4-29-05 Letting, Item 110

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PLANS FOR PROPOSED FEDERAL AID HIGHWAY

VARIOUS ROUTES
OVD SIN STR REP & REPL 2005-12
VARIOUS COUNTIES
C-60-016-05

INDEX OF SHEETS

STANDARDS

630001-05
702001-05
701006-02
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704001-02
720021-01

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

SUBMITTED _____ 20 ____
PASSED

ENGINEER OF OPERATIONS

March 25, 20 05
Mike Hine
ENGINEER OF DESIGN AND ENVIRONMENT

APPROVED March 25, 20 05
Victor Modeer
DIRECTOR DIVISION OF HIGHWAYS

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

CONTRACT NO. 44872

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

Summary of Quantities

CODE NUMBER	PAY ITEM	UNIT	Y002 - IC 100% STATE TOTAL QUANTITY	URBAN	RURAL
T9990710	REMOVE & REINSTALL WALKWAY	FOOT	554.80		554.80
T9992300	OVERHEAD SIGN STRUCTURE WALKWAY	FOOT	736.43	466.10	270.33
T9992530	REPLACE / TIGHTEN CLIPS PER SIGN	EACH	4.00		4.00
T9992600	RE-ERECT SIGN PANEL	SQ FT	69.00		69.00
T9992700	REMOVE & REINSTALL SIGN PANEL	SQ FT	4,192.00		4,192.00
T9995400	FURNISH & INSTALL SADDLE SHIM BLOCK	EACH	32.00	16.00	16.00
T9996200	REPAIR CONCRETE FOUNDATION FOR OVERHEAD SIGN STRUCTURE	EACH	14.00	14.00	
T9996300	OVERHEAD SIGN SUPPORT GROUT REPAIR	EACH	25.00	25.00	
T9997255	FURNISH & INSTALL INTERNAL TRUSS DAMPER	EACH	8.00	4.00	4.00
T9997700	FURNISH & INSTALL SAFETY CHAIN	EACH	56.00	16.00	40.00
T9998600	TIGHTEN CANTILEVER CONNECTION	EACH	2.00	2.00	
T9998815	REPAIR HANDRAIL LOCKING PIN CONNECTION	EACH	89.00		89.00
T9998860	DRILL WEEP HOLE	EACH	10.00	10.00	
T9998897	REPLACE HANDRAIL SUPPORT	EACH	3.00		3.00
T9998910	FURNISH & INSTALL METAL SCREEN	EACH	8.00		8.00
T9998995	DISCONNECT / RECONNECT ELECTRIC SERVICE	EACH	2.00		2.00
X0324397	RELOCATE ELECTRIC SERVICE	EACH	17.00		17.00
X7330095	OVERHEAD SIGN STRUCTURE - CANTLEVER, MONOTUBE	FOOT	20.00		20.00
67100100	MOBILIZATION	L SUM	1.00	0.13	0.87

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

Summary of Quantities

CODE NUMBER	PAY ITEM	UNIT	Y002 - IC 100% STATE TOTAL QUANTITY	URBAN	RURAL
70101700	TRAFFIC CONTROL & PROTECTION	L SUM	1.00	1.00	
73300100	OVERHEAD SIGN STRUCTUR - SPAN, TYPE I-A (4' - 0 X 4' - 6")	FOOT	372.00		372.00
73300200	OVERHEAD SIGN STRUCTURE - SPAN, TYPE II-A (4' - 6" X 5' - 3")	FOOT	298.00		298.00
73300300	OVERHEAD SIGN STRUCTURE - SPAN, TYPE III-A (5' - 0" X 7' - 0")	FOOT	119.00		119.00
73302110	OVERHEAD SIGN STRUCTURE - CANTILEVER, TYPE I-C-A (24" X 4' - 6")	FOOT	100.00		100.00
73302170	OVERHEAD SIGN STRUCTURE - CANTILEVER, TYPE II-C-A (36" X 5' - 6")	FOOT	117.00		117.00
73400200	DRILLED SHAFT CONCRETE FOUNDATIONS	CU YD	251.20		251.20
73600100	REMOVE OVERHEAD SIGN STRUCTURE - SPAN	EACH	9.00		9.00
73600200	REMOVE OVERHEAD SIGN STRUCTURE - CANTILEVER	EACH	8.00		8.00
73700300	REMOVE CONCRETE FOUNDATION - OVERHEAD	EACH	28.00		28.00
73800100	STRUCTURAL STEEL SUPPORT5 OVERHEAD SIGN STRUCTURE	EACH	28.00	8.00	20.00
73801100	REMOVE & RE-ERECT OVERHEAD SIGN STRUCTURE - SPAN	EACH	8.00	4.00	4.00

PAY ITEM	UNIT	Y002 - 1C 100% STATE TOTAL QUANTITY	DISTRICT 1	DISTRICT 2	DISTRICT 3	DISTRICT 4	DISTRICT 5	DISTRICT 6
REMOVE & REINSTALL WALKWAY	FOOT	554.80		65.00	36.00	78.00	217.50	158.30
OVERHEAD SIGN STRUCTURE WALKWAY	FOOT	736.43	466.10	53.50	216.83			
REPLACE / TIGHTEN CLIP PER SIGN	EACH	4.00				1.00		3.00
REINSTALL SIGN PANEL	SQ FT	69.00		69.00				
REMOVE & REINSTALL SIGN PANEL	SQ FT	4,192.00		293.50	313.75	610.00	1,464.75	1,510.00
FURNISH & INSTALL SADDLE SHIM BLOCK	EACH	32.00	16.00	4.00	12.00			
REPAIR CONCRETE FOUNDATION FOR OVERHEAD SIGN STRUCTURE	EACH	14.00	14.00					
OVERHEAD SIGN SUPPORT GROUT REPAIR	EACH	25.00	25.00					
FURNISH & INSTALL INTERNAL TRUSS DAMPER	EACH	8.00	4.00	1.00	3.00			
FURNISH & INSTALL SAFETY CHAIN	EACH	56.00	16.00	8.00	8.00	8.00	8.00	8.00
TIGHTEN CANTILEVER CONNECTION	EACH	2.00	2.00					
REPAIR HANDRAIL LOCKING PIN CONNECTION	EACH	89.00		21.00		16.00	28.00	24.00
DRILL WEEP HOLE	EACH	10.00	10.00					
REPLACE HANDRAIL SUPPORT	EACH	3.00		3.00				
FURNISH & INSTALL METAL SCREEN	EACH	8.00						8.00
RELOCATE ELECTRIC SERVICE	EACH	17.00		5.00	4.00	3.00	4.00	1.00
DISCONNECT / RECONNECT ELECTRIC SERVICE	EACH	2.00						2.00

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

Schedule of Quantities

PAY ITEM	UNIT	Y002 - 1C 100% STATE TOTAL QUANTITY	DISTRICT 1	DISTRICT 2	DISTRICT 3	DISTRICT 4	DISTRICT 5	DISTRICT 6
OVERHEAD SIGN STRUCTURE - CANTILEVER, MONOTUBE	FOOT	20.00		20.00				
MOBOLIZATION	L SUM	1.00	0.13	0.14	0.20	0.12	0.24	0.17
TRAFFIC CONTROL & PROTECTION	L SUM	1.00	1.00					298.00
OVERHEAD SIGN STRUCTURE - SPAN, TYPE I-A (4' - 0" X 4' - 6")	FOOT	372.00			50.00		322.00	119.00
OVERHEAD SIGN STRUCTURE - SPAN, TYPE II-A (4' - 6" X 5' - 3")	FOOT	298.00						298.00
OVERHEAD SIGN STRUCTURE - SPAN, TYPE III-A (5' - 0" X 7' -0")	FOOT	119.00						119.00
OVERHEAD SIGN STRUCTURE - CANTILEVER TYPE 1-C-A (24" - 0" X 4' - 6")	FOOT	100.00		100.00				
OVERHEAD SIGN STRUCTURE - CANTILEVER, TYPE II-C-A (36" X 5' - 6")	FOOT	117.00				117.00		
DRILLED SHAFT CONCRETE FOUNDATIONS	CU YD	251.20		41.10	76.80	30.20	81.60	21.50
REMOVE OVERHEAD SIGNSTRUCTURE - SPAN	EACH	9.00			1.00		4.00	4.00
REMOVE OVERHEAD SIGN STRUCTURE - CANTILEVER	EACH	8.00		4.00		4.00		
REMOVE CONCRETE FOUNDATION - OVERHEAD	EACH	28.00		6.00	8.00	4.00	8.00	2.00
STRUCTURAL STEEL SUPPORT FOR OVERHEAD SIGN STRUCTURE - SPAN	EACH	28.00	8.00	2.00	8.00		8.00	2.00
REMOVE & RE-ERECT OVERHEAD SIGN STRUCTURE - SPAN	EACH	8.00	4.00	1.00	3.00			

District 1
Schedule of Locations for Truss Repair & Replacement

Location No.:	1-01	State I.D. No.:	1S016I290R000.5 (S-18)P4		
County:	Cook	Route:	I-290	0.5	Direction: EB

Description of Work	Unit	Quantity
Remove & Re-erect Overhead Sign Structure - Span	Each	1.00
Structural Steel Support Overhead Sign Structure	Each	2.00
Furnish & Install Internal Truss Damper	Each	1.00
Furnish & Install Safety Chain	Each	4.00
Overhead Sign Support Grout Repair	Each	4.00
Repair Concrete Foundation for Overhead Sign Structure	Each	2.00
Furnish & Install Saddle Shim Block	Each	4.00
Overhead Sign Structure Walkway	Foot	110.75
This work shall be completed during District 1 night-time hours.		

Location No.:	1-02	State I.D. No.:	1S016I290R000.00 (S-19)P2			
County:	Cook	Route:	I-290	M.P.:	0	Direction: EB

Description of Work	Unit	Quantity
Remove & Re-erect Overhead Sign Structure - Span	Each	1.00
Structural Steel Sign Support Overhead Sign StrucTure	Each	2.00
Furnish & Install Internal Truss Damper	Each	1.00
Furnish & Install Safety Chain	Each	4.00
Overhead Sign Support Grout Repair	Each	4.00
Repair Concrete Foundation for Overhead Sign Structure	Each	2.00
Furnish & Install Saddle Shim Block	Each	4.00
Overhead Sign Structure Walkway	Foot	112.75
This work shall be completed during District 1 night-time hours.		

Location No.:	1-03	State I.D. No.:	1S016S053L000.00-010 (S-20)R1			
County:	Cook	Route:	IL 53	M.P.:	0	Direction: SB

Description of Work	Unit	Quantity
Remove & Re-erect Overhead Sign Structure-Span	Each	1.00
Structural Steel Sign Support Overhead Sign Structure	Each	2.00
Furnish & Install Internal Truss Damper	Each	1.00
Overhead Sign Structure Grout Repair	Each	4.00
Repair Concrete Foundation for Overhead Sign Structure	Each	2.00
Furnish & Install Saddle Shim Block	Each	4.00
Overhead Sign Structure Walkway	Foot	141.25
This work shall be completed during District 1 night-time hours.		

Location No.:	1-04	State I.D. No.:	1S016S053L000.2 (S-17)P3			
County:	Cook	Route:	IL 53	M.P.:	0.2	Direction: SB

Description of Work	Unit	Quantity
Remove & Re-erect Overhead Sign Structure-Span	Each	1.00
Structural Steel Sign Support Overhead Sign Structure	Each	2.00
Furnish & Install Internal Truss Damper	Each	1.00
Furnish & Install Safety Chain	Each	2.00
Overhead Sign Structure Grout Repair	Each	4.00
Repair Concrete Foundation for Overhead Sign Structure	Each	2.00
Furnish & Install Saddle Shim Block	Each	4.00
Overhead Sign Structure Walkway	Foot	101.33
This work shall be completed during District 1 night-time hours.		

Location No.:	1-05	State I.D. No.:	1C016I290R001.0-000 (C-4)O2			
County:	Cook	Route:	I-290	M.P.:	1.0	Direction: EB

Description of Work	Unit	Quantity
Furnish & Install Safety Chain	Each	2.00
Tighten Cantilever Connection	Each	2.00
Repair Concrete Foundation for Overhead Sign Structure	Each	1.00
This work shall be completed during District 1 night-time hours.		

Location No.:	1-06	State I.D. No.:	1S016I355L030.2 (TR-125)T4			
County:	Cook	Route:	I-355	M.P.:	30.2	Direction: SB

Description of Work	Unit	Quantity
Repair Concrete Foundation for Overhead Sign Structure	Each	2.00
This work shall be completed during District 1 night-time hours.		

Location No.:	1-07	State I.D. No.:	1C022I290L006.3 (C-1)J1			
County:	Du Page	Route:	I-290	M.P.:	66.3	Direction: WB

Description of Work	Unit	Quantity
Overhead Sign Support Grout Repair	Each	1.00
Repair Concrete Foundation for Overhead Sign Structure	Each	1.00
Drill Weep Hole	Each	2.00
This work shall be completed during District 1 night-time hours.		

Location No.:	1-08	State I.D. No.:	1C022I290L005.6 (C-2)J5			
County:	Du Page	Route:	I-290	M.P.:	5.6	Direction: WB

Description of Work	Unit	Quantity
Overhead Sign Support Grout Repair	Each	1.00
Drill Weep Hole	Each	2.00
This work shall be completed during District 1 night-time hours.		

Location No.:	1-09	State I.D. No.:	1C022I290L005.4 (C-3)K1			
County:	Du Page	Route:	I-290	M.P.:	5.4	Direction: WB

Description of Work	Unit	Quantity
Overhead Sign Structure Grout Repair	Each	1.00
Drill Weep Hole	Each	2.00
This work shall be completed during District 1 night-time hours.		

Location No.:	1-10	State I.D. No.:	1S016S053L000.0-007 (TS-1)Y1			
County:	Cook	Route:	IL 53	M.P.:	0.0	Direction: SB

Description of Work	Unit	Quantity
Overhead Sign Structure Grout Repair	Each	2.00
Repair Concrete Foundation for Overhead Sign Structure	Each	2.00
This work shall be completed during District 1 night-time hours.		

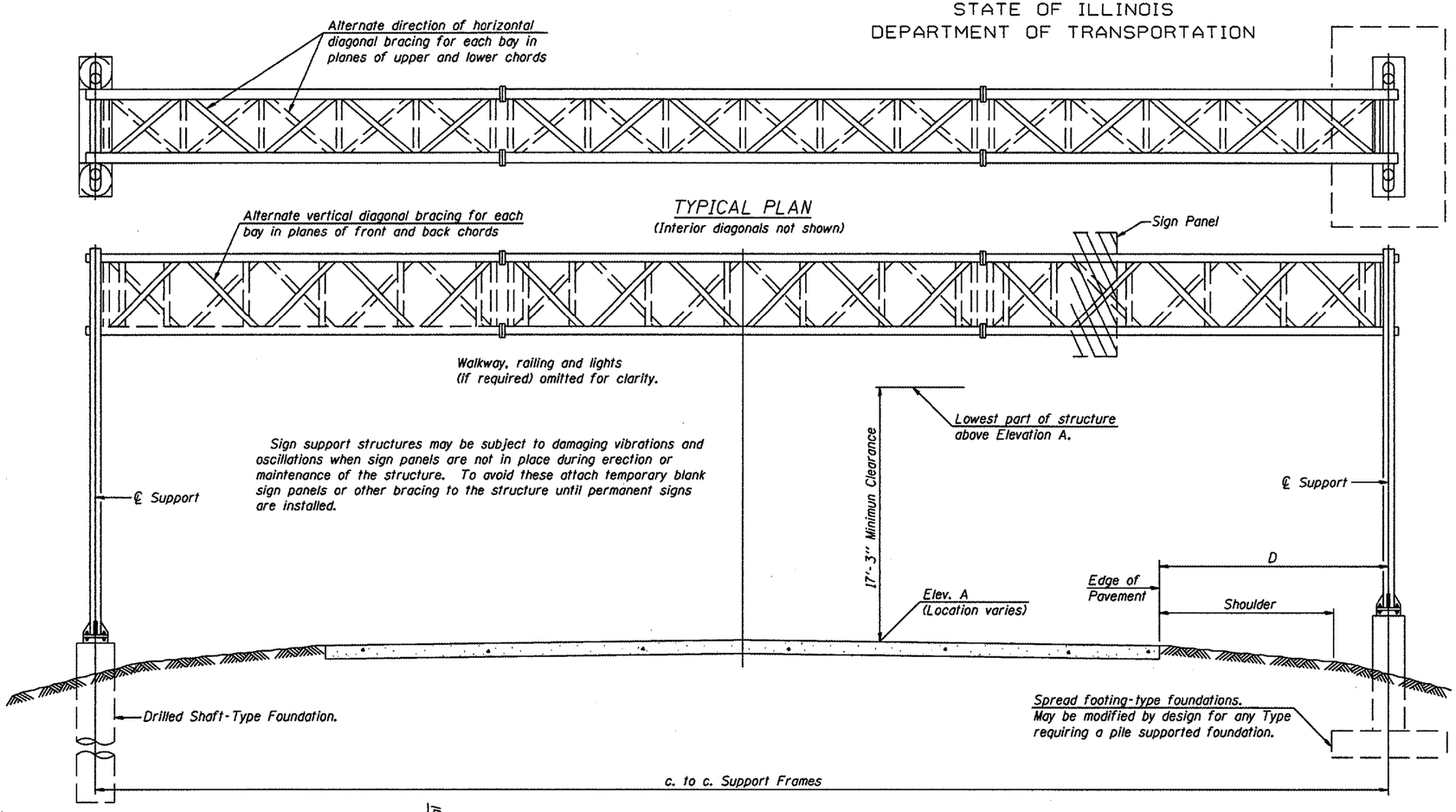
Location No.:	1-11	State I.D. No.:	1S022I290R010.4 (TE-3)B2			
County:	Du Page	Route:	I-290	M.P.:	10.4	Direction: EB

Description of Work	Unit	Quantity
Furnish & Install Safety Chain	Each	2.00
Overhead Sign Structure Grout Repair	Each	2.00
Drill Weep Hole	Each	4.00
This work shall be completed during District 1 night-time hours.		

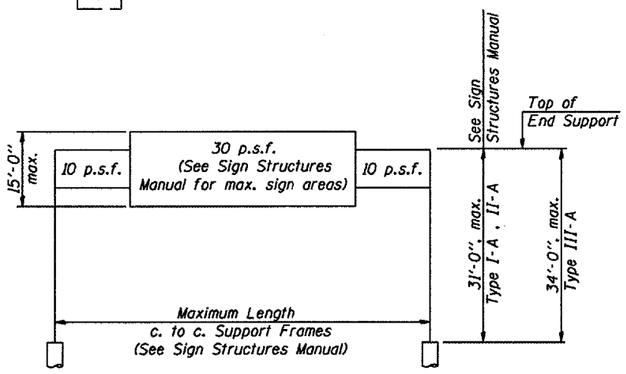
Location No.:	1-12	State I.D. No.:	1S022I290L010.9 (TW-8)A1			
County:	Du Page	Route:	I-290	M.P.:	10.9	Direction: WB

Description of Work	Unit	Quantity
Furnish & Install Safety Chain	Each	2.00
Overhead Sign Structure Grout Repair	Each	2.00
This work shall be completed during District 1 night-time hours.		

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



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

**Looking upstation for structures with signs both sides.

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.
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 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.

This Sheet For Information Only

NUMBER	REVISION	DATE

TOTAL BILL OF MATERIAL

ITEM	UNIT	TOTAL
OVERHEAD SIGN STRUCTURE TYPE I-A (4'-0" x 4'-6")	Foot	
OVERHEAD SIGN STRUCTURE TYPE II-A (4'-6" x 5'-3")	Foot	
OVERHEAD SIGN STRUCTURE TYPE III-A (5'-0" x 7'-0")	Foot	
OVERHEAD SIGN STRUCTURE WALKWAY TYPE A	Foot	
CONCRETE FOUNDATIONS	Cu. Yds.	
DRILLED SHAFT CONCRETE FOUNDATIONS	Cu. Yds.	

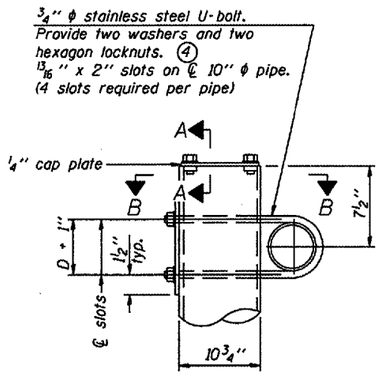
DESIGNED -	- 20
CHECKED -	EXAMINED
DRAWN -	ENGINEER OF BRIDGE DESIGN
CHECKED -	PASSED
	ENGINEER OF BRIDGES AND STRUCTURES

OS-A-1 1-7-05

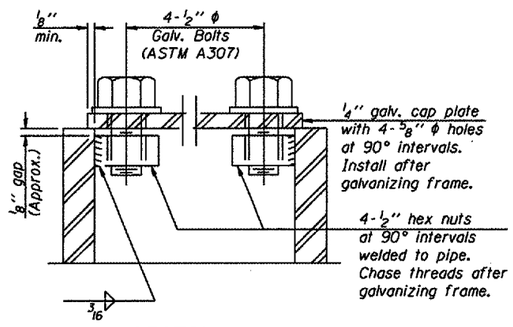
OVERHEAD SIGN STRUCTURES
GENERAL PLAN & ELEVATION
ALUMINUM TRUSS & STEEL SUPPORTS

District 1
End Support Replacement

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

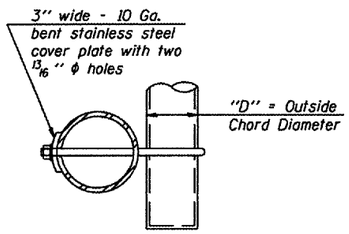


DETAIL A

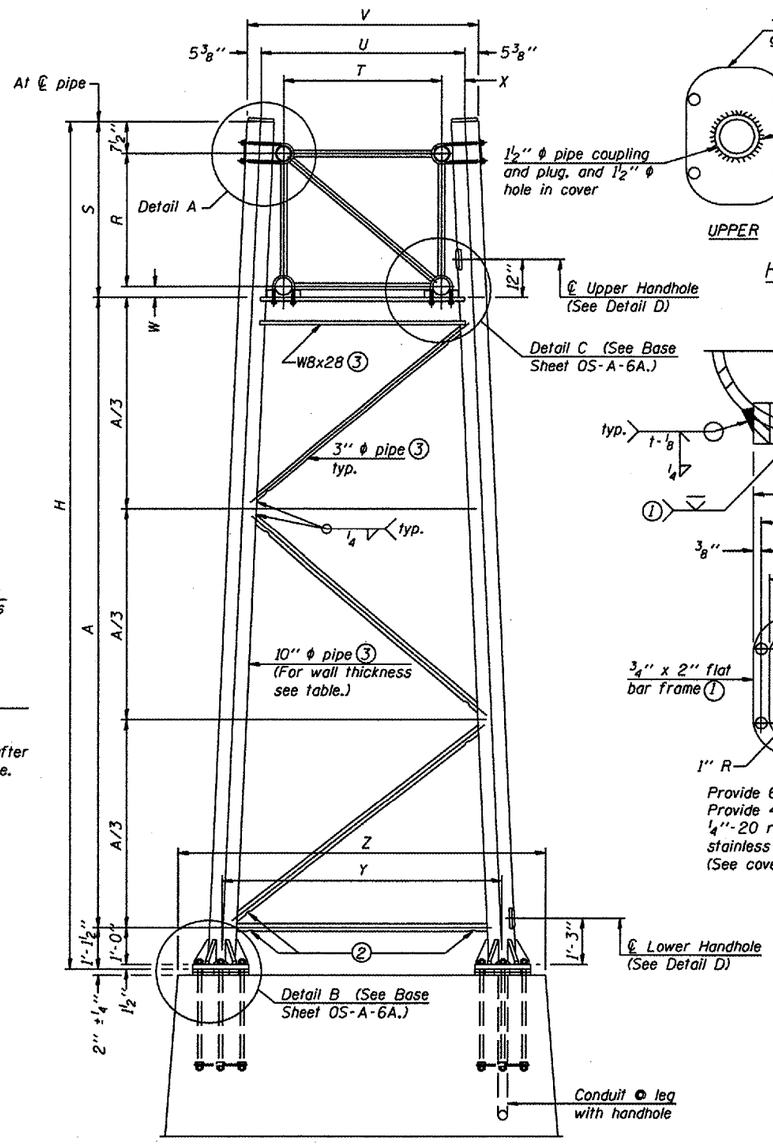


SECTION A-A

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

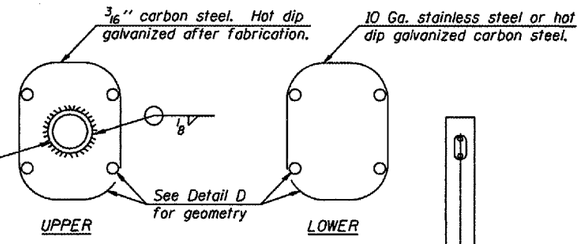


SECTION B-B

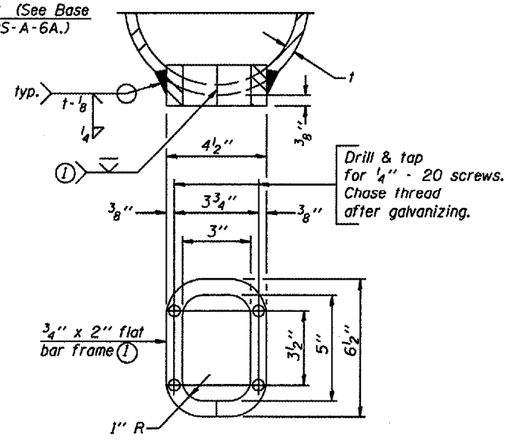


For Foundation Details, see base sheet OS-F3 (Spread Footing) or OS4-F3 (Drilled Shaft).

SIDE ELEVATION

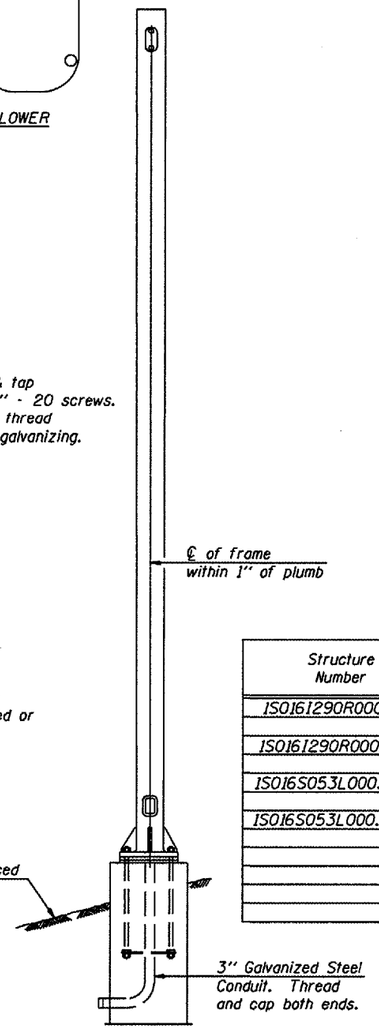


HANDHOLE COVERS



Provide 6 1/2" x 4 1/2" cover.
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)

DETAIL D



END ELEVATION

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 max 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.

Structure Number	Station	Support		Truss Type	Pipe Wall Thickness	H	A
		Left	Right				
IS0161290R000.5	609+00 SB	X		III	0.365(Std)	25'-7 1/4"	15'-5 1/2"
			X		0.365(Std)	29'-3 3/4"	20'-2"
IS0161290R000.0	635+20 SB	X		III	0.365(Std)	26'-3 3/4"	17'-2"
			X		0.365(Std)	28'-9 3/4"	19'-8"
IS016S053L000.0	640+00 NB	X	X	III	0.365(Std)	25'-7 1/4"	15'-5 1/2"
IS016S053L000.2	622+00 NB	X		II	0.365(Std)	24'-4 1/2"	15'-11 3/4"
			X		0.365(Std)	26'-10 1/2"	19'-5 3/4"

10" ϕ PIPE TRUSS SUPPORT FRAME

Truss Type	Dimensions								
	R	S	T	U	V	W	X	Y	Z
I-A	4'-6"	5'-5 1/2"	4'-0"	5'-6"	6'-4 3/4"	4"	9"	8'-3"	10'-9"
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"	10'-9"

NUMBER	REVISION	DATE

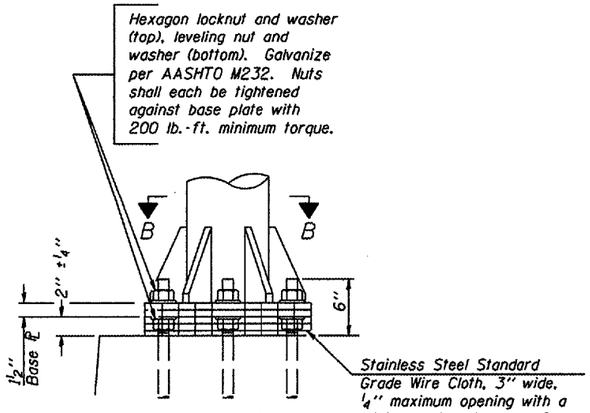
DESIGNED -
CHECKED -
DRAWN -
CHECKED -

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

OS-A-6 1-7-05

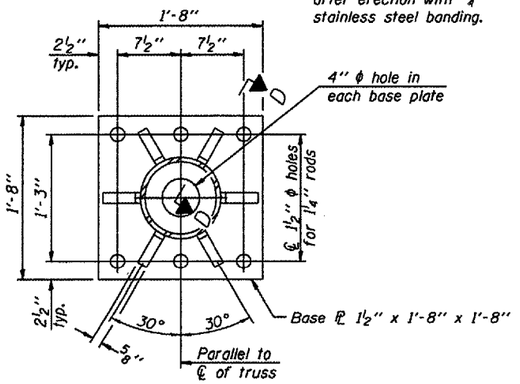
OVERHEAD SIGN STRUCTURES
SUPPORT FRAME for ALUMINUM TRUSS

District 1
End Support Replacement

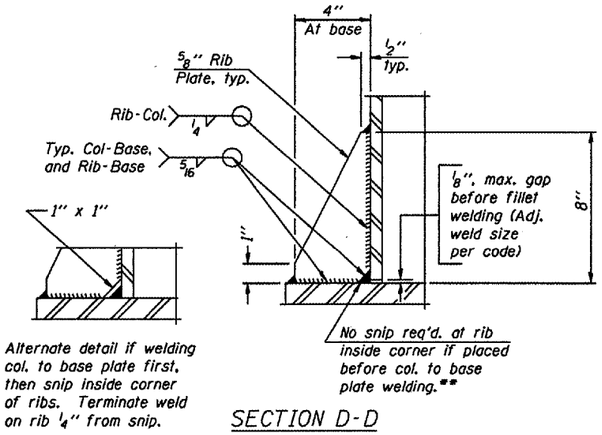


DETAIL B

Ribs shall be cut to fit slope of pipe.

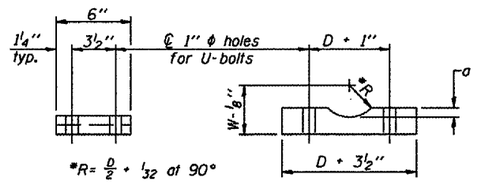


SECTION B-B



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

SECTION D-D

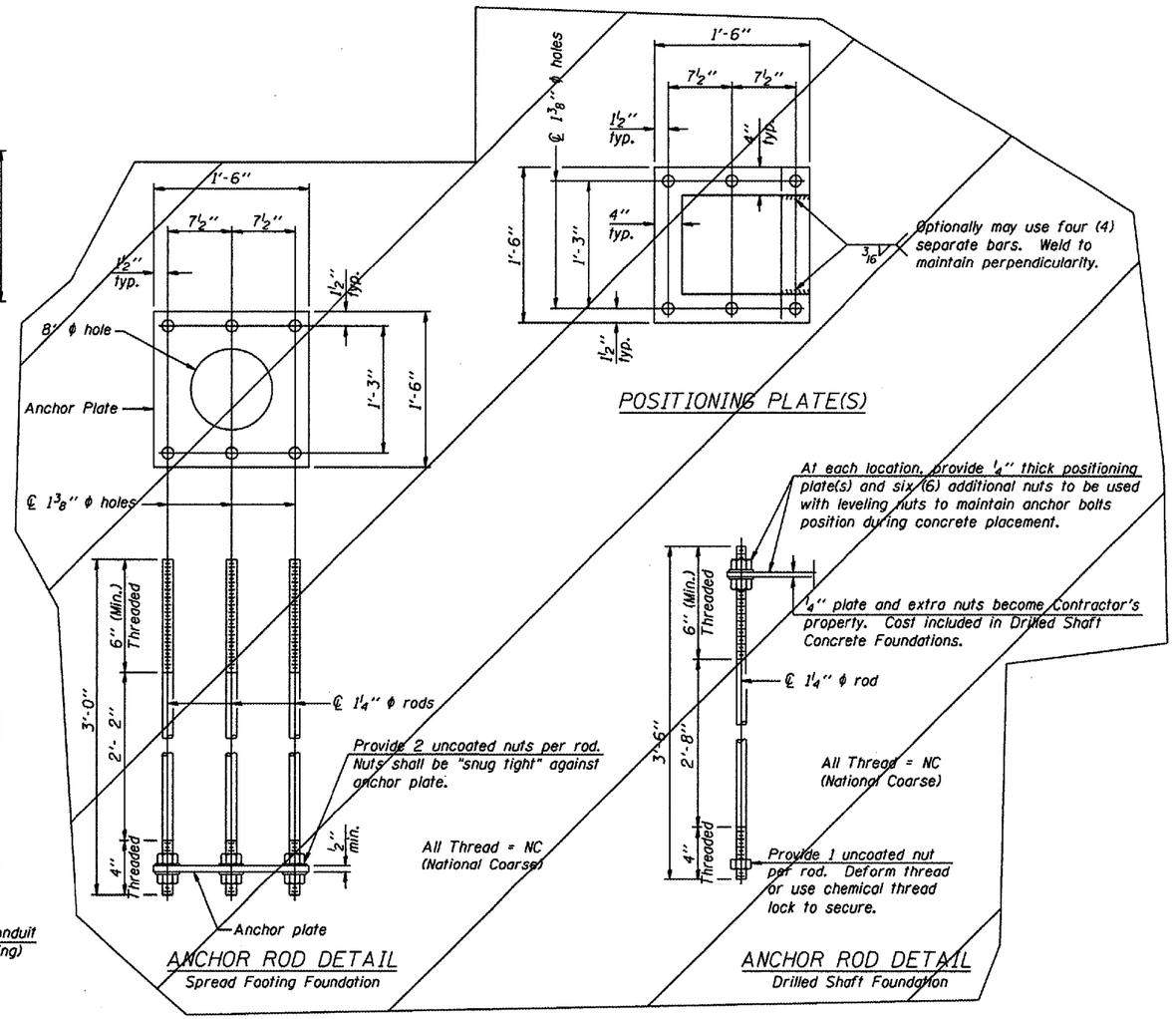


*R = D/2 + 1/32 at 90°

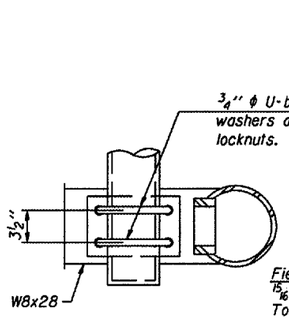
D = Outside Diameter of Chord.
For W, see Base Sheet OS-A-6.

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

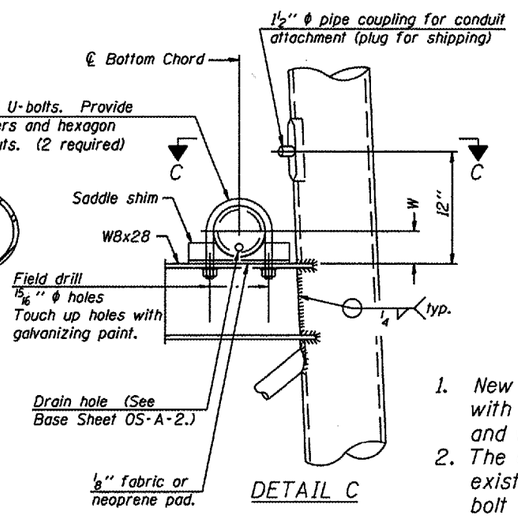
Truss Chord Nominal Dia.	a
5"	3/4"
5 1/2"	13/16"
6"	7/8"
6 1/2"	15/16"
7"	1"



Anchor 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.



SECTION C-C
(Handhole cover not shown)



DETAIL C

10" ϕ PIPE SUPPORT FRAME DETAILS

1. New End Supports to be installed on existing foundation with existing anchor bolts. Provide new anchor bolt nuts and washers as necessary.
2. The Contractor and the Engineer shall field verify the existing end support dimensions and the existing anchor bolt dimensions prior to fabrication of the new end supports.

NUMBER	REVISION	DATE

DESIGNED	-
CHECKED	-
DRAWN	-
CHECKED	-

- 20

EXAMINED

ENGINEER OF BRIDGE DESIGN

PASSED

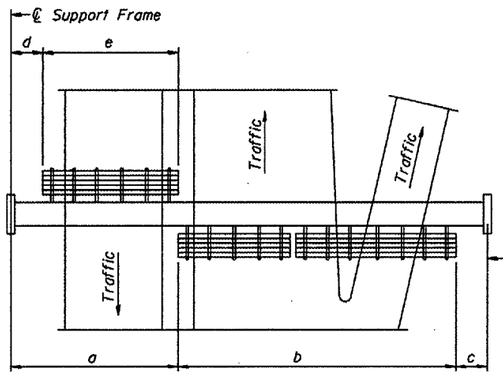
ENGINEER OF BRIDGES AND STRUCTURES

OS-A-6A 1-7-05

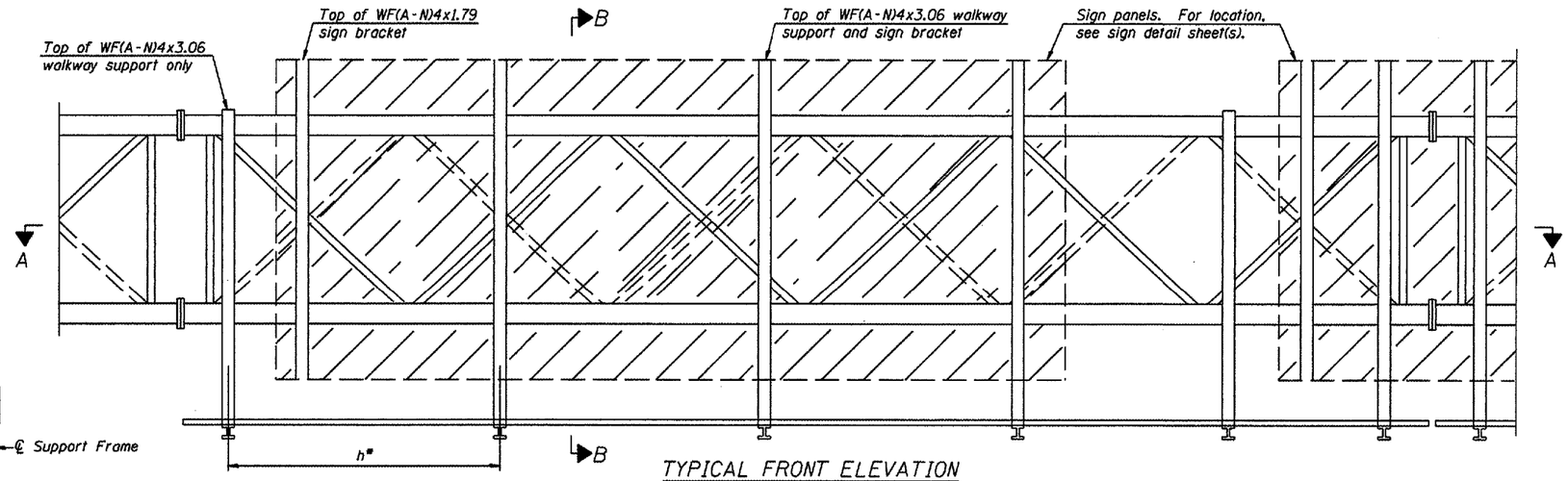
OVERHEAD SIGN STRUCTURES
SUPPORT FRAME DETAILS ALUMINUM TRUSS

District 1
End Support Replacement

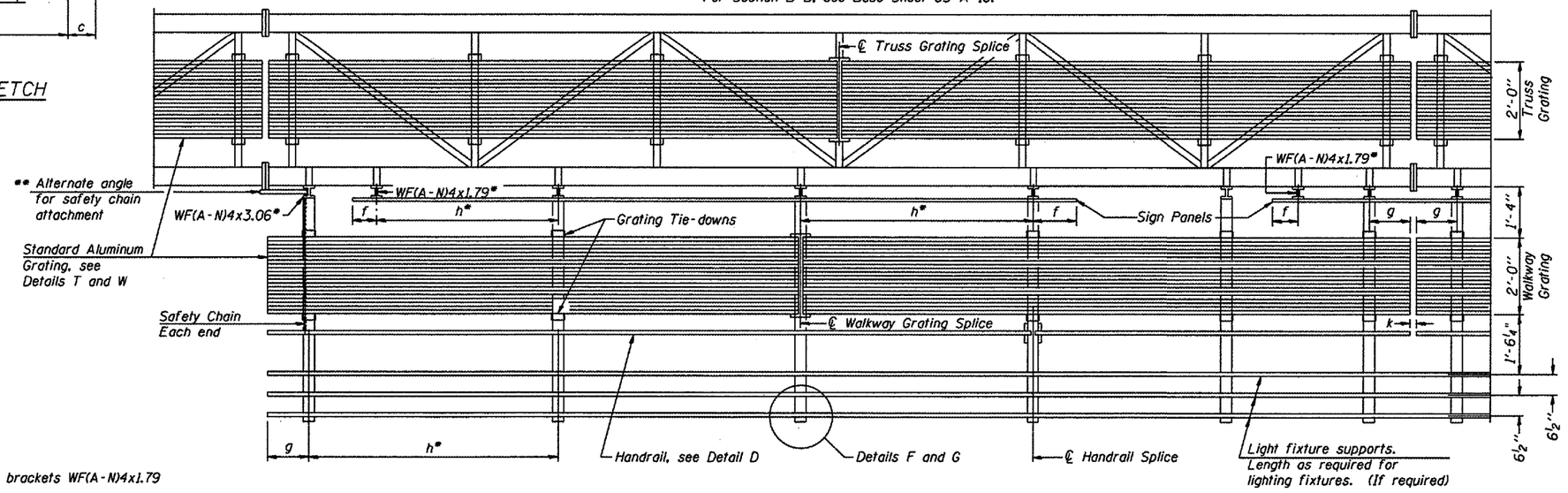
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



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.



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

BRACKET TABLE

WF(A-N)4x1.79 or 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

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 ℄ 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, 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 Details D, F, G and P and Handrail Splice Details, see Base Sheet OS-A-11.

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, handrail and light support splices placed as needed.

Structure Number	Station	a	b	c	d	e	Walkway Grating and Handrail Lengths
IS016I290R000.5	609+00 SB	N/A	N/A	N/A	N/A	N/A	110' - 9" *
IS016I290R000.0	635+20 SB	N/A	N/A	N/A	N/A	N/A	112' - 9" *
IS016S053L000.0	640+00 NB	N/A	N/A	N/A	N/A	N/A	141' - 3" *
IS016S053L000.2	622+00 NB	N/A	N/A	N/A	N/A	N/A	101' - 4" *
						* Truss	Grating Length

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".

DESIGNED	-
CHECKED	-
DRAWN	-
CHECKED	-

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

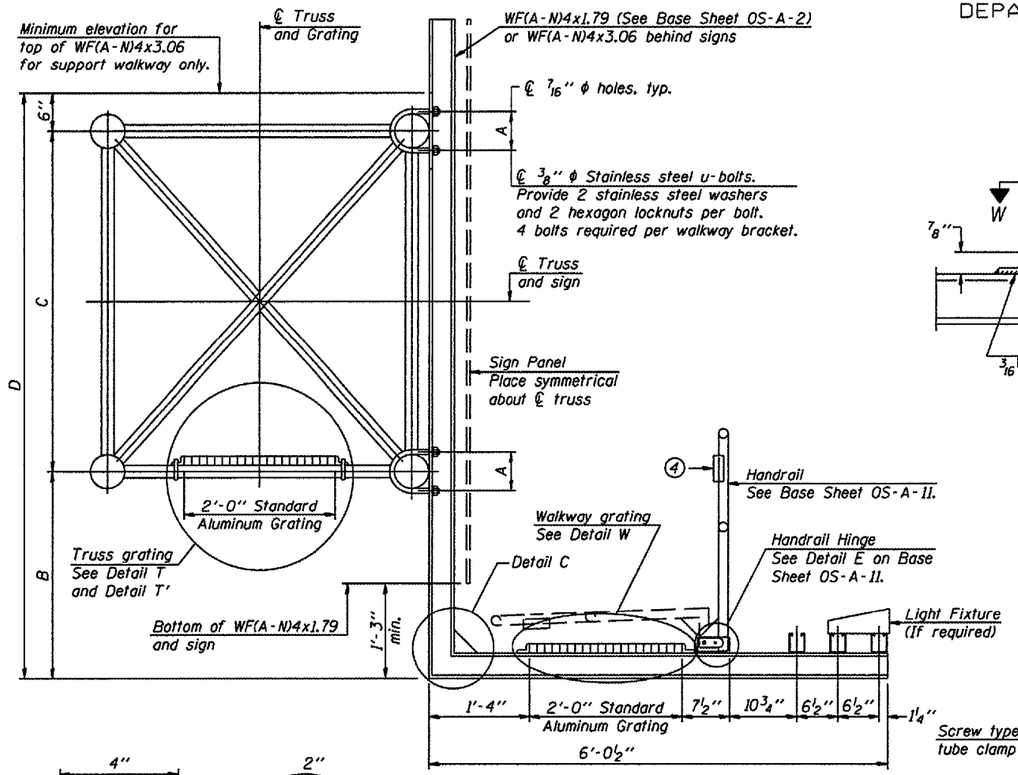
NUMBER	REVISION	DATE

OS-A-9 1-7-05

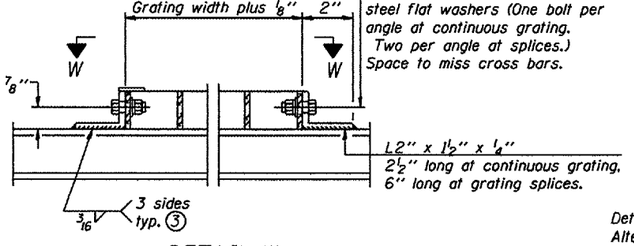
OVERHEAD SIGN STRUCTURES
ALUMINUM WALKWAY DETAILS

District 1
End Support Replacement

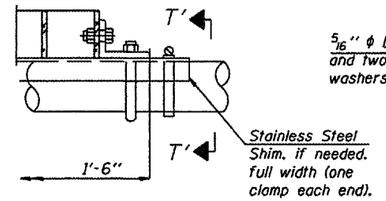
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



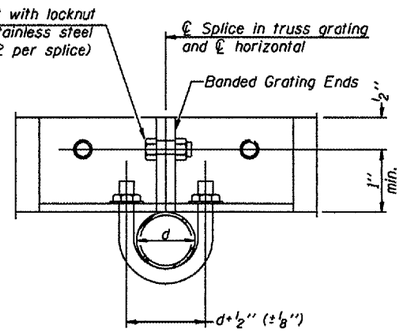
SECTION B-B



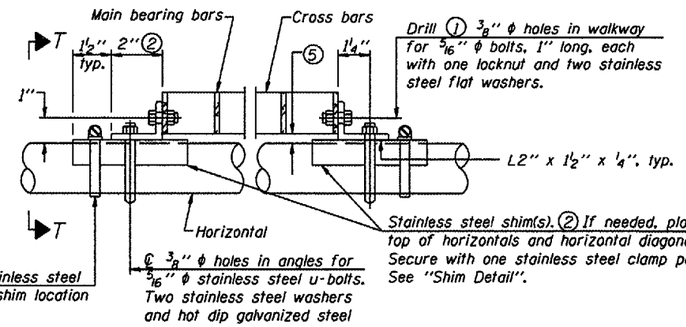
DETAIL W
(Walkway grating)



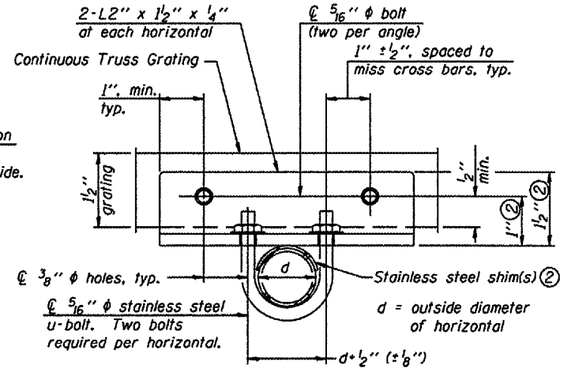
DETAIL T'
(Truss grating splice)
Details not shown same as Detail T.
Alternate materials may be used subject to the Engineer's review and approval.



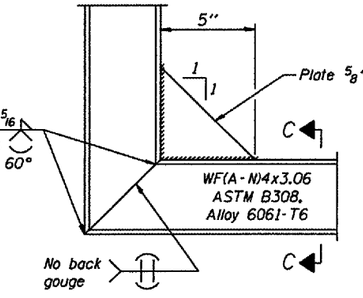
SECTION T'-T'



DETAIL T
(Continuous Truss grating)



SECTION T-T

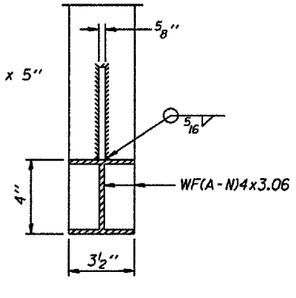


R = bend to match tube (approximately)

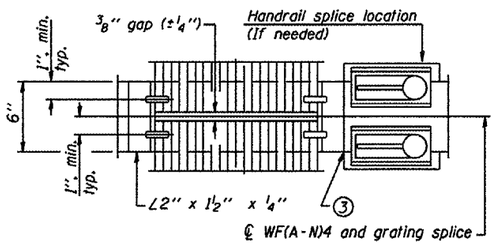
ELEVATION END VIEW

SHIM DETAIL

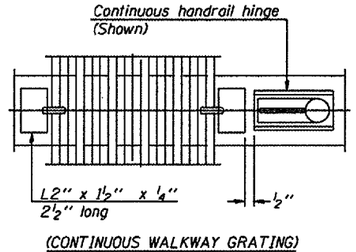
DETAIL C
(See Detail P, Base Sheet OS-A-11.)



SECTION C-C



(AT WALKWAY GRATING SPLICE)



(CONTINUOUS WALKWAY GRATING)

SECTION W-W

SPECIFICATIONS FOR STANDARD ALUMINUM GRATING

Main Bearing Bars shall be 3/16" x 1½" on 1 3/16" centers and conform to ASTM B221 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.

This Sheet For Information Only

Structure Number	Station	A	B	C	D

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 OS-A-11.)

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

⑤ Tube to grating gap may vary from 0 to ½", max. to align walkway, allow for camber, etc.

OVERHEAD SIGN STRUCTURES
ALUMINUM WALKWAY DETAILS

District 1
End Support Replacement

DESIGNED	-
CHECKED	-
DRAWN	-
CHECKED	-

- 20

EXAMINED

ENGINEER OF BRIDGE DESIGN

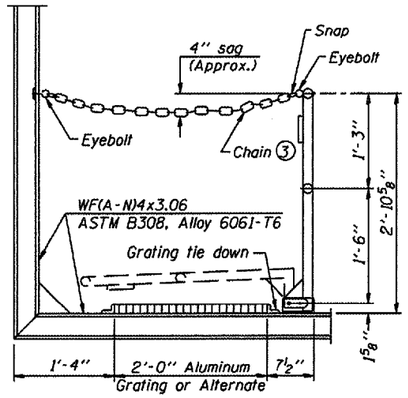
PASSED

ENGINEER OF BRIDGES AND STRUCTURES

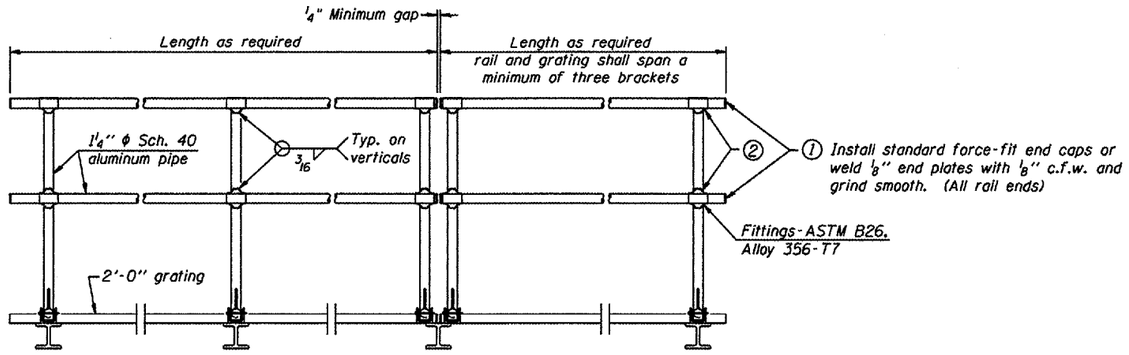
NUMBER	REVISION	DATE

OS-A-10 1-7-05

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



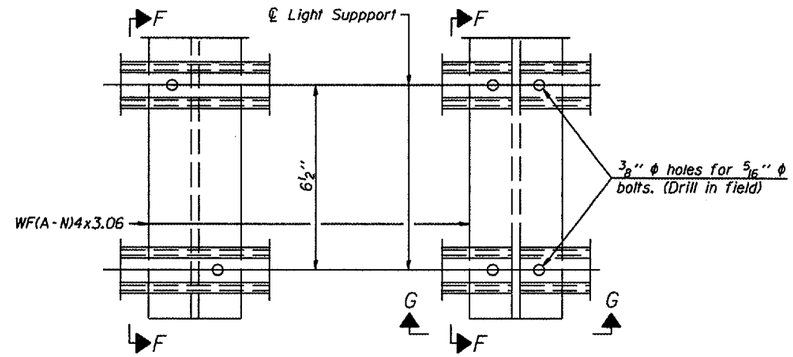
SIDE ELEVATION
(Showing safety chain w/o sign)



FRONT ELEVATION

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

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

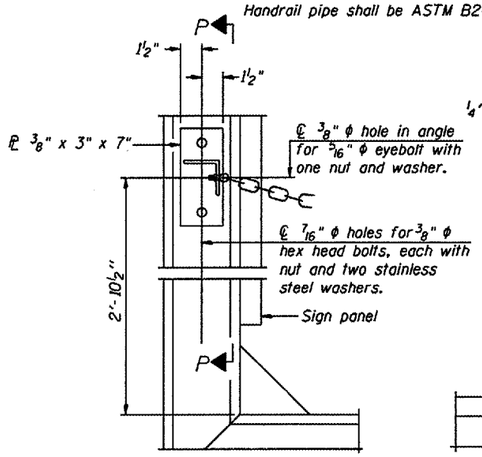


DETAIL F

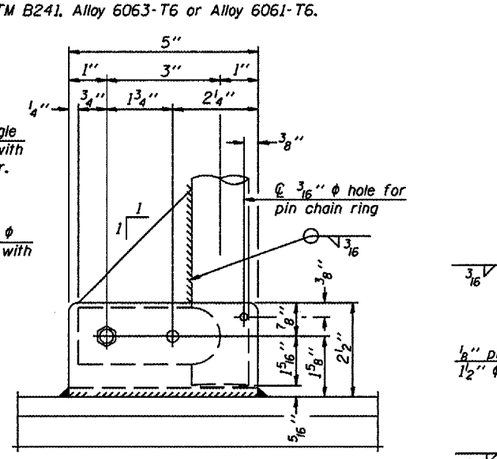
DETAIL G

HANDRAIL DETAILS

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

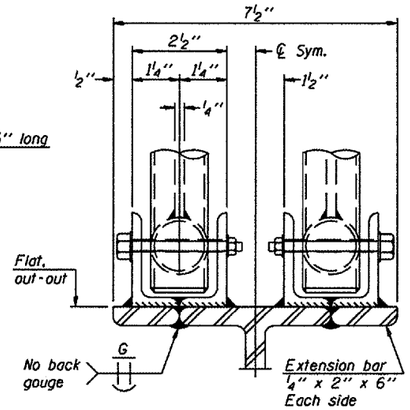


ALTERNATE SAFETY CHAIN ATTACHMENT
(With Sign Present)
Items not shown same as "Side Elevation" of "Handrail Details"

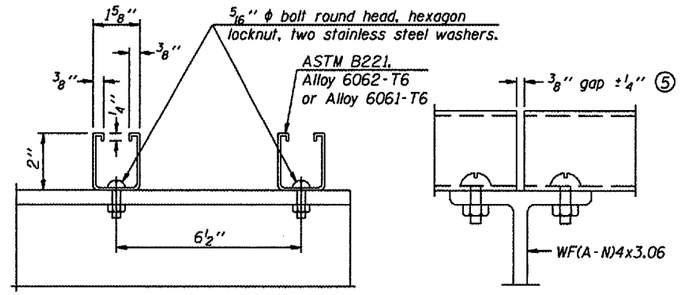


SIDE ELEVATION

FRONT ELEVATION
See "Elevation" at right for dimensions.



ELEVATION AT HANDRAIL JOINT (4)

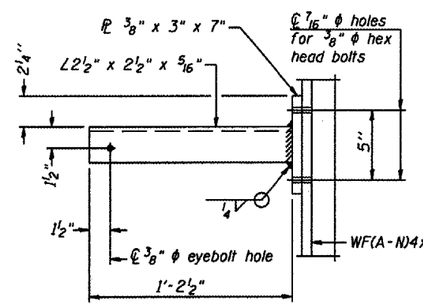


SECTION F-F

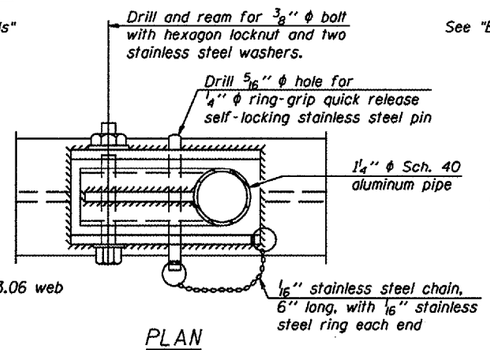
SECTION G-G

LIGHTING FIXTURE MOUNTS (IF REQUIRED)

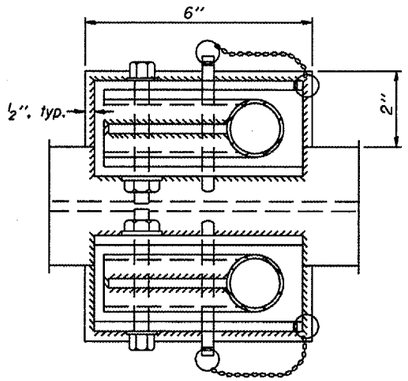
(5) Field cut ends of light support channels shall be free of burrs or hazardous projections and coated with zinc-rich primer or equivalent.



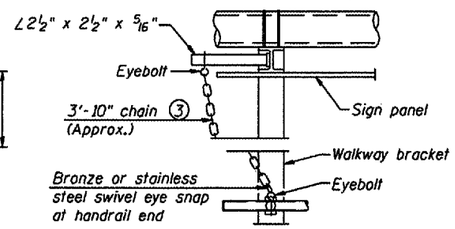
SECTION P-P



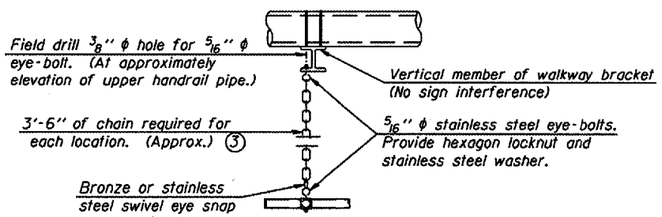
PLAN
DETAIL E HANDRAIL HINGE



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.

(3) 3/16" galvanized steel chain, approximately 12 links per foot. Chain to be hot dip galvanized after manufacture and suitable for prolonged exterior exposure. Alternate materials may be substituted with the Engineer's approval.

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

This Sheet For Information Only

OVERHEAD SIGN STRUCTURES
ALUMINUM HANDRAIL DETAILS

District 1
End Support Replacement

DESIGNED	-
CHECKED	-
DRAWN	-
CHECKED	-

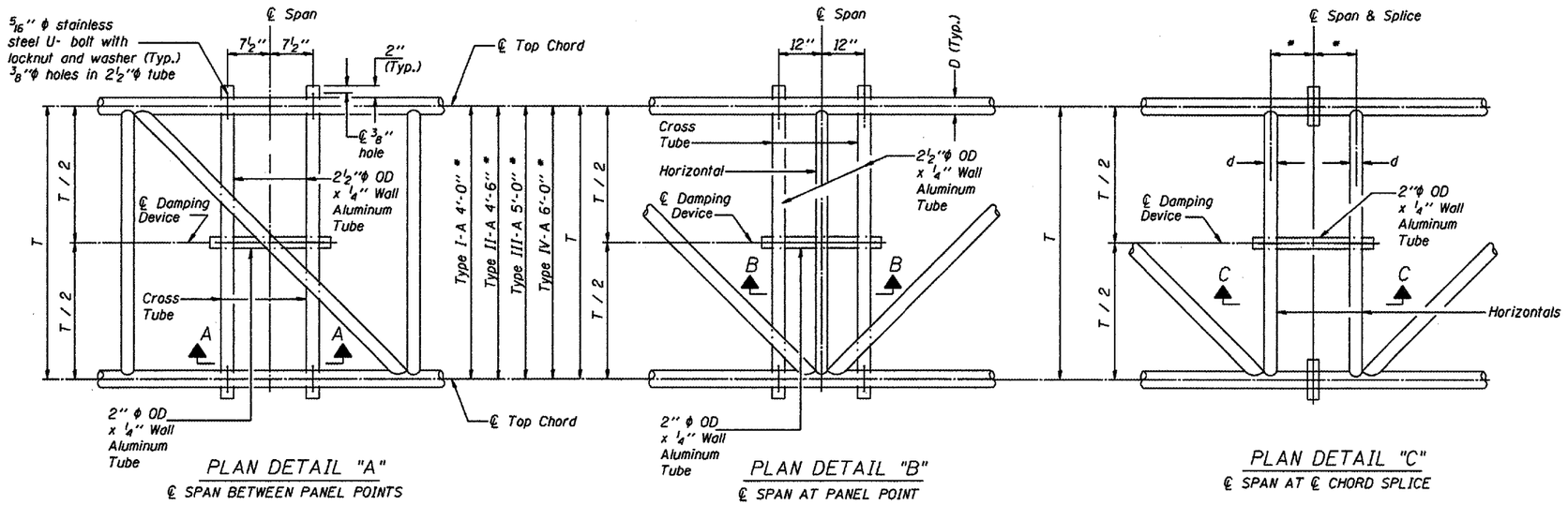
- 20
EXAMINED
ENGINEER OF BRIDGE DESIGN
PASSED
ENGINEER OF BRIDGES AND STRUCTURES

NUMBER	REVISION	DATE

OS-A-11 1-7-05

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

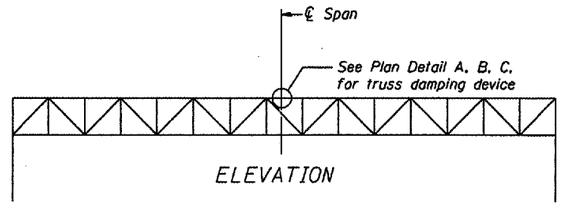
* Verify before drilling holes in mounting tube and cross tubes.



PLAN DETAIL "A"
℄ SPAN BETWEEN PANEL POINTS

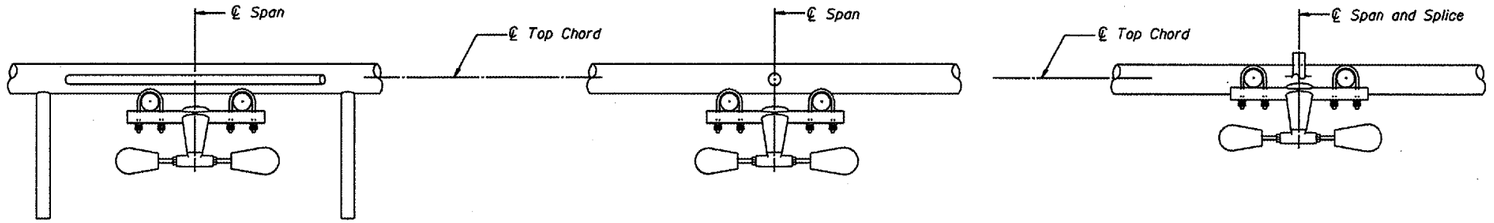
PLAN DETAIL "B"
℄ SPAN AT PANEL POINT

PLAN DETAIL "C"
℄ SPAN AT ℄ CHORD SPLICE



ELEVATION

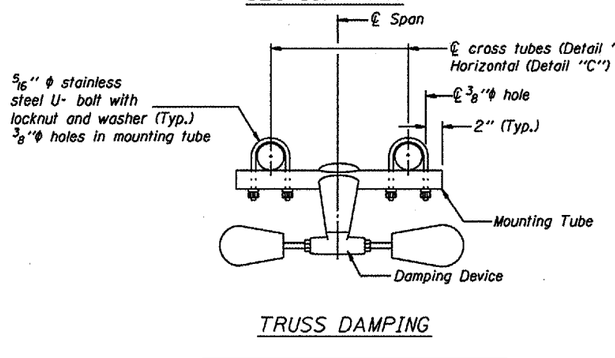
Aluminum Overhead Sign Truss



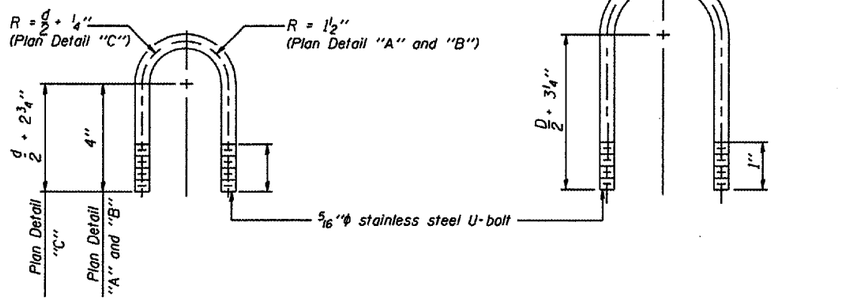
SECTION A-A

SECTION B-B

SECTION C-C



TRUSS DAMPING
(Typical)



DAMPING DEVICE MOUNTING TUBE U-BOLT DETAIL
(Typical)

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

GENERAL NOTES

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

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

Fasteners: U-bolts shall be produced from ASTM A276 Type , 304, 304L, 316 or 316L, Condition A, cold finish, or an equivalent material acceptable to the Engineer. All nuts shall be stainless steel conforming to ASTM A194, Grade 8 (AISI Type 304) or Grade 8F (AISI Type 303). The nuts shall be "locknuts" with nylon or steel inserts and semifinished hexagonal heads equivalent to the finished hex series of the American National Standards. All washers shall be stainless steel conforming to ASTM A240, Type 302 or 304.

DESIGNED	-
CHECKED	-
DRAWN	-
CHECKED	-

\- 20

EXAMINED

ENGINEER OF BRIDGE DESIGN

PASSED

ENGINEER OF BRIDGES AND STRUCTURES

TRUSS DAMPER RETROFIT 07-01-2001

OVERHEAD SIGN STRUCTURE
DAMPING DEVICE

District 1
End Support Replacement

District 2
Schedule of Locations for Truss Repair & Replacement

Location No.:	2-01	State I.D. No.:	2C081S092L029.5(139)				
County:	Rock Island	Route:	IL 92	M.P.:	0.5	Direction:	SB

Description of Work	Unit	Quantity
REMOVE OVERHEAD SIGN STRUCTURE-CANTILEVER	EACH	1.00
REMOVE CONCRETE FOUNDATION-OVERHEAD	EACH	1.00
REMOVE & REINSTALL SIGN PANEL	SQ FT	69.75
REMOVE & REINSTALL WALKWAY	FOOT	16.00
FURNISH & INSTALL SAFETY CHAIN	EACH	2.00
OVERHEAD SIGN STRUCTURE CANTILEVER TYPE I-C-A	FOOT	25.00
DRILLED SHAFT CONCRETE FOUNDATION	CU YD	4.80
REPAIR HANDRAIL LOCKING PIN CONNECTION	EACH	4.00
RELOCATE ELECTRIC SERVICE	EACH	1.00
This sign structure is being completely replaced and downsized.		

Location No.:	2-02	State I.D. No.:	2C081S092L028.8(144)				
County:	Rock Island	Route:	IL 92	M.P.:	28.8	Direction:	SB

Description of Work	Unit	Quantity
REMOVE OVERHEAD SIGN STRUCTURE-CANTILEVER	EACH	1.00
REMOVE CONCRETE FOUNDATION-OVERHEAD	EACH	1.00
REMOVE & REINSTALL SIGN PANEL	SQ FT	71.50
REMOVE & REINSTALL WALKWAY	FOOT	16.00
FURNISH & INSTALL SAFETY CHAIN	EACH	2.00
OVERHEAD SIGN STRUCTURE CANTILEVER TYPE I-C-A	FOOT	25.00
DRILLED SHAFT CONCRETE FOUNDATION	CU YD	4.80
REPAIR HANDRAIL LOCKING PIN CONNECTION	EACH	4.00
RELOCATE ELECTRIC SERVICE	EACH	1.00
This sign structure is being completely replaced and downsized.		

Location No.:	2-03	State I.D. No.:	2C081S092L029.4(140)				
County:	Rock Island	Route:	il 92	M.P.:	29.4	Direction:	sb

Description of Work	Unit	Quantity
REMOVE OVERHEAD SIGN STRUCTURE-CANTILEVER	EACH	1.00
REMOVE CONCRETE FOUNDATION-OVERHEAD	EACH	1.00
REMOVE & REINSTALL SIGN PANEL	SQ FT	78.00
REMOVE & REINSTALL WALKWAY	FOOT	16.00
FURNISH & INSTALL SAFETY CHAIN	EACH	2.00
OVERHEAD SIGN STRUCTURE CANTILEVER TYPE I-C-A	FOOT	25.00
DRILLED SHAFT CONCRETE FOUNDATION	CU YD	4.80
REPAIR HANDRAIL LOCKING PIN CONNECTION	EACH	4.00
RELOCATE ELECTRIC SERVICE	EACH	1.00
This sign structure is being completely replaced and downsized.		

Location No.:	2-04	State I.D. No.:	2C081S092R028.6 (146)				
County:	Rock Island	Route:	IL 92	M.P.:	28.6	Direction:	NB

Description of Work	Unit	Quantity
REMOVE OVERHEAD SIGN STRUCTURE - CANTILEVER	EACH	1.00
REMOVE CONCRETE FOUNDATION - OVERHEAD	EACH	1.00
REMOVE & REINSTALL SIGN PANEL	SQ FT	74.25
REMOVE & REINSTALL WALKWAY	FOOT	17.00
FURNISH & INSTALL SAFETY CHAIN	EACH	2.00
ONERHEAD SIGN STRUCTURE - CANTILEVER, TYPE I-C-A	FOOT	25.00
DRILLED SHAFT CONCRETE FOUNDATION	CU YD	4.80
REPAIR HANDRAIL LOCKING PIN CONNECTION	EACH	4.00
REPLACE HANDRAIL SUPPORT	EACH	3.00
RELOCATE ELECTRIC SERVICE	EACH	1.00
This sign structure is being completely replaced and downsized.		

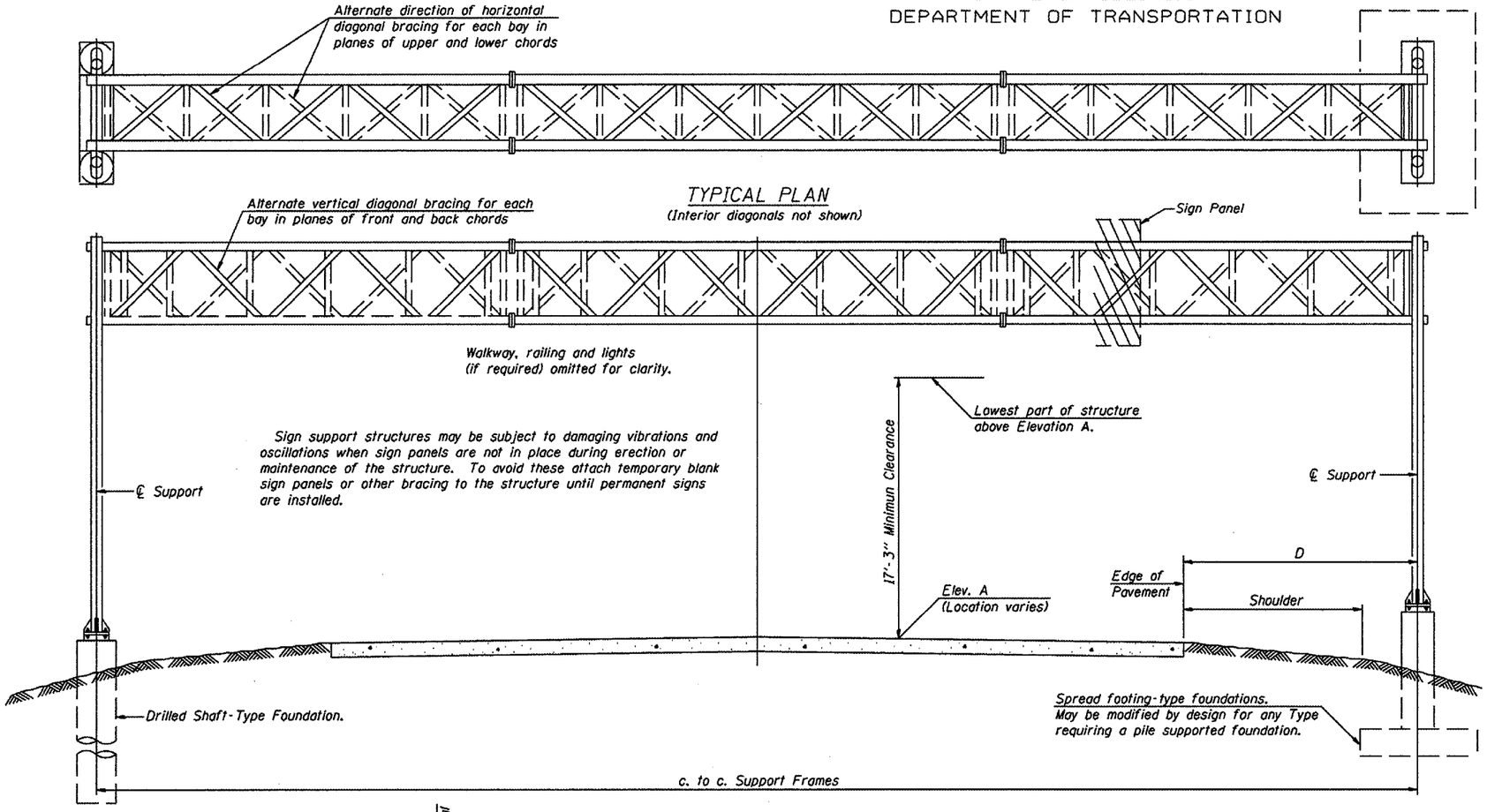
Location No.:	2-05	State I.D. No.:	2S101S020R009.5 (1)				
County:	Winnebago	Route:	US 20	M.P.:	9.5	Direction:	EB

Description of Work	Unit	Quantity
REMOVE & RE-ERECT OVERHEAD SIGN STRUCTURE - SPAN	EACH	1.00
STRUCTURAL STEEL SUPPORT OVERHEAD SIGN STRUCTURE	EACH	2.00
FURNISH & INSTALL SADDLE SHIM BLOCK	EACH	4.00
FURNISH & INSTALL INTERNAL TRUSS DAMPER	EACH	1.00
OVERHEAD SIGN STRUCTURE WALKWAY	FOOT	53.50
REMOVE CONCRETE FOUNDATION - OVERHEAD	EACH	2.00
DRILLED SHAFT CONCRETE FOUNDATIONS	CU YD	21.60
REPAIR HANDRAIL LOCKING PIN CONNECTION	EACH	5.00
RELOCATE ELECTRIC SERVICE	EACH	1.00

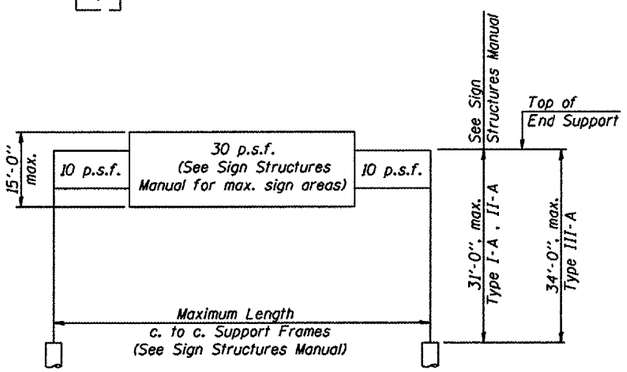
Location No.:	2-06	State I.D. No.:	2M098S078R018.05				
County:	Whiteside	Route:	IL 78	M.P.:	18.05	Direction:	NB

Description of Work	Unit	Quantity
OVERHEAD SIGN STRUCTURE - CANTILEVER, MONOTUBE	FOOT	20.00
RE-ERECT SIGN PANEL	SQ FT	69.00
This sign structure shall be designed to fit on an existing concrete		
foundation with 1 1/2 inch diameter anchor bolts with a 6 bolt		
16 inch diameter bolt pattern.		

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



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

""Looking upstation for structures with signs both sides.

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.
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 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.

DESIGNED -	
CHECKED -	
DRAWN -	
CHECKED -	

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

OS-A-1 1-7-05

This Sheet For Information Only

NUMBER	REVISION	DATE

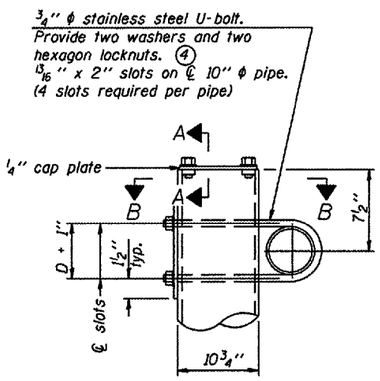
TOTAL BILL OF MATERIAL

ITEM	UNIT	TOTAL
OVERHEAD SIGN STRUCTURE TYPE I-A (4'-0" x 4'-6")	Foot	
OVERHEAD SIGN STRUCTURE TYPE II-A (4'-6" x 5'-3")	Foot	
OVERHEAD SIGN STRUCTURE TYPE III-A (5'-0" x 7'-0")	Foot	
OVERHEAD SIGN STRUCTURE WALKWAY TYPE A	Foot	
CONCRETE FOUNDATIONS	Cu. Yds.	
DRILLED SHAFT CONCRETE FOUNDATIONS	Cu. Yds.	

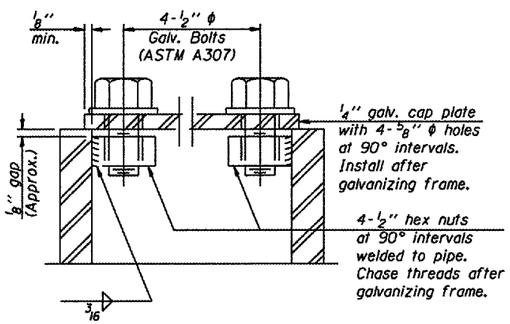
OVERHEAD SIGN STRUCTURES
GENERAL PLAN & ELEVATION
ALUMINUM TRUSS & STEEL SUPPORTS

District 2
Truss Repair & Replacement

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

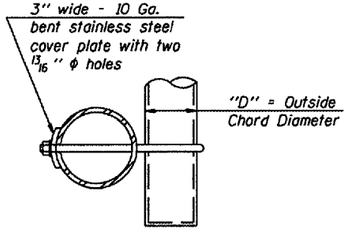


DETAIL A

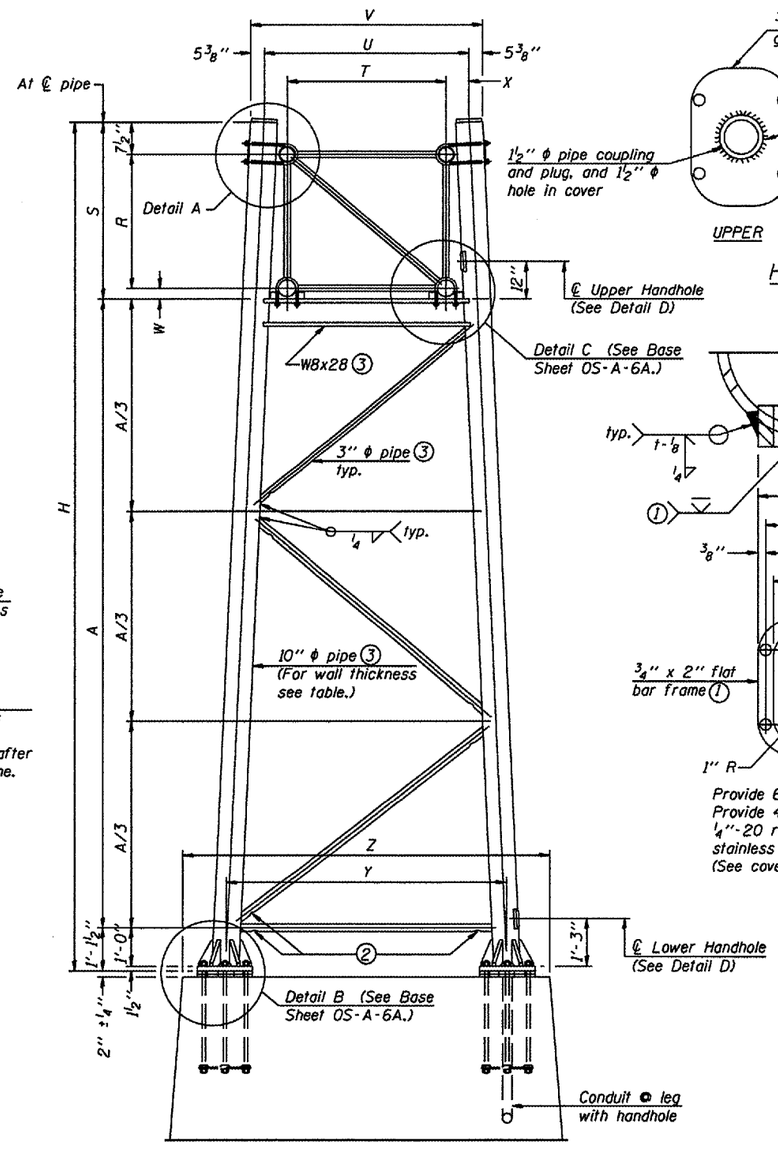


SECTION A-A

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

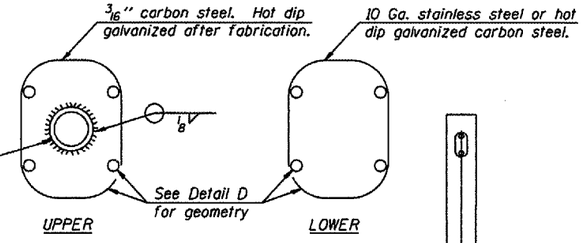


SECTION B-B

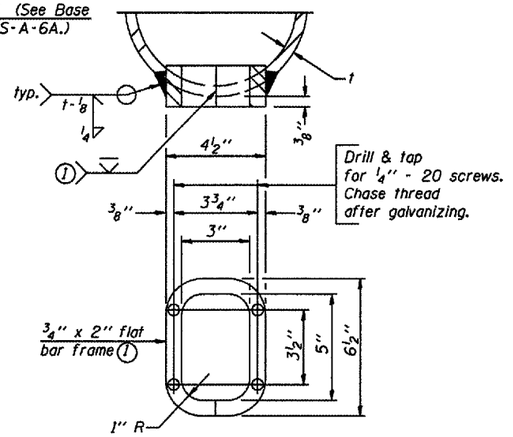


For Foundation Details, see base sheet OS-F3 (Spread Footing) or OS4-F3 (Drilled Shaft).

SIDE ELEVATION

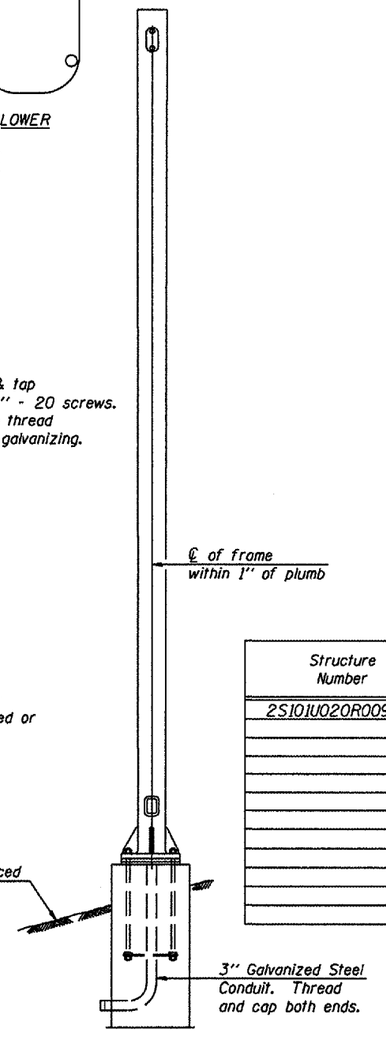


HANDHOLE COVERS



Provide $6\frac{1}{2}$" x $4\frac{1}{2}$" cover.
Provide 4-$\frac{5}{16}$" ϕ holes in cover for $\frac{1}{4}$"-20 round head hot dip galvanized or stainless steel machine screws.
(See cover details)

DETAIL D



END ELEVATION

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 min 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.

Structure Number	Station	Support		Truss Type	Pipe Wall Thickness	H	A
		Left	Right				
2S101U020R009.5	61 + 50 EB	X	X	II-A	0.365(Std)	22'-11 3/4"	15'-7"

10" ϕ PIPE TRUSS SUPPORT FRAME

Truss Type	Dimensions								
	R	S	T	U	V	W	X	Y	Z
I-A	4'-6"	5'-5 1/2"	4'-0"	5'-6"	6'-4 3/4"	4"	9"	8'-3"	10'-9"
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"	10'-9"

OVERHEAD SIGN STRUCTURES
SUPPORT FRAME for ALUMINUM TRUSS

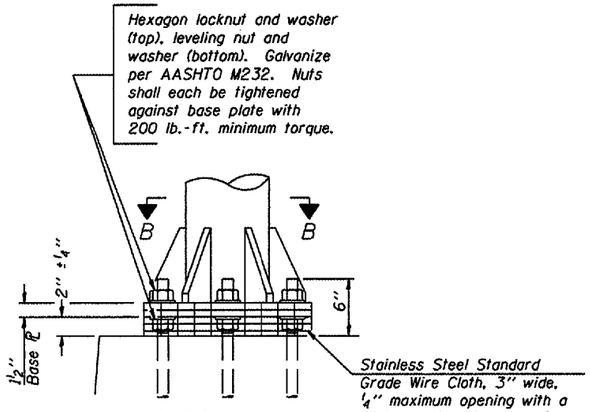
District 2
Truss Repair & Replacement

NUMBER	REVISION	DATE

DESIGNED -
CHECKED -
DRAWN -
CHECKED -

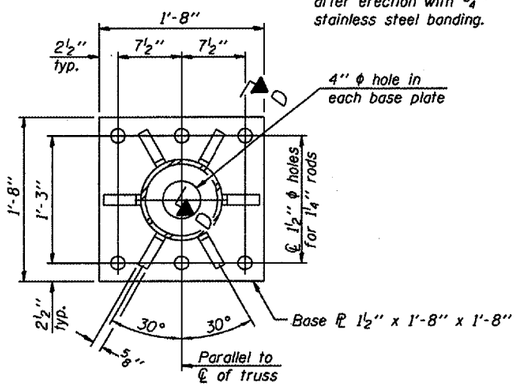
- 20
EXAMINED
ENGINEER OF BRIDGE DESIGN
PASSED
ENGINEER OF BRIDGES AND STRUCTURES

OS-A-6 1-7-05

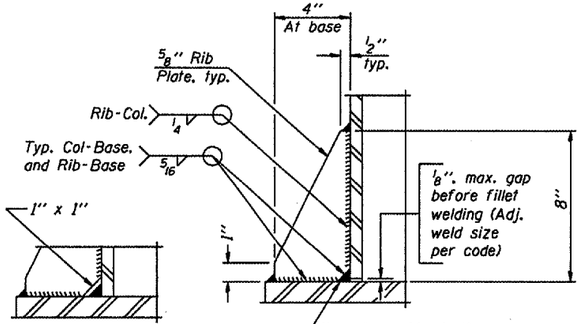


DETAIL B

Ribs shall be cut to fit slope of pipe.

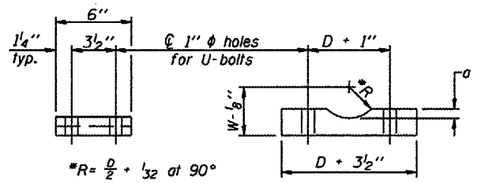


SECTION B-B



** 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



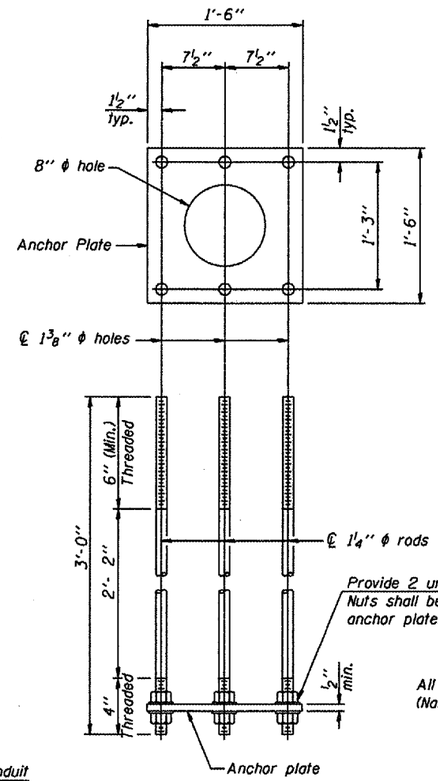
*R = D/2 + 1/32 at 90°

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

SADDLE SHIM DETAIL

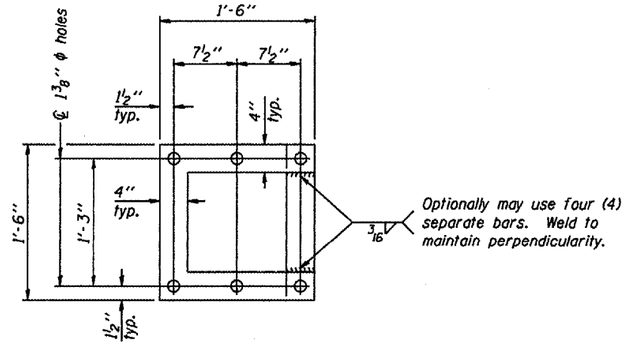
ASTM B26 Alloy 356-F
or
ASTM B209 Alloy 6061-T651
(4 required per sign truss)

Truss Chord Nominal Dia.	a
5"	¾"
5½"	13/16"
6"	⅞"
6½"	15/16"
7"	1"

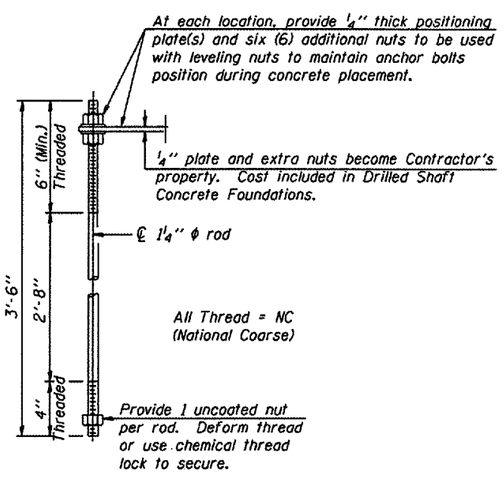


All Thread = NC
(National Coarse)

ANCHOR ROD DETAIL
Spread Footing Foundation

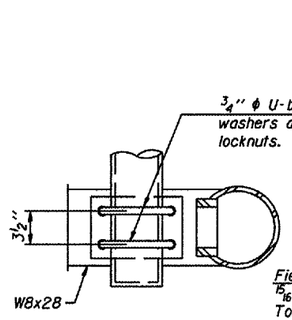


POSITIONING PLATE(S)

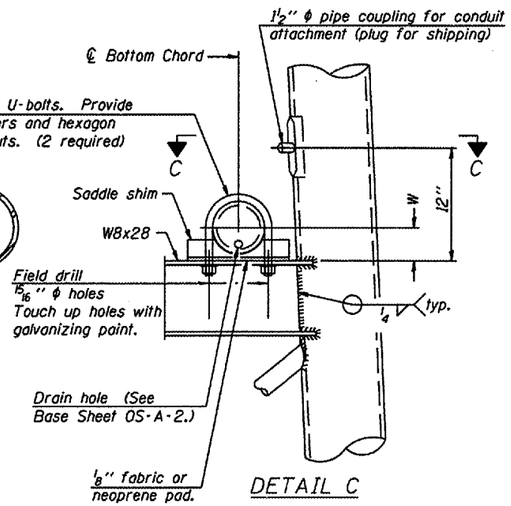


ANCHOR ROD DETAIL
Drilled Shaft Foundation

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.



SECTION C-C
(Handhole cover not shown)



DETAIL C

10" ϕ PIPE SUPPORT FRAME DETAILS

NUMBER	REVISION	DATE

DESIGNED	-
CHECKED	-
DRAWN	-
CHECKED	-

- 20

EXAMINED

ENGINEER OF BRIDGE DESIGN

PASSED

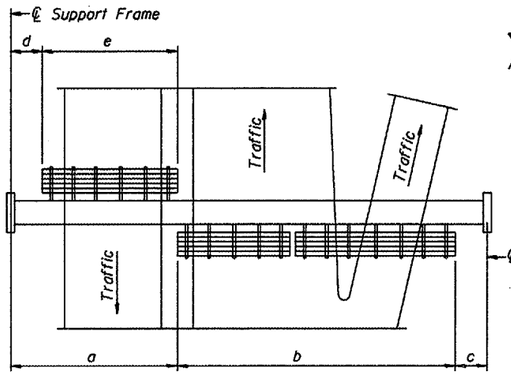
ENGINEER OF BRIDGES AND STRUCTURES

OS-A-6A 1-7-05

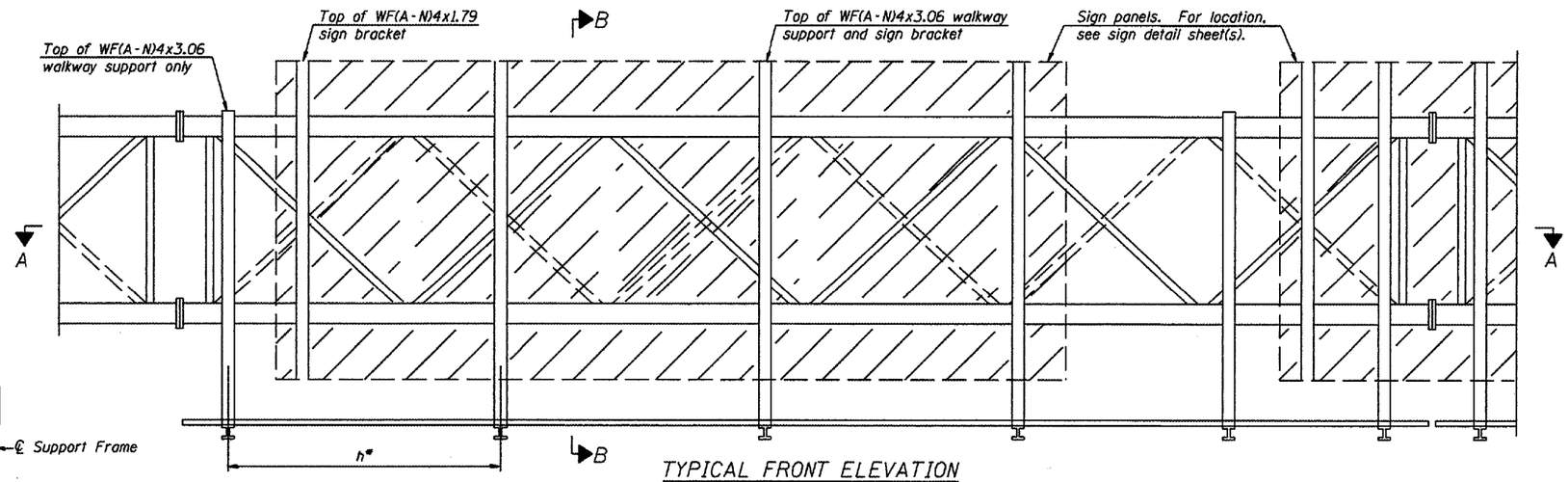
OVERHEAD SIGN STRUCTURES
SUPPORT FRAME DETAILS ALUMINUM TRUSS

District 2
Truss Repair & Replacement

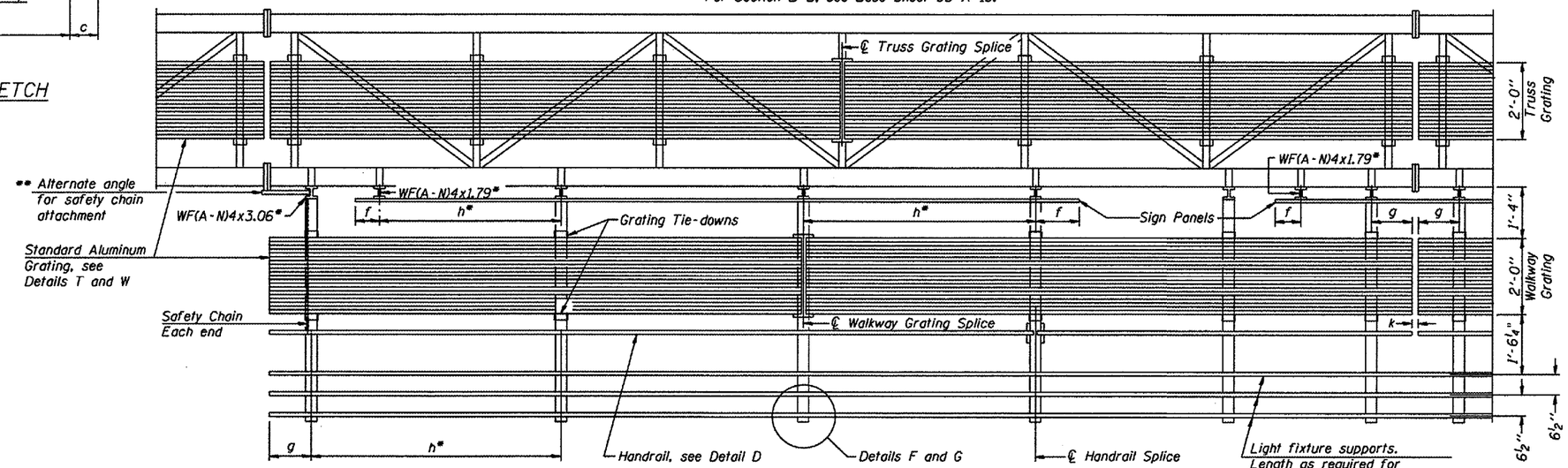
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



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.



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

BRACKET TABLE

WF(A-N)4x1.79 or 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

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 ℄ 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, 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 Details D, F, G and P and Handrail Splice Details, see Base Sheet OS-A-11.

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, handrail and light support splices placed as needed.

Structure Number	Station	a	b	c	d	e	Walkway Grating and Handrail Lengths
2S101U020L009.5	61 + 50 EB	N/A	N/A	N/A	N/A	N/A	53' - 6" *
						* Truss Grating Length	

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".

DESIGNED -	
CHECKED -	
DRAWN -	
CHECKED -	

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

NUMBER	REVISION	DATE

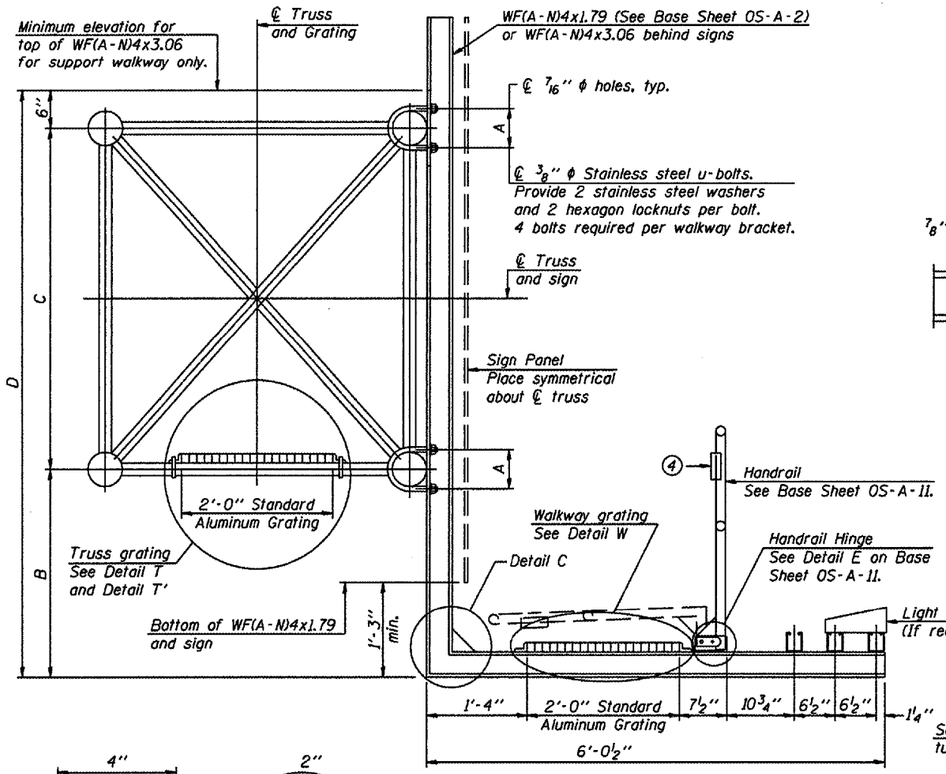
OS-A-9 1-7-05

OVERHEAD SIGN STRUCTURES
ALUMINUM WALKWAY DETAILS

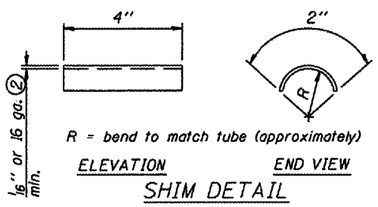
District 2
Truss Repair & Replacement

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

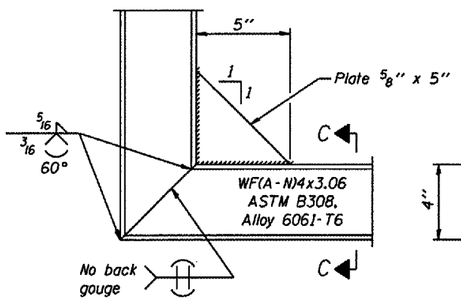
Various Routes
OVD SIN STR REP & REPL 2005-12
Various Counties
Sheet 19 of 82
Contract Number 44872



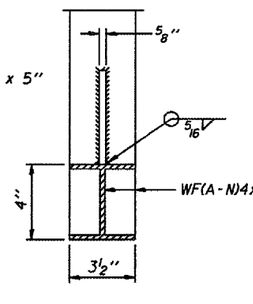
SECTION B-B



SHIM DETAIL

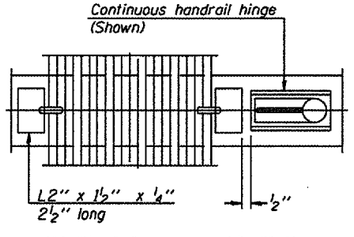


DETAIL C
(See Detail P, Base Sheet OS-A-11.)



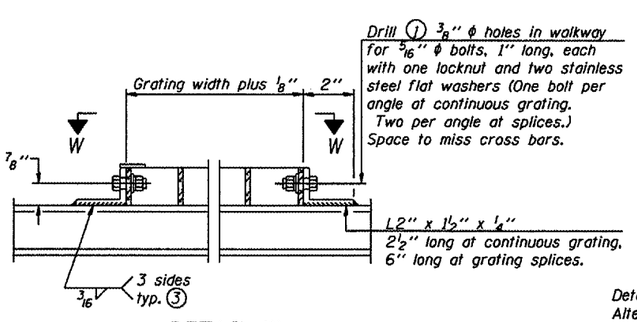
SECTION C-C

(AT WALKWAY GRATING SPLICE)

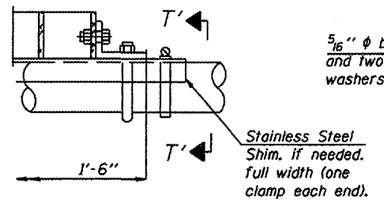


(CONTINUOUS WALKWAY GRATING)

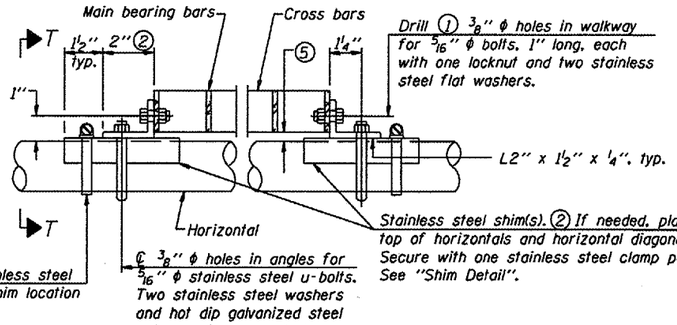
SECTION W-W



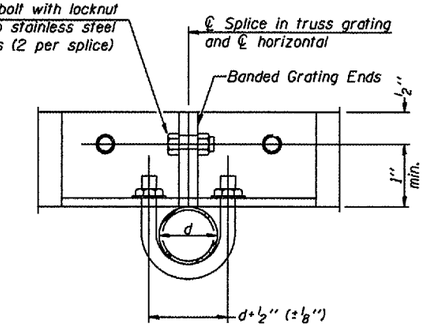
DETAIL W
(Walkway grating)



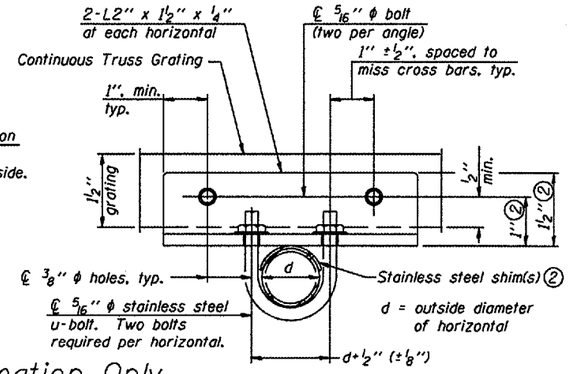
DETAIL T'
(Truss grating splice)
Details not shown same as Detail T.
Alternate materials may be used subject to the Engineer's review and approval.



DETAIL T
(Continuous Truss grating)



SECTION T'-T'



SECTION T-T

This Sheet For Information Only

SPECIFICATIONS FOR STANDARD ALUMINUM GRATING

Main Bearing Bars shall be 3/16" x 1½" on 1 3/16" centers and conform to ASTM B221 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 "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 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.

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 OS-A-11.)
4. ℄ ⅛" x ½" x 2" welded to handrail posts to protect locations that contact grating.
5. Tube to grating gap may vary from 0 to ½", max. to align walkway, allow for camber, etc.

Structure Number	Station	A	B	C	D

DESIGNED	-
CHECKED	-
DRAWN	-
CHECKED	-

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

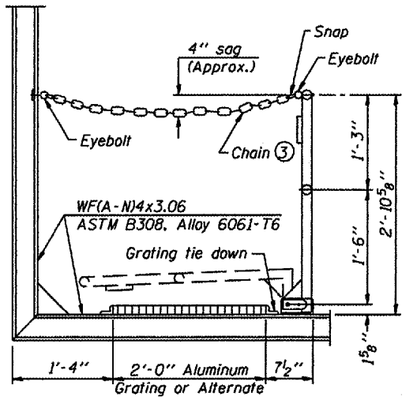
NUMBER	REVISION	DATE

OS-A-10 1-7-05

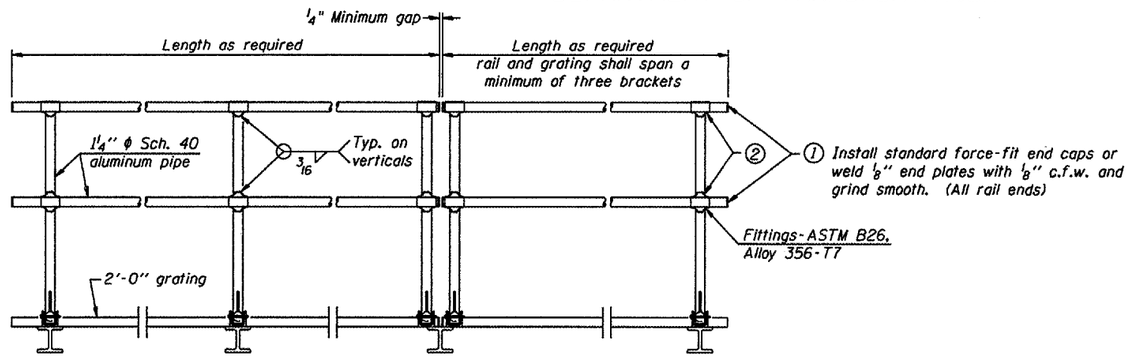
OVERHEAD SIGN STRUCTURES
ALUMINUM WALKWAY DETAILS

District 2
Truss Repair & Replacement

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



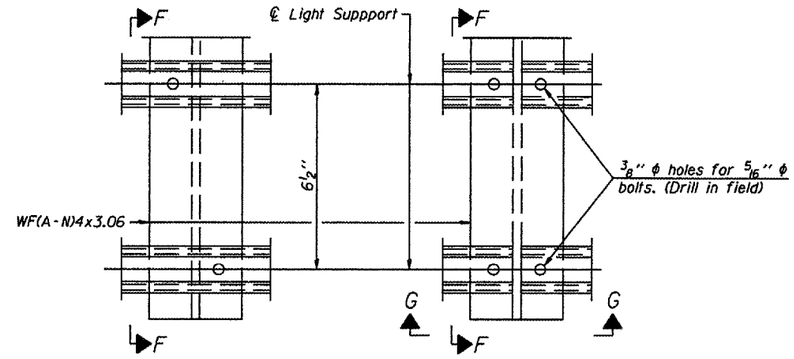
SIDE ELEVATION
(Showing safety chain w/o sign)



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

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

FRONT ELEVATION

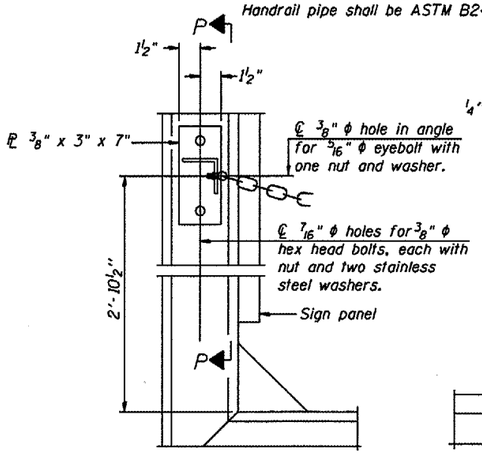


DETAIL F

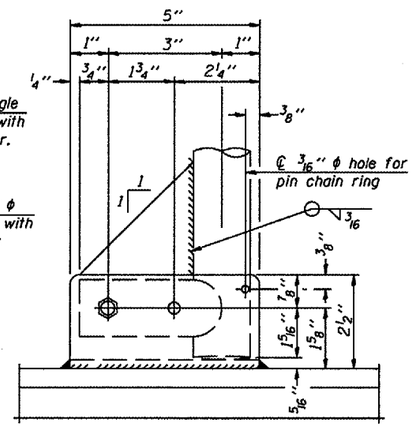
DETAIL G

HANDRAIL DETAILS

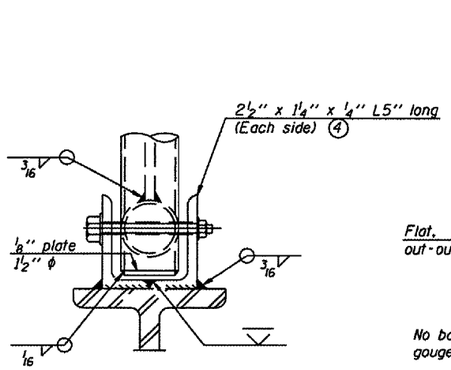
Handrail pipe shall be ASTM B241, Alloy 6063-T6 or Alloy 6061-T6.



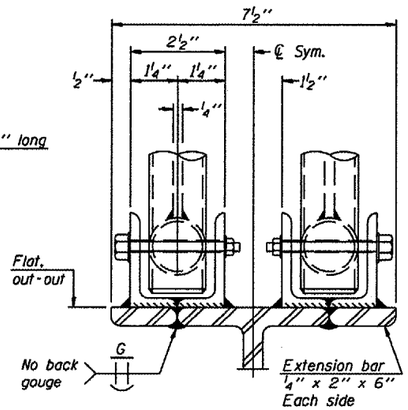
ALTERNATE SAFETY CHAIN ATTACHMENT
(With Sign Present)
Items not shown same as "Side Elevation" of "Handrail Details"



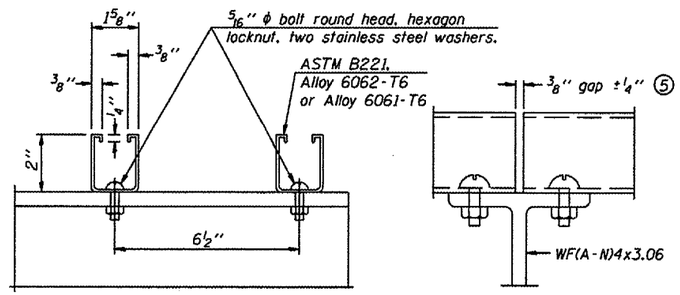
SIDE ELEVATION



FRONT ELEVATION
See "Elevation" at right for dimensions.



ELEVATION AT HANDRAIL JOINT ④

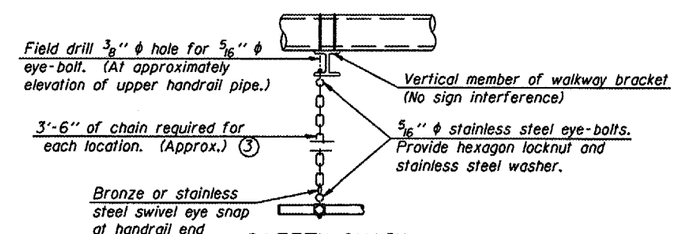


SECTION F-F

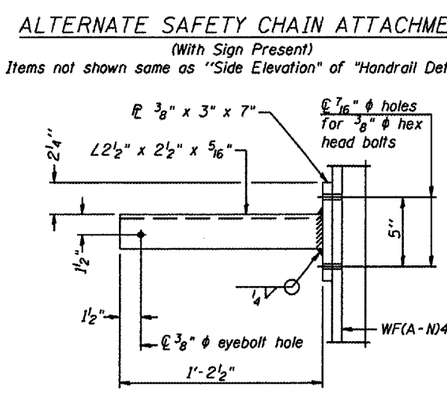
SECTION G-G

LIGHTING FIXTURE MOUNTS (IF REQUIRED)

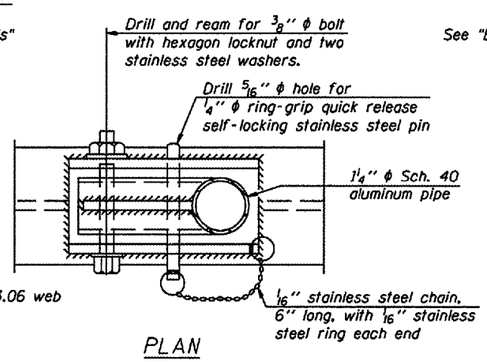
⑤ Field cut ends of light support channels shall be free of burrs or hazardous projections and coated with zinc-rich primer or equivalent.



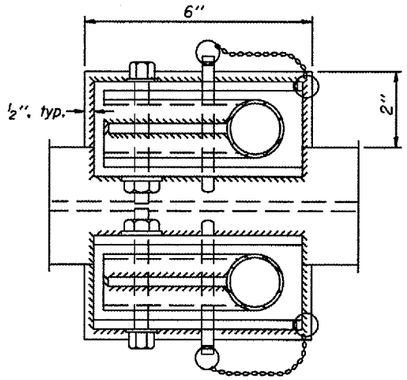
SAFETY CHAIN
One required for each end of each walkway.



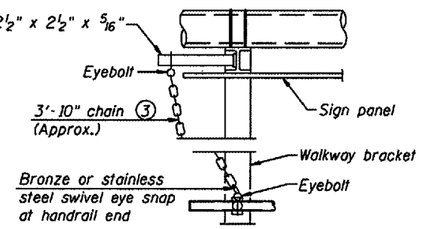
SECTION P-P



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)

③ 3/16" galvanized steel chain, approximately 12 links per foot. Chain to be hot dip galvanized after manufacture and suitable for prolonged exterior exposure. Alternate materials may be substituted with the Engineer's approval.

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

This Sheet For Information Only

DESIGNED -	
CHECKED -	
DRAWN -	
CHECKED -	

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

NUMBER	REVISION	DATE

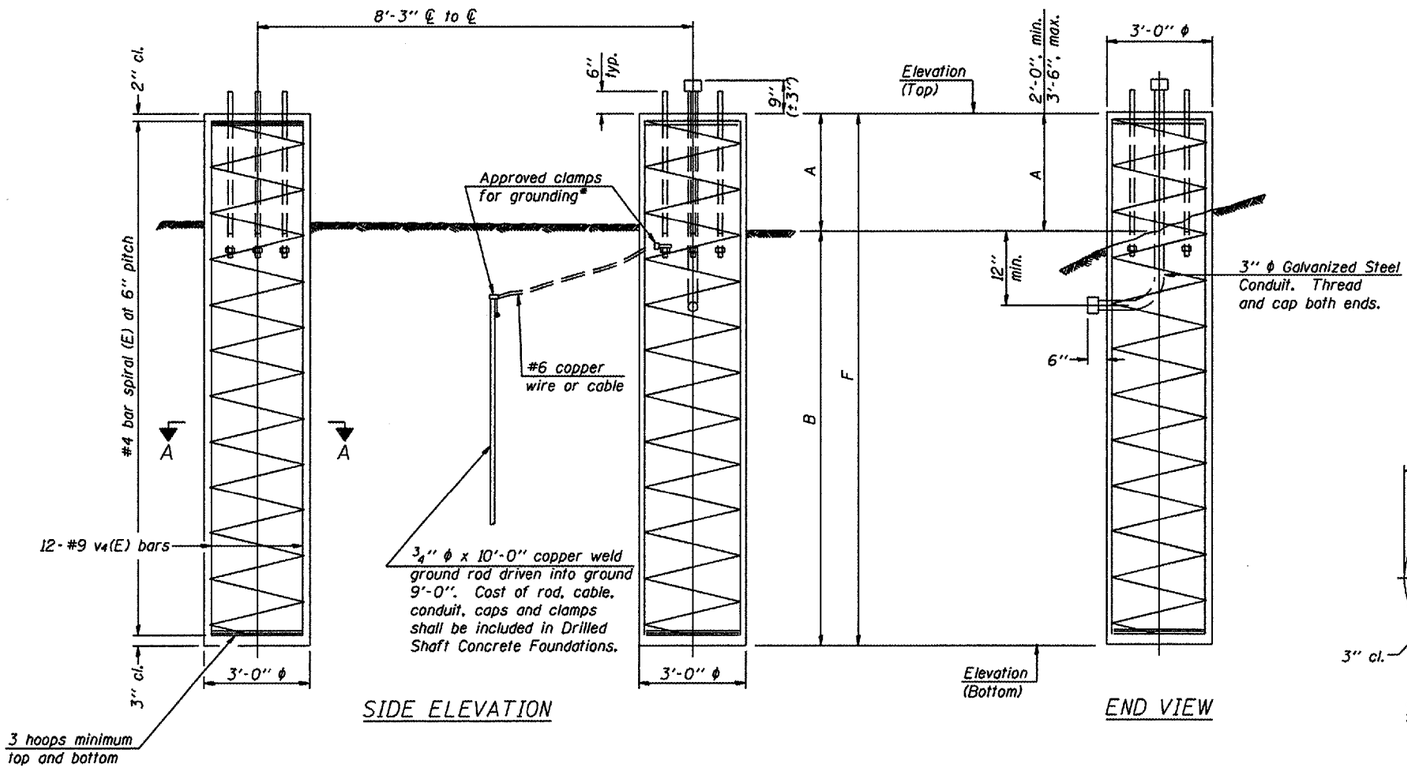
OS-A-11 1-7-05

OVERHEAD SIGN STRUCTURES
ALUMINUM HANDRAIL DETAILS

District 2
Truss Repair & Replacement

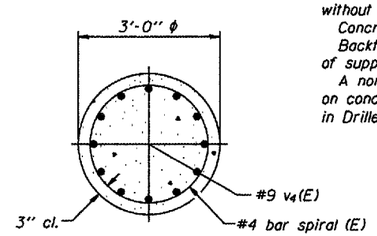
For anchor rod size and placement, see Support Frame Detail Sheet.

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



SIDE ELEVATION

END VIEW



SECTION A-A

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.

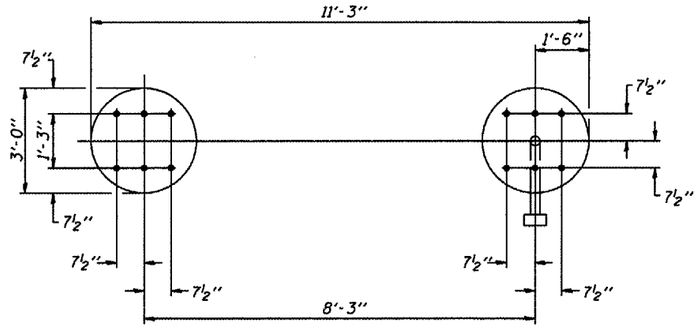
No sonotubes or decomposable forms shall be used below the lower conduit entrance.

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 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.



PLAN

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	
2S101U020R009.5	61 + 50 EB	N/A		3'-0"	17' - 6"	20' - 6"			3'-0"	17' - 6"	20' - 6"	20.5

DESIGNED -
CHECKED -
DRAWN -
CHECKED -

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

NUMBER	REVISION	DATE

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

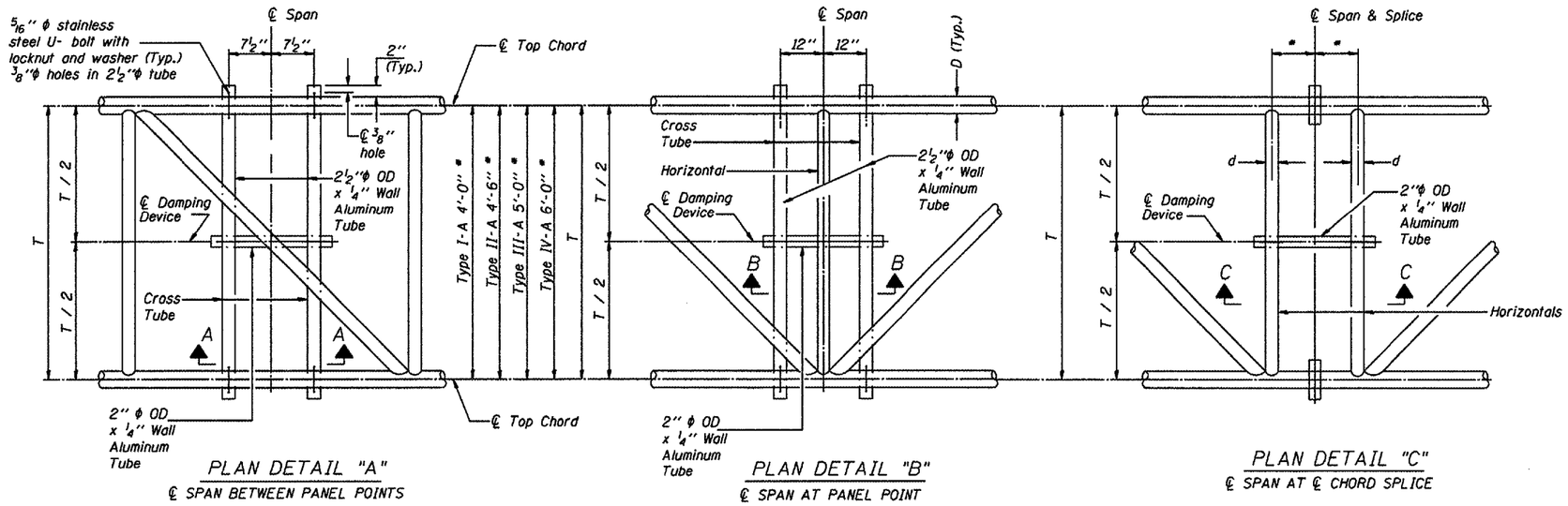
OVERHEAD SIGN STRUCTURES
DRILLED SHAFT DETAILS

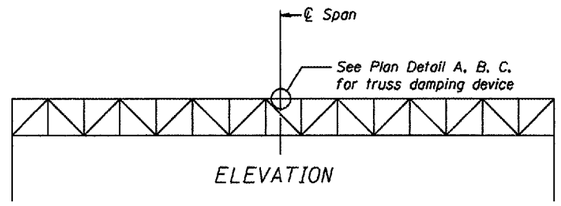
District 2
Truss Repair & Replacement

OS4-F3 1-7-05

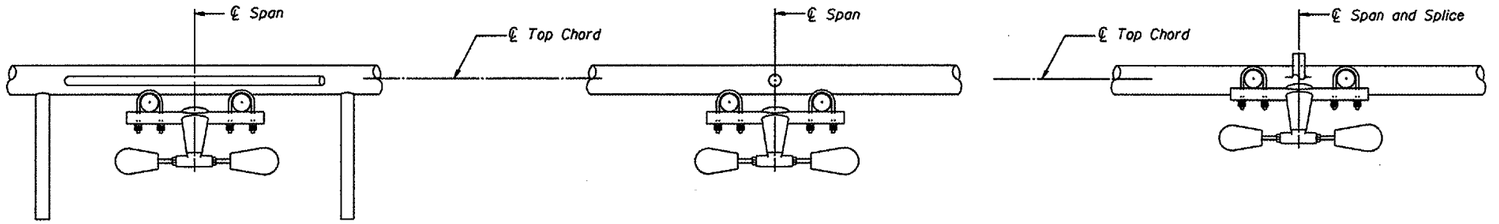
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

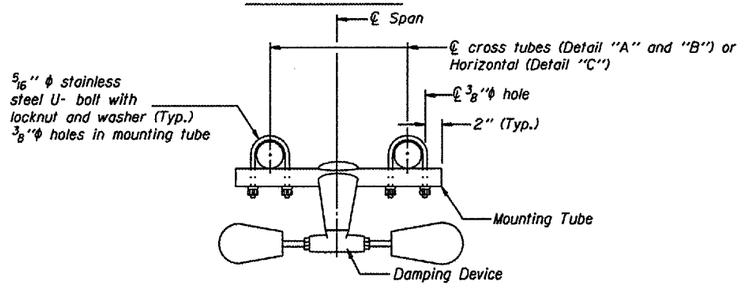
* Verify before drilling holes in mounting tube and cross tubes.



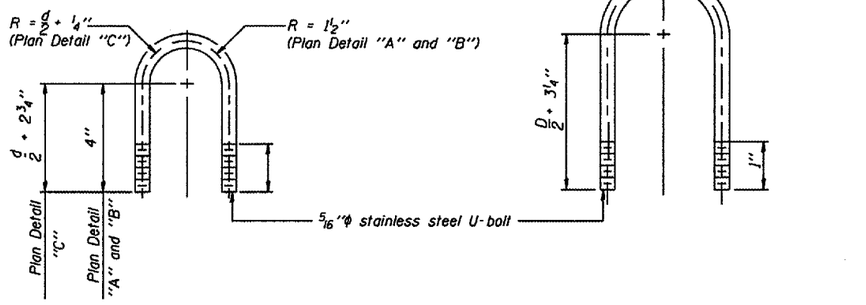


Aluminum Overhead Sign Truss





TRUSS DAMPING
(Typical)



DAMPING DEVICE MOUNTING TUBE U-BOLT DETAIL
(Typical)

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

GENERAL NOTES

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

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

Fasteners: U-bolts shall be produced from ASTM A276 Type , 304, 304L, 316 or 316L, Condition A, cold finish, or an equivalent material acceptable to the Engineer. All nuts shall be stainless steel conforming to ASTM A194, Grade B (AISI Type 304) or Grade 8F (AISI Type 303). The nuts shall be "locknuts" with nylon or steel inserts and semifinished hexagonal heads equivalent to the finished hex series of the American National Standards. All washers shall be stainless steel conforming to ASTM A240, Type 302 or 304.

DESIGNED	-
CHECKED	-
DRAWN	-
CHECKED	-

\- 20

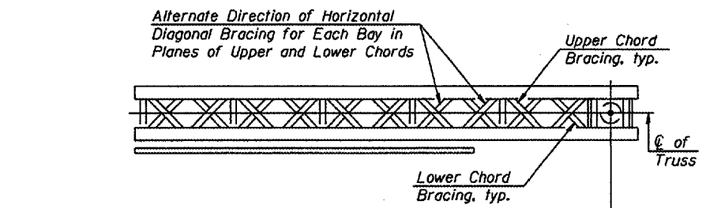
EXAMINED
ENGINEER OF BRIDGE DESIGN

PASSED
ENGINEER OF BRIDGES AND STRUCTURES

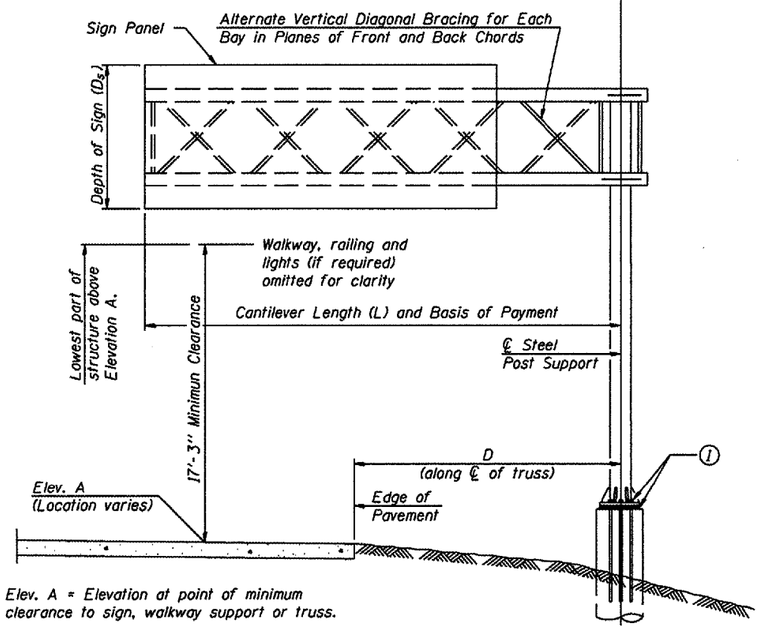
TRUSS DAMPER RETROFIT 07-01-2001

OVERHEAD SIGN STRUCTURE
DAMPING DEVICE

District 2
Truss Repair & Replacement



TYPICAL PLAN
(Walkway not shown)



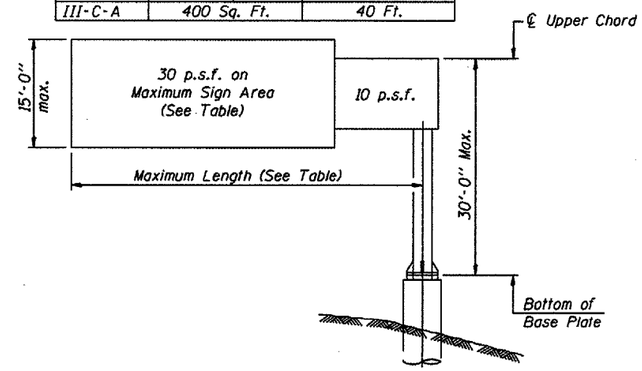
Elev. A = Elevation at point of minimum clearance to sign, walkway support or truss.

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.

Structure Number	Station	Design Truss Type	Cantilever Length (L)	Elev. A	Dim. D	D_s	Total Sign Area
2C081S092L029.5	332 + 50	I	25'-0"	576.62	15'-0"	4'-6"	69.75
2C081S092L028.8	369 + 75	I	25'-0"	572.70	15'-0"	5'-6"	71.50
2C081S092L029.4	342 + 50	I	25'-0"	569.91	15'-0"	6'-0"	78.00
2C081S092R028.6	383 + 00	I	25'-0"	592.60	13'-0"	4'-6"	74.25

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.

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 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.

* 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.

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.	

DESIGNED -
CHECKED -
DRAWN -
CHECKED -

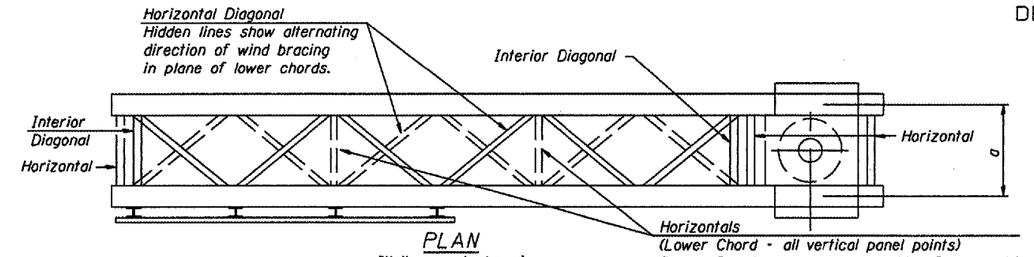
- 20
EXAMINED
ENGINEER OF BRIDGE DESIGN
PASSED
ENGINEER OF BRIDGES AND STRUCTURES

NUMBER	REVISION	DATE

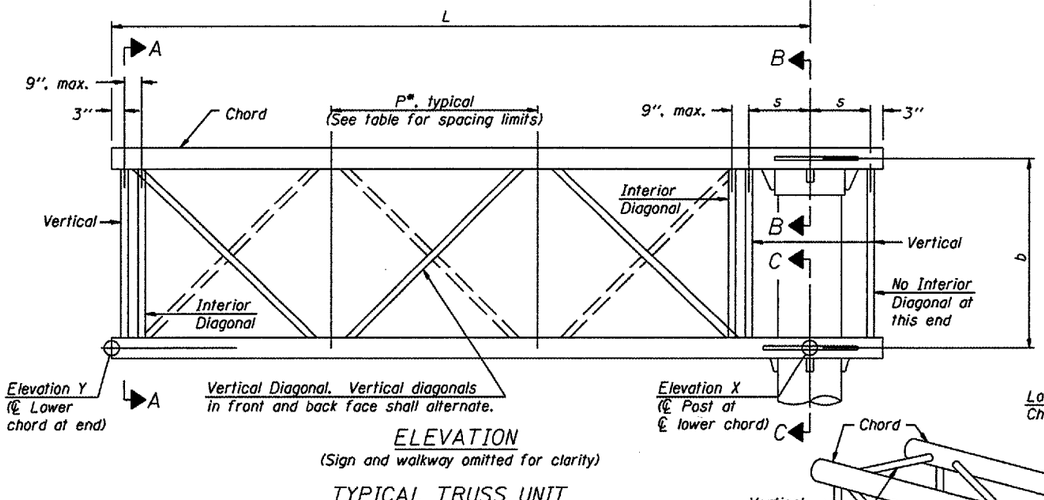
OSC-A-1 1-7-05

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

District 2
Truss Repair & Replacement



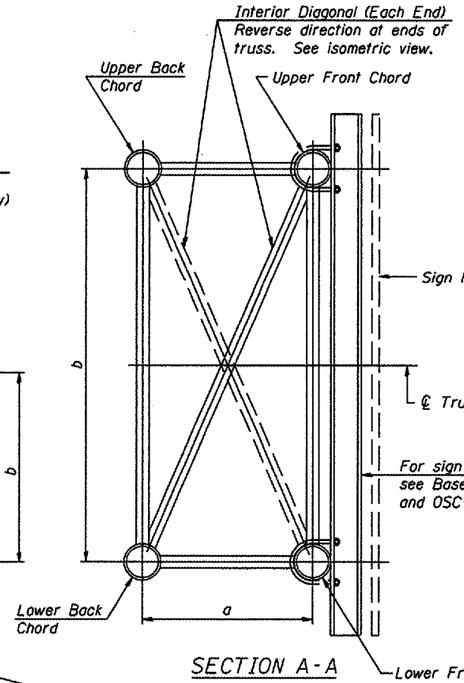
PLAN
(Walkway not shown)



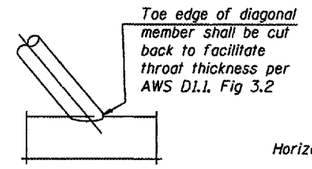
ELEVATION
(Sign and walkway omitted for clarity)

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

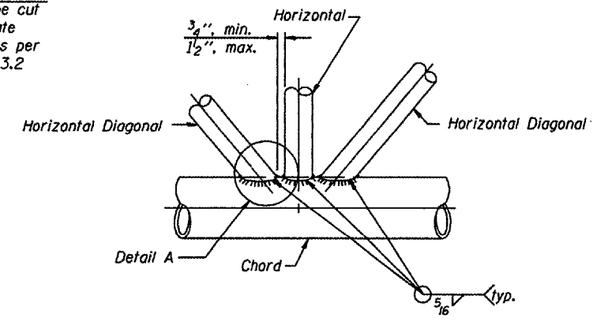
Note:
There are twice as many horizontal diagonals as there are vertical diagonals.



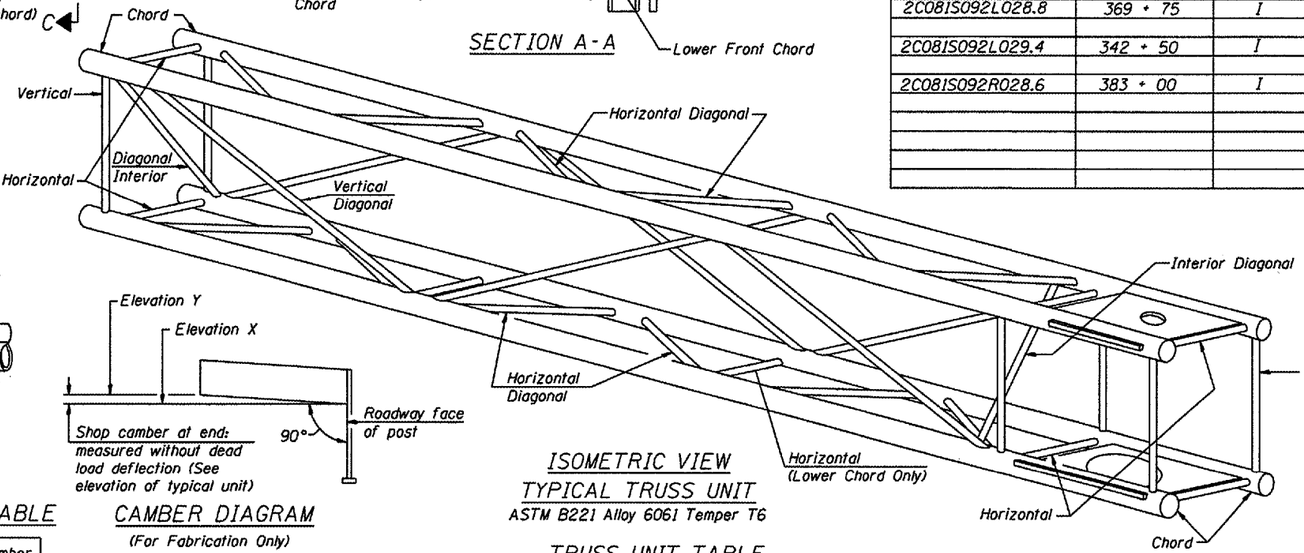
SECTION A-A



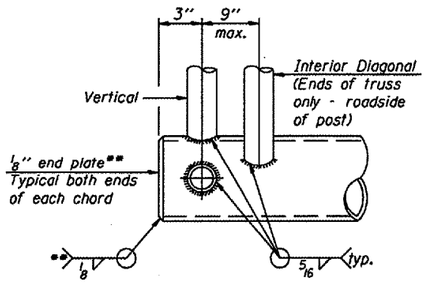
DETAIL A



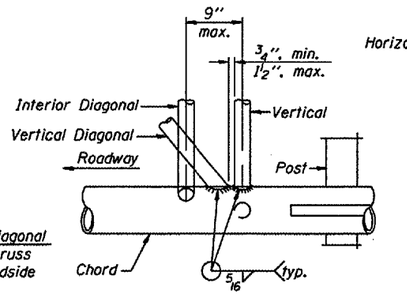
TRUSS INTERIOR JOINT DETAIL



ISOMETRIC VIEW
TYPICAL TRUSS UNIT
ASTM B221 Alloy 6061 Temper T6



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



POST END JOINT DETAIL

CAMBER DIAGRAM
(For Fabrication Only)

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"

Structure Number	Station	Truss Type	Design Length (L)	Number of Panels Per Unit	Panel Length (P)*
2C081S092L029.5	332 + 50	I	25'-0"	7	3' - 4"
2C081S092L028.8	369 + 75	I	25'-0"	7	3' - 4"
2C081S092L029.4	342 + 50	I	25'-0"	7	3' - 4"
2C081S092R028.6	383 + 00	I	25'-0"	7	3' - 4"

NUMBER	REVISION	DATE

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, Horizontal, and Interior Diagonals O.D.	Verticals; Horizontals; Vertical, Horizontal, and Interior Diagonals 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"

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

DESIGNED	-
CHECKED	-
DRAWN	-
CHECKED	-

- 20

EXAMINED
ENGINEER OF BRIDGE DESIGN

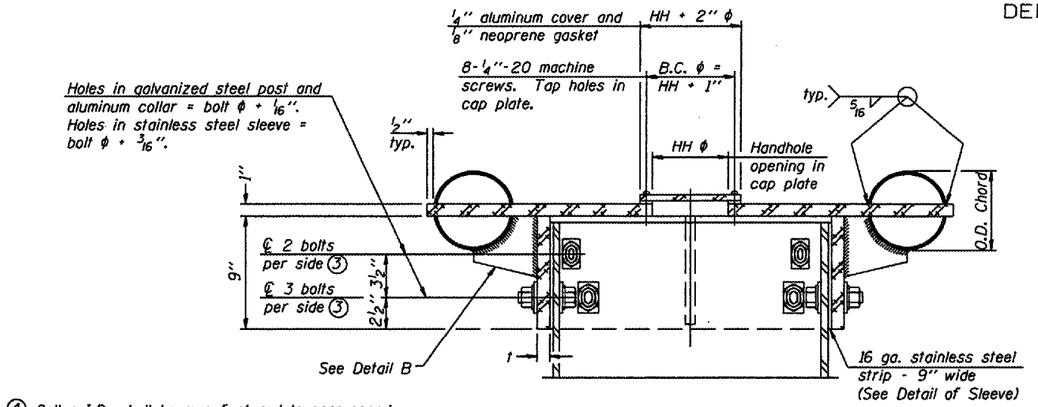
PASSED
ENGINEER OF BRIDGES AND STRUCTURES

OSC-A-2 1-7-05

CANTILEVER SIGN STRUCTURES
TRUSS DETAILS
ALUMINUM TRUSS & STEEL POST

District 2
Truss Repair & Replacement

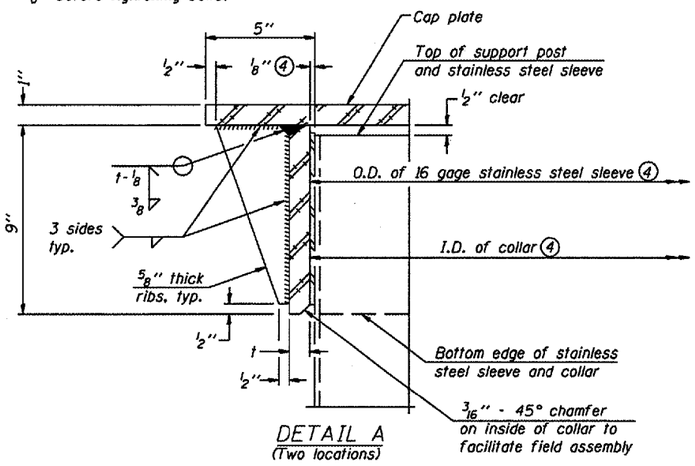
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



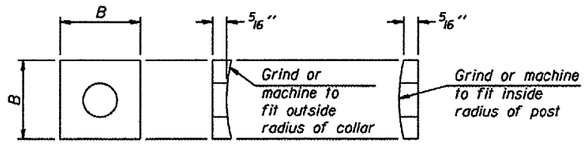
SECTION B-B

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

(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.

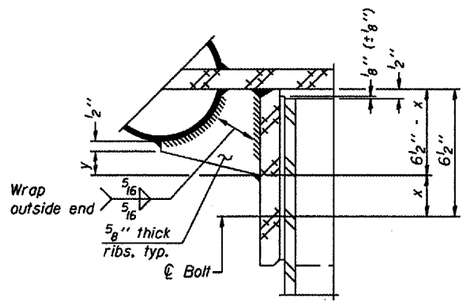


DETAIL A
(Two locations)

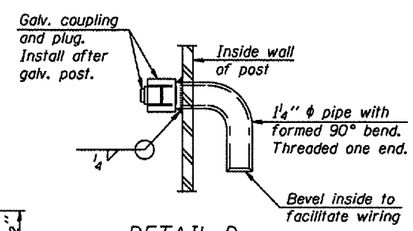


CONTOURED WASHERS

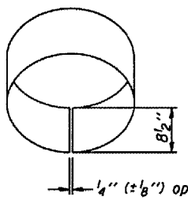
Bolt Size	Contoured Washers	
	Hole Dia.	B
7/8"	1"	2 1/2"
1"	1 1/8"	3"
1 1/4"	1 3/8"	3 1/4"



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

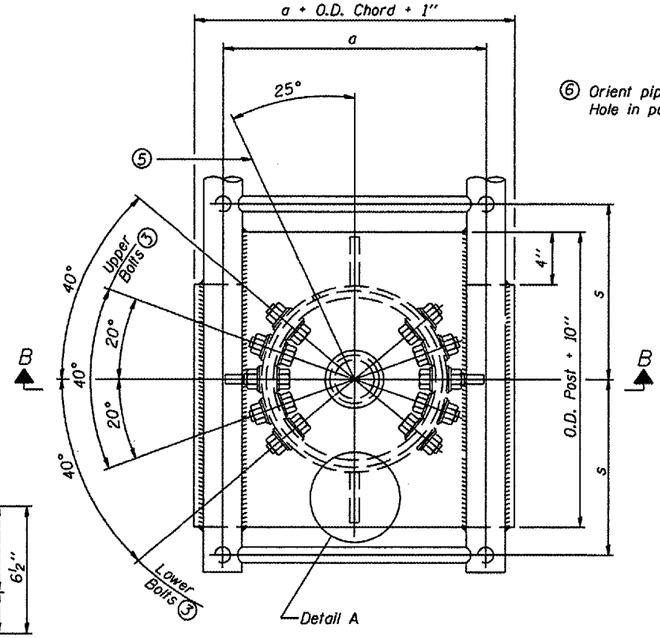


DETAIL D



DETAIL OF STAINLESS STEEL SLEEVE

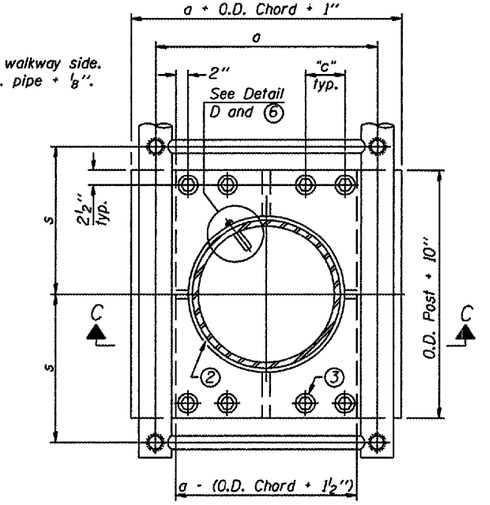
Weld to post after galvanizing.
(Prepare post surface to insure tight, uniform fit and allow welding.)
Welds to be 1 1/2" long at 6" cts. along top edge and at 1/4" opening.



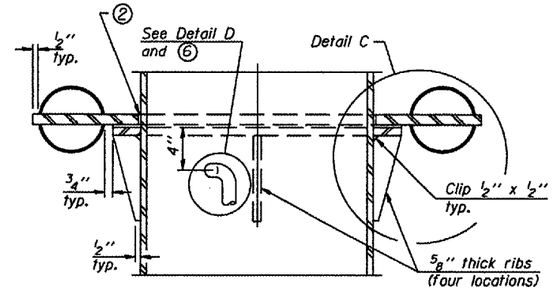
PLAN VIEW - TOP OF COLUMN

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

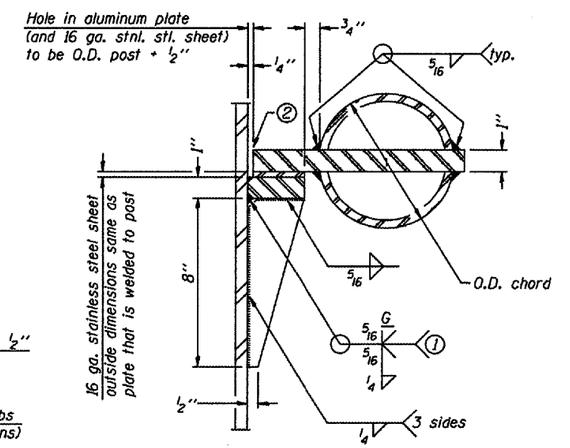
(6) Orient pipe toward walkway side. Hole in post = O.D. pipe + 1/8".



SECTION THRU POST ABOVE LOWER CHORDS



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 Cantilever.

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.

CANTILEVER SIGN STRUCTURES
JUNCTURE DETAILS
ALUMINUM TRUSS & STEEL POST

District 2
Truss Repair & Replacement

DESIGNED	-
CHECKED	-
DRAWN	-
CHECKED	-

- 20

EXAMINED

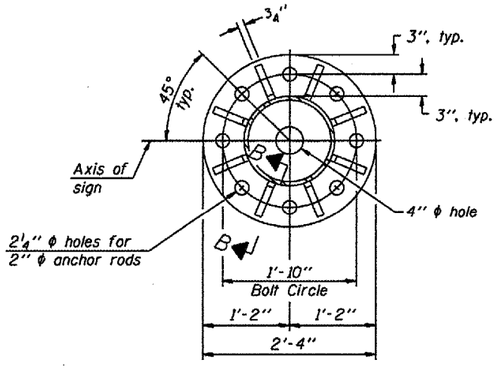
ENGINEER OF BRIDGE DESIGN

PASSED

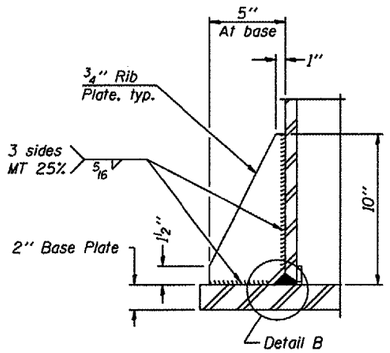
ENGINEER OF BRIDGES AND STRUCTURES

NUMBER	REVISION	DATE

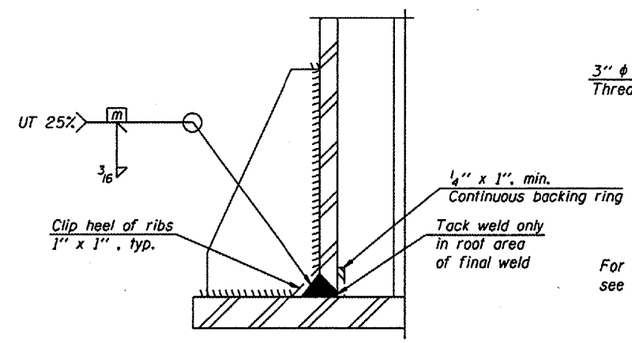
OSC-A-3 1-7-05



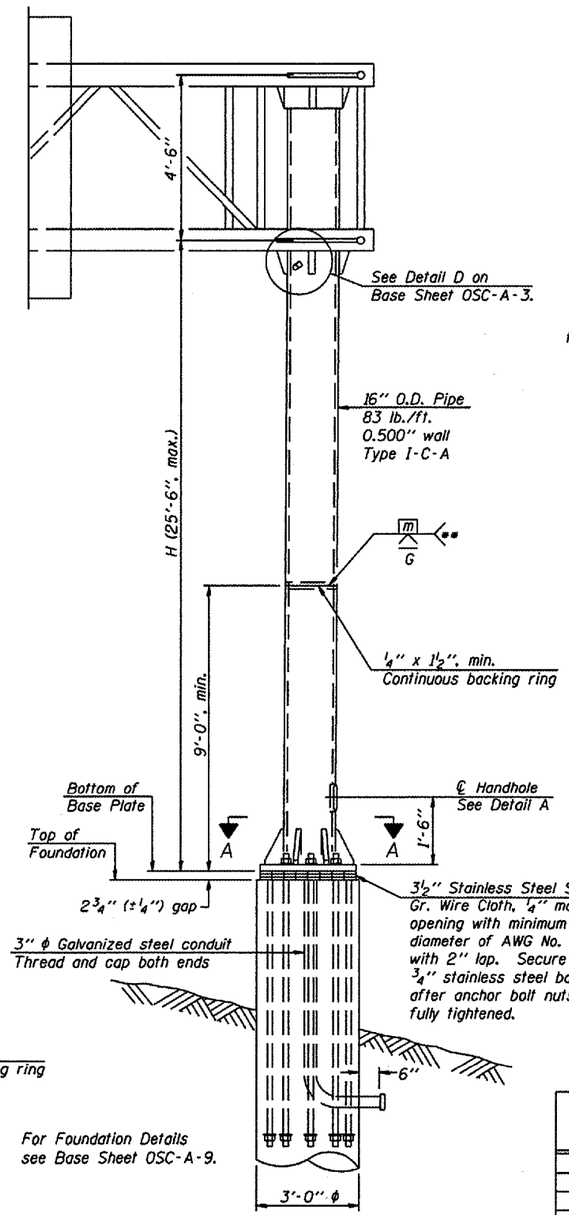
SECTION A-A



SECTION B-B

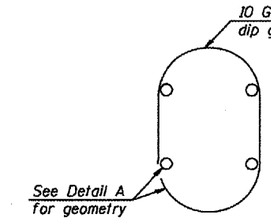


DETAIL B
(Typical rib)

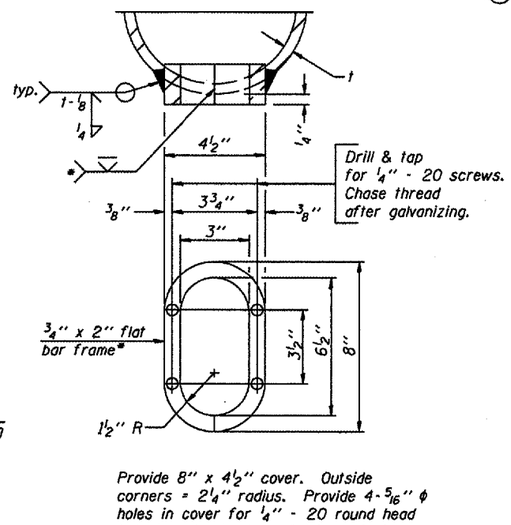


FRONT ELEVATION

For Foundation Details see Base Sheet OSC-A-9.



HANDHOLE COVER

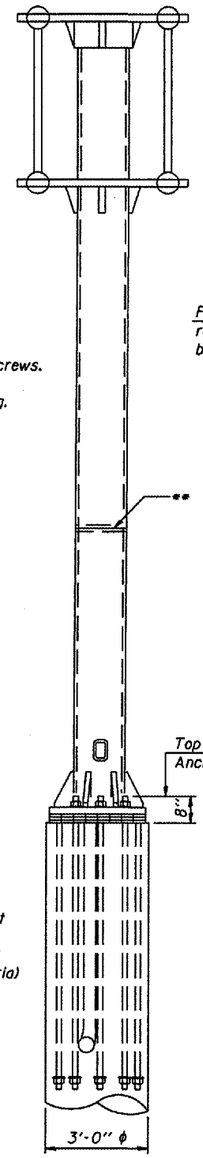


Provide 8" x 4 1/2" cover. Outside corners = 2 1/4" radius. Provide 4-5/16" ϕ holes in cover for 1/4" - 20 round head hot dip galvanized or stainless steel machine screws. (See cover details.)

DETAIL A

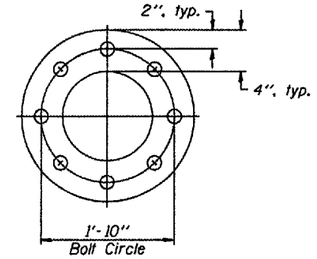
* Bent bars may be butt welded top and bottom or bottom only. In lieu of fabricated handhole frame as shown, may cut from 2" plate (rolling direction vertical). All cut faces to be ground to ANSI Roughness of 500 min or less.

** 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.

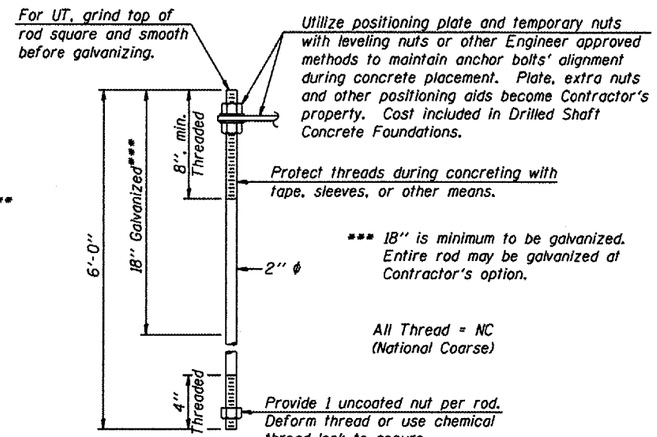


SIDE ELEVATION

Structure Number	Station	H
2C081S092L029.5	332 + 50	16' - 3"
2C081S092L028.8	369 + 75	16' - 3"
2C081S092L029.4	342 + 50	15' + 8"
2C081S092R028.6	383 + 00	15' + 10"



SUGGESTED POSITIONING PLATE



ANCHOR ROD DETAIL

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.

DESIGNED	-
CHECKED	-
DRAWN	-
CHECKED	-

\- 20

EXAMINED

ENGINEER OF BRIDGE DESIGN

PASSED

ENGINEER OF BRIDGES AND STRUCTURES

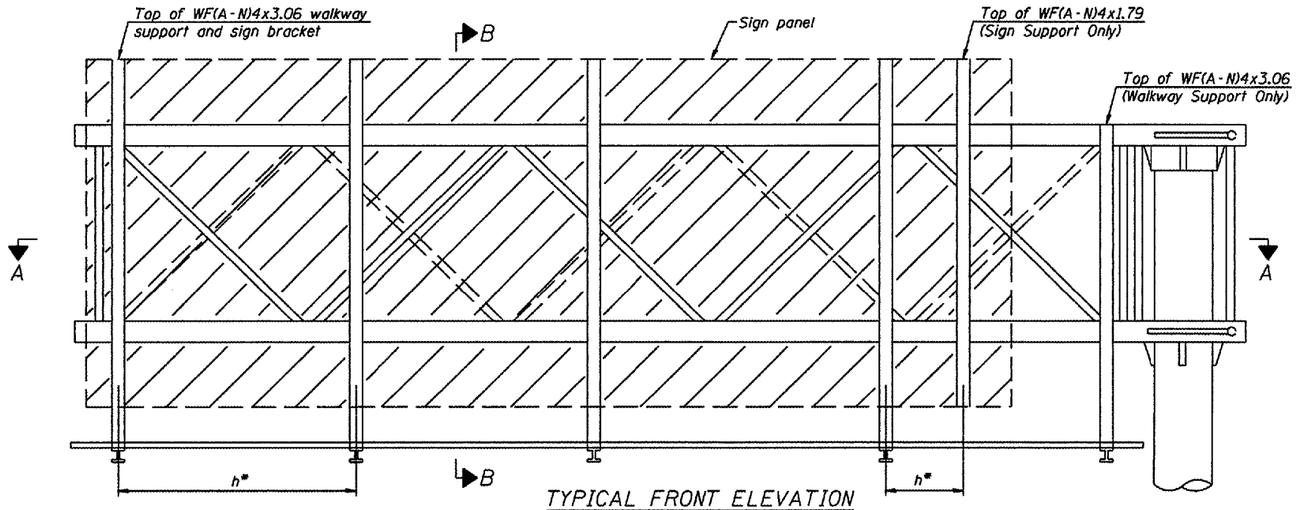
OSC-A-4 1-7-05

NUMBER	REVISION	DATE

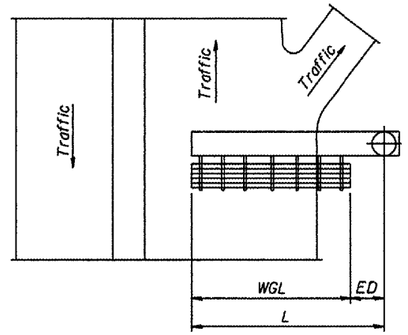
CANTILEVER SIGN STRUCTURES
TYPE I-C-A TRUSS SUPPORT POST
ALUMINUM TRUSS & STEEL POST

District 2
Truss Repair & Replacement

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

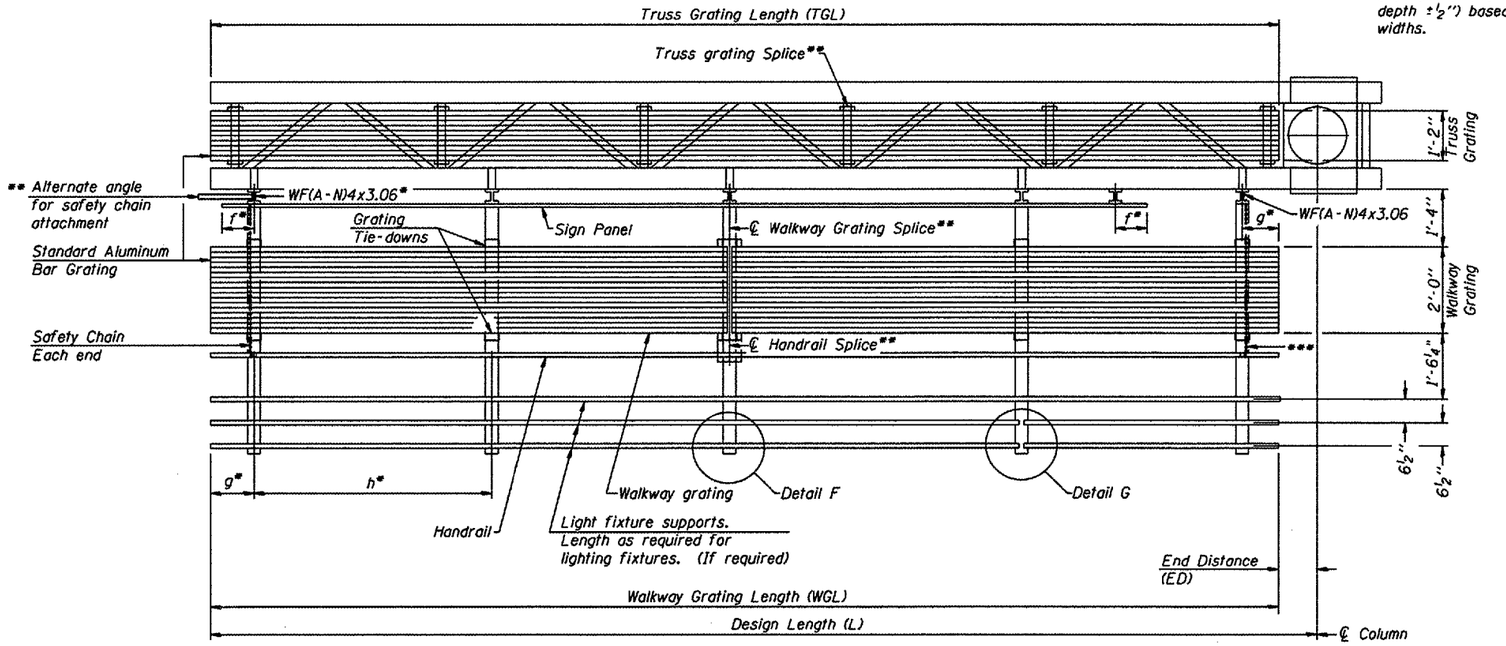


TYPICAL FRONT ELEVATION
With lights and handrail omitted for clarity.



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

Walkway and truss grating dimensions are nominal and may vary (width ±½", depth ±½") based on available standard widths.



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 or grating splices are optional, based on lengths needed and material availability.

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

Structure Number	Station	WGL	ED	TGL
2C081S092L029.5	332 + 50	*		23' - 8"
2C081S092L028.8	369 + 75	*		23' - 8"
2C081S092L029.4	342 + 50	*		23' - 8"
2C081S092R028.6	383 + 00	*		23' - 8"

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 ℄ of nearest bracket)
g = 12" maximum, 4" minimum (End of walkway to ℄ of nearest bracket)
h = 6'-0" maximum (℄ to ℄ sign and/or walkway support brackets, WF(A-N)4x1.79 or WF(A-N)4x3.06)

*** If walkway bracket at safety chain location is behind sign, add angle to bracket.

For details of sign placement, sign/walkway brackets, truss and walkway gratings, grating splices and Section B-B, see Base Sheet OSC-A-7.
For details of handrail, handrail splice, safety chain and Details F and G, see Base Sheet OSC-A-8.

BRACKET TABLE

WF(A-N)4x1.79 or 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

NUMBER	REVISION	DATE

DESIGNED -
CHECKED -
DRAWN -
CHECKED -

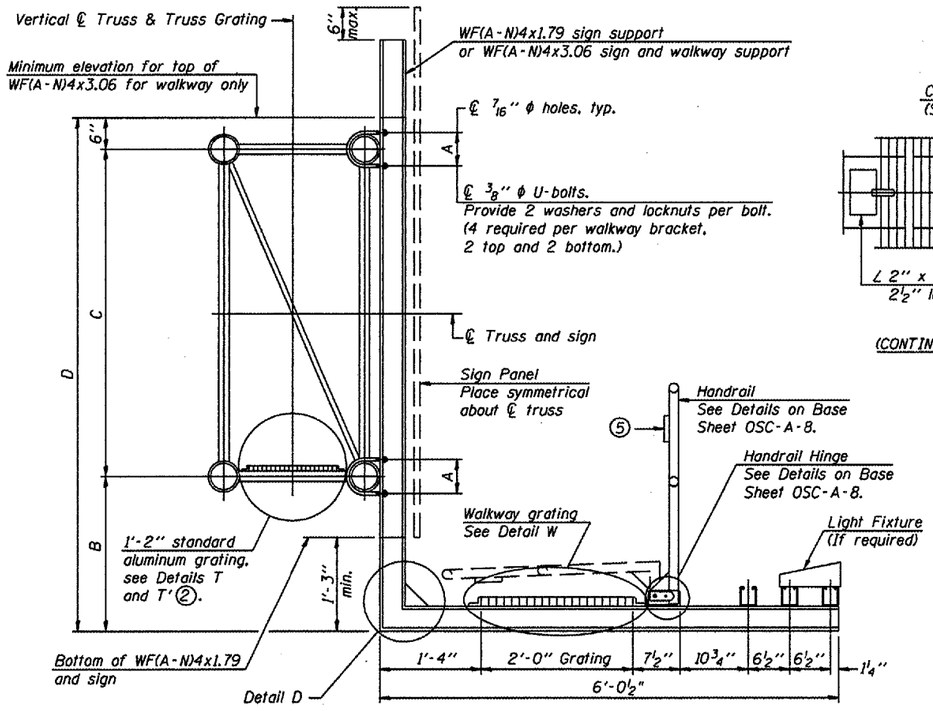
- 20
EXAMINED
ENGINEER OF BRIDGE DESIGN
PASSED
ENGINEER OF BRIDGES AND STRUCTURES

OSC-A-6 1-7-05

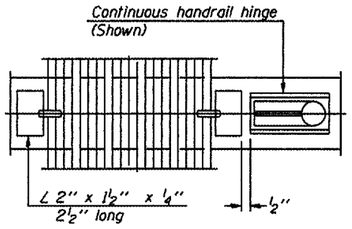
CANTILEVER SIGN STRUCTURES
ALUMINUM WALKWAY DETAILS
ALUMINUM TRUSS & STEEL POST

District 2
Truss Repair & Replacement

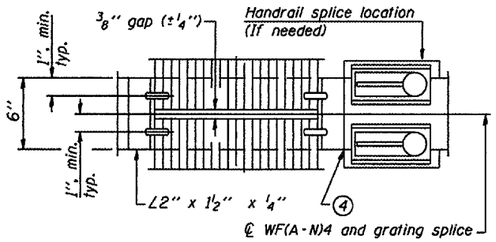
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



SECTION B-B



(CONTINUOUS WALKWAY GRATING)



(AT WALKWAY GRATING SPLICE)

SECTION W-W

SPECIFICATIONS FOR STANDARD ALUMINUM GRATING

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

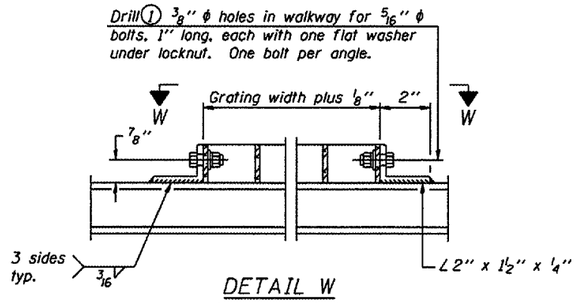
Cross bars (CB) shall be 3/16" x 1½" on 4" centers and conform to ASTM B221 Alloy 6063-T5 or 6061-T6.

OR

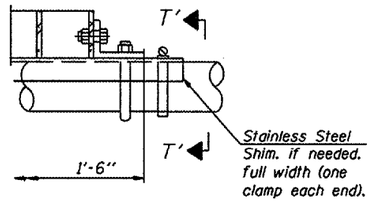
Aluminum Grating with modified "I" sections for main bearing bars shall meet the following requirements:

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 1½", spaced on 1 3/16" centers.

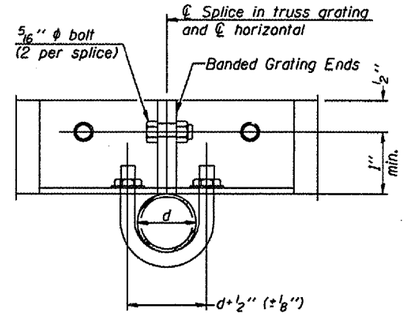
Cross bars shall conform to ASTM B221 Alloy 6063-T5 or T-42 and spaced on 4" centers.



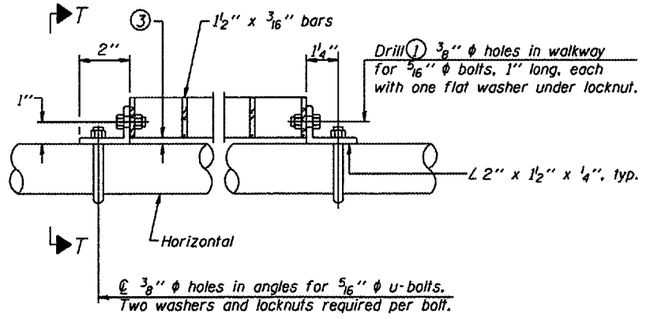
DETAIL W
(Walkway grating)



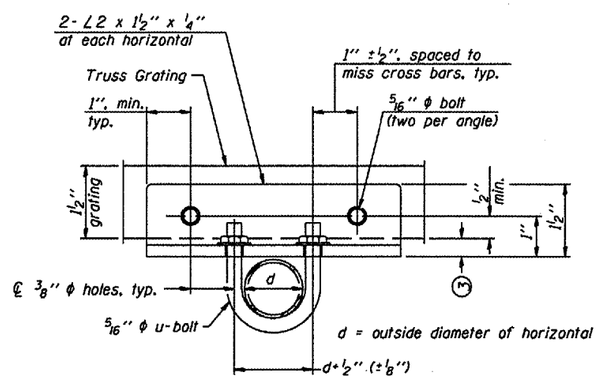
DETAIL T'
(Truss grating splice)
Details not shown same as Detail T.
Alternate materials may be used subject to the Engineer's review and approval.



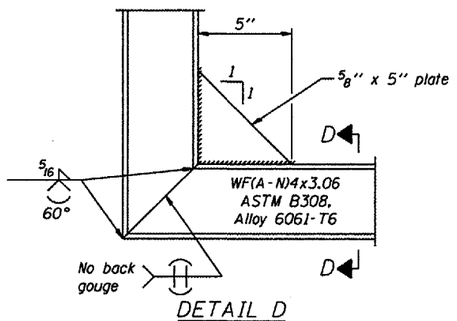
SECTION T'-T'



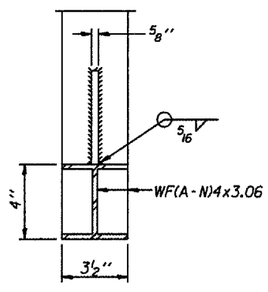
DETAIL T
(Truss grating at horizontal)



SECTION T-T



DETAIL D
(See Detail P, Base Sheet OSC-A-8.)



SECTION D-D

NUMBER	REVISION	DATE

DESIGNED	-
CHECKED	-
DRAWN	-
CHECKED	-

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

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

② When truss grating must be spliced, use suggested detail or other methods subject to the Engineer's review and approval. Locate splice to avoid interference between cross bars and bolt locations.

③ Tube to grating gap may vary from 0 to ½", max. to align walkway, allow for camber, etc.

④ If Handrail Joint present, weld angle to WF(A-N)4 and ¼" extension bars. (See Base Sheet OSC-A-8)

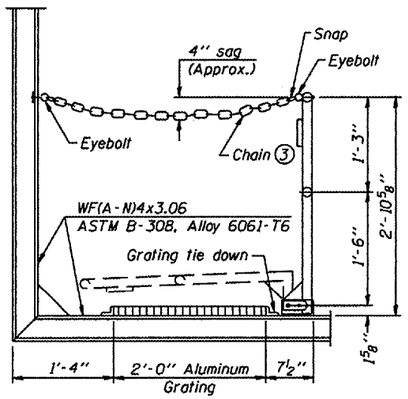
⑤ ℄ ⅛" x ½" x 2" welded to handrail posts to protect locations that contact grating.

Structure Number	Station	A	B	C	D

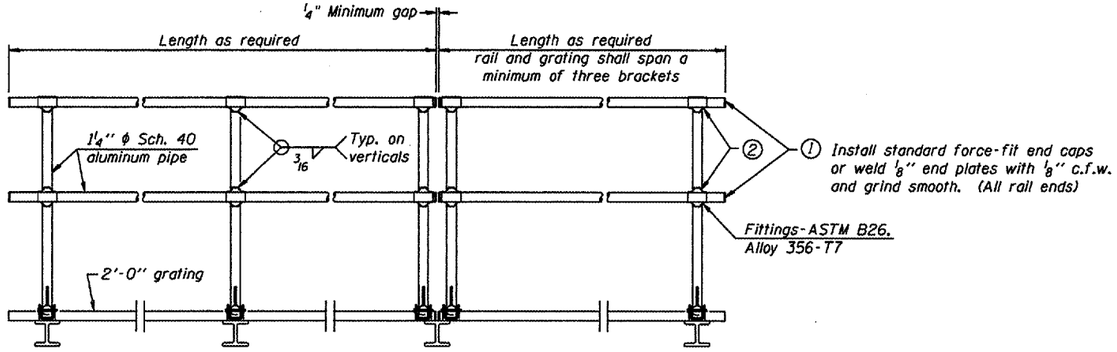
CANTILEVER SIGN STRUCTURES
WALKWAY DETAILS
ALUMINUM TRUSS & STEEL POST

District 2
Truss Repair & Replacement

OSC-A-7 1-7-05



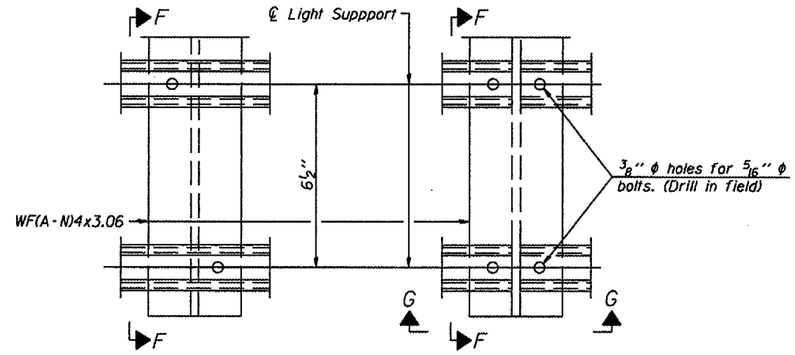
SIDE ELEVATION
(Showing Safety Chain W/O Sign)



FRONT ELEVATION

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

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

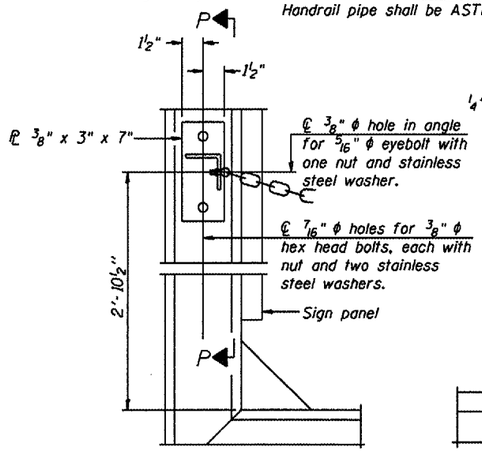


DETAIL F

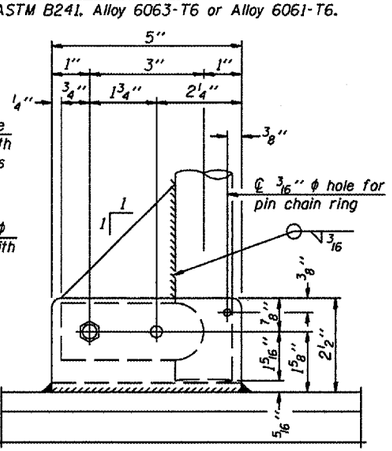
DETAIL G

HANDRAIL DETAILS

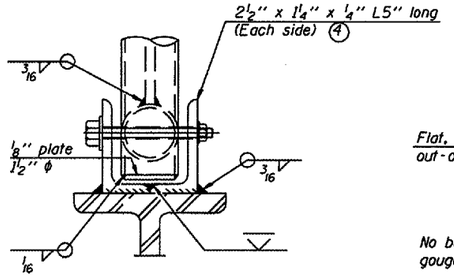
Handrail pipe shall be ASTM B241, Alloy 6063-T6 or Alloy 6061-T6.



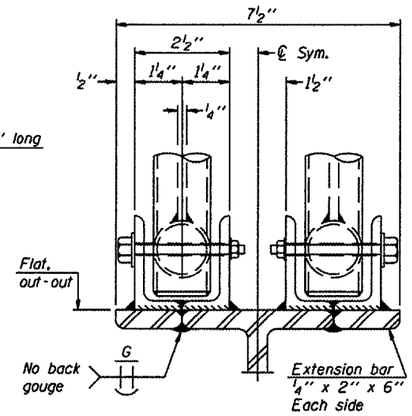
ALTERNATE SAFETY CHAIN ATTACHMENT
(With Sign Present)
Items not shown same as "Side Elevation" of "Handrail Details"



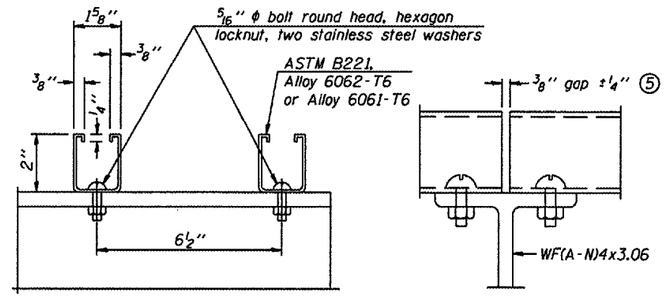
SIDE ELEVATION



FRONT ELEVATION
Details not shown same as "ELEVATION" at right.



ELEVATION AT HANDRAIL JOINT (4)
Details not shown same as "FRONT ELEVATION"

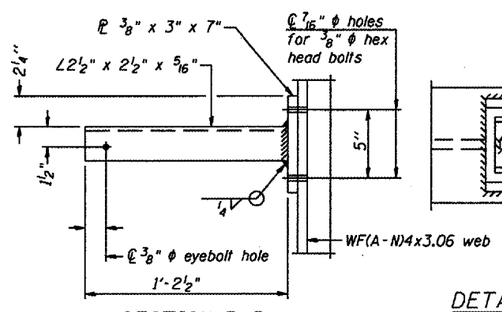


SECTION F-F

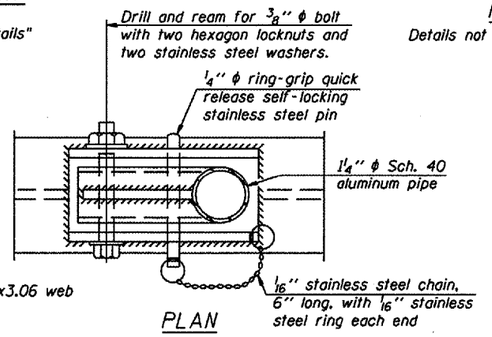
SECTION G-G

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.

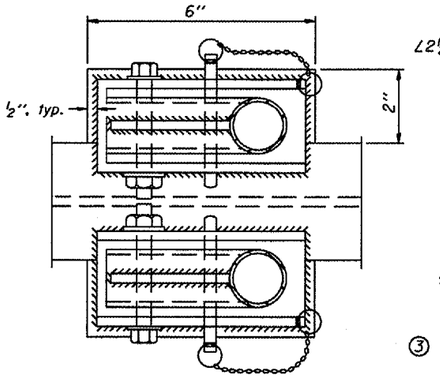


SECTION P-P

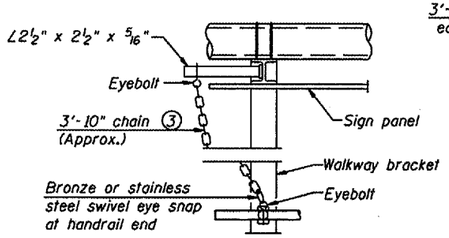


PLAN

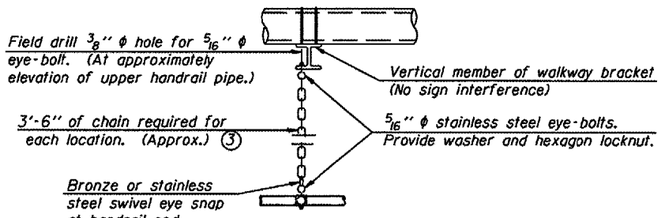
DETAIL E HANDRAIL HINGE



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.

(3) 3/16" galvanized steel chain, approximately 12 links per foot. Chain to be hot dip galvanized after manufacture and suitable for prolonged exterior exposure. Alternate materials may be substituted with the Engineer's approval.

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

DESIGNED	-
CHECKED	-
DRAWN	-
CHECKED	-

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

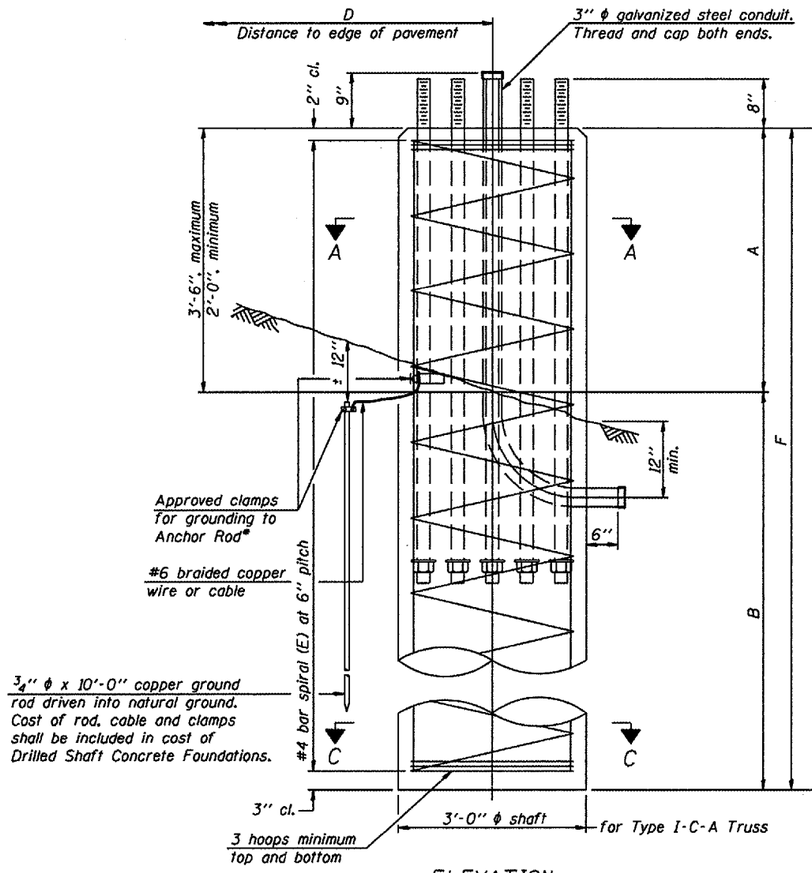
NUMBER	REVISION	DATE

CANTILEVER SIGN STRUCTURES
HANDRAIL DETAILS
ALUMINUM TRUSS & STEEL POST

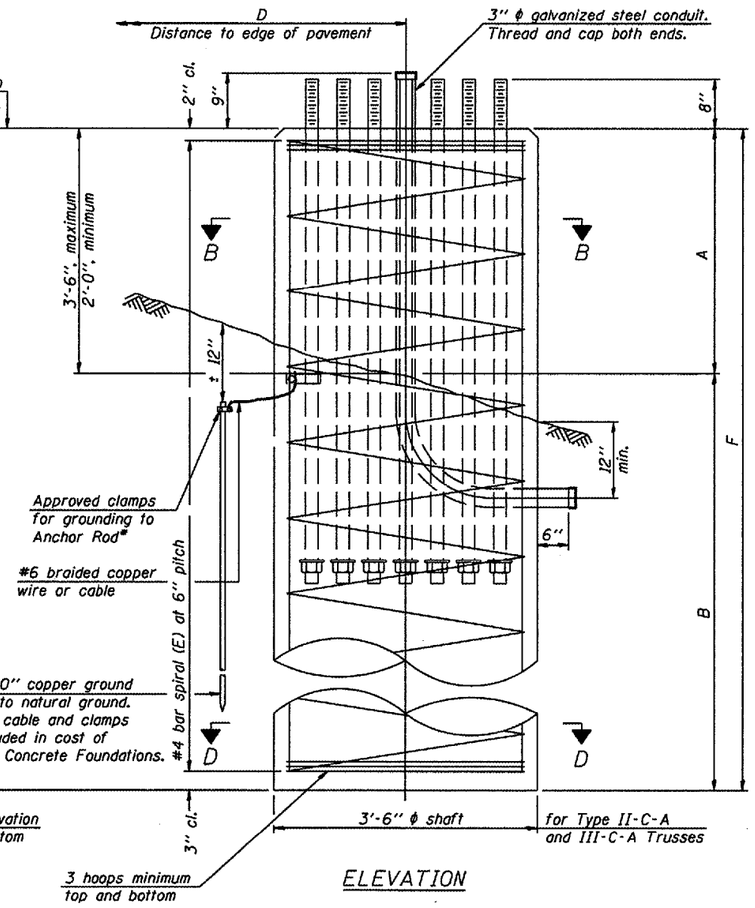
District 2
Truss Repair & Replacement

OSC-A-8 1-7-05

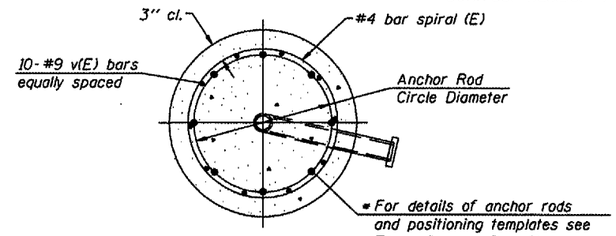
* Grind anchor rod to bright finish at ground clamp location before installing clamp.



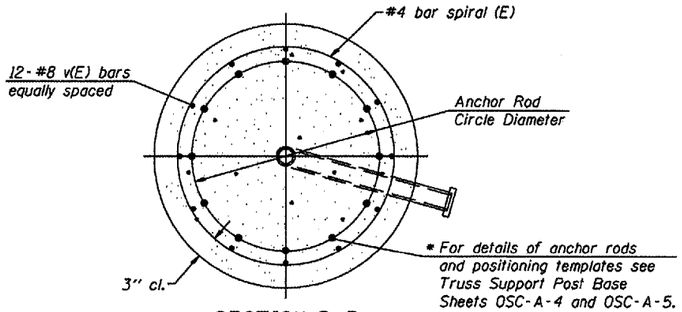
ELEVATION



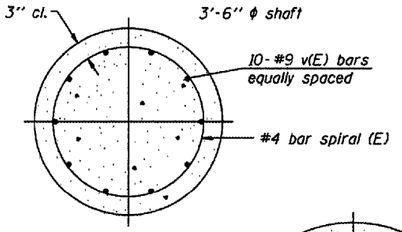
ELEVATION



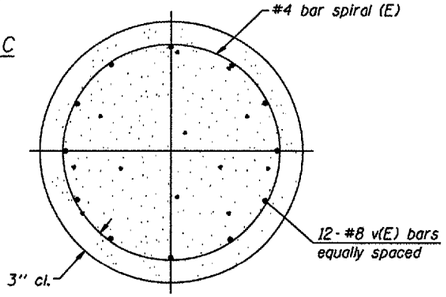
SECTION A-A
3'-0" ϕ shaft



SECTION B-B
3'-6" ϕ shaft



SECTION C-C
3'-0" ϕ shaft



SECTION D-D
3'-6" ϕ 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 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".

FOUNDATION DATA TABLE

Structure Number	Station	Truss Type	Shaft Diameter	Elevation Top	Elevation Bottom	Qu	A	B	F	Class SI Concrete Cubic Yards
2C081S092L029.5	332 + 50	I	3'-0"	578.87			3'-0"	15' - 6"	18' - 6"	4.9
2C081S092L028.8	369 + 75	I	3'-0"	575.20			3'-0"	15' - 6"	18' - 6"	4.9
2C081S092L029.4	342 + 50	I	3'-0"	572.24			3'-0"	15' - 6"	18' - 6"	4.9
2C081S092R028.6	383 + 00	I	3'-0"	595.00			3'-0"	15' - 6"	18' - 6"	4.9

FOUNDATION DESIGN TABLE

Truss Type	Post Base Sheet	Maximum CantileverLength (ft)	Maximum Total Sign Area (sq ft)	Shaft Diameter (in)	"B" Depth (ft)	Anchor Rods No.	Anchor Rods Diameter (in)	Anchor Rod Circle 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 -
CHECKED -
DRAWN -
CHECKED -

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

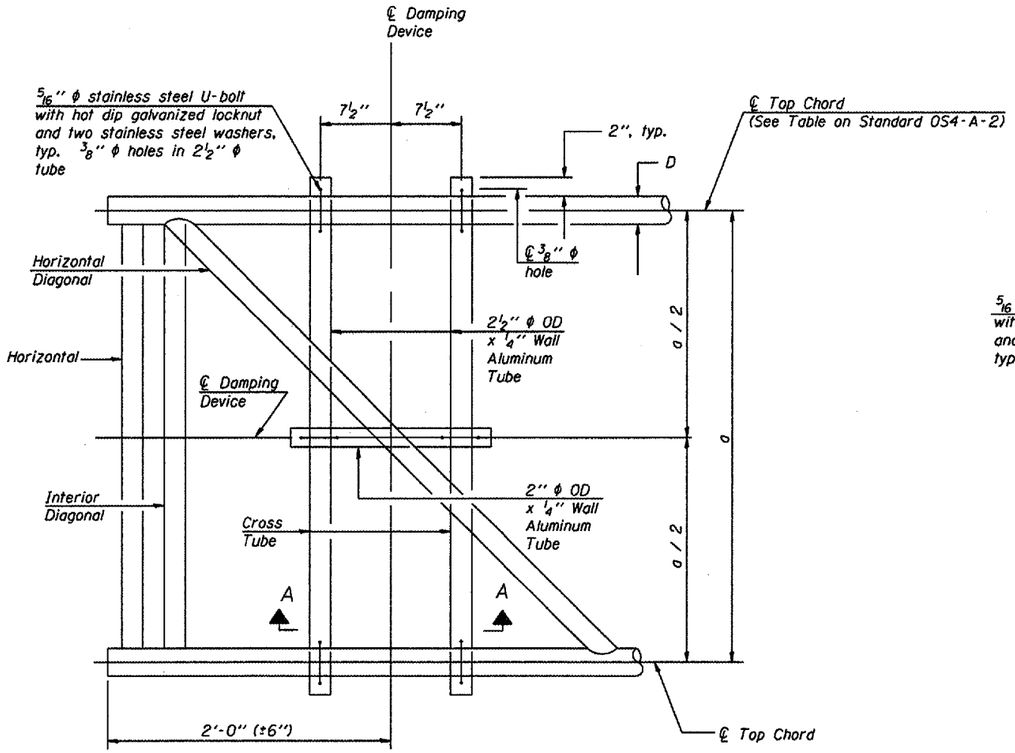
NUMBER	REVISION	DATE

CANTILEVER SIGN STRUCTURES
DRILLED SHAFT
ALUMINUM TRUSS & STEEL POST

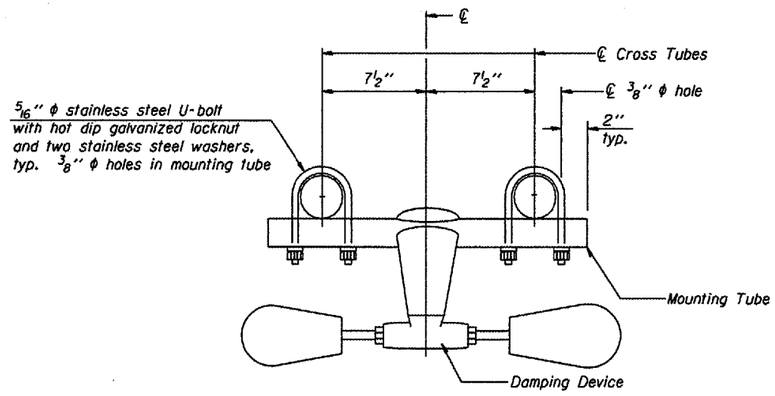
District 2
Truss Repair & Replacement

OSC-A-9 1-7-05

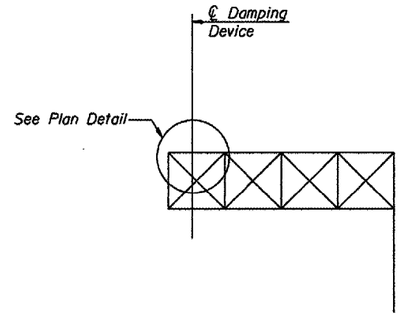
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



PLAN DETAIL



TRUSS DAMPING
DEVICE CONNECTION DETAIL

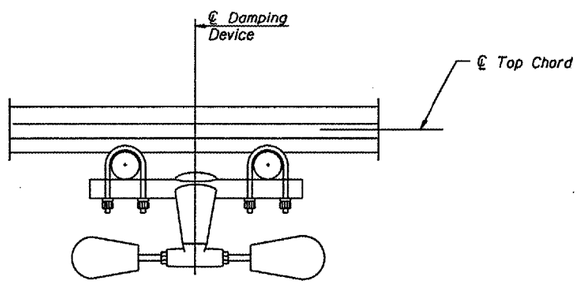


ELEVATION
Aluminum Cantilever
Sign Structure

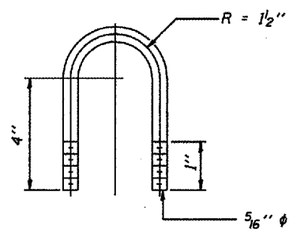
GENERAL NOTES

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

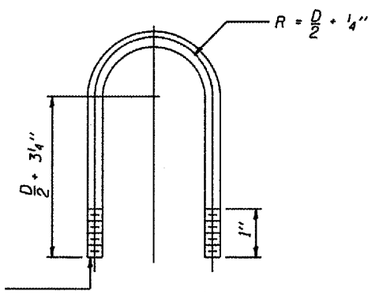
Materials: Aluminum tubes shall be ASTM B221 alloy 6061 temper T6



SECTION A-A



DAMPING DEVICE MOUNTING
TUBE U-BOLT DETAIL
(Typical)



TOP CHORD TO CROSS TUBE
U-BOLT DETAIL
(Typical)

DESIGNED	-
CHECKED	-
DRAWN	-
CHECKED	-

- 20

EXAMINED

ENGINEER OF BRIDGE DESIGN

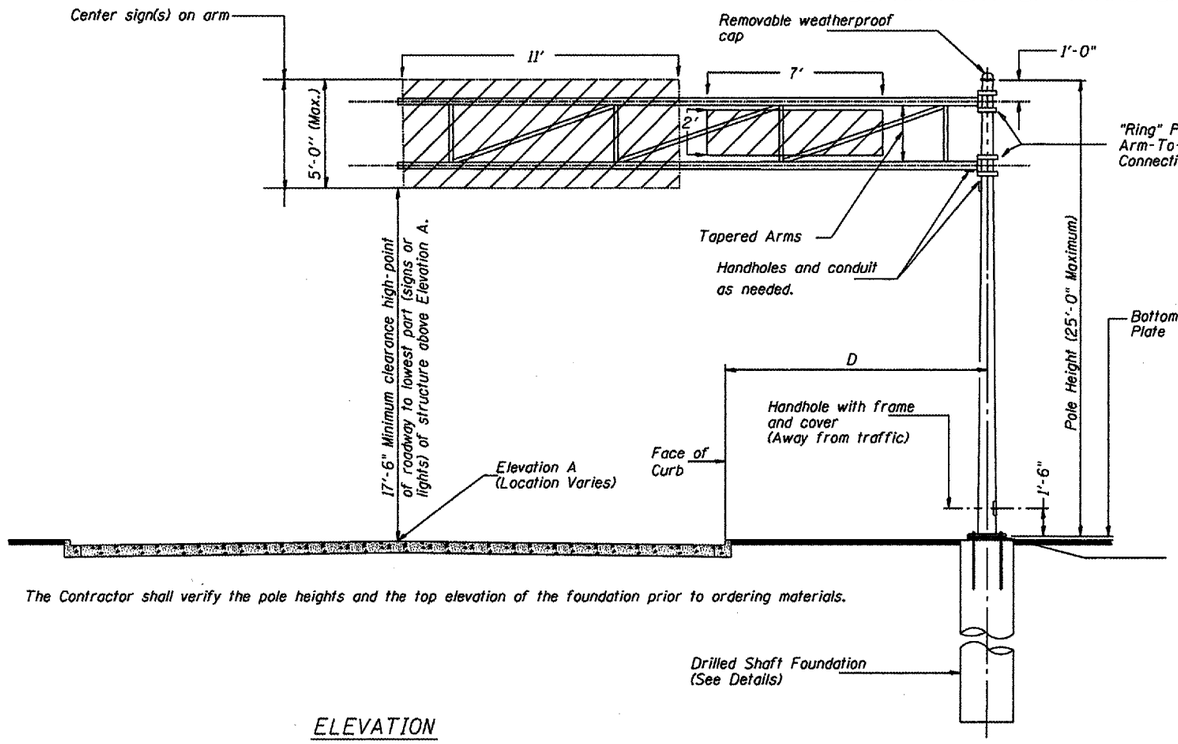
PASSED

ENGINEER OF BRIDGES AND STRUCTURES

OSC-A-D 1-7-05

CANTILEVER SIGN STRUCTURE
DAMPING DEVICE

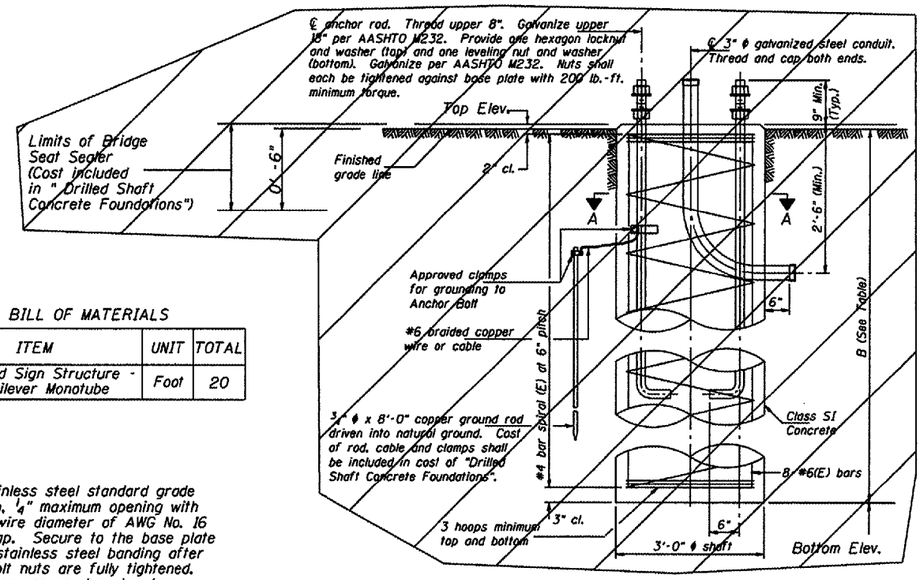
District 2
Truss Repair & Replacement



The Contractor shall verify the pole heights and the top elevation of the foundation prior to ordering materials.

ELEVATION

Looking at face of signs.



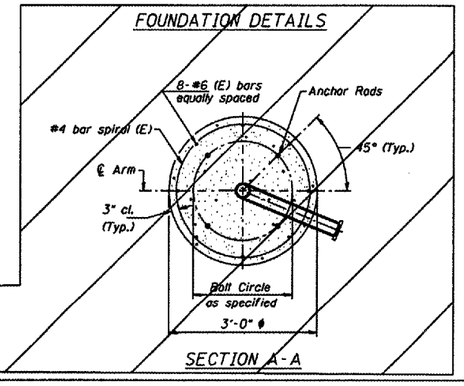
BILL OF MATERIALS

ITEM	UNIT	TOTAL
Overhead Sign Structure - Cantilever Monotube	Foot	20

±2½" stainless steel standard grade wire cloth, ¼" maximum opening with minimum wire diameter of AWG No. 16 with 2" lap. Secure to the base plate with ¾" stainless steel banding after anchor bolt nuts are fully tightened. Add bolt covers or shrouds where applicable.

New monotube cantilever to be installed on existing concrete foundation with existing anchor bolts. The Contractor shall provide new anchor bolt nuts and washers as necessary. The Contractor and the Engineer shall field verify the existing anchor bolt dimensions, anchor bolt pattern and pole height prior to ordering materials and fabrication of the support.

Structure Number	Station	Elev. A (Feet)	Length (Feet)	Foundation		Total Sign Area	Design Sign Area	D (Feet)	Qu (Actual)	Dimension (Feet)		Class SI Concrete (Cu. Yds.)
				Top Elev. (Feet)	Bottom Elev. (Feet)					B	B (Actual)	
2M098S078R018.05	N/A		20			69 SQ FT	100 SQ FT	N/A				



GENERAL NOTES

DESIGN: 1994 AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals.

CONSTRUCTION: Current (at time of letting) Illinois Department of Transportation Standard Specifications for Road and Bridge Construction, Supplemental Specifications and Recurring Special Provisions. ("Standard Specifications") All references to "Mast Arm Assembly and Pole" are applicable, unless otherwise noted.

WELDING: All welds to be continuous unless otherwise shown. All welding to be done in accordance with current AWS D1.1 Structural Welding Code and the Standard Specifications.

ANCHOR RODS: Shall meet Charpy V-notch (CVN) energy of 15 lb.-ft. at 40° F. No welding shall be permitted on rods.

FASTENERS: All connection bolts shall be High Strength Bolts M164, Galvanize M232 (A153). Type 3, or Stainless Steel conforming to ASTM A193, Grade B8 or B8M, Class 1.

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

FOUNDATIONS: The contract unit price for "Concrete Foundations" or "Drilled Shaft Concrete Foundations" shall include: All necessary excavation or drilling (except in rock); backfilling with excavated material; disposal of unsuitable or surplus material; formwork; and furnishing and placing the Class SI Concrete, reinforcement bars, conduit, anchor bolts, nuts, washers and ground rods complete in place.

The foundation details shown are based on common cohesive soil conditions (silty or sandy clay) with an average Qu ≥ 1.25 ton/sq. ft. and minimum Qu = 1.0 ton/sq. ft. for all strata within the "B" portion of the foundation. "Qu", the soil's unconfined compressive strength, shall be determined by the Engineer from either hand penetrometer readings during construction or previous soil investigations at the site. For lower soil strengths or different soil types, the Engineer shall review pertinent data and determine any required revisions to the diameter, depth, reinforcement or configuration of the foundation. If changes are required by the Engineer, or if dimension "B" is increased more than 12" by the Contractor, "as-built" plans shall be prepared by the Resident Engineer and submitted to the Engineer and District Bureau of Operations for future reference. Actual "B", "Elevation Bottom", and average "Qu" values shall also be entered in the table on this sheet for permanent 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 Engineers' written permission. Excavations shall be dewatered before concrete placement if directed by the Engineer at no additional cost.

Concrete shall be placed monolithically, without construction joints.

DESIGNED	
CHECKED	
DRAWN	
CHECKED	

Revised 3/24/05

20

EXAMINED

ENGINEER OF STRUCTURAL SERVICES

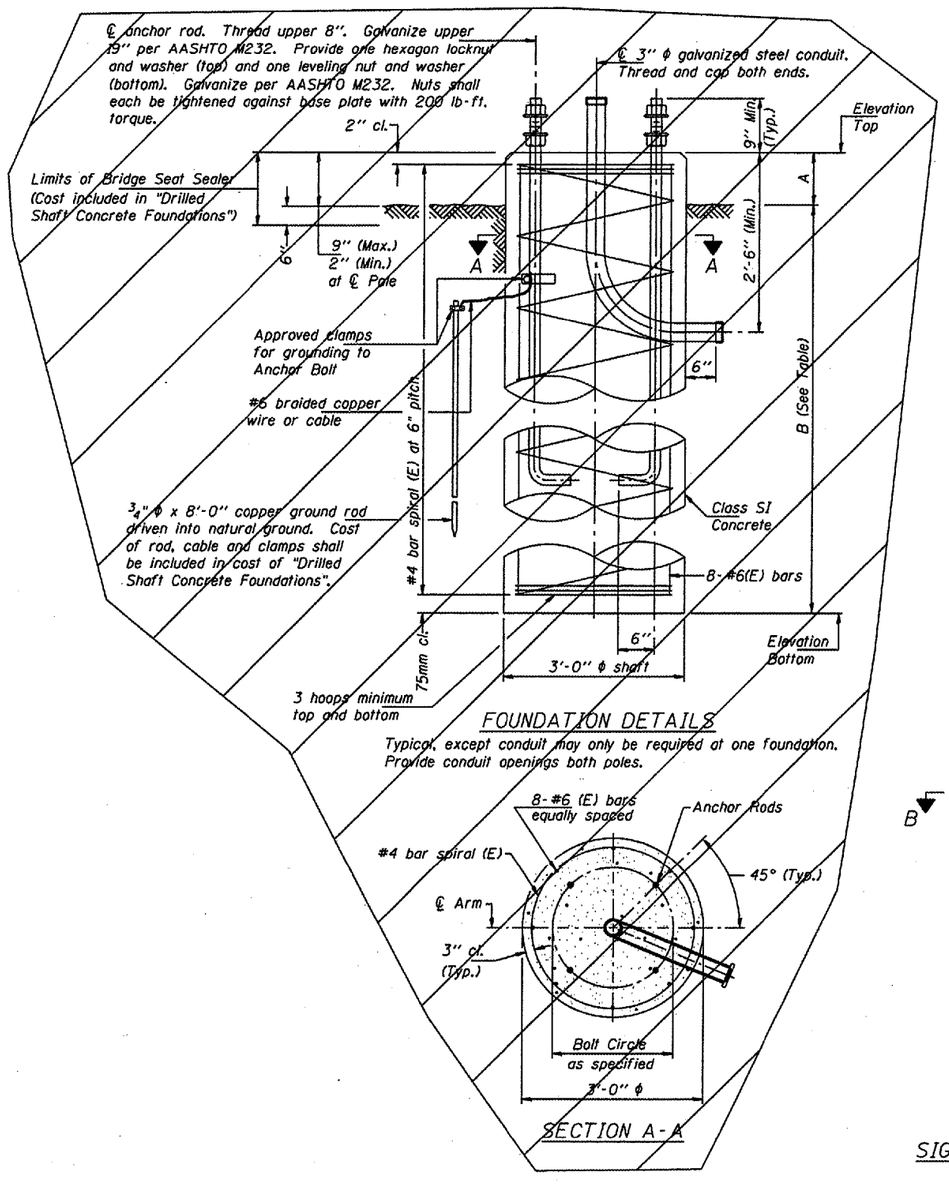
PASSED

ENGINEER OF BRIDGES AND STRUCTURES

OVERHEAD SIGN STRUCTURE CANTILEVER MONOTUBE

District 2
Truss Repair & Replacement

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



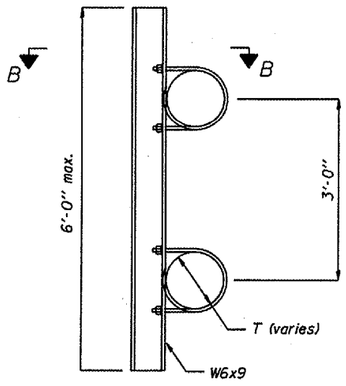
Span (Ft.)	B (Ft.)
Span ≤ 65	12
65 < Span ≤ 80	13
80 < Span ≤ 100	14

FOUNDATIONS: The contract unit price for "Concrete Foundations" or "Drilled Shaft Concrete Foundations" shall include: All necessary excavation or drilling (except in rock); backfilling with excavated material; disposal of unsuitable or surplus material; formwork; and furnishing and placing the Class SI Concrete, reinforcement bars, conduit, anchor bolts, nuts, washers and ground rods complete in place.

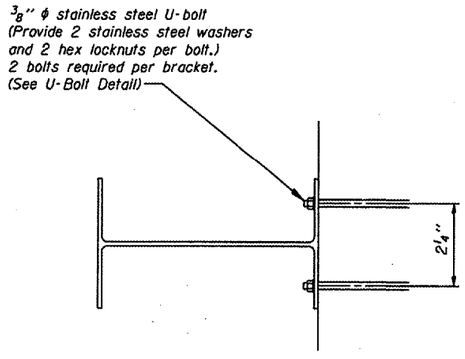
The foundation details shown are based on common cohesive soil conditions (silty or sandy clay) with an average Qu ≥ 1.25 ton/Sq. ft. for all strata within and below the "B" portion of the foundation. "Qu", the soil's unconfined compressive strength, shall be determined by the Engineer from either hand penetrometer readings during construction or previous soil investigations at the site. For lower soil strengths or different soil types, the Engineer shall review pertinent data and determine any required revisions to the diameter, depth, reinforcement or configuration of the foundation. If changes are required by the Engineer, or if dimension "B" is increased more than 12 inches 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 Engineers' written permission. Excavations shall be dewatered before concrete placement if directed by the Engineer at no additional cost.

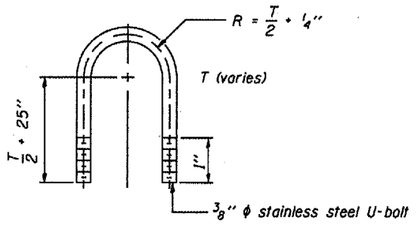
Concrete shall be placed monolithically, without construction joints.



SIGN MOUNTING BRACKET



SECTION B-B
6'-0" maximum spacing.
2'-0" maximum sign overhang beyond end bracket.



U-BOLT DETAIL
(Typical)

DESIGNED	-
CHECKED	-
DRAWN	-
CHECKED	-

- 20

EXAMINED

ENGINEER OF BRIDGE DESIGN

PASSED

ENGINEER OF BRIDGES AND STRUCTURES

DUAL MONOTUBE SIGN STRUCTURE

District 2
Truss Repair & Replacement

District 3
Schedule of Locations for Truss Repair & Replacement

Location No.:	3-01	State I.D. No.:	3S057I055L000.9				
County:	McLean	Route:	I-55	M.P.:	0.9	Direction:	SB

Description of Work	Unit	Quantity
REMOVE & RE-ERECT OVERHEAD SIGN STRUCTURE-SPAN	EACH	1.00
STRUCTURAL STEEL SUPPORT OVERHEAD SIGN STRUCTURE	EACH	2.00
FURNISH & INSTALL SADDLE SHIM BLOCK	EACH	4.00
FURNISH & INSTALL INTERNAL TRUSS DAMPER	EACH	1.00
FURNISH & INSTALL SAFETY CHAIN	EACH	2.00
OVERHEAD SIGN STRUCTURE WALKWAY	FOOT	72.00
REMOVE CONCRETE FOUNDATION-OVERHEAD	EACH	2.00
DRILLED SHAFT CONCRETE FOUNDATION	CU YD	21.60
RELOCATE ELECTRIC SERVICE	EACH	1.00

Location No.:	3-02	State I.D. No.:	3S057I074L134.8				
County:	McLean	Route:	I-74	M.P.:	134.8	Direction:	WB

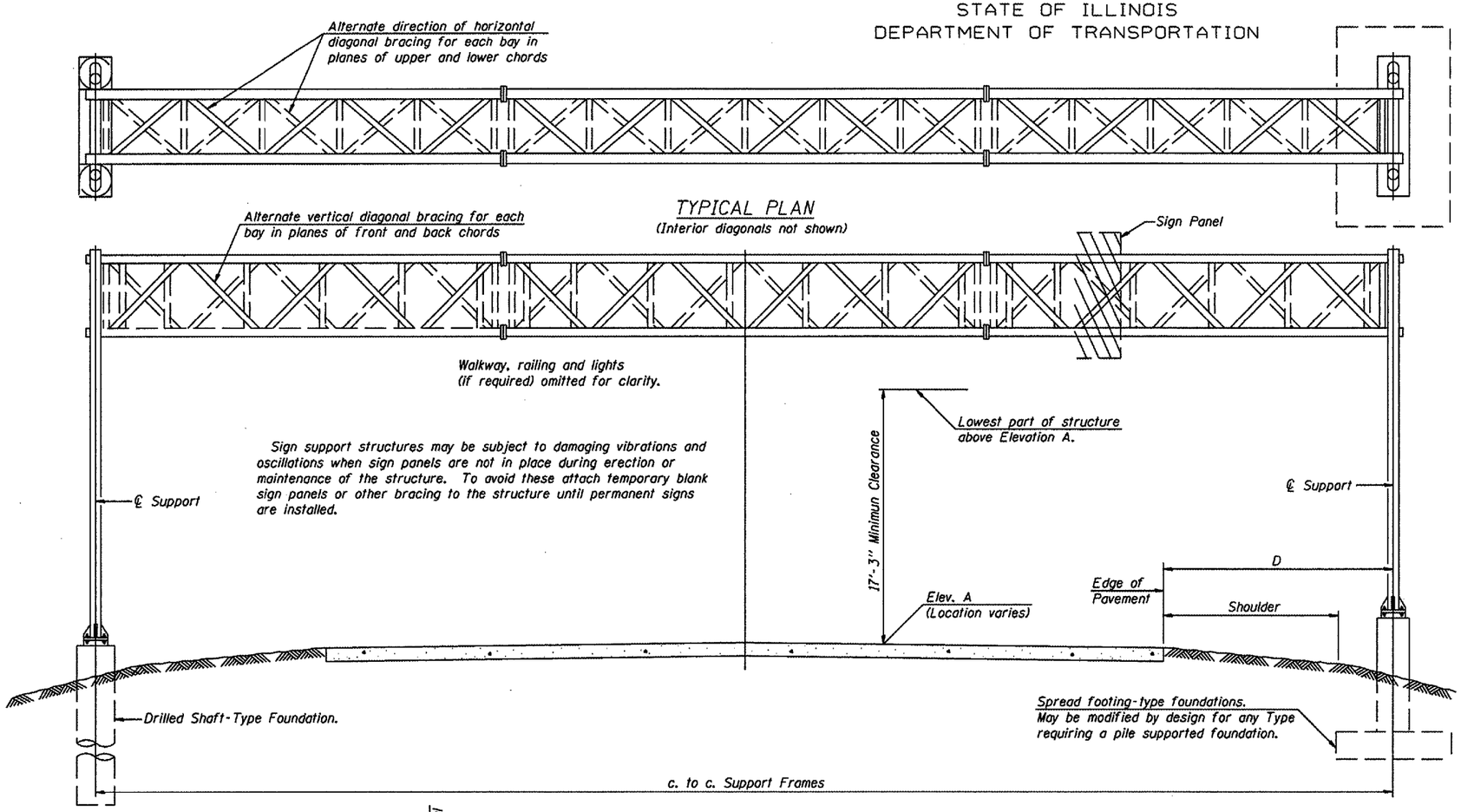
Description of Work	Unit	Quantity
REMOVE OVERHEAD SIGN STRUCTURE-SPAN	EACH	1.00
STRUCTURAL STEEL SUPPORT OVERHEAD SIGN STRUCTURE	EACH	2.00
OVERHEAD SIGN STRUCTURE-SPAN TYPE I-A	FOOT	50.00
REMOVE & REINSTALL WALKWAY	FOOT	36.00
REMOVE & REINSTALL SIGN PANEL	SQ FT	313.75
FURNISH & INSTALL SAFETY CHAIN	EACH	2.00
REMOVE CONCRETE FOUNDATION-OVERHEAD	EACH	2.00
DRILLED SHAFT CONCRETE FOUNDATION	CU YD	12.00
RELOCATE ELECTRIC SERVICE	EACH	1.00
This sign structure is being completely replaced.		

Location No.:	3-03	State I.D. No.:	3S057I074L135.7				
County:	McLean	Route:	I-74	M.P.:	135.7	Direction:	WB

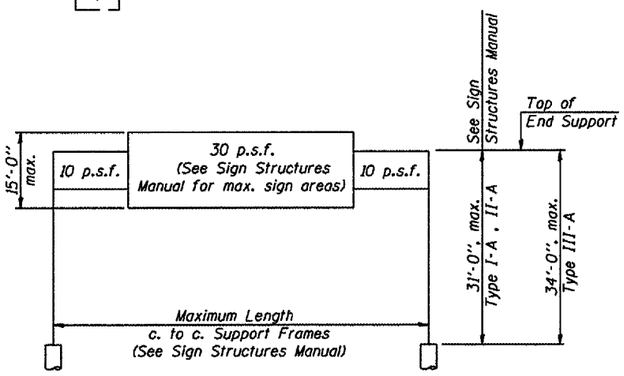
Description of Work	Unit	Quantity
REMOVE & RE-ERECT OVERHEAD SIGN STRUCTURE-SPAN	EACH	1.00
STRUCTURAL STEEL SUPPORT OVERHEAD SIGN STRUCTURE	EACH	2.00
FURNISH & INSTALL SADDLE SHIM BLOCK	EACH	4.00
FURNISH & INSTALL INTERNAL TRUSS DAMPER	EACH	1.00
FURNISH & INSTALL SAFETY CHAIN	EACH	2.00
OVERHEAD SIGN STRUCTURE WALKWAY	FOOT	76.33
REMOVE CONCRETE FOUNDATION-OVERHEAD	EACH	2.00
DRILLED SHAFT CONCRETE FOUNDATION	CU YD	21.60
RELOCATE ELECTRIC SERVICE	EACH	1.00

Location No.:	3-04	State I.D. No.:	3S057I074R133.9				
County:	McLean	Route:	I-74	M.P.:	133.9	Direction:	EB

Description of Work	Unit	Quantity
REMOVE & RE-ERECT OVERHEAD SIGN STRUCTURE - SPAN	EACH	1.00
STRUCTURAL STEEL SUPPORT OVERHEAD SIGN STRUCTURE	EACH	2.00
FURNISH & INSTALL SADDLE SHIM BLOCK	EACH	4.00
FURNISH & INSTALL INTERNAL TRUSS DAMPER	EACH	1.00
FURNISH & INSTALL SAFETY CHAIN	EACH	2.00
OVERHEAD SIGN STRUCTURE WALKWAY	FOOT	68.50
REMOVE CONCRETE FOUNDATION - OVERHEAD	EACH	2.00
DRILLED SHAFT CONCRETE FOUNDATIONS	CU YD	21.60
RELOCATE ELECTRIC SERVICE	EACH	1.00



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
3S057I074L134.8	683 + 00 WB	I	50' - 0"	785.80	15' - 0"	11' - 6"	313.75

THE INFORMATION IN GENERAL NOTES APPLIES TO ALL SIGN STRUCTURES BEING REPAIRED OR REPLACED IN DISTRICT 3.

**Looking upstation for structures with signs both sides.

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.
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 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.

TOTAL BILL OF MATERIAL

ITEM	UNIT	TOTAL
OVERHEAD SIGN STRUCTURE TYPE I-A (4'-0" x 4'-6")	Foot	
OVERHEAD SIGN STRUCTURE TYPE II-A (4'-6" x 5'-3")	Foot	
OVERHEAD SIGN STRUCTURE TYPE III-A (5'-0" x 7'-0")	Foot	
OVERHEAD SIGN STRUCTURE WALKWAY TYPE A	Foot	
CONCRETE FOUNDATIONS	Cu. Yds.	
DRILLED SHAFT CONCRETE FOUNDATIONS	Cu. Yds.	

NUMBER	REVISION	DATE

DESIGNED -	
CHECKED -	
DRAWN -	
CHECKED -	

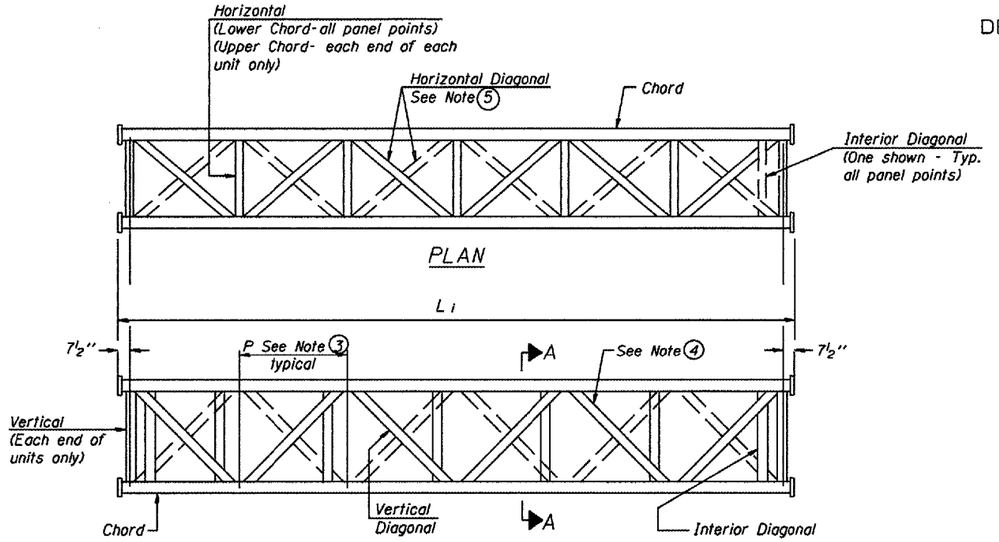
- 20
EXAMINED
ENGINEER OF BRIDGE DESIGN
PASSED
ENGINEER OF BRIDGES AND STRUCTURES

OS-A-1 1-7-05

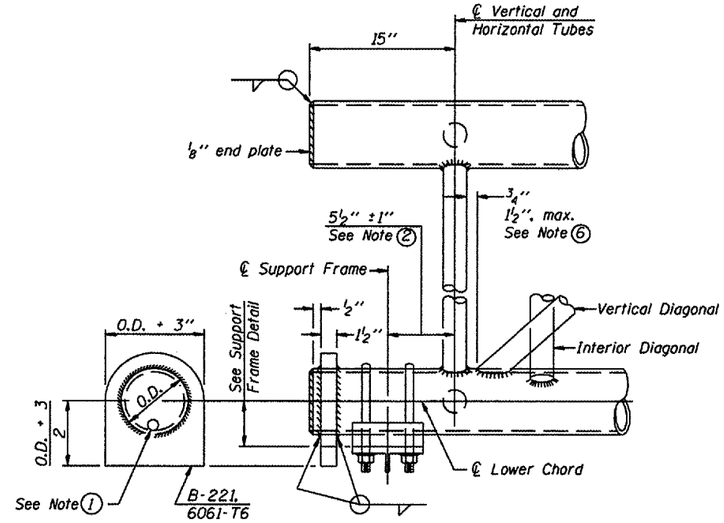
OVERHEAD SIGN STRUCTURES
GENERAL PLAN & ELEVATION
ALUMINUM TRUSS & STEEL SUPPORTS

District 3
Truss Repair & Replacement

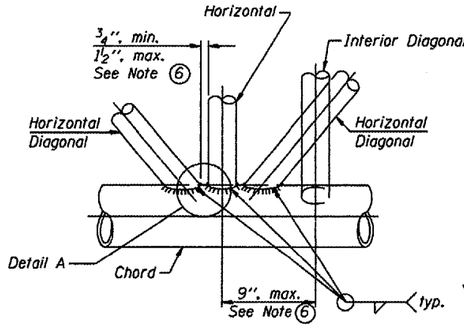
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

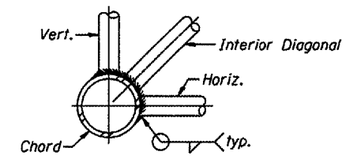


ELEVATION
TYPICAL INTERIOR UNIT
Even number of panels/interior unit required.

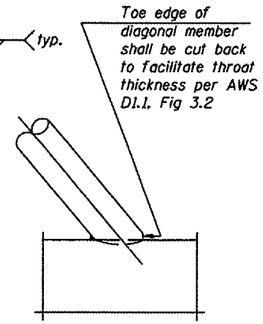


SUPPORT END DETAIL FOR EXTERIOR UNIT

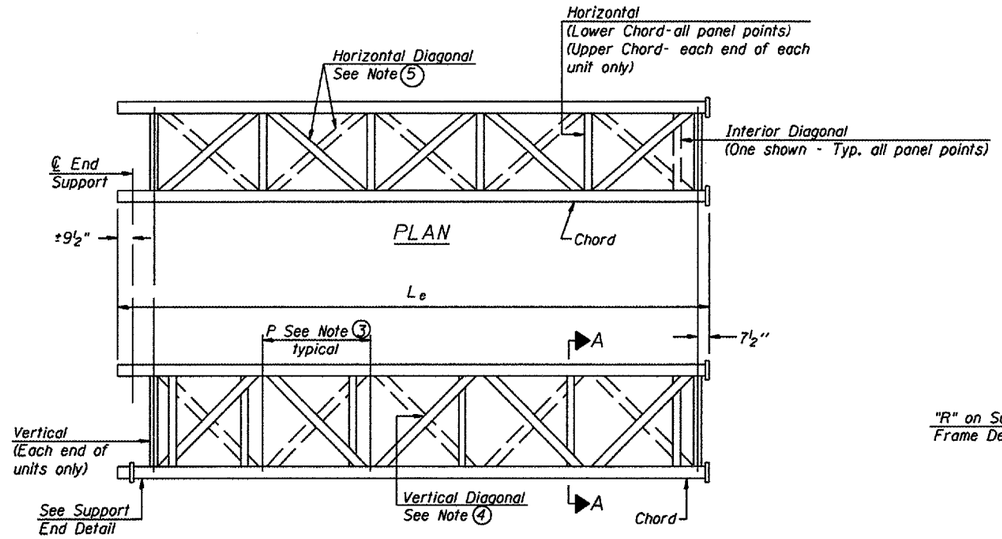




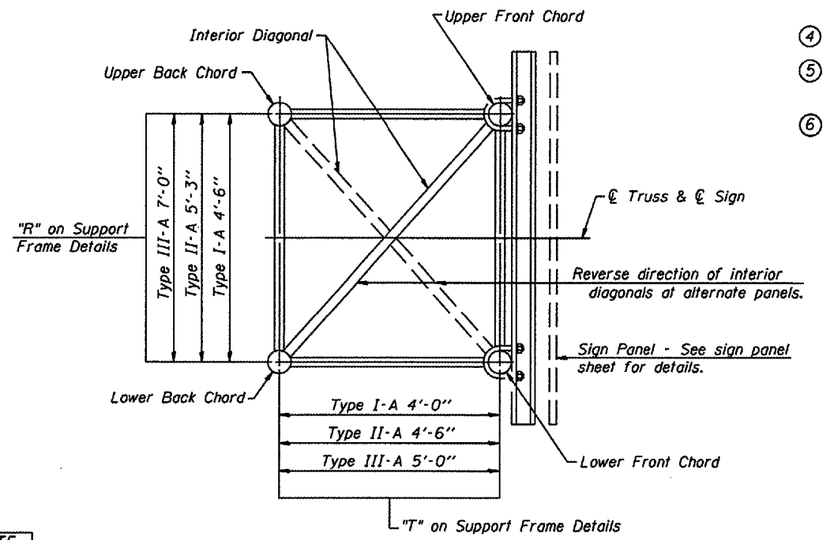
TYPICAL JOINT DETAILS



DETAIL A



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



SECTION A-A

NOTES

1. Contractor may alternatively use standard aluminum drive-fit cap to close end. ½" ϕ 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.

DESIGNED -	
CHECKED -	
DRAWN -	
CHECKED -	

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

OS-A-2 1-7-05

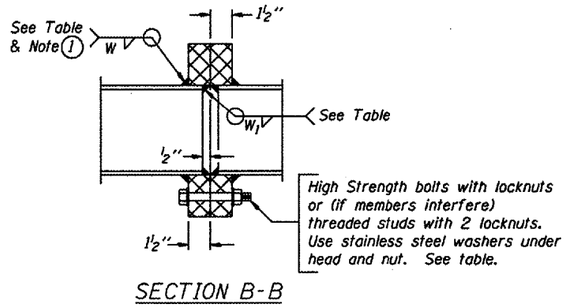
NUMBER	REVISION	DATE

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

District 3
Truss Repair & Replacement

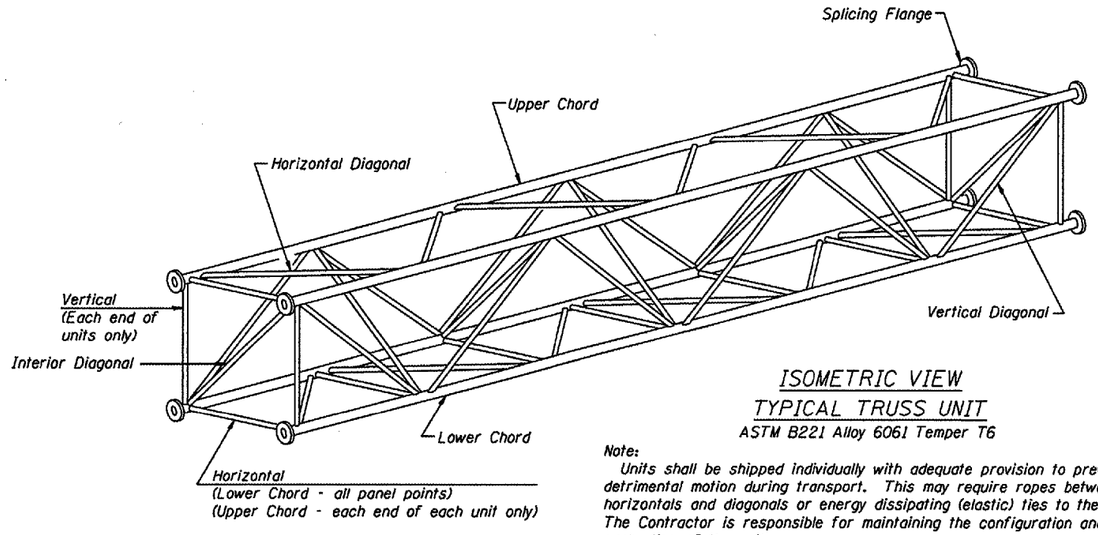
TRUSS UNIT TABLE

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_1		
3S0571074L134.8	683 + 00 WB	I	5	25' - 8 3/4"	4' - 9 3/4"					5"	1/4"	2 1/2"	1/4"	1 1/4"	6	7/8"	5/16"	1/4"	8 3/4"	11 3/4"



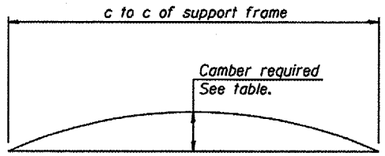
SECTION B-B

(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.



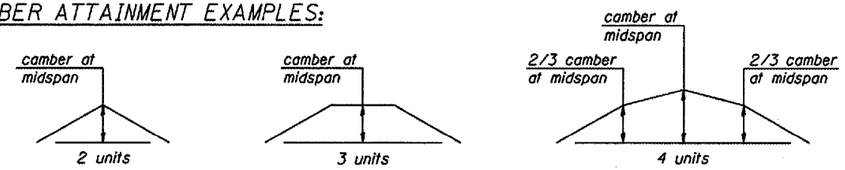
ISOMETRIC VIEW
TYPICAL TRUSS UNIT
ASTM B221 Alloy 6061 Temper T6

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.

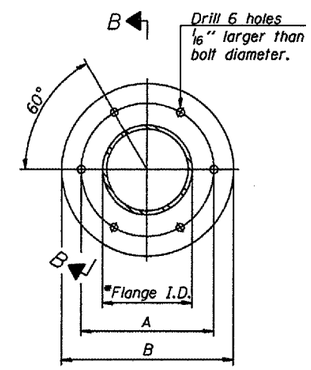


CAMBER DIAGRAM
Camber curve shown is theoretical. Actual camber attained by slope changes at splices between units.

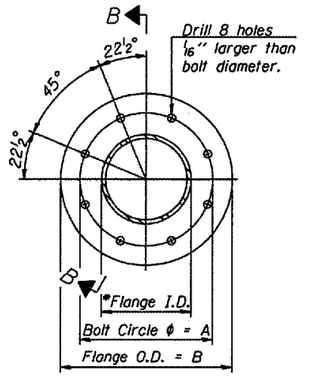
CAMBER ATTAINMENT EXAMPLES:



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".

NUMBER	REVISION	DATE

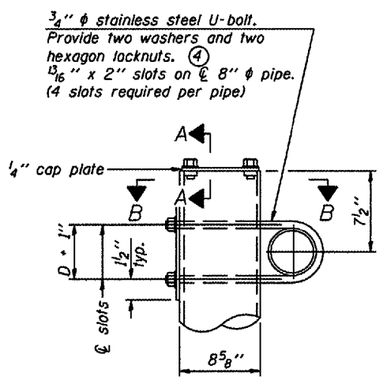
DESIGNED -	
CHECKED -	
DRAWN -	
CHECKED -	

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

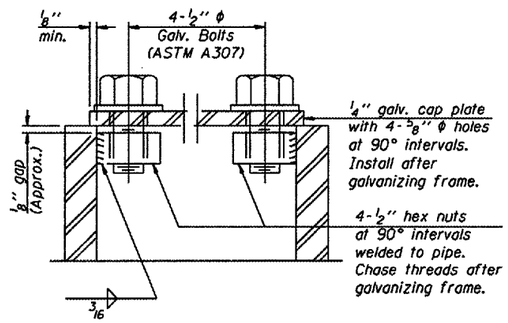
OS4-A-2 1-7-05

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

District 3
Truss Repair & Replacement

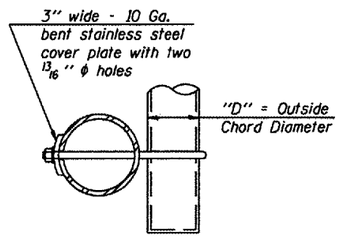


DETAIL A

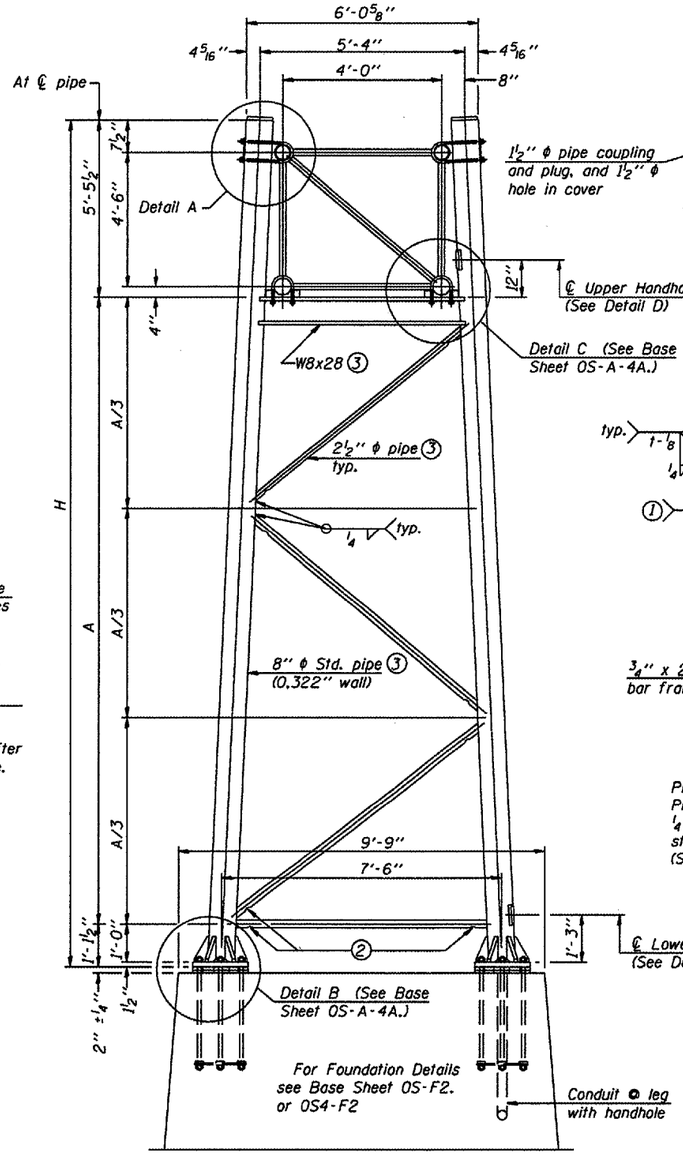


SECTION A-A

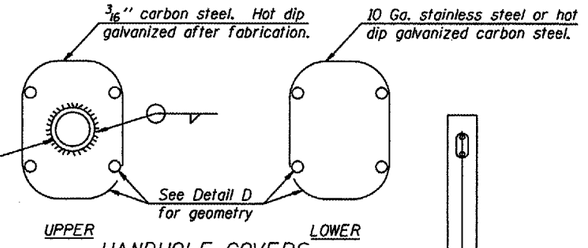
As an alternate to bolts, may use galvanized drive-fit caps installed after galvanizing frame.



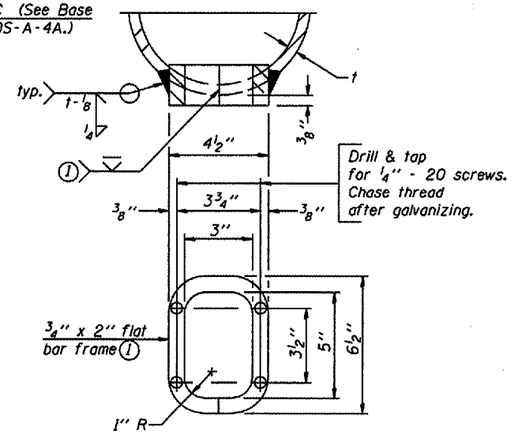
SECTION B-B



SIDE ELEVATION

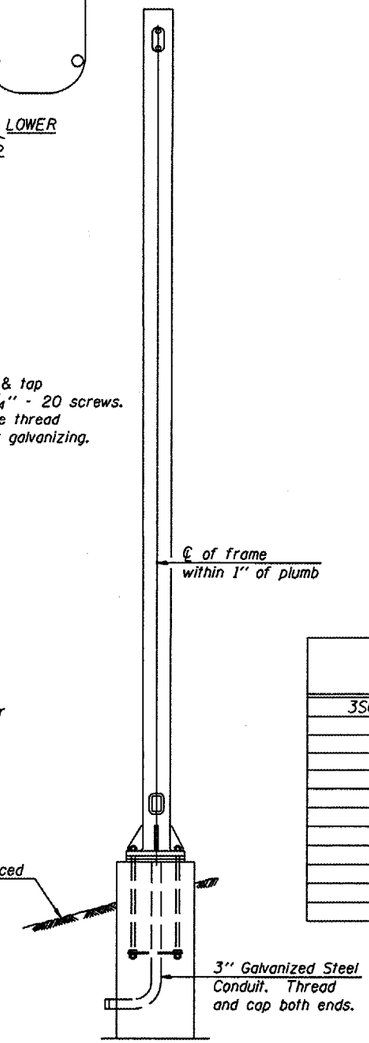


HANDHOLE COVERS



Provide 6 1/2" x 4 1/2" cover.
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)

DETAIL D



END ELEVATION

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.

Structure Number	Station	Support		H	A
		Left	Right		
3S0571074L134.8	683 + 00 WB	X	X	25'-7 1/2"	16' - 6"

8" ϕ PIPE TRUSS SUPPORT FRAME

DESIGNED -	
CHECKED -	
DRAWN -	
CHECKED -	

- 20

EXAMINED
ENGINEER OF BRIDGE DESIGN

PASSED
ENGINEER OF BRIDGES AND STRUCTURES

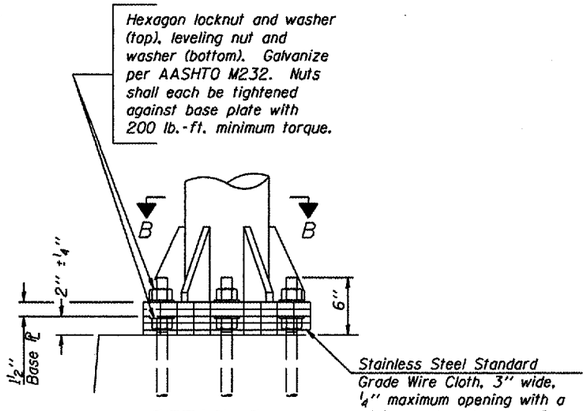
NUMBER	REVISION	DATE

OS-A-4 1-7-05

OVERHEAD SIGN STRUCTURES
SUPPORT FRAME for TYPE I-A ALUMINUM TRUSS

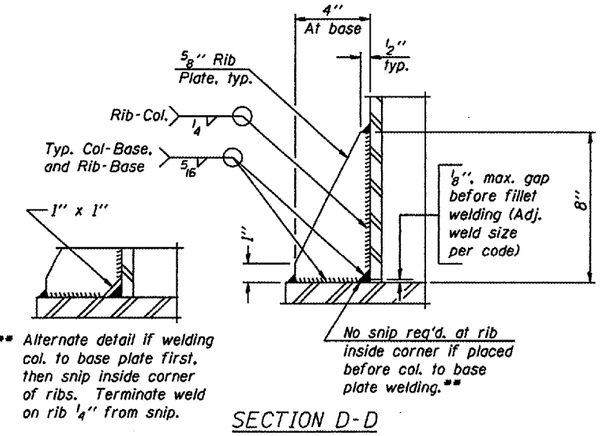
District 3
Truss Repair & Replacement

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

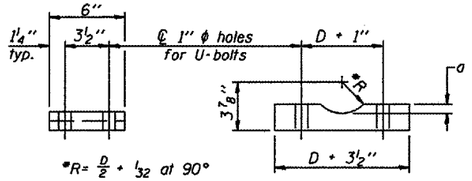


DETAIL B

Ribs shall be cut to fit slope of pipe.

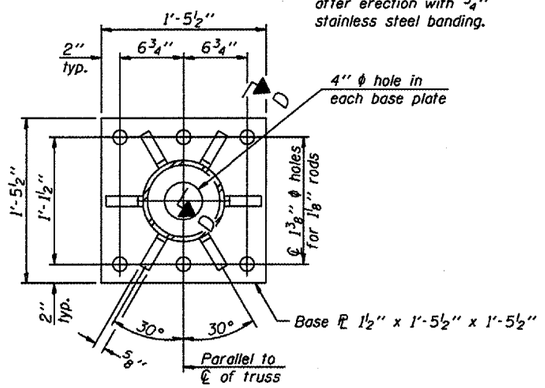


SECTION D-D

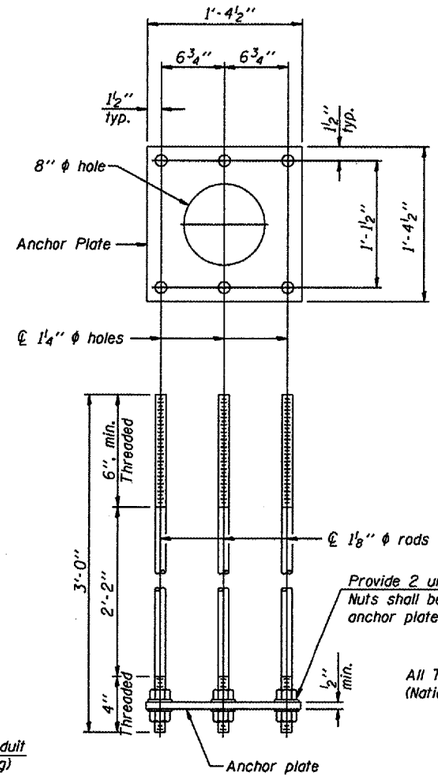


SADDLE SHIM DETAIL
ASTM B26 Alloy 356-F
or
ASTM B209 Alloy 6061-T651
(4 required per sign truss)

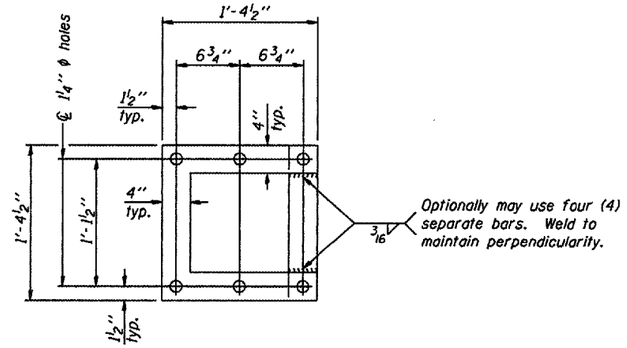
Truss Chord Nominal Dia.	a
5"	3/4"
5 1/2"	13/16"
6"	7/8"
6 1/2"	15/16"



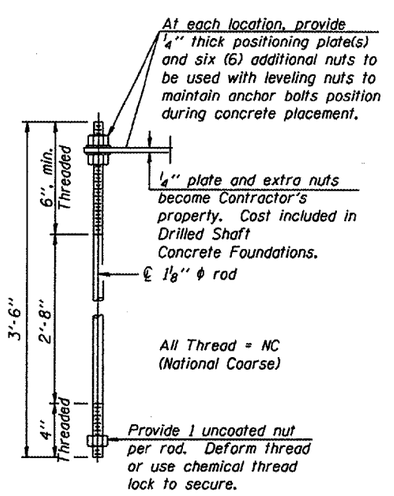
SECTION B-B



ANCHOR ROD DETAIL
Spread Footing Foundation

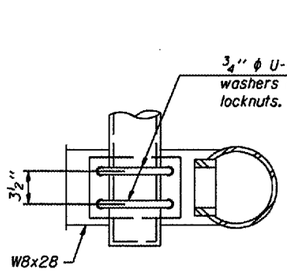


POSITIONING PLATE(S)

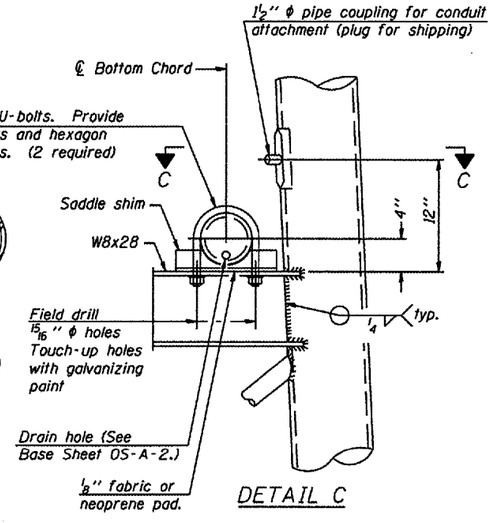


ANCHOR ROD DETAIL
Drilled Shaft Foundation

Anchor rods shall conform to AASHTO M314 Grade 36 or 55 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.



SECTION C-C
(Handhole cover not shown)



DETAIL C

TYPE I-A TRUSS
8" ϕ PIPE SUPPORT FRAME DETAILS

NUMBER	REVISION	DATE

DESIGNED	-
CHECKED	-
DRAWN	-
CHECKED	-

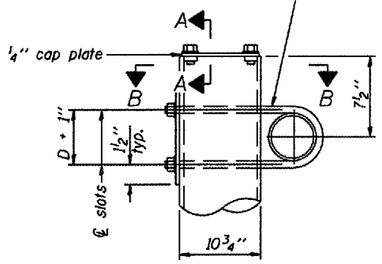
- 20
EXAMINED
ENGINEER OF BRIDGE DESIGN
PASSED
ENGINEER OF BRIDGES AND STRUCTURES

OS-A-4A 1-7-05

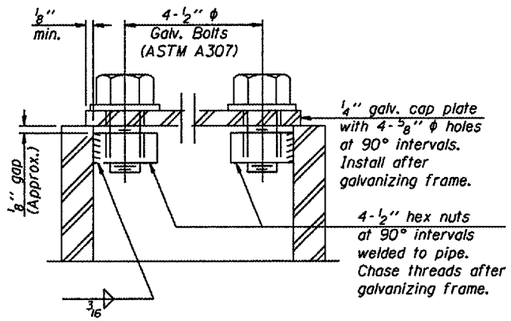
OVERHEAD SIGN STRUCTURES
SUPPORT FRAME DETAILS ALUMINUM TRUSS

District 3
Truss Repair & Replacement

$\frac{3}{4}$" ϕ stainless steel U-bolt. Provide two washers and two hexagon locknuts. (4)
$\frac{13}{16}$" x 2" slots on ℄ 10" ϕ pipe. (4 slots required per pipe)

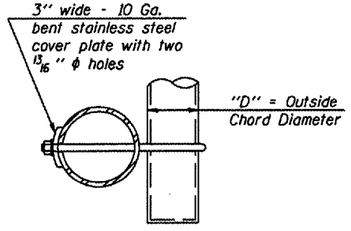


DETAIL A

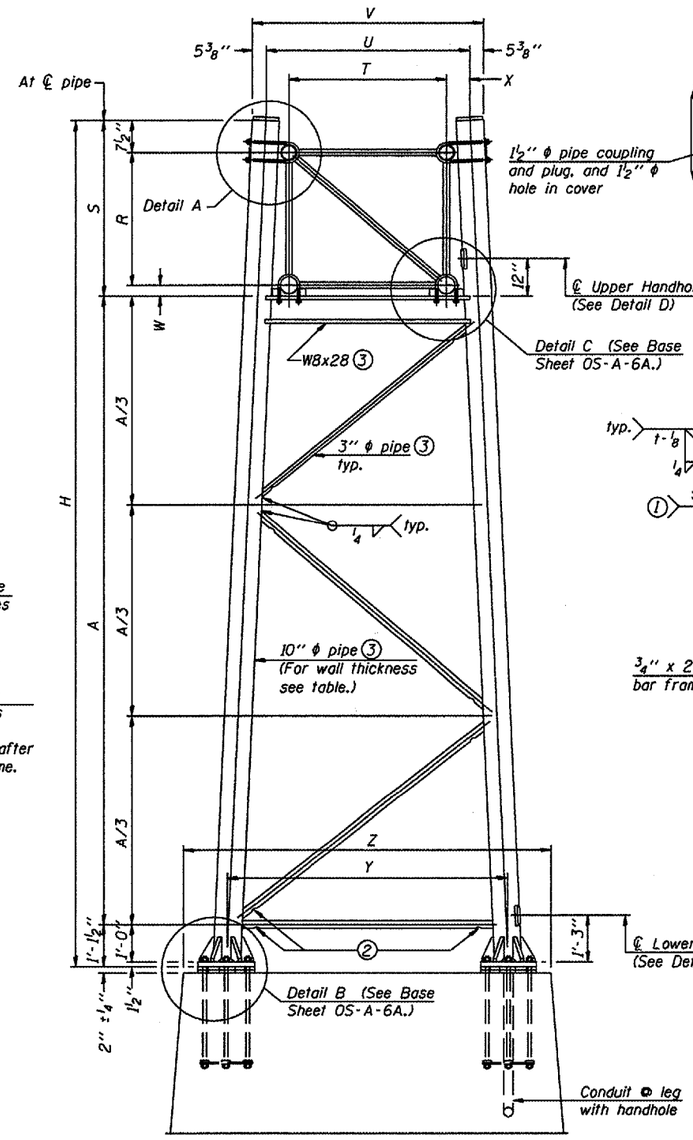


SECTION A-A

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

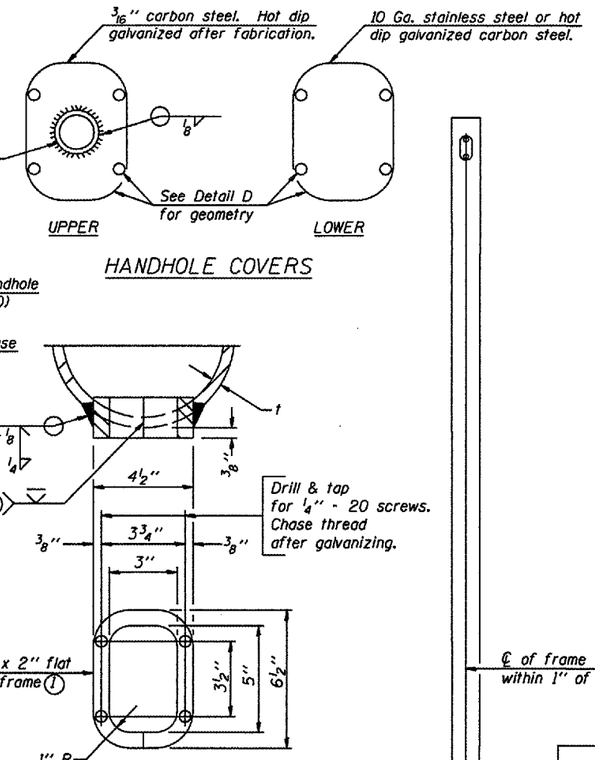


SECTION B-B



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

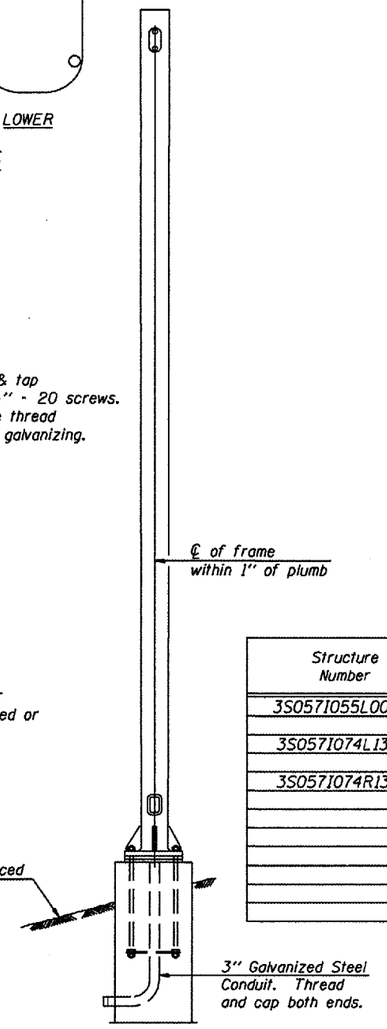
SIDE ELEVATION



HANDHOLE COVERS

Provide 6½" x 4½" cover.
Provide 4-$\frac{5}{16}$" ϕ holes in cover for ¼"-20 round head hot dip galvanized or stainless steel machine screws.
(See cover details)

DETAIL D



END ELEVATION

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 min 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.

Structure Number	Station	Support		Truss Type	Pipe Wall Thickness	H	A
		Left	Right				
3S057I055L000.9	35 + 94 SB	X	X	II	0.365(Std)	24'-9"	17'-3"
3S057I074L135.7	730 + 91 WB	X	X	II	0.365(Std)	24'-6"	17'-0"
3S057I074R133.9	637 + 50 EB	X	X	II	0.365(Std)	23'-9"	16'-3"

10" ϕ PIPE TRUSS SUPPORT FRAME

Truss Type	Dimensions								
	R	S	T	U	V	W	X	Y	Z
I-A	4'-6"	5'-5½"	4'-0"	5'-6"	6'-4¾"	4"	9"	8'-3"	10'-9"
II-A (5)	5'-3"	6'-3¼"	4'-6"	6'-1"	6'-11¾"	4¾"	9½"	8'-3"	10'-9"

NUMBER	REVISION	DATE

DESIGNED -	
CHECKED -	
DRAWN -	
CHECKED -	

- 20

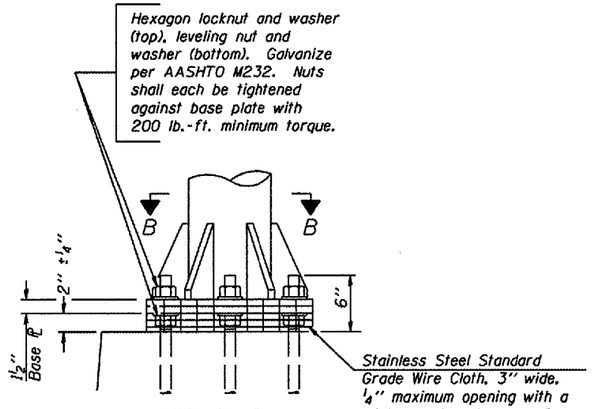
EXAMINED
ENGINEER OF BRIDGE DESIGN

PASSED
ENGINEER OF BRIDGES AND STRUCTURES

OS-A-6 1-7-05

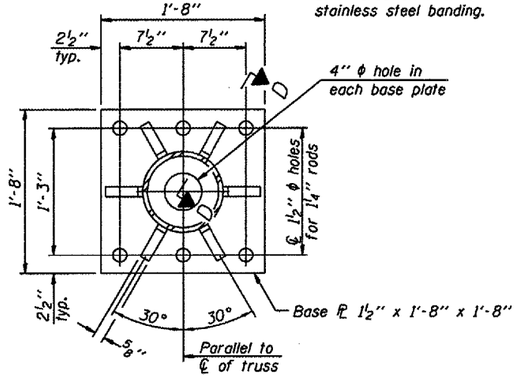
OVERHEAD SIGN STRUCTURES
SUPPORT FRAME for ALUMINUM TRUSS

District 3
Truss Repair & Replacement

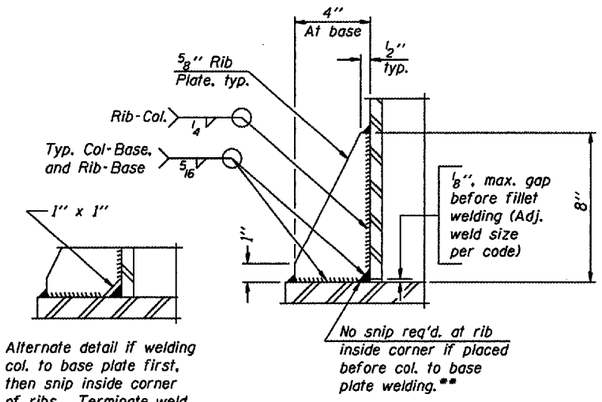


DETAIL B

Ribs shall be cut to fit slope of pipe.

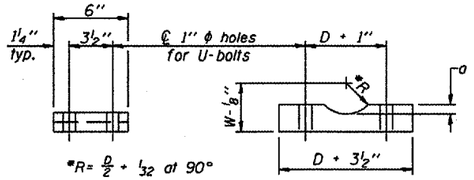


SECTION B-B



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

SECTION D-D



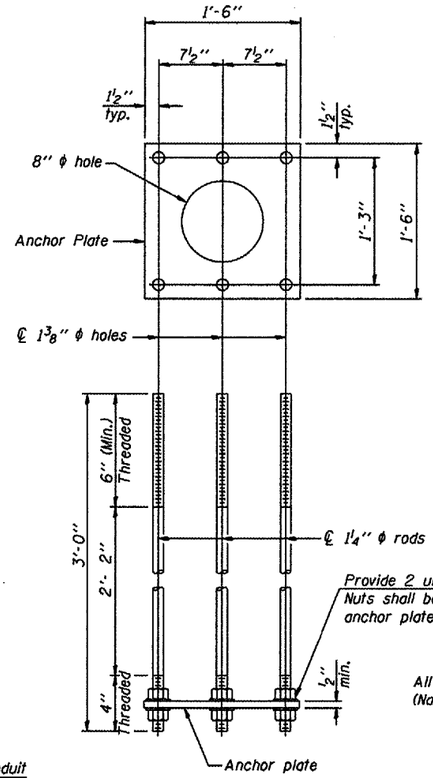
*R = D/2 + 1/32 at 90°

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

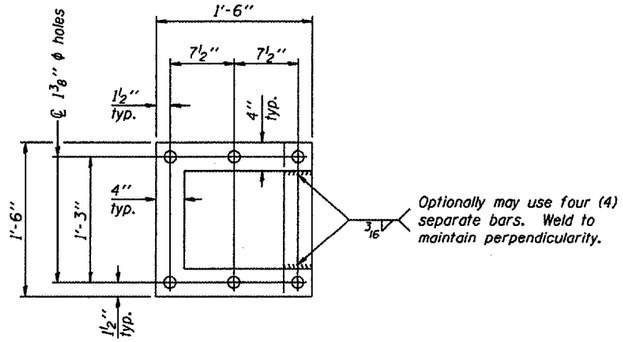
SADDLE SHIM DETAIL

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

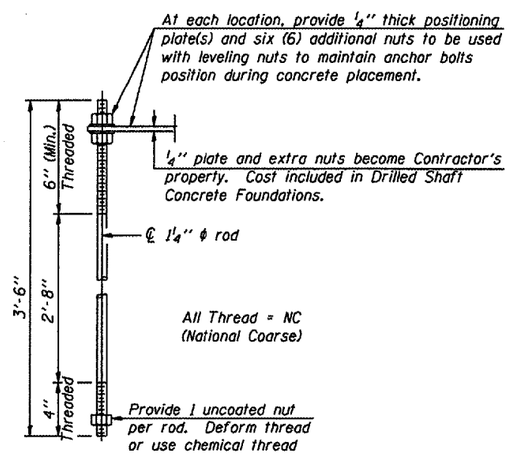
Truss Chord Nominal Dia.	a
5"	3/4"
5 1/2"	13/16"
6"	7/8"
6 1/2"	15/16"
7"	1"



ANCHOR ROD DETAIL
Spread Footing Foundation

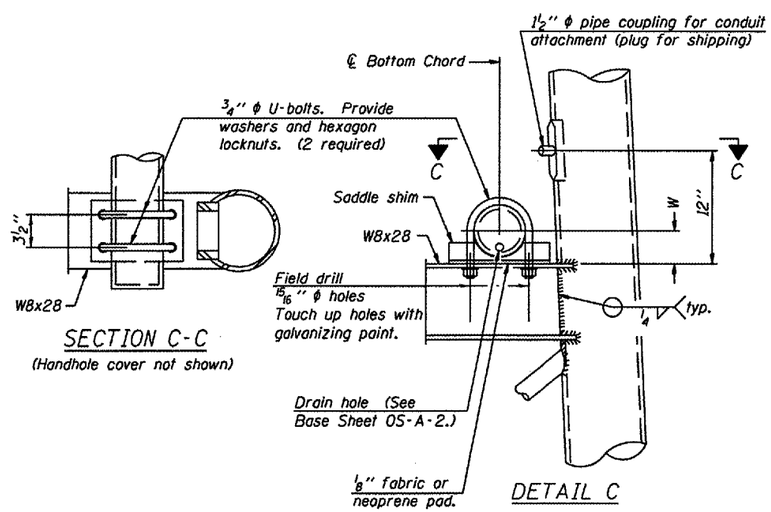


POSITIONING PLATE(S)



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.



SECTION C-C
(Handhole cover not shown)

DETAIL C

10" ℄ PIPE SUPPORT FRAME DETAILS

NUMBER	REVISION	DATE

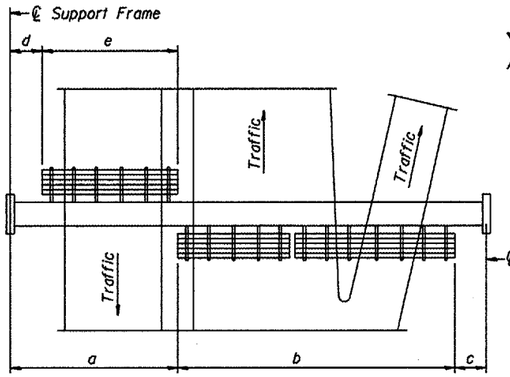
DESIGNED -
CHECKED -
DRAWN -
CHECKED -

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

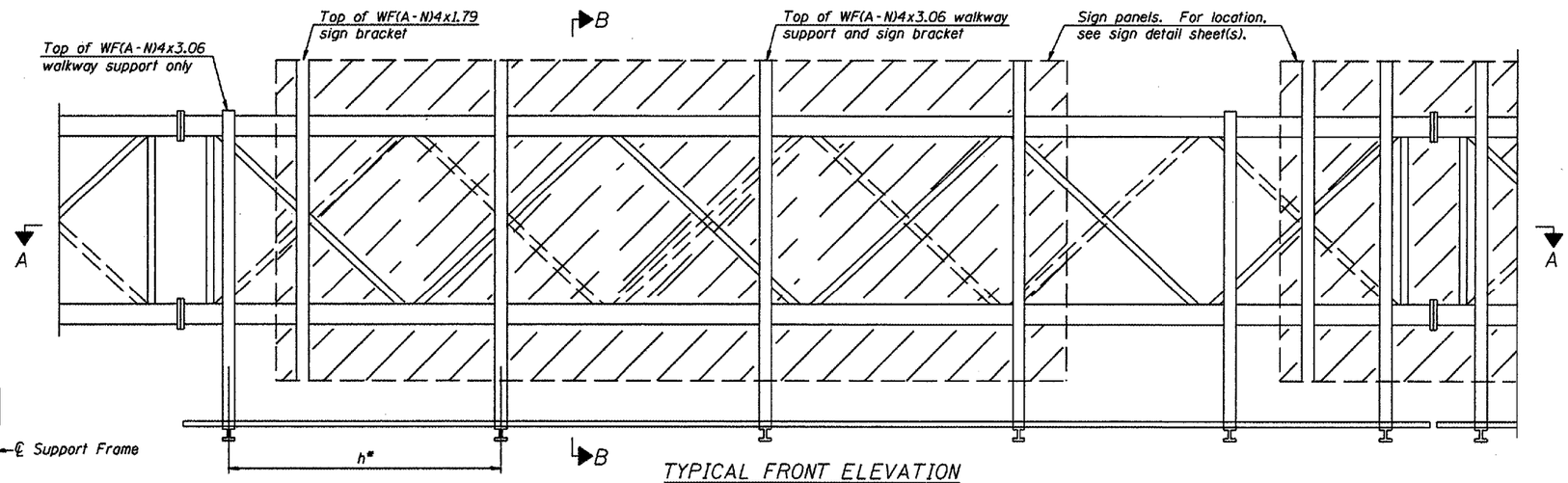
OS-A-6A 1-7-05

OVERHEAD SIGN STRUCTURES
SUPPORT FRAME DETAILS ALUMINUM TRUSS

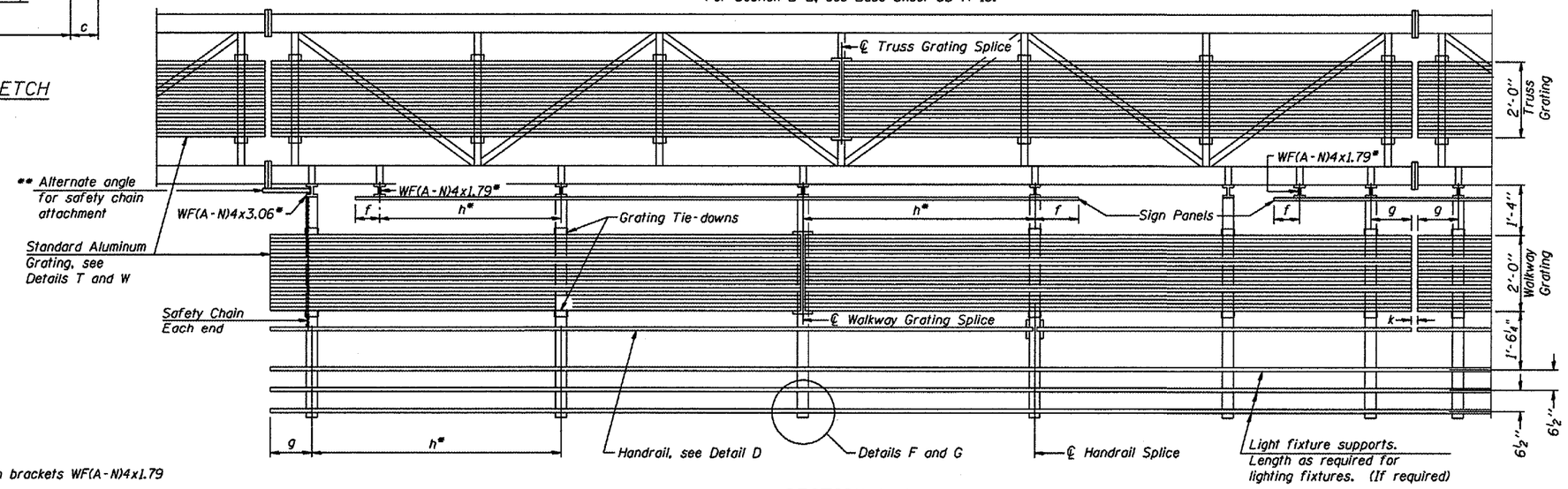
District 3
Truss Repair & Replacement



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.



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

BRACKET TABLE

WF(A-N)4x1.79 or 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

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 ℄ 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, 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 Details D, F, G and P and Handrail Splice Details, see Base Sheet OS-A-11.

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, handrail and light support splices placed as needed.

Structure Number	Station	a	b	c	d	e	Walkway Grating and Handrail Lengths
3S057I055L000.9	35 + 94 SB	N/A	N/A	N/A	N/A	N/A	73' - 2" *
3S057I074L134.8	683 + 00 WB	N/A	N/A	N/A	N/A	N/A	51' - 6" *
3S057I074L135.7	730 + 91 WB	N/A	N/A	N/A	N/A	N/A	77' - 10" *
3S057I074R133.9	637 + 50 EB	N/A	N/A	N/A	N/A	N/A	68' - 6" *

* TRUSS GRATING LENGTH

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".

DESIGNED	-
CHECKED	-
DRAWN	-
CHECKED	-

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

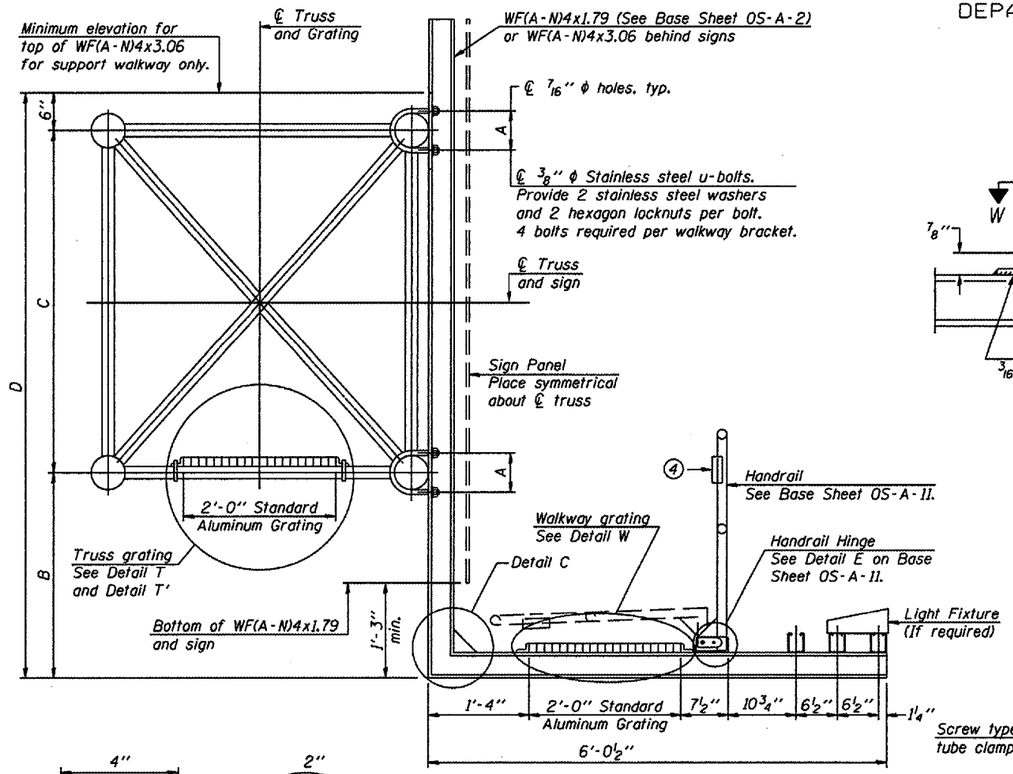
NUMBER	REVISION	DATE

OS-A-9 1-7-05

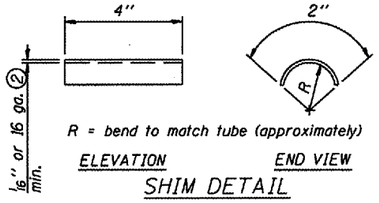
OVERHEAD SIGN STRUCTURES
ALUMINUM WALKWAY DETAILS

District 3
Truss Repair & Replacement

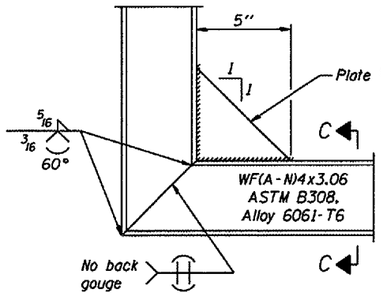
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



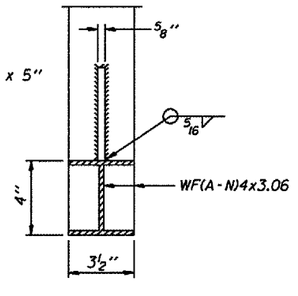
SECTION B-B



SHIM DETAIL

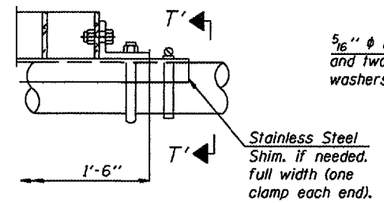


DETAIL C
(See Detail P, Base Sheet OS-A-11.)

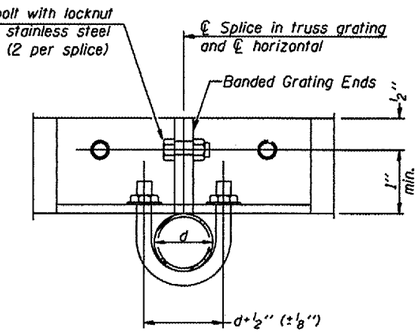


SECTION C-C

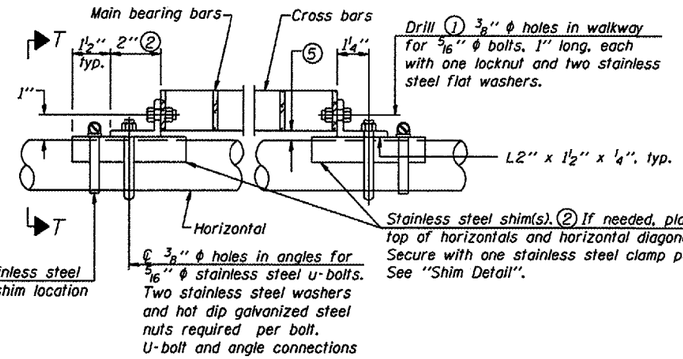
DETAIL W
(Walkway grating)



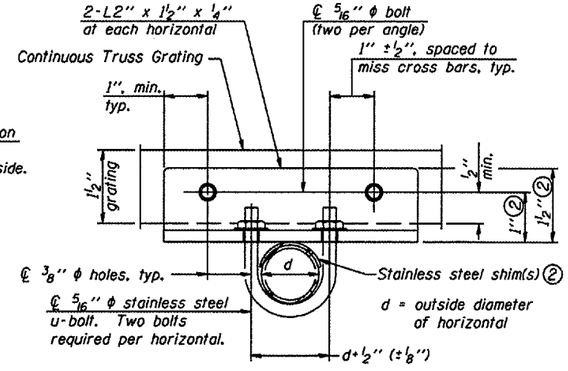
DETAIL T'
(Truss grating splice)
Details not shown same as Detail T.
Alternate materials may be used subject to the Engineer's review and approval.



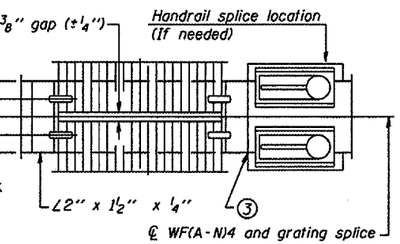
SECTION T'-T'



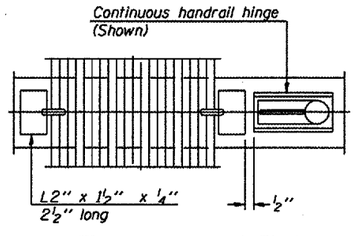
DETAIL T
(Continuous Truss grating)



SECTION T-T



(AT WALKWAY GRATING SPLICE)



(CONTINUOUS WALKWAY GRATING)

SECTION W-W

SPECIFICATIONS FOR STANDARD ALUMINUM GRATING

Main Bearing Bars shall be 3/16" x 1½" on 1 3/16" centers and conform to ASTM B221 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 "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 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	B	C	D

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 OS-A-11.)

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

⑤ Tube to grating gap may vary from 0 to ½", max. to align walkway, allow for camber, etc.

EXISTING WALKWAY AND WALKWAY SUPPORT BRACKETS TO BE REUSED.

DESIGNED -	
CHECKED -	
DRAWN -	
CHECKED -	

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

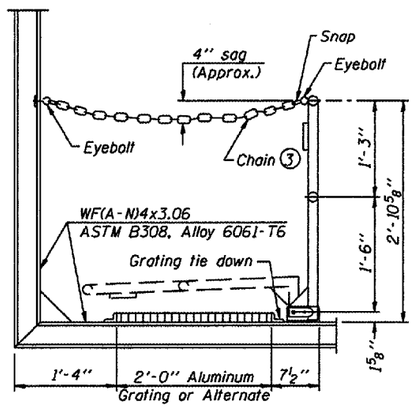
NUMBER	REVISION	DATE

OS-A-10 1-7-05

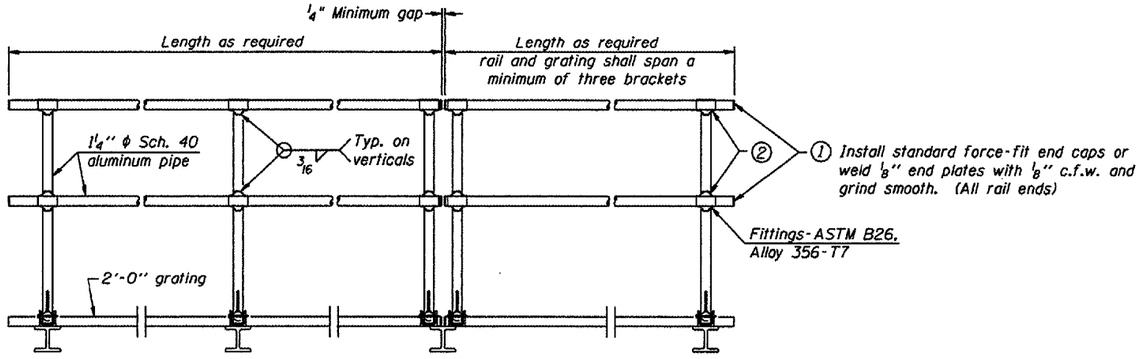
OVERHEAD SIGN STRUCTURES
ALUMINUM WALKWAY DETAILS

District 3
Truss Repair & Replacement

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



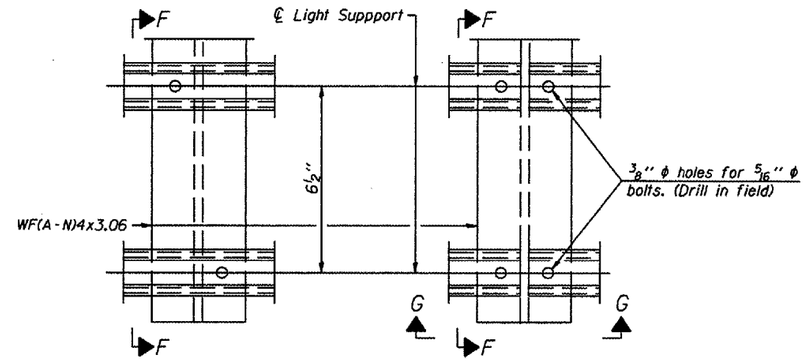
SIDE ELEVATION
(Showing safety chain w/o sign)



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 7/16" ϕ hole in fitting for 3/8" ϕ bolt. Field drill 7/16" ϕ hole in horizontal rail member. Provide locknut and two stainless steel washers for bolt. (Use 5/16" eyebolts in 7/16" ϕ holes on top rail at ends only.)

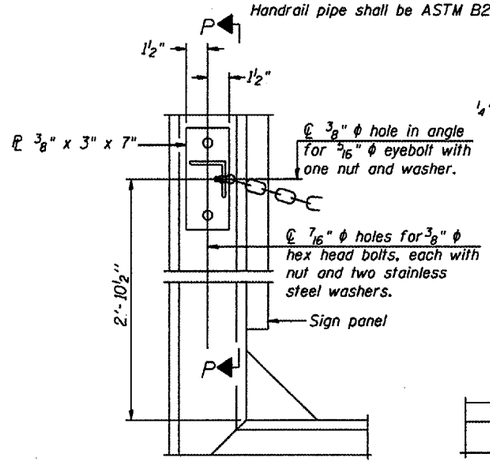


DETAIL F

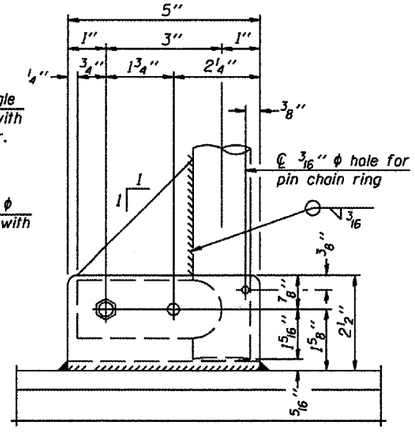
DETAIL G

HANDRAIL DETAILS

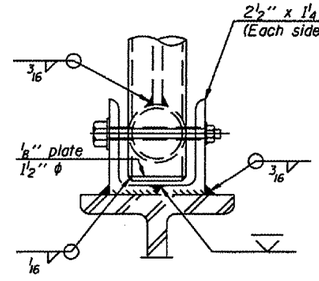
Handrail pipe shall be ASTM B241, Alloy 6063-T6 or Alloy 6061-T6.



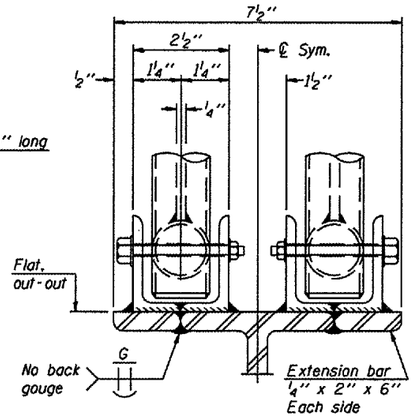
ALTERNATE SAFETY CHAIN ATTACHMENT
(With Sign Present)
Items not shown same as "Side Elevation" of "Handrail Details"



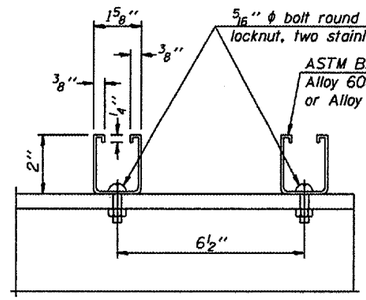
SIDE ELEVATION



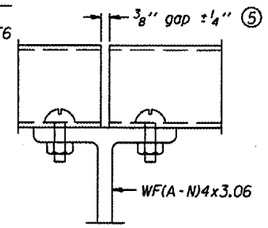
FRONT ELEVATION
See "Elevation" at right for dimensions.



ELEVATION AT HANDRAIL JOINT (4)



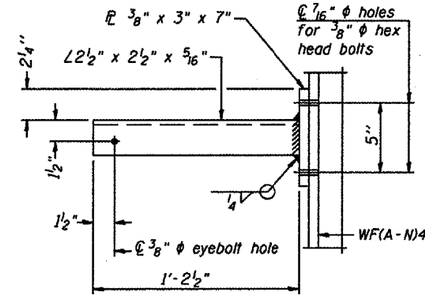
SECTION F-F



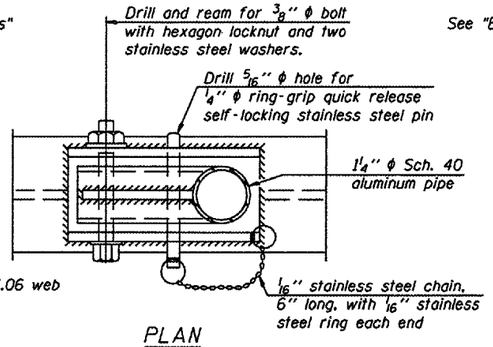
SECTION G-G

LIGHTING FIXTURE MOUNTS (IF REQUIRED)

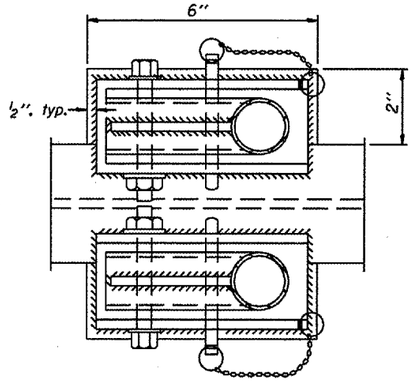
(5) Field cut ends of light support channels shall be free of burrs or hazardous projections and coated with zinc-rich primer or equivalent.



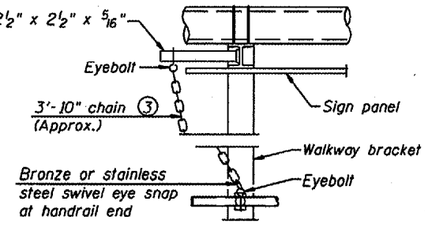
SECTION P-P



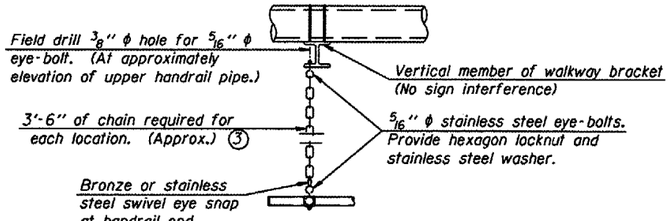
PLAN
DETAIL E HANDRAIL HINGE



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.

(3) 3/16" galvanized steel chain, approximately 12 links per foot. Chain to be hot dip galvanized after manufacture and suitable for prolonged exterior exposure. Alternate materials may be substituted with the Engineer's approval.

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

OVERHEAD SIGN STRUCTURES
ALUMINUM HANDRAIL DETAILS

District 3
Truss Repair & Replacement

DESIGNED	-
CHECKED	-
DRAWN	-
CHECKED	-

- 20

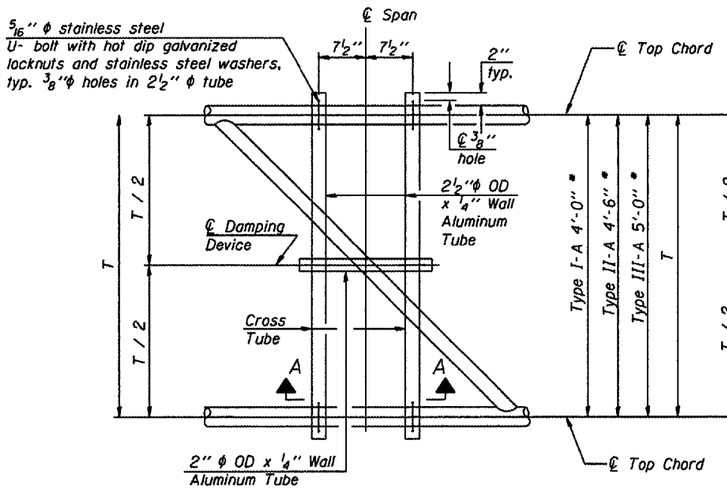
EXAMINED
ENGINEER OF BRIDGE DESIGN

PASSED
ENGINEER OF BRIDGES AND STRUCTURES

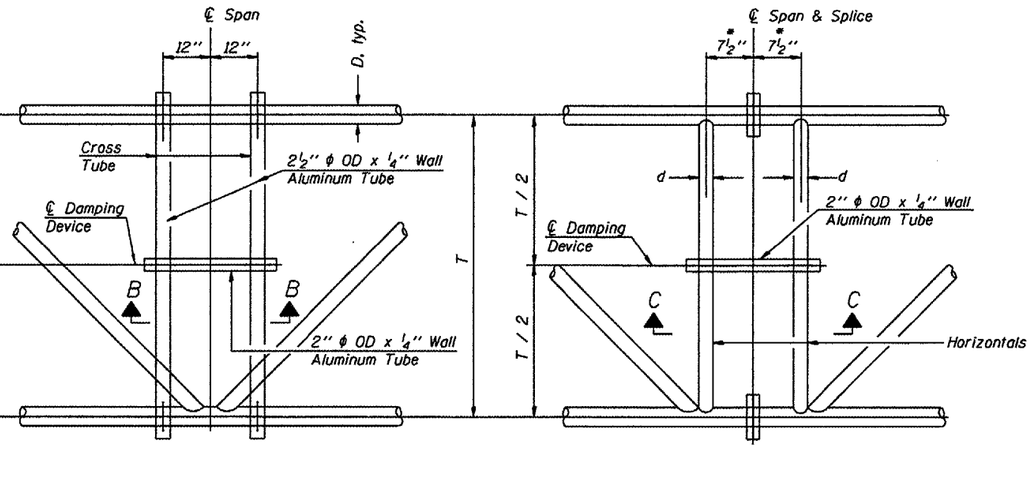
NUMBER	REVISION	DATE

OS-A-11 1-7-05

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

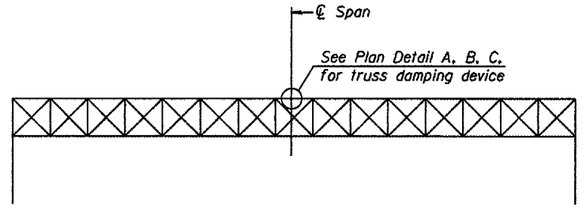


PLAN DETAIL "A"
℄ Span between Panel Points



PLAN DETAIL "B"
℄ Span at Panel Point

PLAN DETAIL "C"
℄ Span at ℄ Chord Splice

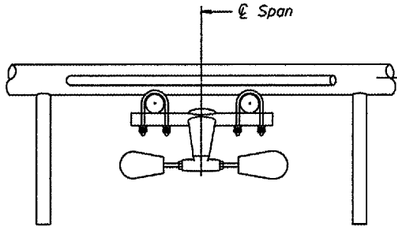


ELEVATION
Aluminum Overhead Sign Truss

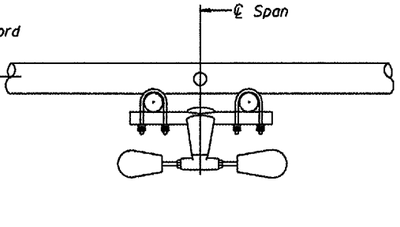
NOTES

Damper: One damper per truss. (31 lbs. Stockbridge-Type Aluminum) Cost included in Overhead Sign Structure...

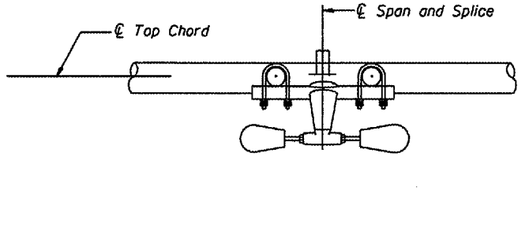
Materials: Aluminum tubes shall be ASTM B221 alloy 6061 temper T6. Cost included in Overhead Sign Structure...



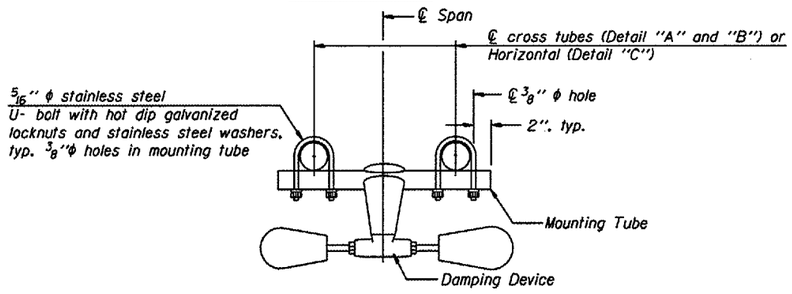
SECTION A-A



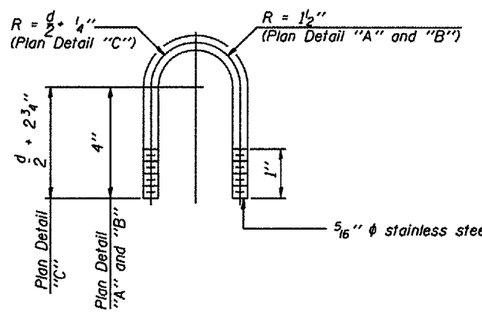
SECTION B-B



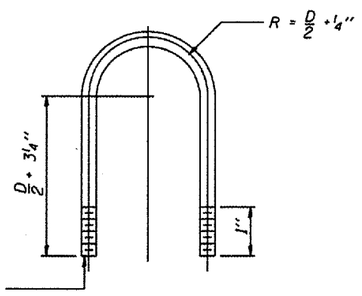
SECTION C-C



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")

This sheet applies to the following structures:
Structure No. 3S057I074L134.8

DESIGNED -	
CHECKED -	
DRAWN -	
CHECKED -	

- 20

EXAMINED
ENGINEER OF BRIDGE DESIGN

PASSED
ENGINEER OF BRIDGES AND STRUCTURES

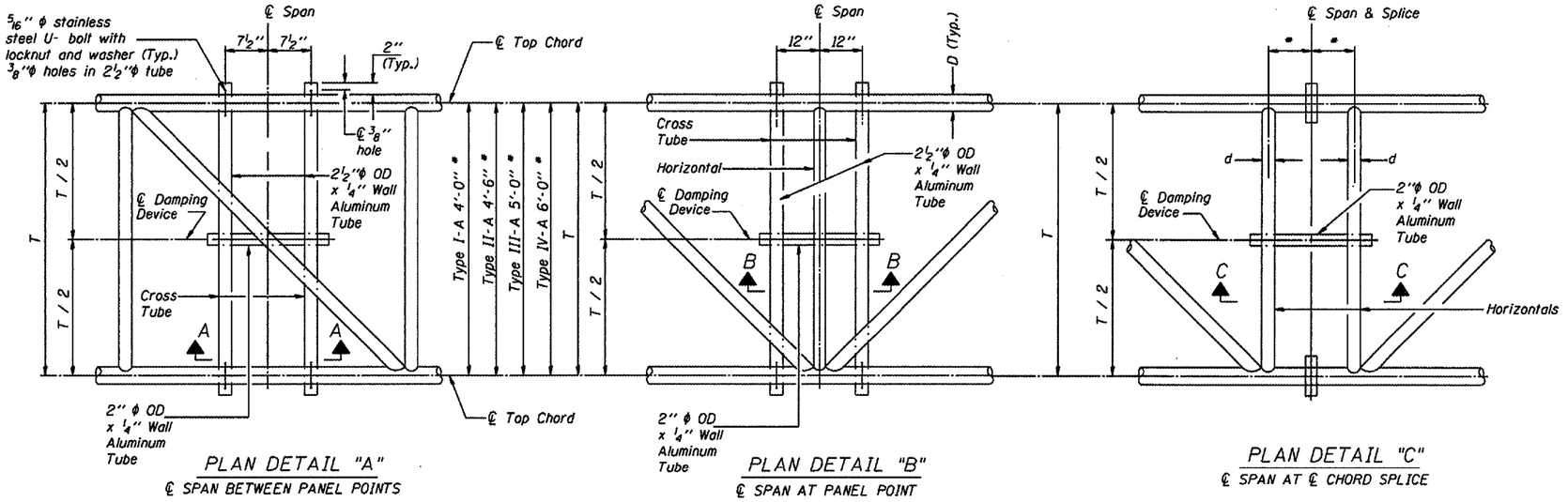
OS-A-D 1-7-05

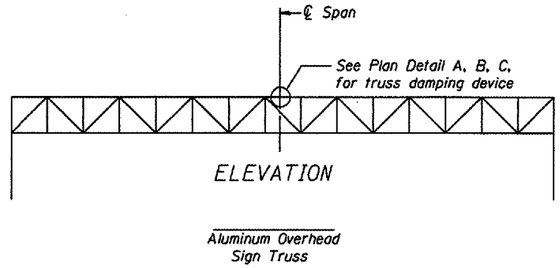
OVERHEAD SIGN STRUCTURE
DAMPING DEVICE

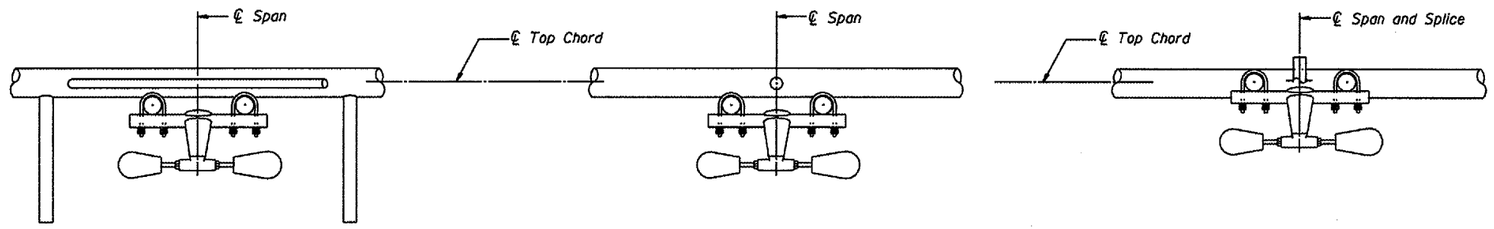
District 3
Truss Repair & Replacement

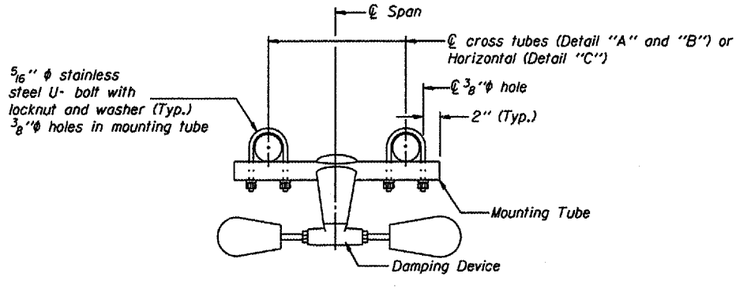
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

* Verify before drilling holes in mounting tube and cross tubes.



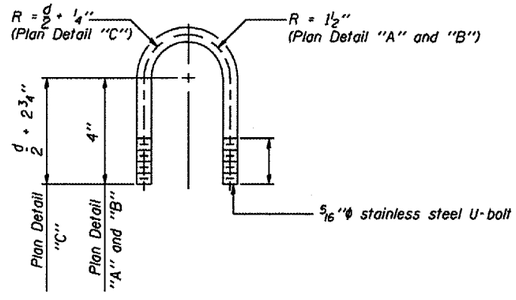






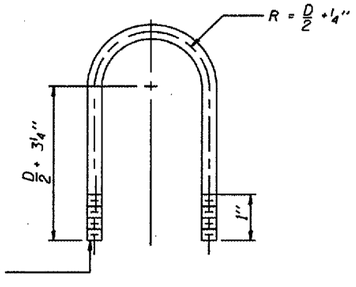
TRUSS DAMPING

(Typical)



DAMPING DEVICE MOUNTING TUBE U-BOLT DETAIL

(Typical)



TOP CHORD TO CROSS TUBE U-BOLT DETAIL

(Typical - Detail "A" and "B")

This sheet applies to the following structures:

Structure No. 3S057I055L000.9
Structure No. 3S057I074L135.7
Structure No. 3S057I074R133.9

GENERAL NOTES

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

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

Fasteners: U-bolts shall be produced from ASTM A276 Type 304, 304L, 316 or 316L, Condition A, cold finish, or an equivalent material acceptable to the Engineer. All nuts shall be stainless steel conforming to ASTM A194, Grade 8 (AISI Type 304) or Grade 8F (AISI Type 303). The nuts shall be "locknuts" with nylon or steel inserts and semifinished hexagonal heads equivalent to the finished hex series of the American National Standards. All washers shall be stainless steel conforming to ASTM A240, Type 302 or 304.

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

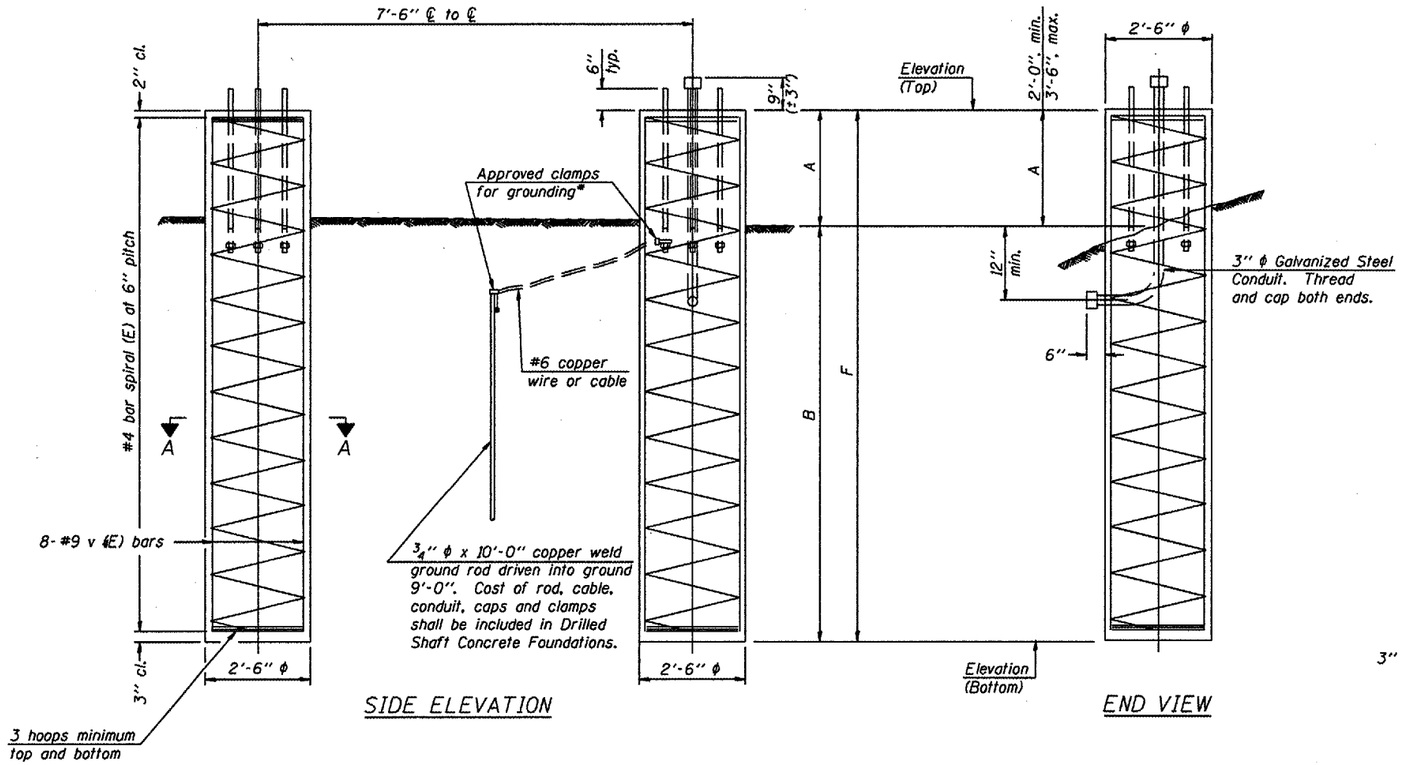
TRUSS DAMPER RETROFIT 07-01-2001

OVERHEAD SIGN STRUCTURE
DAMPING DEVICE

District 3
Truss Repair & Replacement

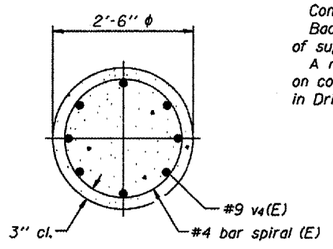
For anchor rod size and placement, see Support Frame Detail Sheet.

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

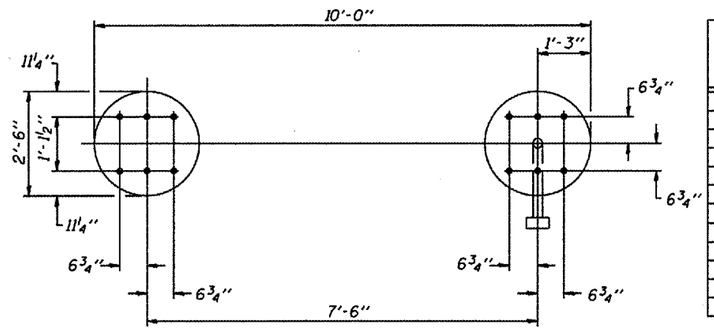


SIDE ELEVATION

END VIEW



SECTION A-A



PLAN

BAR LIST - EACH FOUNDATION

Bar	Number	Size	Length	Shape
v4(E)	16	#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 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	
3S0571074L134.8	683 + 00 WB	N/A		3' - 0"	13' - 6"	16' - 6"	N/A		3' - 0"	13' - 6"	16' - 6"	12.00

DESIGNED -
CHECKED -
DRAWN -
CHECKED -

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

NUMBER	REVISION	DATE

OS4-F2 1-7-05

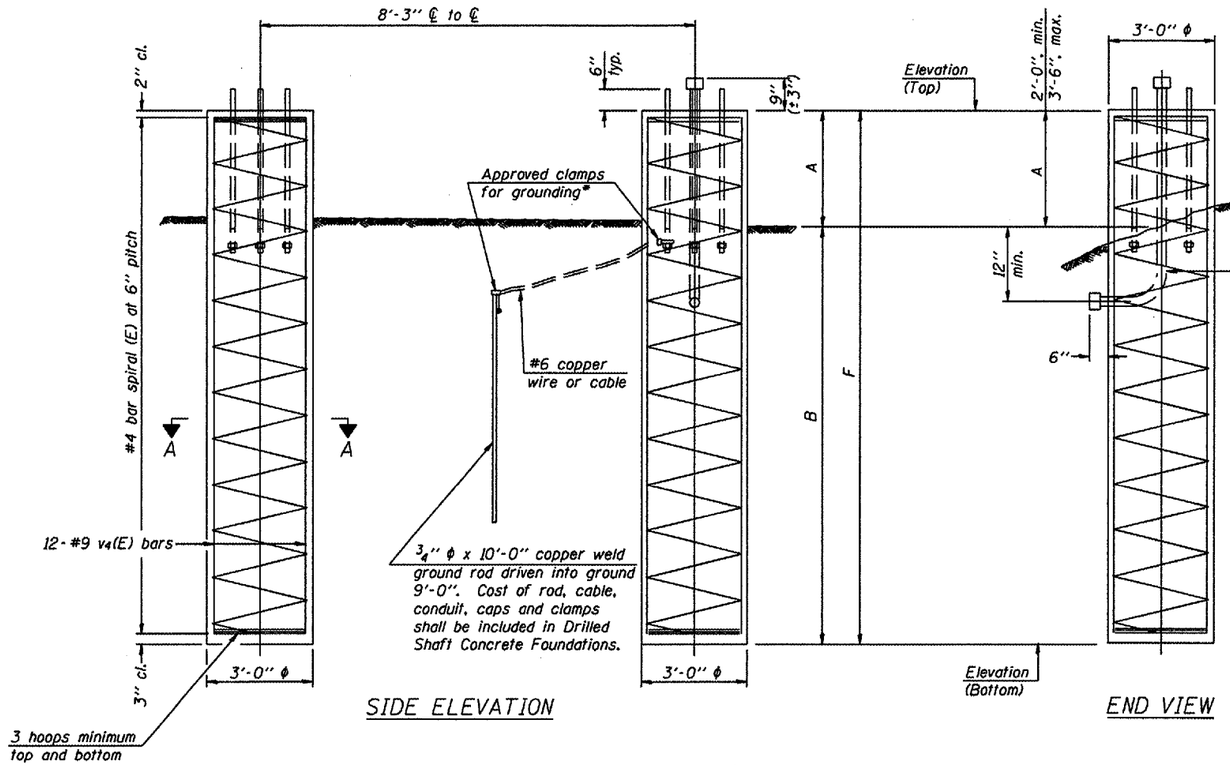
DETAILS FOR 8" ϕ SUPPORT FRAME
TYPE I-A TRUSS

OVERHEAD SIGN STRUCTURES
DRILLED SHAFT DETAILS

District 3
Truss Repair & Replacement

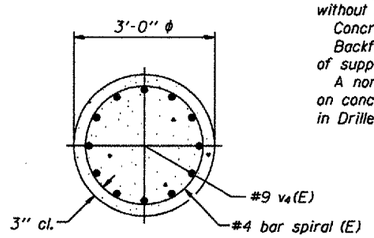
For anchor rod size and placement, see Support Frame Detail Sheet.

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

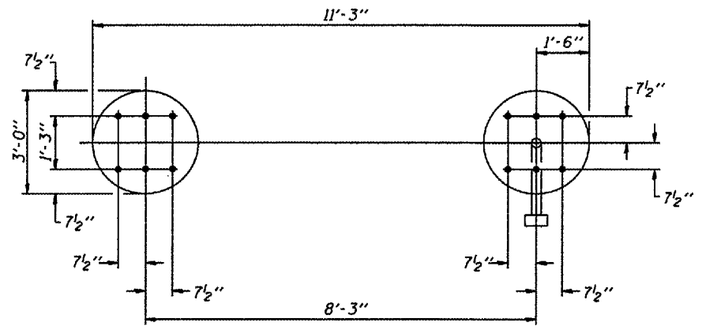


SIDE ELEVATION

END VIEW



SECTION A-A



PLAN

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 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	
3S0571055L000.9	35 + 94 SB	N/A		3' - 0"	17' - 6"	20' - 6"	N/A		3' - 0"	17' - 6"	20' - 6"	21.60
3S0571074L135.7	730 + 91 WB	N/A		3' - 0"	17' - 6"	20' - 6"	N/A		3' - 0"	17' - 6"	20' - 6"	21.60
3S0571074R133.9	637 + 50 EB	N/A		3' - 0"	17' - 6"	20' - 6"	N/A		3' - 0"	17' - 6"	20' - 6"	21.60

DESIGNED	-
CHECKED	-
DRAWN	-
CHECKED	-

- 20
EXAMINED
ENGINEER OF BRIDGE DESIGN
PASSED
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 3
Truss Repair & Replacement

OS4-F3 1-7-05

District 4
Schedule of Locations for Truss Repair & Replacement

Location No.:	4-01	State I.D. No.:	4C090U024R001.0				
County:	Tazewell	Route:	US 24	M.P.:	1	Direction:	EB

Description of Work	Unit	Quantity
REMOVE OVERHEAD SIGN STRUCTURE-CANTILEVER	EACH	1.00
OVERHEAD SIGN STRUCTURE CANTILEVER 2CA3-0X5-6	FOOT	29.00
DRILLED SHAFT CONCRETE FOUNDATION	CU YD	6.40
REMOVE CONCRETE FOUNDATION-OVERHEAD	EACH	1.00
REMOVE & REINSTALL SIGN PANEL	SQ FT	140.00
REMOVE & REINSTALL WALKWAY	FOOT	20.00
RELOCATE ELECTRIC SERVICE	EACH	1.00
REPAIR HANDRAIL LOCKING PIN CONNECTION	EACH	4.00
FURNISH & INSTALL SAFETY CHAIN	EACH	2.00

Location No.:	4-02	State I.D. No.:	4C072S006R009.2				
County:	Peoria	Route:	IL 6	M.P.:	9.2	Direction:	EB

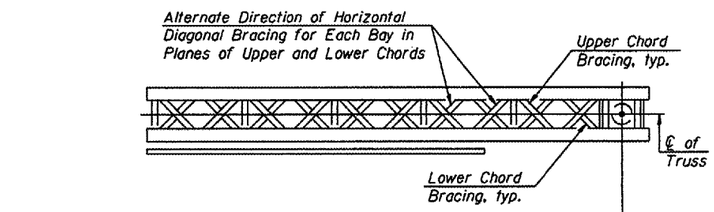
Description of Work	Unit	Quantity
REMOVE OVERHEAD SIGN STRUCTURE-CANTILEVER	EACH	1.00
OVERHEAD SIGN STRUCTURE CANTILEVER 2CA3-0X5-6	FOOT	28.00
DRILLED SHAFT CONCRETE FOUNDATION	CU YD	6.40
REMOVE CONCRETE FOUNDATION-OVERHEAD	EACH	1.00
REMOVE & REINSTALL SIGN PANEL	SQ FT	159.50
REMOVE & REINSTALL WALKWAY	FOOT	16.00
RELOCATE ELECTRIC SERVICE	EACH	1.00
REPAIR HANDRAIL LOCKING PIN CONNECTION	EACH	4.00
FURNISH & INSTALL SAFETY CHAIN	EACH	2.00

Location No.:	4-03	State I.D. No.:	4C090U024L000.9				
County:	Tazewell	Route:	US 24	M.P.:	0.9	Direction:	WB

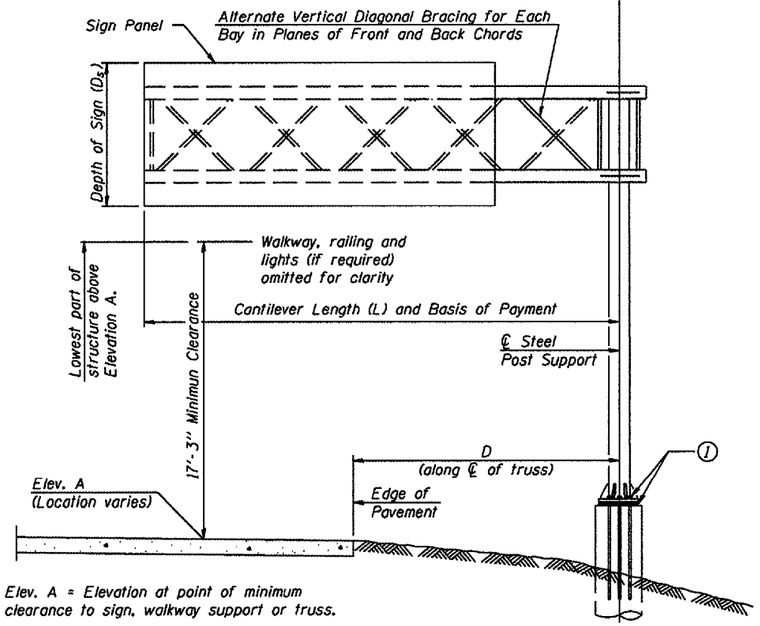
Description of Work	Unit	Quantity
REMOVE OVERHEAD SIGN STRUCTURE-CANTILEVER	EACH	1.00
OVERHEAD SIGN STRUCTURE CANTILEVER 2CA3-0X5-6	FOOT	30.00
DRILLED SHAFT CONCRETE FOUNDATION	CU YD	8.70
REMOVE CONCRETE FOUNDATION OVERHEAD	EACH	1.00
REMOVE & REINSTALL SIGN PANEL	SQ FT	232.50
REMOVE & REINSTALL WALKWAY	FOOT	22.00
RELOCATE ELECTRIC SERVICE	EACH	1.00
REPAIR HANDRAIL LOCKING PIN CONNECTION	EACH	4.00
FURNISH & INSTALL SAFETY CHAIN	EACH	2.00
REPLACE / TIGHTEN CLIP PER SIGN	EACH	1.00

Location No.:	4-04	State I.D. No.:	4C102I074L114.8				
County:	Woodford	Route:	I-74	M.P.:	114.8	Direction:	WB

Description of Work	Unit	Quantity
REMOVE OVERHEAD SIGN STRUCTURE - CANTILEVER	EACH	1.00
OVERHEAD SIGN STRUCTURE-CANTILEVER,TYPE II-C-A (36" X 5'-6")	FOOT	30.00
DRILLED SHAFT CONCRETE FOUNDATIONS	CU YD	8.70
REMOVE CONCRETE FOUNDATION - OVERHEAD	EACH	1.00
REMOVE & REINSTALL SIGN PANEL	SQ FT	78.00
REMOVE & REINSTALL WALKWAY	FOOT	20.00
REPAIR HANDRAIL LOCKING PIN CONNECTION	EACH	4.00
FURNISH & INSTALL SAFETY CHAIN	EACH	2.00
There is no sign lighting on this structure.		



TYPICAL PLAN
(Walkway not shown)



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

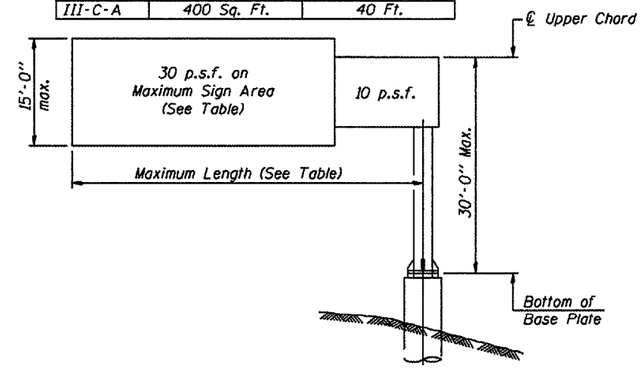
TYPICAL ELEVATION
Looking in Direction of Traffic

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.

22'-11 3/4"

Structure Number	Station	Design Truss Type	Cantilever Length (L)	Elev. A	Dim. D	D_s	Total Sign Area
4C090U024R001.0	277 + 25	II	29' - 0"	100.56	14' - 0"	9' - 0"	140.00
4C072S006R009.2	734 + 00	II	28' - 0"	100.00	16' - 0"	11' - 0"	159.50
4C090U024L000.9	274 + 50	II	30' - 0"	100.00	14' - 0"	15' - 0"	232.50
4C102I074L114.8	3 + 50 WB	II	30' - 0"	807.53	20' - 0"	6' - 6"	78.00

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.

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 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.

* 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.

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.	

DESIGNED -
CHECKED -
DRAWN -
CHECKED -

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

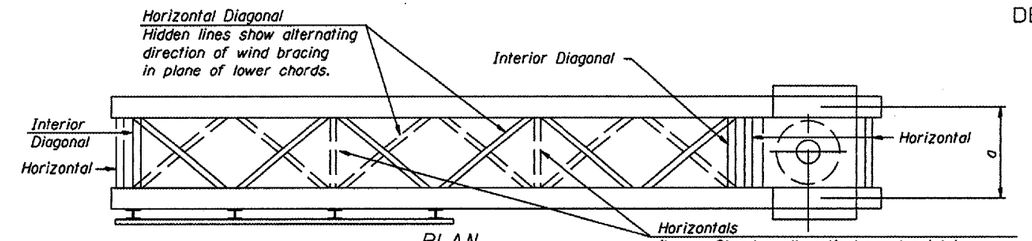
NUMBER	REVISION	DATE

OSC-A-1 1-7-05

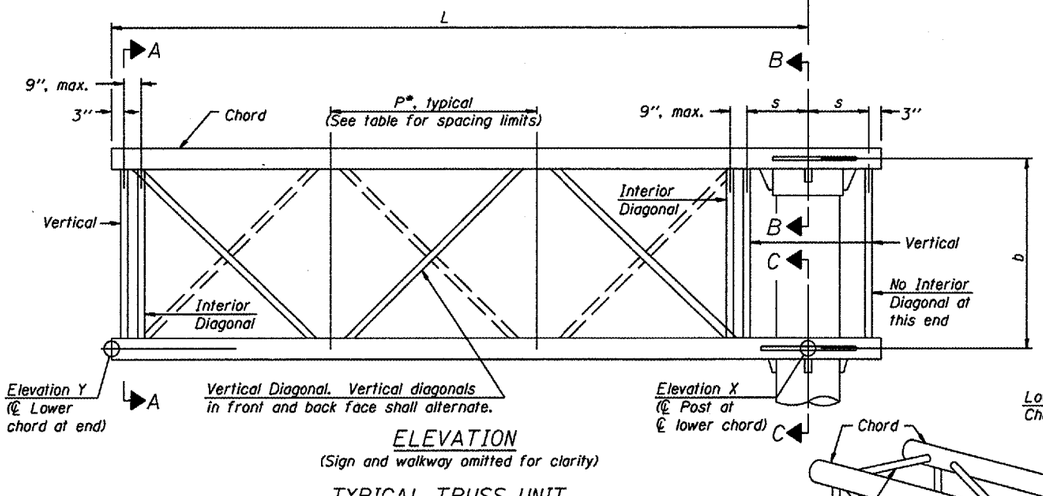
CANTILEVER SIGN STRUCTURES
GENERAL PLAN & ELEVATION
ALUMINUM TRUSS & STEEL POST

District 4
Truss Repair & Replacement

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

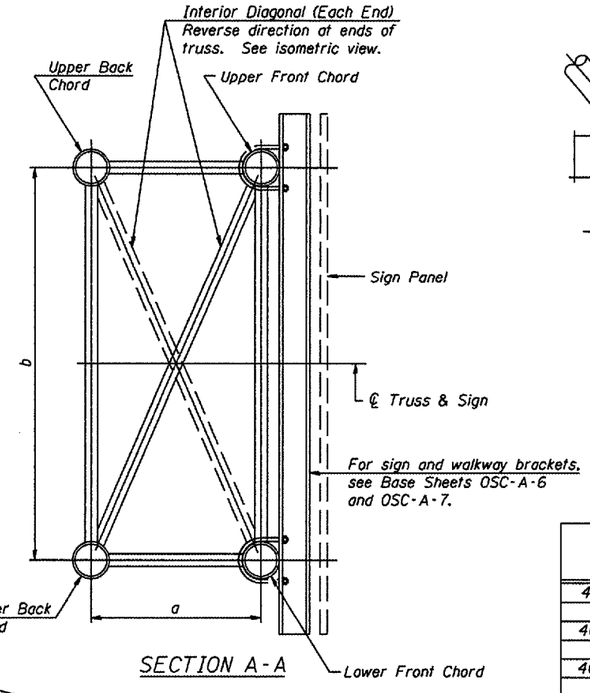


PLAN
(Walkway not shown)

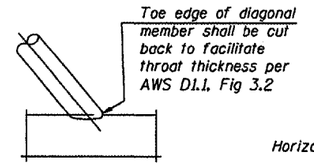


ELEVATION
(Sign and walkway omitted for clarity)

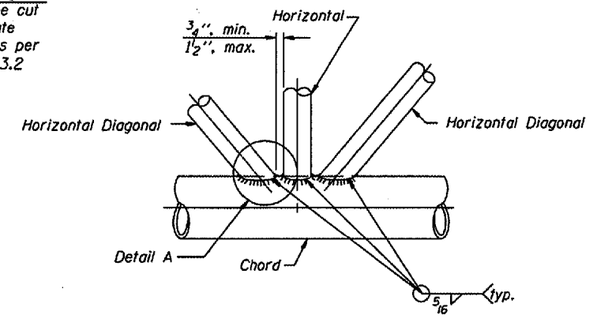
TYPICAL TRUSS UNIT
For Section B-B and Section C-C, see Base Sheet OSC-A-3.



SECTION A-A



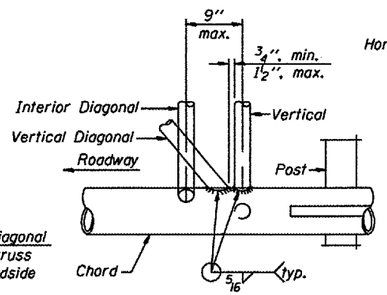
DETAIL A



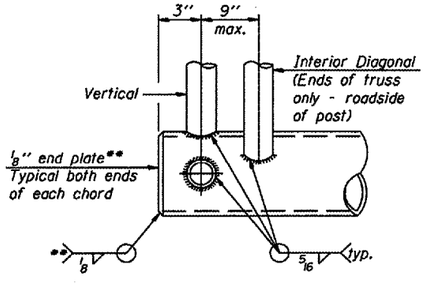
TRUSS INTERIOR JOINT DETAIL

Structure Number	Station	Truss Type	Design Length (L)	Number of Panels Per Unit	Panel Length (P)*
4C090U024R001.0	277 + 25	II	29' - 0"	7	3' - 10 1/2"
4C072S006R009.2	734 + 00	II	28' - 0"	7	3' - 8 1/2"
4C090U024L000.9	274 + 50	II	30' - 0"	7	4' - 0"
4C102I074L114.8	3 + 50 WB	II	30' - 0"	7	4' - 0"

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



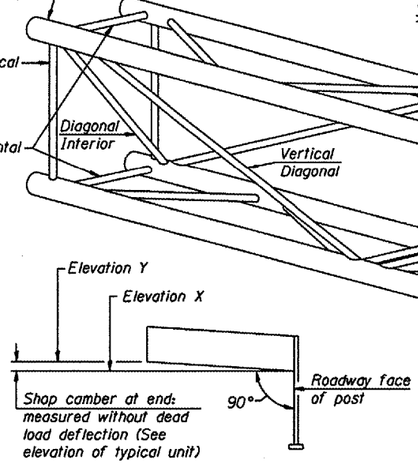
POST END JOIN DETAIL



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

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"



CAMBER DIAGRAM
(For Fabrication Only)

ISOMETRIC VIEW
TYPICAL TRUSS UNIT
ASTM B221 Alloy 6061 Temper T6

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, Horizontal, and Interior Diagonals O.D.	Verticals; Horizontals; Vertical, Horizontal, and Interior Diagonals 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 = (L - s - 3") / # Panels

NUMBER	REVISION	DATE

CANTILEVER SIGN STRUCTURES
TRUSS DETAILS
ALUMINUM TRUSS & STEEL POST

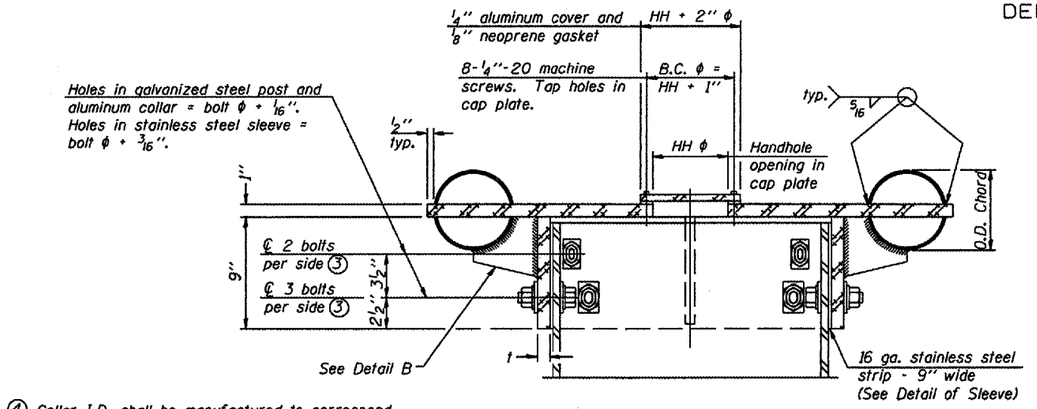
District 4
Truss Repair & Replacement

DESIGNED	-
CHECKED	-
DRAWN	-
CHECKED	-

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

OSC-A-2 1-7-05

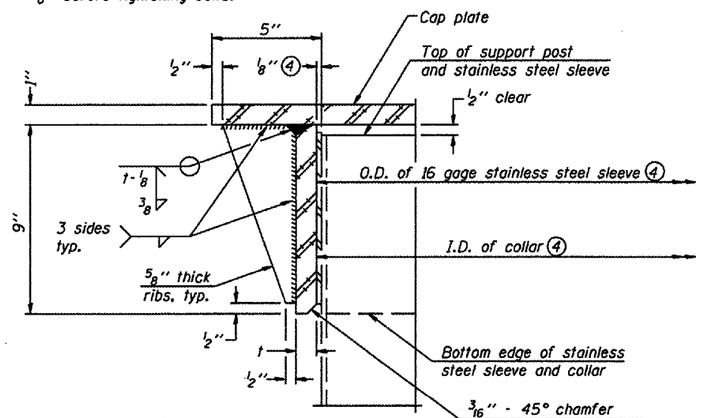
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



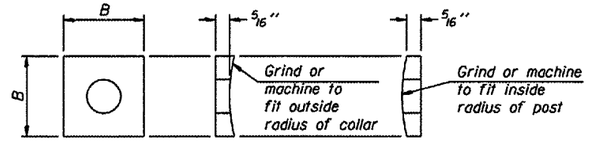
SECTION B-B

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

(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.

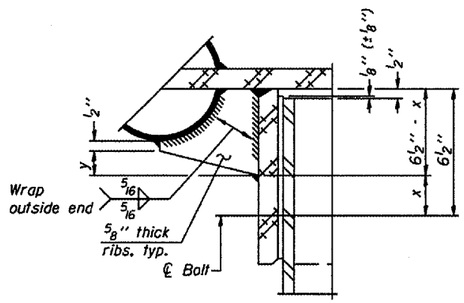


DETAIL A
(Two locations)

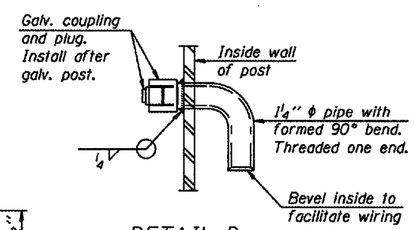


CONTOURED WASHERS

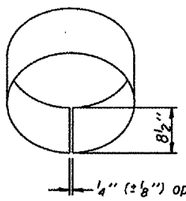
Bolt Size	Contoured Washers	
	Hole Dia.	B
7/8"	1"	2 1/2"
1"	1 1/8"	3"
1 1/4"	1 3/8"	3 1/4"



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

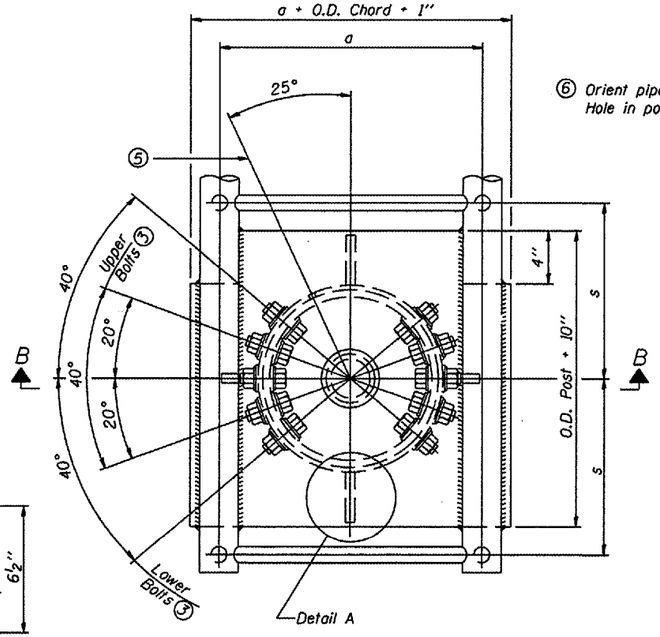


DETAIL D



DETAIL OF STAINLESS STEEL SLEEVE

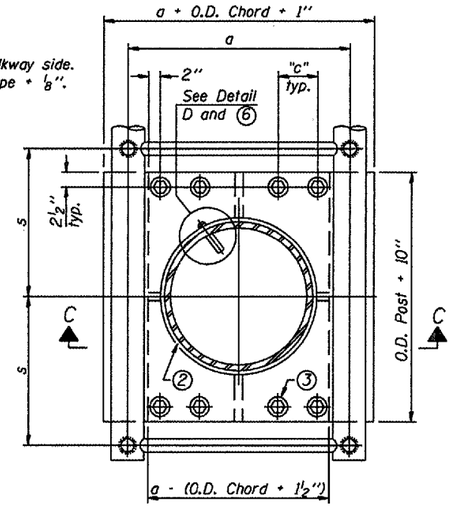
Weld to post after galvanizing.
(Prepare post surface to insure tight, uniform fit and allow welding.)
Welds to be 1 1/2" long at 6" cts. along top edge and at 1/4" opening.



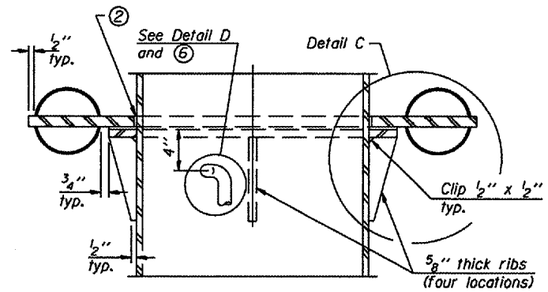
PLAN VIEW - TOP OF COLUMN

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

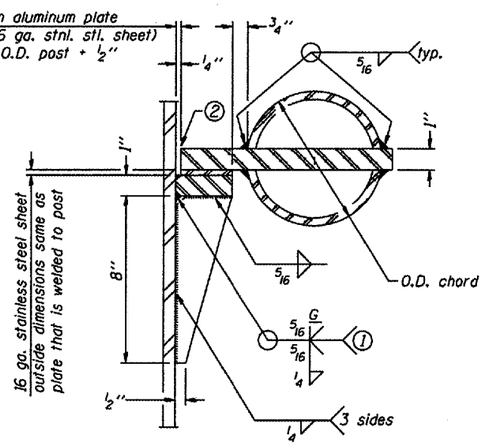
(6) Orient pipe toward walkway side. Hole in post = O.D. pipe + 1/8".



SECTION THRU POST ABOVE LOWER CHORDS



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 Cantilever.

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	-
CHECKED	-
DRAWN	-
CHECKED	-

- 20

EXAMINED

ENGINEER OF BRIDGE DESIGN

PASSED

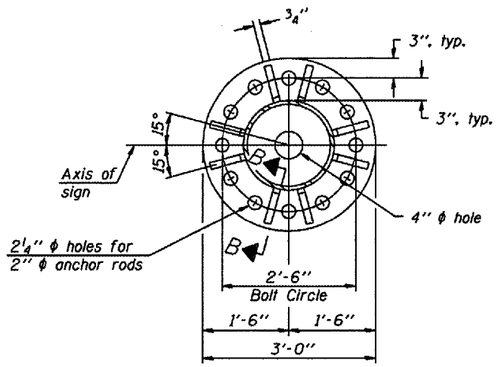
ENGINEER OF BRIDGES AND STRUCTURES

NUMBER	REVISION	DATE

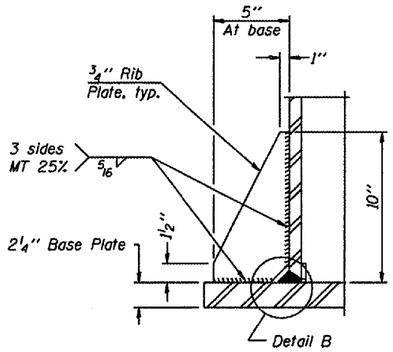
CANTILEVER SIGN STRUCTURES
JUNCTURE DETAILS
ALUMINUM TRUSS & STEEL POST

District 4
Truss Repair & Replacement

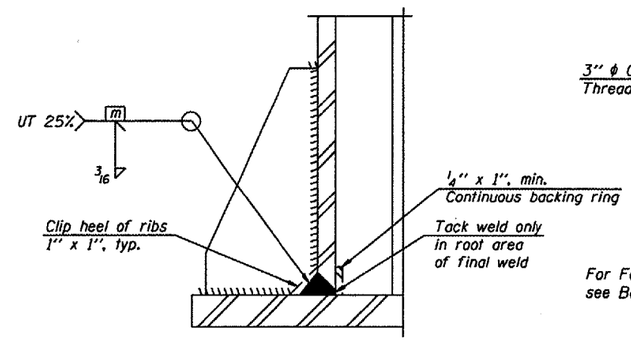
OSC-A-3 1-7-05



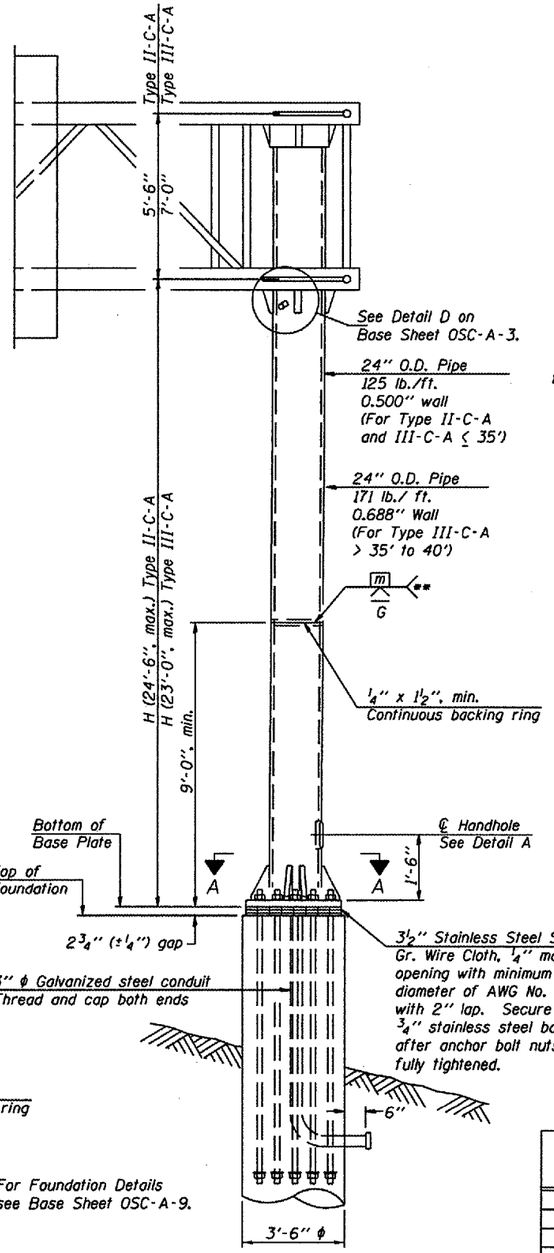
SECTION A-A



SECTION B-B

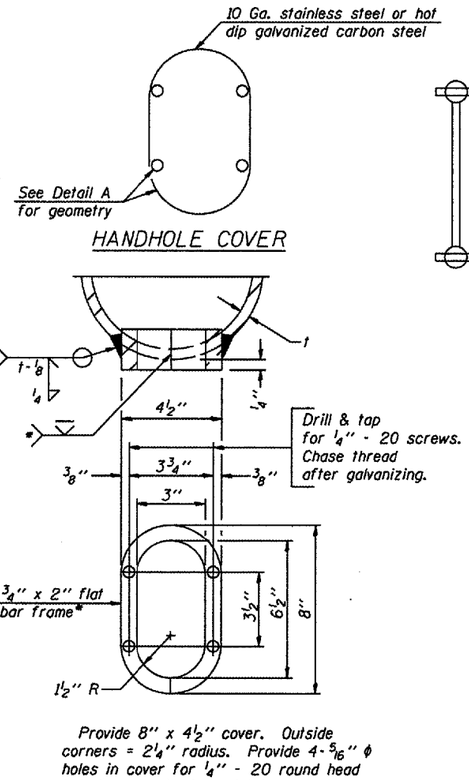


DETAIL B
(Typical rib)



FRONT ELEVATION

For Foundation Details see Base Sheet OSC-A-9.



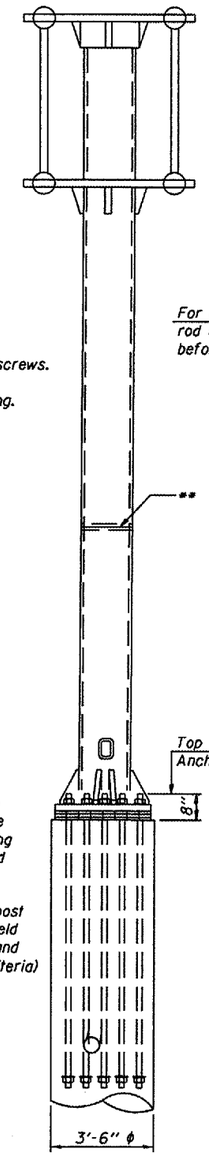
HANDHOLE COVER

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.)

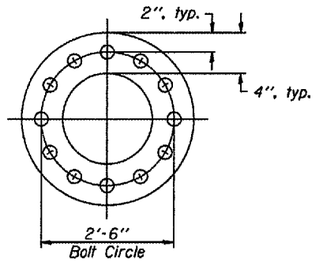
DETAIL A

* 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 500 min or less.

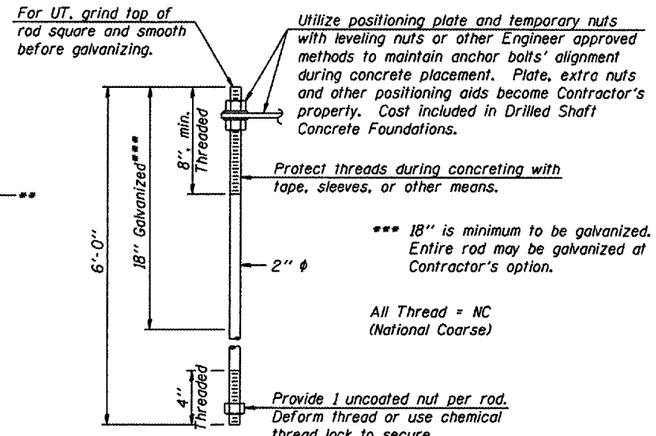
** Butt welded joint in post is only allowed for post heights (H) over 20 ft. in length. If used, weld procedure must be preapproved by Engineer and joint shall receive 100% RT or UT (tension criteria) at Contractor's expense.



SIDE ELEVATION



SUGGESTED POSITIONING PLATE



ANCHOR ROD DETAIL

Anchor rods shall conform to 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.

Structure Number	Station	H
4C090U024R001.0	277 + 25	18' - 4"
4C072S006R009.2	734 + 00	19' - 6"
4C090U024L000.9	274 + 50	23' - 9"
4C102I074L114.8	3 + 50 WB	24' - 4"

NUMBER	REVISION	DATE

DESIGNED	-
CHECKED	-
DRAWN	-
CHECKED	-

- 20

EXAMINED

ENGINEER OF BRIDGE DESIGN

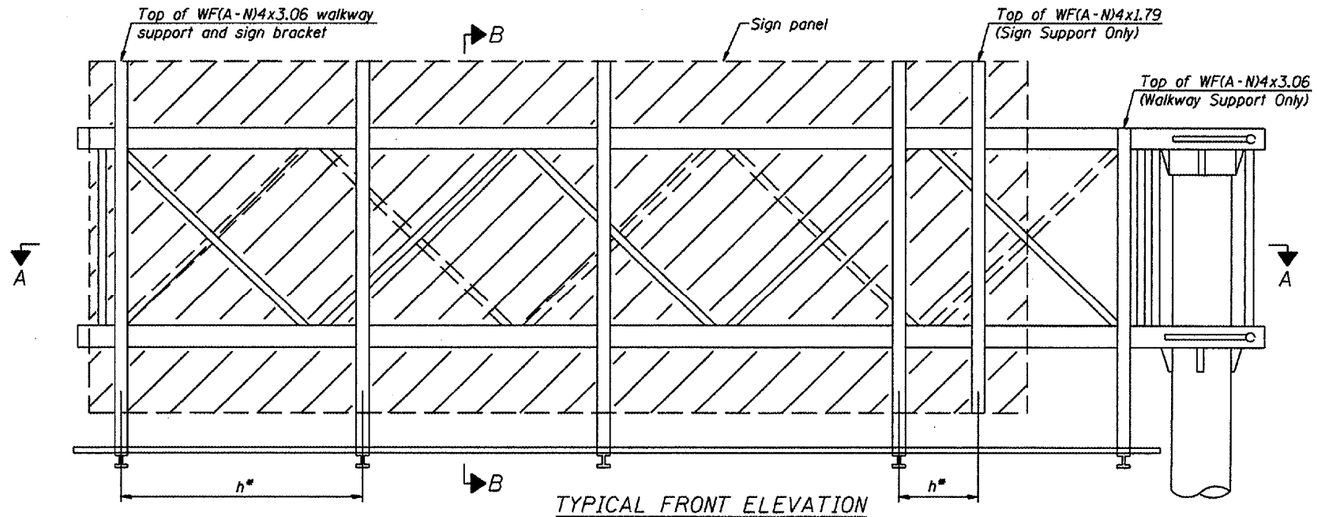
PASSED

ENGINEER OF BRIDGES AND STRUCTURES

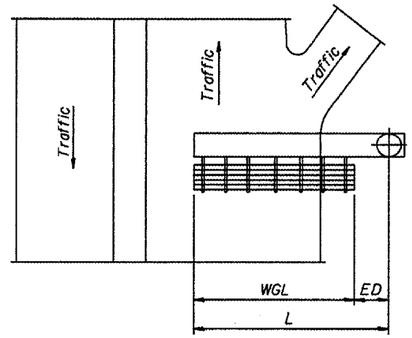
OSC-A-5 1-7-05

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

District 4
Truss Repair & Replacement

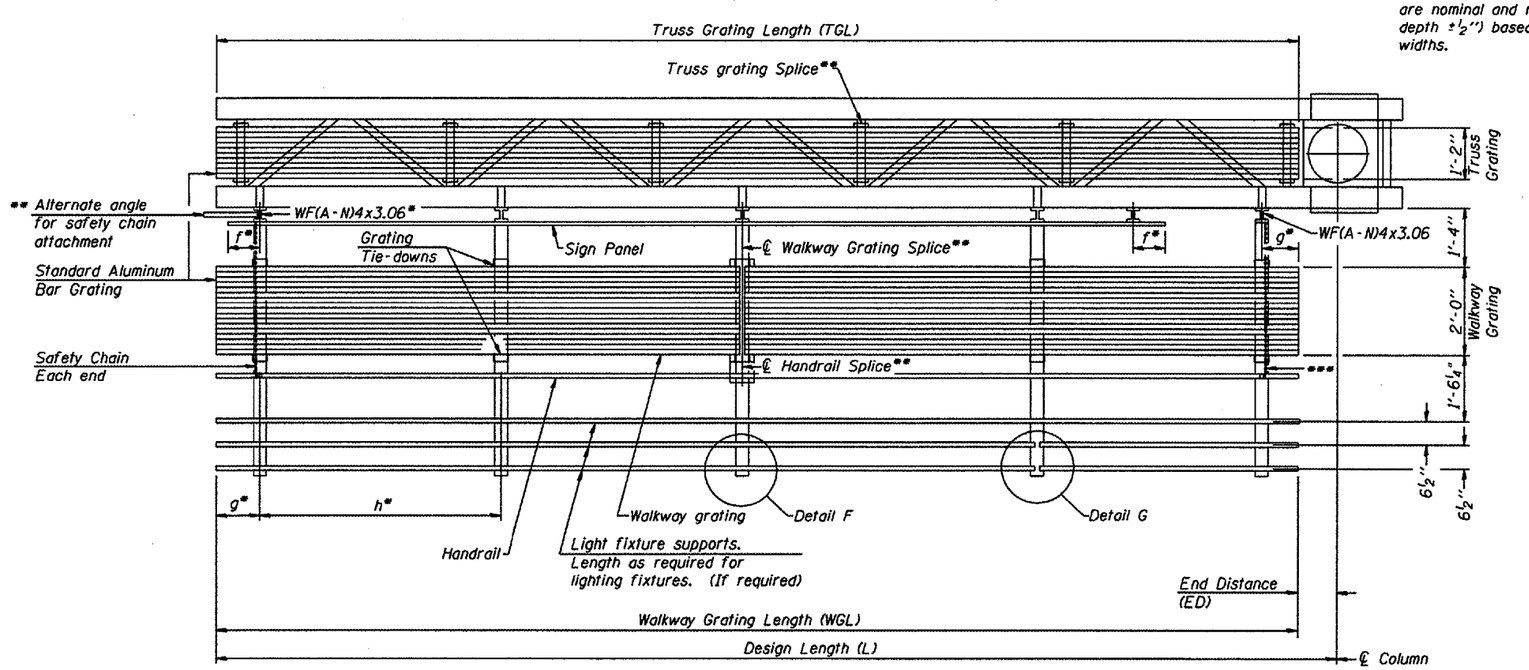


TYPICAL FRONT ELEVATION
With lights and handrail omitted for clarity.



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

Walkway and truss grating dimensions are nominal and may vary (width ±½", depth ±½") based on available standard widths.



Structure Number	Station	WGL	ED	TGL
4C090U024R001.0	277 + 25	*		27' - 6"
4C072S006R009.2	734 + 00	*		26' - 6"
4C090U024L000.9	274 + 50	*		28' - 6"
4C102I074L114.8	3 + 50 WB	*		28' - 6"

* Reuse existing walkway grating.

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 ℄ of nearest bracket)
g = 12" maximum, 4" minimum (End of walkway to ℄ of nearest bracket)
h = 6'-0" maximum (℄ to ℄ sign and/or walkway support brackets, WF(A-N)4x1.79 or WF(A-N)4x3.06)

*** If walkway bracket at safety chain location is behind sign, add angle to bracket.

For details of sign placement, sign/walkway brackets, truss and walkway gratings, grating splices and Section B-B, see Base Sheet OSC-A-7.
For details of handrail, handrail splice, safety chain and Details F and G, see Base Sheet OSC-A-8.

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

SECTION A-A

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

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

BRACKET TABLE

WF(A-N)4x1.79 or 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

NUMBER	REVISION	DATE

DESIGNED	-
CHECKED	-
DRAWN	-
CHECKED	-

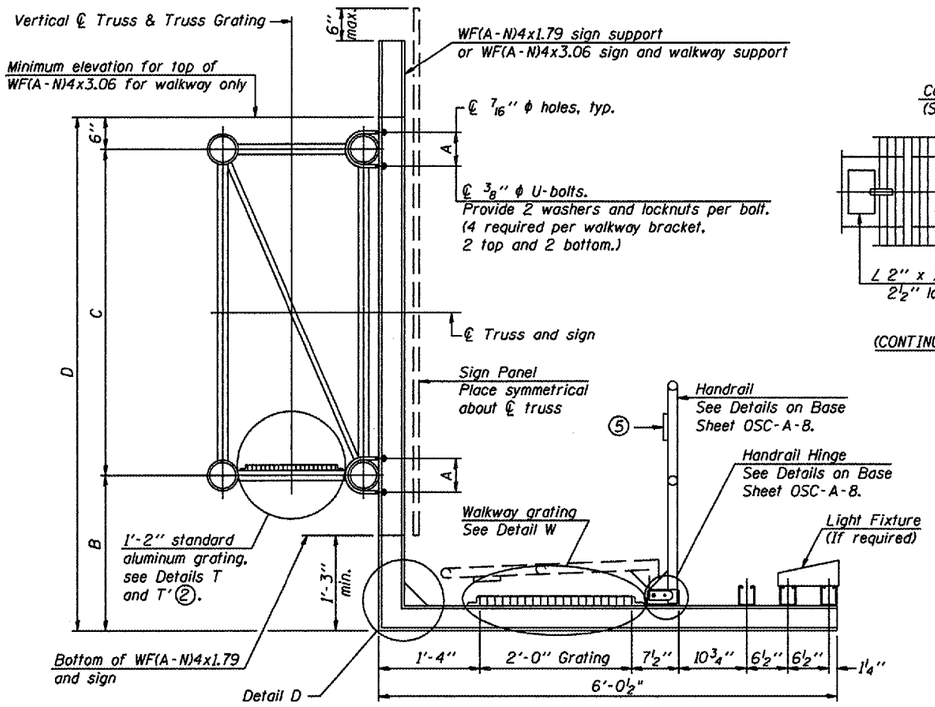
- 20
EXAMINED
ENGINEER OF BRIDGE DESIGN
PASSED
ENGINEER OF BRIDGES AND STRUCTURES

OSC-A-6 1-7-05

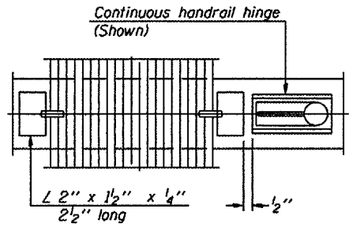
CANTILEVER SIGN STRUCTURES
ALUMINUM WALKWAY DETAILS
ALUMINUM TRUSS & STEEL POST

District 4
Truss Repair & Replacement

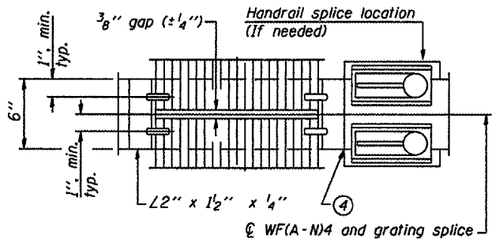
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



SECTION B-B



(CONTINUOUS WALKWAY GRATING)



(AT WALKWAY GRATING SPLICE)

SECTION W-W

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.

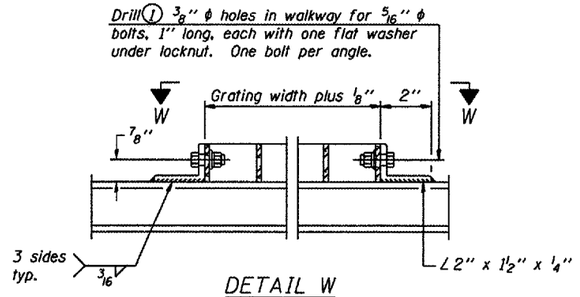
Cross bars (CB) shall be 3/16" x 1 1/2" on 4" centers and conform to ASTM B221 Alloy 6063-T5 or 6061-T6.

OR

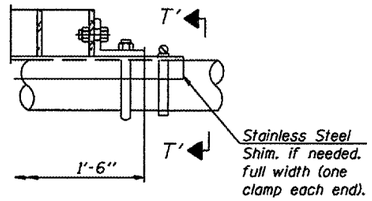
Aluminum Grating with modified "T" sections for main bearing bars shall meet the following requirements:

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.

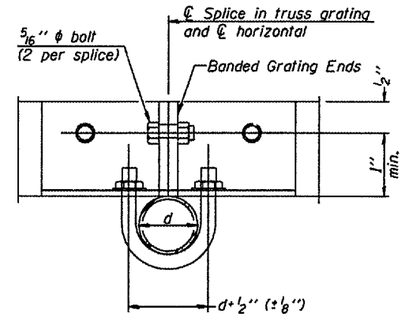


DETAIL W
(Walkway grating)

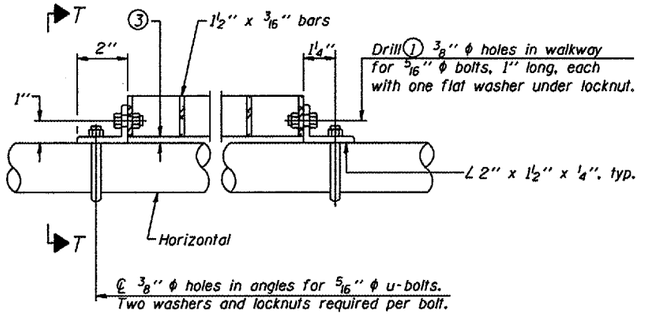


DETAIL T'
(Truss grating splice)

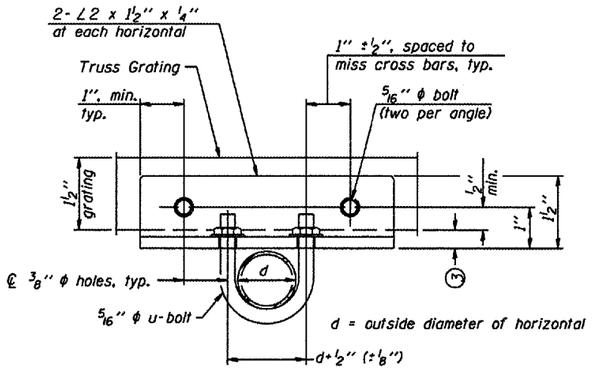
Details not shown same as Detail T. Alternate materials may be used subject to the Engineer's review and approval.



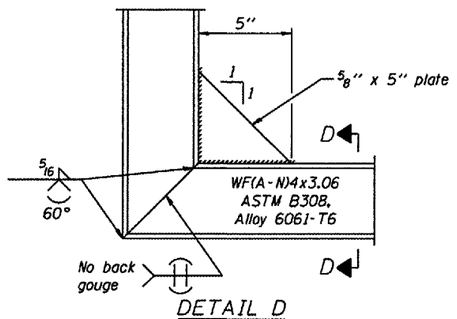
SECTION T'-T'



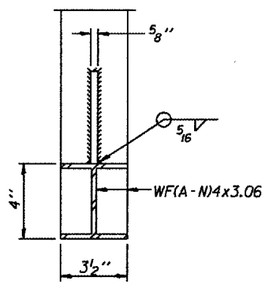
DETAIL T
(Truss grating at horizontal)



SECTION T-T



DETAIL D
(See Detail P, Base Sheet OSC-A-8.)



SECTION D-D

NUMBER	REVISION	DATE

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

(2) When truss grating must be spliced, use suggested detail or other methods subject to the Engineer's review and approval. Locate splice to avoid interference between cross bars and bolt locations.

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

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

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

Structure Number	Station	A	B	C	D
Reuse existing walkway support brackets.					

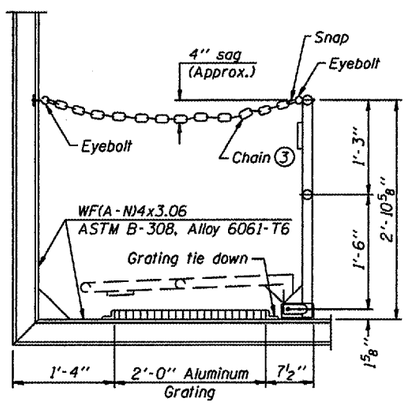
DESIGNED -
CHECKED -
DRAWN -
CHECKED -

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

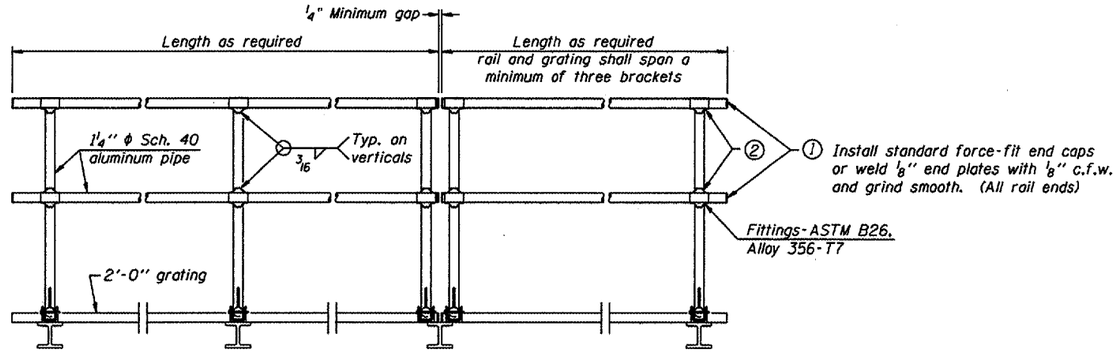
OSC-A-7 1-7-05

CANTILEVER SIGN STRUCTURES
WALKWAY DETAILS
ALUMINUM TRUSS & STEEL POST

District 4
Truss Repair & Replacement



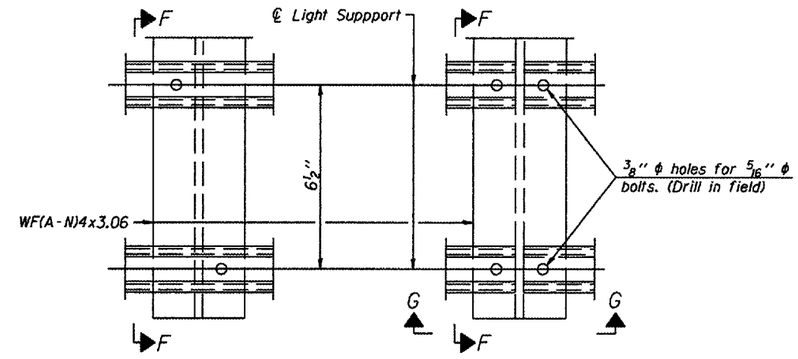
SIDE ELEVATION
(Showing Safety Chain W/O Sign)



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 7/16" ϕ hole in fitting for 3/8" ϕ bolt. Field drill 7/16" ϕ hole in horizontal rail member. Provide locknut and two stainless steel washers for bolt. (Use 5/16" eyebolts in 7/16" ϕ holes on top rail at ends only.)

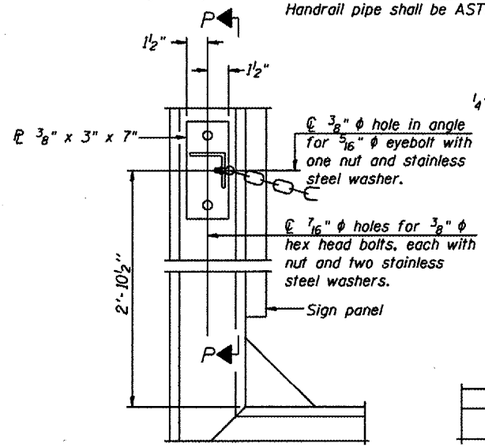


DETAIL F

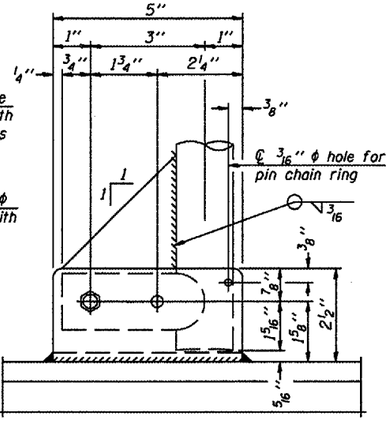
DETAIL G

HANDRAIL DETAILS

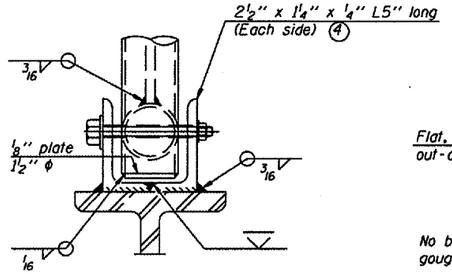
Handrail pipe shall be ASTM B241, Alloy 6063-T6 or Alloy 6061-T6.



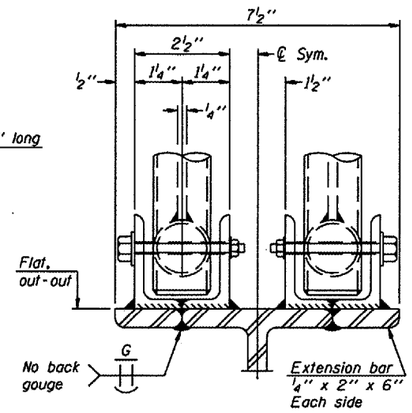
ALTERNATE SAFETY CHAIN ATTACHMENT
(With Sign Present)
Items not shown same as "Side Elevation" of "Handrail Details"



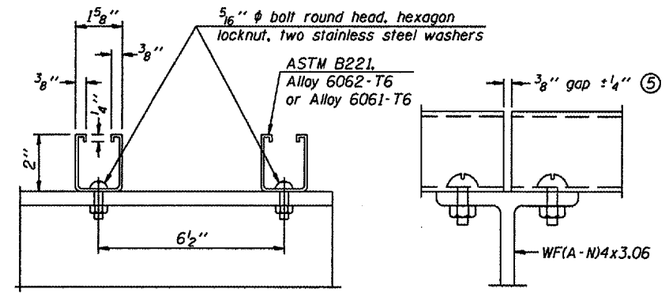
SIDE ELEVATION



FRONT ELEVATION
Details not shown same as "ELEVATION" at right.



ELEVATION AT HANDRAIL JOINT (4)
Details not shown same as "FRONT ELEVATION"

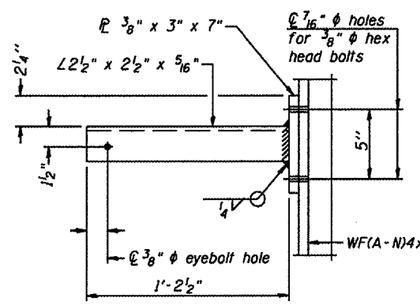


SECTION F-F

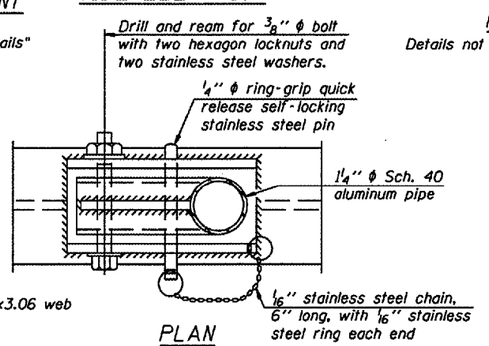
SECTION G-G

LIGHTING FIXTURE MOUNTS (IF REQUIRED)

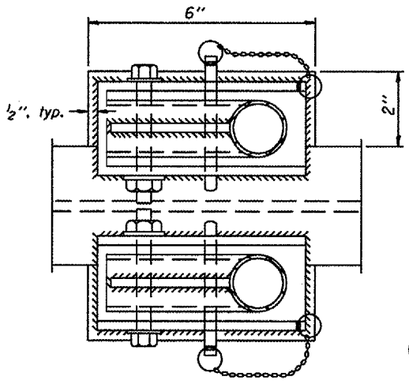
(5) Field cut ends of light support channels shall be free of burrs or hazardous projections and coated with zinc-rich primer or equivalent.



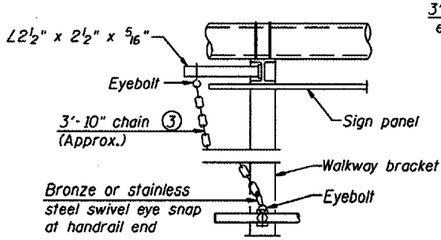
SECTION P-P



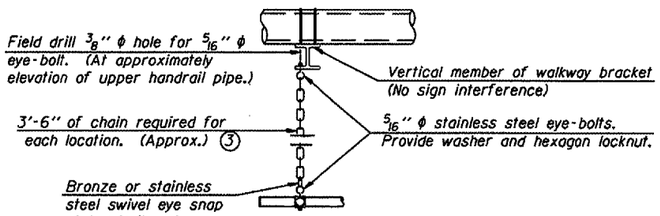
PLAN
DETAIL E HANDRAIL HINGE



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.

(3) 3/16" galvanized steel chain, approximately 12 links per foot. Chain to be hot dip galvanized after manufacture and suitable for prolonged exterior exposure. Alternate materials may be substituted with the Engineer's approval.

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

DESIGNED	-
CHECKED	-
DRAWN	-
CHECKED	-

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

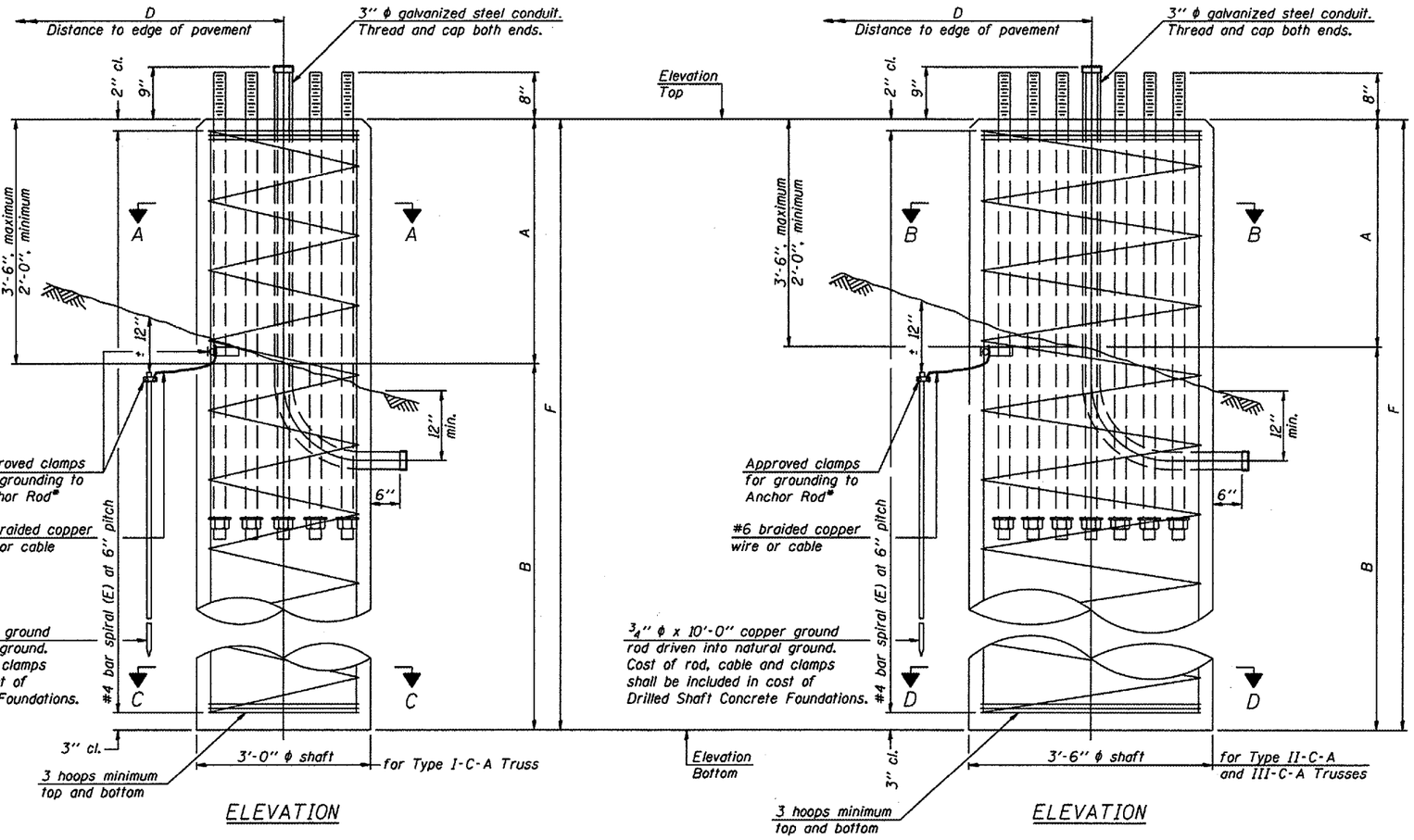
NUMBER	REVISION	DATE

CANTILEVER SIGN STRUCTURES
HANDRAIL DETAILS
ALUMINUM TRUSS & STEEL POST

District 4
Truss Repair & Replacement

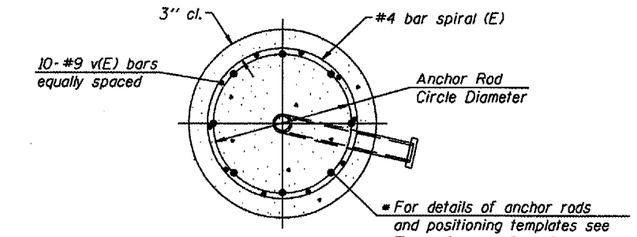
OSC-A-8 1-7-05

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

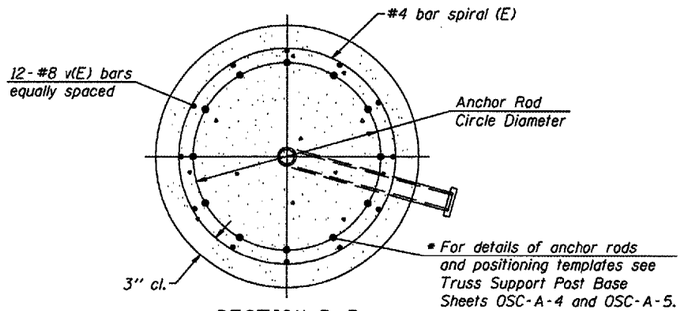


ELEVATION

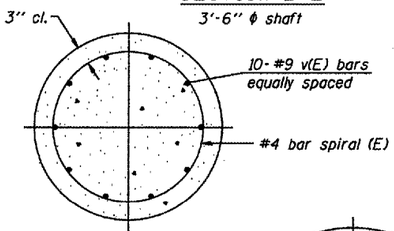
ELEVATION



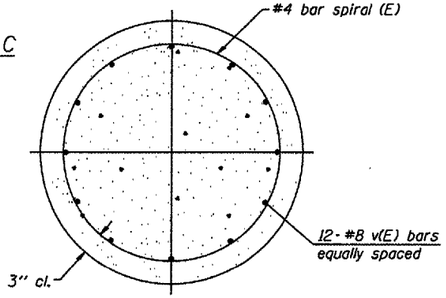
SECTION A-A
3'-0" ϕ shaft



SECTION B-B
3'-6" ϕ shaft



SECTION C-C
3'-0" ϕ shaft



SECTION D-D
3'-6" ϕ 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 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".

FOUNDATION DATA TABLE

Structure Number	Station	Truss Type	Shaft Diameter	Elevation Top	Elevation Bottom	Qu	A	B	F	Class SI Concrete Cubic Yards
4C090U024R001.0	277 + 25	II	3' - 6"	102.00			3' - 0"	15' - 0"	18' - 0"	6.4
4C072S006R009.2	734 + 00	II	3' - 6"	101.00			3' - 0"	15' - 0"	18' - 0"	6.4
4C090U024L000.9	274 + 50	II	3' - 6"	99.00			3' - 0"	21' - 6"	24' - 6"	8.7
4C102I074L114.8	3 + 50 WB	II	3' - 6"	806.20			3' - 0"	21' - 6"	24' - 6"	8.7

FOUNDATION DESIGN TABLE

Truss Type	Post Base Sheet	Maximum CantileverLength (ft)	Maximum Total Sign Area (sq ft)	Shaft Diameter (in)	"B" Depth (ft)	Anchor Rods No.	Anchor Rods Diameter (in)	Anchor Rod Circle 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

CANTILEVER SIGN STRUCTURES
DRILLED SHAFT
ALUMINUM TRUSS & STEEL POST

District 4
Truss Repair & Replacement

DESIGNED	-
CHECKED	-
DRAWN	-
CHECKED	-

- 20

EXAMINED

ENGINEER OF BRIDGE DESIGN

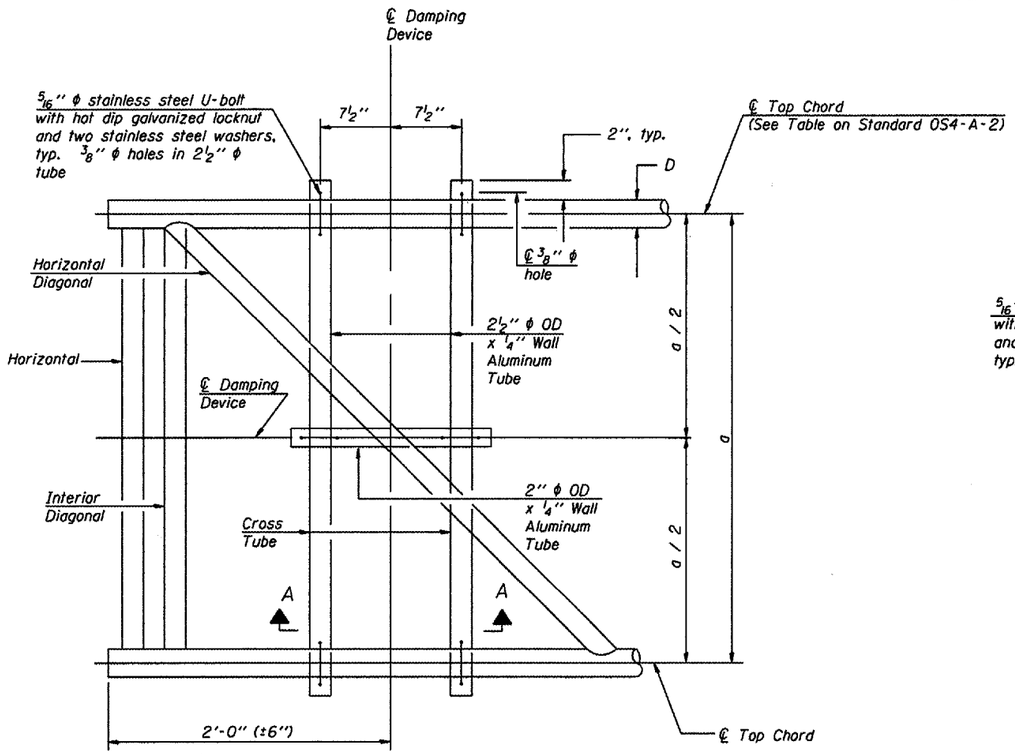
PASSED

ENGINEER OF BRIDGES AND STRUCTURES

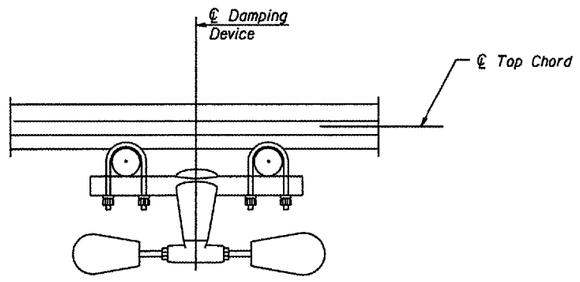
NUMBER	REVISION	DATE

OSC-A-9 1-7-05

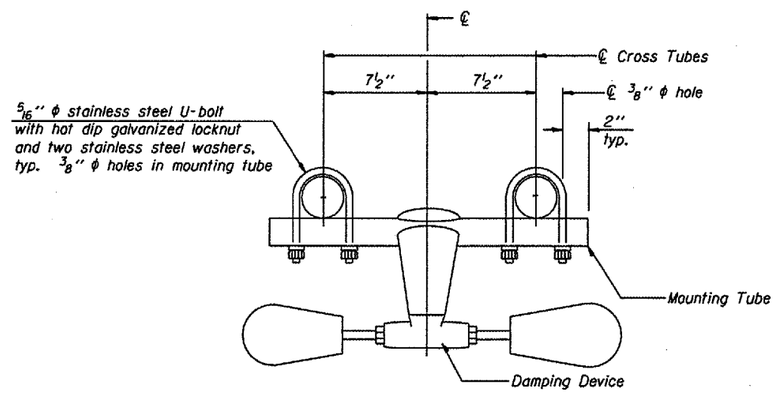
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



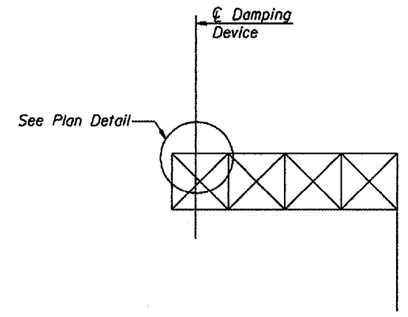
PLAN DETAIL



SECTION A-A



TRUSS DAMPING
DEVICE CONNECTION DETAIL

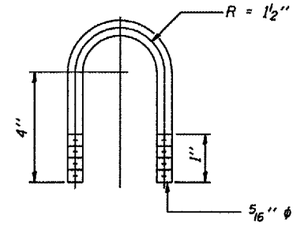


ELEVATION
Aluminum Cantilever
Sign Structure

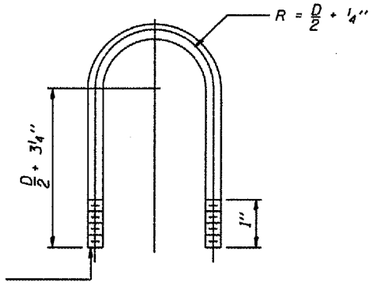
GENERAL NOTES

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

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



DAMPING DEVICE MOUNTING
TUBE U-BOLT DETAIL
(Typical)



TOP CHORD TO CROSS TUBE
U-BOLT DETAIL
(Typical)

DESIGNED -	
CHECKED -	
DRAWN -	
CHECKED -	

- 20

EXAMINED

ENGINEER OF BRIDGE DESIGN

PASSED

ENGINEER OF BRIDGES AND STRUCTURES

OSC-A-D 1-7-05

CANTILEVER SIGN STRUCTURE
DAMPING DEVICE

District 4
Truss Repair & Replacement

District 5
Schedule of Locations for Truss Repair & Replacement

Location No.:	5-01	State I.D. No.:	5S010I074R179.0				
County:	Champaign	Route:	I-74	M.P.:	179	Direction:	EB

Description of Work	Unit	Quantity
REMOVE OVERHEAD SIGN STRUCTURE-SPAN	EACH	1.00
STRUCTURAL STEEL SUPPORT OVERHEAD SIGN STRUCTURE	EACH	2.00
DRILLED SHAFT CONCRETE FOUNDATION	CU YD	20.40
REMOVE CONCRETE FOUNDATION-OVERHEAD	EACH	2.00
OVERHEAD SIGN STRUCTURE-SPAN TYPE 1A	FOOT	75.00
RELOCATE ELECTRIC SERVICE	EACH	1.00
REPAIR HANDRAIL LOCKING PIN CONNECTION	EACH	6.00
FURNISH & INSTALL SAFETY CHAIN	EACH	2.00
REMOVE & REINSTALL SIGN PANEL	SQ FT	258.25
REMOVE & REINSTALL WALKWAY	FOOT	60.50

Location No.:	5-02	State I.D. No.:	5S010I074L179.22				
County:	Champaign	Route:	I-74	M.P.:	179.22	Direction:	WB

Description of Work	Unit	Quantity
REMOVE OVERHEAD SIGN STRUCTURE-SPAN	EACH	1.00
STRUCTURAL SUPPORT OVERHEAD SIGN STRUCTURE	EACH	2.00
DRILLED SHAFT CONCRETE FOUNDATION	CU YD	20.40
REMOVE CONCRETE FOUNDATION-OVERHEAD	EACH	2.00
OVERHEAD SIGN STRUCTURE-SPAN TYPE 1A	FOOT	75.00
REMOVE & REINSTALL SIGN PANEL	SQ FT	393.75
RELOCATE ELECTRIC SERVICE	EACH	1.00
REPAIR HANDRAIL LOCKING PIN CONNECTION	EACH	6.00
FURNISH & INSTALL SAFETY CHAIN	EACH	2.00
REMOVE & REINSTALL WALKWAY	FOOT	60.50

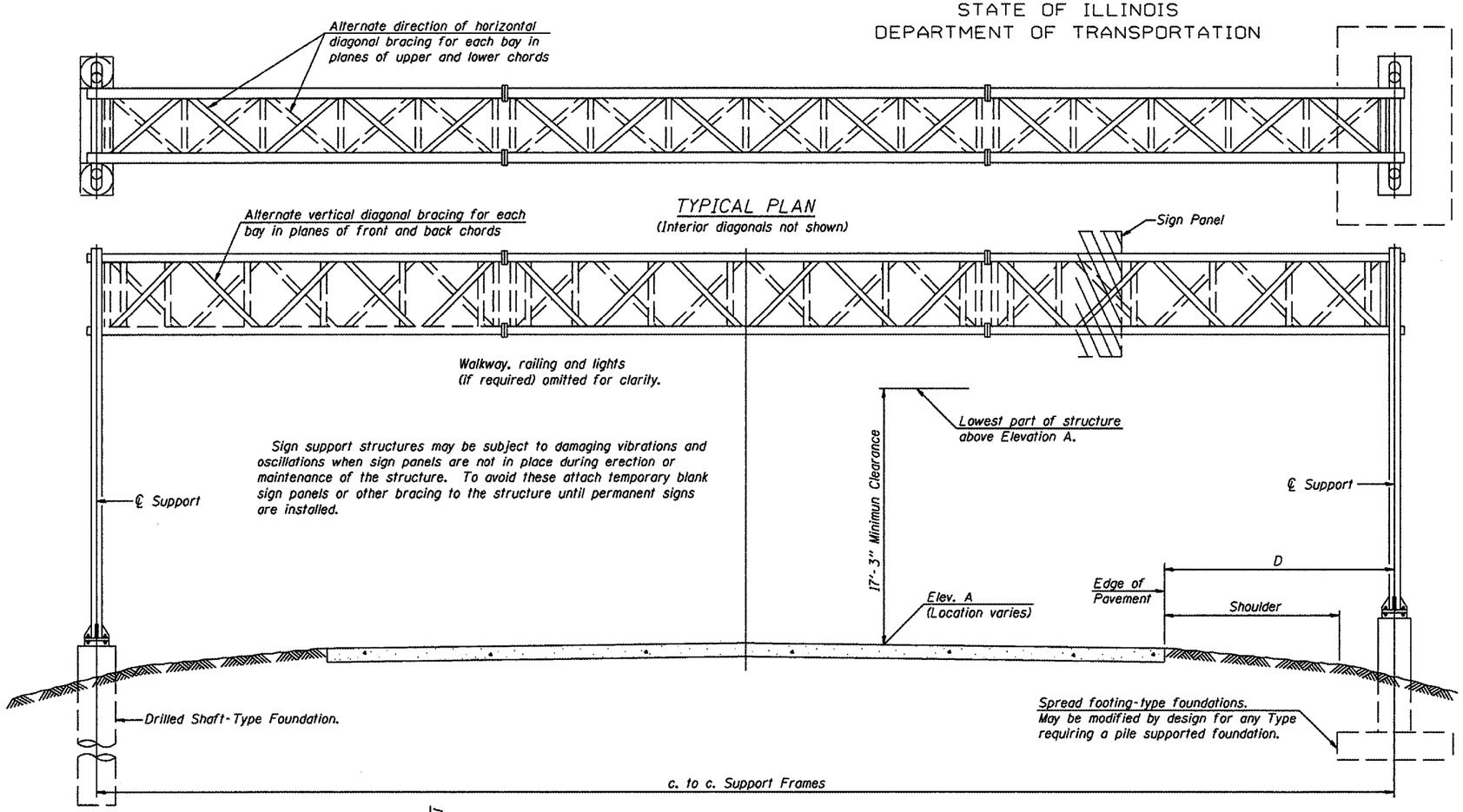
Location No.:	5-03	State I.D. No.:	5S010I072R180.76				
County:	Champaign	Route:	I-72	M.P.:	180.76	Direction:	EB

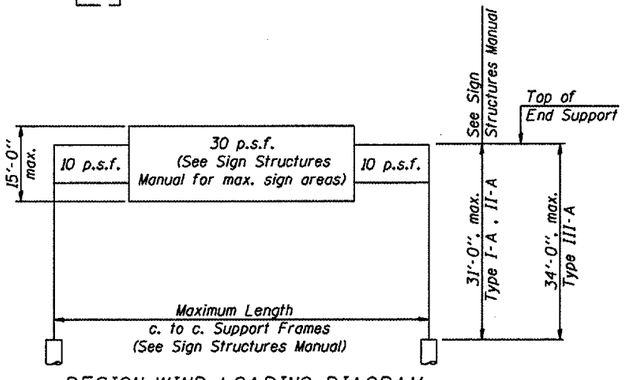
Description of Work	Unit	Quantity
REMOVE OVERHEAD SIGN STRUCTURE-SPAN	EACH	1.00
OVERHEAD SIGN STRUCTURE SPAN TYPE 1A	FOOT	88.00
DRILLED SHAFT CONCRETE FOUNDATION	CU YD	20.40
REMOVE CONCRETE FOUNDATION OVERHEAD	EACH	2.00
REMOVE & REINSTALL SIGN PANEL	SQ FT	368.75
REMOVE & REINSTALL WALKWAY	FOOT	30.50
RELOCATE ELECTRIC SERVICE	EACH	1.00
REPAIR HANDRAIL LOCKING PIN CONNECTION	EACH	6.00
FURNISH & INSTALL SAFETY CHAIN	EACH	2.00
STRUCTURAL STEEL SUPPORT OVERHEAD SIGN STRUCTURE	EACH	2.00

Location No.:	5-04	State I.D. No.:	5S010U045L012.30				
County:	Champaign	Route:	US 45	M.P.:	12.3	Direction:	SB

Description of Work	Unit	Quantity
REMOVE OVERHEAD SIGN STRUCTURE-SPAN	EACH	1.00
OVERHEAD SIGN STRUCTURE SPAN, TYPE I-A	FOOT	84.00
DRILLED SHAFT CONCRETE FOUNDATION	CU YD	20.40
REMOVE CONCRETE FOUNDATION OVERHEAD	EACH	2.00
REMOVE & REINSTALL SIGN PANEL	SQ FT	444.00
REMOVE & REINSTALL WALKWAY	FOOT	66.00
RELOCATE ELECTRIC SERVICE	EACH	1.00
REPAIR HANDRAIL LOCKING PIN CONNECTION	EACH	10.00
FURNISH & INSTALL SAFETY CHAIN	EACH	2.00
STRUCTURAL STEEL SUPPORT OVERHEAD SIGN STRUCTURE	EACH	2.00

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION





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
5S0101074R179.0	147 + 88 EB	I	75' - 0"	781.24	13' - 0"	11' - 6"	258.25
5S0101074L179.2	174 + 84 WB	I	75' - 0"	763.27	13' - 0"	12' - 6"	393.75
5S0101072R180.7	1894 + 00 EB	I	88' - 0"	710.48	32' - 0"	14' - 6"	368.75
5S010U045L012.3	48 + 00 SB	I	84' - 0"	722.49	20' - 0"	14' - 0"	444.00

**Looking upstation for structures with signs both sides.

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.
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 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.

TOTAL BILL OF MATERIAL

ITEM	UNIT	TOTAL
OVERHEAD SIGN STRUCTURE TYPE I-A (4'-0" x 4'-6")	Foot	
OVERHEAD SIGN STRUCTURE TYPE II-A (4'-6" x 5'-3")	Foot	
OVERHEAD SIGN STRUCTURE TYPE III-A (5'-0" x 7'-0")	Foot	
OVERHEAD SIGN STRUCTURE WALKWAY TYPE A	Foot	
CONCRETE FOUNDATIONS	Cu. Yds.	
DRILLED SHAFT CONCRETE FOUNDATIONS	Cu. Yds.	

NUMBER	REVISION	DATE

DESIGNED	-
CHECKED	-
DRAWN	-
CHECKED	-

- 20

EXAMINED

ENGINEER OF BRIDGE DESIGN

PASSED

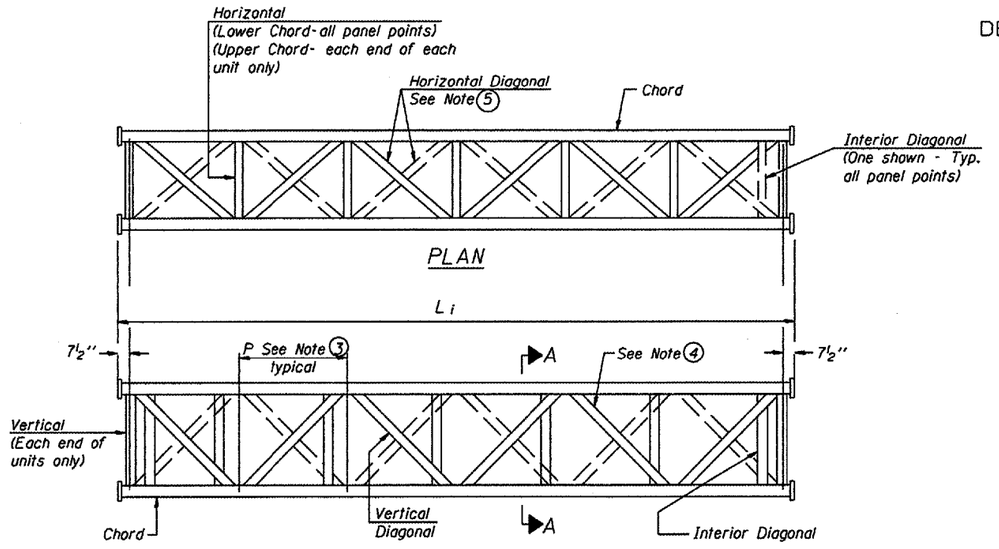
ENGINEER OF BRIDGES AND STRUCTURES

OS-A-1 1-7-05

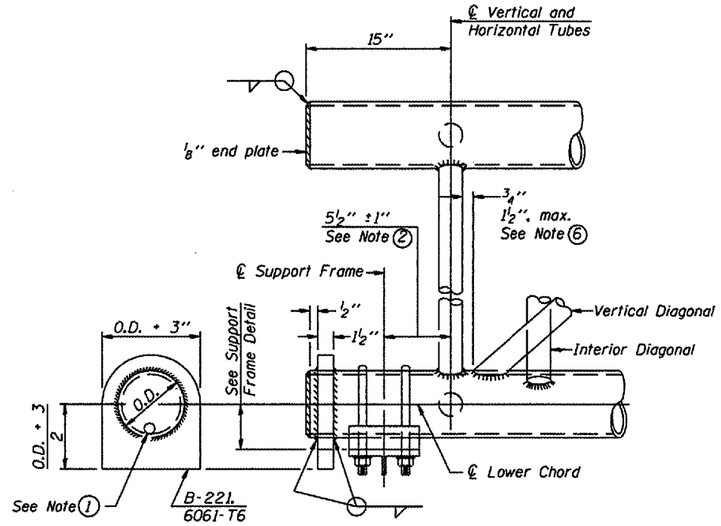
OVERHEAD SIGN STRUCTURES
GENERAL PLAN & ELEVATION
ALUMINUM TRUSS & STEEL SUPPORTS

District 5
Truss Repair & Replacement

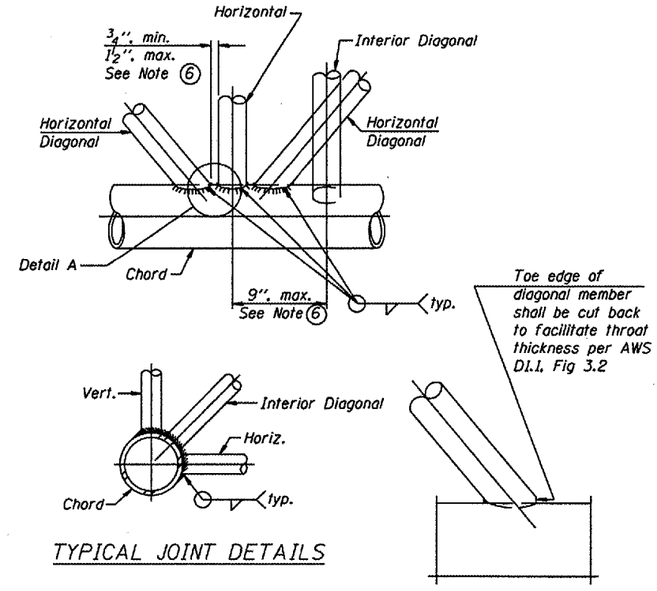
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



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



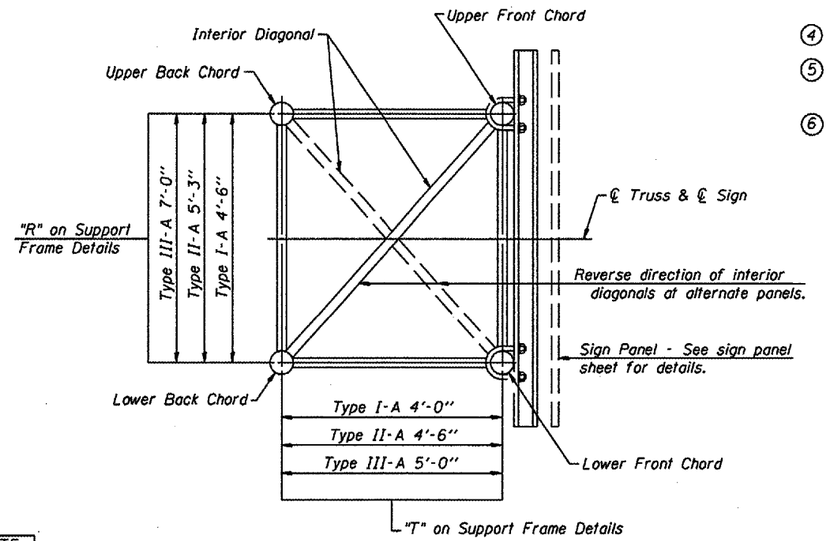
SUPPORT END DETAIL FOR EXTERIOR UNIT



TYPICAL JOINT DETAILS

DETAIL A

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



SECTION A-A

NOTES

(1) Contractor may alternatively use standard aluminum drive-fit cap to close end. ½" ϕ 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.

DESIGNED	-
CHECKED	-
DRAWN	-
CHECKED	-

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

OS-A-2 1-7-05

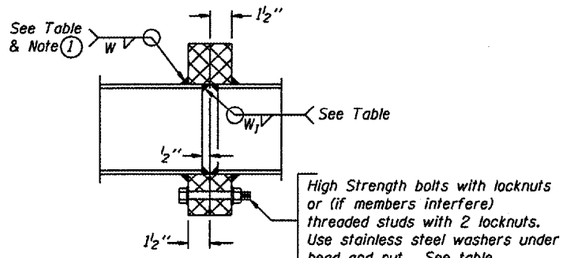
NUMBER	REVISION	DATE

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

District 5
Truss Repair & Replacement

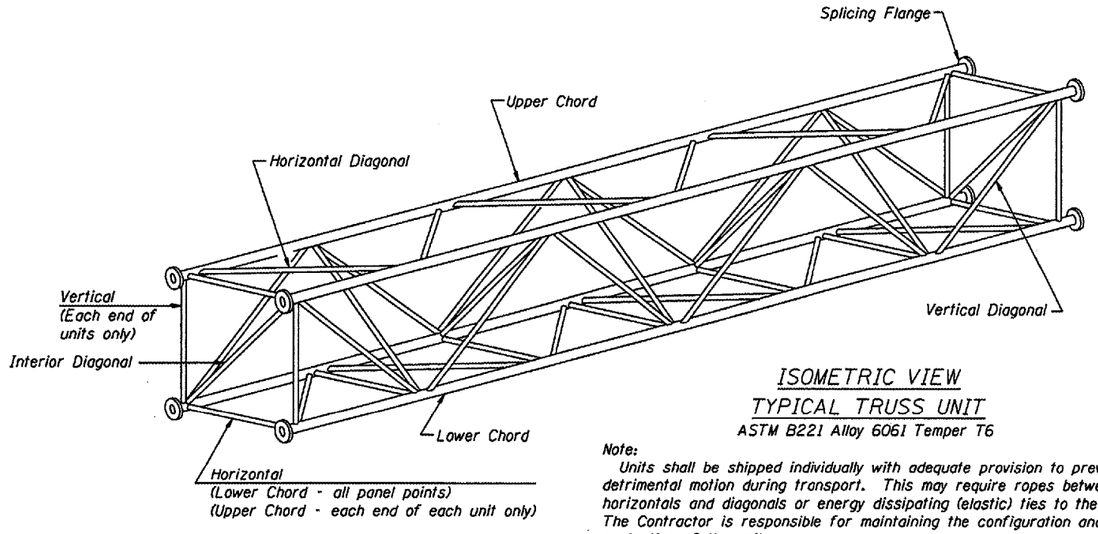
TRUSS UNIT TABLE

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_1		
5S010I074R179.0	147 + 88 EB	I	8	38' - 2 1/2"	38' - 2 1/2"					5"	5/16"	2 1/2"	5/16"	2"	6	7/8"	5/16"	1/4"	8 3/4"	11 3/4"
5S010I074L179.2	174 + 84 WB	I	8	38' - 2 1/2"	38' - 2 1/2"					5"	5/16"	2 1/2"	5/16"	2"	6	7/8"	5/16"	1/4"	8 3/4"	11 3/4"
5S010I072R180.7	1894 + 00 EB	I	6	30' - 1 1/2"	38' - 2 1/2"	1	6	29' - 6"	4' - 8 1/2"	5"	5/16"	2 1/2"	5/16"	2 3/4"	6	7/8"	5/16"	1/4"	8 3/4"	11 3/4"
5S010U045L012.3	48 + 00 SB	I	6	28' - 9"	38' - 2 1/2"	1	6	28' - 1 1/2"	4' - 5 3/4"	5"	5/16"	2 1/2"	5/16"	2 1/2"	6	7/8"	5/16"	1/4"	8 3/4"	11 3/4"



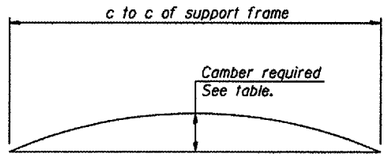
SECTION B-B

(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.



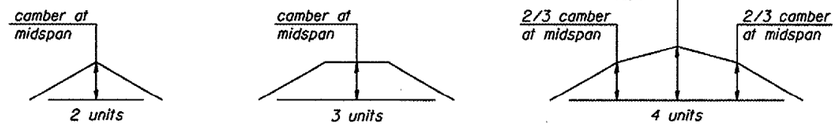
ISOMETRIC VIEW
TYPICAL TRUSS UNIT
ASTM B221 Alloy 6061 Temper T6

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.

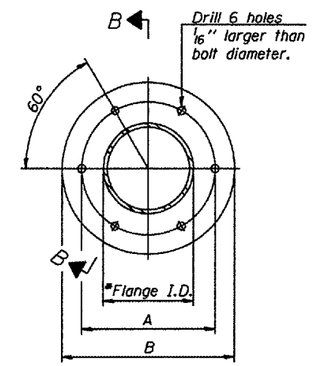


CAMBER DIAGRAM
Camber curve shown is theoretical. Actual camber attained by slope changes at splices between units.

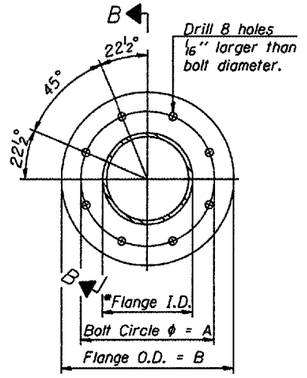
CAMBER ATTAINMENT EXAMPLES:



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".

NUMBER	REVISION	DATE

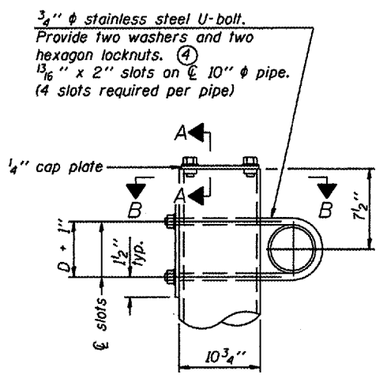
DESIGNED -	
CHECKED -	
DRAWN -	
CHECKED -	

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

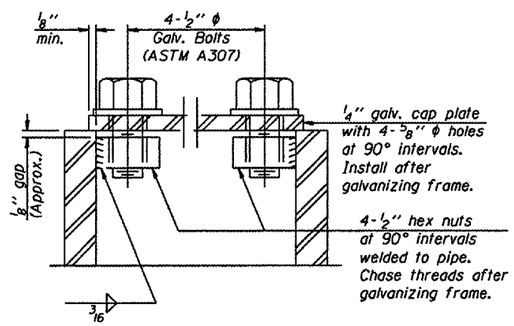
OS4-A-2 1-7-05

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

District 5
Truss Repair & Replacement

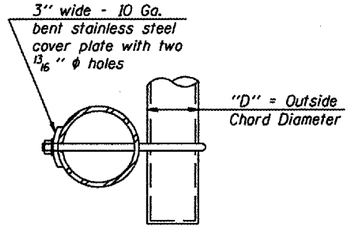


DETAIL A

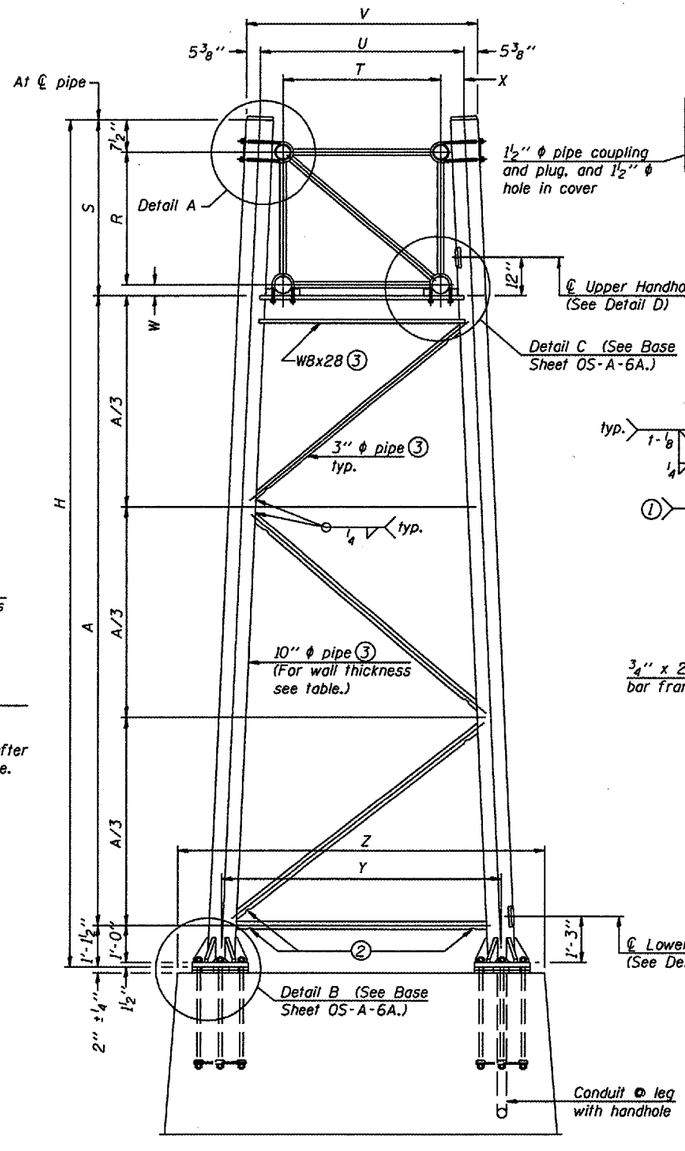


SECTION A-A

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

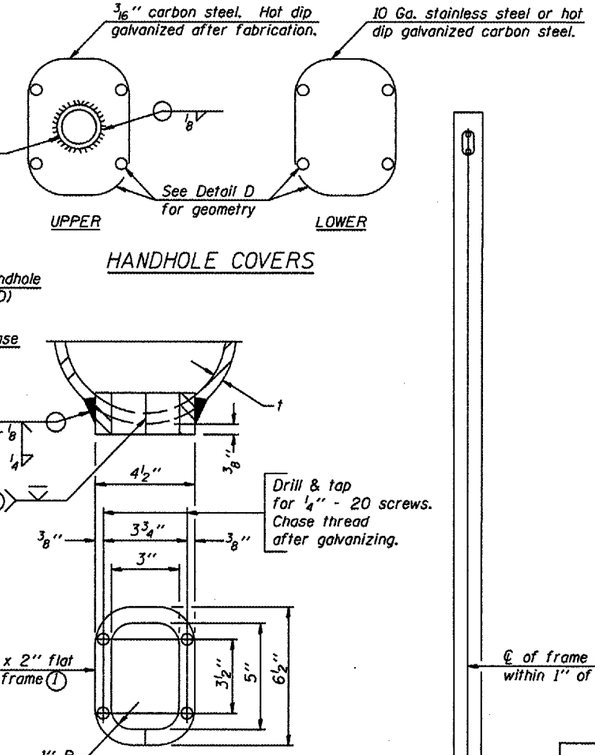


SECTION B-B



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

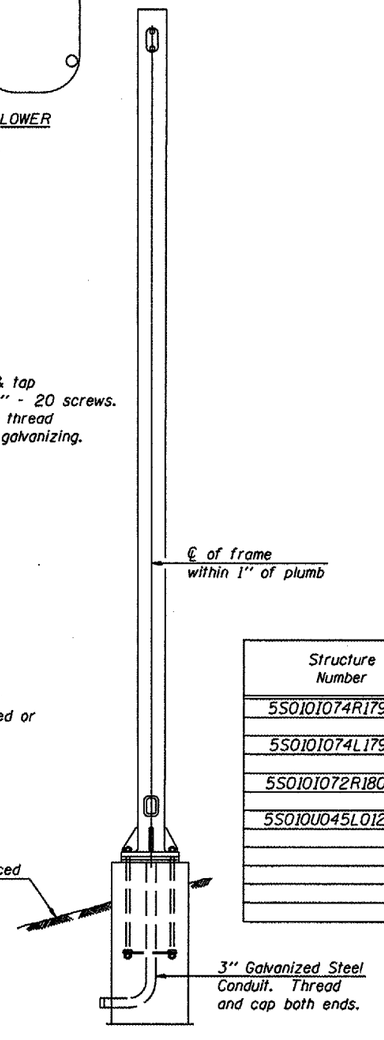
SIDE ELEVATION



HANDHOLE COVERS

Provide 6 1/2" x 4 1/2" cover.
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)

DETAIL D



END ELEVATION

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 min 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.

Structure Number	Station	Support		Truss Type	Pipe Wall Thickness	H	A
		Left	Right				
5S0101074R179.0	147 + 88 EB	X	X	I	0.279	25'-4"	18'-9"
5S0101074L179.2	174 + 84 WB	X	X	I	0.279	25'-8"	19'-1"
5S0101072R180.7	1894 + 00 EB	X	X	I	0.279	30'-1"	23'-6"
5S010U045L012.3	48 + 00 SB	X		I	0.279	25'-3"	18'-8"
			X		0.279	29'-8"	23'-2"

10" ϕ PIPE TRUSS SUPPORT FRAME

Truss Type	Dimensions								
	R	S	T	U	V	W	X	Y	Z
I-A	4'-6"	5'-5 1/2"	4'-0"	5'-6"	6'-4 3/4"	4"	9"	8'-3"	10'-9"
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"	10'-9"

NUMBER	REVISION	DATE

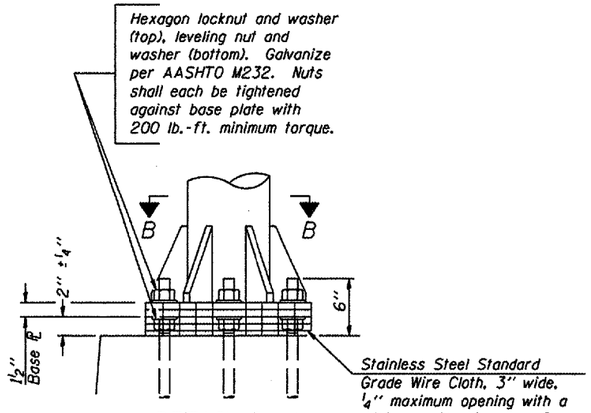
DESIGNED -
CHECKED -
DRAWN -
CHECKED -

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

OS-A-6 1-7-05

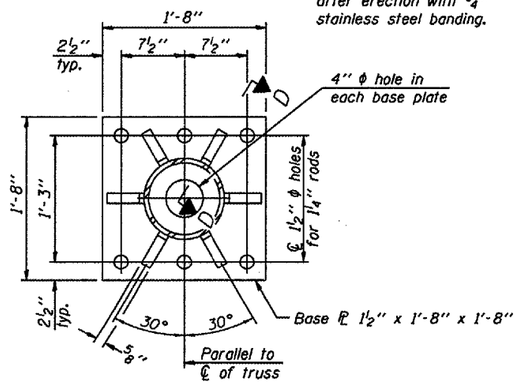
OVERHEAD SIGN STRUCTURES
SUPPORT FRAME for ALUMINUM TRUSS

District 5
Truss Repair & Replacement

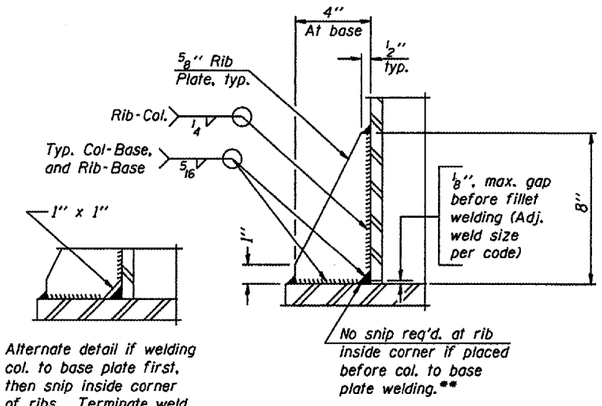


DETAIL B

Ribs shall be cut to fit slope of pipe.

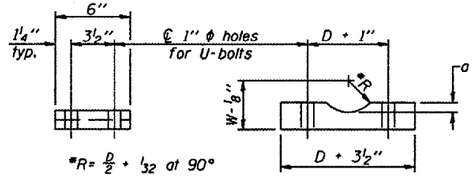


SECTION B-B



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

SECTION D-D



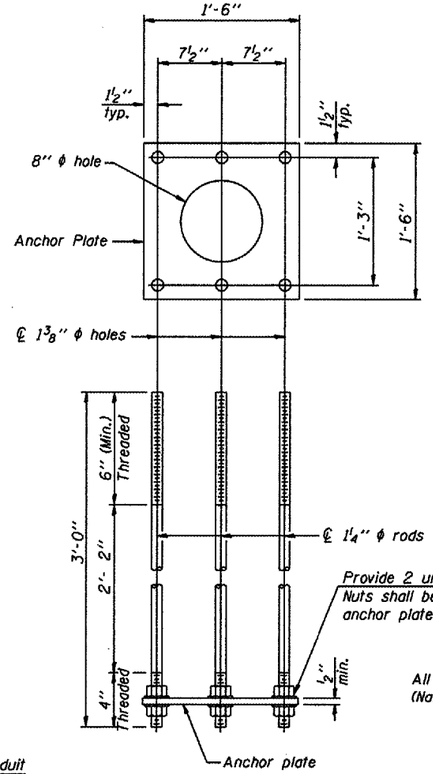
*R = D/2 + 1/32 at 90°

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

SADDLE SHIM DETAIL

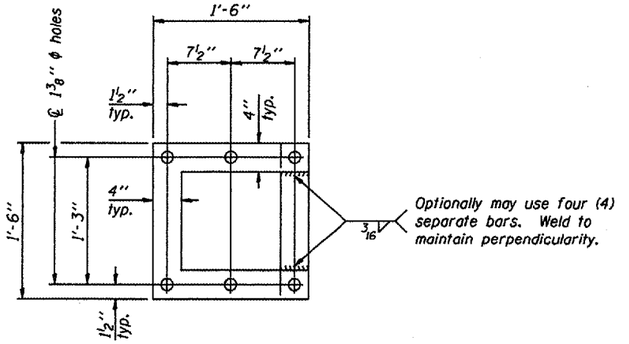
ASTM B26 Alloy 356-F
or
ASTM B209 Alloy 6061-T651
(4 required per sign truss)

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

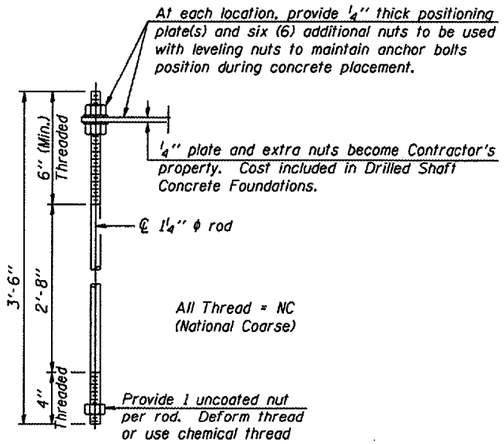


ANCHOR ROD DETAIL

Spread Footing Foundation



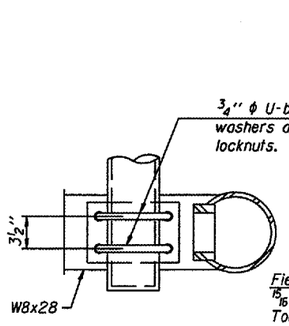
POSITIONING PLATE(S)



ANCHOR ROD DETAIL

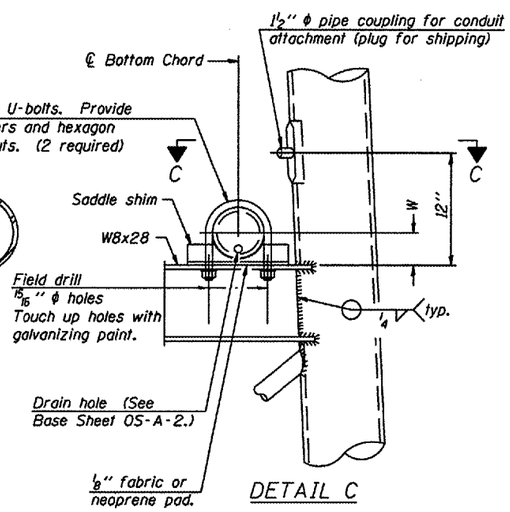
Drilled Shaft Foundation

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.



SECTION C-C

(Handhole cover not shown)



DETAIL C

10" ϕ PIPE SUPPORT FRAME DETAILS

NUMBER	REVISION	DATE

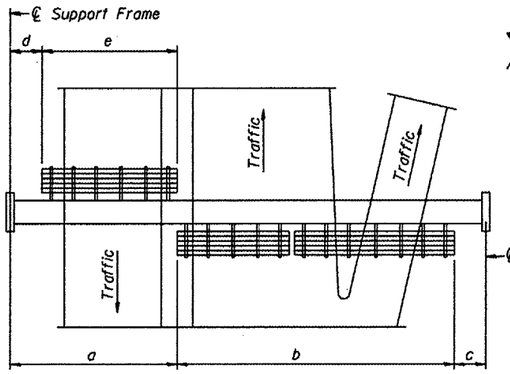
DESIGNED -
CHECKED -
DRAWN -
CHECKED -

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

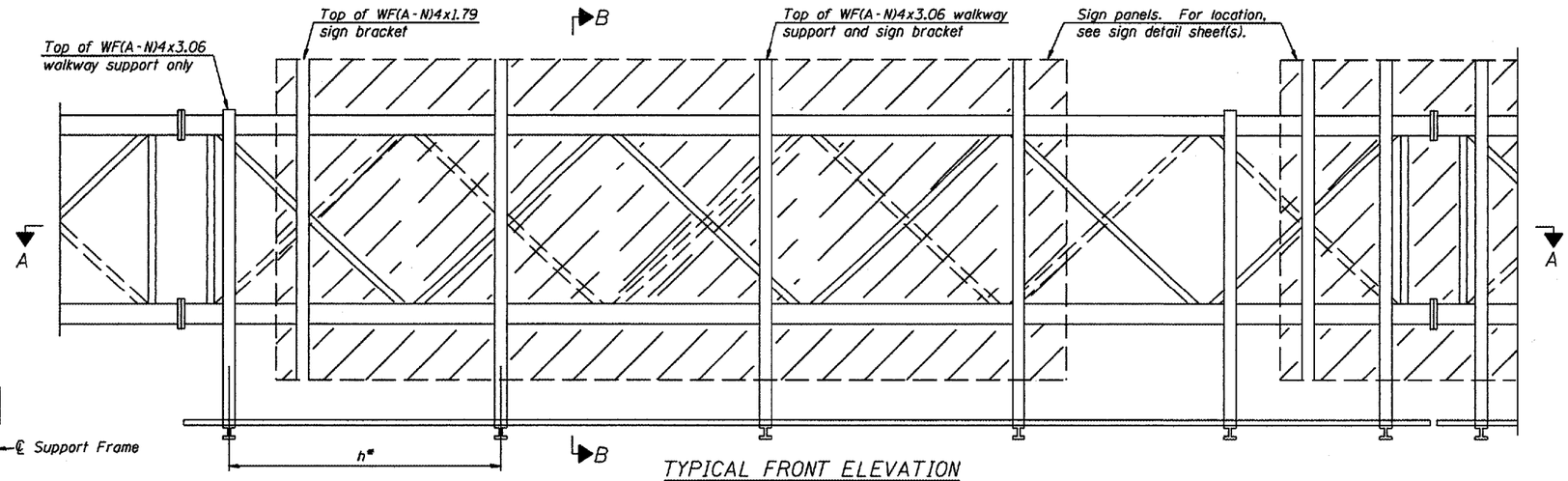
OS-A-6A 1-7-05

OVERHEAD SIGN STRUCTURES
SUPPORT FRAME DETAILS ALUMINUM TRUSS

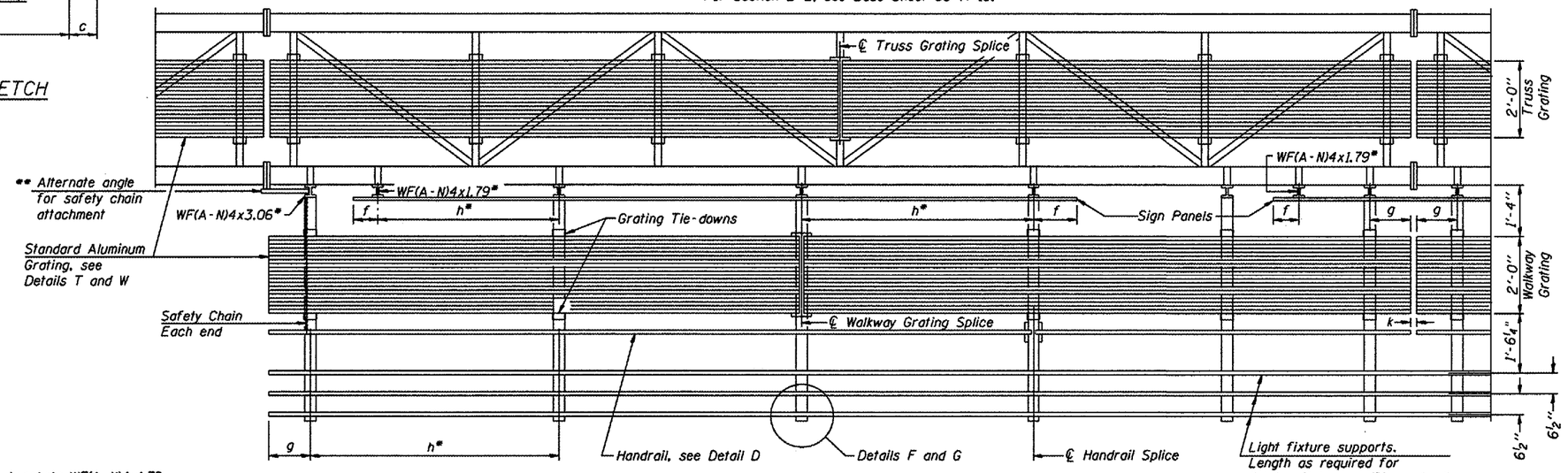
District 5
Truss Repair & Replacement



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.



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

BRACKET TABLE

WF(A-N)4x1.79 or 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

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 ℄ 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, 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 Details D, F, G and P and Handrail Splice Details, see Base Sheet OS-A-11.

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, handrail and light support splices placed as needed.

Structure Number	Station	a	b	c	d	e	Walkway Grating and Handrail Lengths
5S0101074R179.0	147 + 88 EB	N/A	N/A	N/A	N/A	N/A	76' - 1" *
5S0101074L179.2	174 + 84 WB	N/A	N/A	N/A	N/A	N/A	76' - 1" *
5S0101072R180.7	1894 + 00 EB	N/A	N/A	N/A	N/A	N/A	88' - 9" *
5S010U045L012.3	48 + 00 SB	N/A	N/A	N/A	N/A	N/A	84' - 10" *

* Truss Grating Length

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".

DESIGNED	-
CHECKED	-
DRAWN	-
CHECKED	-

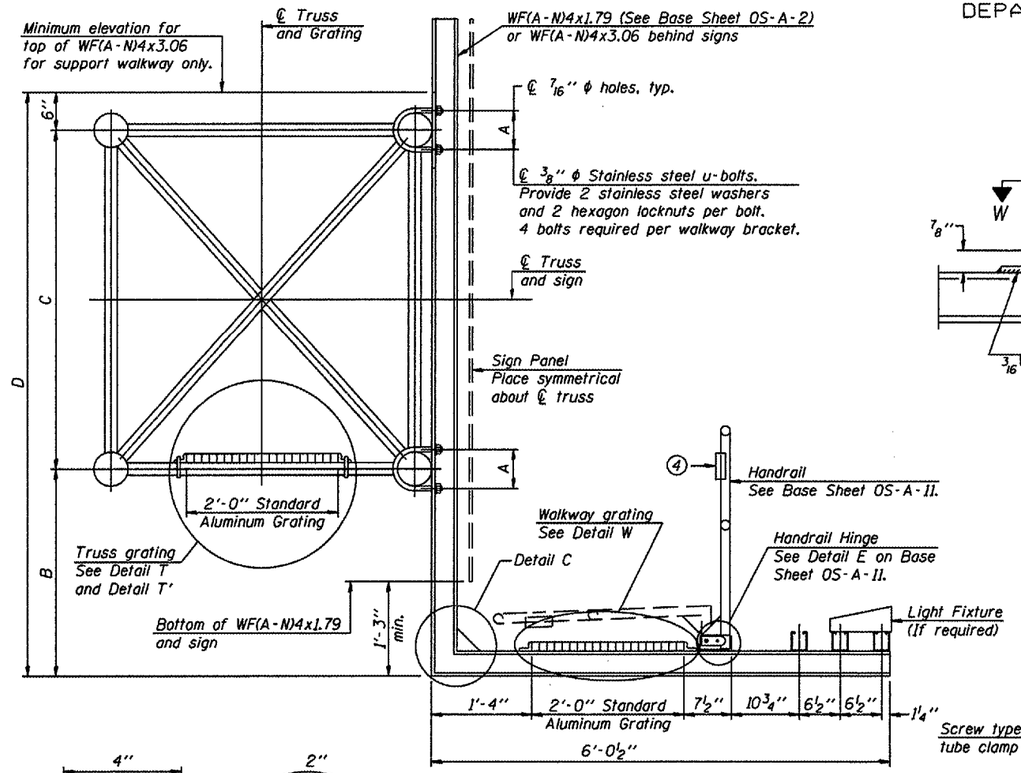
- 20
EXAMINED
ENGINEER OF BRIDGE DESIGN
PASSED
ENGINEER OF BRIDGES AND STRUCTURES

NUMBER	REVISION	DATE

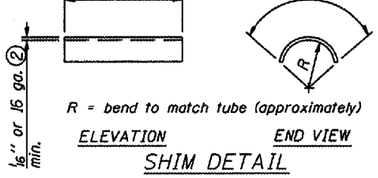
OS-A-9 1-7-05

OVERHEAD SIGN STRUCTURES
ALUMINUM WALKWAY DETAILS

District 5
Truss Repair & Replacement



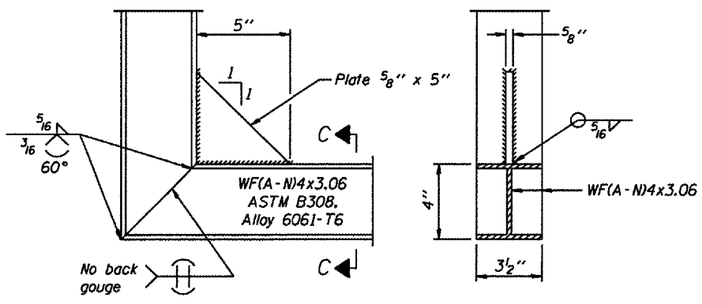
SECTION B-B



R = bend to match tube (approximately)

ELEVATION END VIEW

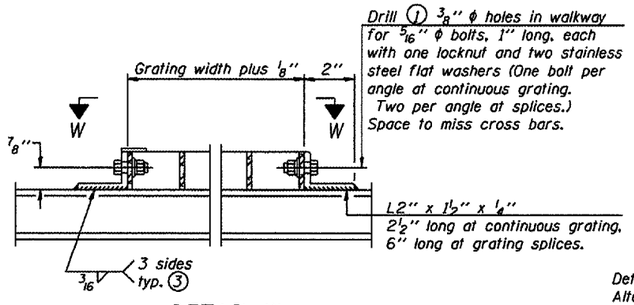
SHIM DETAIL



DETAIL C

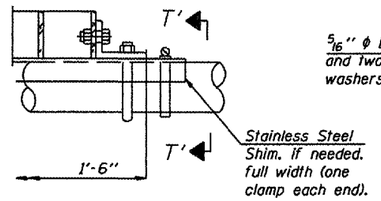
(See Detail P, Base Sheet OS-A-11.)

SECTION C-C



DETAIL W

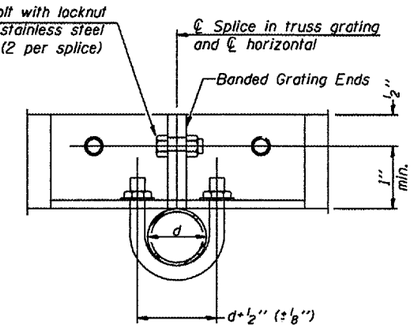
(Walkway grating)



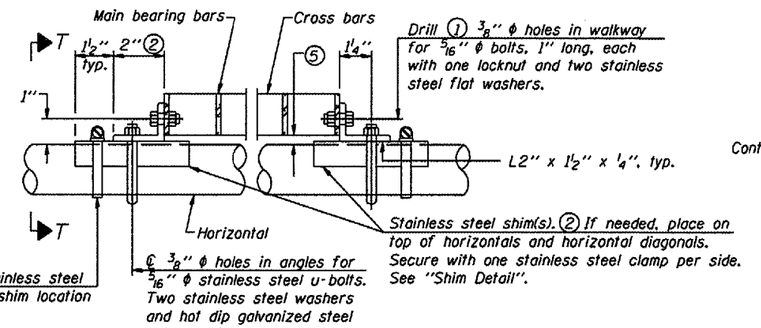
DETAIL T'

(Truss grating splice)

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

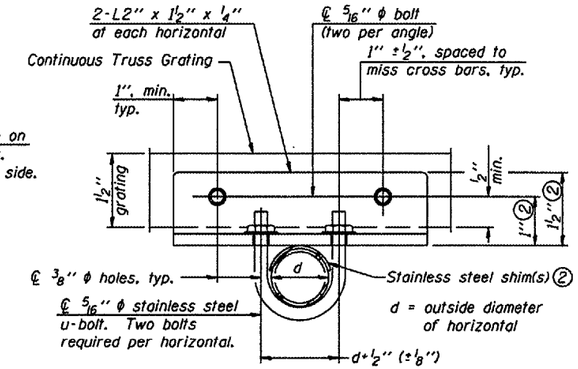


SECTION T'-T'

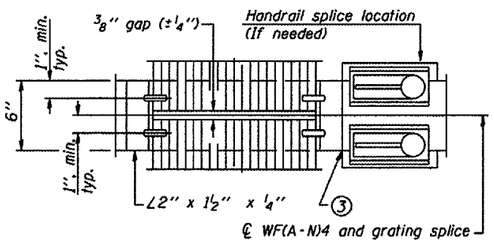


DETAIL T

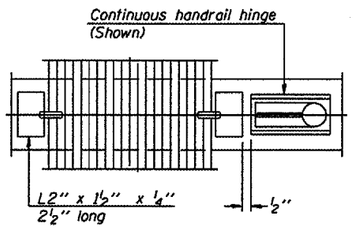
(Continuous Truss grating)



SECTION T-T



(AT WALKWAY GRATING SPLICE)



(CONTINUOUS WALKWAY GRATING)

SECTION W-W

SPECIFICATIONS FOR STANDARD ALUMINUM GRATING

Main Bearing Bars shall be 3/16" x 1½" on 1 3/16" centers and conform to ASTM B221 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 "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 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.

This Sheet For Information Only

Structure Number	Station	A	B	C	D

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 OS-A-11.)

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

⑤ Tube to grating gap may vary from 0 to ½", max. to align walkway, allow for camber, etc.

DESIGNED -	
CHECKED -	
DRAWN -	
CHECKED -	

- 20

EXAMINED

ENGINEER OF BRIDGE DESIGN

PASSED

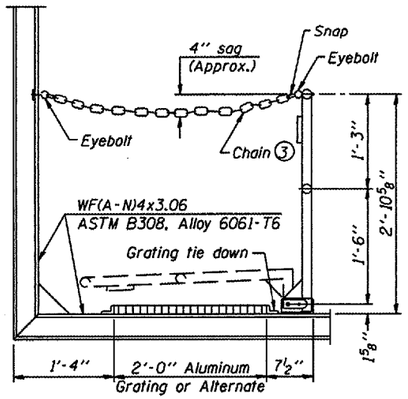
ENGINEER OF BRIDGES AND STRUCTURES

NUMBER	REVISION	DATE

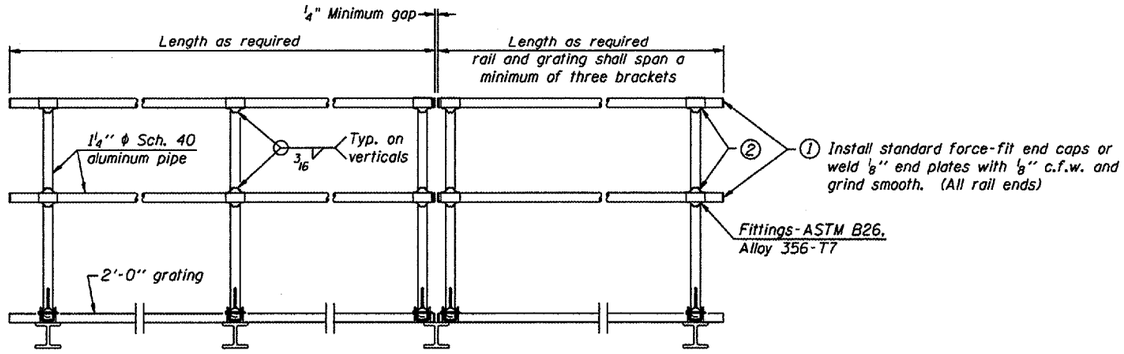
OVERHEAD SIGN STRUCTURES
ALUMINUM WALKWAY DETAILS

District 5
Truss Repair & Replacement

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



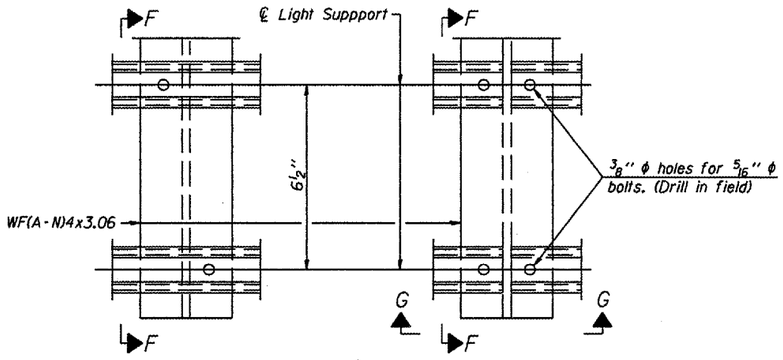
SIDE ELEVATION
(Showing safety chain w/o sign)



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

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

FRONT ELEVATION

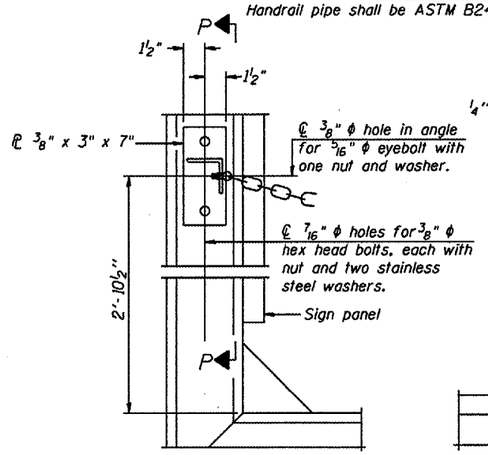


DETAIL F

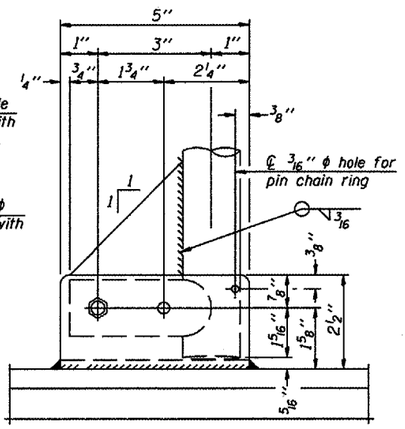
DETAIL G

HANDRAIL DETAILS

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

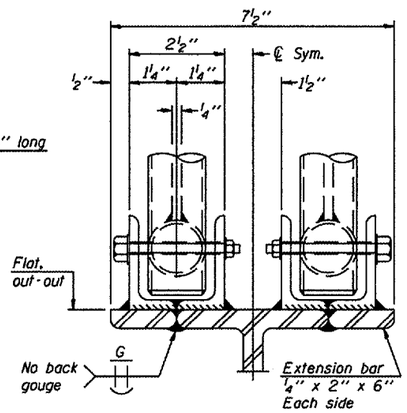


ALTERNATE SAFETY CHAIN ATTACHMENT
(With Sign Present)
Items not shown same as "Side Elevation" of "Handrail Details"

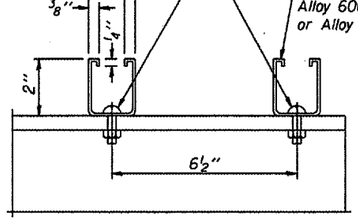


SIDE ELEVATION

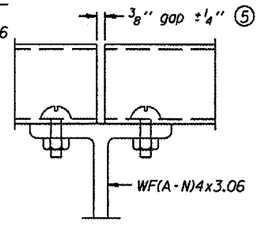
FRONT ELEVATION
See "Elevation" at right for dimensions.



ELEVATION AT HANDRAIL JOINT (4)



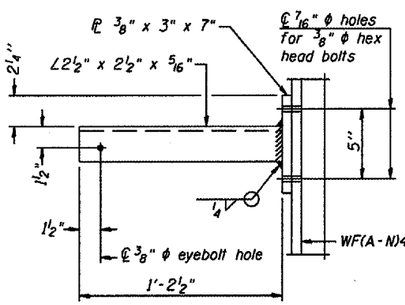
SECTION F-F



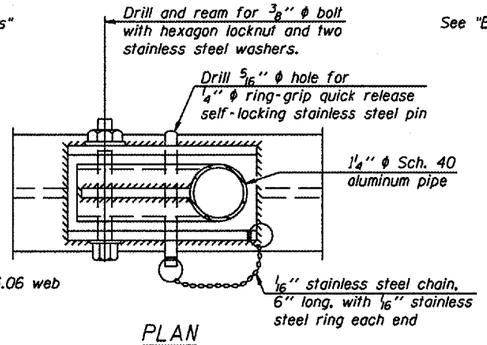
SECTION G-G

LIGHTING FIXTURE MOUNTS (IF REQUIRED)

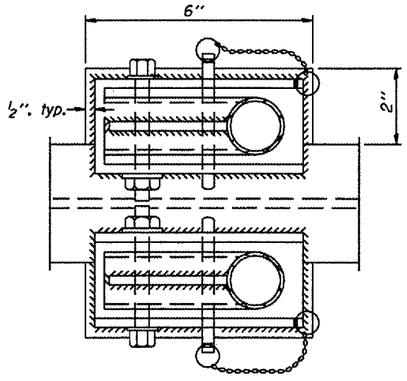
(5) Field cut ends of light support channels shall be free of burrs or hazardous projections and coated with zinc-rich primer or equivalent.



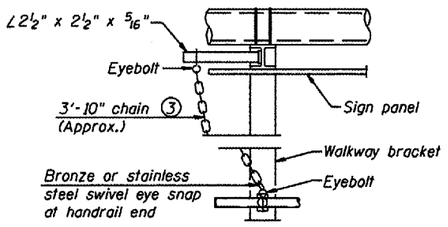
SECTION P-P



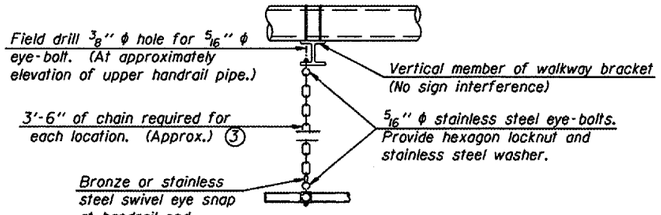
PLAN
DETAIL E HANDRAIL HINGE



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.

(3) 3/16" galvanized steel chain, approximately 12 links per foot. Chain to be hot dip galvanized after manufacture and suitable for prolonged exterior exposure. Alternate materials may be substituted with the Engineer's approval.

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

This Sheet For Information Only

OVERHEAD SIGN STRUCTURES
ALUMINUM HANDRAIL DETAILS

District 5
Truss Repair & Replacement

DESIGNED	-
CHECKED	-
DRAWN	-
CHECKED	-

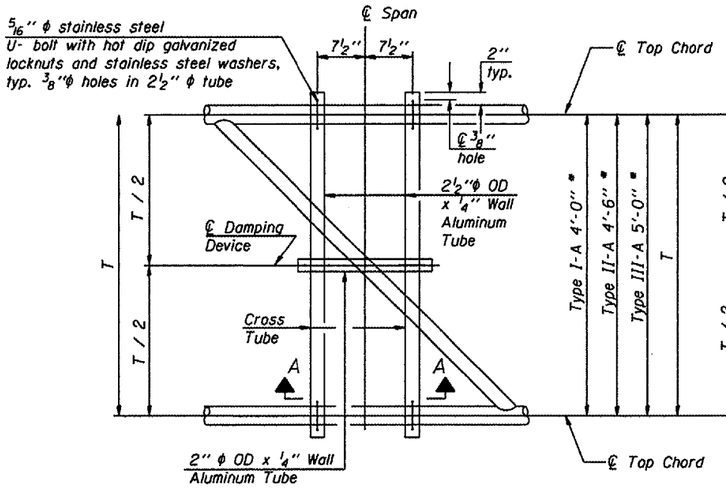
- 20
EXAMINED
ENGINEER OF BRIDGE DESIGN
PASSED
ENGINEER OF BRIDGES AND STRUCTURES

NUMBER	REVISION	DATE

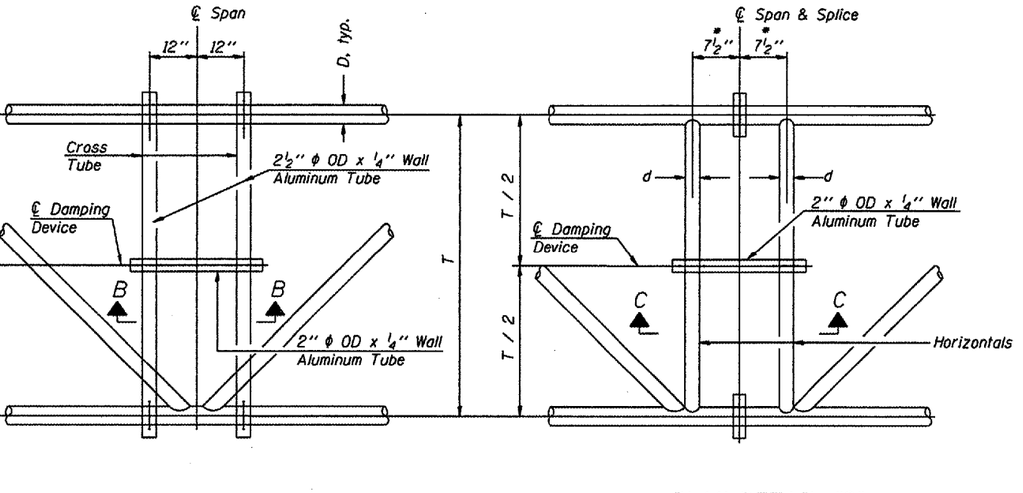
OS-A-11 1-7-05

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

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

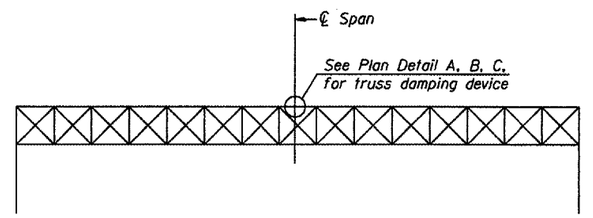


PLAN DETAIL "A"
℄ Span between Panel Points



PLAN DETAIL "B"
℄ Span at Panel Point

PLAN DETAIL "C"
℄ Span at ℄ Chord Splice

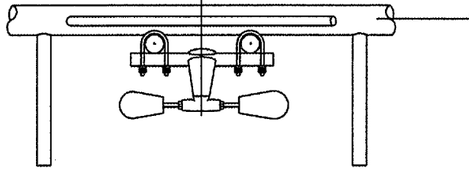


ELEVATION
Aluminum Overhead Sign Truss

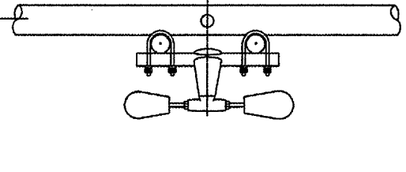
NOTES

Damper: One damper per truss. (31 lbs. Stockbridge-Type Aluminum) Cost included in Overhead Sign Structure...

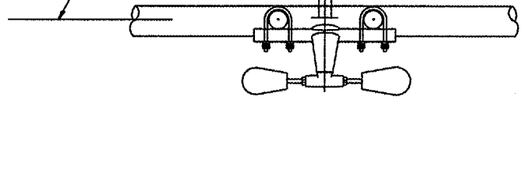
Materials: Aluminum tubes shall be ASTM B221 alloy 6061 temper T6. Cost included in Overhead Sign Structure...



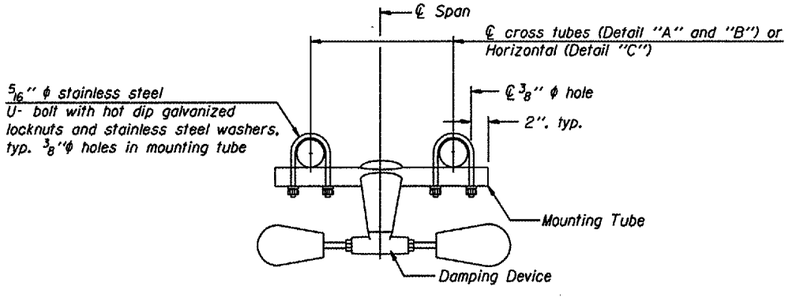
SECTION A-A



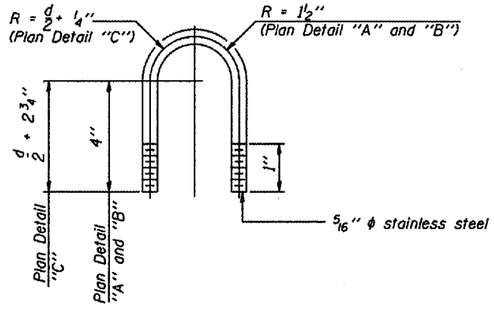
SECTION B-B



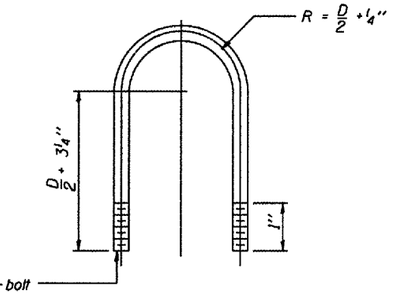
SECTION C-C



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")

DESIGNED	-
CHECKED	-
DRAWN	-
CHECKED	-

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

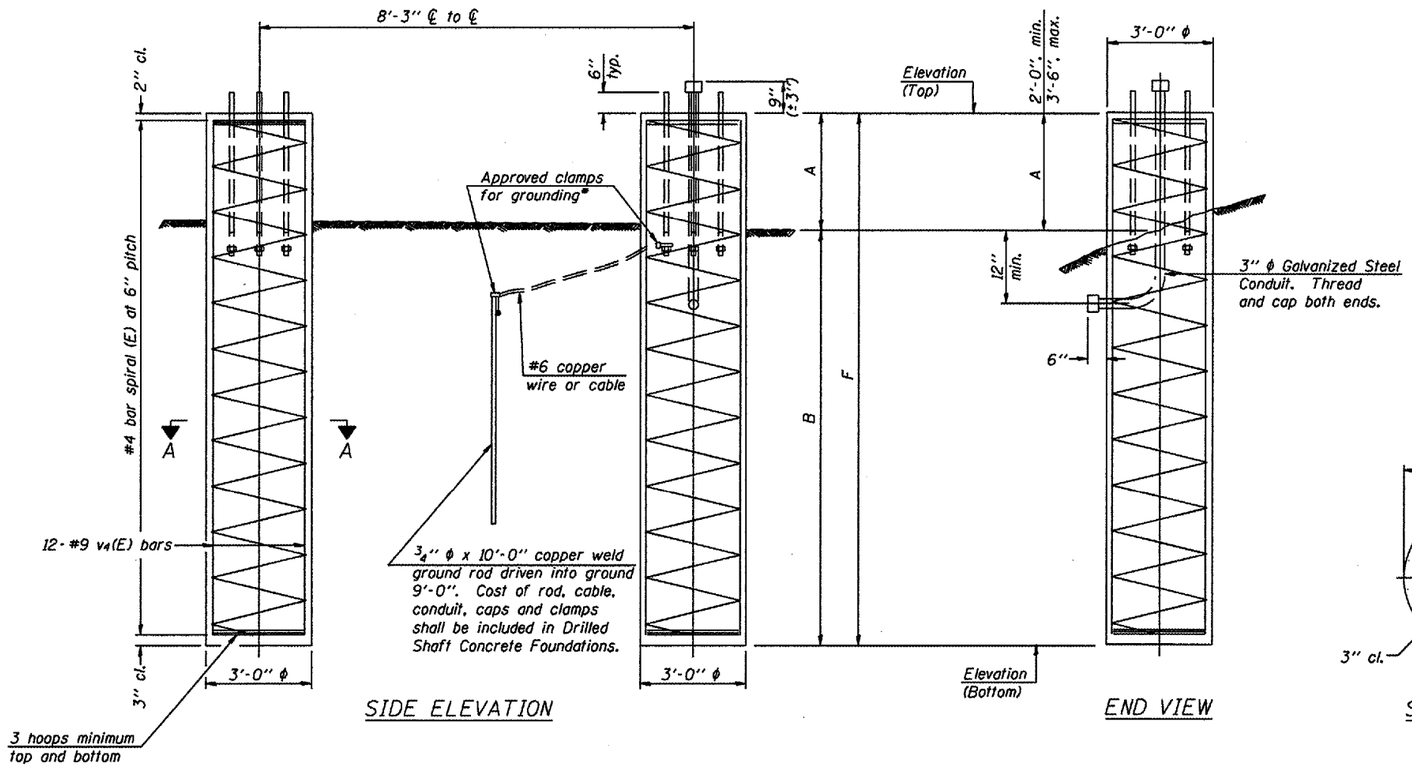
OS-A-D 1-7-05

OVERHEAD SIGN STRUCTURE
DAMPING DEVICE

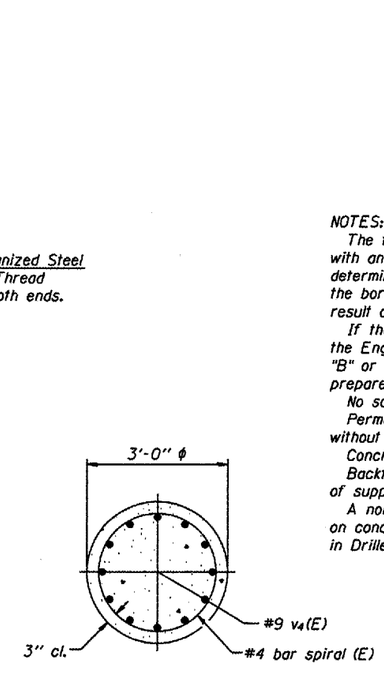
District 5
Truss Repair & Replacement

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.



SIDE ELEVATION



END VIEW

SECTION A-A

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.

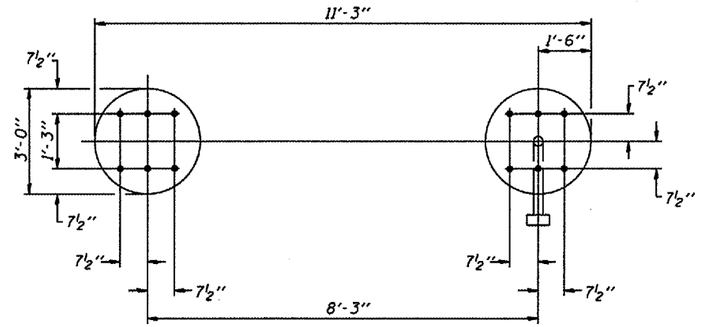
No sonotubes or decomposable forms shall be used below the lower conduit entrance.

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 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.



PLAN

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	
5S0101074R179.0	147 + 88 EB	783.20		3' - 0"	16' - 6"	19' - 6"	783.20		3' - 0"	16' - 6"	19' - 6"	20.40
5S0101074L179.2	174 + 84 WB	765.23		3' - 0"	16' - 6"	19' - 6"	765.23		3' - 0"	16' - 6"	19' - 6"	20.40
5S0101072R180.7	1894 + 00 EB	709.10		3' - 0"	16' - 6"	19' - 6"	709.10		3' - 0"	16' - 6"	19' - 6"	20.40
5S010U045L012.3	48 + 00 SB	725.74		3' - 0"	16' - 6"	19' - 6"	712.74		3' - 0"	16' - 6"	19' - 6"	20.40

DESIGNED	-
CHECKED	-
DRAWN	-
CHECKED	-

- 20

EXAMINED

ENGINEER OF BRIDGE DESIGN

PASSED

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
Truss Repair & Replacement

OS4-F3 1-7-05

District 6
Schedule of Locations for Truss Repair & Replacement

Location No.:	6-01	State I.D. No.:	6S075I072R002.7				
County:	Pike	Route:	I-72	M.P.:	2.7	Direction:	EB

Description of Work	Unit	Quantity
REMOVE OVERHEAD SIGN STRUCTURE-SPAN	EACH	1.00
OVERHEAD SIGN STRUCTURE-SPAN TYPE III-A	FOOT	119.00
REMOVE & REINSTALL SIGN PANEL	SQ FT	429.00
REMOVE & REINSTALL WALKWAY	FOOT	46.00
REPAIR HANDRAIL LOCKING PIN CONNECTION	EACH	8.00
FURNISH & INSTALL SAFETY CHAIN	EACH	2.00
FURNISH & INSTALL METAL SCREEN	EACH	4.00
DISCONNECT / RECONNECT ELECTRIC SERVICE	EACH	1.00
This structure is being downsized from a Type IV truss to		
a Type III truss.		

Location No.:	6-02	State I.D. No.:	6S075I072L005.3				
County:	Pike	Route:	I-72	M.P.:	5.3	Direction:	WB

Description of Work	Unit	Quantity
REMOVE OVERHEAD SIGN STRUCTURE-SPAN	EACH	1.00
OVERHEAD SIGN STRUCTURE-SPAN TYPE II-A	FOOT	91.00
REMOVE & REINSTALL SIGN PANEL	SQ FT	406.00
REMOVE & REINSTALL WALKWAY	FOOT	46.00
REPAIR HANDRAIL LOCKING PIN CONNECTION	EACH	6.00
FURNISH & INSTALL SAFETY CHAIN	EACH	2.00
FURNISH & INSTALL METAL SCREEN	EACH	4.00
DISCONNECT / RECONNECT ELECTRIC SERVICE	EACH	1.00
This structure is being downsized from a Type IV truss to		
a Type III truss.		

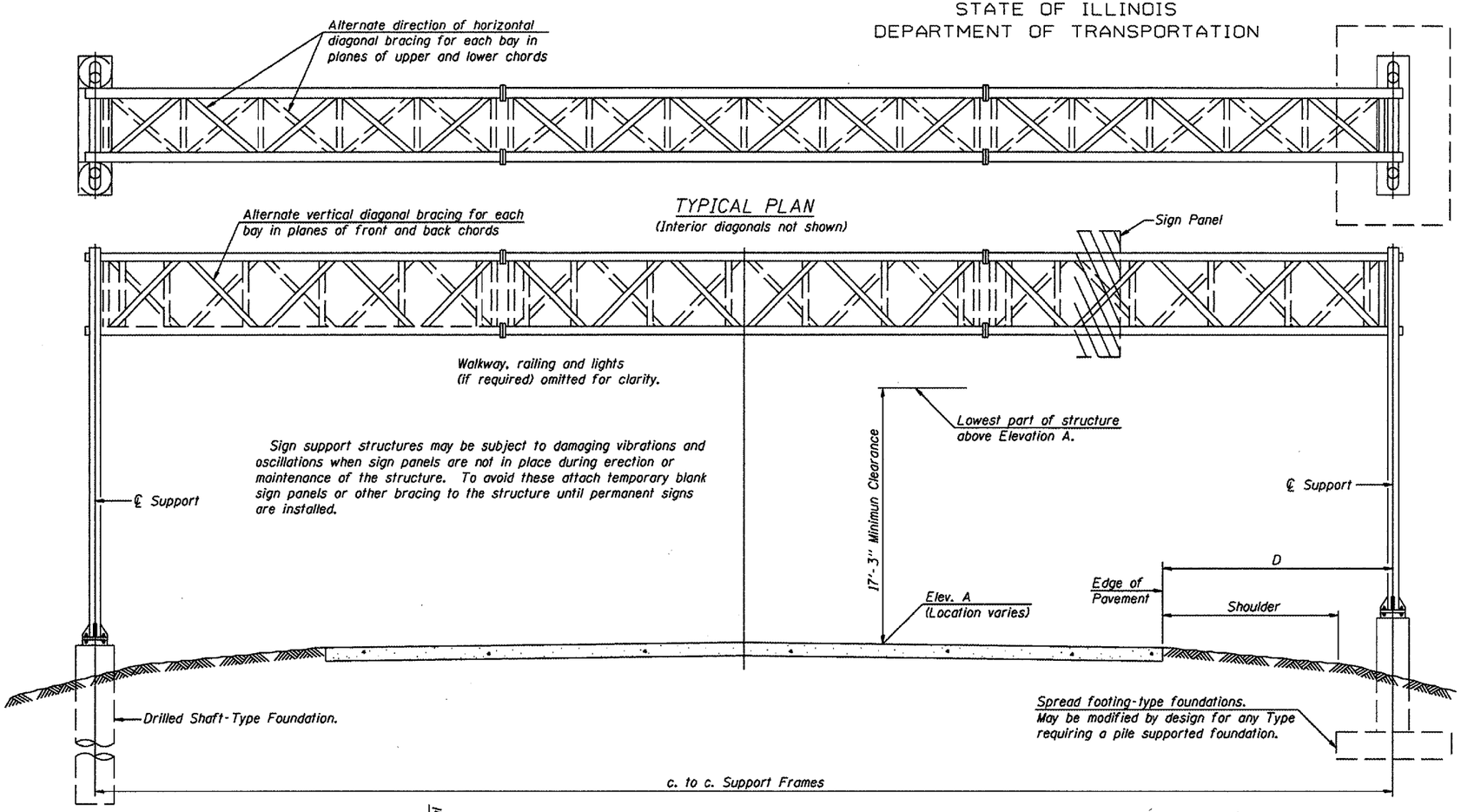
Location No.:	6-03	State I.D. No.:	6S054I055L128.2				
County:	Logan	Route:	I-55	M.P.:	128.2	Direction:	SB

Description of Work	Unit	Quantity
REMOVE OVERHEAD SIGN STRUCTURE-SPAN	EACH	1.00
OVERHEAD SIGN STRUCTURE-SPAN TYPE II-A	FOOT	107.00
REMOVE & REINSTALL SIGN PANEL	SQ FT	434.00
REMOVE & REINSTALL WALKWAY	FOOT	34.00
FURNISH & INSTALL SAFETY CHAIN	EACH	2.00
REPLACE / TIGHTEN CLIP PER SIGN	EACH	2.00
This structure is being downsized from a Type IV truss to		
a Type II truss. There is no sign lighting on this structure.		

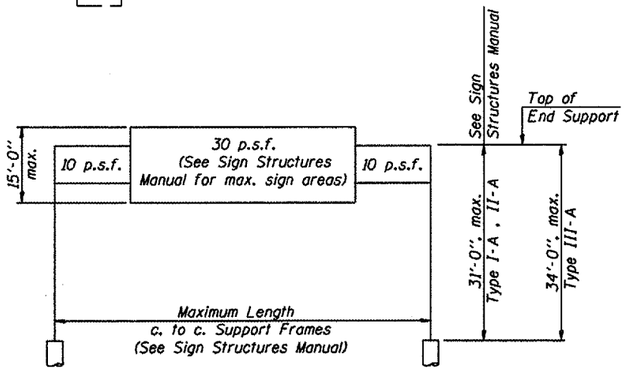
Location No.:	6-04	State I.D. No.:	6S054I055L126.5				
County:	Logan	Route:	I-55	M.P.:	126.5	Direction:	SB

Description of Work	Unit	Quantity
REMOVE OVERHEAD SIGN STRUCTURE - SPAN	EACH	1.00
OVERHEAD SIGN STRUCTURE - SPAN, TYPE II-A	FOOT	100.00
STRUCTURAL STEEL SUPPORT OVERHEAD SIGN STRUCTURE	EACH	2.00
REMOVE & REINSTALL SIGN PANEL	SQ FT	241.00
REMOVE & REINSTALL WALKWAY	FOOT	32.30
REPAIR HANDRAIL LOCKING PIN CONNECTION	EACH	10.00
FURNISH & INSTALL SAFETY CHAIN	EACH	2.00
REPLACE / TIGHTEN CLIP PER SIGN	EACH	1.00
RELOCATE ELECTRIC SERVICE	EACH	1.00
DRILLED SHAFT CONCRETE FOUNDATIONS	CU YD	21.50
REMOVE CONCRETE FOUNDATION - OVERHEAD	EACH	2.00

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



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
6S075I072R002.7	153 + 00	III	119' - 0"	465.98	41' - 6"	15' - 6"	429.00
6S075I072L005.3	1080 + 00	II	91' - 0"	465.91	41' - 6"	12' - 6"	406.00
6S054I055L128.2	490 + 00	II	107' - 0"	588.88	41' - 6"	14' - 0"	434.00
6S054I055L126.5	385 + 84	II	100' - 0"	564.30	32' - 0"	14' - 0"	241.00

**Looking upstation for structures with signs both sides.

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.
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 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.

TOTAL BILL OF MATERIAL

ITEM	UNIT	TOTAL
OVERHEAD SIGN STRUCTURE TYPE I-A (4'-0" x 4'-6")	Foot	
OVERHEAD SIGN STRUCTURE TYPE II-A (4'-6" x 5'-3")	Foot	
OVERHEAD SIGN STRUCTURE TYPE III-A (5'-0" x 7'-0")	Foot	
OVERHEAD SIGN STRUCTURE WALKWAY TYPE A	Foot	
CONCRETE FOUNDATIONS	Cu. Yds.	
DRILLED SHAFT CONCRETE FOUNDATIONS	Cu. Yds.	

NUMBER	REVISION	DATE

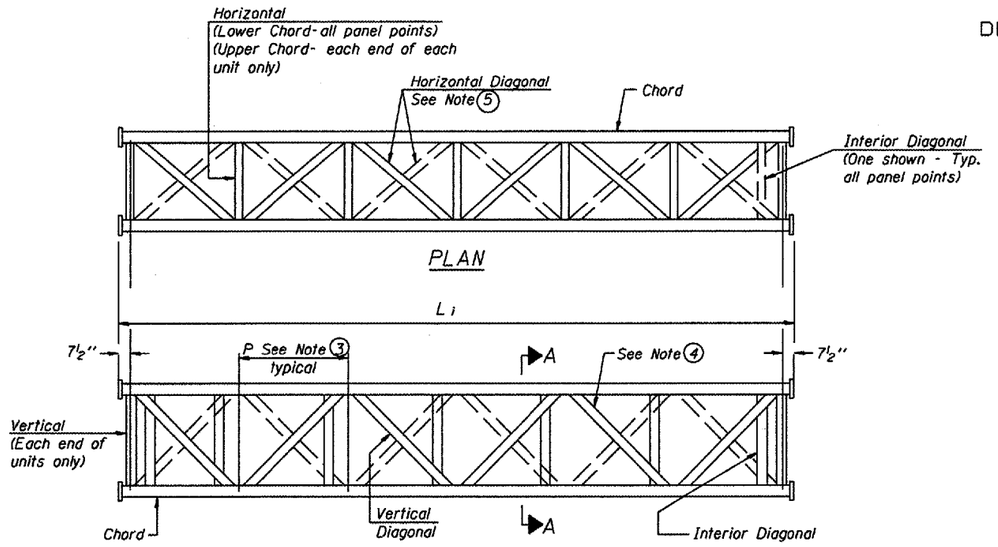
DESIGNED -
CHECKED -
DRAWN -
CHECKED -

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

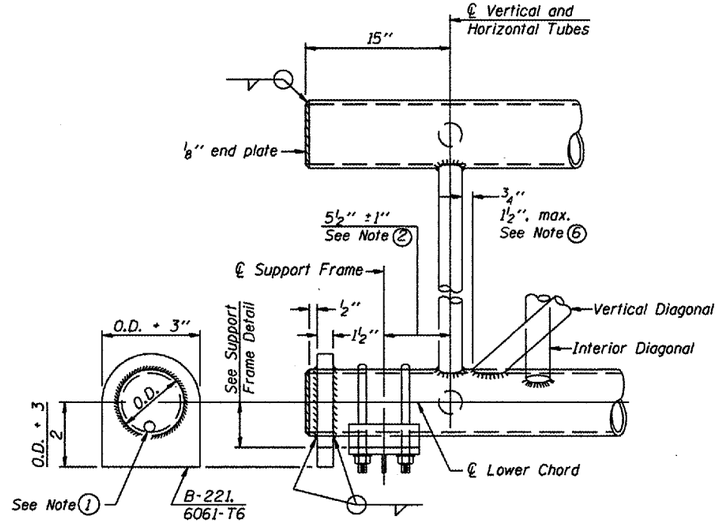
OS-A-1 1-7-05

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

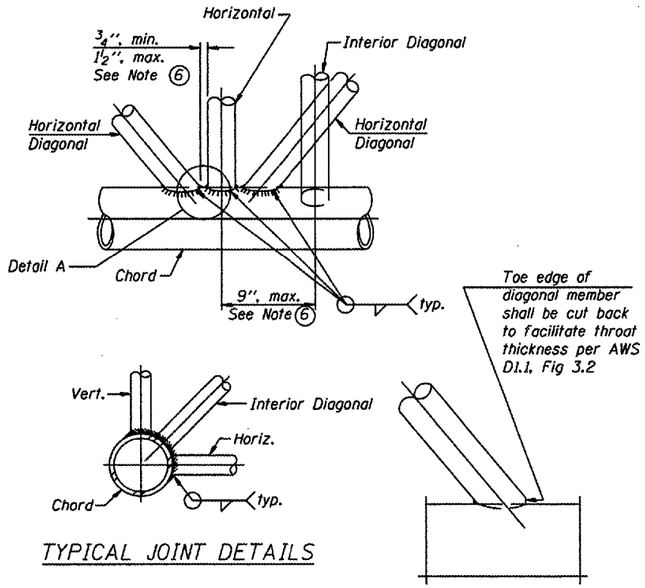
District 6
Truss Repair & Replacement



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

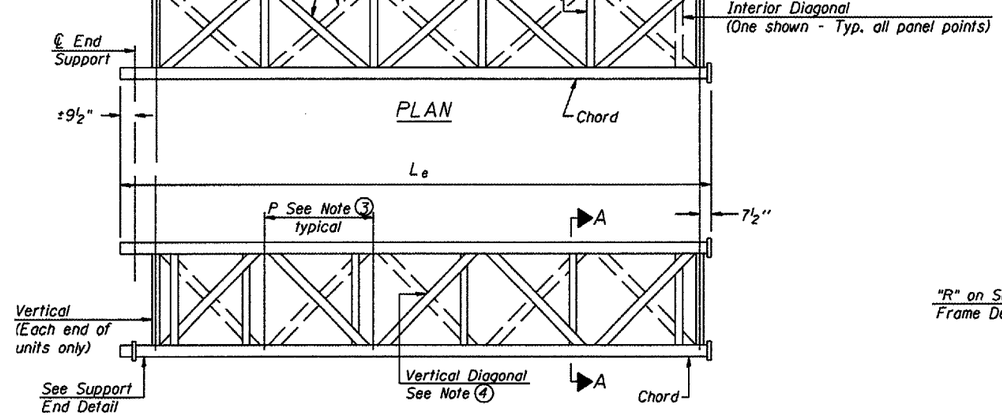


SUPPORT END DETAIL FOR EXTERIOR UNIT

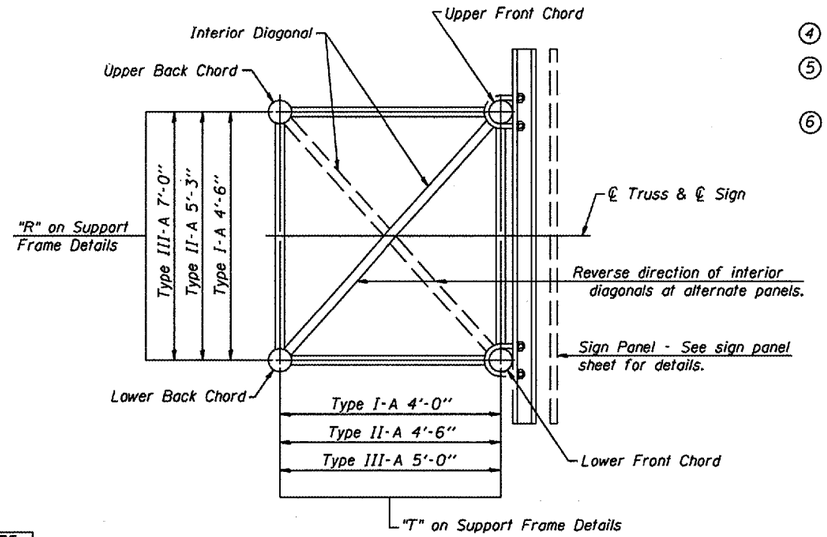


TYPICAL JOINT DETAILS

DETAIL A



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



SECTION A-A

NOTES

(1) Contractor may alternatively use standard aluminum drive-fit cap to close end. ½" ϕ 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.

DESIGNED	-
CHECKED	-
DRAWN	-
CHECKED	-

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

OS-A-2 1-7-05

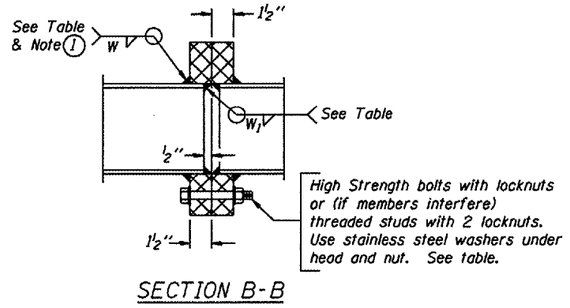
NUMBER	REVISION	DATE

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

District 6
Truss Repair & Replacement

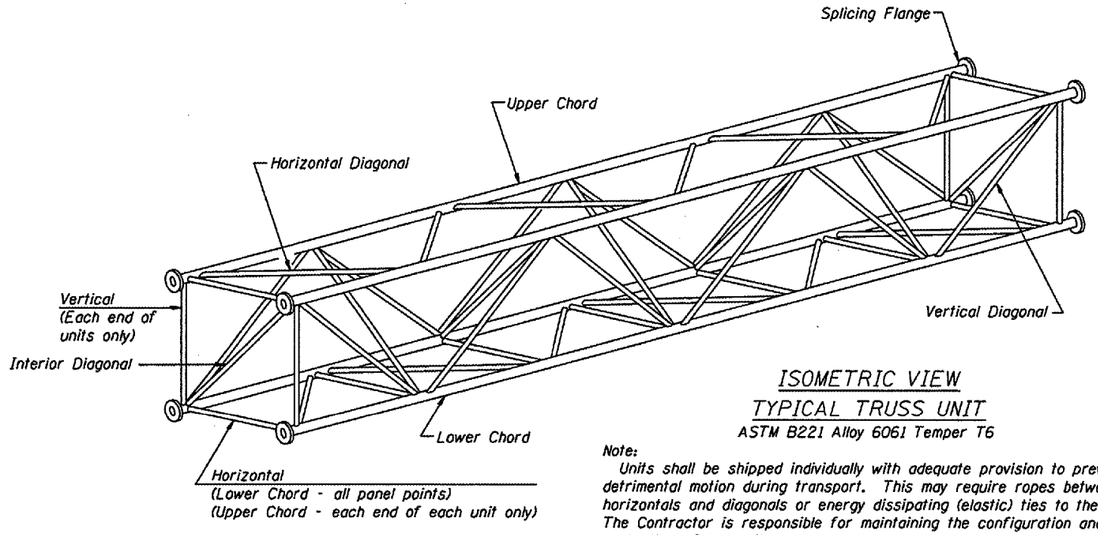
TRUSS UNIT TABLE

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_1		
6S075I072R002.7	153 + 00	III	6	30' - 6"	4' - 9 1/4"	2	6	29' - 10 1/2"	4' - 9 1/4"	7"	5/16"	3 1/4"	5/16"	3 1/4"	6	1"	7/16"	5/16"	11 1/2"	15"
6S075I072L005.3	1080 + 00	II	5	29' - 3 1/4"	5' - 5 3/4"	1	6	34' - 1 1/2"	5' - 5 3/4"	6"	5/16"	3"	5/16"	2 1/2"	6	7/8"	3/8"	1/4"	10 1/4"	13 3/4"
6S054I055L128.2	490 + 00	II	7	38' - 2 1/4"	5' - 2 1/4"	1	6	32' - 4 1/2"	5' - 2 1/4"	6 1/2"	5/16"	3"	5/16"	3 1/2"	6	1"	3/8"	1/4"	11"	14 1/2"
6S054I055L126.5	385 + 84	II	6	34' - 1 1/2"	5' - 4 1/2"	1	6	33' - 6"	5' - 4 1/2"	6"	5/16"	3"	5/16"	3"	6	7/8"	3/8"	1/4"	10 1/4"	13 3/4"



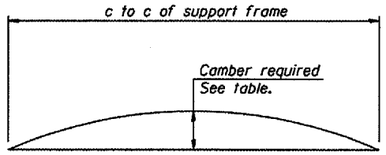
SECTION B-B

(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.



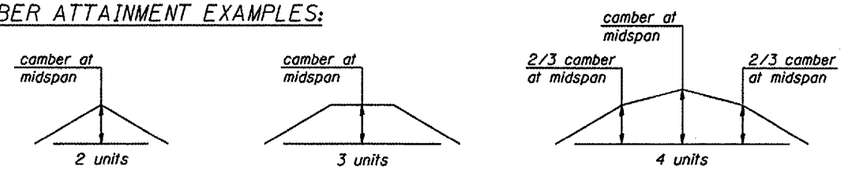
ISOMETRIC VIEW
TYPICAL TRUSS UNIT
ASTM B221 Alloy 6061 Temper T6

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.

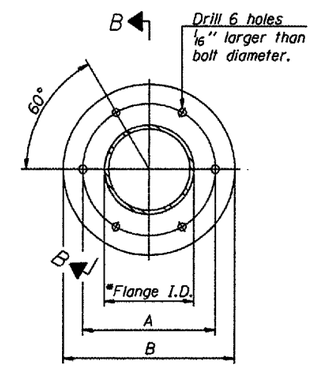


CAMBER DIAGRAM
Camber curve shown is theoretical. Actual camber attained by slope changes at splices between units.

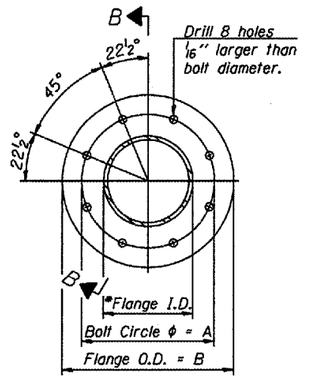
CAMBER ATTAINMENT EXAMPLES:



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".

NUMBER	REVISION	DATE

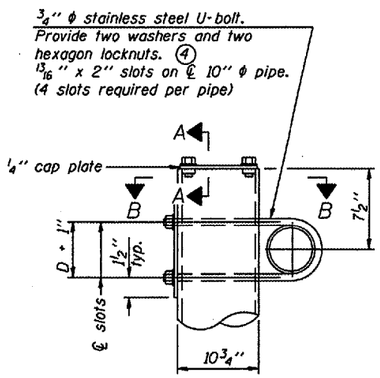
DESIGNED -	
CHECKED -	
DRAWN -	
CHECKED -	

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

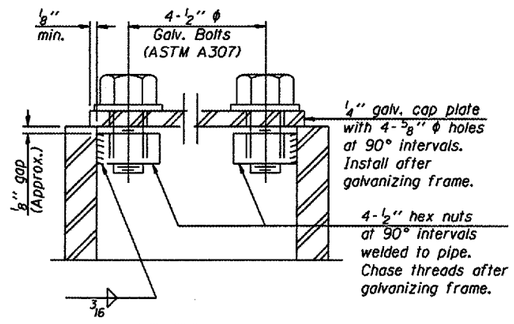
OS4-A-2 1-7-05

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

District 6
Truss Repair & Replacement

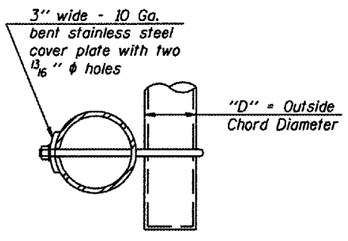


DETAIL A

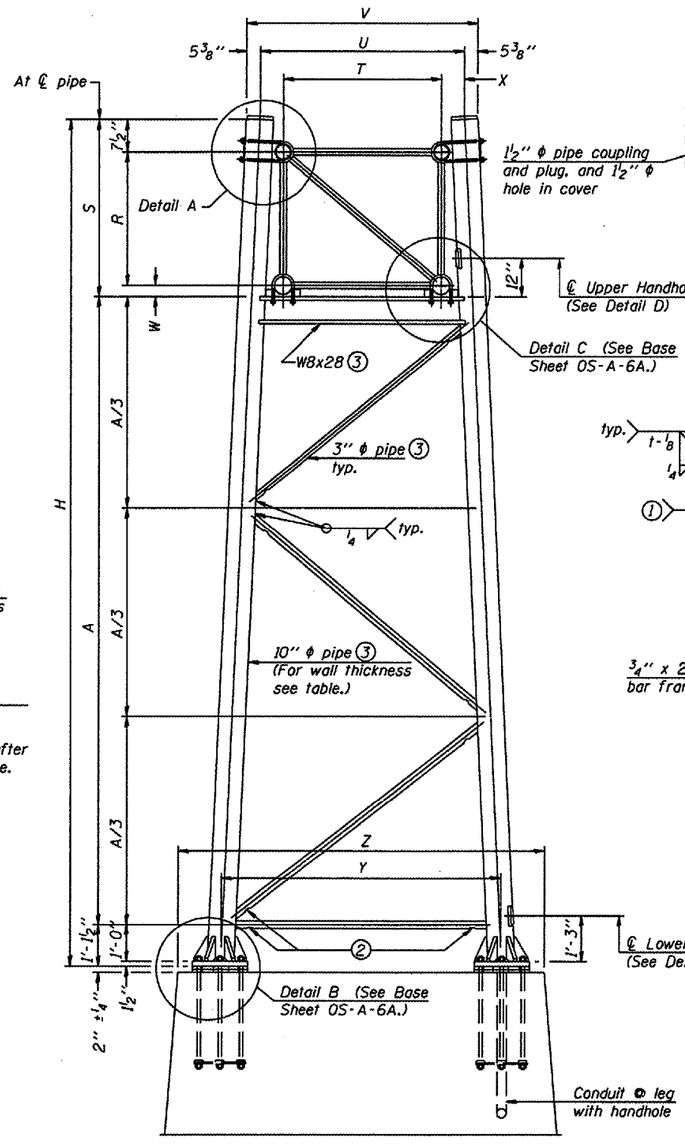


SECTION A-A

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

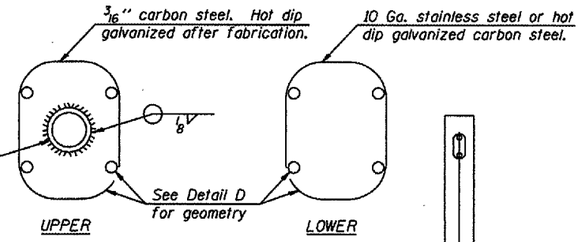


SECTION B-B

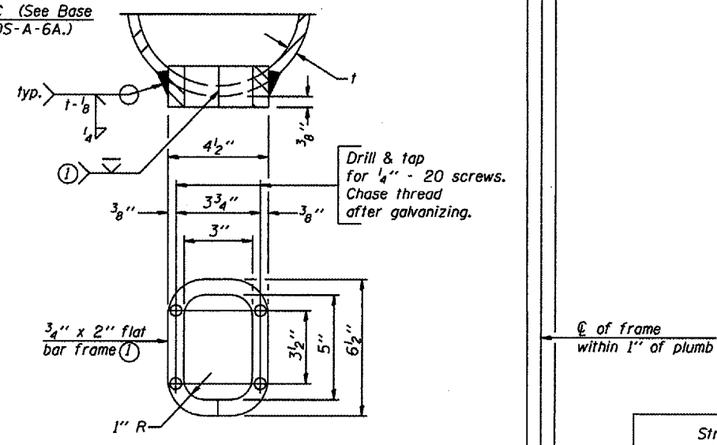


For Foundation Details, see base sheet OS-F3 (Spread Footing) or OS4-F3 (Drilled Shaft).

SIDE ELEVATION

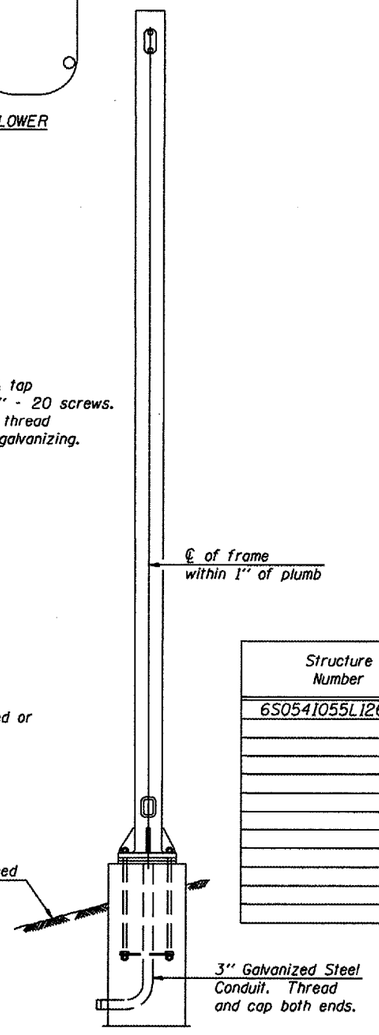


HANDHOLE COVERS



Provide 6 1/2" x 4 1/2" cover.
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)

DETAIL D



END ELEVATION

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 min 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.

Structure Number	Station	Support		Truss Type	Pipe Wall Thickness	H	A
		Left	Right				
6S0541055L126.5	385 + 84	X	X	II	0.365(Std)	30' - 4"	22' - 11"

10" ϕ PIPE TRUSS SUPPORT FRAME

Truss Type	Dimensions								
	R	S	T	U	V	W	X	Y	Z
I-A	4'-6"	5'-5 1/2"	4'-0"	5'-6"	6'-4 3/4"	4"	9"	8'-3"	10'-9"
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"	10'-9"

NUMBER	REVISION	DATE

DESIGNED	-
CHECKED	-
DRAWN	-
CHECKED	-

- 20

EXAMINED

ENGINEER OF BRIDGE DESIGN

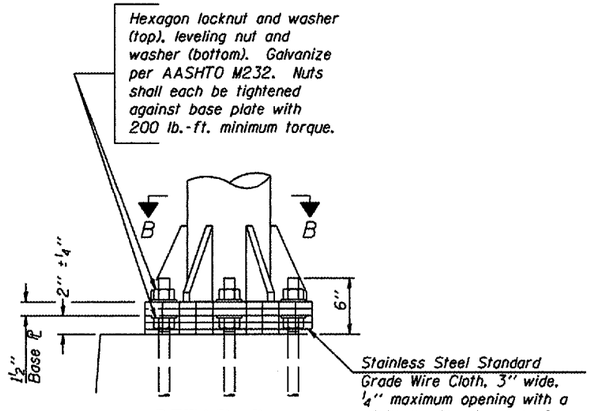
PASSED

ENGINEER OF BRIDGES AND STRUCTURES

OS-A-6 1-7-05

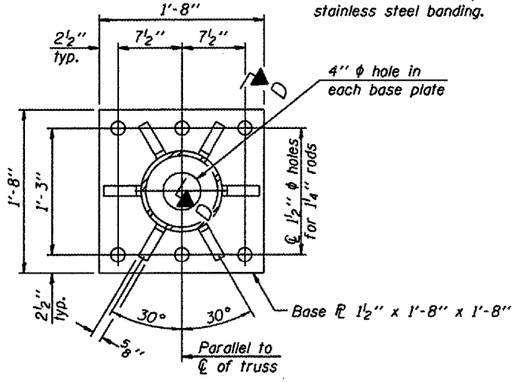
OVERHEAD SIGN STRUCTURES
SUPPORT FRAME for ALUMINUM TRUSS

District 6
Truss Repair & Replacement

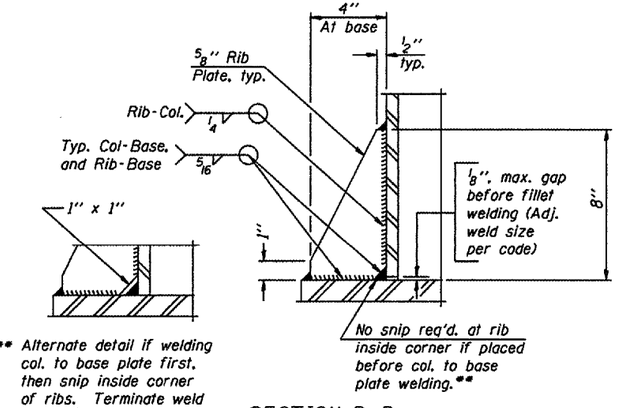


DETAIL B

Ribs shall be cut to fit slope of pipe.

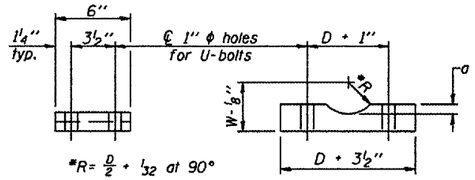


SECTION B-B



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

SECTION D-D



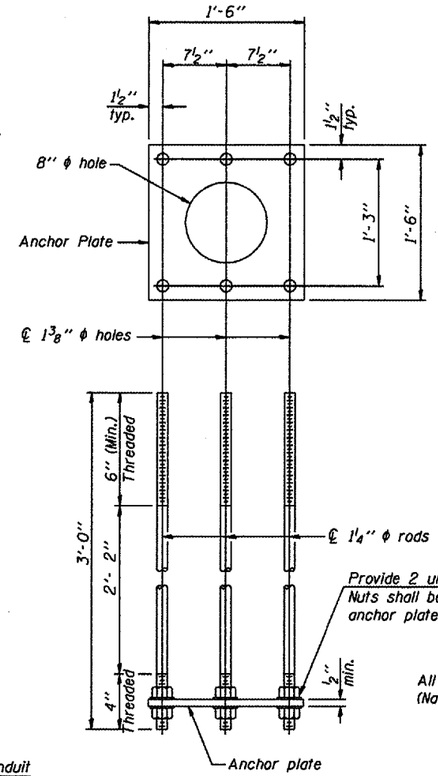
*R= D/2 + 1/32 at 90°

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

SADDLE SHIM DETAIL

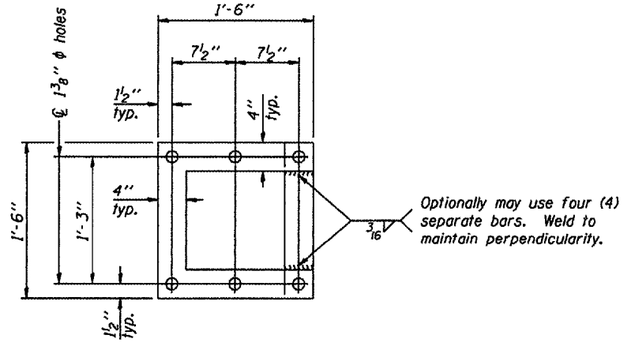
ASTM B26 Alloy 356-F
or
ASTM B209 Alloy 6061-T651
(4 required per sign truss)

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

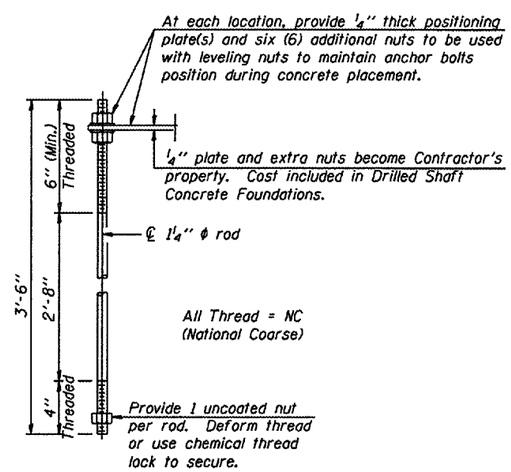


All Thread = NC
(National Coarse)

ANCHOR ROD DETAIL
Spread Footing Foundation

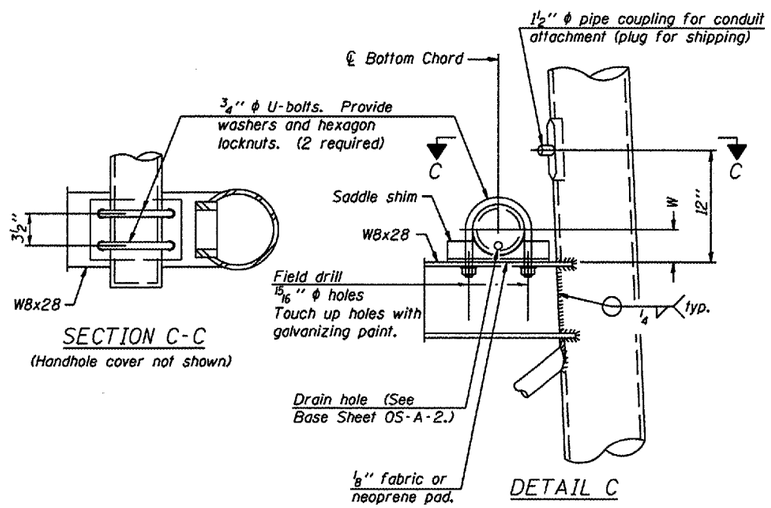


POSITIONING PLATE(S)



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.



SECTION C-C
(Handhole cover not shown)

DETAIL C

10" ϕ PIPE SUPPORT FRAME DETAILS

NUMBER	REVISION	DATE

DESIGNED -
CHECKED -
DRAWN -
CHECKED -

- 20

EXAMINED

ENGINEER OF BRIDGE DESIGN

PASSED

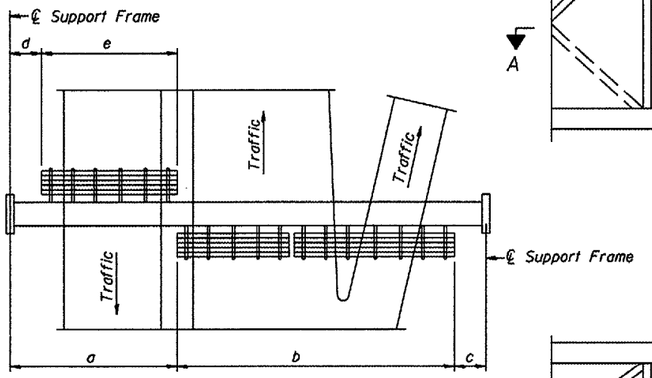
ENGINEER OF BRIDGES AND STRUCTURES

OS-A-6A 1-7-05

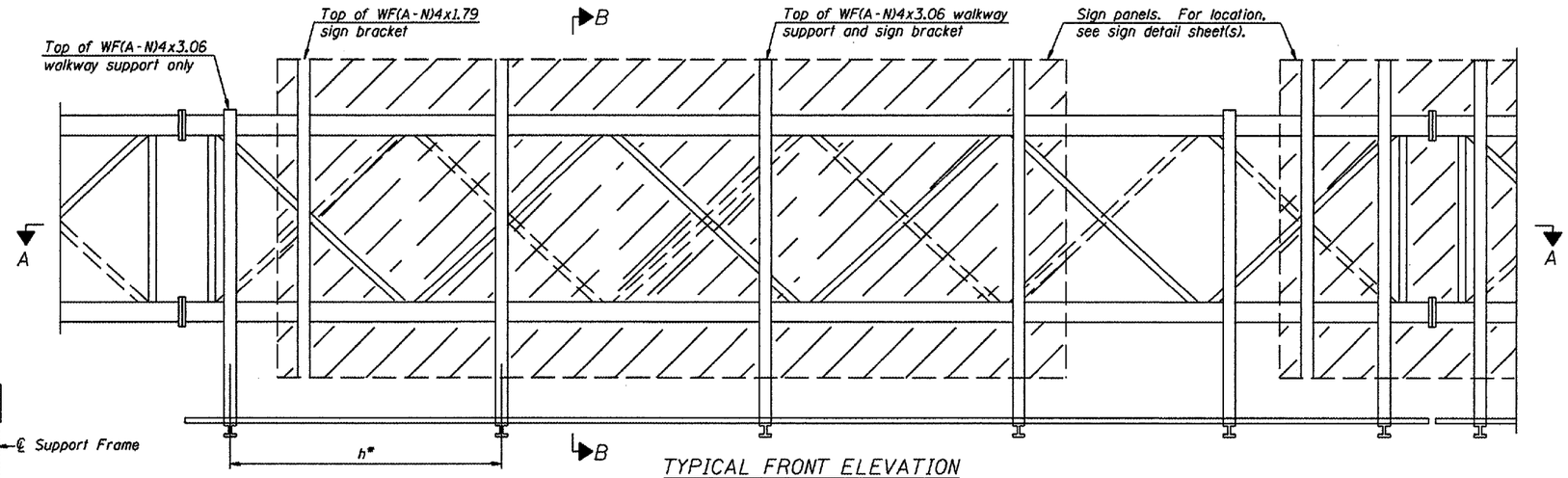
OVERHEAD SIGN STRUCTURES
SUPPORT FRAME DETAILS ALUMINUM TRUSS

District 6
Truss Repair & Replacement

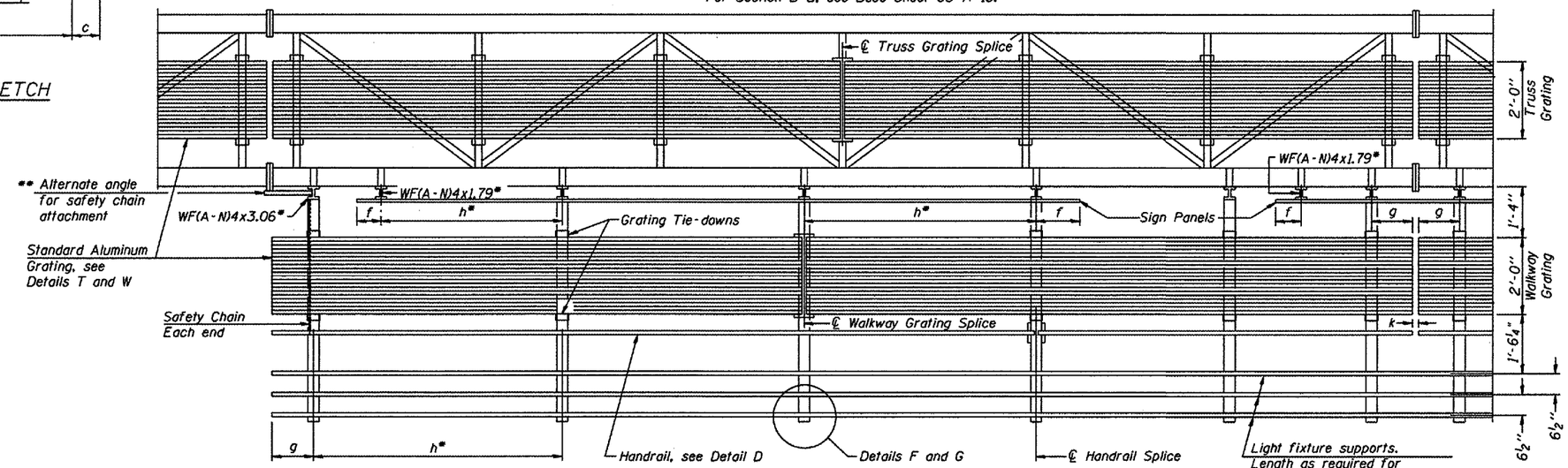
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



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.



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

BRACKET TABLE

WF(A-N)4x1.79 or 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

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 ℄ 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, 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 Details D, F, G and P and Handrail Splice Details, see Base Sheet OS-A-11.

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, handrail and light support splices placed as needed.

Structure Number	Station	a	b	c	d	e	Walkway Grating and Handrail Lengths
6S0751072R002.7	153 + 00	N/A	N/A	N/A	N/A	N/A	119' - 0" *
6S0751072L005.3	1080 + 00	N/A	N/A	N/A	N/A	N/A	91' - 0" *
6S0541055L128.2	490 + 00	N/A	N/A	N/A	N/A	N/A	107' - 0" *
6S0541055L126.5	385 + 84	N/A	N/A	N/A	N/A	N/A	100' - 0" *
						* Truss	Grating Lengths

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".

DESIGNED	-
CHECKED	-
DRAWN	-
CHECKED	-

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

NUMBER	REVISION	DATE

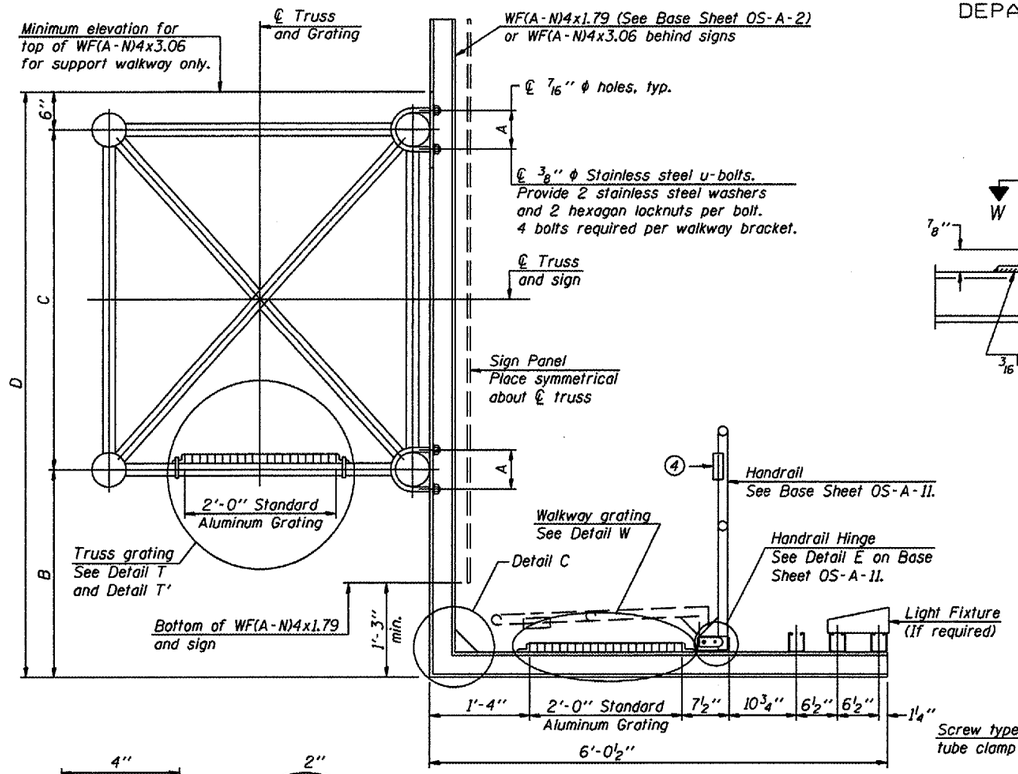
OS-A-9 1-7-05

OVERHEAD SIGN STRUCTURES
ALUMINUM WALKWAY DETAILS

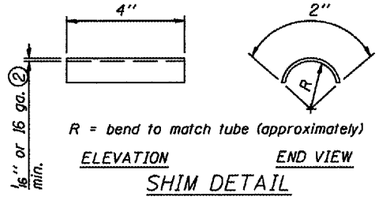
District 6
Truss Repair & Replacement

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

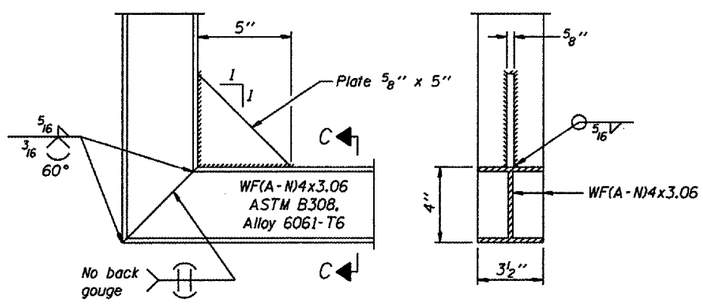
Various Routes
OVD SIN STR REP & REPL 2005-12
Various Counties
Sheet 77 of 82
Contract Number 44872



SECTION B-B

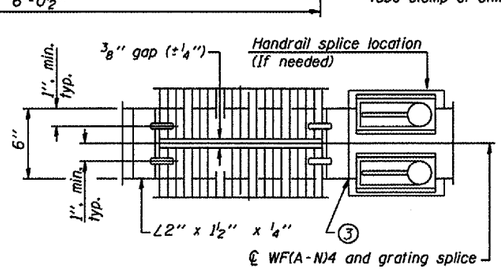


SHIM DETAIL

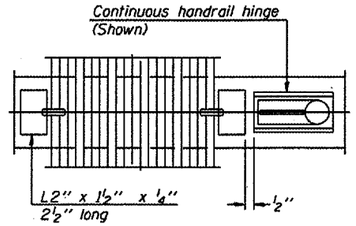


DETAIL C
(See Detail P, Base Sheet OS-A-11.)

SECTION C-C

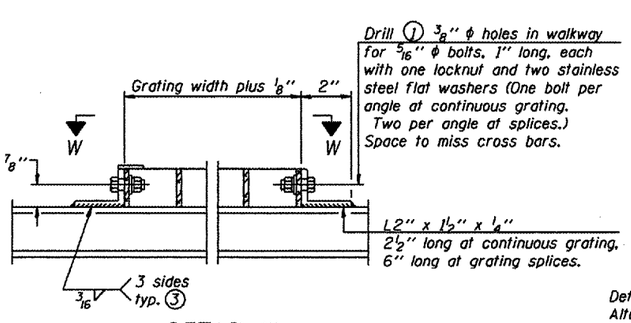


(AT WALKWAY GRATING SPLICE)

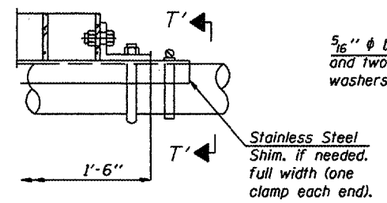


(CONTINUOUS WALKWAY GRATING)

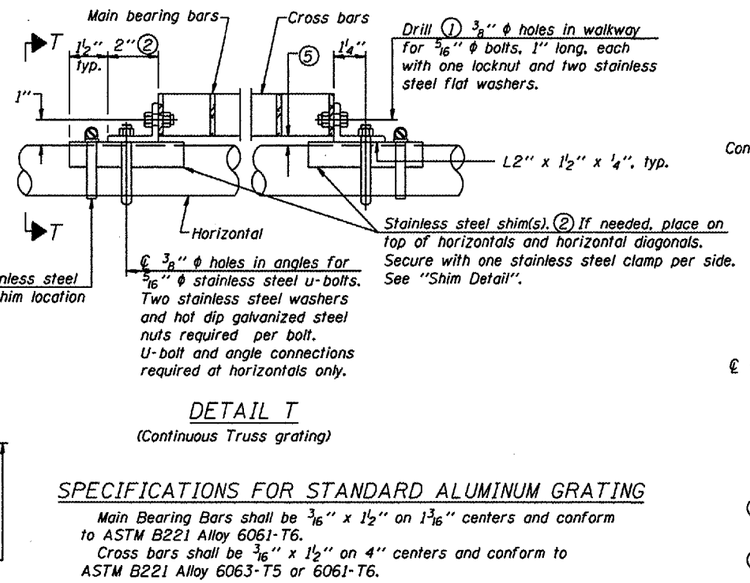
SECTION W-W



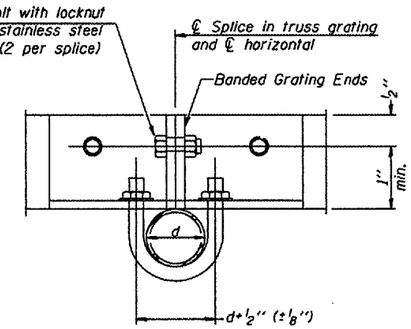
DETAIL W
(Walkway grating)



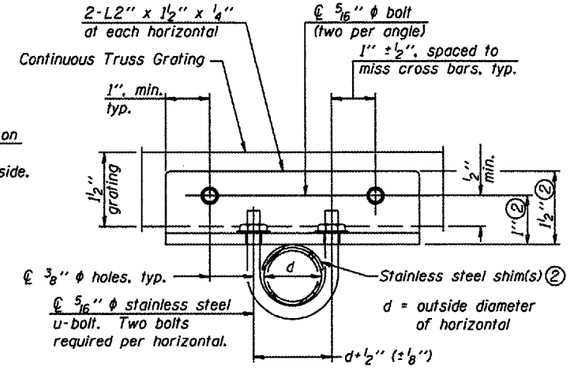
DETAIL T'
(Truss grating splice)
Details not shown same as Detail T.
Alternate materials may be used subject to the Engineer's review and approval.



DETAIL T
(Continuous Truss grating)



SECTION T'-T'



SECTION T-T

SPECIFICATIONS FOR STANDARD ALUMINUM GRATING

Main Bearing Bars shall be 3/16" x 1½" on 1 3/16" centers and conform to ASTM B221 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.

This Sheet For Information Only

Structure Number	Station	A	B	C	D
Reuse Existing Walkway and					
Walkway Support Brackets					

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 OS-A-11.)

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

⑤ Tube to grating gap may vary from 0 to ½", max. to align walkway, allow for camber, etc.

OVERHEAD SIGN STRUCTURES
ALUMINUM WALKWAY DETAILS

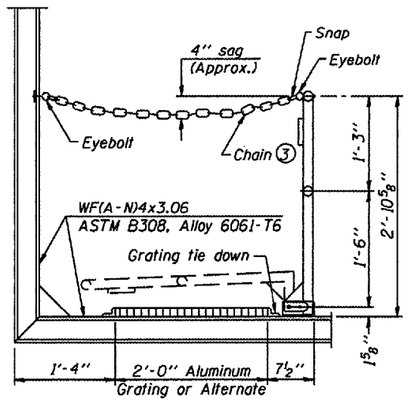
District 6
Truss Repair & Replacement

DESIGNED	-
CHECKED	-
DRAWN	-
CHECKED	-

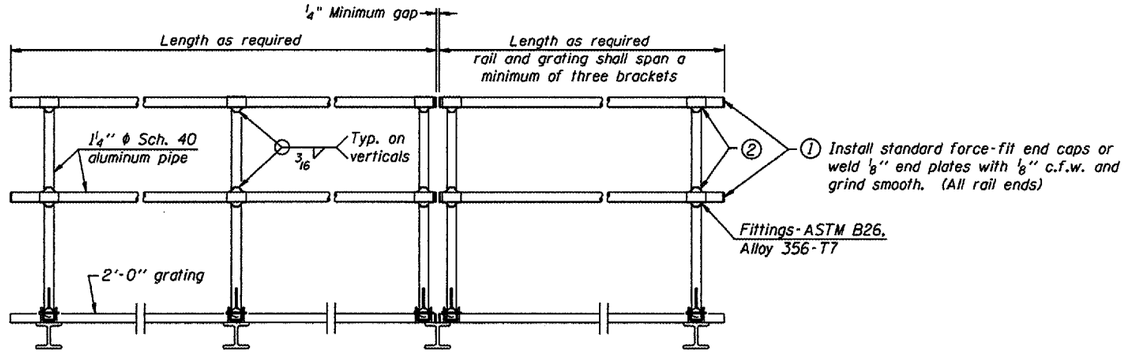
- 20
EXAMINED
ENGINEER OF BRIDGE DESIGN
PASSED
ENGINEER OF BRIDGES AND STRUCTURES

NUMBER	REVISION	DATE

OS-A-10 1-7-05

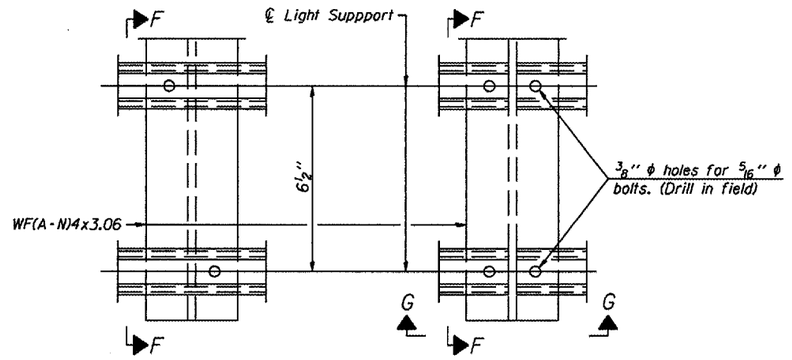


SIDE ELEVATION
(Showing safety chain w/o sign)



FRONT ELEVATION

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

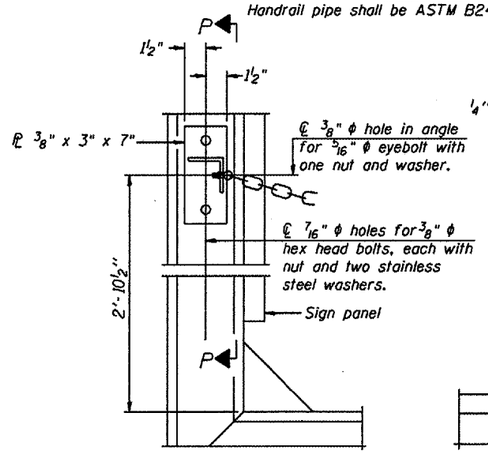


DETAIL F

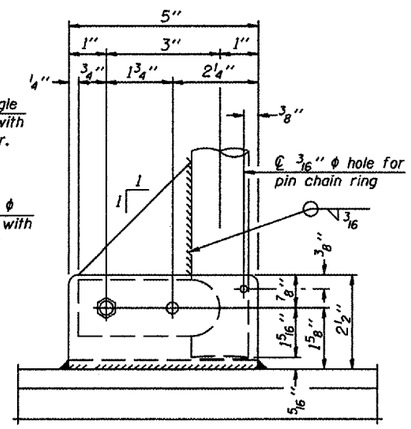
DETAIL G

HANDRAIL DETAILS

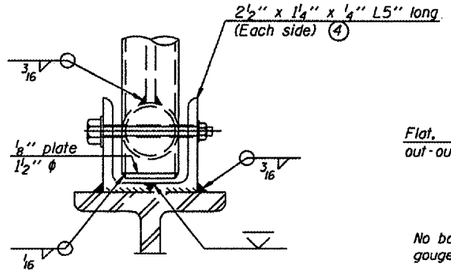
Handrail pipe shall be ASTM B241, Alloy 6063-T6 or Alloy 6061-T6.



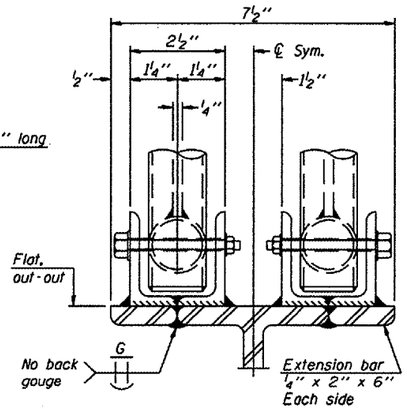
ALTERNATE SAFETY CHAIN ATTACHMENT
(With Sign Present)
Items not shown same as "Side Elevation" of "Handrail Details"



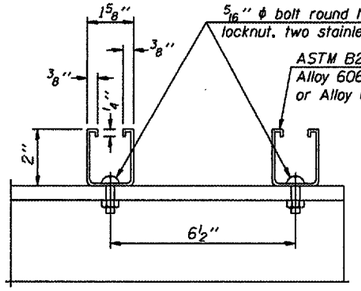
SIDE ELEVATION



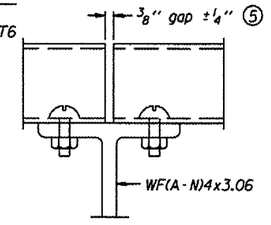
FRONT ELEVATION
See "Elevation" at right for dimensions.



ELEVATION AT HANDRAIL JOINT (4)



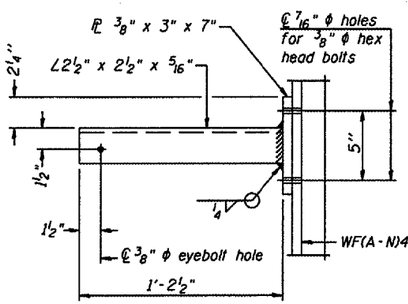
SECTION F-F



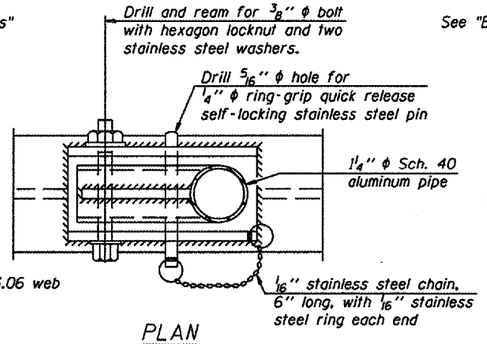
SECTION G-G

LIGHTING FIXTURE MOUNTS (IF REQUIRED)

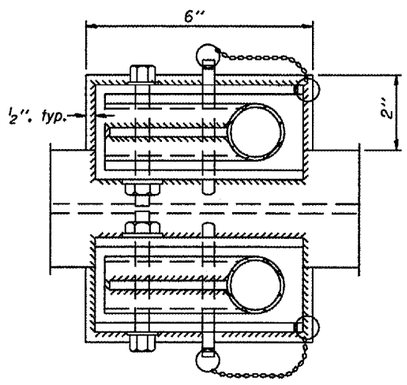
(5) Field cut ends of light support channels shall be free of burrs or hazardous projections and coated with zinc-rich primer or equivalent.



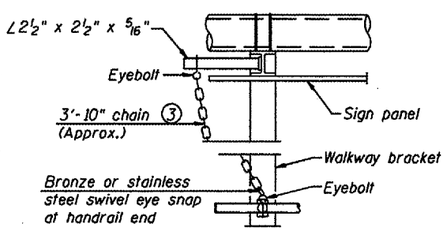
SECTION P-P



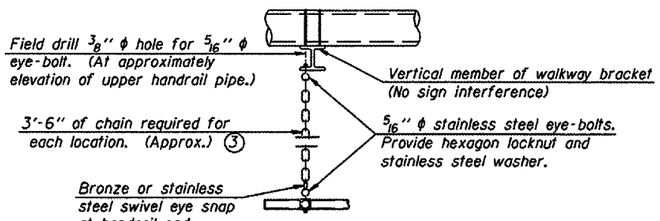
PLAN
DETAIL E HANDRAIL HINGE



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.

(3) 3/16" galvanized steel chain, approximately 12 links per foot. Chain to be hot dip galvanized after manufacture and suitable for prolonged exterior exposure. Alternate materials may be substituted with the Engineer's approval.

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

This Sheet For Information Only

DESIGNED -	
CHECKED -	
DRAWN -	
CHECKED -	

- 20

EXAMINED

ENGINEER OF BRIDGE DESIGN

PASSED

ENGINEER OF BRIDGES AND STRUCTURES

NUMBER	REVISION	DATE

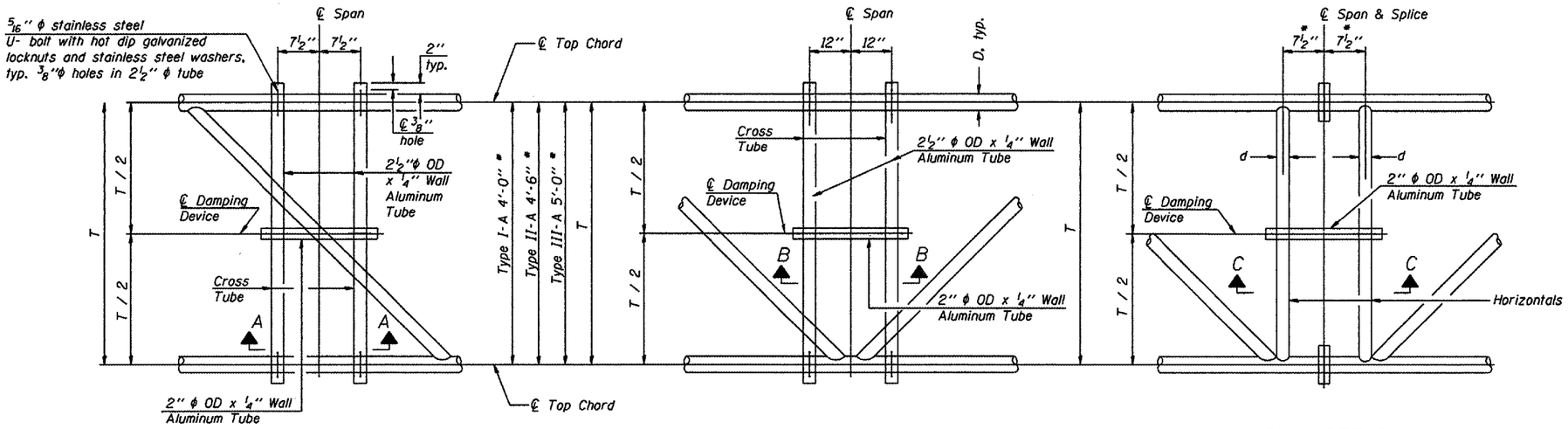
OS-A-11 1-7-05

OVERHEAD SIGN STRUCTURES
ALUMINUM HANDRAIL DETAILS

District 6
Truss Repair & Replacement

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

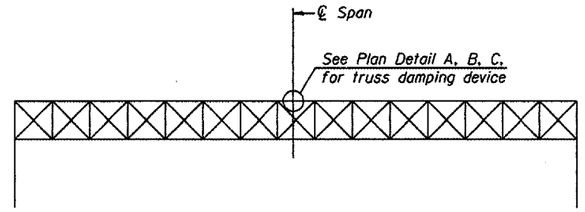
* Center of horizontal to center of splice dimension may vary. Verify before drilling holes in mounting tube.



PLAN DETAIL "A"
℄ Span between Panel Points

PLAN DETAIL "B"
℄ Span at Panel Point

PLAN DETAIL "C"
℄ Span at ℄ Chord Splice



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

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")

DESIGNED -	
CHECKED -	
DRAWN -	
CHECKED -	

\- 20

EXAMINED

ENGINEER OF BRIDGE DESIGN

PASSED

ENGINEER OF BRIDGES AND STRUCTURES

OS-A-D 1-7-05

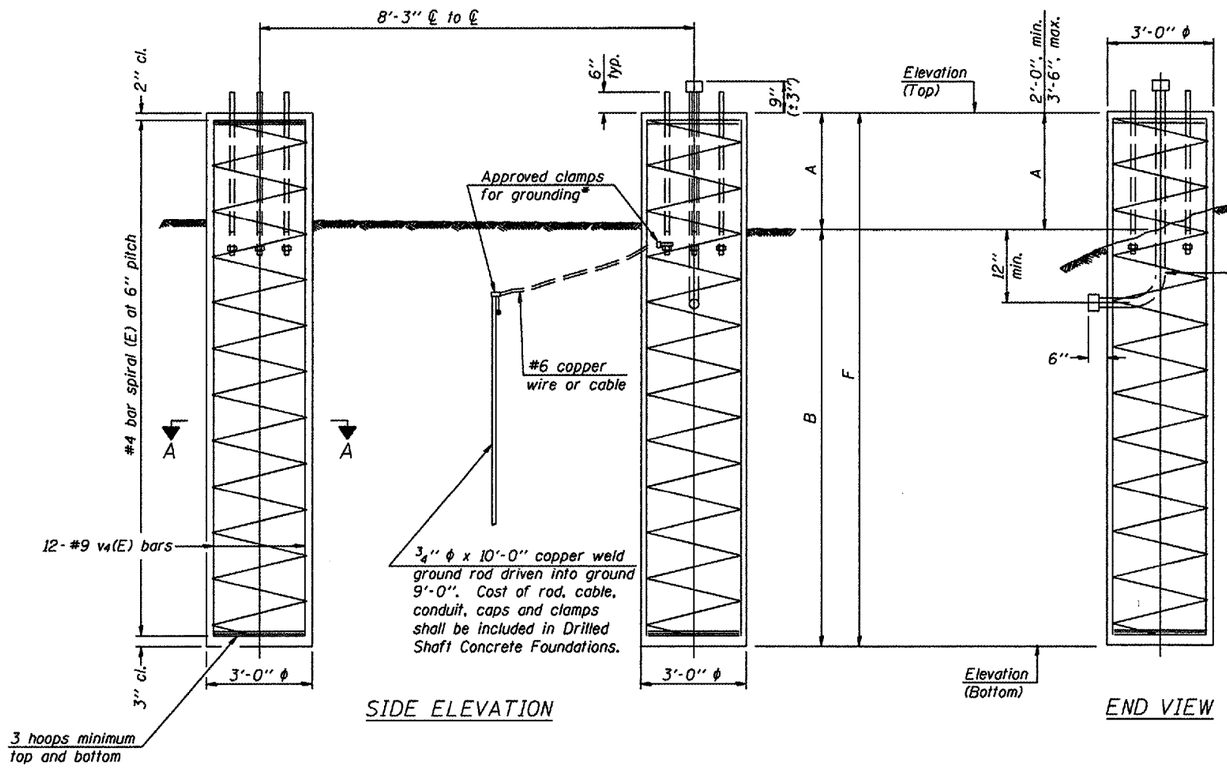
OVERHEAD SIGN STRUCTURE
DAMPING DEVICE

District 6
Truss Repair & Replacement

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

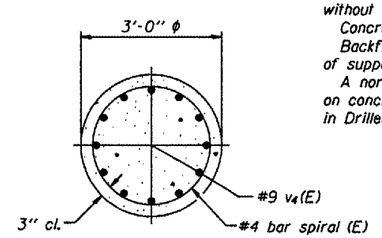
For anchor rod size and placement, see Support Frame Detail Sheet.

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



SIDE ELEVATION

END VIEW



SECTION A-A

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.

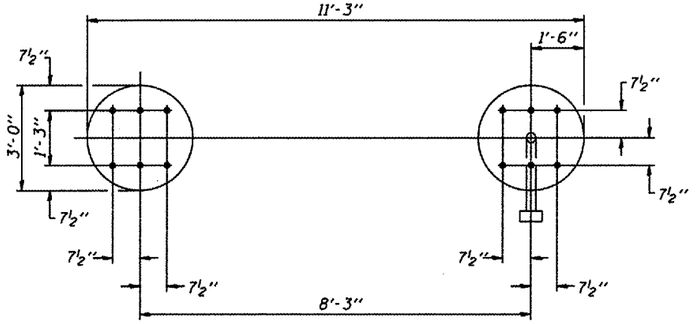
No sonotubes or decomposable forms shall be used below the lower conduit entrance.

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 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.



PLAN

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	
6S054I055L126.5	385 + 84	562.8		3' - 0"	17' - 6"	20' - 6"	562.8		3' - 0"	17' - 6"	20' - 6"	21.5

DESIGNED	-
CHECKED	-
DRAWN	-
CHECKED	-

\- 20

EXAMINED

ENGINEER OF BRIDGE DESIGN

PASSED

ENGINEER OF BRIDGES AND STRUCTURES

NUMBER	REVISION	DATE

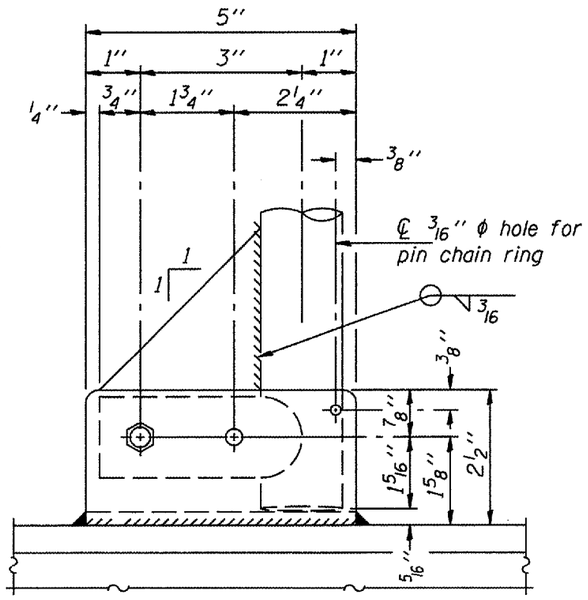
DETAILS FOR 10" ϕ SUPPORT FRAME
TYPE I-A or II-A TRUSS

OVERHEAD SIGN STRUCTURES
DRILLED SHAFT DETAILS

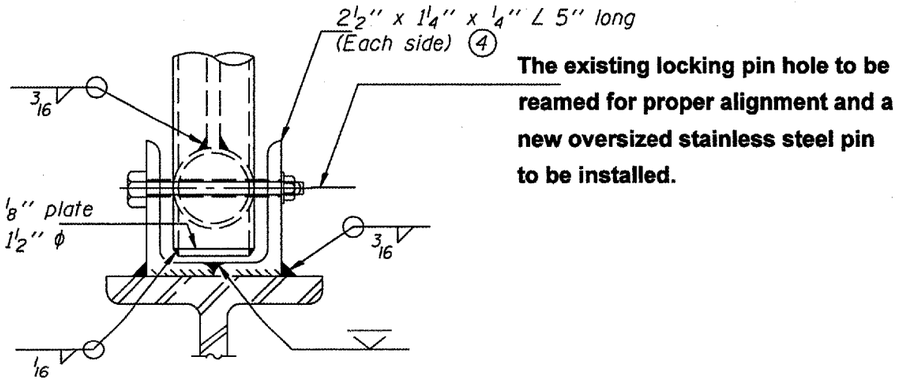
District 6
Truss Repair & Replacement

OS4-F3 1-7-05

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



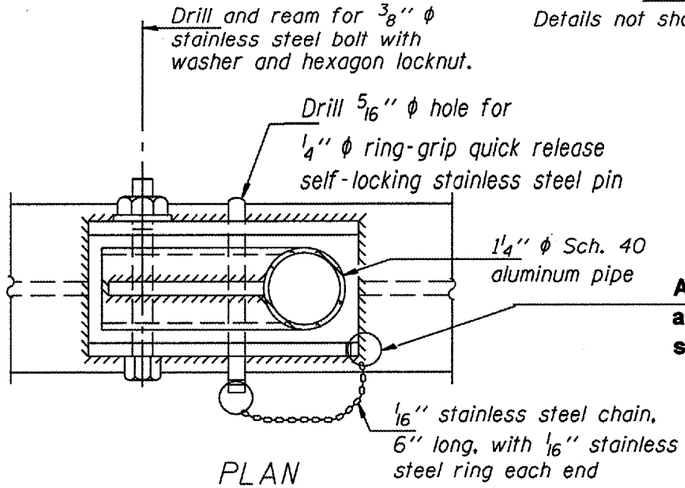
SIDE ELEVATION



The existing locking pin hole to be reamed for proper alignment and a new oversized stainless steel pin to be installed.

FRONT ELEVATION

Details not shown same as "ELEVATION" at right.



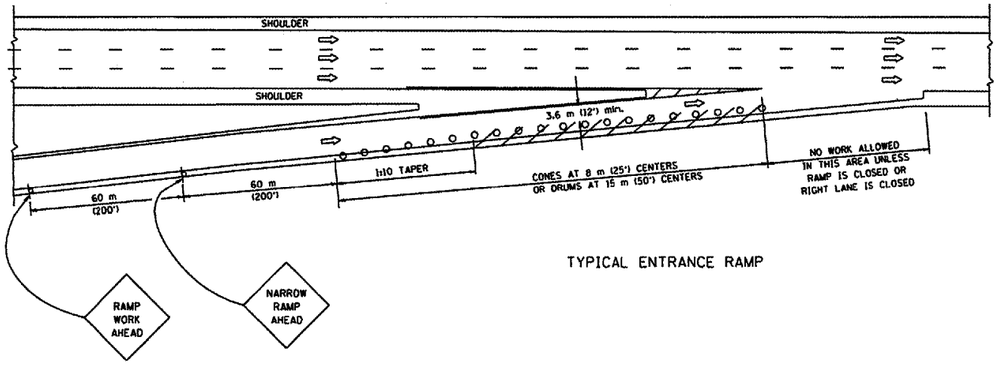
A new stainless steel chain shall be attached to the angle with a 1/16" stainless steel ring.

PLAN

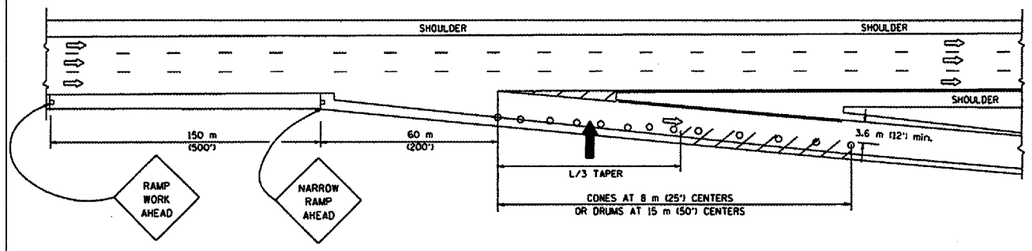
DETAIL E HANDRAIL HINGE

OVERHEAD SIGN STRUCTURES
HANDRAIL HINGE REPAIR DETAIL

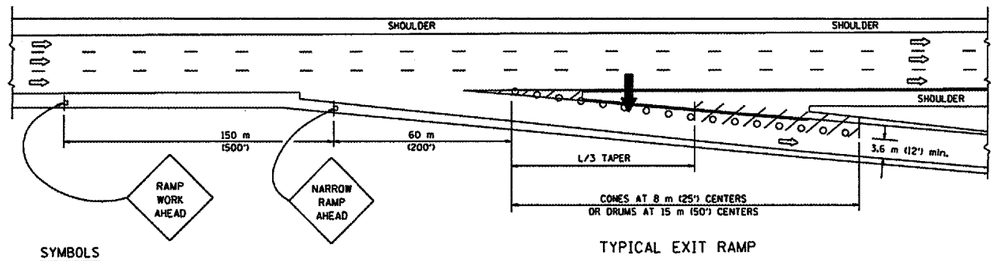
PARTIAL RAMP CLOSURE DETAILS



TYPICAL ENTRANCE RAMP



TYPICAL EXIT RAMP



TYPICAL EXIT RAMP

SYMBOLS

- ARROWBOARD
- WORK AREA
- SIGN ON PORTABLE OR PERMANENT SUPPORT
- FLAGGER WITH CONTROL SIGN
- DRUM WITH MONO-DIRECTIONAL STEADY BURNING LIGHT
- CONES - 700 (28) IN HEIGHT

GENERAL NOTES

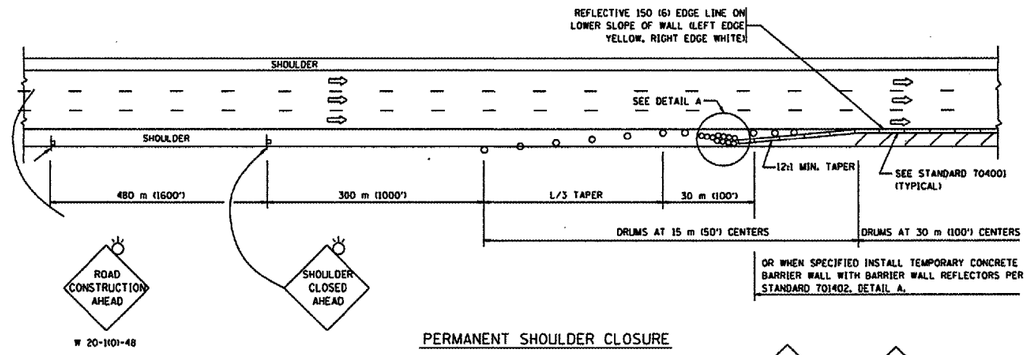
1. THE "L" DISTANCE EQUALS:

SPEED LIMIT	FORMULAS	
80 km/h (45 mph) OR GREATER:	METRIC L=0.65(WXS)	ENGLISH L=(WXS)

W = WIDTH OF OFFSET IN METERS (FEET)
S = NORMAL POSTED SPEED KM/H (MPH)

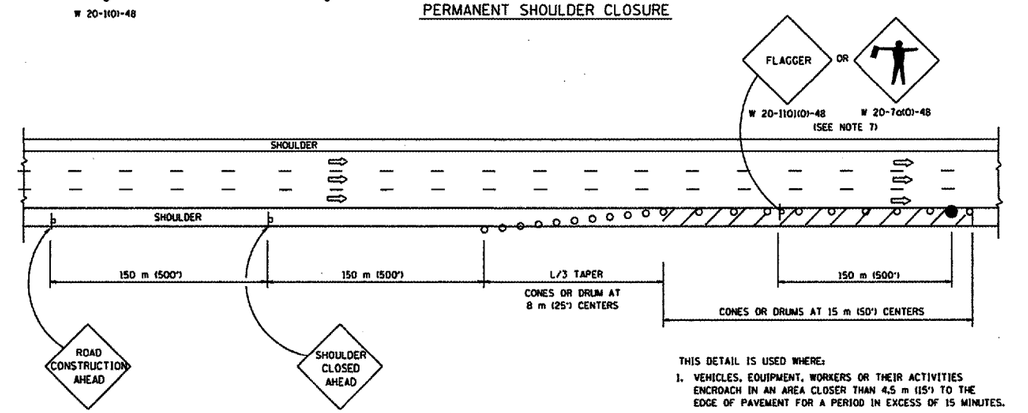
2. PLASTIC DRUMS WITH HIGH PERFORMANCE REFLECTIVE SHEETING AND STEADY BURNING LIGHTS ARE REQUIRED FOR ALL NIGHTIME CLOSURES.
3. ALL SIGNS SHALL BE POST MOUNTED IF THE CLOSURE TIME EXCEEDS FOUR DAYS.
4. FLASHING LIGHTS SHALL BE USED DURING THE HOURS OF DARKNESS AND SHALL BE INSTALLED ABOVE THE FIRST TWO SETS OF SIGNS.

SHOULDER CLOSURE DETAILS



W 20-1(01)-48

PERMANENT SHOULDER CLOSURE

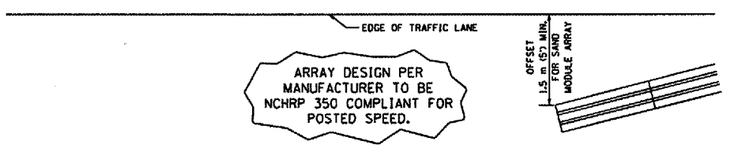


W 20-1(01)-48

THIS DETAIL IS USED WHERE:

1. VEHICLES, EQUIPMENT, WORKERS OR THEIR ACTIVITIES ENCROACH IN AN AREA CLOSER THAN 4.5 m (15') TO THE EDGE OF PAVEMENT FOR A PERIOD IN EXCESS OF 15 MINUTES.

DAYTIME SHOULDER CLOSURE



5. THE IMPACT ATTENUATOR, TEMPORARY IS NOT REQUIRED WHEN THE TEMPORARY CONCRETE BARRIER WALL IS OUTSIDE THE CLEAR ZONE OR IS TIED INTO THE EXISTING GUARDRAIL. IF OFFSET IS LESS THAN 5 FEET USE "TRAFFIC BARRIER TERMINAL, TYPE III, TEMPORARY" DEVICE TO MEET NCHRP350 FOR POSTED SPEED.
6. AUTHORIZATION FROM THE DISTRICT'S BUREAU OF TRAFFIC IS REQUIRED FOR ALL FREEWAY CLOSURES.
7. THE FLAGGER AND FLAGGER SIGN ARE REQUIRED AT THE ABOVE WORK SITES WHEN:
   a. FOUR OR MORE WORK VEHICLES ENTER THE TRAFFIC LANES IN A ONE HOUR PERIOD.
   b. THE WORK AVTIVITY REQUIRES FREQUENT ENCROACHMENT INTO THE LANE OPEN TO TRAFFIC.

   THE FLAGGER SHALL BE STATIONED APPROXIMATELY 30 m (100') TO 60 m (200') IN ADVANCE OF THE WORKERS.

DETAIL "A"
IMPACT ATTENUATOR, TEMPORARY
(SEE NOTE 5)

ALL DIMENSIONS ARE IN MILLIMETERS (INCHES) UNLESS OTHERWISE SHOWN.

REVISIONS	
NAME	DATE
DWS	11/96
JAF	12/02
NCHRP 350	04/03

ILLINOIS DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL DETAILS
FOR FREEWAY
SHOULDER CLOSURES
PARTIAL RAMP CLOSURES

SCALE: NONE
DATE: **DATE**
DRAWN BY
DESIGNED BY: DWS
CHECKED BY