STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PLANS FOR PROPOSED FEDERAL AID HIGHWAY

VARIOUS ROUTES
OVD SIN STR REP & REPL 2008-9
VARIOUS COUNTIES
C-60-010-08

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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

SUBMITTED 9-10 20 07
PASSED
Joe Hill
ENGINEER OF OPERATIONS

October 12, 2007
Eric E. Harm
Interim ENGINEER OF DESIGN AND ENVIRONMENT

APPROVED October 12, 20 07
Milton R Sees P.E.
DIRECTOR DIVISION OF HIGHWAYS

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

CONTRACT NO. 44973

CODE NUMBER	PAY ITEM	UNIT	Y002 - 1C 100% STATE TOTAL QUANTITY	URBAN	RURAL
T9990710	REMOVE AND REINSTALL WALKWAY	FOOT	270.50		270.50
73305000	OVERHEAD SIGN STRUCTURE WALKWAY	FOOT	940.00	504.00	436.00
T9992530	REPLACE AND TIGHTEN SIGN MOUNTING CLIPS PER EACH SIGN	EACH	21.00	9.00	12.00
T9992700	REM & REIN SIGN PANEL	SQ FT	2,161.50		2,161.50
T9995200	REPLACE U-BOLT	EACH	14.00	12.00	2.00
T9995400	FURNISH AND INSTALL SADDLE SHIM BLOCK	EACH	48.00	24.00	24.00
T9996200	REPAIR CONCRETE FOUNDATION FOR OVERHEAD SIGN STRUCTURE	EACH	2.00	2.00	
T9996300	OVERHEAD SIGN SUPPORT GROUT REPAIR	EACH	24.00	16.00	8.00
T9997255	FURNISH AND INSTALL INTERRNAL TRUSS DAMPER	EACH	12.00	6.00	6.00
T9997700	FURNISH AND INSTALL SAFETY CHAIN	EACH	32.00	10.00	22.00
T9998700	FURNISH AND INSTALL WALKWAY TIE DOWN BOLTS	EACH	6.00		6.00
T9998815	REPAIR HANDRAIL LOCKING PIN CONNECTION	EACH	76.00		76.00
T9998820	FURNISH AND INSTALL HANDRAIL	FOOT	1,659.00	1,641.00	18.00
T9998897	REPLACE HANDRAIL SUPPORT	EACH	1.00		1.00
T9998995	DISCONNECT AND RECONNECT ELECTRIC SERVICE	EACH	20.00	6.00	14.00
X0324397	RELOCATE ELECTRIC SERVICE	EACH	12.00		12.00
67100100	MOBILIZATION	L SUM	1.00	0.70	0.30
70101700	TRAFFIC CONTROL AND PROTECTION	L SUM	1.00	0.70	0.30
73300100	OVERHEAD SIGN STRUCTURE - SPAN, TYPE I-A (4' - 0" X 4' - 6")	FOOT	79.00		79.00

CODE NUMBER	PAY ITEM	UNIT	Y002 - 1C 100% STATE TOTAL QUANTITY	URBAN	RURAL
73300200	OVERHEAD SIGN STRUCTURE - SPAN, TYPE II-A (4' - 6" X 5' - 3")	FOOT	311.00		311.00
73302170	OVERHEAD SIGN STRUCTURE-CANTILEVER, TYPE II-C-A (3'-0" X 5' - 6")	FOOT	120.00		120.00
73400200	DRILLED SHAFT CONCRETE FOUNDATIONS	CU YD	171.10		171.10
73600100	REMOVE OVERHEAD SIGN STRUCTURE - SPAN	EACH	4.00		4.00
73600200	REMOVE OVERHEAD SIGN STRUCTURE-CANTILEVER	EACH	4.00		4.00
73700300	REMOVE CONCRETE FOUNDATION - OVERHEAD	EACH	22.00		22.00
73800100	STRUCTURAL STEEL SUPPORT FOR OVERHEAD SIGN STRUCTURE - SPAN	EACH	30.00	12.00	18.00
73801100	REMOVE AND RE ERECT OVERHEAD SIGN STRUCTURE - SPAN	EACH	12.00	6.00	6.00
X0325870	ERECT OVERHEAD SIGN STRUCTURE - CANTILEVER	EACH	1.00	1.00	
X0325871	INSTALL DYNAMIC MESSAGE SIGN	EACH	1.00	1.00	
X0325872	RELOCATE FLASHER CONTROLLER	EACH	1.00		1.00

PAY ITEM	UNIT	Y002 - 1C 100% STATE TOTAL QUANTITY	DISTRICT 1	DISTRICT 2	DISTRICT 3	DISTRICT 4	DISTRICT 8
REMOVE & REINSTALL WALKWAY	FOOT	270.50		163.50	89.00	18.00	
OVERHEAD SIGN STRUCTURE WALKWAY	FOOT	940.00		57.00		379.00	504.00
REPLACE/TIGHTEN CLIP PER SIGN	EACH	21.00		9.00	3.00		9.00
REMOVE & REINSTALL SIGN PANEL	SQ FT	2,161.50		1,462.50	595.00	104.00	
REPLACE U-BOLT	EACH	14.00		2.00			12.00
FURNISH & INSTALL SADDLE SHIM BLOCK	EACH	48.00		4.00		20.00	24.00
REPAIR CONCRETE FOUNDATION FOR OVERHEAD SIGN STRUCTURE	EACH	2.00					2.00
OVERHEAD SIGN SUPPORT GROUT REPAIR	EACH	24.00		4.00	4.00		16.00
FURNISH & INSTALL INTERNAL TRUSS DAMPER	EACH	12.00		1.00		5.00	6.00
FURNISH & INSTALL SAFETY CHAIN	EACH	32.00		6.00	6.00	10.00	10.00
FURNISH & INSTALL WALKWAY TIE DOWN BOLT	EACH	6.00			6.00		
REPAIR HANDRAIL LOCKING PIN CONNECTION	EACH	76.00		26.00	10.00	40.00	
FURNISH & INSTALL HANDRAIL	FOOT	1,659.00	1,641.00			18.00	
REPLACE HANDRAIL SUPPORT	EACH	1.00		1.00			
DISCONNECT/RECONNECT ELECTRIC SERVICE	EACH	20.00		5.00	3.00	6.00	6.00
RELOCTE ELECTRIC SERVICE	EACH	12.00		4.00	2.00	6.00	
MOBILIZATION	L SUM	1.00	0.60	0.10	0.10	0.10	0.10
TRAFFIC CONTROL & PROTECTION	L SUM	1.00	0.60	0.10	0.10	0.10	0.10

PAY ITEM	UNIT	Y002 - 1C 100% STATE TOTAL QUANTITY	DISTRICT 1	DISTRICT 2	DISTRICT 3	DISTRICT 4	DISTRICT 8
OVERHEAD SIGN STRUCTURE - SPAN, TYPE I-A (4' - 0" X 4' - 6")	FOOT	79.00		79.00			
OVERHEAD SIGN STRUCTURE - SPAN, TYPE II- A (4' - 6" X 5' - 3")	FOOT	311.00		215.00	96.00		
OVERHEAD SIGN STRUCTURE - CANTILEVER, TYPE II-C-A (36" X 5' - 6")	FOOT	120.00		30.00	60.00	30.00	
DRILLED SHAFT CONCRETE FOUNDATIONS	CU YD	171.10	5.00	73.20	14.20	78.70	
REMOVE OVERHEAD SIGN STRUCTURE - SPAN	EACH	4.00		3.00	1.00		
REMOVE OVERHEAD SIGN STRUCTURE-CANTILEVER	EACH	4.00		1.00	2.00	1.00	
REMOVE CONCRETE FOUNDATION - OVERHEAD	EACH	22.00		9.00	2.00	11.00	
STRUCTURAL STEEL SUPPORT FOR OVERHEAD SIGN STRUCTURE - SPAN	EACH	30.00		8.00		10.00	12.00
REMOVE & RE-ERECT OVERHEAD SIGN STRUCTURE - SPAN	EACH	12.00		1.00		5.00	6.00
ERECT OVERHEAD SIGN STRUCTURE CANTILEVER	EACH	1.00	1.00				
INSTALL DYNAMIC MESSAGE SIGN	EACH	1.00	1.00				
RELOCATE FLASHER CONTROLLER	EACH	1.00		1.00			

District 1
Schedule of Overhead Sign Structure Repair & Replacement

Location No.: 1-01	State I.D. No.: 1C049U041R000.0-004			
County: Lake	Route: U. S. 41	M.P.: 0	Direction: NB	
Description of Work			Unit	Quantity
Drilled Shaft Concrete Foundation			Cu Yd	5.00
Erect Overhead Sign Structure, Cantilever			Each	1.00
Install Dynamic Message Sign			Each	1.00

Location No.: 1-02	State I.D. No.: 1S016I094R051.9-000 (SB-S-2)D3			
County: Cook	Route: I - 94	M.P.: 51.9	Direction: SB	
Description of Work			Unit	Quantity
Furnish & Install Handrail			Foot	46.00
This work shall be completed during District 1 night-tIme hours.				

Location No.: 1-03	State I.D. No.: 1S016I094R051.8-000 (SB-S-1)D1			
County: Cook	Route: I - 94	M.P.: 51.8	Direction: SB	
Description of Work			Unit	Quantity
Furnish & Install Handrail			Foot	60.00
This work shall be completed during District 1 night-tIme hours.				

Location No.: 1-04	State I.D. No.: 1S016I094L051.9-000 (NB-S-9)D4			
County: Cook	Route: I - 94	M.P.: 51.9	Direction: NB	
Description of Work			Unit	Quantity
Furnish & Install Handrail			Foot	41.00
This work shall be completed during District 1 night-tIme hours.				

Location No.: 1-05	State I.D. No.: 1S016I094R052.5-000 (SB-S-4)L3			
County: Cook	Route: I - 94	M.P.: 52.5	Direction: SB	
Description of Work			Unit	Quantity
Furnish & Install Handrail			Foot	73.00
This work shall be completed during District 1 night-tIme hours.				

Location No.: 1-06	State I.D. No.: 1S016I094L052.5-000 (NB-S-6)C2			
County: Cook	Route: I - 94	M.P.: 52.5	Direction: NB	
Description of Work			Unit	Quantity
Furnish & Install Handrail			Foot	80.00
This work shall be completed during District 1 night-tIme hours.				

Location No.: 1-07	State I.D. No.: 1C016I094L052.4-000 (NB-C-5)C4			
County: Cook	Route: I - 94	M.P.: 52.4	Direction: NB	
Description of Work			Unit	Quantity
Furnish & Install Handrail			Foot	25.00
This work shall be completed during District 1 night-time hours.				

Location No.: 1-08	State I.D. No.: 1S016I094L052.3-000 (NB-S-7)C6			
County: Cook	Route: I - 94	M.P.: 52.3	Direction: NB	
Description of Work			Unit	Quantity
Furnish & Install Handrail			Foot	65.00
This work shall be completed during District 1 night-time hours.				

Location No.: 1-09	State I.D. No.: 1S016I094R052.9-000 (SB-S-6)B3			
County: Cook	Route: I - 94	M.P.: 52.9	Direction: SB	
Description of Work			Unit	Quantity
Furnish & Install Handrail			Foot	61.00
This work shall be completed during District 1 night-time hours.				

Location No.: 1-10	State I.D. No.: 1S016I094R052.7-000 (SB-S-5)B1			
County: Cook	Route: I - 94	M.P.: 52.7	Direction: SB	
Description of Work			Unit	Quantity
Furnish & Install Handrail			Foot	61.00
This work shall be completed during District 1 night-time hours.				

Location No.: 1-11	State I.D. No.: 1C016I094R052.6-000 (SB-C-1)C5			
County: Cook	Route: I - 94	M.P.: 52.7	Direction: SB	
Description of Work			Unit	Quantity
Furnish & Install Handrail			Foot	13.00
This work shall be completed during District 1 night-time hours.				

Location No.: 1-12	State I.D. No.: 1C016I094L052.9-000 (NB-C-4)B4			
County: Cook	Route: I - 94	M.P.: 52.9	Direction: NB	
Description of Work			Unit	Quantity
Furnish & Install Handrail			Foot	28.00
This work shall be completed during District 1 night-time hours.				

Location No.: 1-13	State I.D. No.: 1S016I094L052.7-000 (NB-S-5)B6			
County: Cook	Route: I - 94	M.P.: 52.7	Direction: NB	
Description of Work			Unit	Quantity
Furnish & Install Handrail			Foot	87.00
This work shall be completed during District 1 night-time hours.				

Location No.: 1-14	State I.D. No.: 1S016I094R052.5-000 (SB-S-4)C6			
County: Cook	Route: I - 94	M.P.: 52.5	Direction: SB	
Description of Work			Unit	Quantity
Furnish & Install Handrail			Foot	73.00
This work shall be completed during District 1 night-time hours.				

Location No.: 1-15	State I.D. No.: 1S016I094L052.5-000 (NB-S-6)C2			
County: Cook	Route: I - 94	M.P.: 52.5	Direction: NB	
Description of Work			Unit	Quantity
Furnish & Install Handrail			Foot	79.00
This work shall be completed during District 1 night-time hours.				

Location No.: 1-17	State I.D. No.: 1S016I094L052.3-000 (NB-S-7)C6			
County: Cook	Route: I - 94	M.P.: 52.3	Direction: NB	
Description of Work			Unit	Quantity
Furnish & Install Handrail			Foot	65.00
This work shall be completed during District 1 night-time hours.				

Location No.: 1-18	State I.D. No.: 1S016I094R053.2-001 (SB-S-9)A3			
County: Cook	Route: I - 94	M.P.: 53.2	Direction: SB	
Description of Work			Unit	Quantity
Furnish & Install Handrail			Foot	41.00
This work shall be completed during District 1 night-time hours.				

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

District 1
Schedule of Overhead Sign Structure Repair & Replacement

Location No.: 1-19	State I.D. No.: 1S016I094R053.2-000 (SB-S-8)A1					
County: Cook	Route: I - 94	M.P.: 53.2	Direction: SB			
Description of Work					Unit	Quantity
Furnish & Install Handrail					Foot	35.00
This work shall be completed during District 1 night-time hours.						

Location No.: 1-20	State I.D. No.: 1S016I094R053.0-000 (SB-S-7)B5					
County: Cook	Route: I - 94	M.P.: 53.0	Direction: SB			
Description of Work					Unit	Quantity
Furnish & Install Handrail					Foot	52.00
This work shall be completed during District 1 night-time hours.						

Location No.: 1-21	State I.D. No.: 1S016I094L053.0-000 (NB-S-4)B2					
County: Cook	Route: I - 94	M.P.: 53.0	Direction: NB			
Description of Work					Unit	Quantity
Furnish & Install Handrail					Foot	80.00
This work shall be completed during District 1 night-time hours.						

Location No.: 1-22	State I.D. No.: 1S016I094L052.2-000 (NB-S-8)C10					
County: Cook	Route: I - 94	M.P.: 52.2	Direction: NB			
Description of Work					Unit	Quantity
Furnish & Install Handrail					Foot	42.00
This work shall be completed during District 1 night-time hours.						

Location No.: 1-23	State I.D. No.: 1S016I094R053.5-000 (SB-S-11)A5					
County: Cook	Route: I - 94	M.P.: 53.5	Direction: SB			
Description of Work					Unit	Quantity
Furnish & Install Handrail					Foot	54.00
This work shall be completed during District 1 night-time hours.						

Location No.: 1-24	State I.D. No.: 1S016I094R053.4-000 (SB-S-10)Z1					
County: Cook	Route: I - 94	M.P.: 53.4	Direction: SB			
Description of Work					Unit	Quantity
Furnish & Install Handrail					Foot	36.00
This work shall be completed during District 1 night-time hours.						

Location No.: 1-25	State I.D. No.: 1S016I094L053.3-000 (NB-S-3)A2					
County: Cook	Route: I -94	M.P.: 53.3	Direction: NB			
Description of Work					Unit	Quantity
Furnish & Install Handrail					Foot	43.00
This work shall be completed during District 1 night-time hours.						

Location No.: 1-26	State I.D. No.: 1C016I094L053.3-000 (NB-C-3)A4					
County: Cook	Route: I - 94	M.P.: 53.3	Direction: NB			
Description of Work					Unit	Quantity
Furnish & Install Handrail					Foot	27.00
This work shall be completed during District 1 night-time hours.						

Location No.: 1-27	State I.D. No.: 1S016I094R054.1-000 (SB-S-13)Y3					
County: Cook	Route: I - 94	M.P.: 54.1	Direction: SB			
Description of Work					Unit	Quantity
Furnish & Install Handrail					Foot	63.00
This work shall be completed during District 1 night-time hours.						

Location No.: 1-28	State I.D. No.: 1S016I094R054.0-000 (SB-S-12)Y1					
County: Cook	Route: I - 94	M.P.: 54	Direction: SB			
Description of Work					Unit	Quantity
Furnish & Install Handrail					Foot	60.00
This work shall be completed during District 1 night-time hours.						

Location No.: 1-29	State I.D. No.: 1S016I094L054.1-000 (NB-C-2)Y2					
County: Cook	Route: I - 94	M.P.: 54.1	Direction: NB			
Description of Work					Unit	Quantity
Furnish & Install Handrail					Foot	17.00
This work shall be completed during District 1 night-time hours.						

Location No.: 1-30	State I.D. No.: 1S016I094L054.4-000 (NB-S-2)Y4					
County: Cook	Route: I - 94	M.P.: 54.4	Direction: NB			
Description of Work					Unit	Quantity
Furnish & Install Handrail					Foot	61.00
This work shall be completed during District 1 night-time hours.						

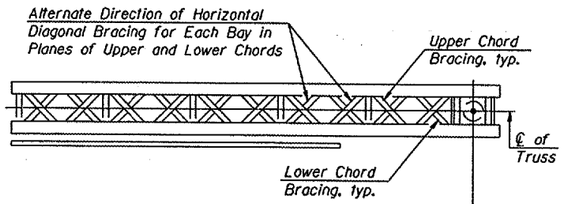
Location No.: 1-31	State I.D. No.: 1S016I094L054.2-000 (NB-S-1) X8					
County: Cook	Route: I - 94	M.P.: 54.2	Direction: NB			
Description of Work					Unit	Quantity
Furnish & Install Handrail					Foot	45.00
This work shall be completed during District 1 night-time hours.						

Location No.: 1-32	State I.D. No.: 1S016I094R054.3-000 (SB-S-16) X1					
County: Cook	Route: I - 94	M.P.: 54.3	Direction: SB			
Description of Work					Unit	Quantity
Furnish & Install Handrail					Foot	14.00
This work shall be completed during District 1 night-time hours.						

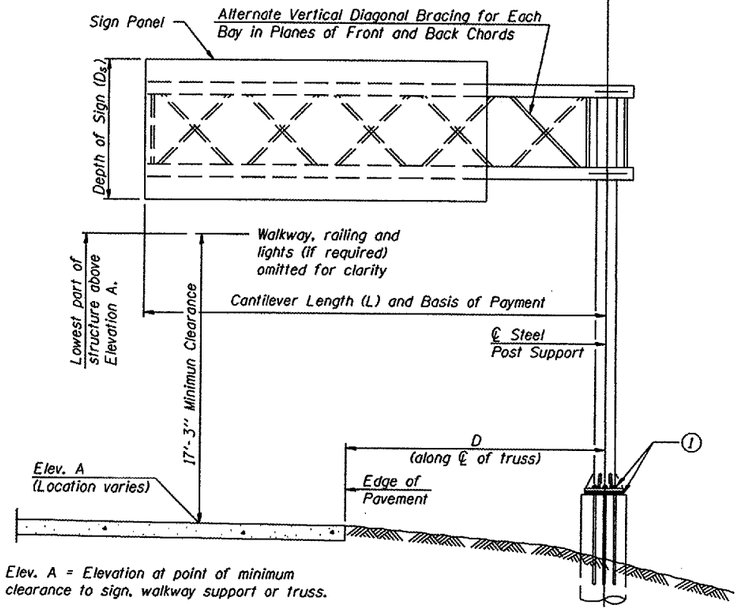
Location No.: 1-33	State I.D. No.: 1S016I094R054.5-000 (SB-S-15) X9					
County: Cook	Route: I - 94	M.P.: 54.5	Direction: SB			
Description of Work					Unit	Quantity
Furnish & Install Handrail					Foot	67.00
This work shall be completed during District 1 night-time hours.						

Location No.: 1-34	State I.D. No.: 1S016I094R054.4-000 (SB-S-14) X3					
County: Cook	Route: I - 94	M.P.: 54.4	Direction: SB			
Description of Work					Unit	Quantity
Furnish & Install Handrail					Foot	34.00
This work shall be completed during District 1 night-time hours.						

Location No.: 1-35	State I.D. No.: 1C016I094L054.2-000 (NB-C-1) X6					
County: Cook	Route: I - 94	M.P.: 54.2	Direction: NB			
Description of Work					Unit	Quantity
Furnish & Install Handrail					Foot	13.00
This work shall be completed during District 1 night-time hours.						



TYPICAL PLAN
(Walkway not shown)



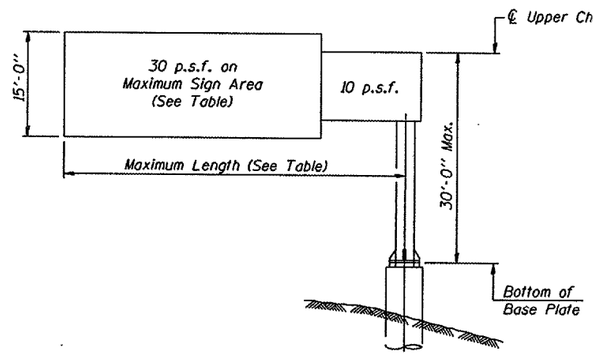
Elev. A = Elevation at point of minimum clearance to sign, walkway support or truss.

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
IC049U041R000.0-004		I-C-A	25'-0"	0.00 Ft.	6'-0"	3.03 Ft.	40.69 Sq. Ft.

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

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

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

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

ANCHOR RODS: Shall conform to AASHTO M314 Gr. 105 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.

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

* 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

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

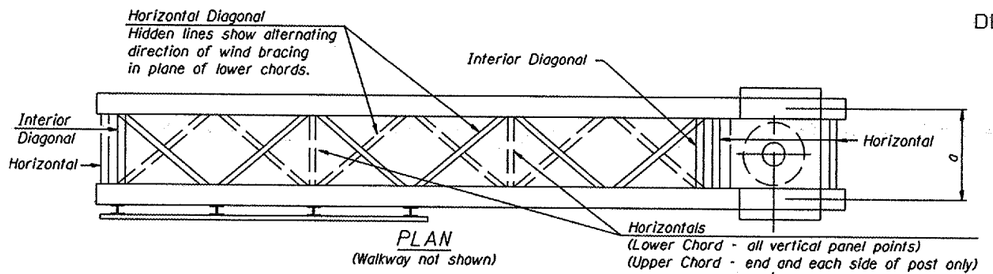
NUMBER	REVISION	DATE

OSC-A-1 6/01/2007

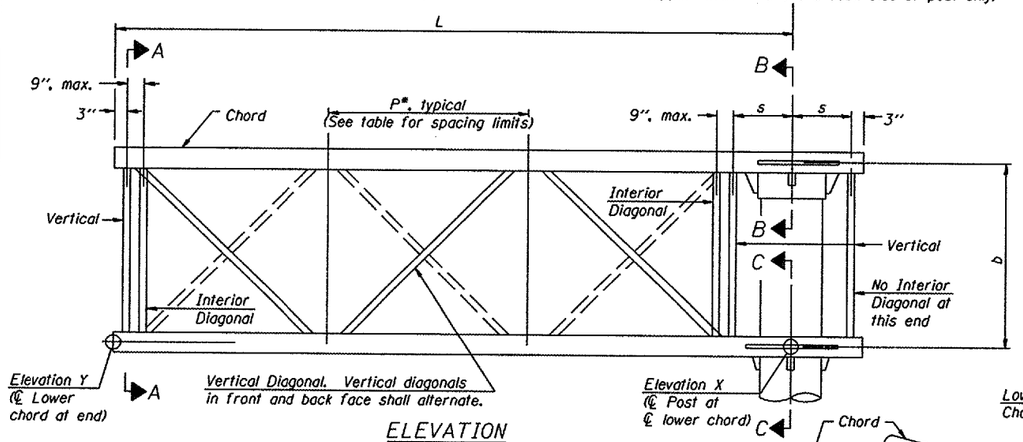
CANTILEVER SIGN STRUCTURES
GENERAL PLAN & ELEVATION
ALUMINUM TRUSS & STEEL POST

District 1
Overhead Sign Structure
Repair and Replacement

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



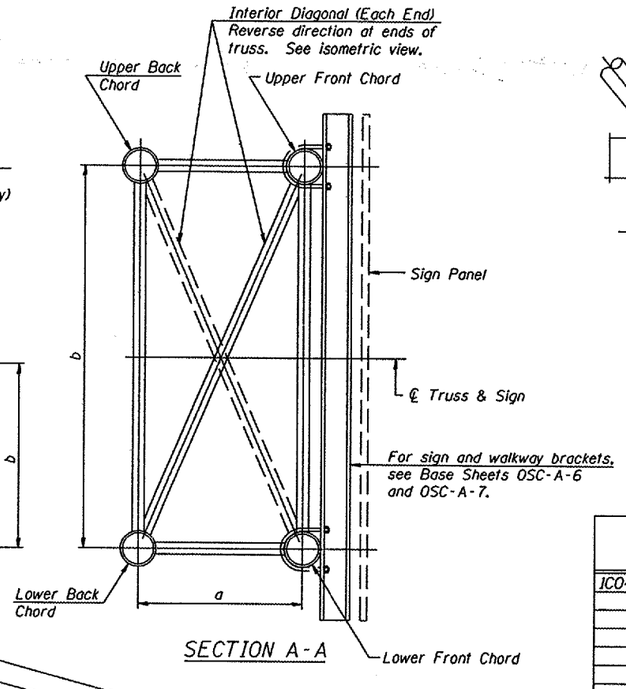
PLAN
(Walkway not shown)



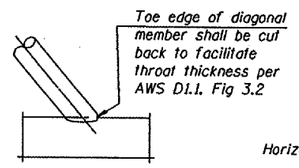
ELEVATION
(Sign and walkway omitted for clarity)

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

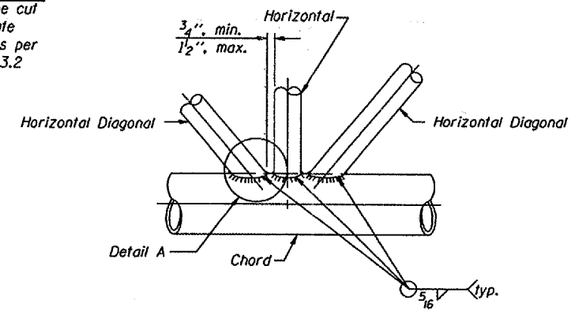
Note:
There are twice as many horizontal diagonals as there are vertical diagonals.



SECTION A-A



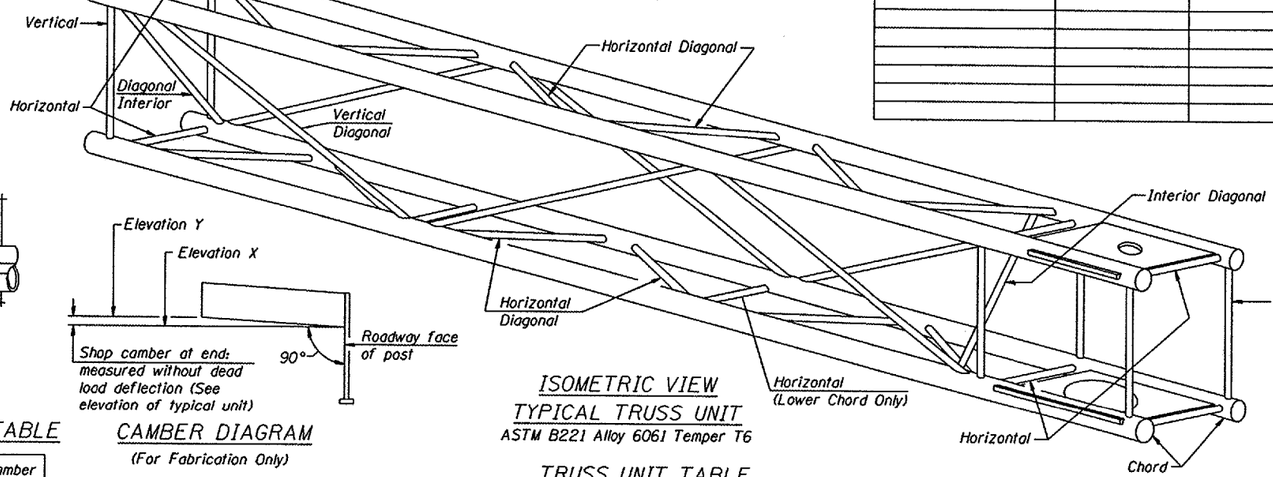
DETAIL A



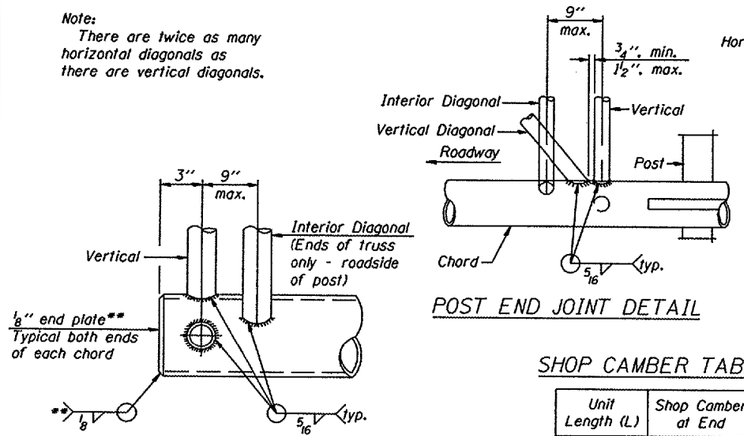
TRUSS INTERIOR JOINT DETAIL

This Sheet For Information Only

Structure Number	Station	Truss Type	Design Length (L)	Number of Panels Per Unit	Panel Length (P)*
IC049U041R000.0-004		I-C-A	25'-0"	6	3' - 10 3/4"



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"

TRUSS UNIT TABLE

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

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

NUMBER	REVISION	DATE

CANTILEVER SIGN STRUCTURES
TRUSS DETAILS
ALUMINUM TRUSS & STEEL POST

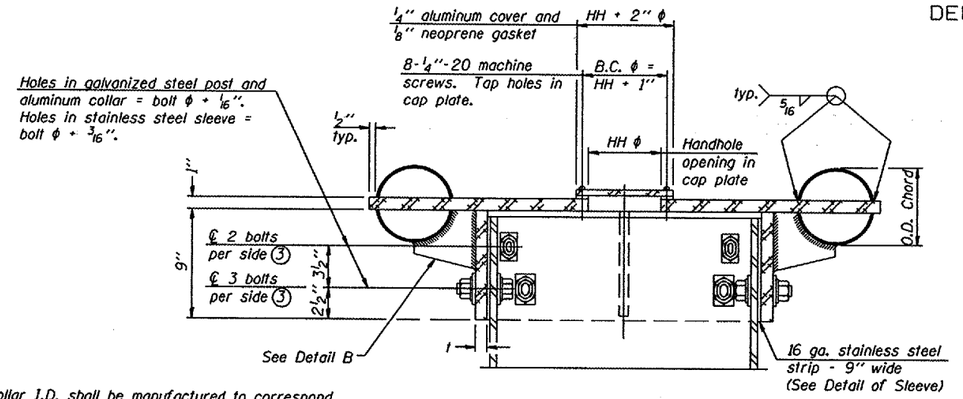
District 1
Overhead Sign Structure
Repair and Replacement

DESIGNED -	
CHECKED -	
DRAWN -	
CHECKED -	

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

OSC-A-2 6/01/2007

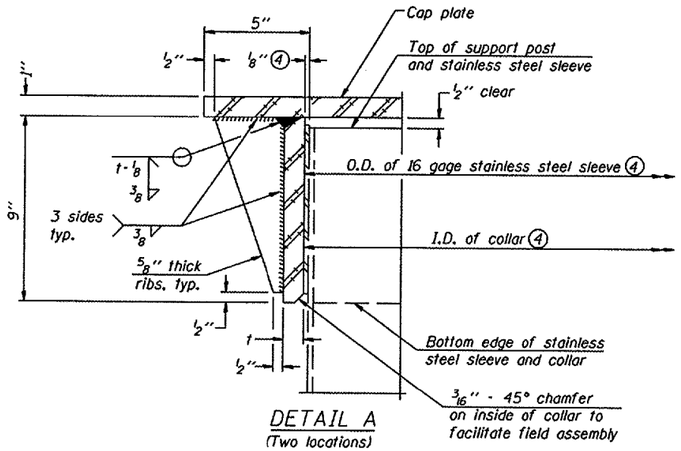
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



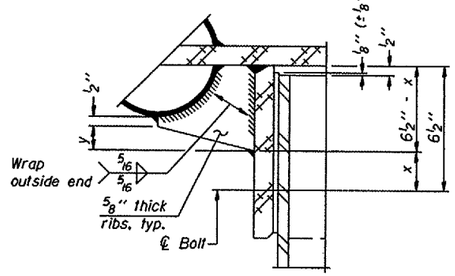
SECTION B-B

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

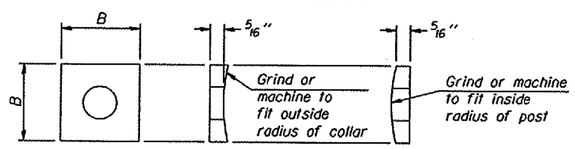
④ Collar I.D. shall be manufactured to correspond to O.D. of actual galvanized post and stainless steel sleeve plus ⅛" (±1/16"). Maximum gap between post and collar at any location equals ⅛" before tightening bolts.



DETAIL A
(Two locations)

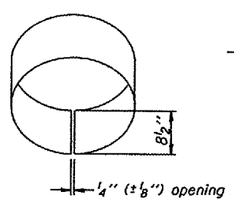


DETAIL B
Two locations
(For details not shown, see Detail C)

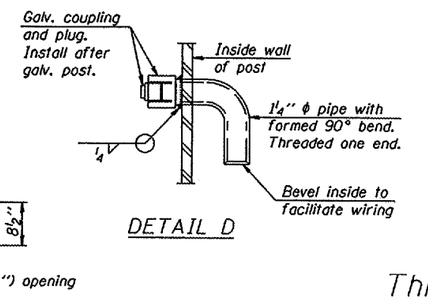


CONTOURED WASHERS

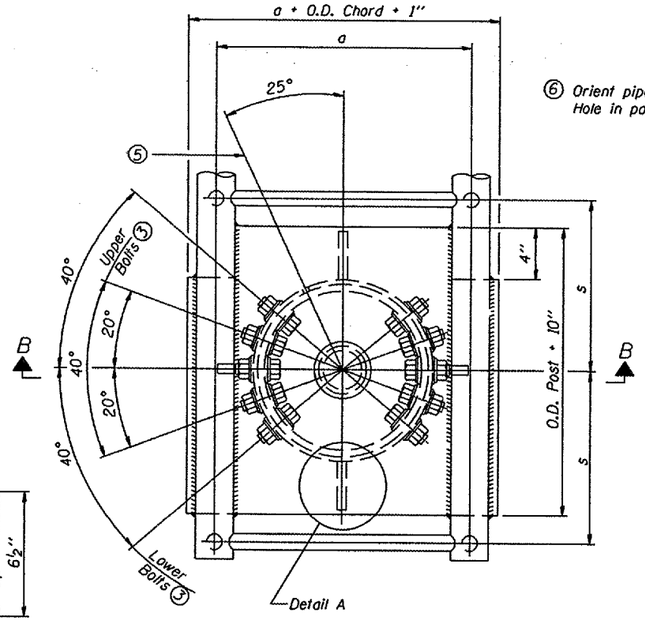
Bolt Size	Contoured Washers	
	Hole Dia.	B
⅞"	1"	2½"
1"	1⅛"	3"
1¼"	1⅜"	3¼"



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



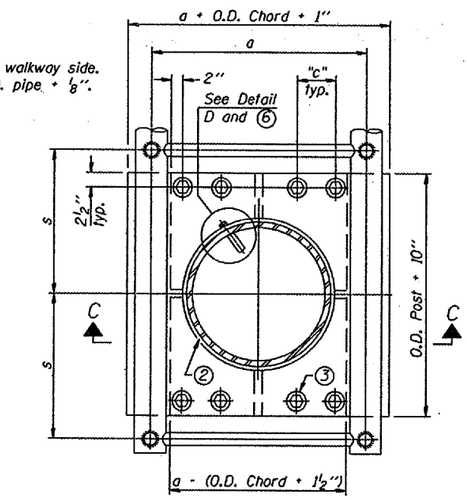
DETAIL D



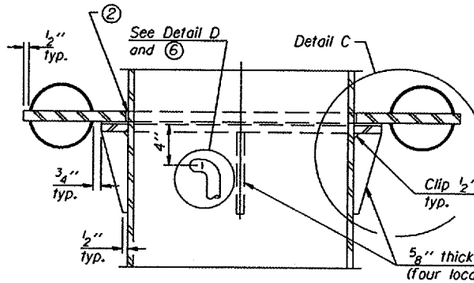
PLAN VIEW - TOP OF COLUMN

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

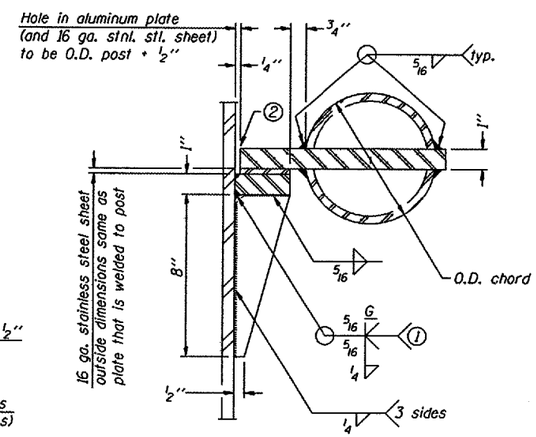
⑥ Orient pipe toward walkway side. Hole in post = O.D. pipe + ⅛".



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.

This Sheet For Information Only

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#/')	⅞"	3¼"	8"	⅝"	1¾"	2¼"
II-C-A	24" ϕ (125#/')	1"	3½"	12"	⅞"	2"	1¼"
III-C-A (35' max.)	24" ϕ (125#/')	1¼"	3½"	12"	⅞"	2"	1"
III-C-A (>35' to 40')	24" ϕ (171#/')	1¼"	3½"	12"	⅞"	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.

NUMBER	REVISION	DATE

DESIGNED -	
CHECKED -	
DRAWN -	
CHECKED -	

- 20

EXAMINED
ENGINEER OF BRIDGE DESIGN

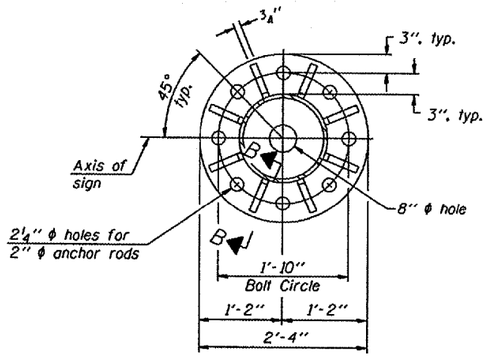
PASSED
ENGINEER OF BRIDGES AND STRUCTURES

OSC-A-3 6/01/2007

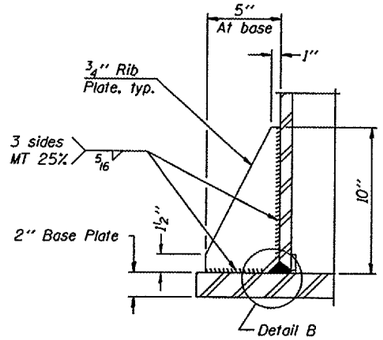
CANTILEVER SIGN STRUCTURES
JUNCTURE DETAILS
ALUMINUM TRUSS & STEEL POST

District 1
Overhead Sign Structure
Repair and Replacement

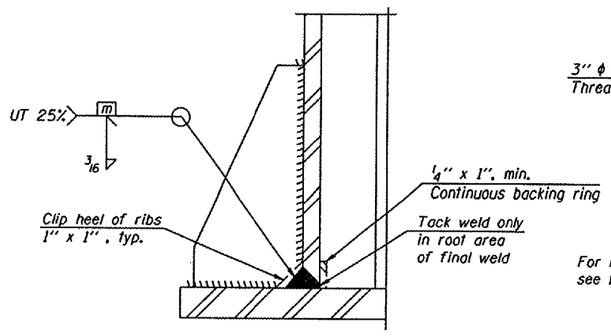
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



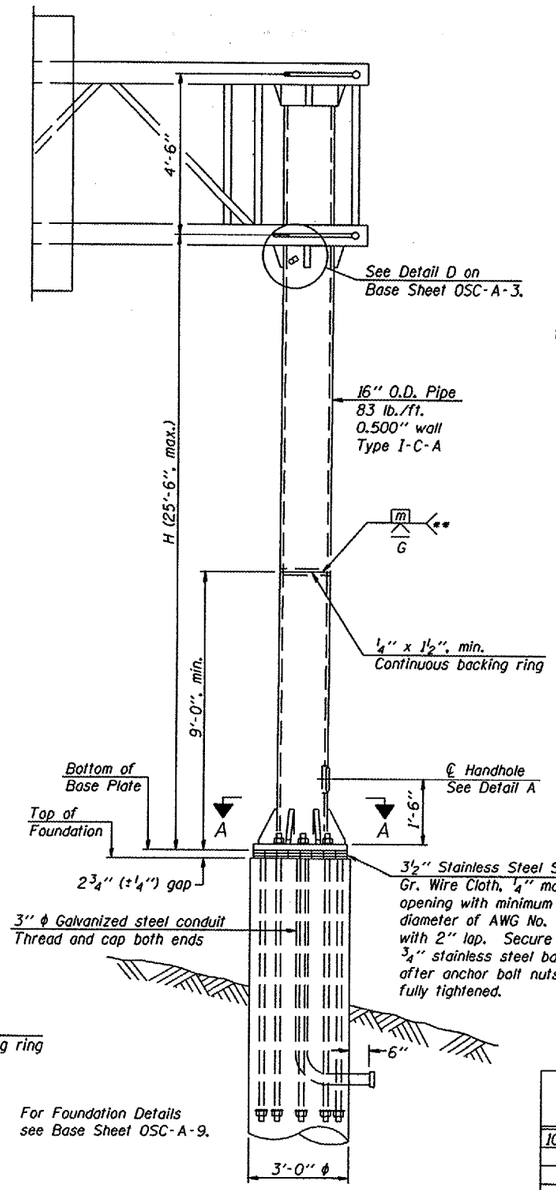
SECTION A-A



SECTION B-B

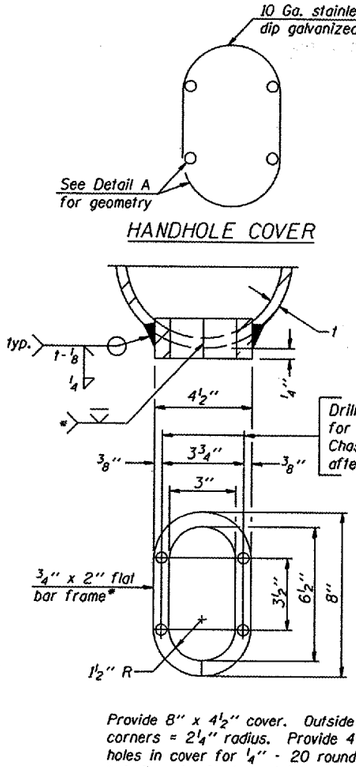


DETAIL B
(Typical rib)



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

FRONT ELEVATION



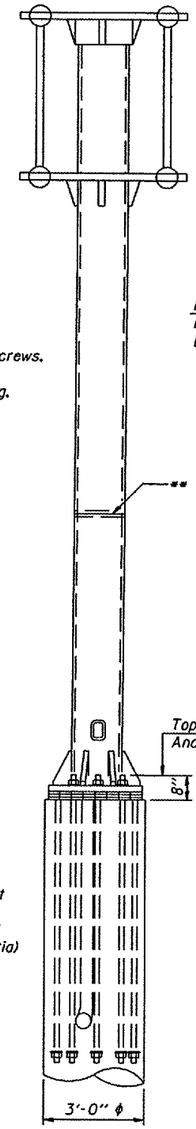
HANDHOLE COVER

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.)

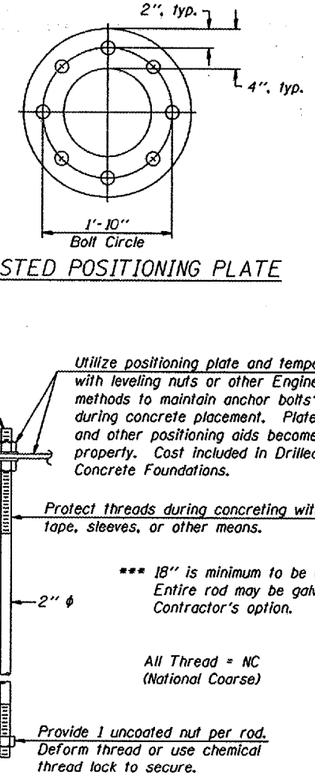
DETAIL A

* 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 μin or less.

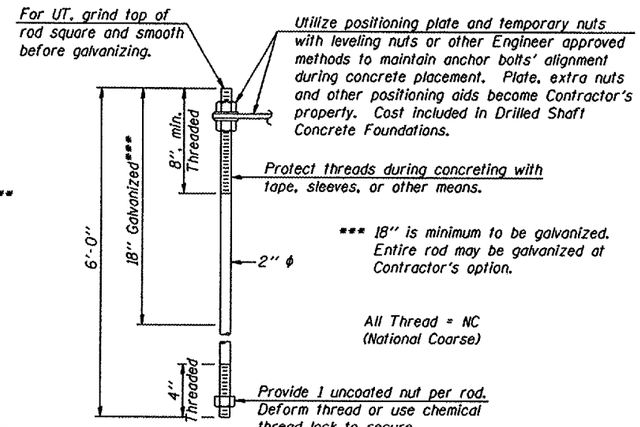
** Butt welded joint in post is only allowed for post heights (H) over 20 ft. in length. If used, weld procedure must be preapproved by Engineer and joint shall receive 100% RT or UT (tension criteria) at Contractor's expense.



SIDE ELEVATION



SUGGESTED POSITIONING PLATE



ANCHOR ROD DETAIL

Anchor rods shall conform to AASHTO M314 Grade 105 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
1C049U041R000.0-004		15'-6 1/2"

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

NUMBER	REVISION	DATE

DESIGNED	-
CHECKED	-
DRAWN	-
CHECKED	-

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

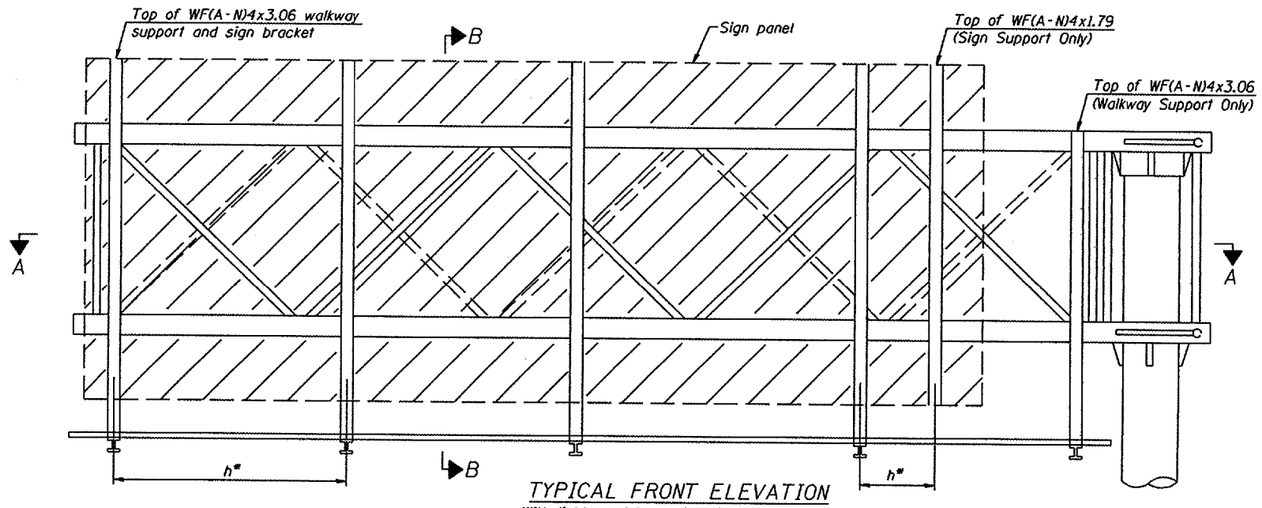
OSC-A-4 6/01/2007

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

District 1
Overhead Sign Structure
Repair and Replacement

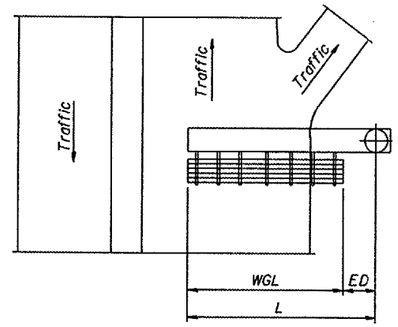
This Sheet For Information Only

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



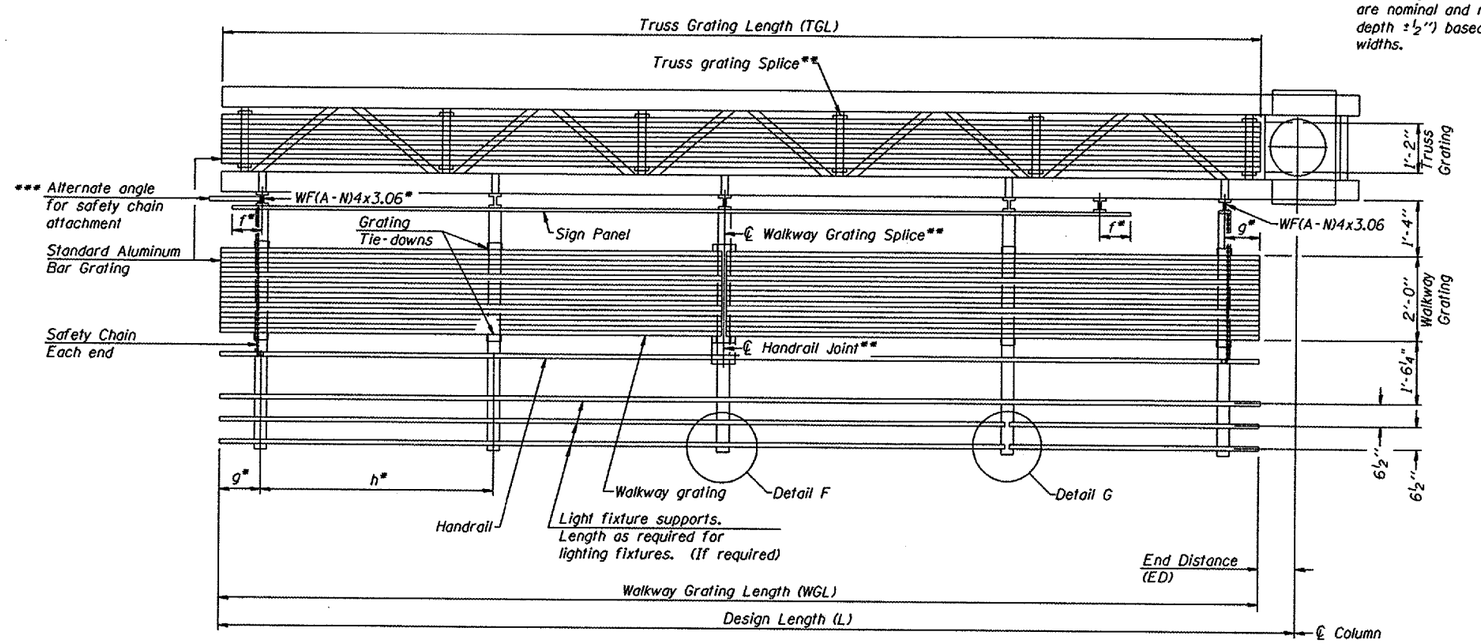
TYPICAL FRONT ELEVATION
With lights and handrail omitted for clarity.

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



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

This Sheet For Information Only



SECTION A-A

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

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

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

Structure Number	Station	WGL	ED	TGL
IC049U041R000.0-004				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. See alternate safety chain attachment on base sheet OSC-A-8

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 joint, 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

DESIGNED -	
CHECKED -	
DRAWN -	
CHECKED -	

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

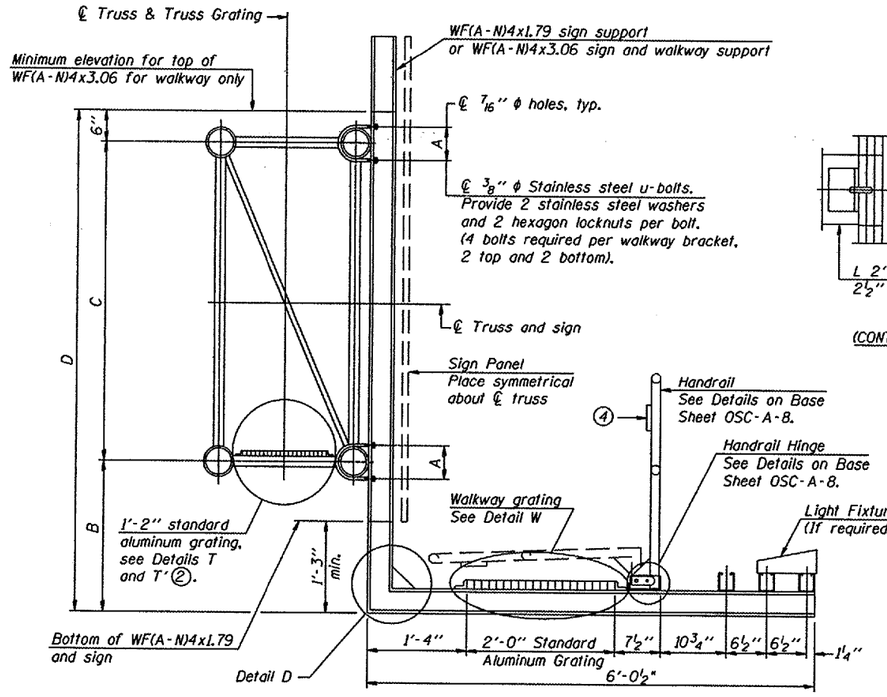
NUMBER	REVISION	DATE

CANTILEVER SIGN STRUCTURES
ALUMINUM WALKWAY DETAILS
ALUMINUM TRUSS & STEEL POST

District 1
Overhead Sign Structure
Repair and Replacement

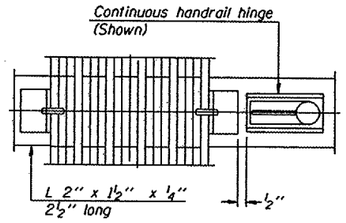
OSC-A-6 6/01/2007

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

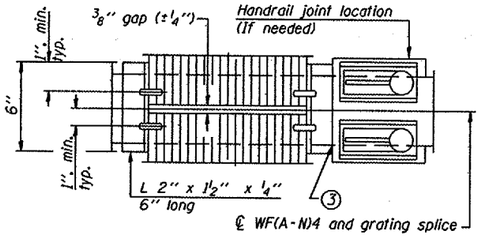


SECTION B-B

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



(CONTINUOUS WALKWAY GRATING)



(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.

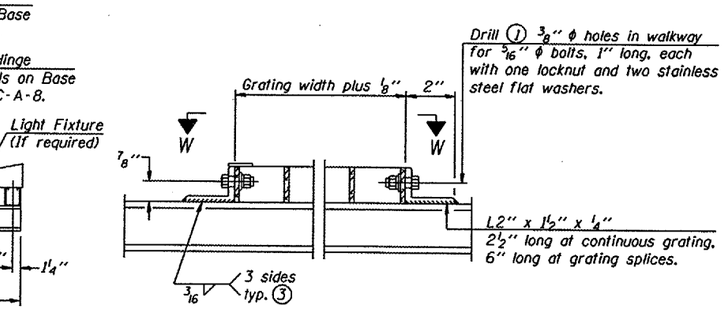
Cross bars (CB) shall be 3/16" x 1½" on 4" centers and conform to ASTM B221 Alloy 6063-T5 or 6061-T6.

OR

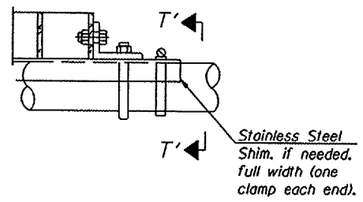
Aluminum Grating with modified "I" sections for main bearing bars shall meet the following requirements:

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.

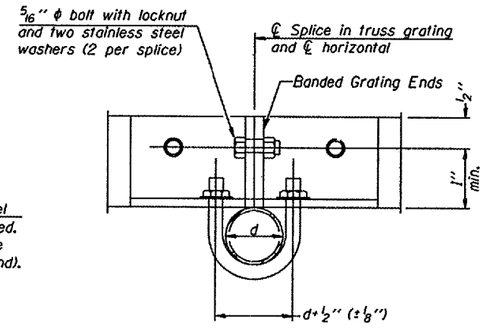
Cross bars shall conform to ASTM B221 Alloy 6063-T5 or T-42 and spaced on 4" centers.



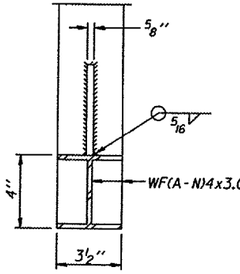
DETAIL W
(Walkway grating)



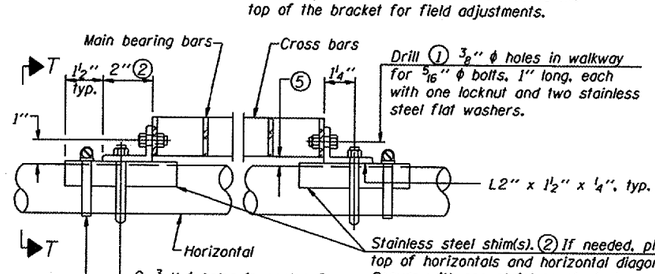
DETAIL T'
(Truss grating splice)
Details not shown same as Detail T.
Alternate materials may be used subject to the Engineer's review and approval.



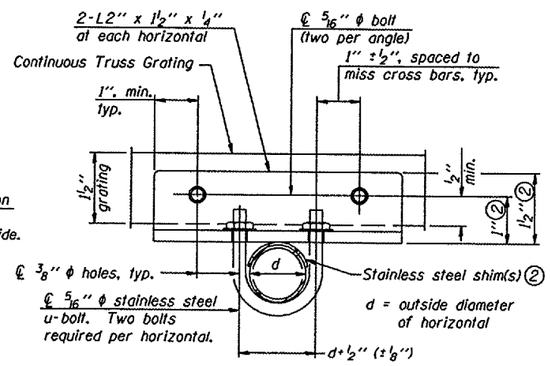
SECTION T'-T'



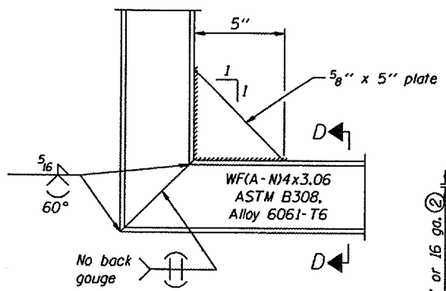
SECTION D-D



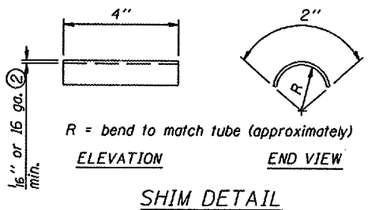
DETAIL T
(Continuous Truss grating)



SECTION T-T



DETAIL D



SHIM DETAIL

This Sheet For Information Only

NUMBER	REVISION	DATE

DESIGNED	-
CHECKED	-
DRAWN	-
CHECKED	-

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

OSC-A-7 6/01/2007

(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 OSC-A-8.)

(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.

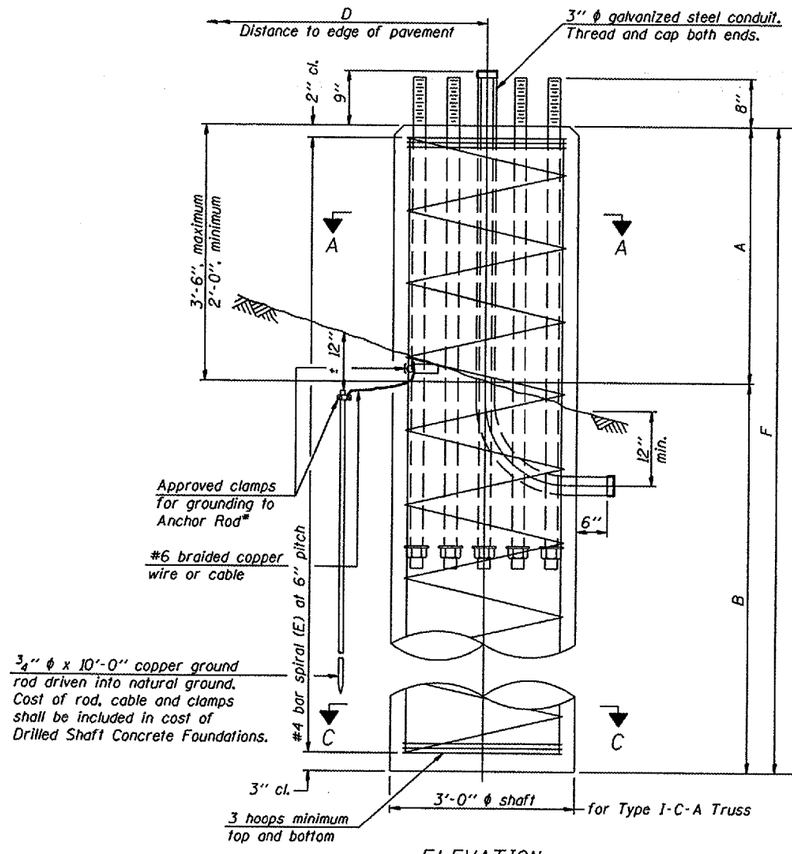
Structure Number	Station	A	B	C	D

CANTILEVER SIGN STRUCTURES
WALKWAY DETAILS
ALUMINUM TRUSS & STEEL POST

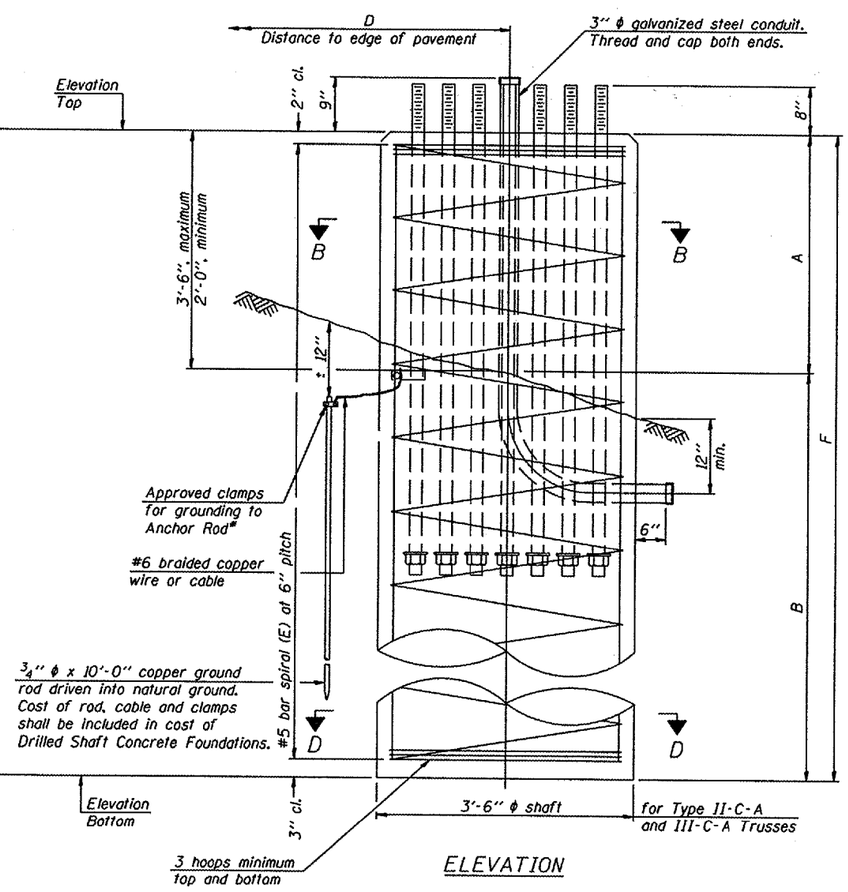
District 1
Overhead Sign Structure
Repair and Replacement

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

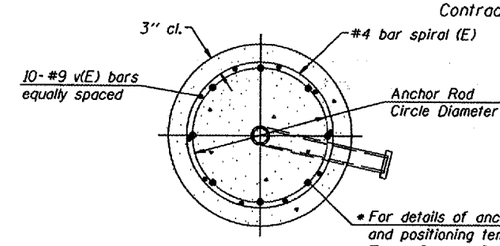
* Grind anchor rod to bright finish at ground clamp location before installing clamp.



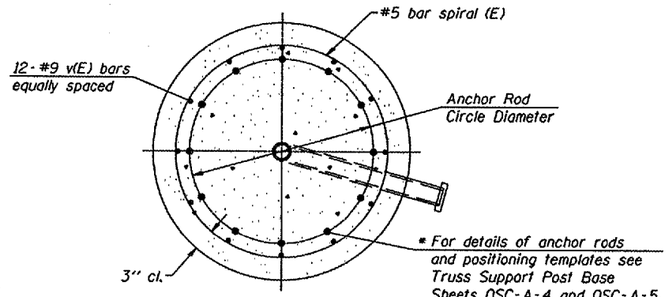
ELEVATION



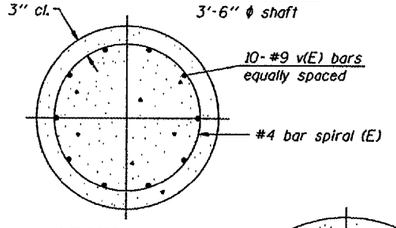
ELEVATION



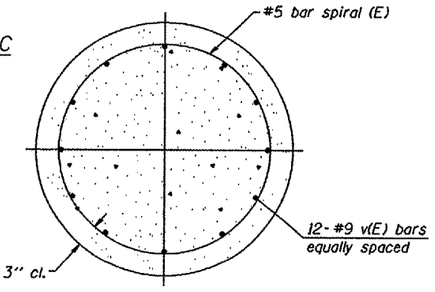
SECTION A-A
3'-0" ϕ shaft



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".

Note: Anchor Rods and Rebar for Concrete Foundation will be provided by IDOT.

FOUNDATION DATA TABLE

Structure Number	Station	Truss Type	Shaft Diameter	Elevation Top	Elevation Bottom	Qu	A	B	F	Class SI Concrete Cubic Yards
IC049U04IR000.0-004		I-C-A	3'-0"				3'-0"	16'-0"	19'-0"	5.0

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

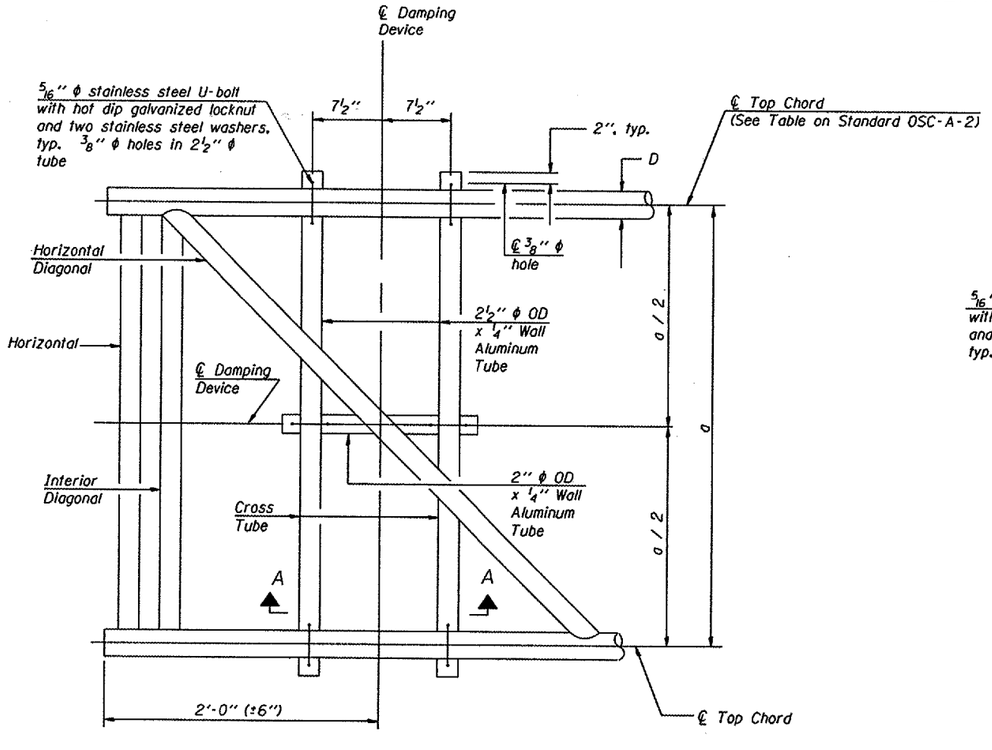
NUMBER	REVISION	DATE

OSC-A-9 6/01/2007

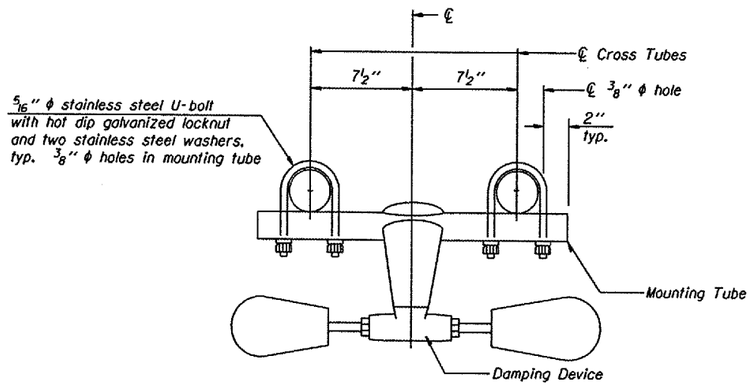
CANTILEVER SIGN STRUCTURES
DRILLED SHAFT
ALUMINUM TRUSS & STEEL POST

District 1
Overhead Sign Structure
Repair and Replacement

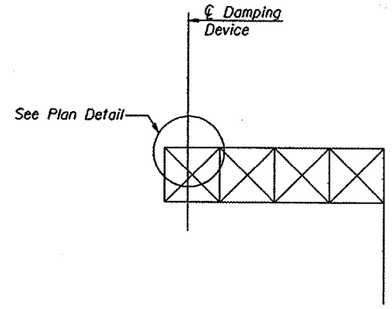
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



PLAN DETAIL



TRUSS DAMPING
DEVICE CONNECTION DETAIL

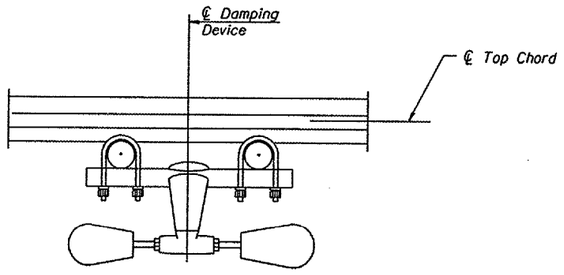


ELEVATION
Aluminum Cantilever
Sign Structure

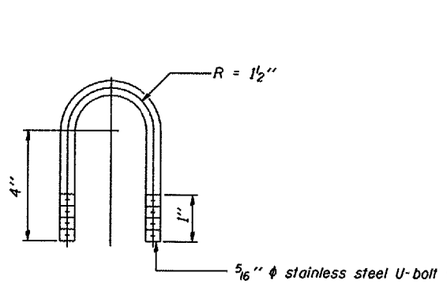
GENERAL NOTES

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

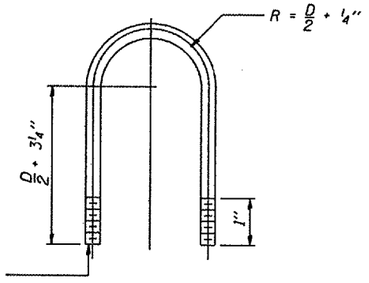
Materials: Aluminum tubes shall be ASTM B221 alloy 6061 temper T6



SECTION A-A



DAMPING DEVICE MOUNTING
TUBE U-BOLT DETAIL
(Typical)



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

This Sheet For Information Only

CANTILEVER SIGN STRUCTURE
DAMPING DEVICE

District 1
Overhead Sign Structure
Repair and Replacement

DESIGNED	-
CHECKED	-
DRAWN	-
CHECKED	-

- 20

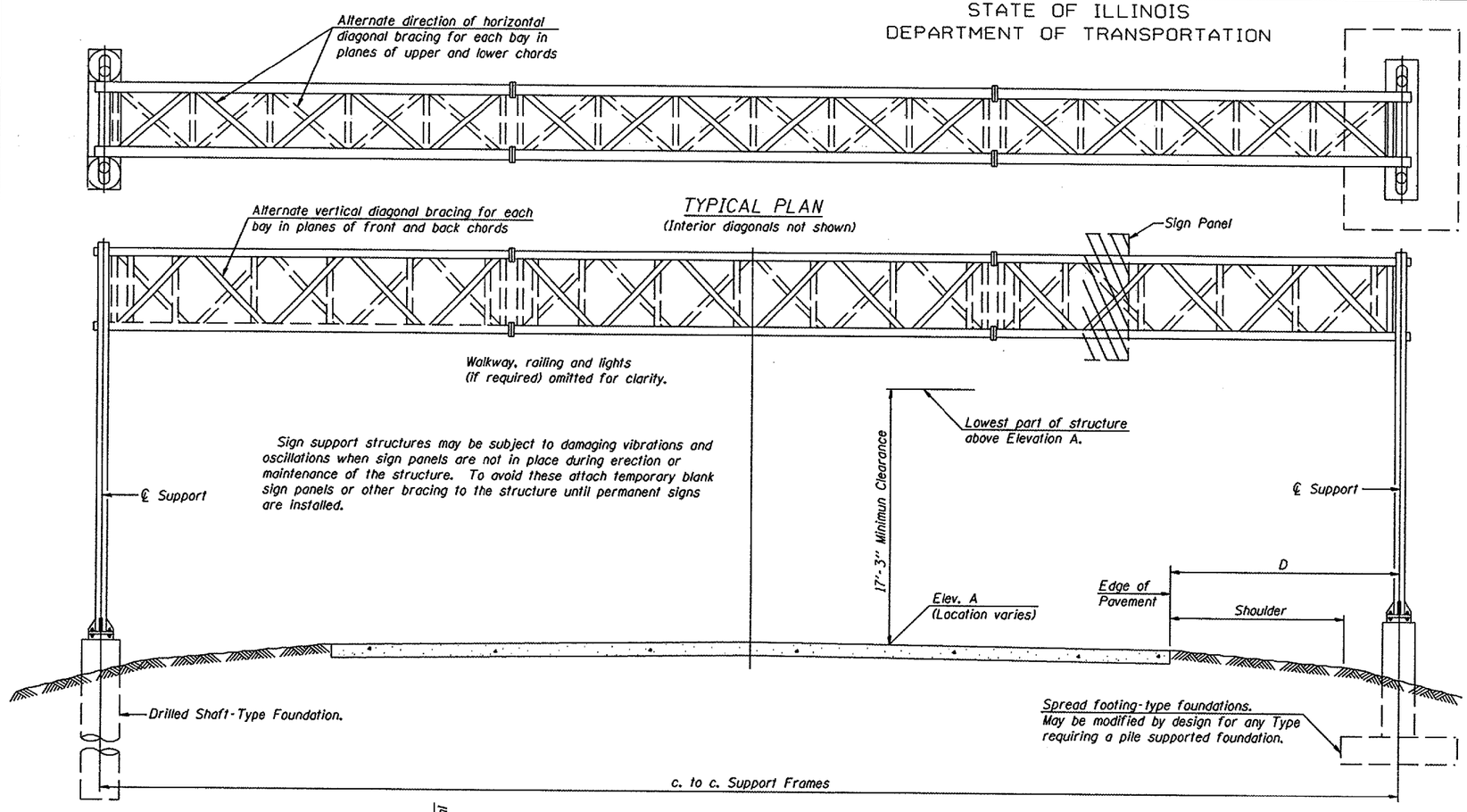
EXAMINED

ENGINEER OF BRIDGE DESIGN

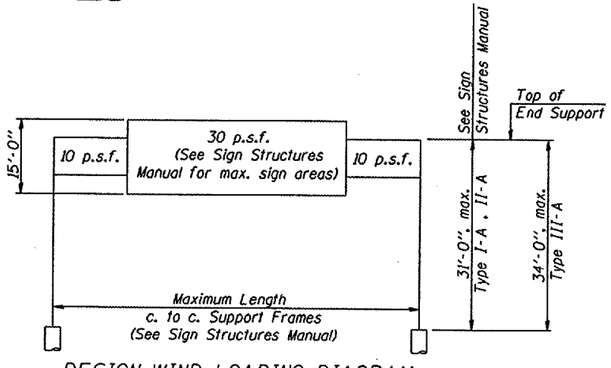
PASSED

ENGINEER OF BRIDGES AND STRUCTURES

OSC-A-D 6/01/2007



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

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

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

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

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

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

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

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

ANCHOR RODS: Shall conform to 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.

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

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

NUMBER	REVISION	DATE

DESIGNED -
CHECKED -
DRAWN -
CHECKED -

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

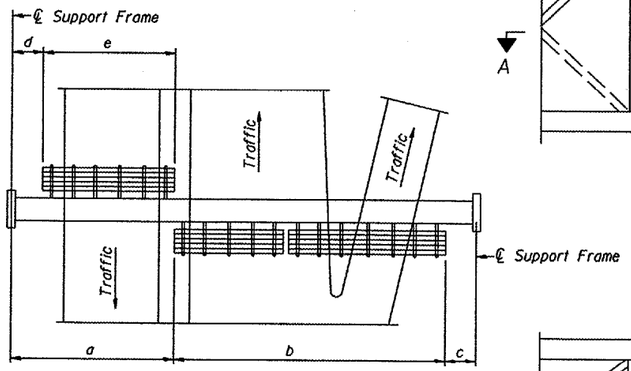
OS-A-1 6/01/2007

This Sheet For Information Only

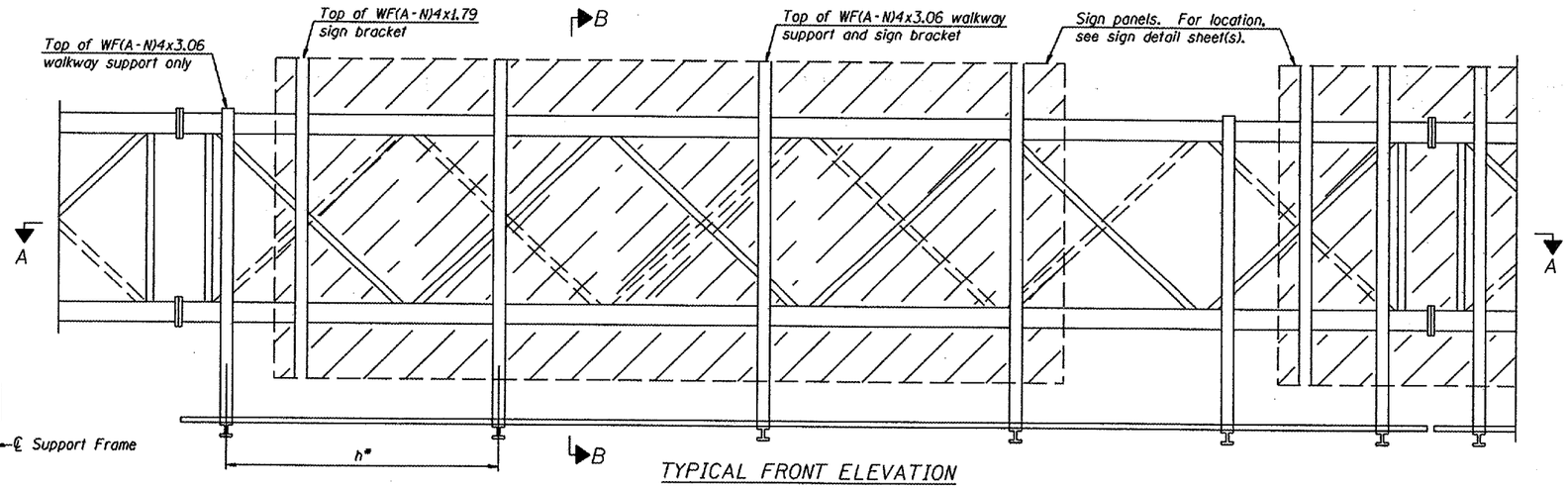
OVERHEAD SIGN STRUCTURES
GENERAL PLAN & ELEVATION
ALUMINUM TRUSS & STEEL SUPPORTS

District 1
Handrail Replacement
for Vierendeel
Sign Structure-Span

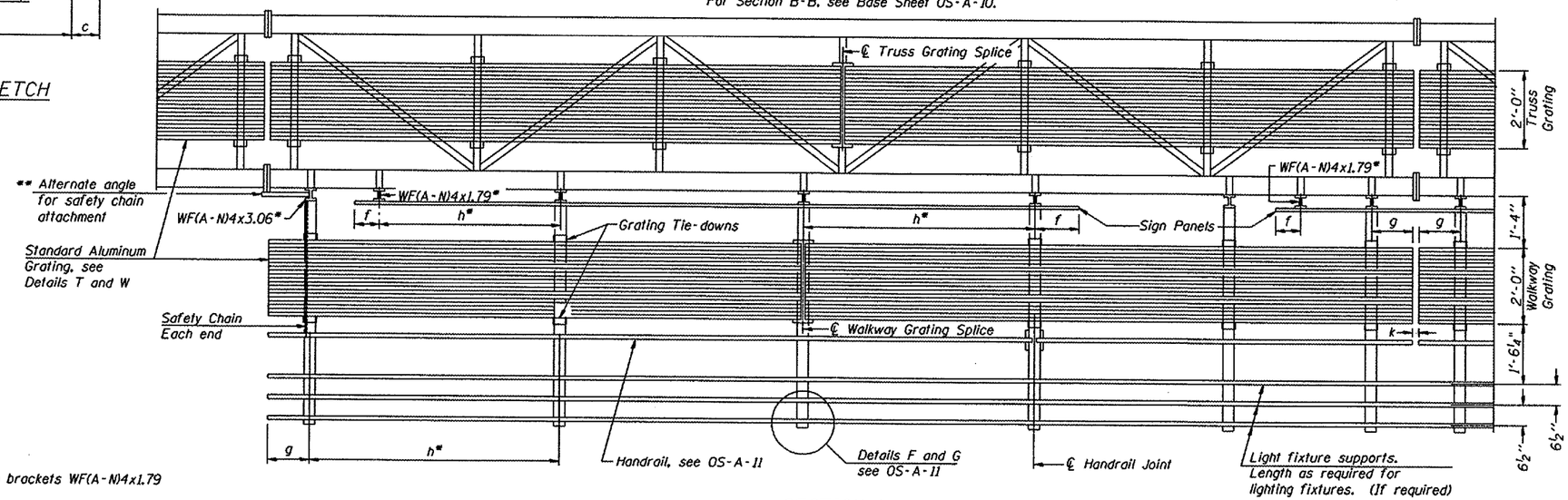
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



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

Structure Number	Station	a	b	c	d	e	Walkway Grating and Handrail Lengths
IS0161094R051.9	208 + 35 SB	N/A	N/A	N/A	N/A	N/A	46'-0" *
IS0161094R051.8	5 + 61 SB	N/A	N/A	N/A	N/A	N/A	60'-0" *
IS0161094L051.9	209 + 50 NB	N/A	N/A	N/A	N/A	N/A	41'-0" *
IS0161094R052.5	175 + 32 SB	N/A	N/A	N/A	N/A	N/A	73'-0" *
IS0161094L052.5	175 + 12 NB	N/A	N/A	N/A	N/A	N/A	80'-0" *
IS0161094L052.3	185 + 00 NB	N/A	N/A	N/A	N/A	N/A	65'-0" *
IS0161094R052.9	156 + 92 SB	N/A	N/A	N/A	N/A	N/A	61'-0" *
IS0161094R052.7	165 + 07 SB	N/A	N/A	N/A	N/A	N/A	61'-0" *
IS0161094L052.7	164 + 98 NB	N/A	N/A	N/A	N/A	N/A	87'-0" *
IS0161094R052.5	175 + 27 SB	N/A	N/A	N/A	N/A	N/A	25'-0" *

* Lengths shown are for replacement of handrail only. Stainless steel pins, bolts, washers and nuts shall be used.

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

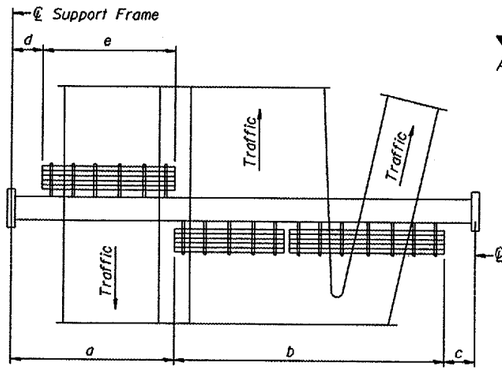
NUMBER	REVISION	DATE

OS-A-9 6/01/2007

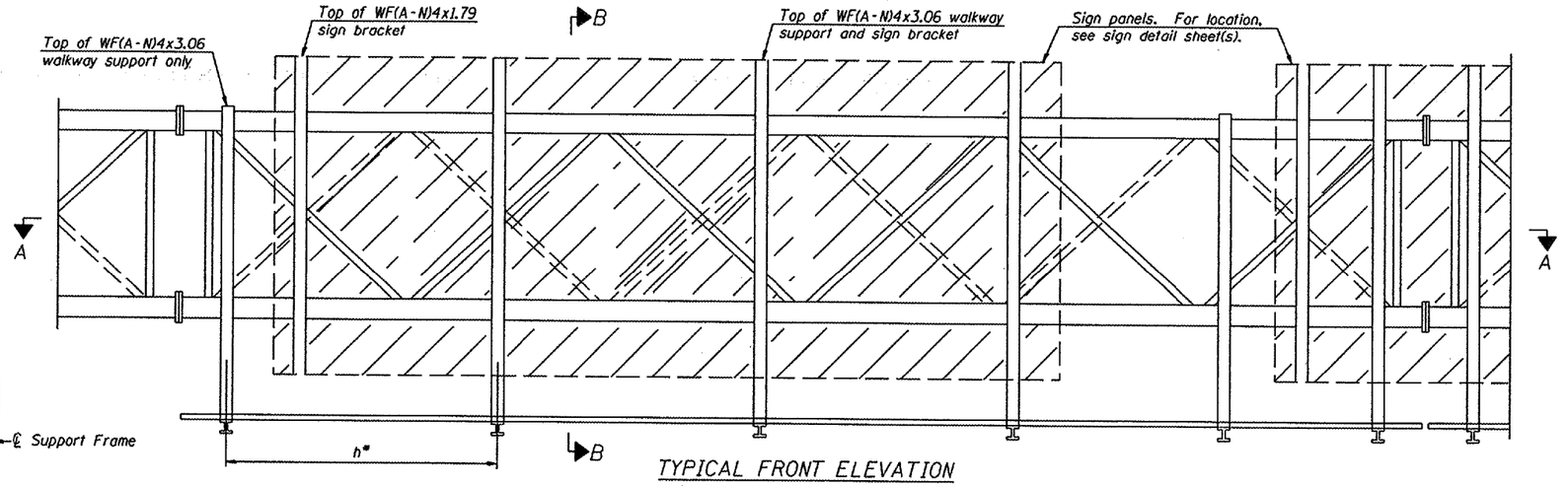
OVERHEAD SIGN STRUCTURES
ALUMINUM WALKWAY DETAILS

District 1
Handrail Replacement
for Vierendeel
Sign Structure-Span

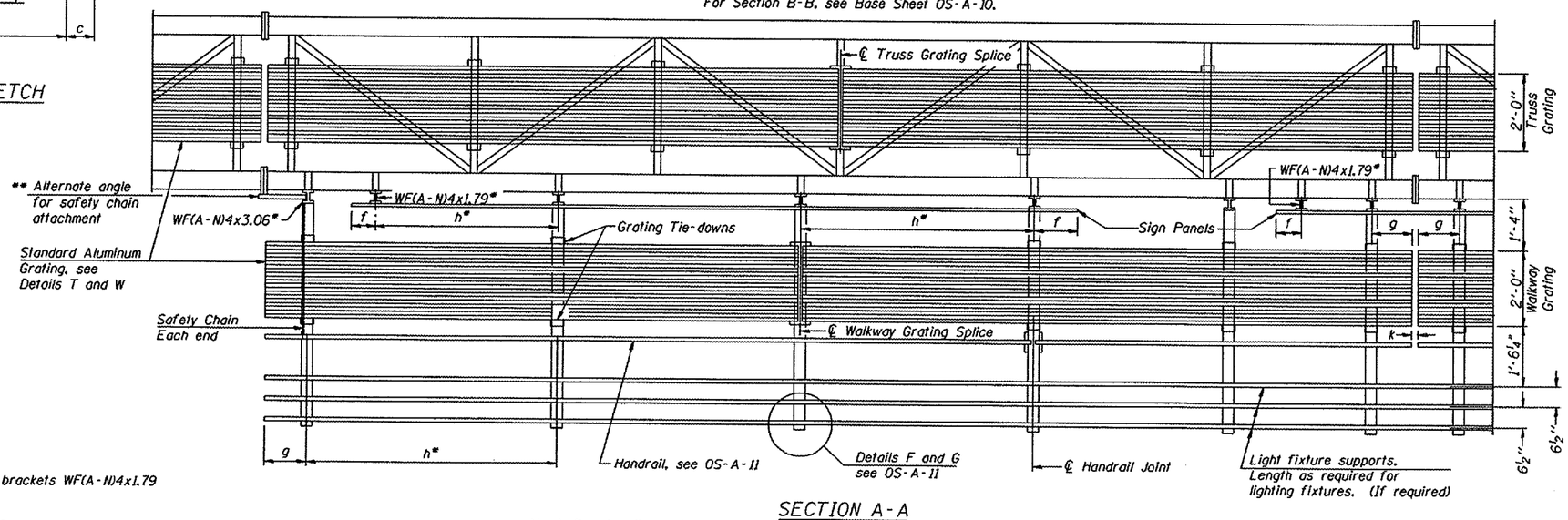
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



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

Structure Number	Station	a	b	c	d	e	Walkway Grating and Handrail Lengths	
150161094L052.5	175 + 12 NB	N/A	N/A	N/A	N/A	N/A	79'-0"	✳
150161094L052.3	185 + 00 NB	N/A	N/A	N/A	N/A	N/A	65'-0"	✳
150161094R053.2	141 + 09 SB	N/A	N/A	N/A	N/A	N/A	41'-0"	✳
150161094R053.2	144 +28 SB	N/A	N/A	N/A	N/A	N/A	35'-0"	✳
150161094R053.0	150 + 18 SB	N/A	N/A	N/A	N/A	N/A	52'-0"	✳
150161094L053.0	150 + 35 NB	N/A	N/A	N/A	N/A	N/A	80'-0"	✳
150161094L052.2	12 + 17 NB	N/A	N/A	N/A	N/A	N/A	42'-0"	✳
150161094R053.5	120 + 43 SB	N/A	N/A	N/A	N/A	N/A	54'-0"	✳
150161094R053.4	127 + 70 SB	N/A	N/A	N/A	N/A	N/A	36'-0"	✳
150161094L053.3	131 + 24 NB	N/A	N/A	N/A	N/A	N/A	43'-0"	✳

✳ Lengths shown are for replacement of handrail only. Stainless steel pins, bolts, washers and nuts shall be used.

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 -	

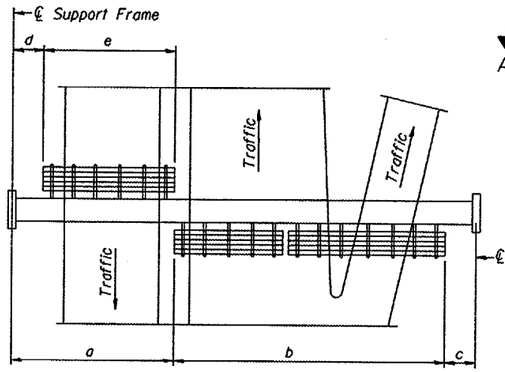
- 20
EXAMINED
ENGINEER OF BRIDGE DESIGN
PASSED
ENGINEER OF BRIDGES AND STRUCTURES

NUMBER	REVISION	DATE

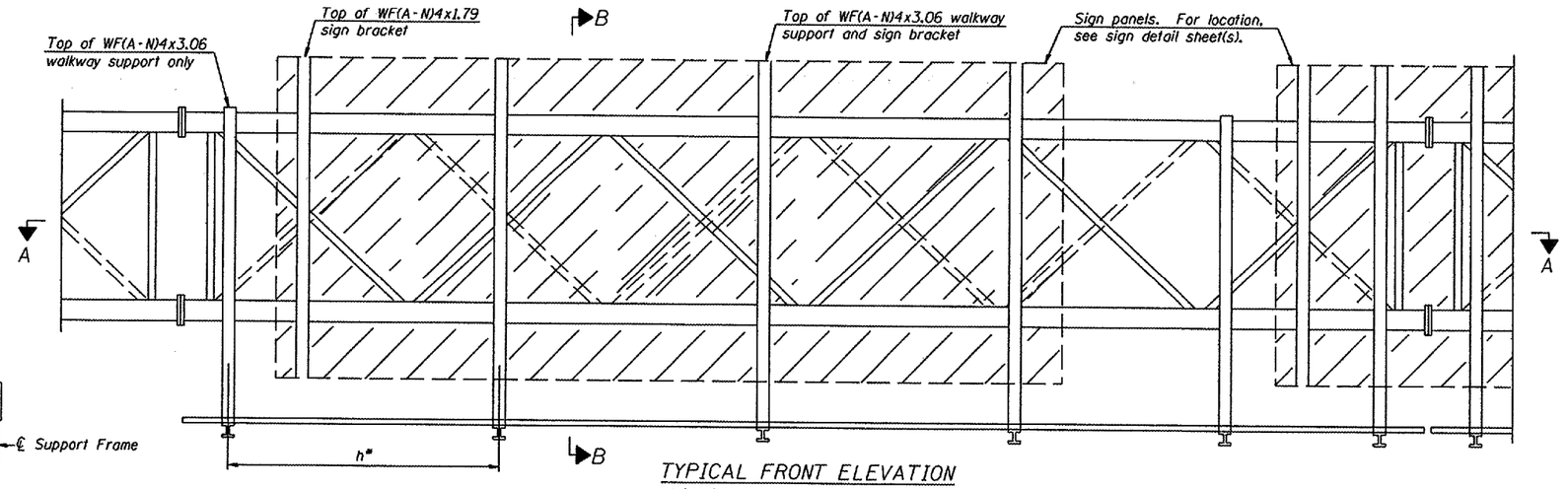
OS-A-9 6/01/2007

OVERHEAD SIGN STRUCTURES
ALUMINUM WALKWAY DETAILS

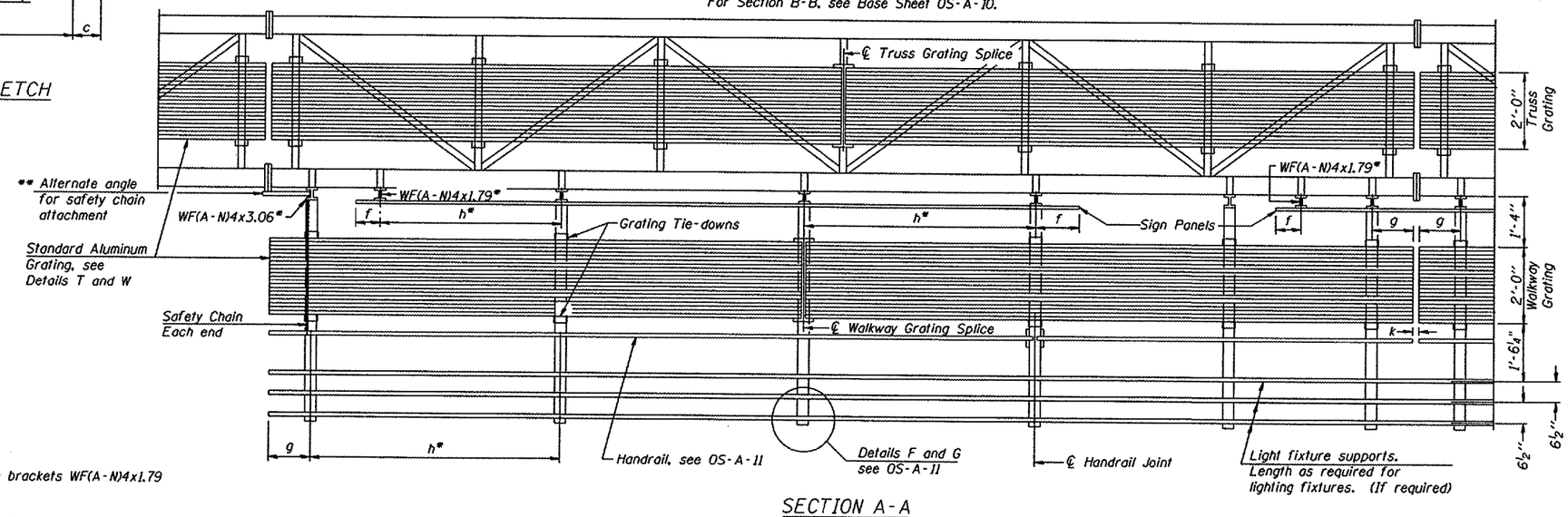
District 1
Handrail Replacement
for Vierendeel
Sign Structure-Span



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

Structure Number	Station	a	b	c	d	e	Walkway Grating and Handrail Lengths	
IS0161094R054.1	93 + 27 SB	N/A	N/A	N/A	N/A	N/A	63'-0"	*
IS0161094R054.0	101 + 81 SB	N/A	N/A	N/A	N/A	N/A	60'-0"	*
IS0161094L054.1	93 + 06 NB	N/A	N/A	N/A	N/A	N/A	17'-0"	*
IS0161094L054.4	101 + 40 NB	N/A	N/A	N/A	N/A	N/A	61'-0"	*
IS0161094L054.2	79 + 80 NB	N/A	N/A	N/A	N/A	N/A	45'-0"	*
IS0161094R054.3	84 + 52 SB	N/A	N/A	N/A	N/A	N/A	14'-0"	*
IS0161094R054.5	71 + 60 SB	N/A	N/A	N/A	N/A	N/A	67'-0"	*
IS0161094R054.4	78 + 41 SB	N/A	N/A	N/A	N/A	N/A	34'-0"	*

* Lengths shown are for replacement of handrail only. Stainless steel pins, bolts, washers and nuts shall be used.

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

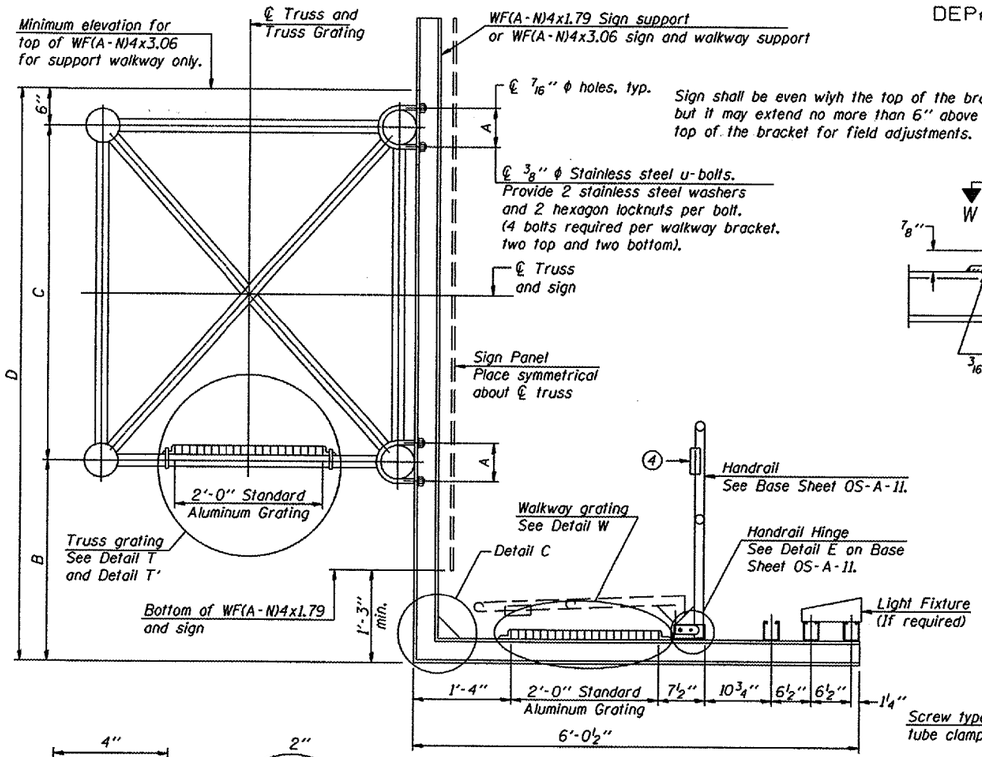
OS-A-9 6/01/2007

OVERHEAD SIGN STRUCTURES
ALUMINUM WALKWAY DETAILS

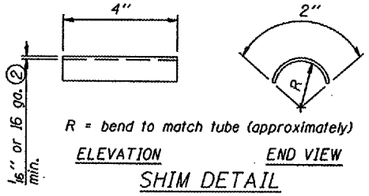
District 1
Handrail Replacement
for Vierendeel
Sign Structure-Span

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

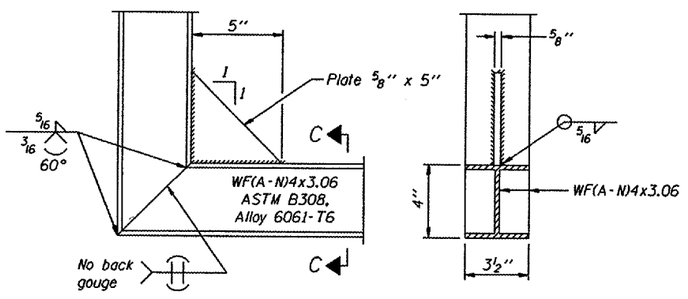
Various Routes
OVD SIN STR REP & REPL 2008-9
Various Counties
Sheet 20 of 105
Contract Number 44973



SECTION B-B

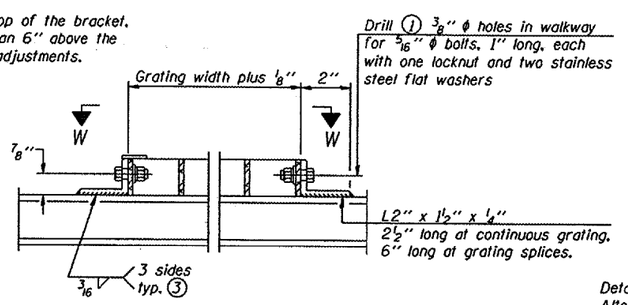


SHIM DETAIL

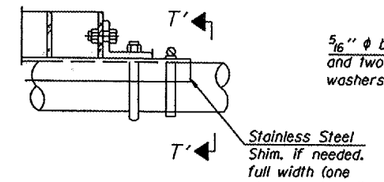


DETAIL C

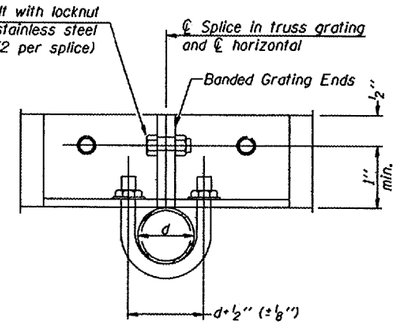
SECTION C-C



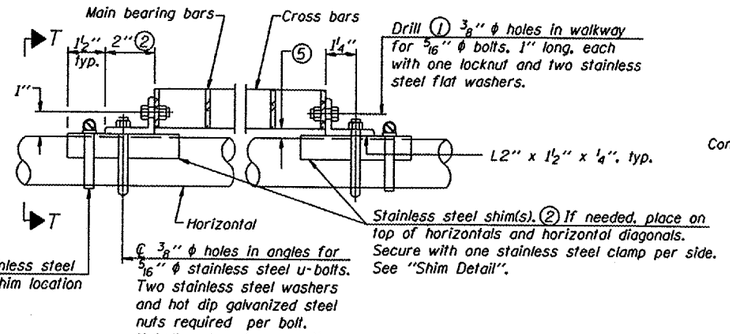
DETAIL W
(Walkway grating)



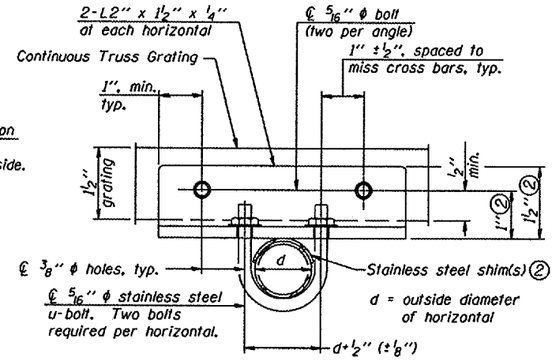
DETAIL T'
(Truss grating splice)
Details not shown same as Detail T.
Alternate materials may be used subject to the Engineer's review and approval.



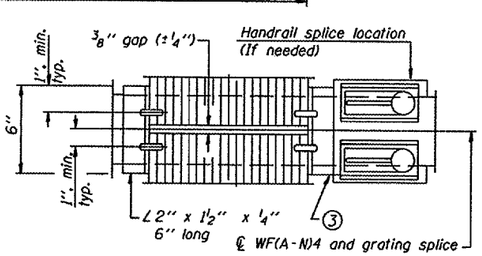
SECTION T'-T'



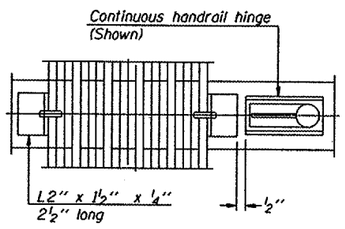
DETAIL T
(Continuous Truss grating)



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.

DESIGNED -	
CHECKED -	
DRAWN -	
CHECKED -	

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

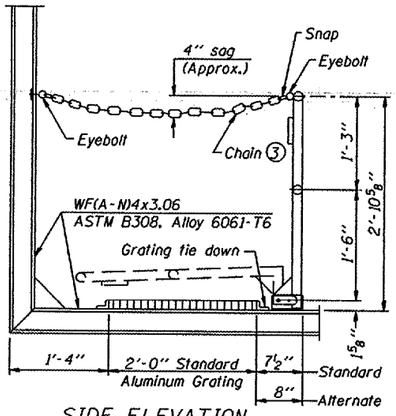
NUMBER	REVISION	DATE

OS-A-10 6/01/2007

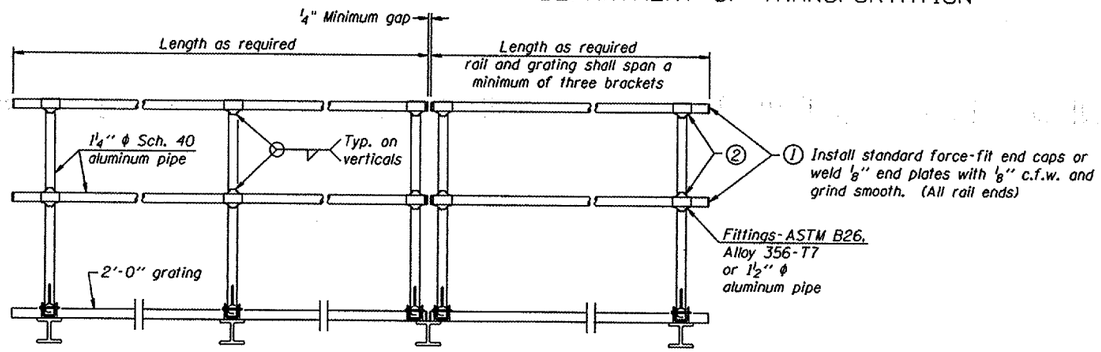
OVERHEAD SIGN STRUCTURES
ALUMINUM WALKWAY DETAILS

District 1
Handrail Replacement
for Vierendeel
Sign Structure-Span

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



SIDE ELEVATION
(Showing safety chain w/o sign)

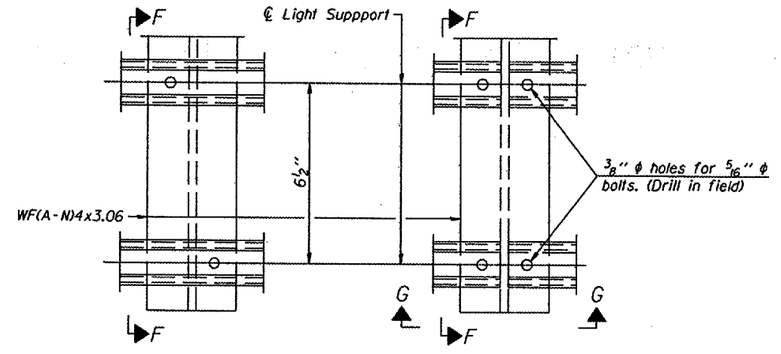


FRONT ELEVATION

HANDRAIL DETAILS

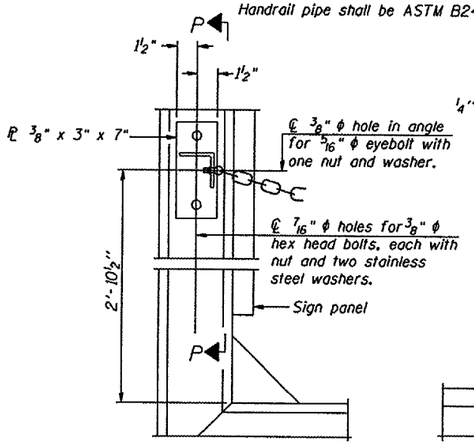
Handrail pipe shall be ASTM B241 or B429, Alloy 6063-T6 or Alloy 6061-T6.

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

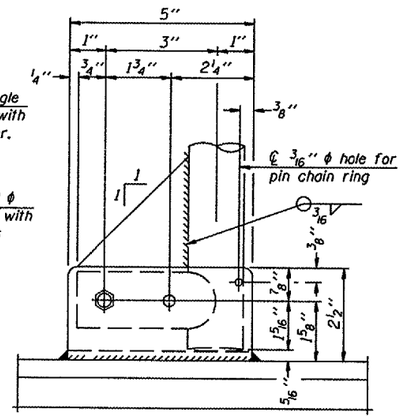


DETAIL F

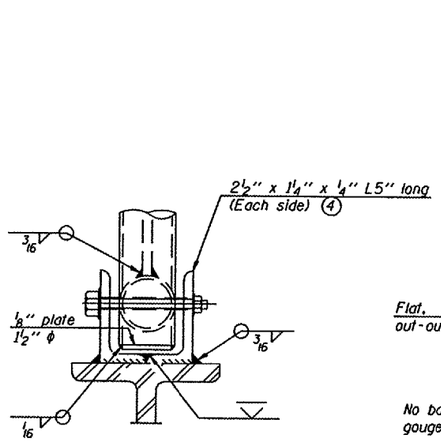
DETAIL G



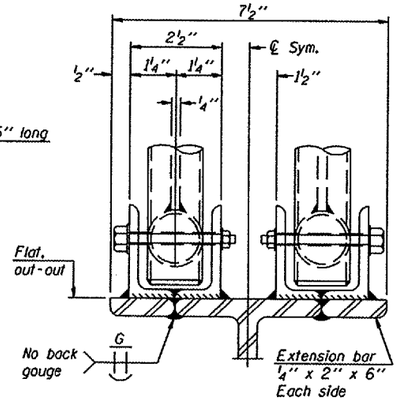
ALTERNATE SAFETY CHAIN ATTACHMENT
(With Sign Present)
Items not shown same as "Side Elevation" of "Handrail Details"



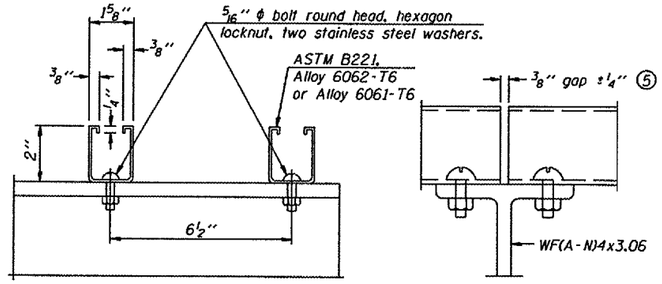
SIDE ELEVATION



FRONT ELEVATION
See "Elevation" at right for dimensions.



ELEVATION AT HANDRAIL JOINT ④

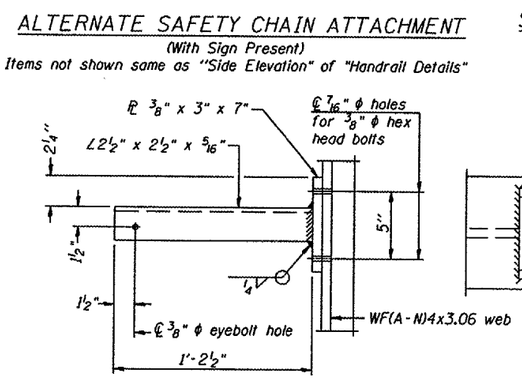


SECTION F-F

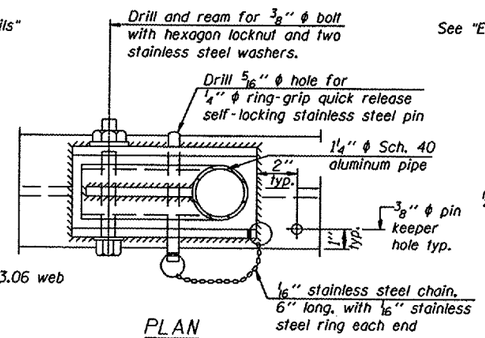
SECTION G-G

LIGHTING FIXTURE MOUNTS (IF REQUIRED)

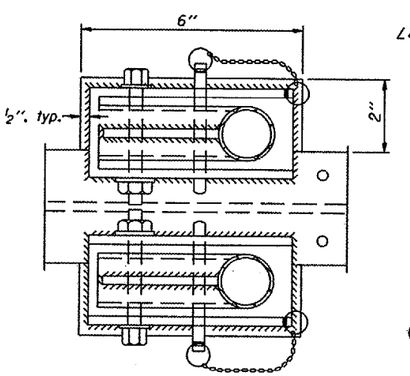
⑤ Field cut ends of light support channels shall be free of burrs or hazardous projections and coated with zinc-rich primer or equivalent.



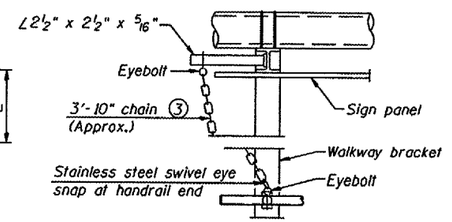
SECTION P-P



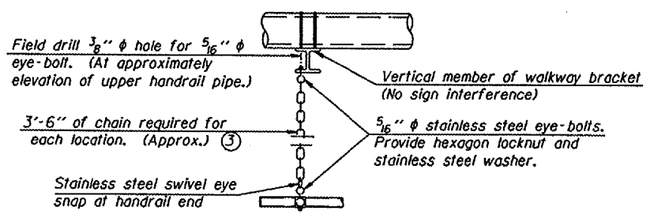
PLAN
DETAIL E HANDRAIL HINGE



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" Type 304L stainless steel chain, approximately 12 links per foot.

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

DESIGNED	-
CHECKED	-
DRAWN	-
CHECKED	-

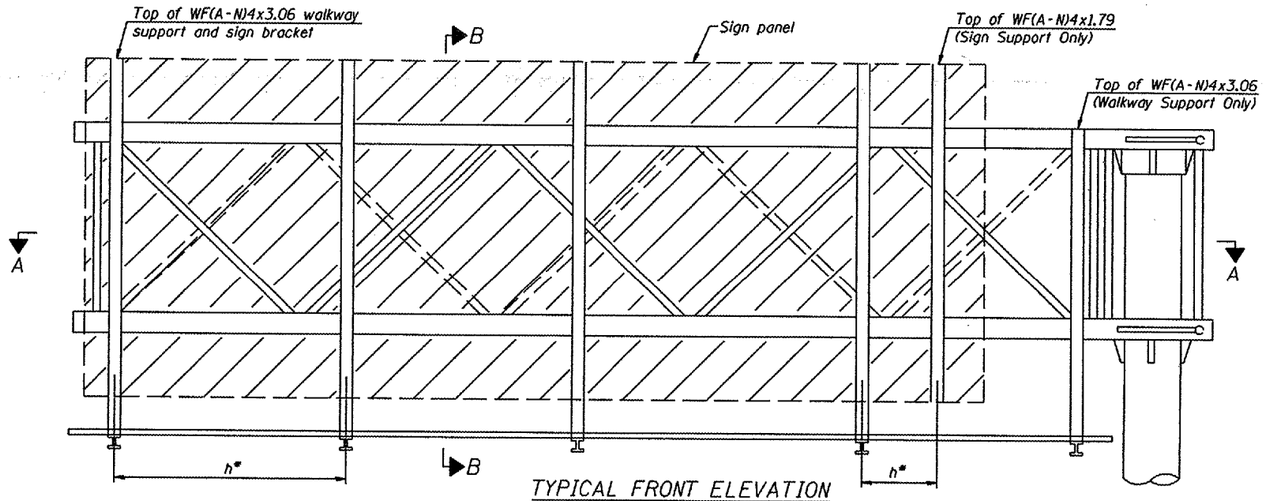
- 20
EXAMINED
PASSED
ENGINEER OF BRIDGE DESIGN
ENGINEER OF BRIDGES AND STRUCTURES

NUMBER	REVISION	DATE

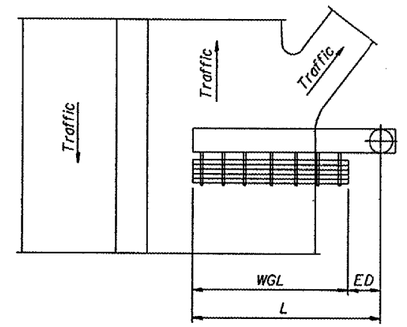
OS-A-11 6/01/2007

OVERHEAD SIGN STRUCTURES
ALUMINUM HANDRAIL DETAILS

District 1
Handrail Replacement
for Vierendeel
Sign Structure-Span

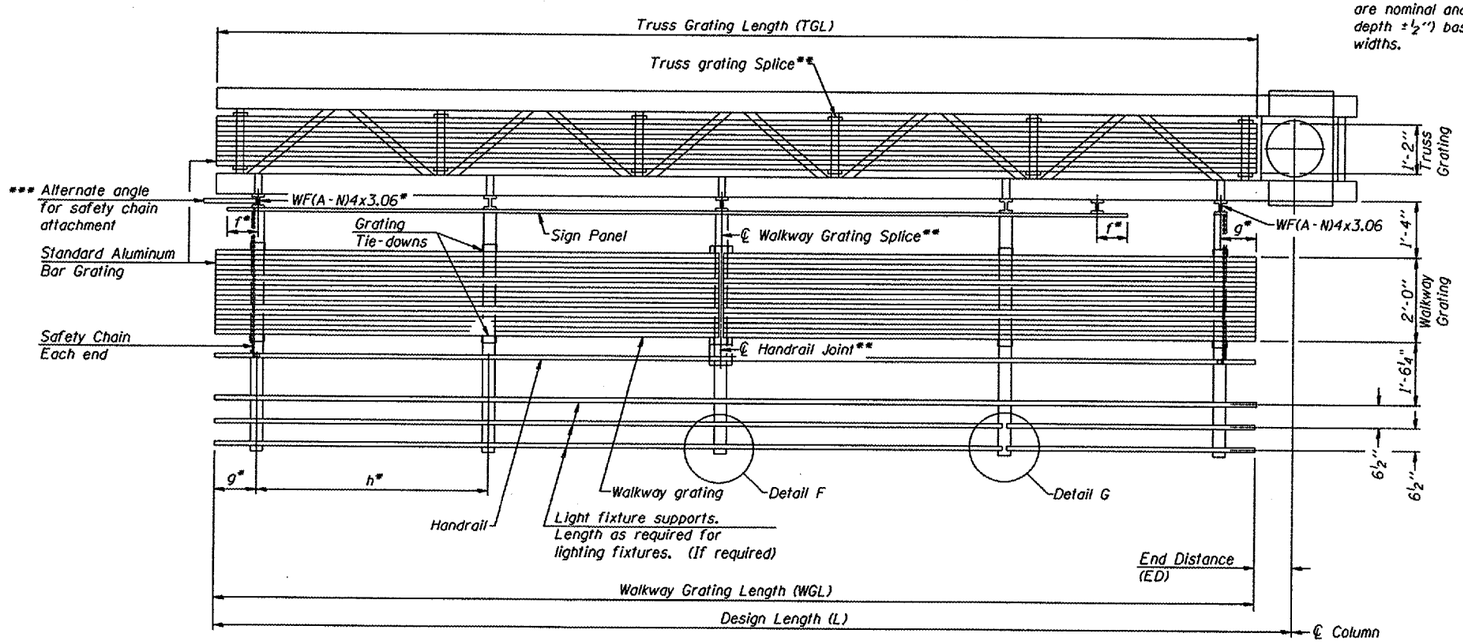


TYPICAL FRONT ELEVATION
With lights and handrail omitted for clarity.



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
1C0161094L052.4	179 + 17 NB	25'-0" *	N/A	N/A
1C0161094R052.6	170 + 83 SB	13'-0" *	N/A	N/A
1C0161094L052.9	161 + 74 NB	28'-0" *	N/A	N/A
1C0161094L053.3	131 + 47 NB	27'-0" *	N/A	N/A
1C0161094L054.2	72 + 25 NB	13'-0" *	N/A	N/A

* Lengths shown are for replacement of handrail only. Stainless steel pins, bolts, washers and nuts shall be used.

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. See alternate safety chain attachment on base sheet OSC-A-8

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 joint, 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 joints 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 -

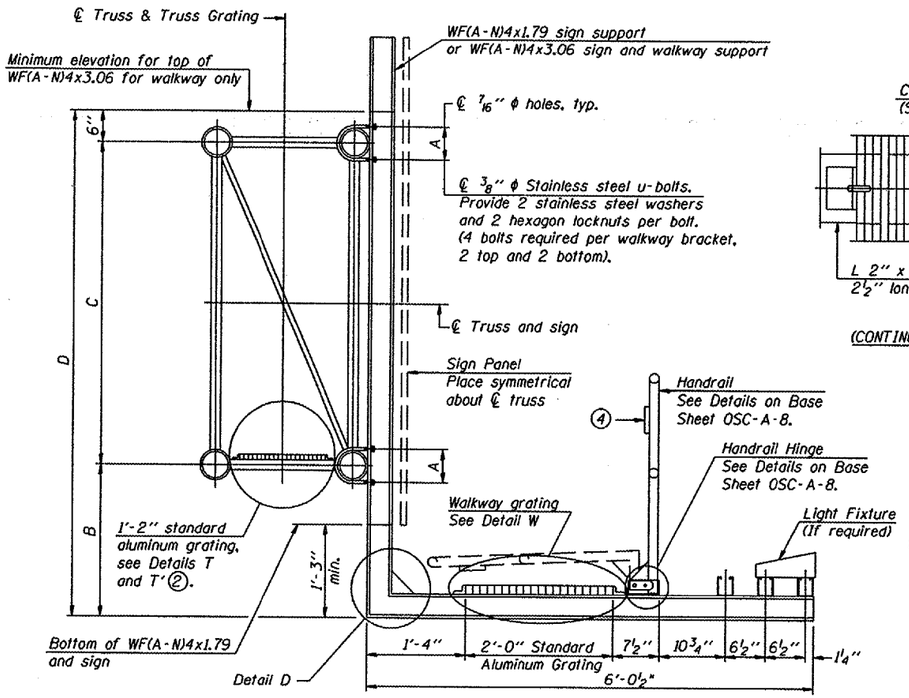
- 20
EXAMINED
ENGINEER OF BRIDGE DESIGN
PASSED
ENGINEER OF BRIDGES AND STRUCTURES

OSC-A-6 6/01/2007

CANTILEVER SIGN STRUCTURES
ALUMINUM WALKWAY DETAILS
ALUMINUM TRUSS & STEEL POST

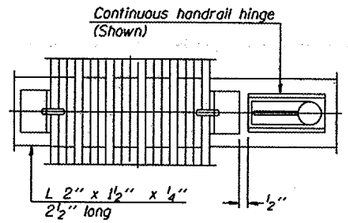
District 1
Handrail Replacement
for Vierendeel
Sign Structure-Cantilever

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

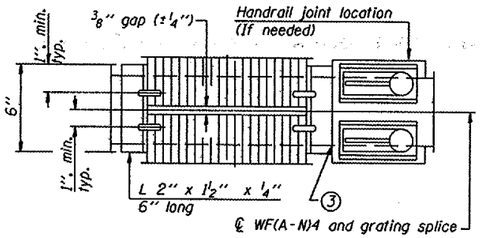


SECTION B-B

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

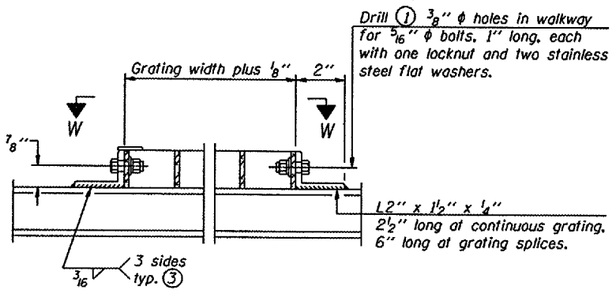


(CONTINUOUS WALKWAY GRATING)

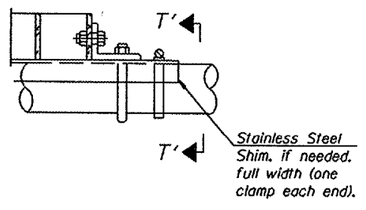


(AT WALKWAY GRATING SPLICE)

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.

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.

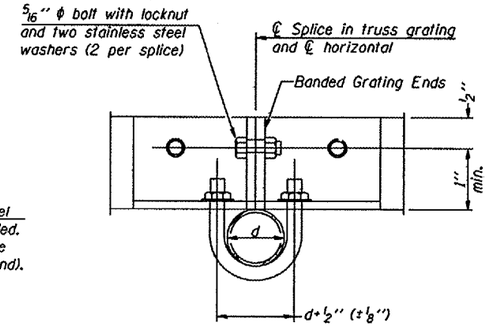
Cross bars (CB) shall be 3/16" x 1½" on 4" centers and conform to ASTM B221 Alloy 6063-T5 or 6061-T6.

OR

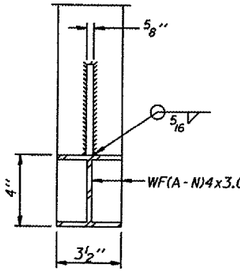
Aluminum Grating with modified "I" sections for main bearing bars shall meet the following requirements:

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.

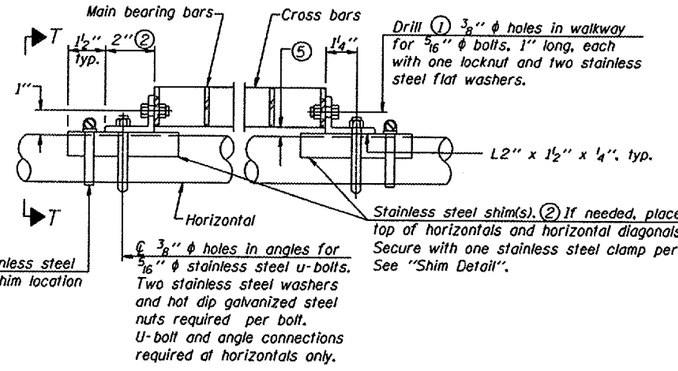
Cross bars shall conform to ASTM B221 Alloy 6063-T5 or T-42 and spaced on 4" centers.



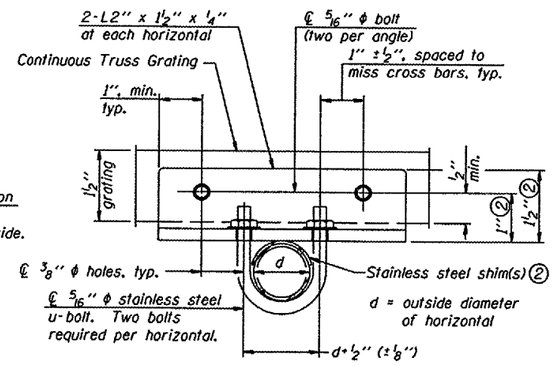
SECTION T'-T'



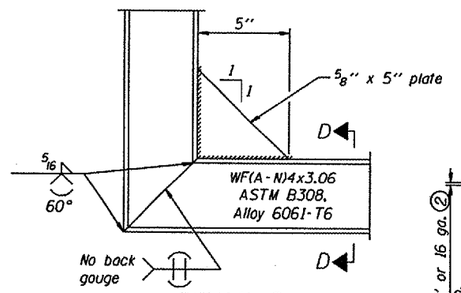
SECTION D-D



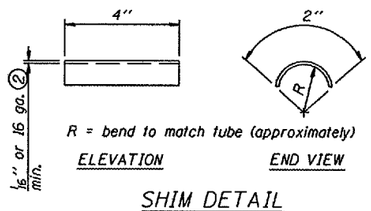
DETAIL T
(Continuous Truss grating)



SECTION T-T



DETAIL D



SHIM DETAIL

NUMBER	REVISION	DATE

DESIGNED	-
CHECKED	-
DRAWN	-
CHECKED	-

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

OSC-A-7 6/01/2007

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 OSC-A-8.)

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.

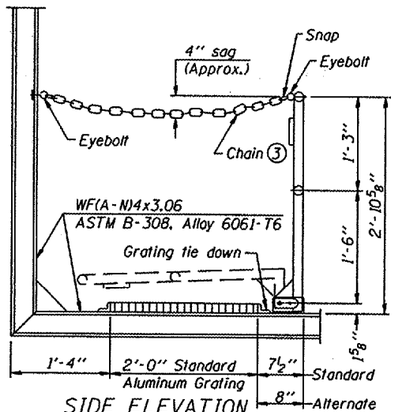
Structure Number	Station	A	B	C	D

This Sheet For Information Only

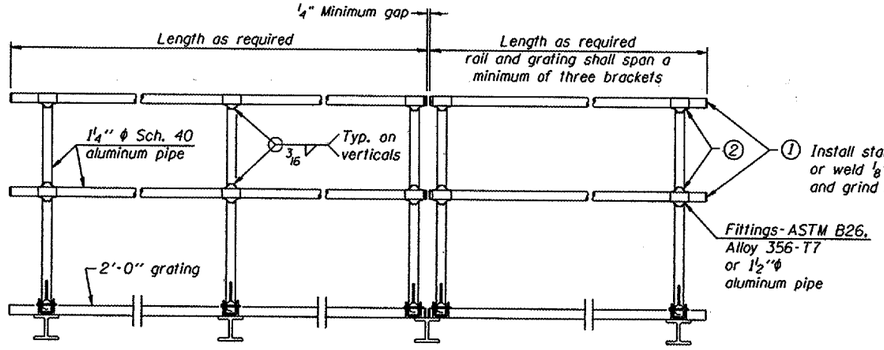
CANTILEVER SIGN STRUCTURES
WALKWAY DETAILS
ALUMINUM TRUSS & STEEL POST

District 1
Handrail Replacement
for Vierendeel
Sign Structure-Cantilever

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

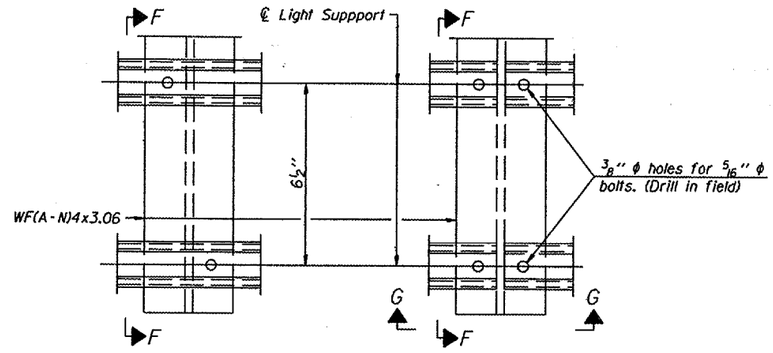


SIDE ELEVATION
(Showing Safety Chain W/O Sign)



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 1/16" 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.)

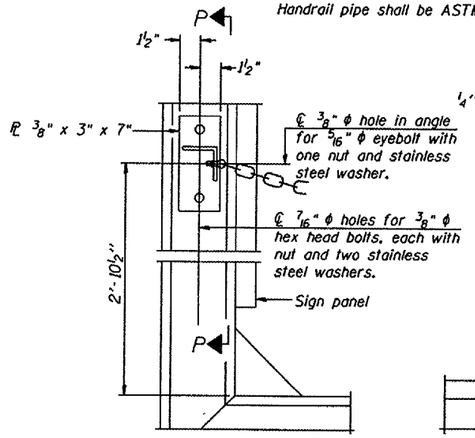


DETAIL F

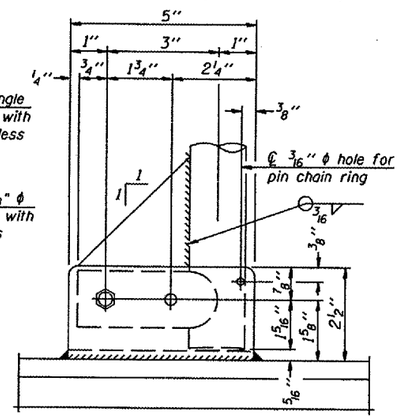
DETAIL G

HANDRAIL DETAILS

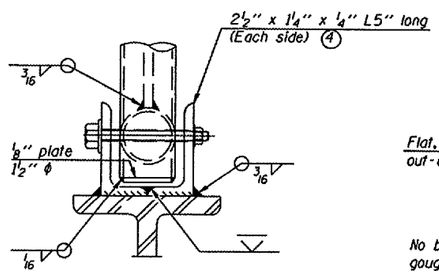
Handrail pipe shall be ASTM B241 or B429, Alloy 6063-T6 or Alloy 6061-T6.



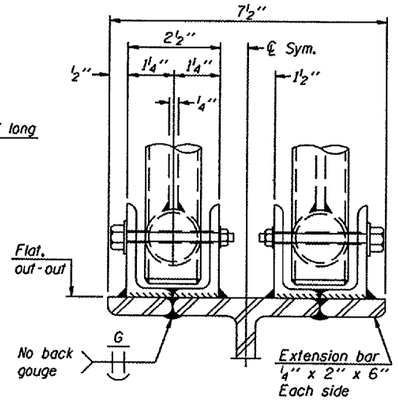
ALTERNATE SAFETY CHAIN ATTACHMENT
(With Sign Present)
Items not shown same as "Side Elevation" of "Handrail Details"



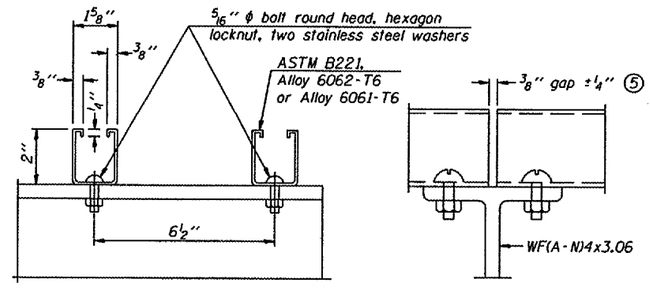
SIDE ELEVATION



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



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

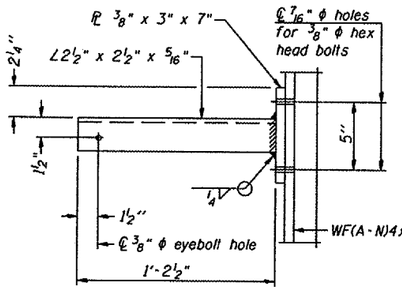


SECTION F-F

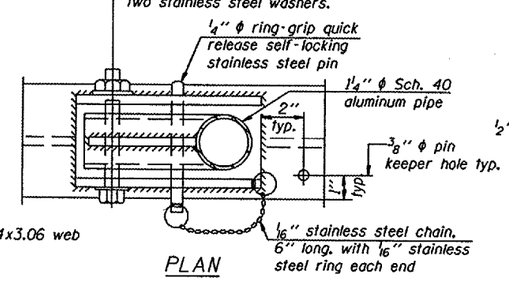
SECTION G-G

LIGHTING FIXTURE MOUNTS (IF REQUIRED)

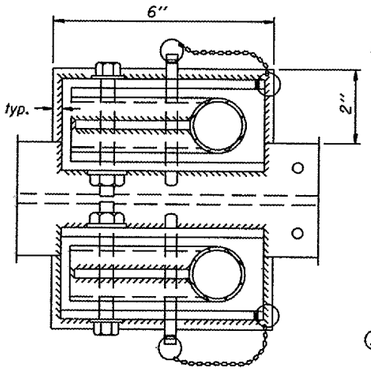
(5) Field cut ends of light support channels shall be free of burrs or hazardous projections and coated with zinc-rich primer or equivalent.



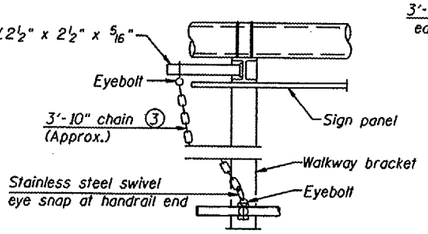
SECTION P-P



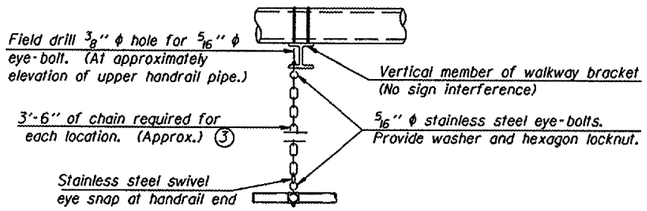
PLAN
DETAIL E HANDRAIL HINGE



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" Type 304L stainless steel chain, approximately 12 links per foot.

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

DESIGNED	-
CHECKED	-
DRAWN	-
CHECKED	-

- 20

EXAMINED

PASSED
ENGINEER OF BRIDGE DESIGN

ENGINEER OF BRIDGES AND STRUCTURES

NUMBER	REVISION	DATE

CANTILEVER SIGN STRUCTURES
HANDRAIL DETAILS
ALUMINUM TRUSS & STEEL POST

District 1
Handrail Replacement
for Vierendeel
Sign Structure-Cantilever

OSC-A-8 6/01/2007

District 1
Schedule of Overhead Sign Structure Repair & Replacement

Illinois Department of Transportation
Division of Highways
Illinois Department of Transportation

SOIL BORING LOG

Page 1 of 2

Date 7/13/07

ROUTE FAP 346 (US-41) DESCRIPTION Proposed Cantilever Sign South of IL-22 LOGGED BY M. Esposito

SECTION LOCATION SE 1/4, SEC. 16, TWP. 43N, RNG. 12E, 3rd PM

COUNTY LAKE DRILLING METHOD CME 750, 3.25 in. ID HSA HAMMER TYPE CME Automatic

STRUCT. NO.
Station

BORING NO. B-1
Station 425 ft. S/O IL22 CL
Offset 14.00ft Rt EOP
Ground Surface Elev. 100.09 ft

Surface Water Elev. ft
Stream Bed Elev. ft

Groundwater Elev.:
First Encounter 88.1 ft ▼
Upon Completion 97.2 ft ▽
After 72 Hrs. 93.2 ft ▽

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
Brown SILTY LOAM (Topsoil) 99.09			13
Loose Brown SAND 98.09			
Hard Brown SILTY LOAM ▽	8		
	11	>4.5	12
	13		
-5			
Grades w/More Clay	5		
	9	7.4	15
	10	S @ 15%	
▽			
	4		
	7	5.9	16
	9	B	
-10			
89.59	3	2.5	15
Very Stiff Gray SILTY CLAY	4	P	15
	7	2.6	
88.09 ▼		B	
Loose Gray Coarse SAND	3		
*Note: Began Drilling w/Water			18
	4		
	4		
85.59			
Stiff to Very Stiff Gray SILTY CLAY -15	3		
*Note Ceased Drilling w/Water	5	2.2	18
	7	B	
	1		
	3	1.6	11
	6	B	
80.59			
Gray Coarse Gravel -20			

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
Gray Coarse Gravel *(continued)* 79.59	4		16
Very Stiff Gray SILTY CLAY	7	3.0	16
	6	B	
78.09			
Soft Gray SILTY CLAY	2		
	3	0.7	20
	3	B	
-25			
	2		
	2	0.4	15
	3	B	
	1		
	2	0.4	18
	2	B	
-30			
Grades to Very Stiff	1		
	3	3.0	18
	6	B	
68.09			
Medium Dense Gray Fine SAND	3		
	6		21
	6		
*Note: Began Drilling w/Water			
-35	4		
	7		22
	12		
	6		
	9		18
61.09	11		
Note: Drilled with water from 12 ft. to 15 ft. and from 34 ft. to 39 ft. -40			

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)
The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)

BBS, from 137 (Rev. 8-99)

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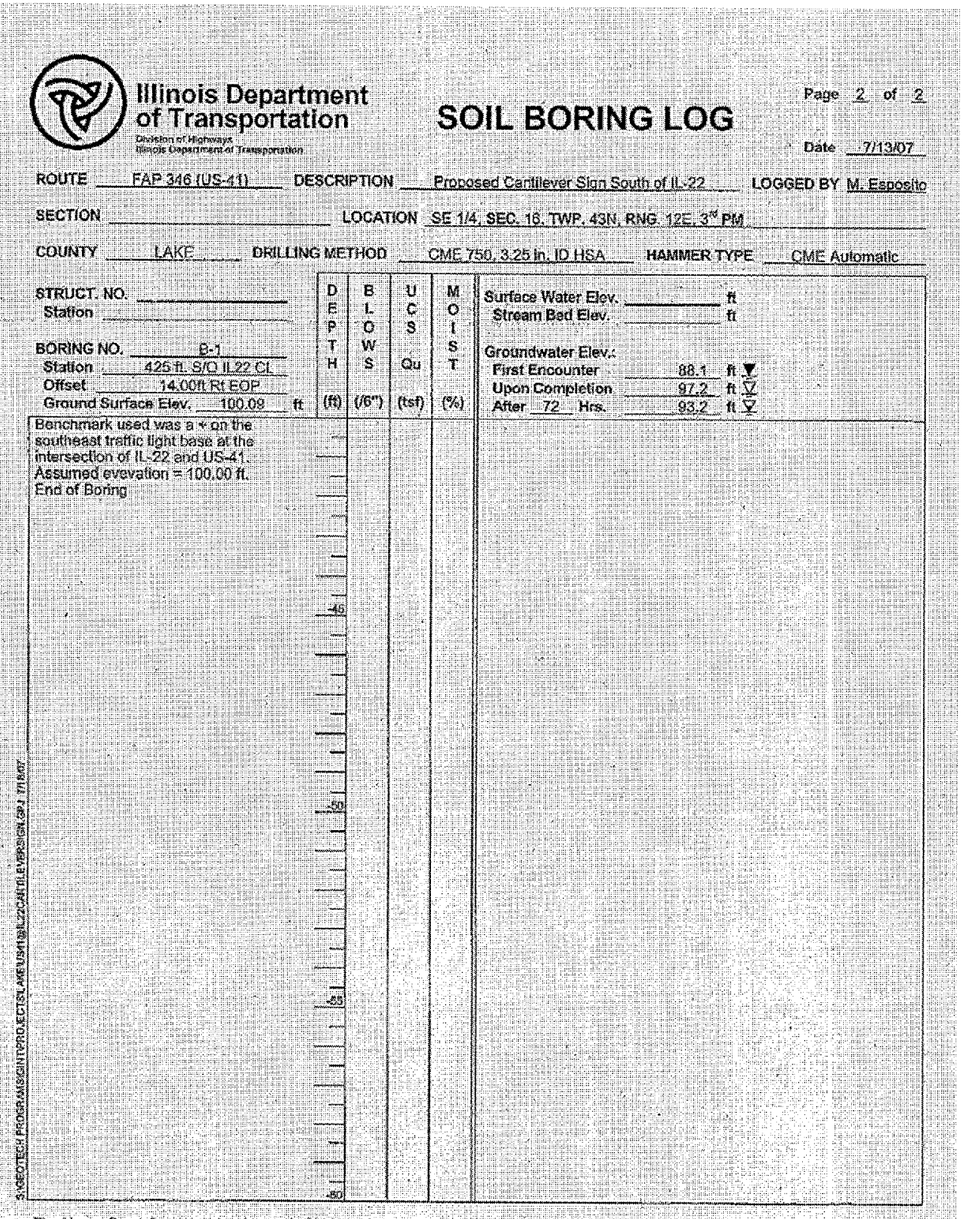

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The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)
The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)

BBS, from 137 (Rev. 8-99)

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

District 2
Schedule of Overhead Sign Structure Repair & Replacement

Location No.:	2-01	State I.D. No.:	2S101U020R023.8				
County:	Winnebago	Route:	US 20	M.P.:	23.8	Direction:	EB

Description of Work	Unit	Quantity
REMOVE OVERHEAD SIGN STRUCTURE-SPAN	EACH	1.00
STRUCTURAL STEEL SUPPORT FOR OVERHEAD SIGN STRUCTURE	EACH	2.00
OVERHEAD SIGN STRUCTURE-SPAN, TYPE I-A (4' - 0" X 4' - 6")	FOOT	79.00
REMOVE & REINSTALL WALKWAY	FOOT	34.00
REPLACE / TIGHTEN CLIPS PER SIGN	EACH	2.00
REMOVE & REINSTALL SIGN PANEL	SQ FT	391.50
REPAIR HANDRAIL LOCKING PIN CONNECTION	EACH	4.00
DISCONNECT / RECONNECT ELECTRIC SERVICE	EACH	1.00
RELOCATE ELECTRIC SERVICE	EACH	1.00
DRILLED SHAFT CONCRETE FOUNDATIONS	CU YD	20.40
REMOVE CONCRETE FOUNDATION - OVERHEAD	EACH	2.00

Location No.:	2-02	State I.D. No.:	2S101U020L023.1				
County:	Winnebago	Route:	US 20	M.P.:	23.1	Direction:	WB

Description of Work	Unit	Quantity
REMOVE OVERHEAD SIGN STRUCTURE - SPAN	EACH	1.00
STRUCTURAL STEEL SUPPORT FOROVERHEAD SIGN STRUCTURE	EACH	2.00
OVERHEAD SIGN STRUCTURE-SPAN, TYPE II-A (4' - 6" X 5' - 3")	FOOT	99.00
REMOVE & REINSTALL WALKWAY	FOOT	46.00
REPLACE / TIGHTEN CLIPS PER SIGN	EACH	2.00
REMOVE & REINSTALL SIGN PANEL	SQ FT	438.00
REPAIR HANDRAIL LOCKING PIN CONNECTION	EACH	10.00
DISCONNECT / RECONNECT ELECTRIC SERVICE	EACH	1.00
RELOCATE ELECTRIC SERVICE	EACH	1.00
DRILLED SHAFT CONCRETE FOUNDATIONS	CU YD	20.40
REMOVE CONCRETE FOUNDATION - OVERHEAD	EACH	4.00
FURNISH & INSTALL SAFETY CHAIN	EACH	2.00
RELOCATE FLASHER CONTROLLER	EACH	1.00

Location No.:	2-03	State I.D. No.:	2S101U020L022.6				
County:	Winnebago	Route:	US 20	M.P.:	22.6	Direction:	WB

Description of Work	Unit	Quantity
REMOVE OVERHEAD SIGN STRUCTURE-SPAN	EACH	1.00
STRUCTURAL STEEL SUPPORT FOR OVERHEAD SIGN STRUCTURE	EACH	2.00
OVERHEAD SIGN STRUCTURE-SPAN, TYPE II-A (4' - 6" X 5' - 3")	FOOT	116.00
REMOVE & REINSTALL WALKWAY	FOOT	64.00
REPLACE / TIGHTEN CLIPS PER SIGN	EACH	2.00
REMOVE & REINSTALL SIGN PANEL	SQ FT	381.00
REPAIR HANDRAIL LOCKING PIN CONNECTION	EACH	10.00
DISCONNECT / RECONNECT ELECTRIC SERVICE	EACH	1.00
RELOCATE ELECTRIC SERVICE	EACH	1.00
DRILLED SHAFT CONCRETE FOUNDATIONS	CU YD	20.40
REMOVE CONCRETE FOUNDATION - OVERHEAD	FOOT	2.00
FURNISH & INSTALL SAFETY CHAIN	EACH	2.00
REPLACE HANDRAIL SUPPORT	EACH	1.00

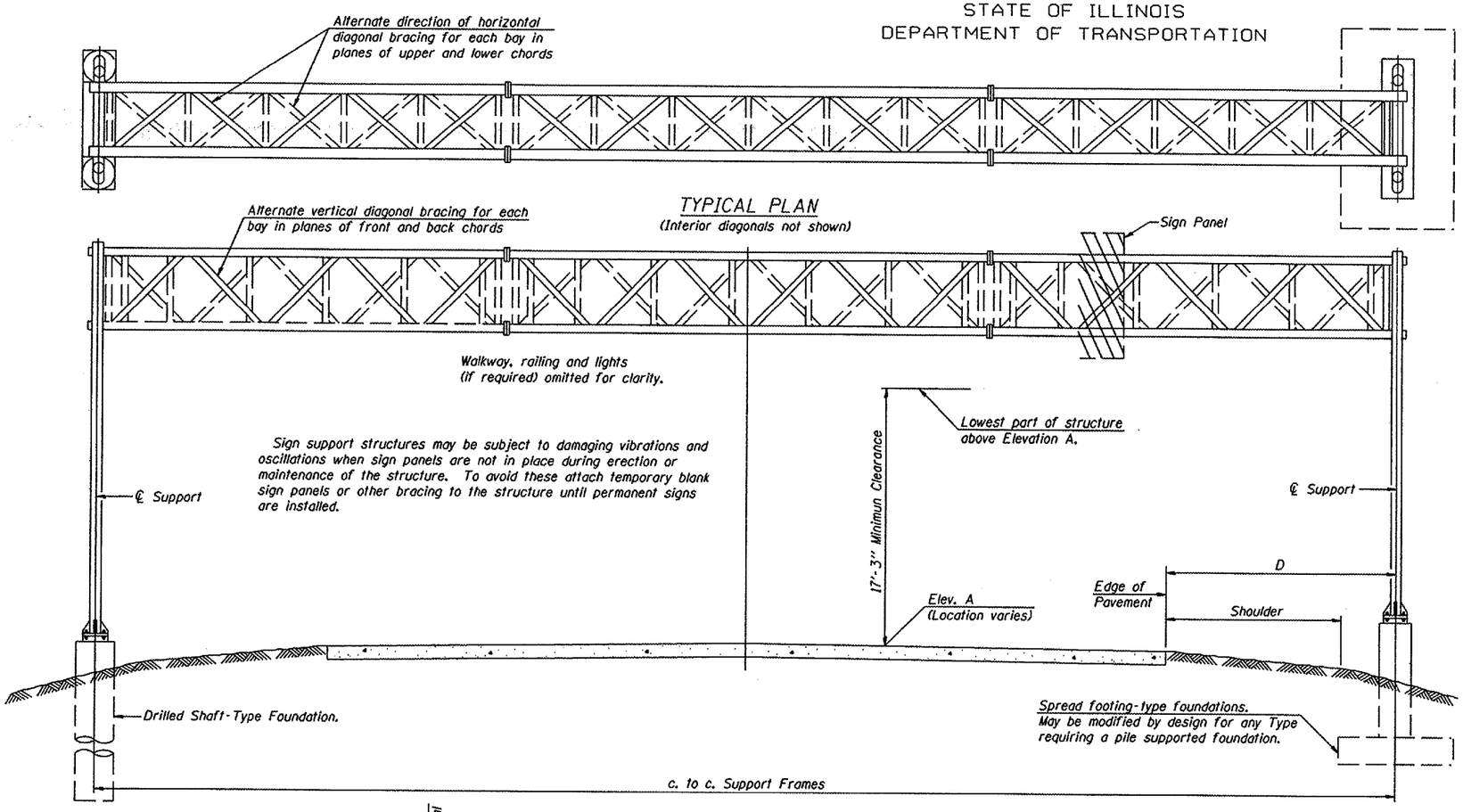
Location No.:	2-04	State I.D. No.:	2C101HARRR024.7				
County:	Winnebago	Route:	Harr	M.P.:	24.7	Direction:	EB

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
REMOVE & REINSTALL WALKWAY	FOOT	19.50
REPLACE / TIGHTEN CLIPS PER SIGN	CU YD	1.00
REMOVE & REINSTALL SIGN PANEL	SQ FT	252.00
REPAIR HANDRAIL LOCKING PIN CONNECTION	EACH	2.00
DISCONNECT / RECONNECT ELECTRIC SERVICE	EACH	1.00
RELOCATE ELECTRIC SERVICE	EACH	1.00
DRILLED SHAFT CONCRETE FOUNDATIONS	FOOT	12.00
REMOVE CONCRETE FOUNDATION - OVERHEAD	EACH	1.00
FURNISH & INSTALL SAFETY CHAIN	EACH	2.00

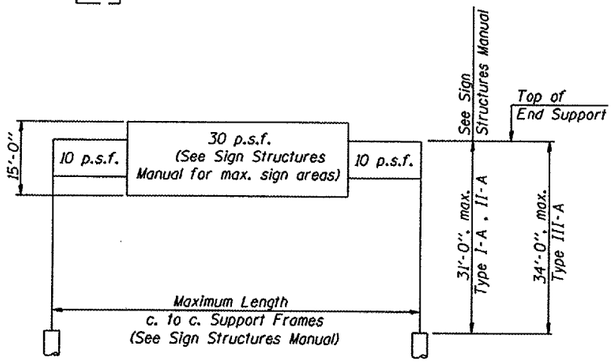
Location No.:	2-05	State I.D. No.:	2S037I080R009.4				
County:	Henry	Route:	I - 80	M.P.:	9.4	Direction:	EB

Description of Work	Unit	Quantity
REMOVE & RE-ERCT OVERHEAD SIGN STRUCTURE-SPAN	EACH	1.00
STRUCTURAL STEEL SUPPORT OVERHEAD SIGN STRUCTURE	EACH	2.00
FURNISH & INSTALL SADDLE SHIM BLOCK	EACH	4.00
REPLACE / TIGHTEN CLIPS PER SIGN	EACH	2.00
FURNISH & INSTALL INTERNAL TRUSS DAMPER	EACH	1.00
DISCONNECT / RECONNECT ELECTRIC SERVICE	EACH	1.00
OVERHEAD SIGN SUPPORT GROUT REPAIR	EACH	4.00
REPLACE U-BOLT	EACH	2.00
OVERHEAD SIGN STRUCTURE WALKWAY	FOOT	57.00

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
2S101U020R023.8	820 + 00	I-A	79' - 0"	789.96	35' - 0"	12' - 6"	391.50
2S101U020L023.1	783 + 00	II-A	99' - 0"	796.29	42' - 0"	14' - 0"	438.00
2S101U020L022.6	757 + 00	II-A	116' - 0"	801.52	42' - 0"	13' - 6"	381.00

**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

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

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

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

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

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

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

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

ANCHOR RODS: Shall conform to 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.

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

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

NUMBER	REVISION	DATE

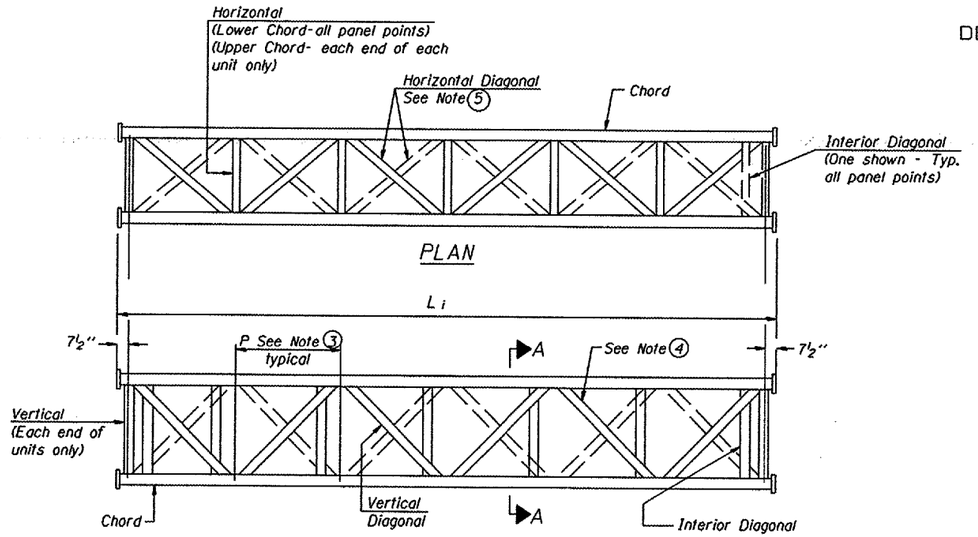
DESIGNED -
CHECKED -
DRAWN -
CHECKED -

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

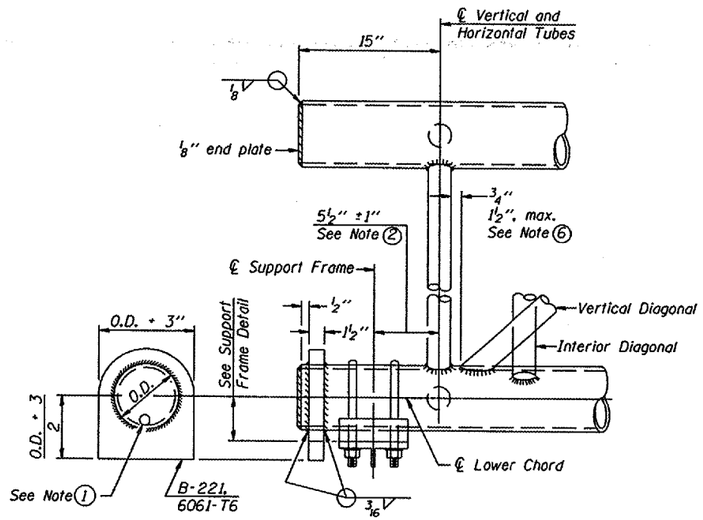
OS-A-1 6/01/2007

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

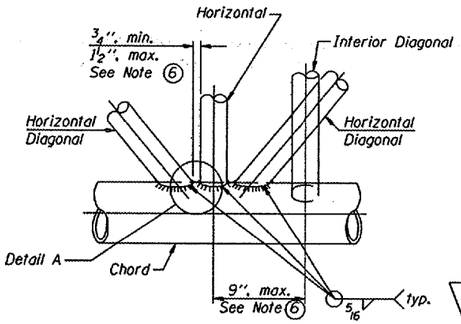
District 2
Overhead Sign Structure
Repair & Replacement

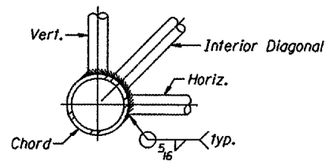


ELEVATION
TYPICAL INTERIOR UNIT
Even number of panels/interior unit required.

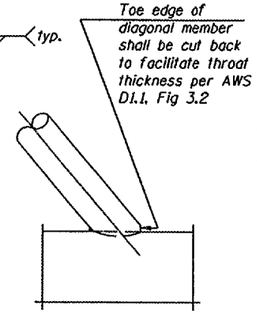


SUPPORT END DETAIL FOR EXTERIOR UNIT

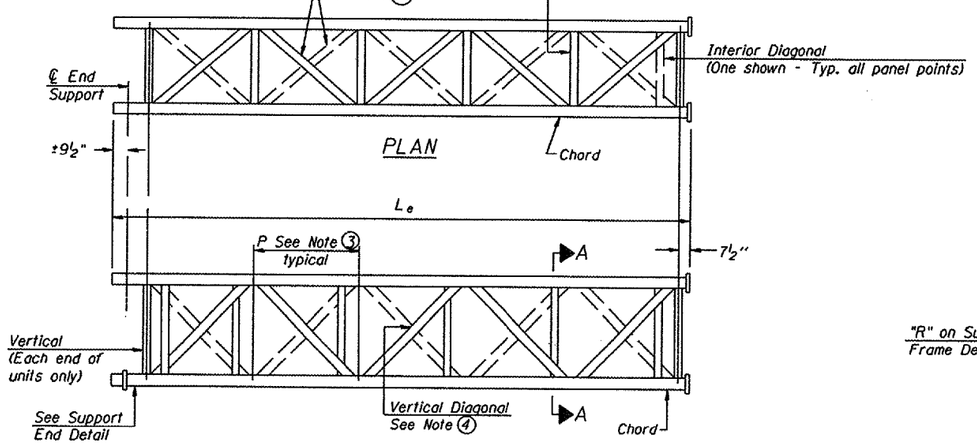




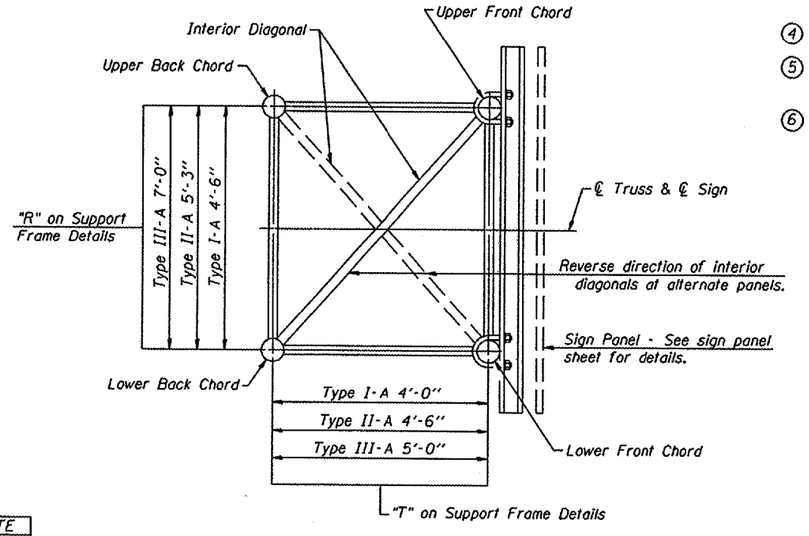
TYPICAL JOINT DETAILS



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
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ENGINEER OF BRIDGES AND STRUCTURES

OS-A-2 6/01/2007

NUMBER	REVISION	DATE

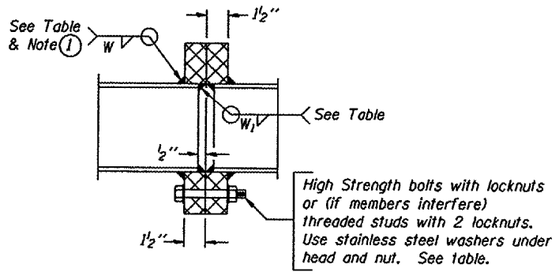
OVERHEAD SIGN STRUCTURES
ALUMINUM TRUSS DETAILS
FOR TRUSS TYPES I-A, II-A AND III-A

District 2
Overhead Sign Structure
Repair & Replacement

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

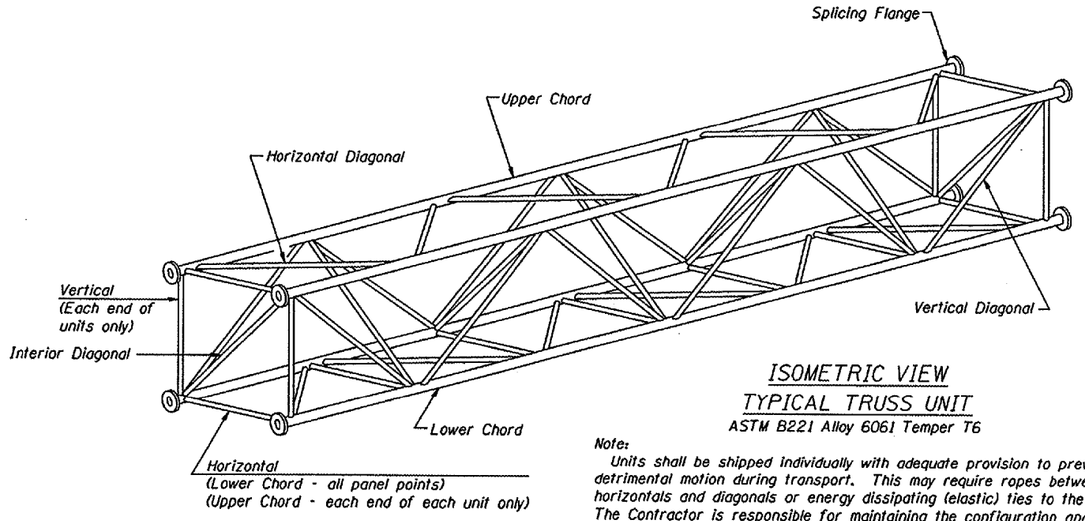
TRUSS UNIT TABLE

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		
2S101U020R023.8	820 + 00	I-A	5	25'-6 1/4"	4'-8 3/4"	1	6	29'-7 1/2"	4'-8 3/4"	5"	5/16"	2 1/2"	5/16"	2 1/4"	6	7/8"	5/16"	1/4"	8 3/4"	11 3/4"
2S101U020L023.1	783 + 00	II-A	6	33'-9"	5'-3 3/4"	1	6	33'-1 1/2"	5'-3 3/4"	6"	5/16"	3"	5/16"	3"	6	7/8"	3/8"	1/4"	10 1/4"	13 3/4"
2S101U020L022.6	757 + 00	II-A	8	39'-4 1/2"	4'-8 1/4"	1	8	38'-9"	4'-8 1/4"	7"	5/16"	3"	5/16"	4"	6	1"	3/8"	1/4"	11 1/2"	15"



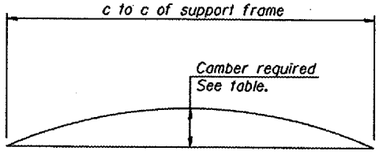
SECTION B-B

(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.



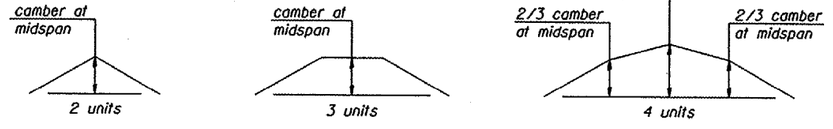
ISOMETRIC VIEW
TYPICAL TRUSS UNIT
ASTM B221 Alloy 6061 Temper T6

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.

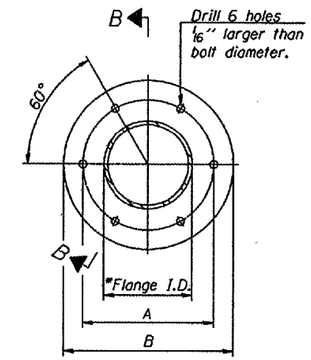


CAMBER DIAGRAM
Camber curve shown is theoretical. Actual camber attained by slope changes at splices between units.

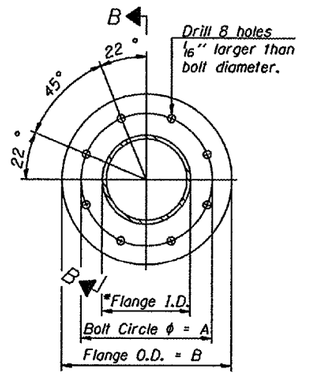
CAMBER ATTAINMENT EXAMPLES:



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

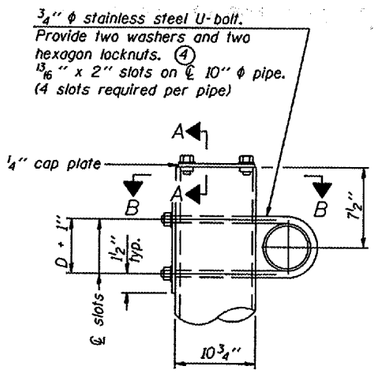
DESIGNED -	
CHECKED -	
DRAWN -	
CHECKED -	

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

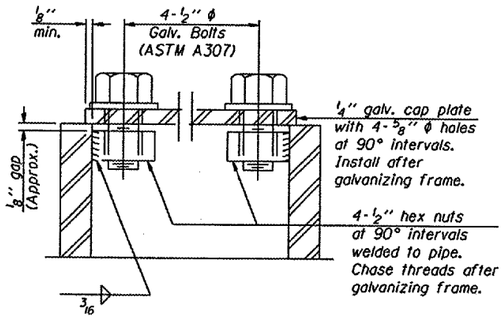
OS4-A-2 6/01/2007

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

District 2
Overhead Sign Structure
Repair & Replacement

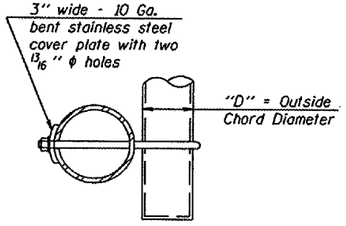


DETAIL A

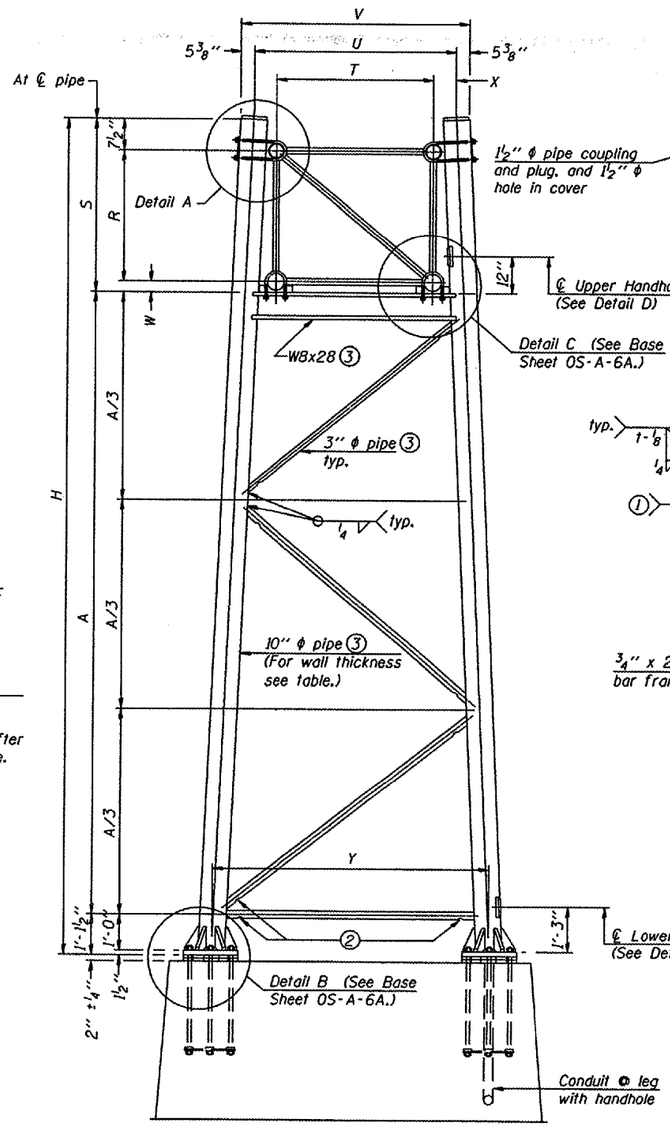


SECTION A-A

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

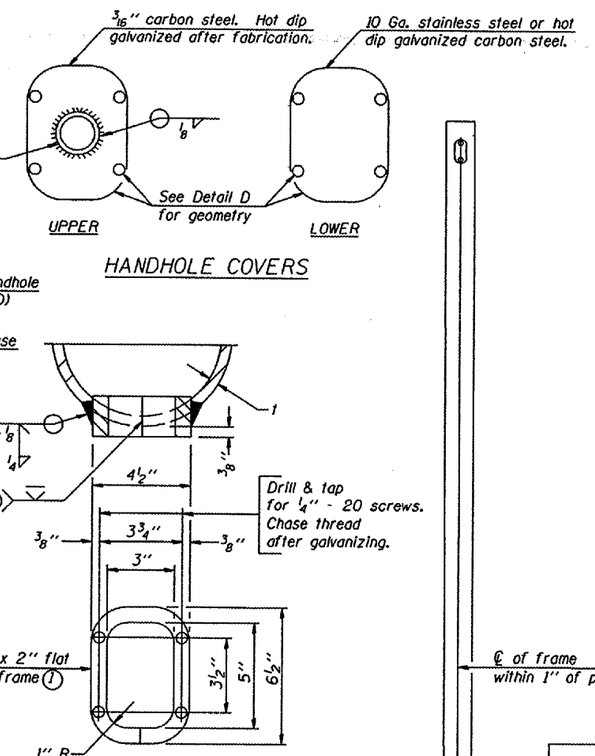


SECTION B-B

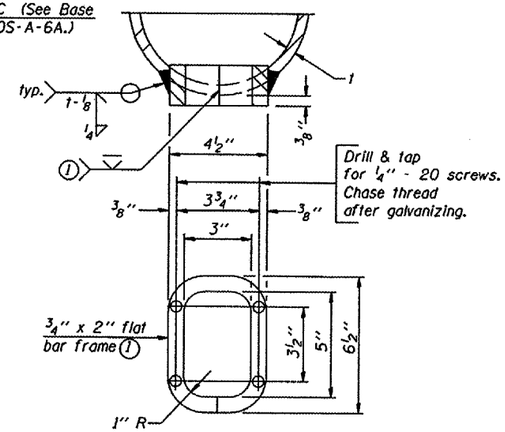


For Foundation Details, see base sheet OS-F3 (Spread Footing) or OS4-F3 (Drilled Shaft).

SIDE ELEVATION

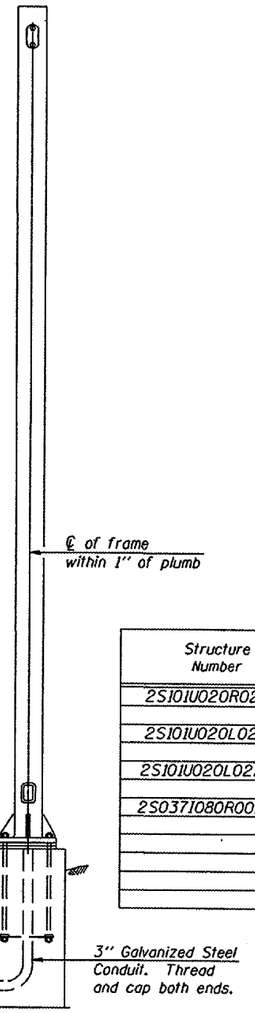


HANDHOLE COVERS



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 μin or less.

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

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

(4) See General Notes for fasteners.

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

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

The following notes apply to Structure No. 2S037I080R009.4 only.

(7) New end supports to be installed on existing concrete foundations with existing anchor bolts. The Contractor shall provide new anchor bolt nuts and washers as necessary.

(8) 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.

Structure Number	Station	Support Left	Support Right	Truss Type	Pipe Wall Thickness	H (6)	A
2S101U020R023.8	820 + 00	X		I-A	0.279"	29'-7 1/4"	24'-1 3/4"
			X			29'-2 1/2"	23'-9"
2S101U020L023.1	783 + 00	X		II-A	0.365(STD)	28'-4 1/2"	22'-1 1/4"
			X			30'-8 1/2"	24'-5 1/4"
2S101U020L022.6	757 + 00	X		II-A	0.365(STD)	28'-2 1/4"	23'-11"
			X			29'-5 1/2"	23'-2 1/4"
2S037I080R009.4	530 + 39	X		III-A	0.279"	26'-7 1/4"	11'-4"

The "H" and "A" dimensions shown were taken from the existing end support details for Structure No. 2S037I080R009.4

10" ϕ PIPE TRUSS SUPPORT FRAME

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

NUMBER	REVISION	DATE

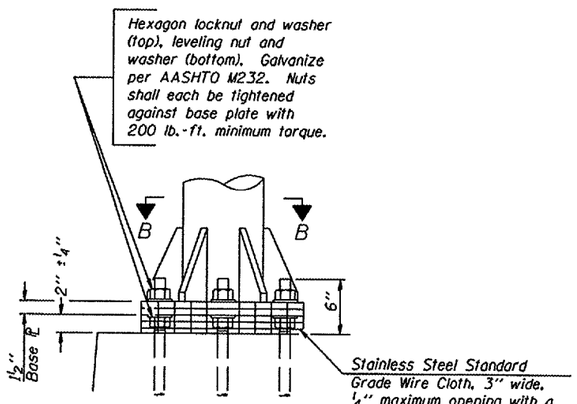
DESIGNED -
CHECKED -
DRAWN -
CHECKED -

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

OS-A-6 6/01/2007

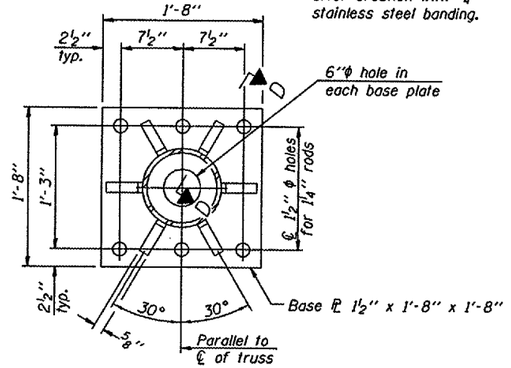
OVERHEAD SIGN STRUCTURES
SUPPORT FRAME FOR ALUMINUM TRUSS

District 2
Overhead Sign Structure
Repair & Replacement

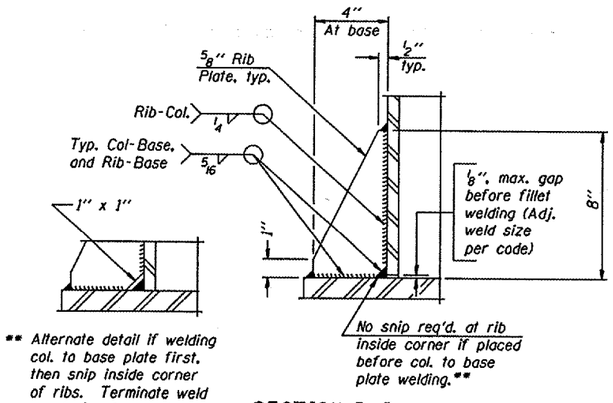


DETAIL B

Ribs shall be cut to fit slope of pipe.

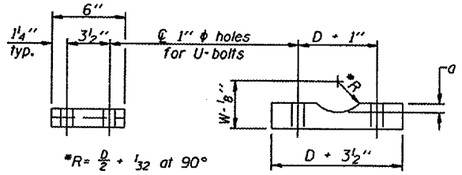


SECTION B-B



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

SECTION D-D



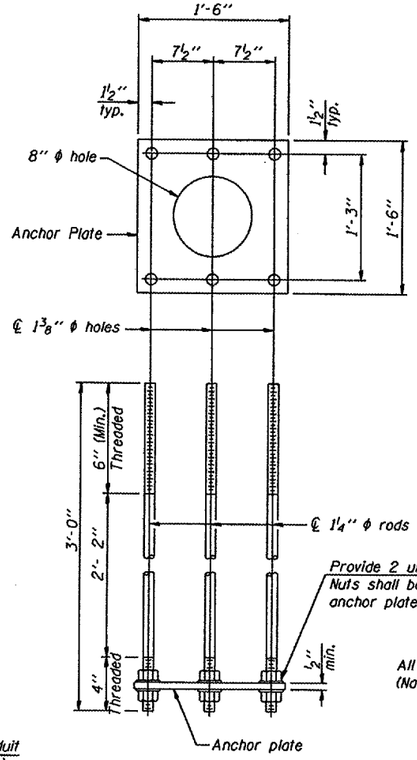
*R = D/2 + 1/32 at 90°

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

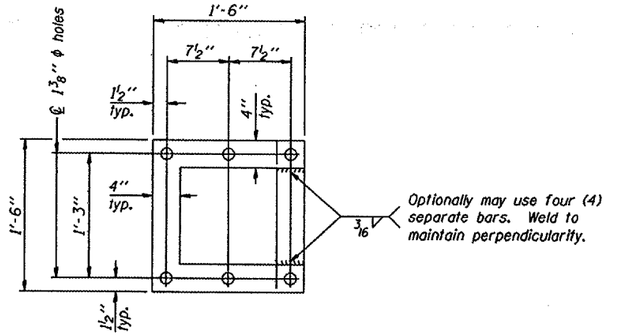
SADDLE SHIM DETAIL

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

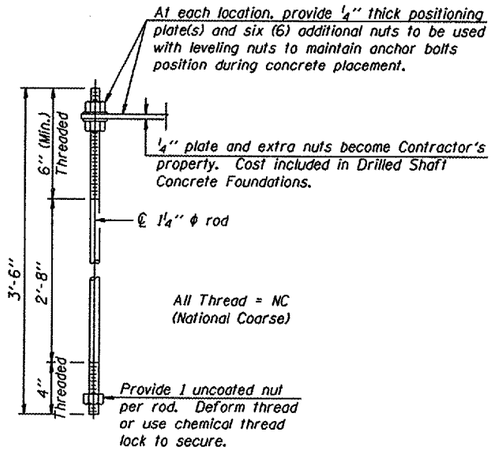
Truss Chord Nominal Dia.	a
5"	¾"
5½"	13/16"
6"	⅞"
6½"	15/16"
7"	1"



ANCHOR ROD DETAIL
Spread Footing Foundation

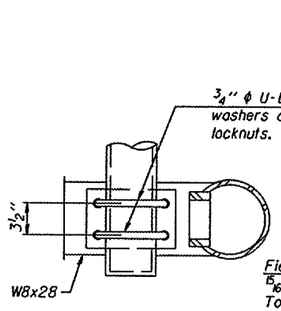


POSITIONING PLATE(S)

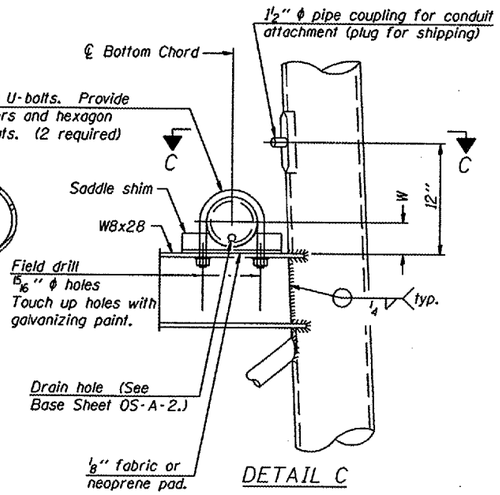


ANCHOR ROD DETAIL
Drilled Shaft Foundation

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

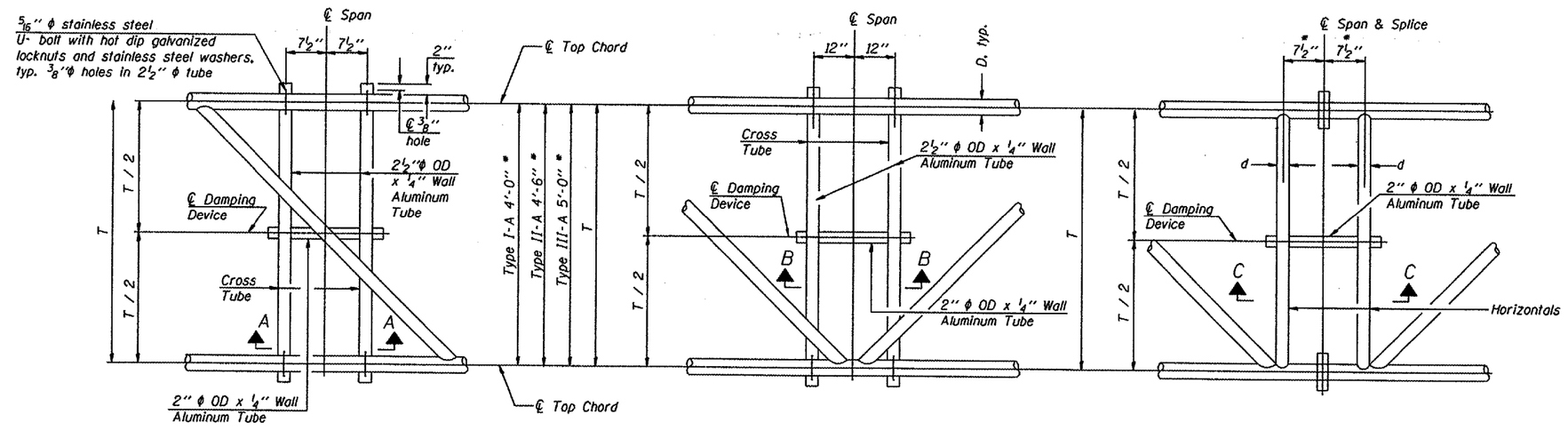
OS-A-6A 6/01/2007

OVERHEAD SIGN STRUCTURES
SUPPORT FRAME DETAILS ALUMINUM TRUSS

District 2
Overhead Sign Structure
Repair & Replacement

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

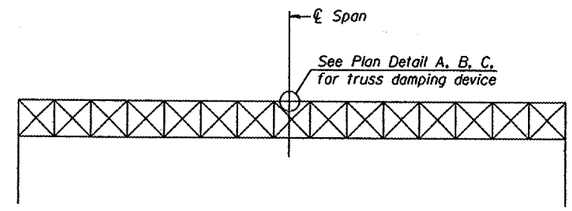
* Center of horizontal to center of splice dimension may vary. Verify before drilling holes in mounting tube.



PLAN DETAIL "A"
℄ Span between Panel Points

PLAN DETAIL "B"
℄ Span at Panel Point

PLAN DETAIL "C"
℄ Span at ℄ Chord Splice

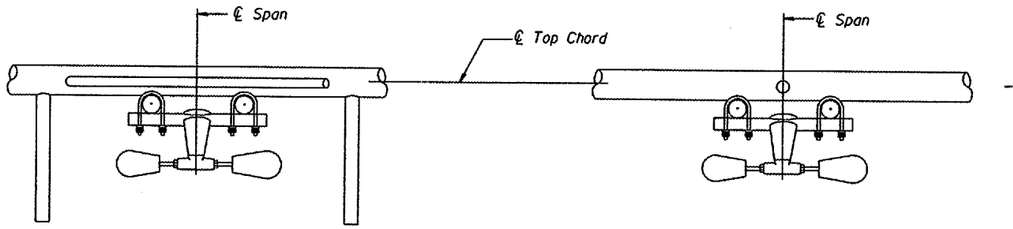


ELEVATION
Aluminum Overhead Sign Truss

NOTES

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

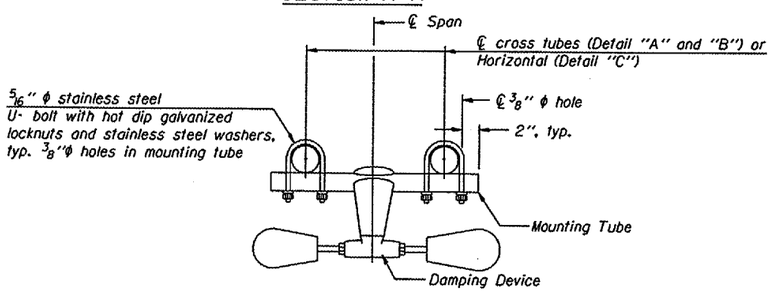
Materials: Materials: Aluminum tubes shall be ASTM B221 alloy 6061 temper T6. Cost included in Overhead Sign Structure...



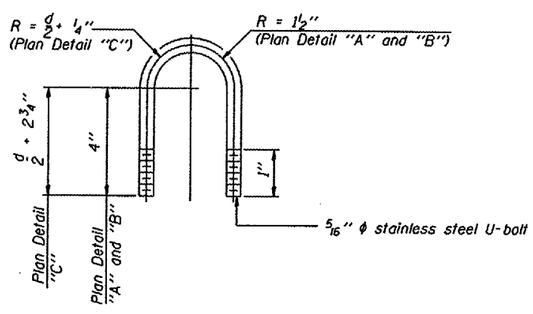
SECTION A-A

SECTION B-B

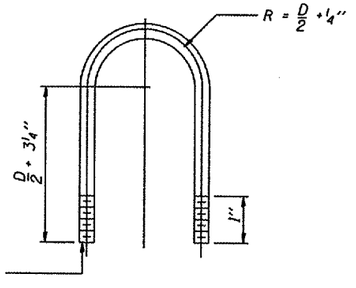
SECTION C-C



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 detail applies to the following overhead sign structures:
Structure No: 2S101U020R023.8
Structure No: 2S101U020L023.1
Structure No: 2S101U020L022.6

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

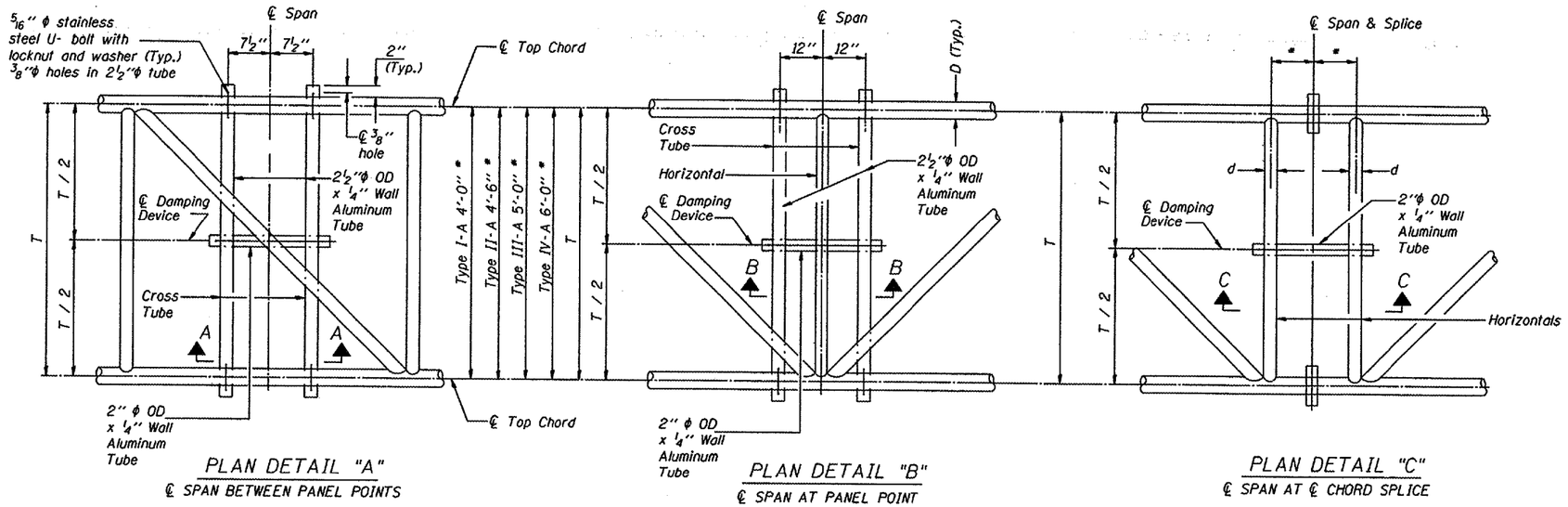
OS-A-D 6/01/2007

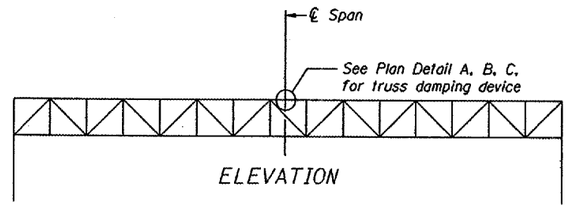
OVERHEAD SIGN STRUCTURE
DAMPING DEVICE

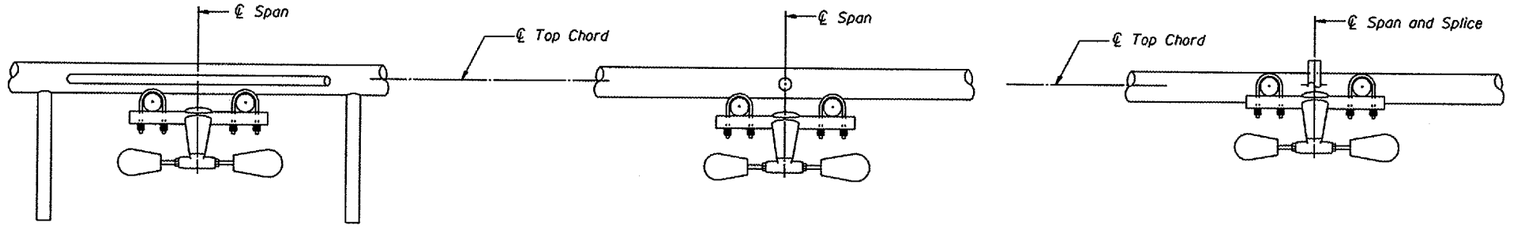
District 2
Overhead Sign Structure
Repair & Replacement

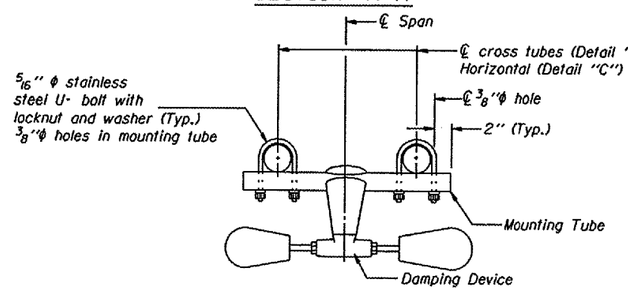
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

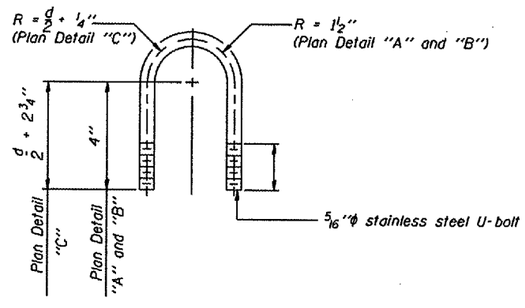
* Verify before drilling holes in mounting tube and cross tubes.

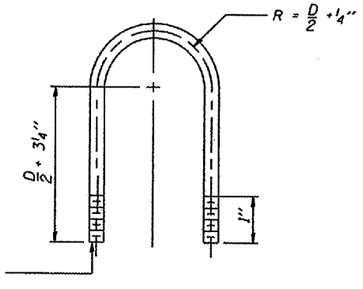












This detail applies to the following overhead sign structure:
Structure No: 2S037I080R009.4

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 ENGINEER OF BRIDGE DESIGN
CHECKED -	ENGINEER OF BRIDGES AND STRUCTURES

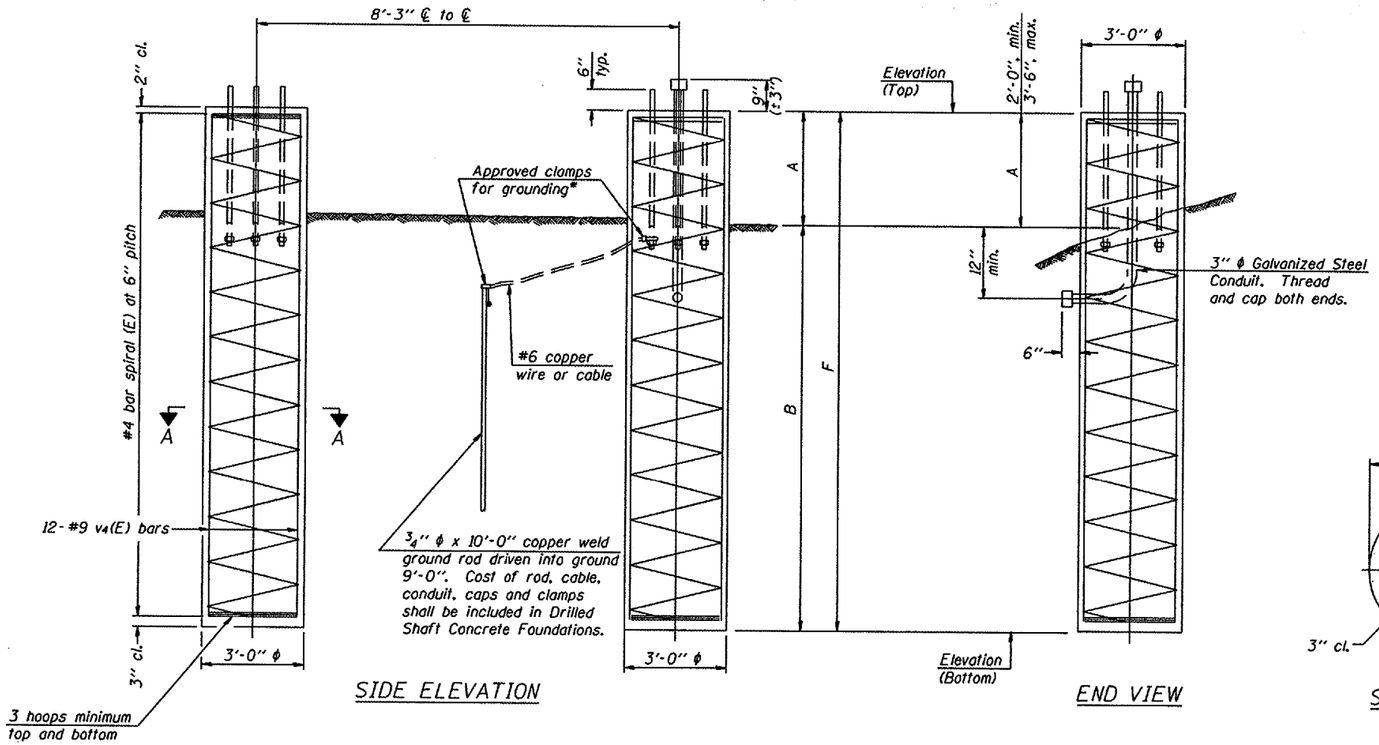
TRUSS DAMPER RETROFIT 07-01-2001

OVERHEAD SIGN STRUCTURE
DAMPING DEVICE

District 2
Overhead Sign Structure
Repair & Replacement

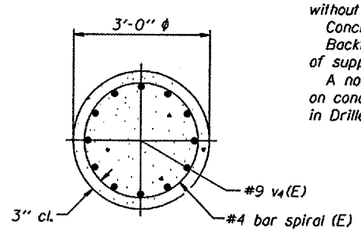
For anchor rod size and placement, see Support Frame Detail Sheet.

* 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.

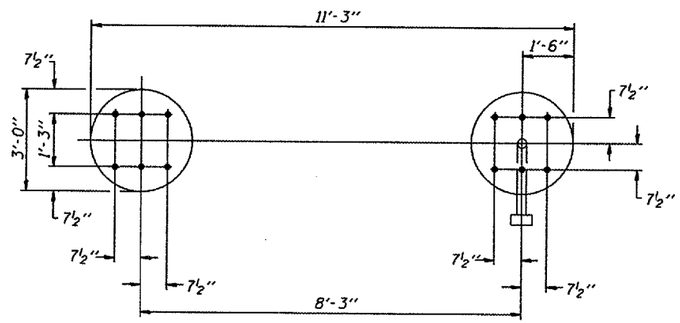
No sonotubes or decomposable forms shall be used below the lower conduit entrance.

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	
2S101U020R023.8	820 + 00	N/A		3'-0"	16' - 6"	19' - 6"	N/A		3'-0"	16' - 6"	19' - 6"	20.40
2S101U020L023.1	783 + 00	N/A		3'-0"	17' - 6"	20' - 6"	N/A		3'-0"	17' - 6"	20' - 6"	21.50
2S101U020L022.6	757 + 00	N/A		3'-0"	20' - 6"	23' - 6"	N/A		3'-0"	20' - 6"	23' - 6"	24.60

DESIGNED	-
CHECKED	-
DRAWN	-
CHECKED	-

- 20

EXAMINED

PASSED — ENGINEER OF BRIDGE DESIGN

ENGINEER OF BRIDGES AND STRUCTURES

NUMBER	REVISION	DATE

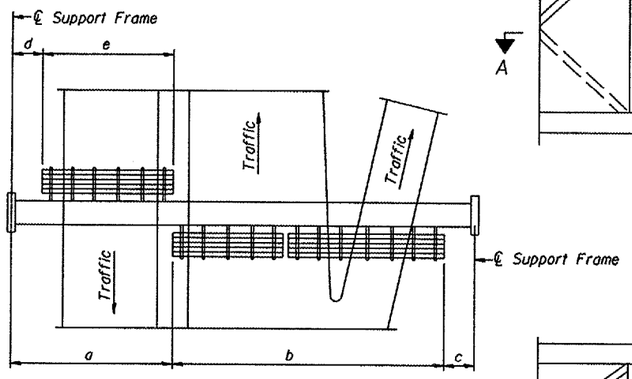
DETAILS FOR 10" ϕ SUPPORT FRAME
TYPE I-A or II-A TRUSS

OVERHEAD SIGN STRUCTURES
DRILLED SHAFT DETAILS

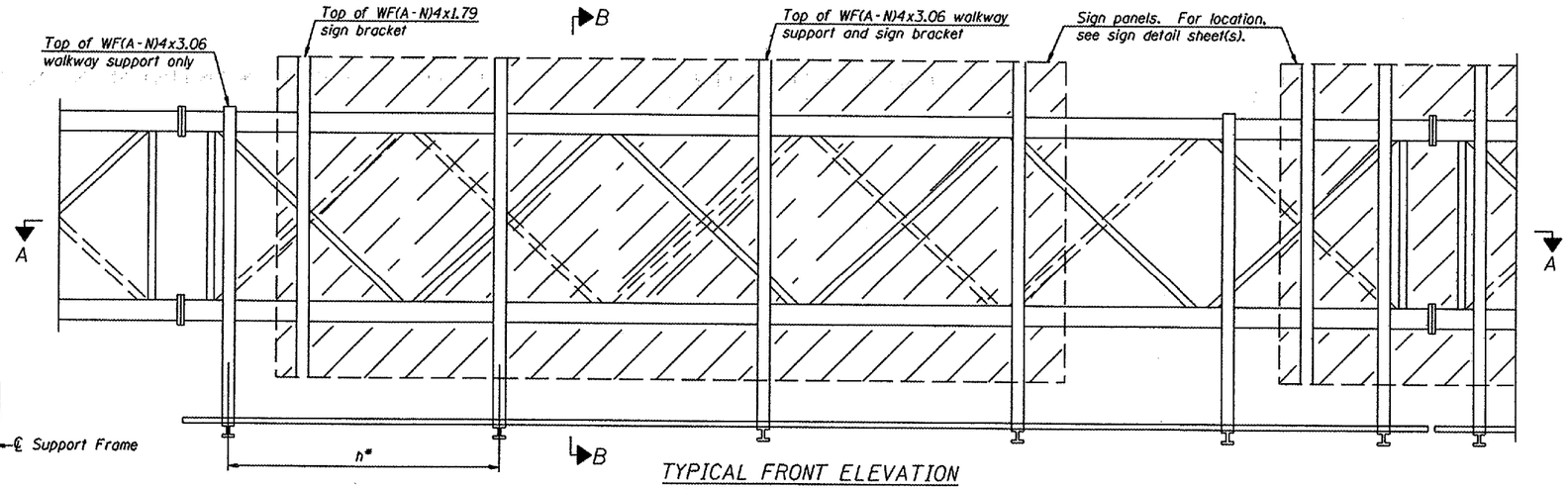
District 2
Overhead Sign Structure
Repair & Replacement

OS4-F3

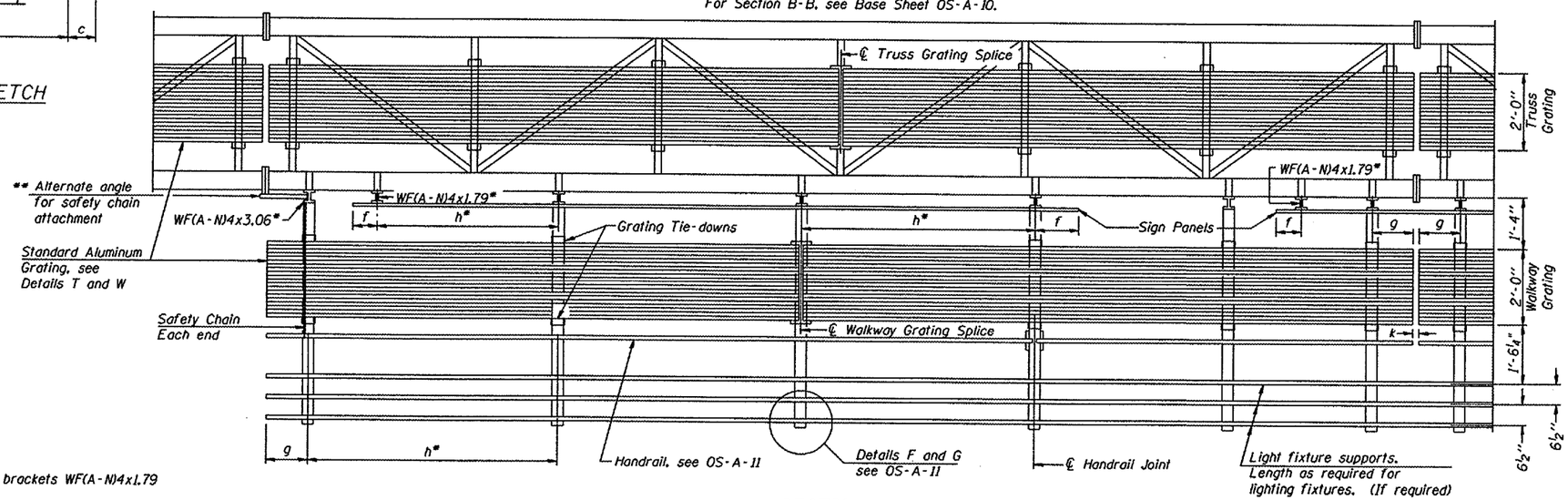
6/01/2007



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

SECTION A-A
Handrail and walkway shall span a minimum of three brackets between splices and/or gap joints.
Place all sign and walkway brackets as close to panel points as practical.
Handrail joints, grating, and light support splices placed as needed.

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".

Structure Number	Station	a	b	c	d	e	Walkway Grating and Handrail Lengths
The length shown for the following structure is for internal truss grating installation.							
2S037I080R009.4	530 + 39	N/A	N/A	N/A	N/A	N/A	57' - 0"

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 Handrail Details see Base Sheet OS-A-11.

OVERHEAD SIGN STRUCTURES
ALUMINUM WALKWAY DETAILS

District 2
Overhead Sign Structure
Repair & Replacement

DESIGNED	-
CHECKED	-
DRAWN	-
CHECKED	-

\- 20

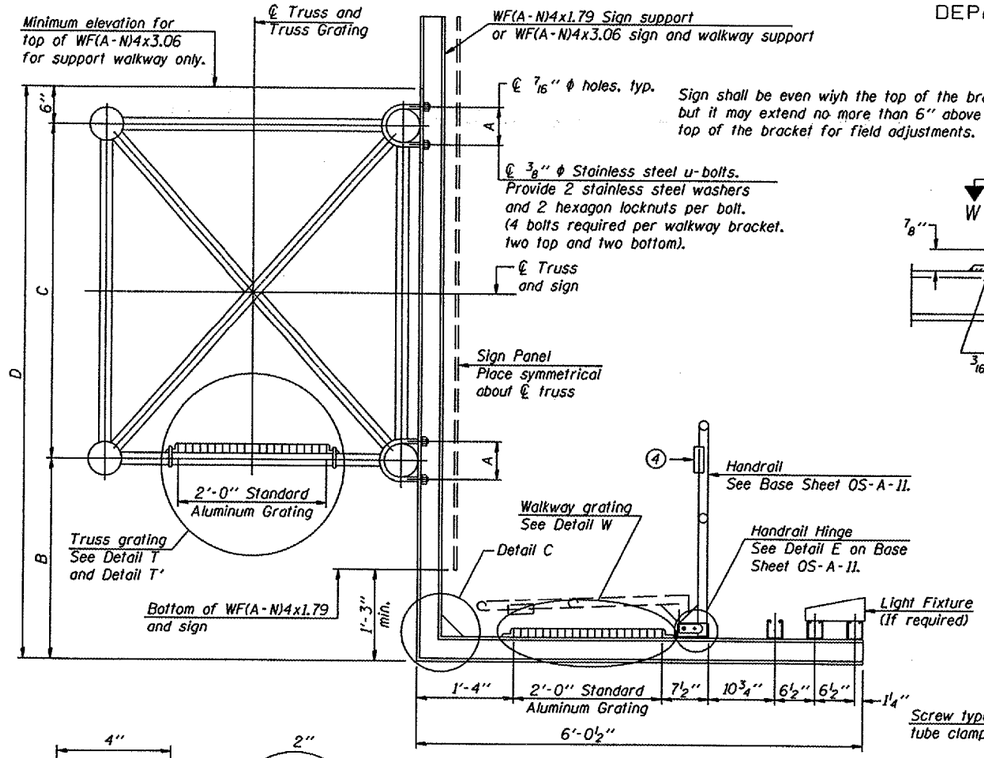
EXAMINED
ENGINEER OF BRIDGE DESIGN

PASSED
ENGINEER OF BRIDGES AND STRUCTURES

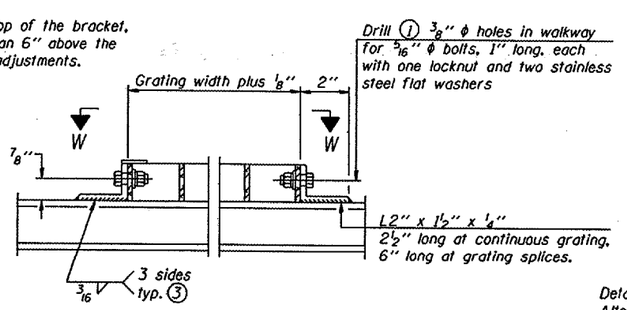
NUMBER	REVISION	DATE

OS-A-9 6/01/2007

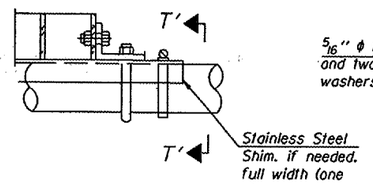
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



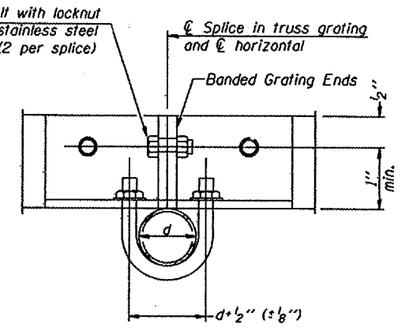
Sign shall be even wiyh the top of the bracket, but it may extend no more than 6" above the top of the bracket for field adjustments.



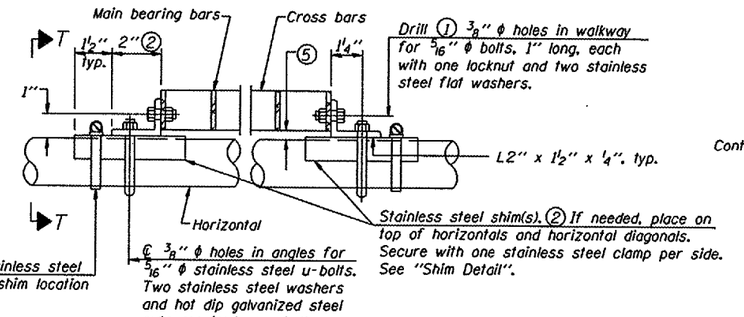
DETAIL W
(Walkway grating)



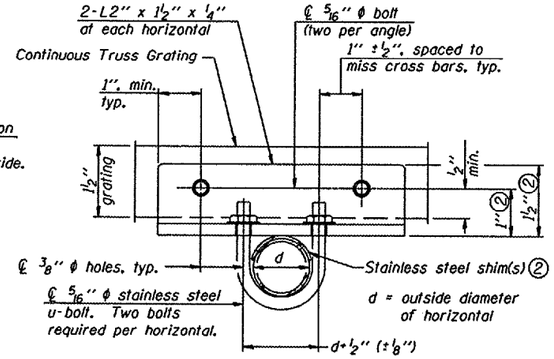
DETAIL T'
(Truss grating splice)
Details not shown same as Detail T. Alternate materials may be used subject to the Engineer's review and approval.



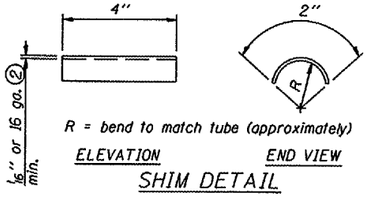
SECTION T'-T'



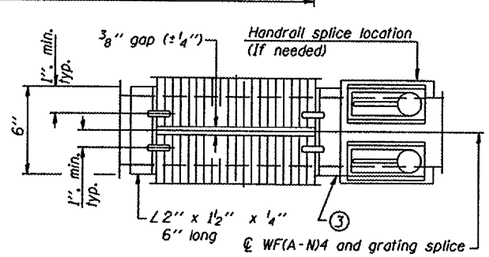
DETAIL T
(Continuous Truss grating)



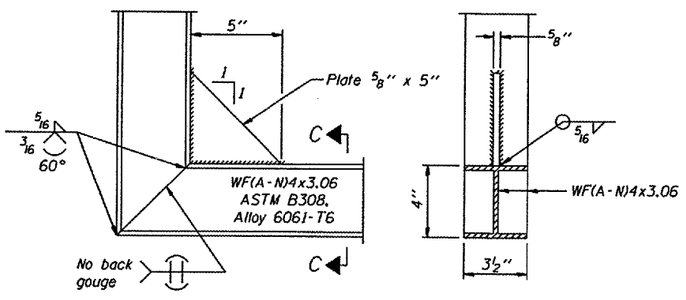
SECTION T-T



R = bend to match tube (approximately)
ELEVATION END VIEW
SHIM DETAIL

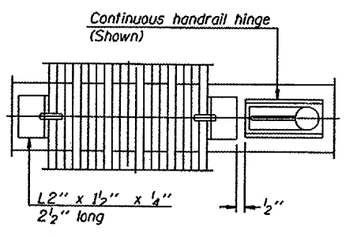


(AT WALKWAY GRATING SPLICE)



DETAIL C

SECTION C-C



(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

The existing walkway and walkway support brackets will be reused.

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

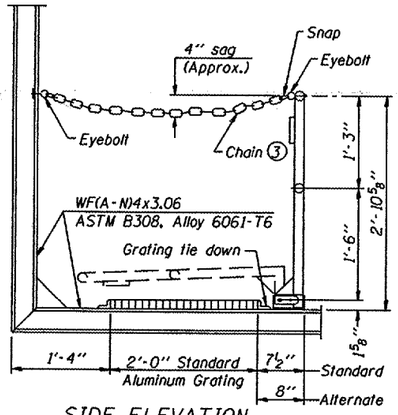
OS-A-10 6/01/2007

OVERHEAD SIGN STRUCTURES
ALUMINUM WALKWAY DETAILS

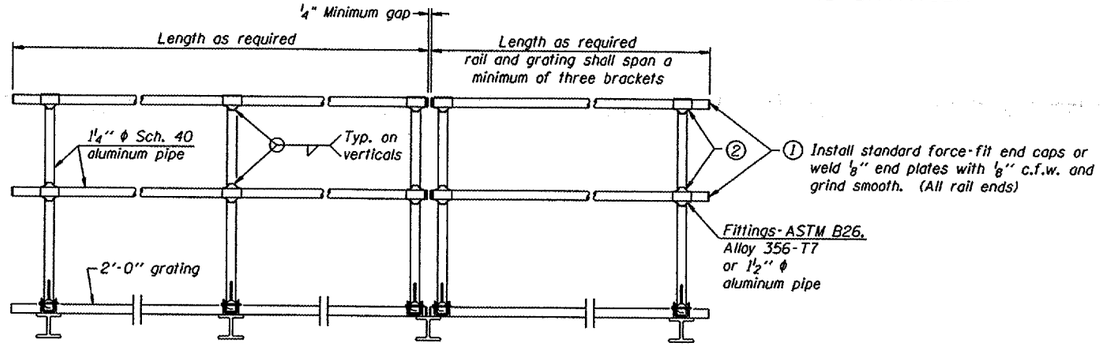
District 2
Overhead Sign Structure
Repair & Replacement

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

Various Routes
OVD SIN STR REP & REPL 2008-9
Various Counties
Sheet 37 of 105
Contract Number 44973



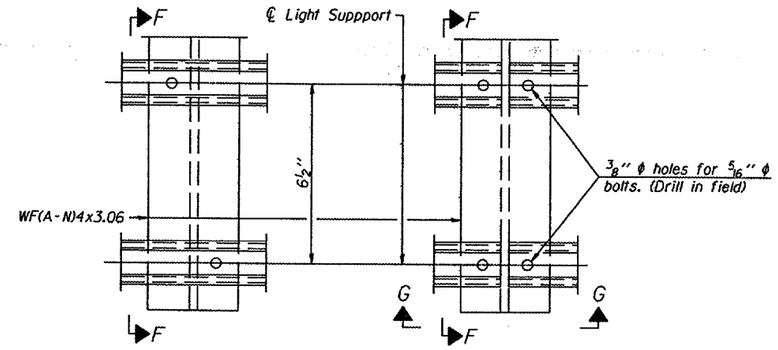
SIDE ELEVATION
(Showing safety chain w/o sign)



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

FRONT ELEVATION

(2) Horizontal handrail member shall be continuous thru fitting. Provide 7/16" 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 ⅝" eyebolts in 7/16"ϕ holes on top rail at ends only.)

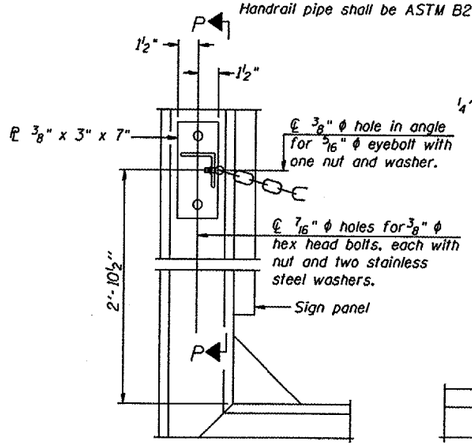


DETAIL F

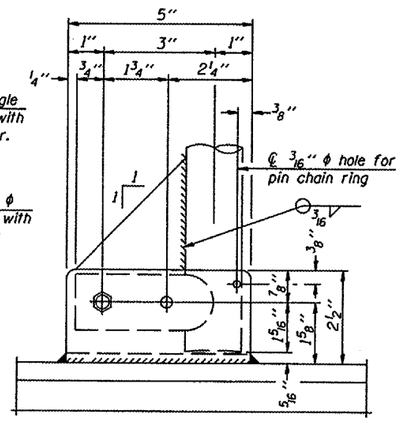
DETAIL G

HANDRAIL DETAILS

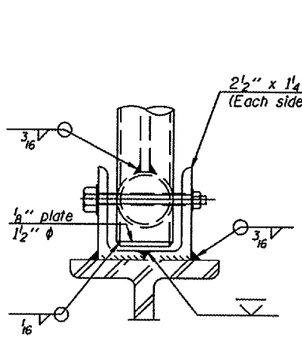
Handrail pipe shall be ASTM B241 or B429, Alloy 6063-T6 or Alloy 6061-T6.



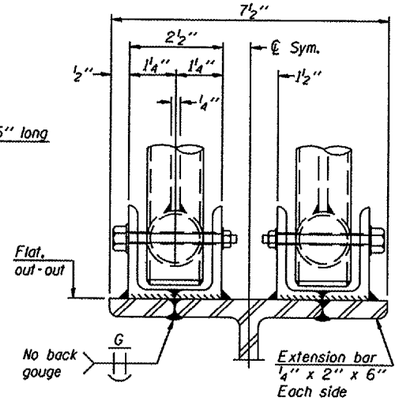
ALTERNATE SAFETY CHAIN ATTACHMENT
(With Sign Present)
Items not shown same as "Side Elevation" of "Handrail Details"



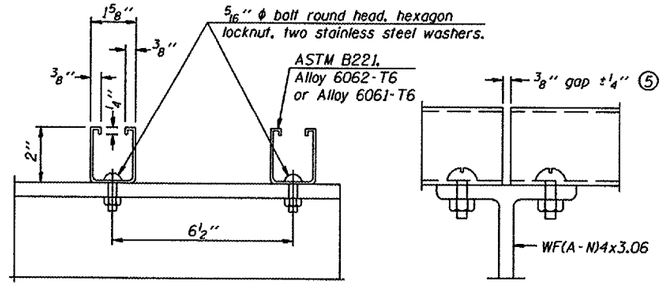
SIDE ELEVATION



FRONT ELEVATION
See "Elevation" at right for dimensions.



ELEVATION AT HANDRAIL JOINT (4)

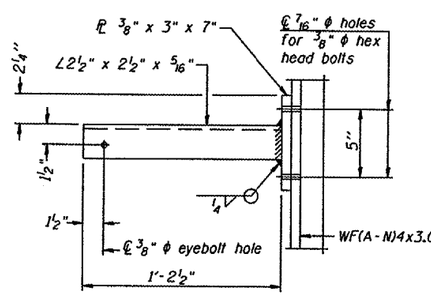


SECTION F-F

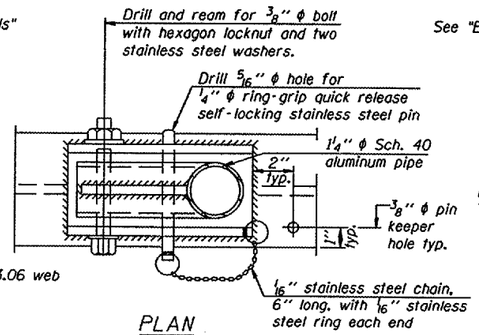
SECTION G-G

LIGHTING FIXTURE MOUNTS (IF REQUIRED)

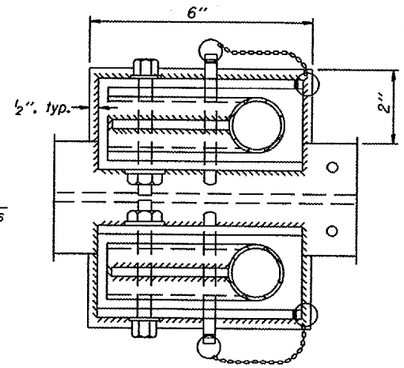
(5) Field cut ends of light support channels shall be free of burrs or hazardous projections and coated with zinc-rich primer or equivalent.



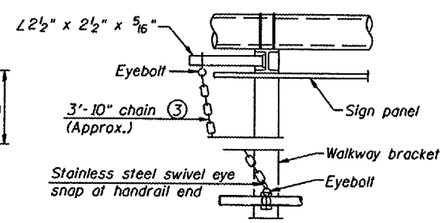
SECTION P-P



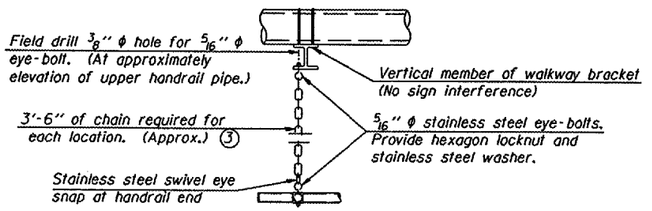
PLAN
DETAIL E HANDRAIL HINGE



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" Type 304L stainless steel chain, approximately 12 links per foot.

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

This Sheet For Information Only

OVERHEAD SIGN STRUCTURES
ALUMINUM HANDRAIL DETAILS

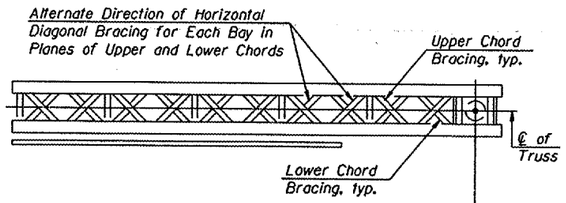
District 2
Overhead Sign Structure
Repair & Replacement

DESIGNED	-
CHECKED	-
DRAWN	-
CHECKED	-

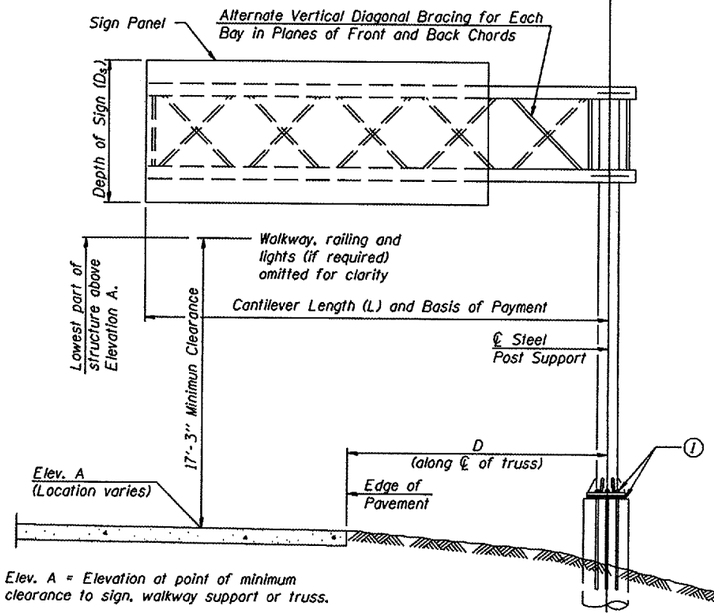
- 20
EXAMINED
PASSED
ENGINEER OF BRIDGE DESIGN
ENGINEER OF BRIDGES AND STRUCTURES

NUMBER	REVISION	DATE

OS-A-11 6/01/2007



TYPICAL PLAN
(Walkway not shown)



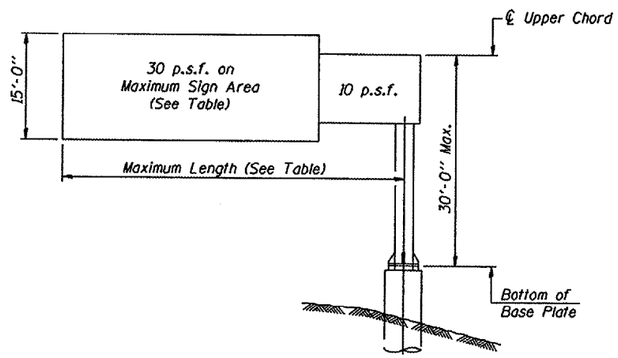
Elev. A = Elevation at point of minimum clearance to sign, walkway support or truss.

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
2C1011090R024.7	48 + 30	II-C-A	30' - 0"	778.35	17' - 0"	11' - 0"	252.00

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

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

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

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

ANCHOR RODS: Shall conform to AASHTO M314 Gr. 105 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.

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

* 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

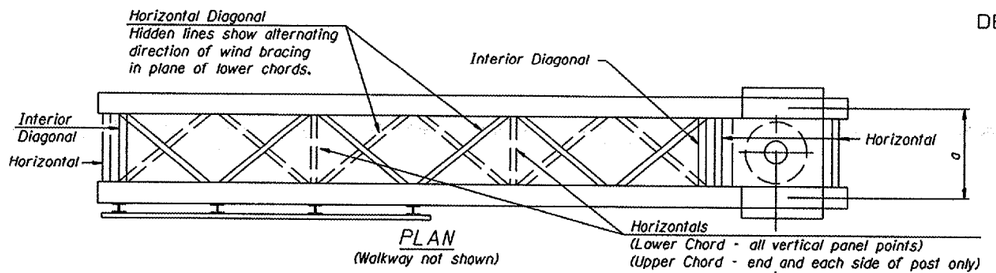
OSC-A-1 6/01/2007

NUMBER	REVISION	DATE

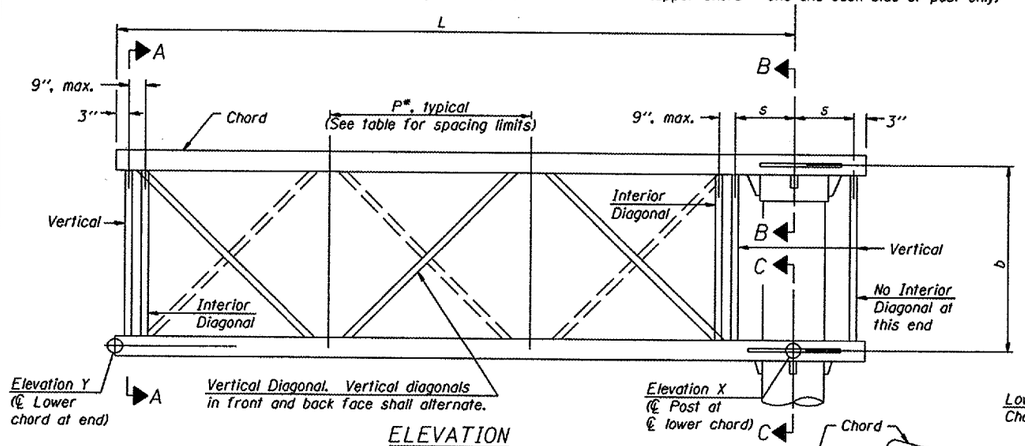
CANTILEVER SIGN STRUCTURES
GENERAL PLAN & ELEVATION
ALUMINUM TRUSS & STEEL POST

District 2
Overhead Sign Structure
Repair & Replacement

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



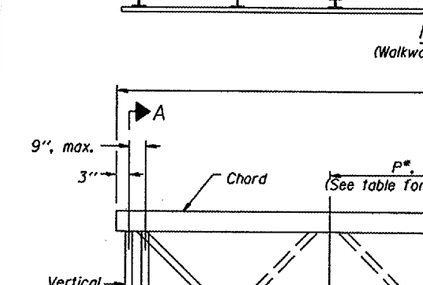
PLAN
(Walkway not shown)



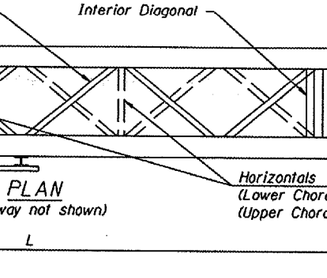
ELEVATION
(Sign and walkway omitted for clarity)

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

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



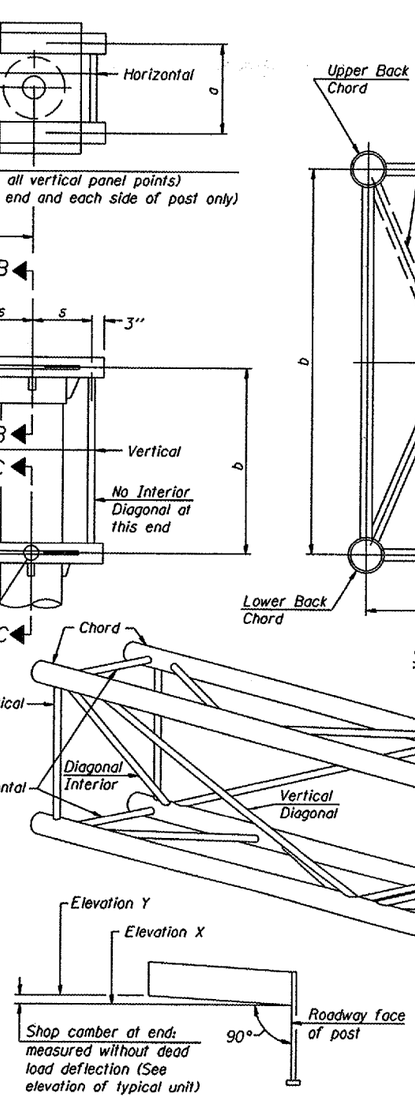
CANTILEVER END JOINT DETAIL
** Contractor may alternatively use standard aluminum drive-fit cap to close ends.



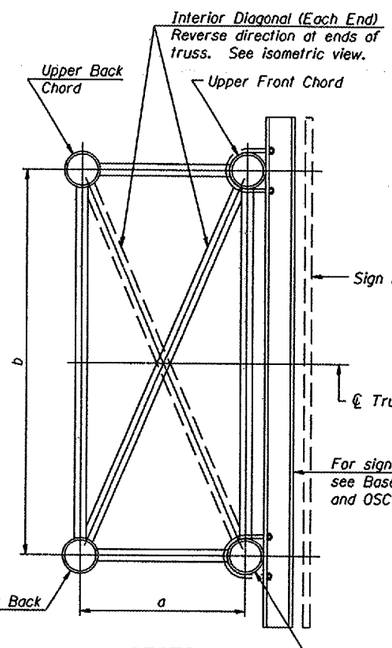
POST END JOINT DETAIL

SHOP CAMBER TABLE

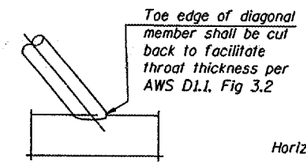
Unit Length (L)	Shop Camber at End
15'	1 1/2"
16'-17'	1 3/4"
18'-20'	2"
21'-22'	2 1/4"
23'-25'	2 1/2"
26'-27'	2 3/4"
28'-30'	3"
31'-32'	3 1/4"
33'-35'	3 1/2"
36'-37'	4"
38'-40'	4 1/2"



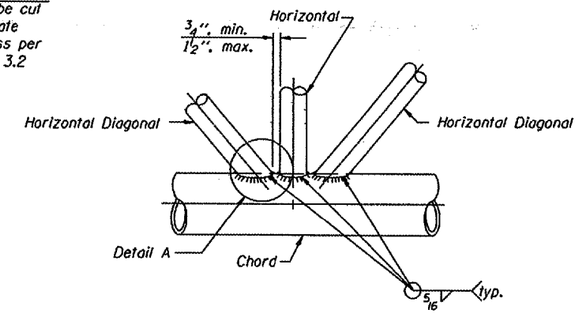
CAMBER DIAGRAM
(For Fabrication Only)



SECTION A-A

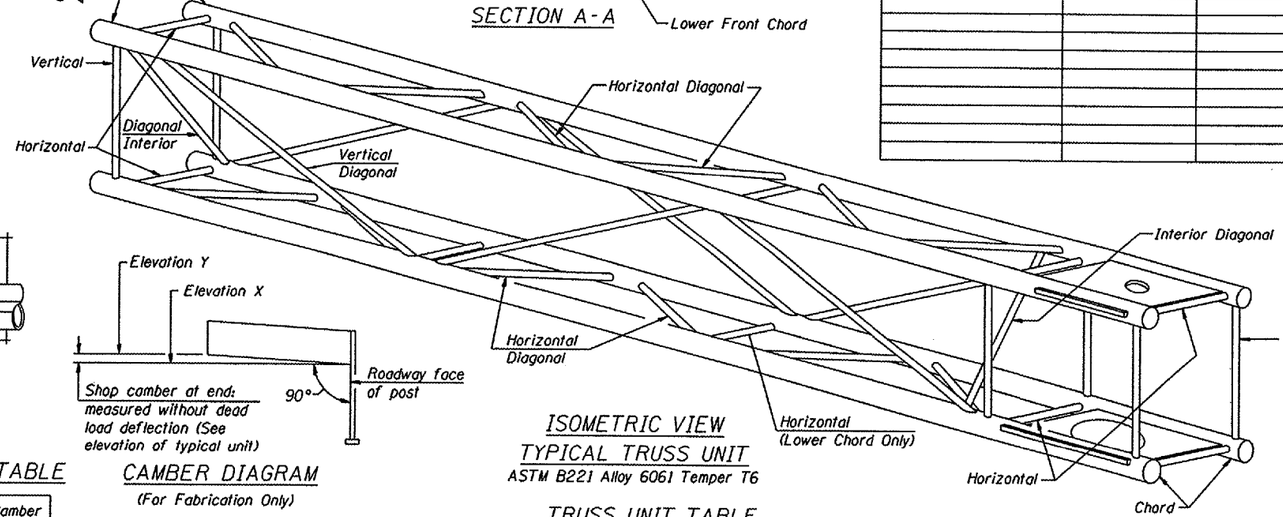


DETAIL A



TRUSS INTERIOR JOINT DETAIL

Structure Number	Station	Truss Type	Design Length (L)	Number of Panels Per Unit	Panel Length (P)*
2C101109OR024.7	48 + 30	II-C-A	30' - 0"	7	4' - 0"



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 2
Overhead Sign Structure
Repair & Replacement

DESIGNED	-
CHECKED	-
DRAWN	-
CHECKED	-

- 20

EXAMINED

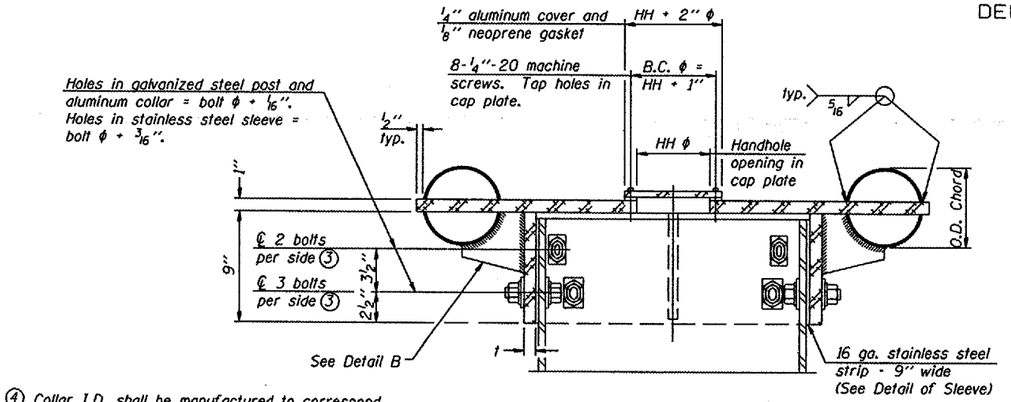
ENGINEER OF BRIDGE DESIGN

PASSED

ENGINEER OF BRIDGES AND STRUCTURES

OSC-A-2 6/01/2007

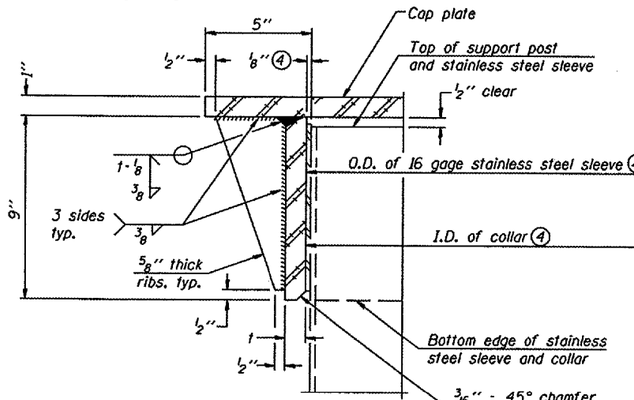
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



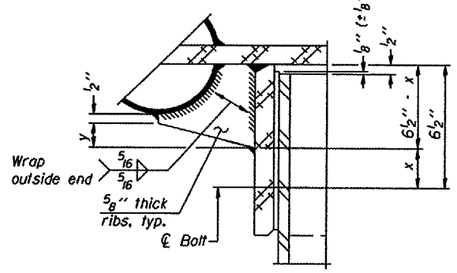
SECTION B-B

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

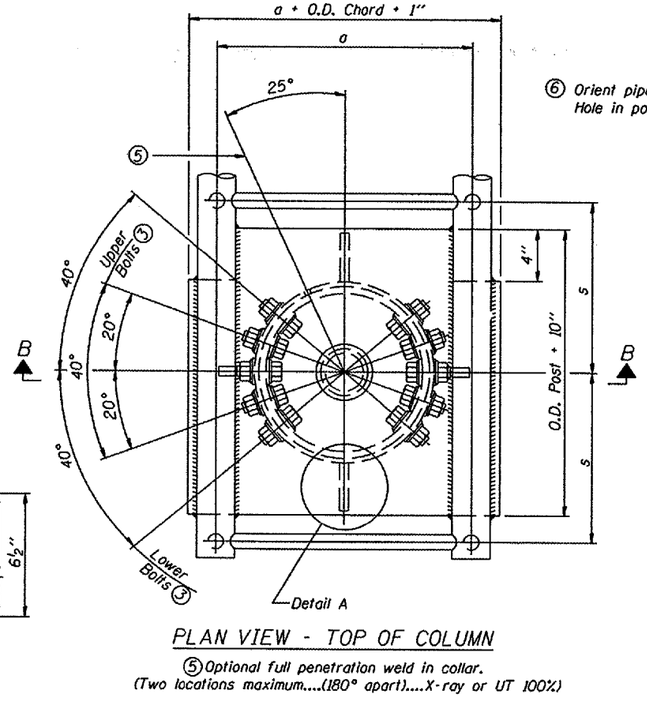
④ Collar I.D. shall be manufactured to correspond to O.D. of actual galvanized post and stainless steel sleeve plus 1/8" (±1/16"). Maximum gap between post and collar at any location equals 1/8" before tightening bolts.



DETAIL A
(Two locations)



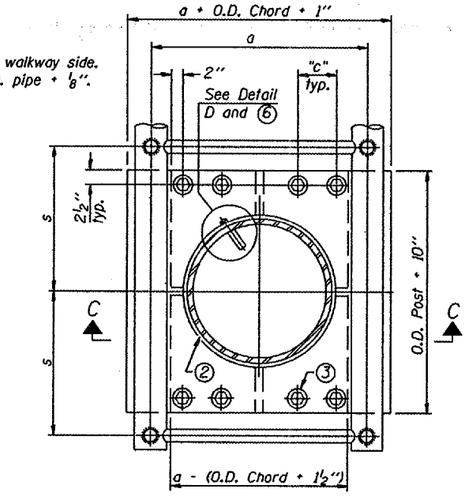
DETAIL B
Two locations
(For details not shown, see Detail C)



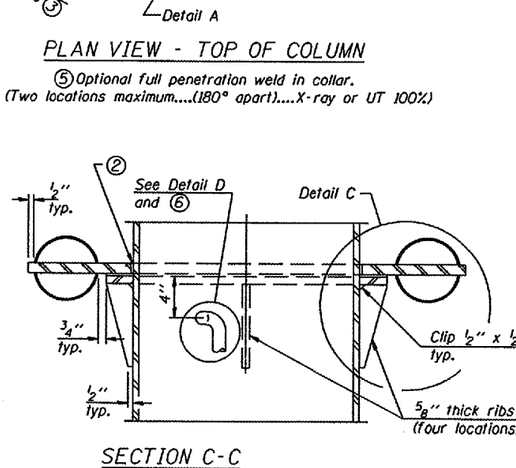
PLAN VIEW - TOP OF COLUMN

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

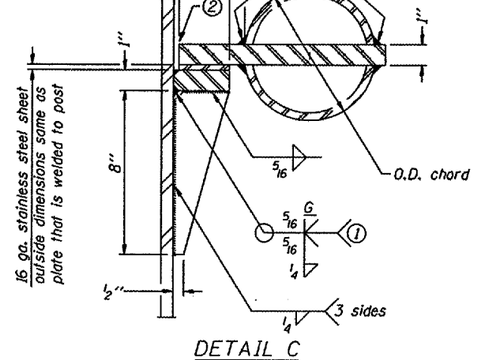
⑥ Orient pipe toward walkway side. Hole in post = O.D. pipe + 1/8".



SECTION THRU POST ABOVE LOWER CHORDS



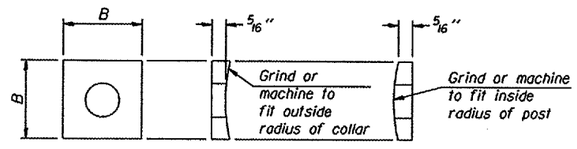
SECTION C-C



DETAIL C

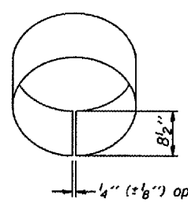
① Grind top if required to fully seat aluminum plate and stainless steel sheet.

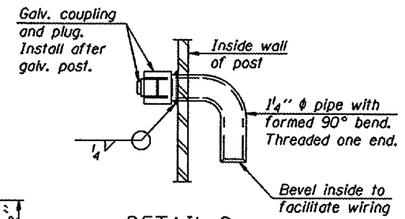
② After tightening lower connection bolts, fill gap with non-hardening, silicone caulk suitable for exterior exposure and acceptable to the Engineer. Cost is included in Overhead Sign Structure Cantilever.



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 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 1/2" long at 6" cts. along top edge and at 1/4" opening.

Truss Type	Post Size	Upper & Lower Connection Bolt Diameter ③	Lower Juncture Bolt Spacing Dimension "c" ③	Opening in Cap Plate "HH"	Collar Thickness (t)	Side Ribs	
						x	y
I-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.

NUMBER	REVISION	DATE

DESIGNED -
CHECKED -
DRAWN -
CHECKED -

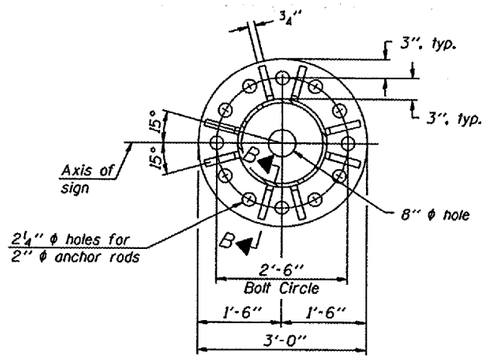
- 20
EXAMINED
PASSED
ENGINEER OF BRIDGE DESIGN
ENGINEER OF BRIDGES AND STRUCTURES

OSC-A-3 6/01/2007

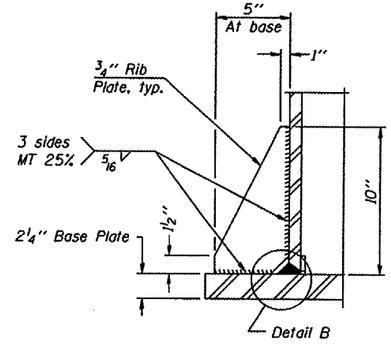
CANTILEVER SIGN STRUCTURES
JUNCTURE DETAILS
ALUMINUM TRUSS & STEEL POST

District 2
Overhead Sign Structure
Repair & Replacement

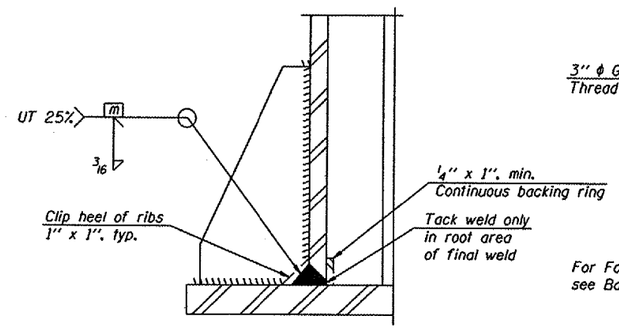
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



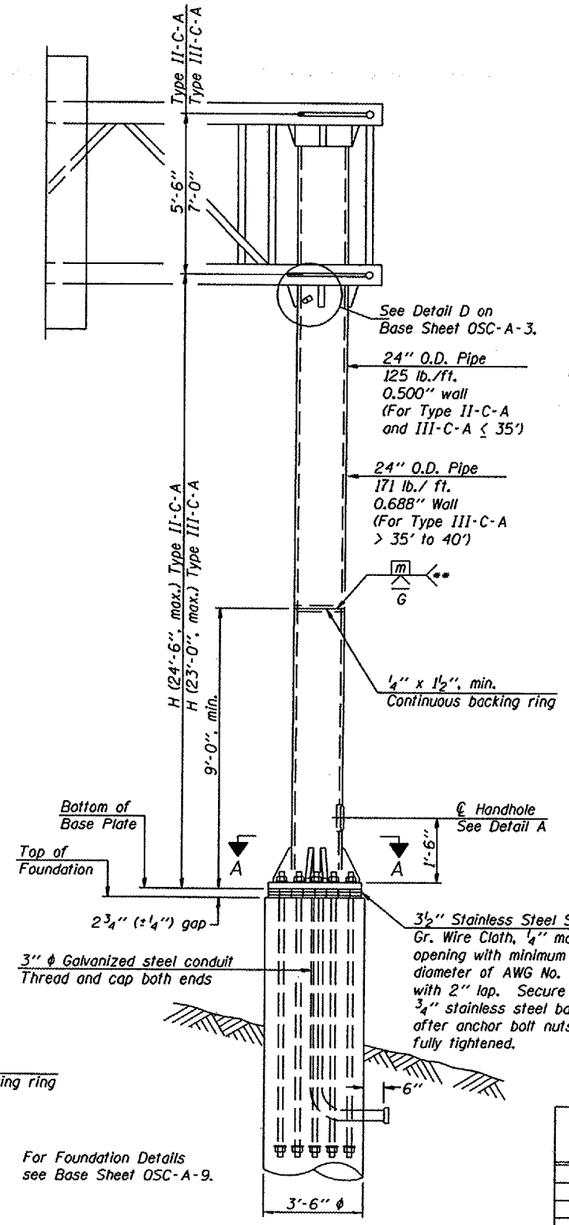
SECTION A-A



SECTION B-B

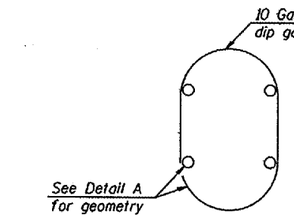


DETAIL B
(Typical rib)

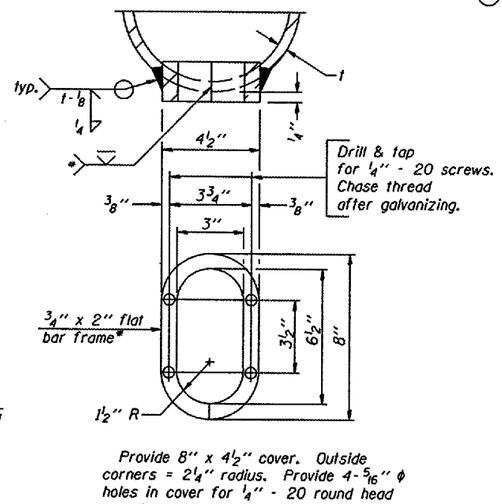


FRONT ELEVATION

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



HANDHOLE COVER

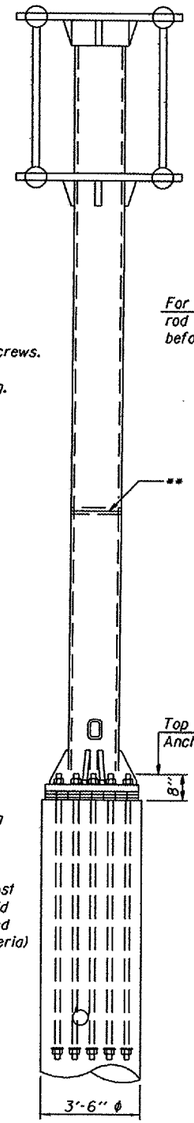


Provide 8" x 4 1/2" cover. Outside corners = 2 1/4" radius. Provide 4-5/16" ϕ holes in cover for 1/4" - 20 round head hot dip galvanized or stainless steel machine screws. (See cover details.)

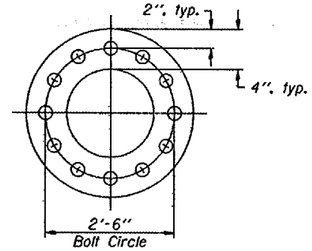
DETAIL A

* 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 μin or less.

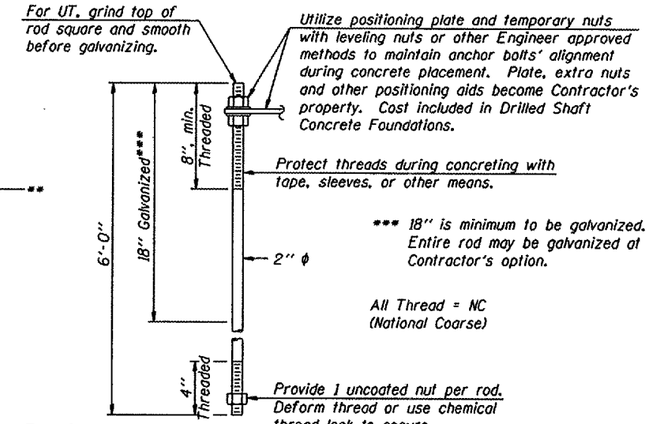
** Butt welded joint in post is only allowed for post heights (H) over 20 ft. in length. If used, weld procedure must be preapproved by Engineer and joint shall receive 100% RT or UT (tension criteria) at Contractor's expense.



SIDE ELEVATION



SUGGESTED POSITIONING PLATE



ANCHOR ROD DETAIL

Anchor rods shall conform to AASHTO M314 Grade 105 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
2C1011090R024.7	48 + 30	20'-11 1/2"

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

NUMBER	REVISION	DATE

DESIGNED	-
CHECKED	-
DRAWN	-
CHECKED	-

- 20

EXAMINED

ENGINEER OF BRIDGE DESIGN

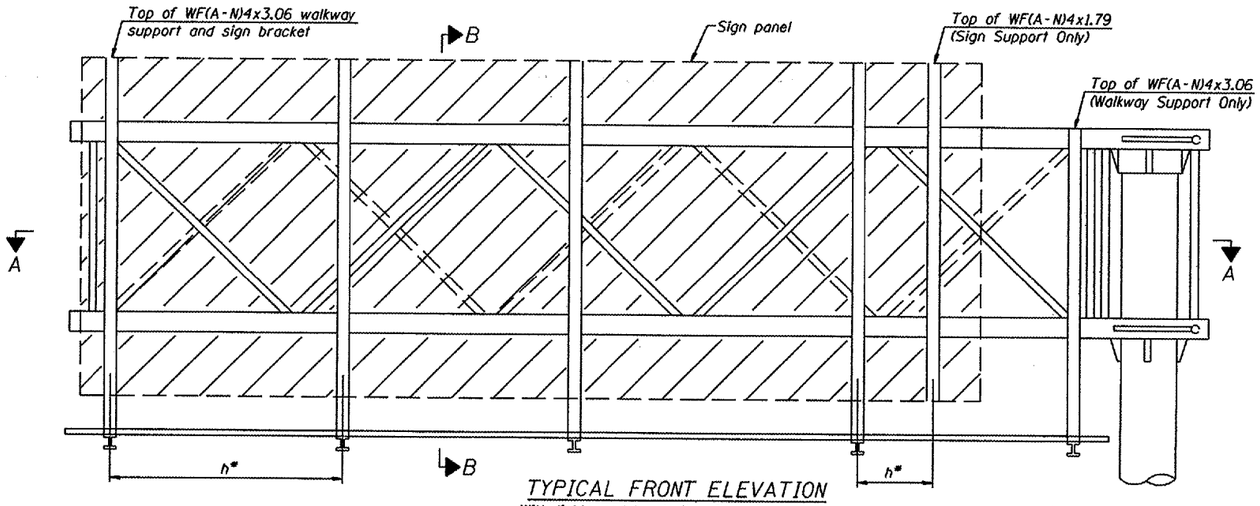
PASSED

ENGINEER OF BRIDGES AND STRUCTURES

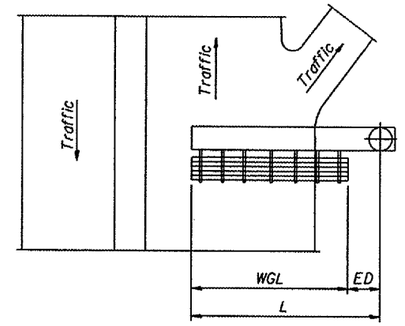
OSC-A-5 6/01/2007

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

District 2
Overhead Sign Structure
Repair & Replacement

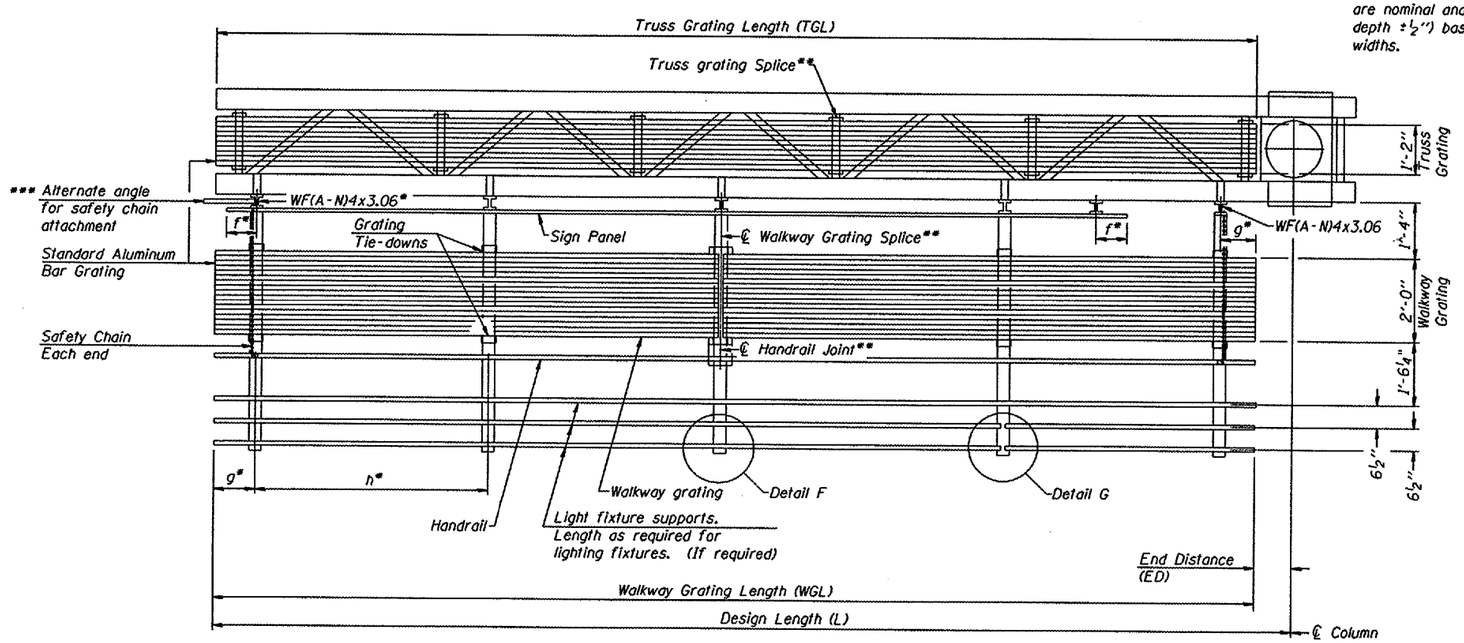


TYPICAL FRONT ELEVATION
With lights and handrail omitted for clarity.



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
2C1011090R024.7	48 + 30	✳		28' - 6"

✳ Reuse existing walkway and walkway support brackets.

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. See alternate safety chain attachment on base sheet OSC-A-8

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 joint, 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 joints 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 -

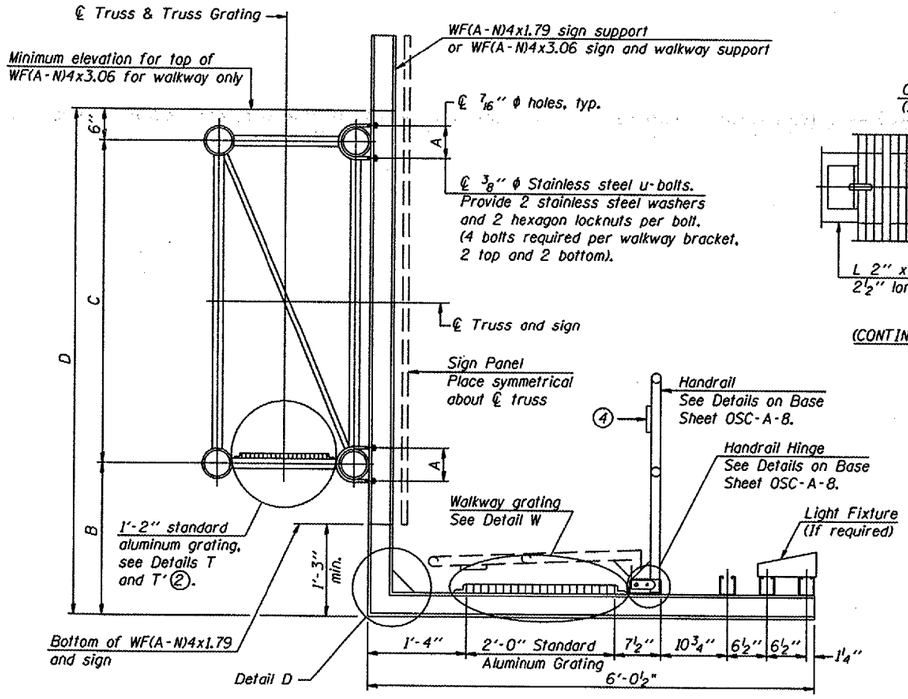
- 20
EXAMINED
ENGINEER OF BRIDGE DESIGN
PASSED
ENGINEER OF BRIDGES AND STRUCTURES

OSC-A-6 6/01/2007

CANTILEVER SIGN STRUCTURES
ALUMINUM WALKWAY DETAILS
ALUMINUM TRUSS & STEEL POST

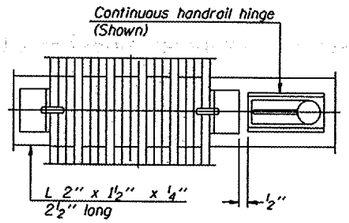
District 2
Overhead Sign Structure
Repair & Replacement

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

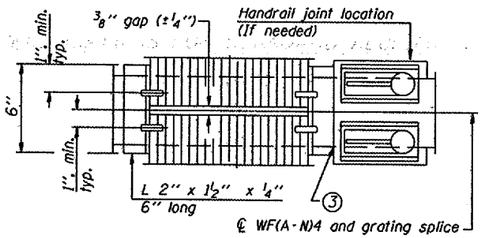


SECTION B-B

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

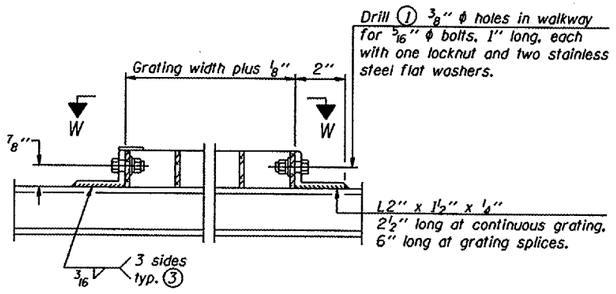


(CONTINUOUS WALKWAY GRATING)

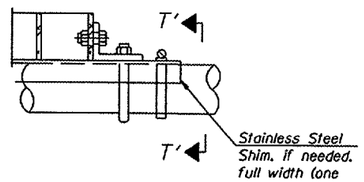


(AT WALKWAY GRATING SPLICE)

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.

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.

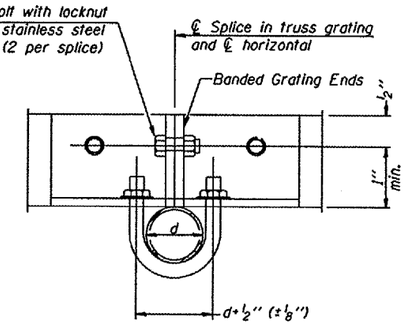
Cross bars (CB) shall be 3/16" x 1½" on 4" centers and conform to ASTM B221 Alloy 6063-T5 or 6061-T6.

OR

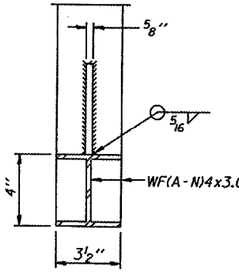
Aluminum Grating with modified "I" sections for main bearing bars shall meet the following requirements:

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.

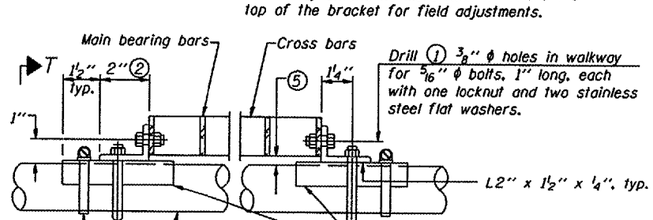


SECTION T'-T'

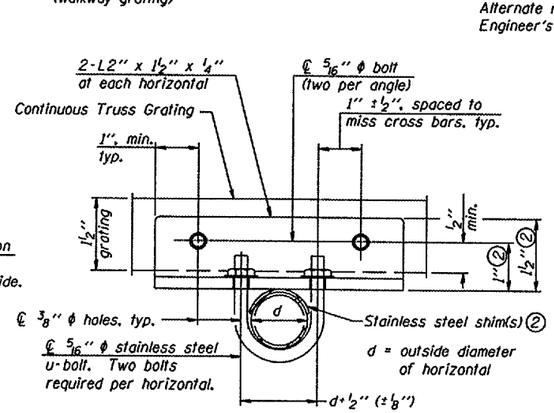


SECTION D-D

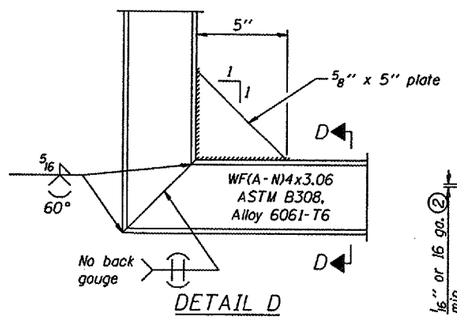
Screw type stainless steel tube clamp at shim location



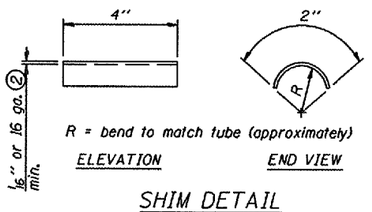
DETAIL T
(Continuous Truss grating)



SECTION T-T



DETAIL D



SHIM DETAIL

NUMBER	REVISION	DATE

DESIGNED -
CHECKED -
DRAWN -
CHECKED -

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

OSC-A-7 6/01/2007

(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 OSC-A-8.)

(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.

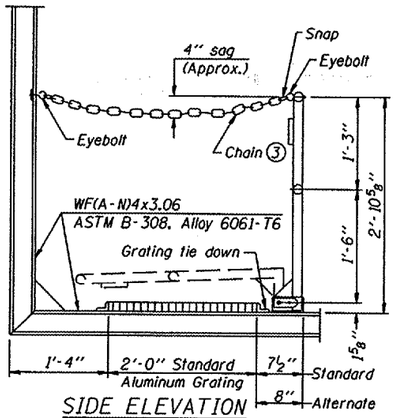
Reuse existing walkway and walkway support brackets.

Structure Number	Station	A	B	C	D

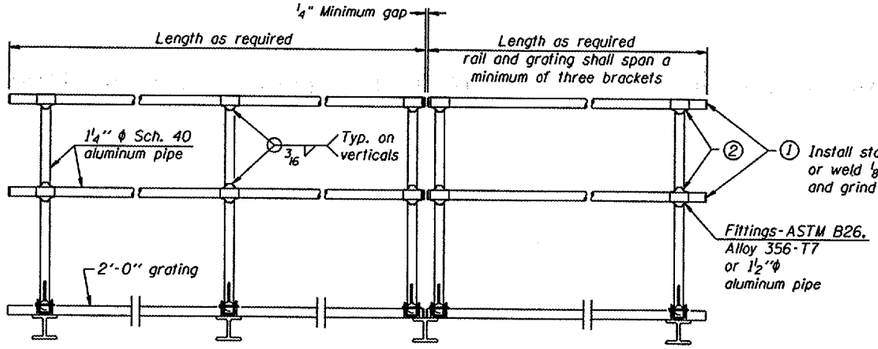
CANTILEVER SIGN STRUCTURES
WALKWAY DETAILS
ALUMINUM TRUSS & STEEL POST

District 2
Overhead Sign Structure
Repair & Replacement

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



SIDE ELEVATION
(Showing Safety Chain W/O Sign)



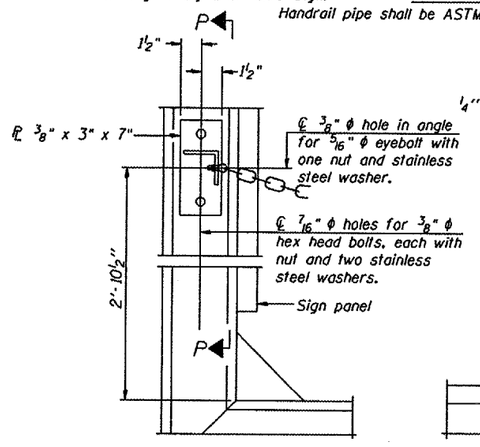
FRONT ELEVATION

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

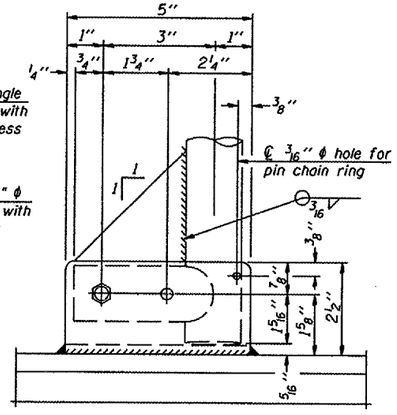
② Horizontal handrail member shall be continuous thru fitting. Provide 7/16" ϕ hole in fitting for ⅜" ϕ bolt. Field drill 7/16" ϕ hole in horizontal rail member. Provide locknut and two stainless steel washers for bolt. (Use 5/16" eyebolts in 7/16" ϕ holes on top rail at ends only.)

HANDRAIL DETAILS

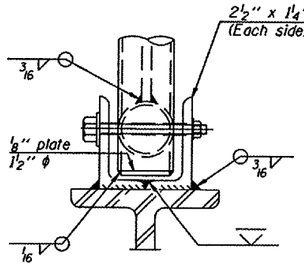
Handrail pipe shall be ASTM B241 or B429, Alloy 6063-T6 or Alloy 6061-T6.



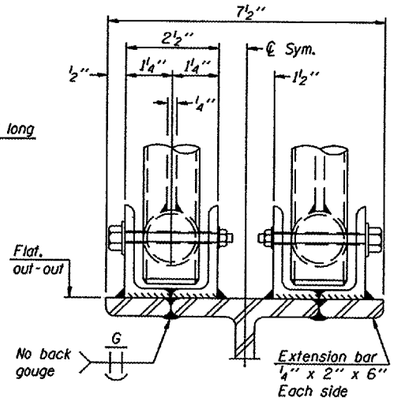
ALTERNATE SAFETY CHAIN ATTACHMENT
(With Sign Present)
Items not shown same as "Side Elevation" of "Handrail Details"



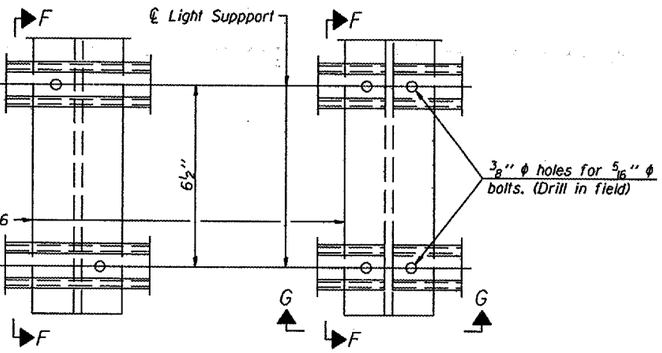
SIDE ELEVATION



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

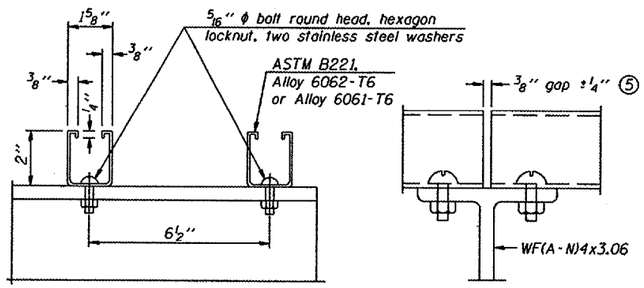


ELEVATION AT HANDRAIL JOINT (4)
Details not shown same as "FRONT ELEVATION"



DETAIL F

DETAIL G

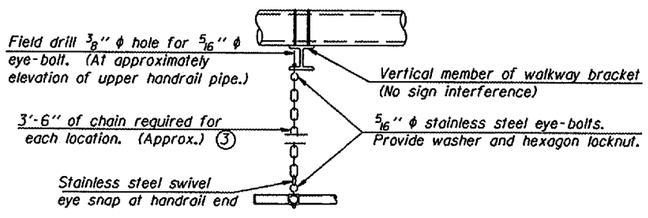


SECTION F-F

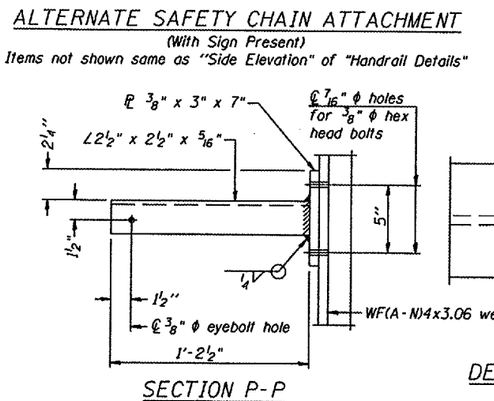
SECTION G-G

LIGHTING FIXTURE MOUNTS (IF REQUIRED)

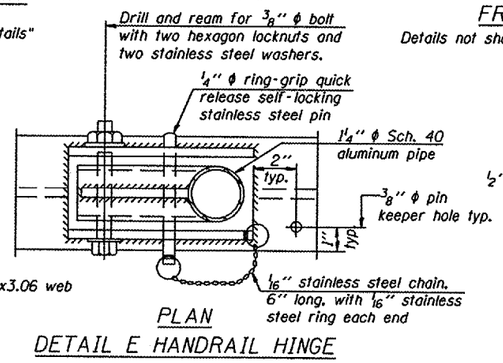
(5) Field cut ends of light support channels shall be free of burrs or hazardous projections and coated with zinc-rich primer or equivalent.



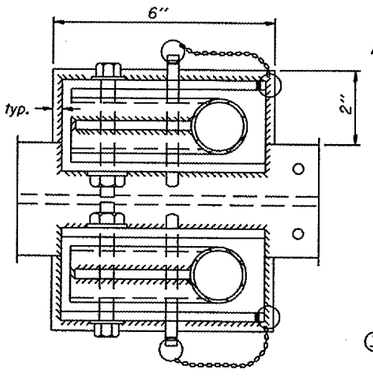
SAFETY CHAIN
One required for each end of each walkway.



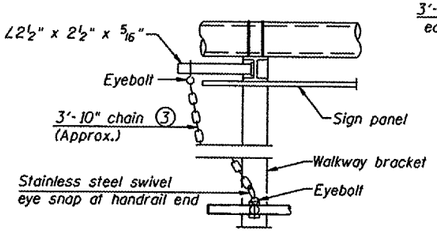
SECTION P-P



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" Type 304L stainless steel chain, approximately 12 links per foot.

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

DESIGNED	-
CHECKED	-
DRAWN	-
CHECKED	-

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

OSC-A-8 6/01/2007

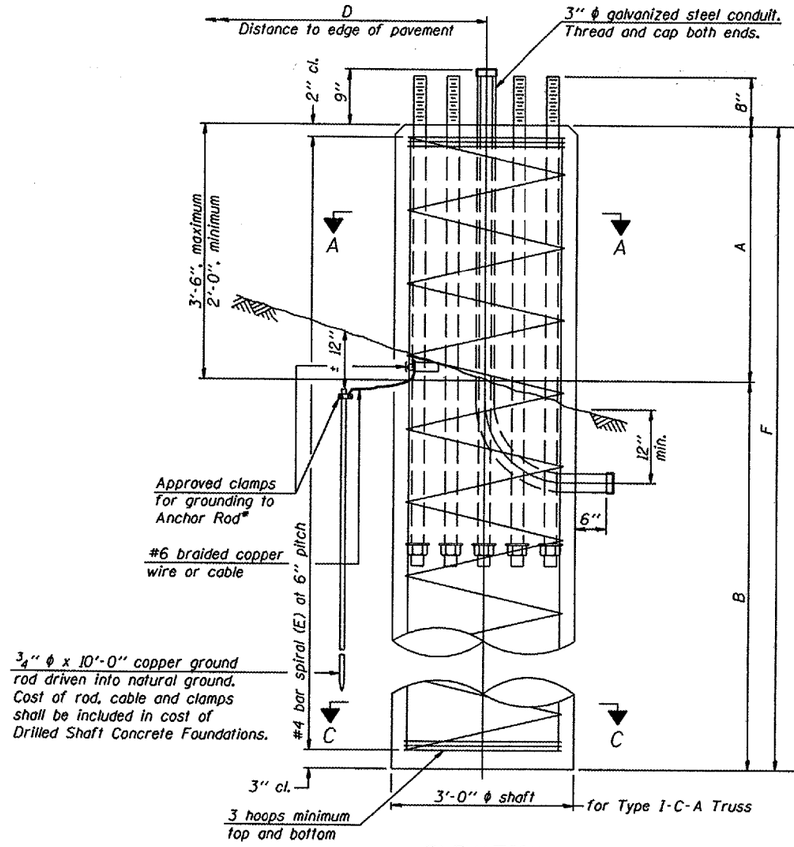
NUMBER	REVISION	DATE

This Sheet For Information Only

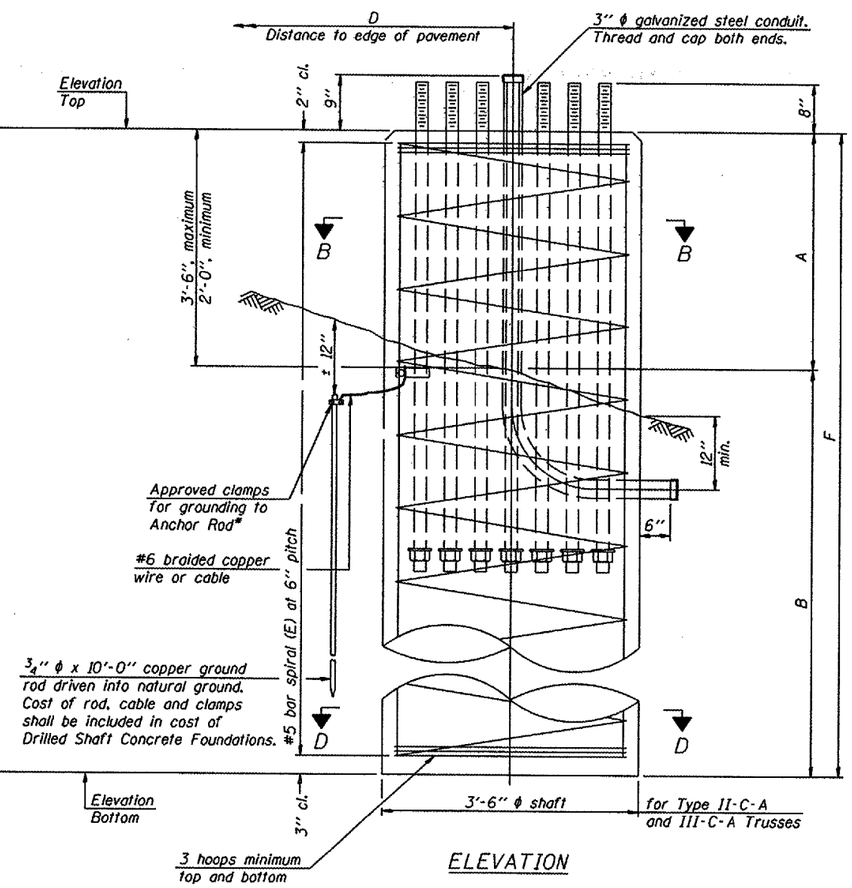
CANTILEVER SIGN STRUCTURES
HANDRAIL DETAILS
ALUMINUM TRUSS & STEEL POST

District 2
Overhead Sign Structure
Repair & Replacement

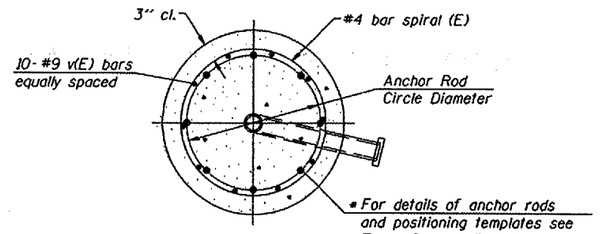
* Grind anchor rod to bright finish at ground clamp location before installing clamp.



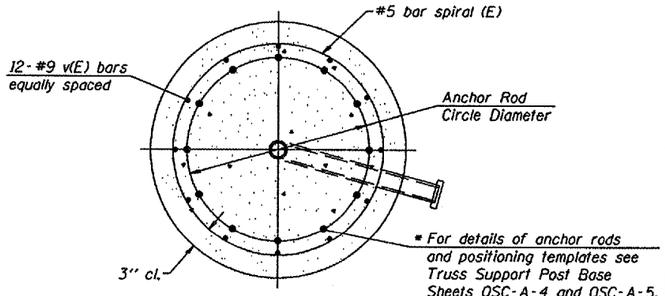
ELEVATION



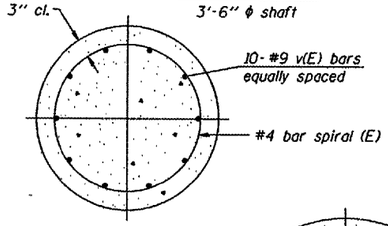
ELEVATION



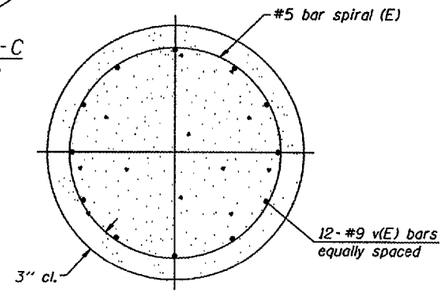
SECTION A-A
3'-0" ϕ shaft



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
2C1011090R024.7	48 + 30	II-C-A	3'-6"	N/A	N/A		3'-0"	21'-6"	24'-6"	8.60

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

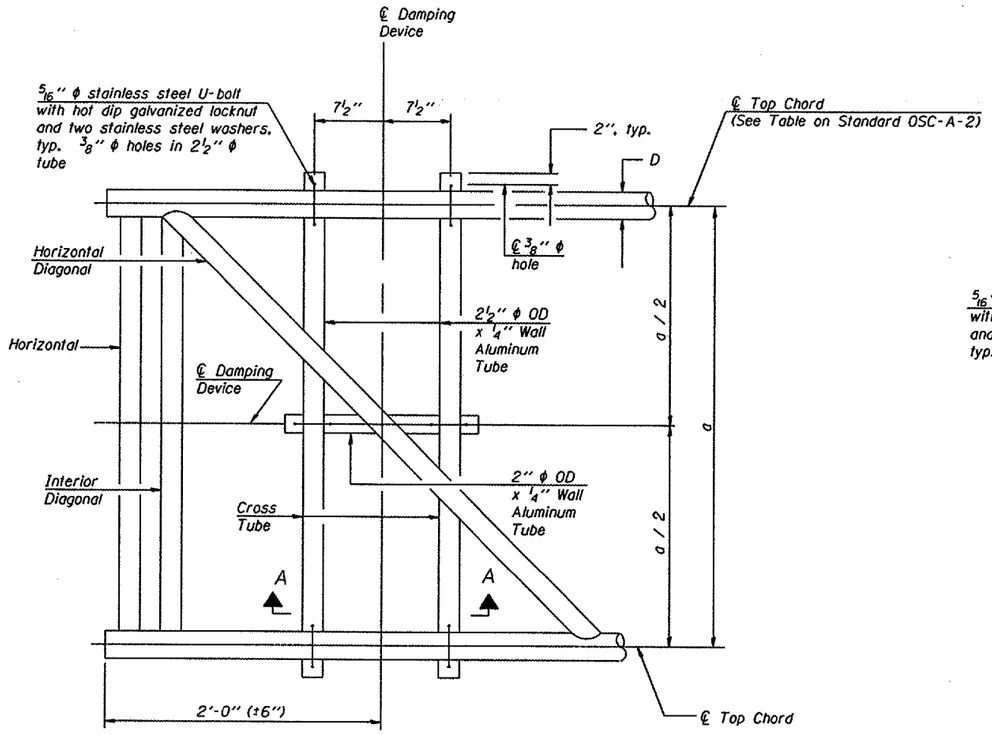
NUMBER	REVISION	DATE

OSC-A-9 6/01/2007

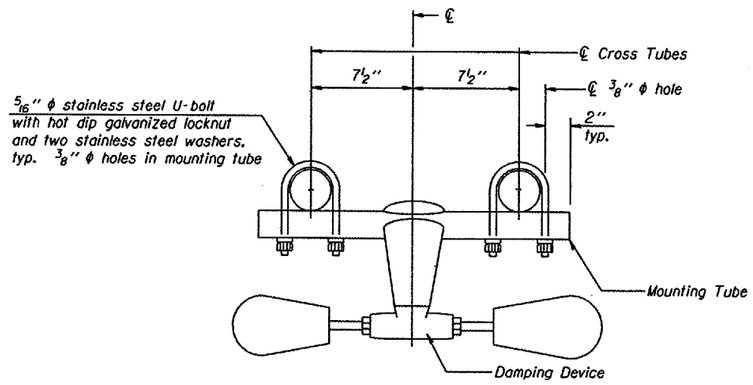
CANTILEVER SIGN STRUCTURES
DRILLED SHAFT
ALUMINUM TRUSS & STEEL POST

District 2
Overhead Sign Structure
Repair & Replacement

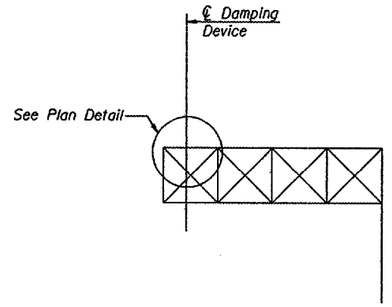
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



PLAN DETAIL



TRUSS DAMPING
DEVICE CONNECTION DETAIL

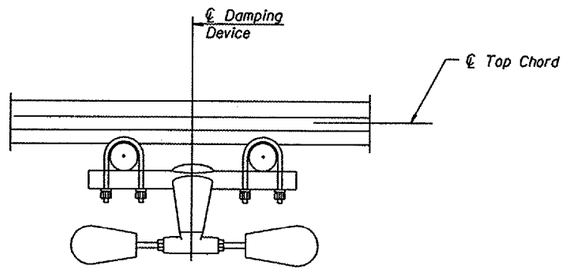


ELEVATION
Aluminum Cantilever
Sign Structure

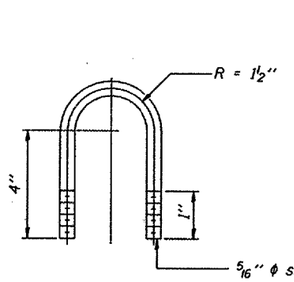
GENERAL NOTES

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

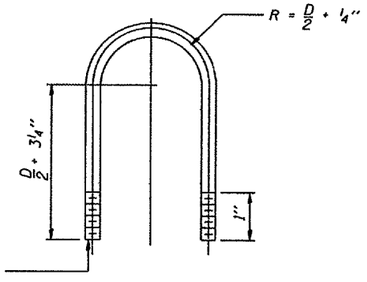
Materials: Aluminum tubes shall be ASTM B221 alloy 6061 temper T6



SECTION A-A



DAMPING DEVICE MOUNTING
TUBE U-BOLT DETAIL
(Typical)



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

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

OSC-A-D 6/01/2007

CANTILEVER SIGN STRUCTURE
DAMPING DEVICE

District 2
Overhead Sign Structure
Repair & Replacement

District 2
Schedule of Overhead Sign Structure Repair & Replacement

2S101U20BL 023.1 29

Illinois Department of Transportation
Division of Highways
Illinois Department of Transportation/D-2

SOIL BORING LOG

Page 1 of 1

ROUTE Bypass 20 DESCRIPTION P92-111-06 Overhead Sign Truss, .5 m. E. of Mulford Date 3/27/07
SECTION LOCATION Cherry Valley Twp. - 10 NE, SEC., TWP. 43N, RNG. 2E LOGGED BY Byron Wetzell
COUNTY Winnebago DRILLING METHOD Hollow Stem Auger HAMMER TYPE C-45
STRUCT. NO.
Station 2835+00
BORING NO. B-1a
Station 2835+00
Offset 60.00ft Lt WB E.O.P.
Ground Surface Elev. 94.20 ft

Surface Water Elev. ft
Stream Bed Elev. ft
Groundwater Elev.:
First Encounter 74.2 ft ▼
Upon Completion 72.7 ft ▽
After Hrs. ft

	DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
BROWN stiff SILTY CLAY LOAM			1.1 P	25.0
		3		
	91.70	3	1.4 P	27.0
BROWN stiff SILTY CLAY LOAM		5		
	90.20			
	-5			
BROWN soft SANDY LOAM with GRAVEL		1		
		2	0.3 P	19.0
		3		
	87.20			
BROWN loose dirty SAND & GRAVEL		1		
		1		
	85.20	4		
	-10			
BROWN loose dirty SAND & GRAVEL		2		
		4		
	82.70	5		
TAN medium dirty SAND & GRAVEL		6		
		10		
	80.20	12		
	-15			
TAN medium dirty SAND & GRAVEL		2		
		6		
	77.70	12		
TAN dense SAND & GRAVEL		17		
		20		
	75.20	25		
	▼-20			

	DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
TAN dense SAND & GRAVEL		13		
		22		
	72.70▽	27		
TAN very dense SAND & GRAVEL		18		
		24		
	70.20	31		
	-25			
TAN very dense SAND & GRAVEL with weathered LIMESTONE at bottom 6"		21		
		47		
	67.70	53		
End of Boring				
	-30			
	-35			
	-40			

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)
The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)

BBS, from 137 (Rev. 8-99)

2S101U20BL 023.1 29

Illinois Department of Transportation
Division of Highways
Illinois Department of Transportation/D-2

SOIL BORING LOG

Page 1 of 1

ROUTE Bypass 20 DESCRIPTION P92-111-06 Overhead Sign Truss, .5 m. E. of Mulford Date 5/16/07
SECTION LOCATION Cherry Valley Twp. - 10 NE, SEC., TWP. 43N, RNG. 2E LOGGED BY Wally Garza
COUNTY Winnebago DRILLING METHOD Hollow Stem Auger HAMMER TYPE B-53
STRUCT. NO.
Station 2835+00
BORING NO. B-2a
Station 2831+80
Offset 12.00ft Lt Med. CL
Ground Surface Elev. 100.00 ft

Surface Water Elev. ft
Stream Bed Elev. ft
Groundwater Elev.:
First Encounter ft
Upon Completion ft
After Hrs. ft

	DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
STIFF brown SILTY CLAY LOAM			2.0 P	18.0
	97.50	6		
VERY STIFF brown SILTY CLAY LOAM		6	2.5 B	23.0
	96.00	6		
	-5			
STIFF brown LOAM		2		
		3	1.3 B	24.0
	93.50	5		
VERY SOFT brown SANDY LOAM		2		
		1	0.2 B	22.0
		3		
	90.50			
	-10			
LOOSE tan moist dirty SAND		2		
		3		
	88.50	6		
DENSE tan dirty SAND with clean medium SAND lens		4		
		11		
	86.00	24		
	-15			
DENSE tan dirty SAND & GRAVEL		22		
		21		
	83.50	19		
VERY DENSE tan well cemented SAND with medium GRAVEL		33		
		44		
	81.00	56		
End of Boring				
	-20			

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)
The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)

BBS, from 137 (Rev. 8-99)

District 2
Schedule of Overhead Sign Structure Repair & Replacement

2S101U20BR023.8 SIGN 24

Illinois Department of Transportation
Division of Highways
Illinois Department of Transportation/D-2

SOIL BORING LOG

Page 1 of 1

Date 3/27/07

ROUTE Bypass 20 DESCRIPTION P92-111-06 Overhead Sign Truss, EB Bypass 20, 1.0 m. W. of Harrison Avenue LOGGED BY Beau Wetzell

SECTION LOCATION Cherry Valley Twp. - 2 SW, SEC. , TWP. 43N, RNG. 2E

COUNTY Winnebago DRILLING METHOD Hollow Stem Auger HAMMER TYPE C-45

STRUCT. NO.
Station

BORING NO. B-1b
Station 72+10
Offset 31.00ft Rt E.O.P.
Ground Surface Elev. 97.50 ft

Surface Water Elev. ft
Stream Bed Elev. ft

Groundwater Elev.:
First Encounter ft
Upon Completion ft
After Hrs. ft

	DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
BROWN medium SANDY LOAM			0.8 P	15.0
	95.00	5		
BROWN medium SANDY LOAM		7	0.7 P	15.0
	93.00	7		
	-5	13		
LIGHT TAN dense well-cemented SAND & GRAVEL		13		
	91.00	17		
		27		
TAN very dense well-cemented SAND & GRAVEL		50		
	88.50	56		
	-10	66		
TAN very dense well-cemented SAND & GRAVEL		100		
	86.00			
		61		
TAN very dense well-cemented SAND & GRAVEL		100		
	83.50			
End of Boring				
	-15			
	-20			

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)
The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)

BBS, from 137 (Rev. 8-99)

2S101U20BR023.8 SIGN 24

Illinois Department of Transportation
Division of Highways
Illinois Department of Transportation/D-2

SOIL BORING LOG

Page 1 of 1

Date 5/16/07

ROUTE Bypass 20 DESCRIPTION P92-111-06 Overhead Sign Truss, EB 20, 1.0 m. W. of Harrison Avenue LOGGED BY Wally Garza

SECTION LOCATION Cherry Valley Twp. - 2 SW, SEC. , TWP. 43N, RNG. 2E

COUNTY Winnebago DRILLING METHOD Hollow Stem Auger HAMMER TYPE B-53

STRUCT. NO.
Station

BORING NO. B-2b
Station 72+0
Offset 12.00ft Rt. Med. CL.
Ground Surface Elev. 100.00 ft

Surface Water Elev. ft
Stream Bed Elev. ft

Groundwater Elev.:
First Encounter ft
Upon Completion ft
After Hrs. ft

	DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
STIFF brown SANDY LOAM			1.1 P	12.0
	96.00	2		
MEDIUM tan weathered LIMESTONE fragments with SAND		5		
	96.00	9		
	-5	8		
DENSE tan well-cemented SAND & GRAVEL		13		
	93.50	19		
		25		
VERY DENSE tan well-cemented SAND		34		
	91.00	45		
	-10	45		
VERY DENSE tan well-cemented SAND		00/11		
	88.50			
End of Boring				
	-15			
	-20			

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)
The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)

BBS, from 137 (Rev. 8-99)

District 2
Schedule of Overhead Sign Structure Repair & Replacement

2S101U20BL022.6 SIGN 30

Illinois Department of Transportation
Division of Highways
Illinois Department of Transportation/D-2

SOIL BORING LOG

Page 1 of 1

ROUTE Bypass 20 DESCRIPTION P92-111-06 Overhead Sign Truss, .1 m. E. of Mulford Date 3/27/07
SECTION LOCATION Cherry Valley Twp. - 10 NW, SEC., TWP. 43N, RNG. 2E LOGGED BY Beau Wetzell
COUNTY Winnebago DRILLING METHOD Hollow Stem Auger HAMMER TYPE C-45

STRUCT. NO.
Station 2609+92
BORING NO. B-1c
Station 2609+92
Offset 40.00ft Lt WB E.O.P.
Ground Surface Elev. 94.50 ft

Surface Water Elev. ft
Stream Bed Elev. ft
Groundwater Elev.:
First Encounter 84.5 ft ▼
Upon Completion ft
After Hrs. ft

	(ft)	DEPTH	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
BROWN soft SILTY CLAY LOAM				0.4	28.0
				P	
	92.00				
BROWN medium SILTY CLAY LOAM			2		
			3	1.4	27.0
			5	P	
	90.00	-5			
BROWN soft SANDY LOAM			2		
			2	0.5	18.0
	88.00		10	P	
BROWN loose fine SAND			7		
			6		
	85.50		4		
		▼-10			
TAN medium dirty SAND & GRAVEL			4		
			7		
	83.00		8		
TAN dense dirty SAND & GRAVEL			10		
			14		
	80.50		18		
		-15			
Wash Double Pounded			14		
			15		
	78.00		20		
TAN very dense weathered LIMESTONE			14		
			100/5.5"		
	75.50	-20			

	(ft)	DEPTH	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
TAN very dense weathered LIMESTONE			48		
			100/4.5"		
	73.00				
TAN very dense weathered LIMESTONE			45		
			46		
	70.50		41		
TAN gray, very dense weathered LIMESTONE		-25	51		
			100/2.5"		
	68.00				
End of Boring		-30			
		-35			
		-40			

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)
The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)
BBS, from 137 (Rev. 8-99)

2S101U20BL022.6 SIGN 30

Illinois Department of Transportation
Division of Highways
Illinois Department of Transportation/D-2

SOIL BORING LOG

Page 1 of 1

ROUTE Bypass 20 DESCRIPTION P92-111-06 Overhead Sign Truss, .1 m. E. of Mulford Date 5/16/07
SECTION LOCATION Cherry Valley Twp. - 10 NW, SEC., TWP. 43N, RNG. 2E LOGGED BY Wally Garza
COUNTY Winnebago DRILLING METHOD Hollow Stem Auger HAMMER TYPE B-53

STRUCT. NO.
Station 2609+92
BORING NO. B-2c
Station 2607+75
Offset 14.00ft Lt Med. CL
Ground Surface Elev. 100.00 ft

Surface Water Elev. ft
Stream Bed Elev. ft
Groundwater Elev.:
First Encounter 85.0 ft ▼
Upon Completion Dry ft
After Hrs. ft

	(ft)	DEPTH	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
MEDIUM brown LOAM				0.5	16.0
				P	
	97.50				
STIFF gray SILTY CLAY LOAM			5		
			7	2.1	26.0
	96.00		8	B	
MEDIUM gray SILTY CLAY LOAM		-5	3		
			4	0.8	26.0
	93.50		6	B	
STIFF tan/gray SILTY CLAY			2		
			4	1.5	27.0
			5	B	
	90.50	-10			
LOOSE tan dirty SAND			2		
			2		
	88.50		3		
LOOSE tan moist dirty SAND			2		
			4		
	85.50		4		
		▼-15			
VERY STIFF tan SANDY LOAM TILL			4		
			6	2.7	9.0
	83.50		7	B	
STIFF tan SANDY LOAM TILL			4		
			7	1.5	8.0
	81.00		12	S	
		-20			

	(ft)	DEPTH	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
STIFF tan SANDY LOAM TILL			11		
			11	1.0	9.0
	78.50		16	S	
VERY STIFF tan SANDY LOAM TILL			8		
			9	2.7	10.0
			12	B	
	75.50	-25			
MEDIUM tan moist dirty SAND and medium GRAVEL			12		
			13		
	73.50		13		
End of Boring		-30			
		-35			
		-40			

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)
The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)
BBS, from 137 (Rev. 8-99)

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

District 3
Schedule of Overhead Sign Structure Repair & Replacement

Location No.:	3-01	State I.D. No.:	3C053I055R192.8				
County:	Livingston	Route:	I-55	M.P.:	192.8	Direction:	NB

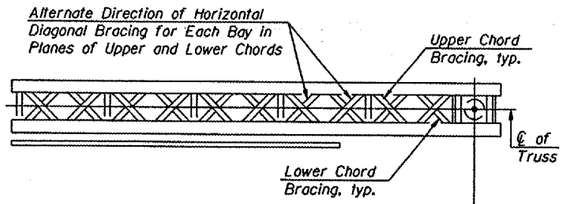
Description of Work	Unit	Quantity
REMOVE OVERHEAD SIGN STRUCTURE-CANTILEVER	EACH	1.00
REMOVE CONCRETE FOUNDATION-OVERHEAD	EACH	1.00
REMOVE & REINSTALL SIGN PANEL	SQ FT	48.00
REMOVE & REINSTALL WALKWAY	FOOT	16.50
FURNISH & INSTALL SAFETY CHAIN	EACH	2.00
OVERHEAD SIGN STRUCTURE CANTILEVER, TYPE II-C-A	FOOT	30.00
DRILLED SHAFT CONCRETE FOUNDATION	CU YD	7.10
DISCONNECT/RECONNECT ELECTRIC SERVICE	EACH	1.00
RELOCATE ELECTRIC SERVICE	EACH	1.00
FURNISH & INSTALL WALKWAY TIE DOWN BOLT	EACH	2.00
This sign structure is being completely replaced.		

Location No.:	3-02	State I.D. No.:	3C053I055L194.4				
County:	Livingston	Route:	I-55	M.P.:	194.4	Direction:	SB

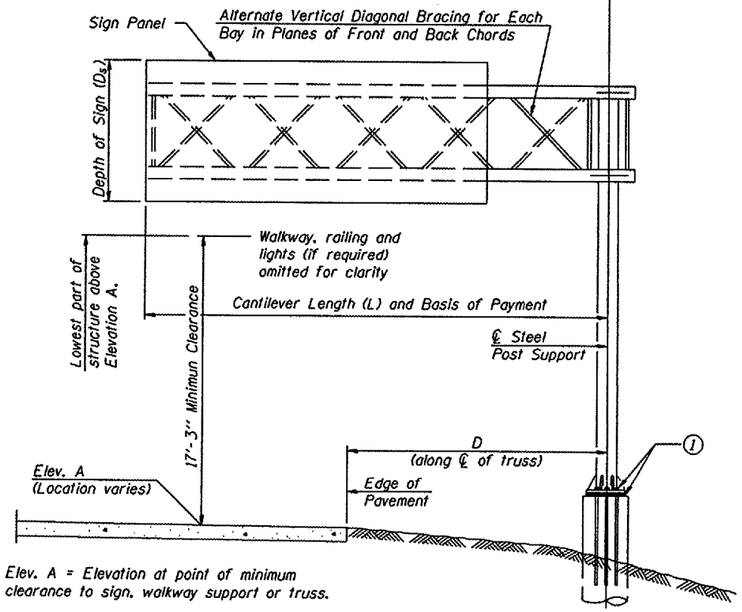
Description of Work	Unit	Quantity
REMOVE OVERHEAD SIGN STRUCTURE - CANTILEVER	EACH	1.00
REMOVE CONCRETE FOUNDATION - OVERHEAD	EACH	1.00
REMOVE & REINSTALL SIGN PANEL	SQ FT	49.00
REMOVE & REINSTALL WALKWAY	FOOT	16.50
FURNISH & INSTALL SAFETY CHAIN	EACH	2.00
OVERHEAD SIGN STRUCTURE CANTILEVER, TYPE II-C-A	FOOT	30.00
DRILLED SHAFT CONCRETE FOUNDATIONS	EACH	7.10
DISCONNECT/RECONNECT ELECTRIC SERVICE	EACH	1.00
RELOCATE ELECTRIC SERVICE	EACH	1.00
REPAIR HANDRAIL LOCKING PIN CONNECTION	EACH	4.00
FURNISH & INSTALL WALKWAY TIE DOWN BOLT	EACH	4.00
This sign structure is being completely replaced.		

Location No.:	3-03	State I.D. No.:	3S050I080L078.9				
County:	LaSalle	Route:	I-80	M.P.:	78.9	Direction:	WB

Description of Work	Unit	Quantity
REMOVE OVERHEAD SIGN STRUCTURE-SPAN	EACH	1.00
OVERHEAD SIGN STRUCTURE-SPAN TYPE II-A	FOOT	96.00
REMOVE & REINSTALL SIGN PANEL	SQ FT	498.00
REMOVE & REINSTALL WALKWAY	FOOT	56.00
FURNISH & INSTALL SAFETY CHAIN	EACH	2.00
OVERHEAD SIGN SUPPORT GROUT REPAIR	EACH	4.00
DISCONNECT/RECONNECT ELECTRIC SERVICE	EACH	1.00
REPAIR HANDRAIL LOCKING PIN CONNECTION	EACH	6.00
REPLACE / TIGHTEN CLIP PER SIGN	EACH	3.00
This sign structure is being down sized from a Type IV truss		
to a Type II truss. The existing end support will be reused.		



TYPICAL PLAN
(Walkway not shown)



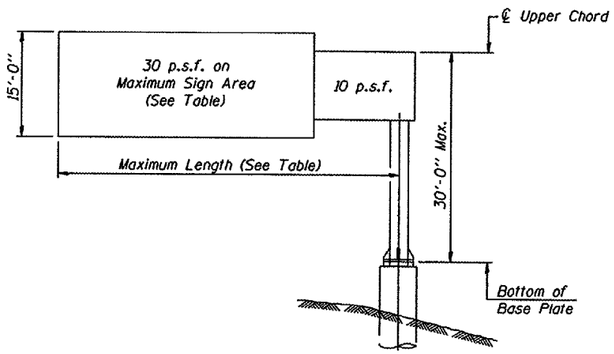
Elev. A = Elevation at point of minimum clearance to sign, walkway support or truss.

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
3C0531055R192.8	719 + 82	II-C-A	30' - 0"	100.00	21' - 6"	5' - 0"	48.00
3C0531055L194.4	804 + 17	II-C-A	30' - 0"	100.00	21' - 6"	5' - 0"	49.00

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

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

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

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

ANCHOR RODS: Shall conform to AASHTO M314 Gr. 105 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.

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

* 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 -	

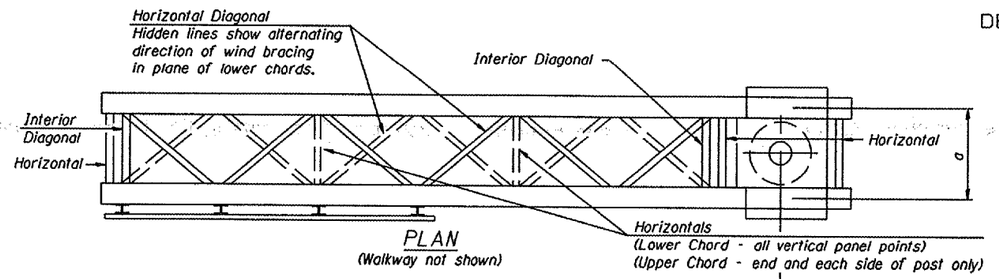
- 20
EXAMINED
ENGINEER OF BRIDGE DESIGN
PASSED
ENGINEER OF BRIDGES AND STRUCTURES

NUMBER	REVISION	DATE

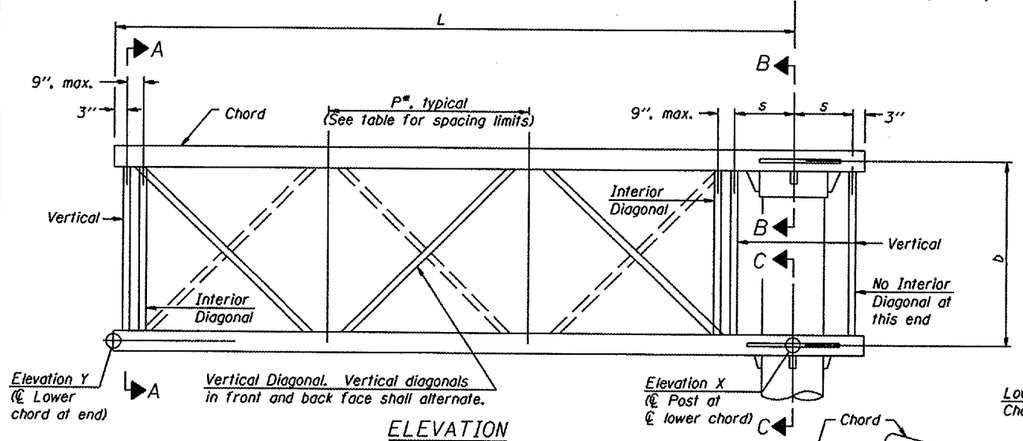
OSC-A-1 6/01/2007

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

District 3
Overhead Sign Structure
Repair & Replacement



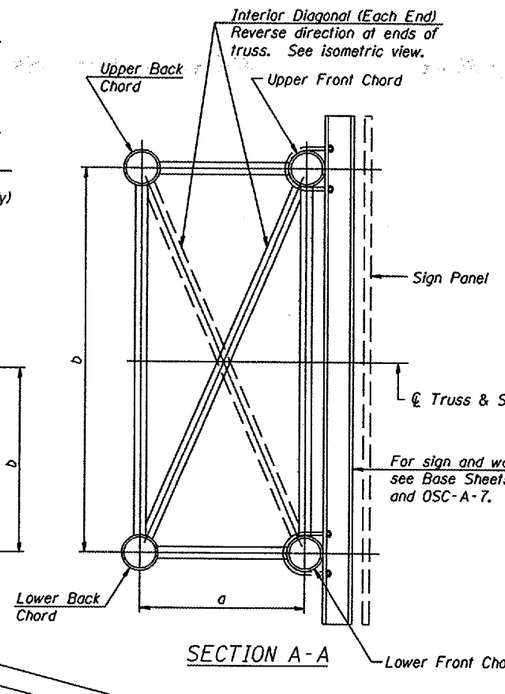
PLAN
(Walkway not shown)



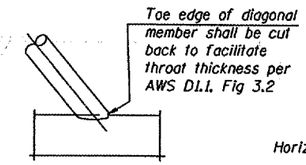
ELEVATION
(Sign and walkway omitted for clarity)

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

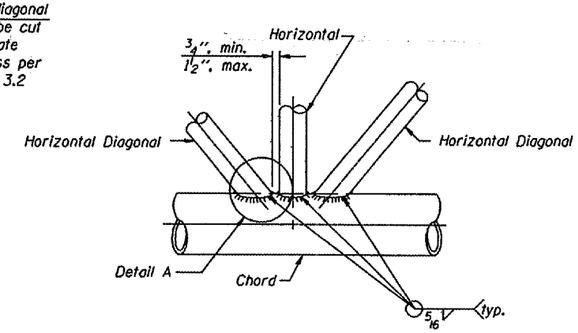
Note:
There are twice as many horizontal diagonals as there are vertical diagonals.



SECTION A-A

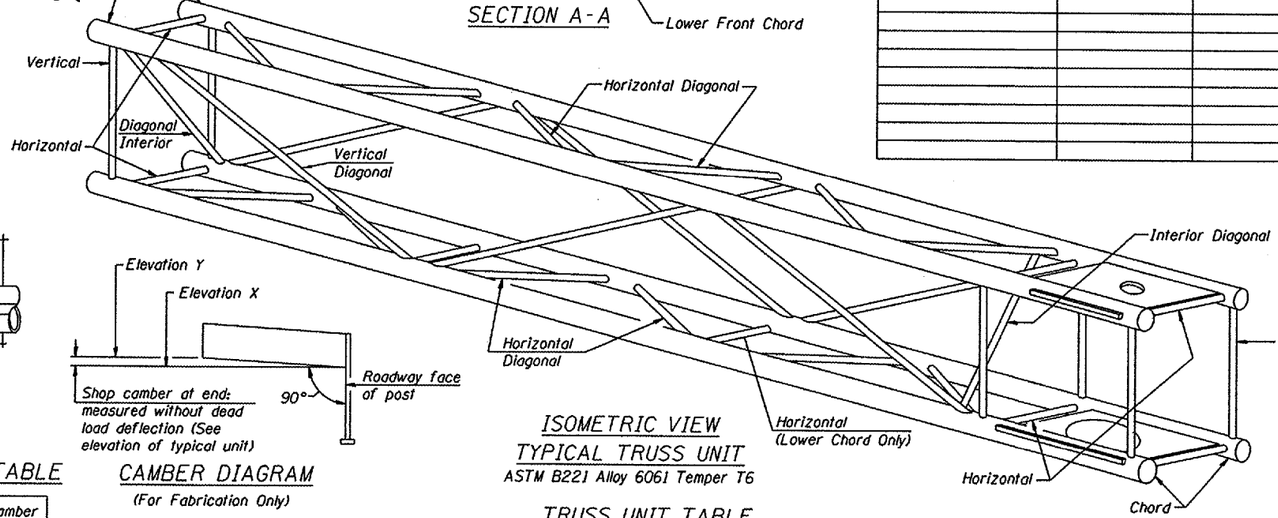


DETAIL A

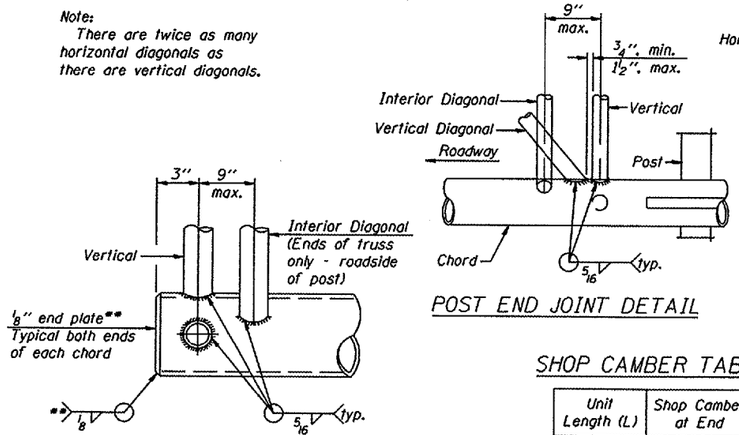


TRUSS INTERIOR JOINT DETAIL

Structure Number	Station	Truss Type	Design Length (L)	Number of Panels Per Unit	Panel Length (P)*
3C0531055R192.8	719 + 82	II-C-A	30' - 0"	7	4' - 0"
3C0531055L194.4	804 + 17	II-C-A	30' - 0"	7	4' - 0"



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"

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 3
Overhead Sign Structure
Repair & Replacement

DESIGNED	-
CHECKED	-
DRAWN	-
CHECKED	-

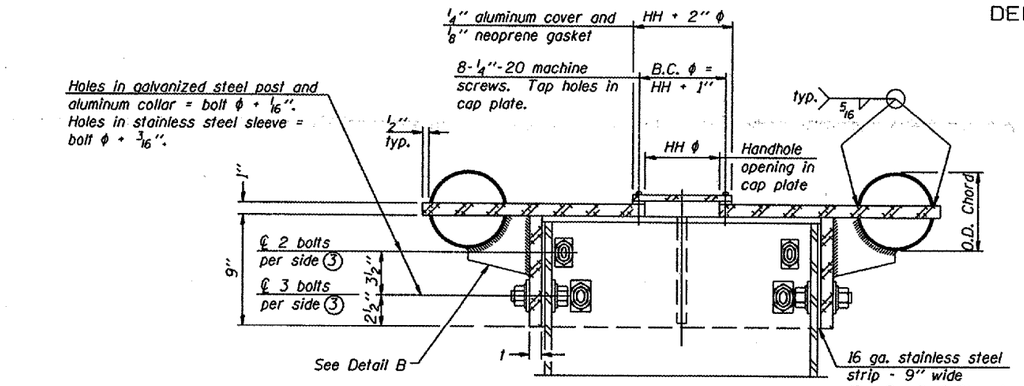
- 20

EXAMINED
ENGINEER OF BRIDGE DESIGN

PASSED
ENGINEER OF BRIDGES AND STRUCTURES

OSC-A-2 6/01/2007

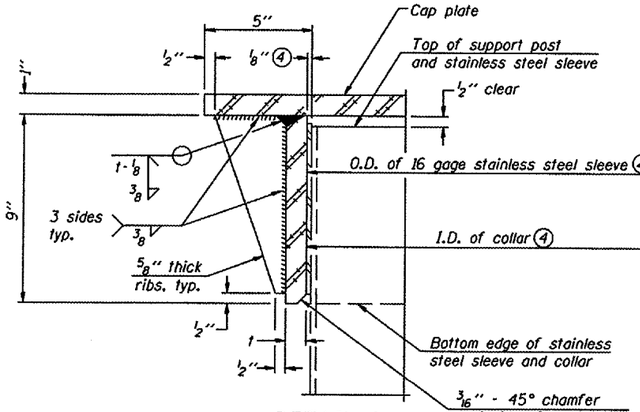
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



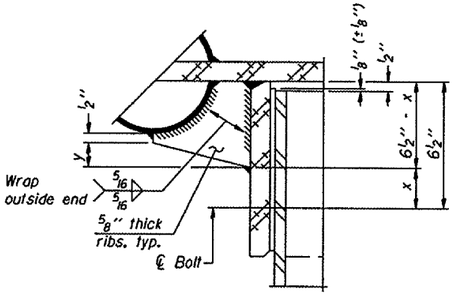
SECTION B-B

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

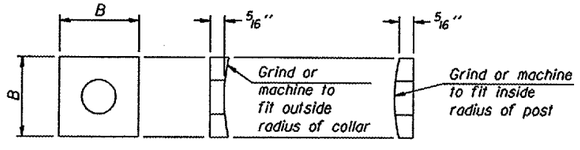
(4) Collar I.D. shall be manufactured to correspond to O.D. of actual galvanized post and stainless steel sleeve plus 1/8" (±1/16"). Maximum gap between post and collar at any location equals 1/8" before tightening bolts.



DETAIL A
(Two locations)

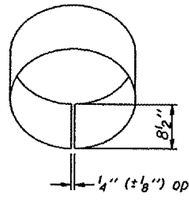


DETAIL B
Two locations
(For details not shown, see Detail C)



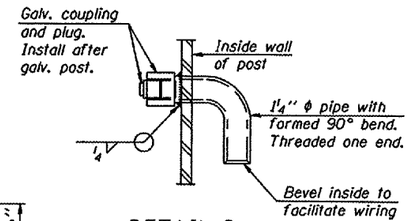
CONTOURED WASHERS

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

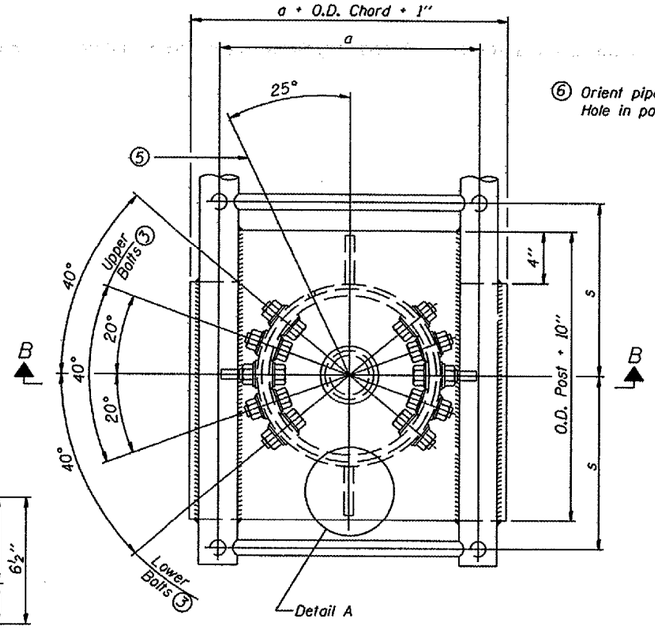


DETAIL OF STAINLESS STEEL SLEEVE

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



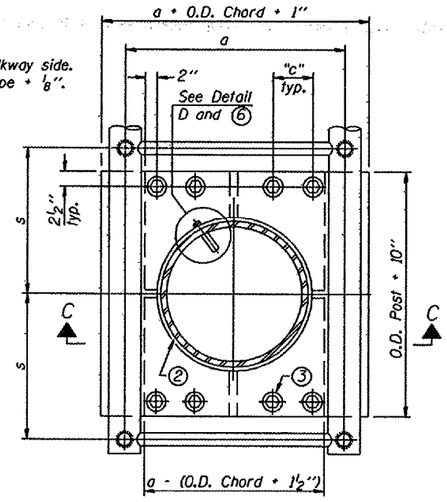
DETAIL D



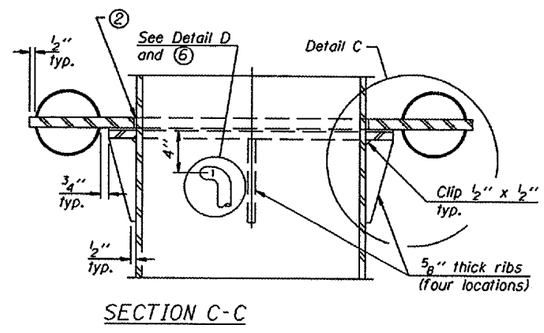
PLAN VIEW - TOP OF COLUMN

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

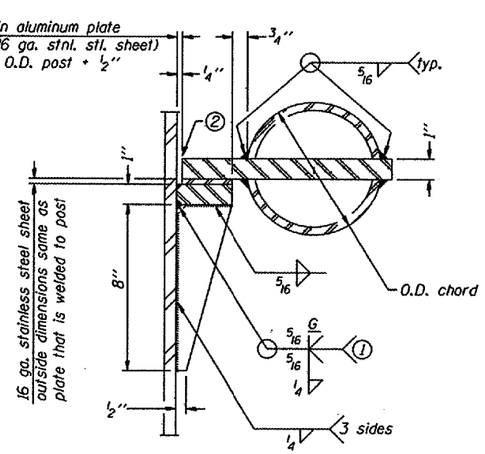
(6) Orient pipe toward walkway side. Hole in post = O.D. pipe + 1/8".



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

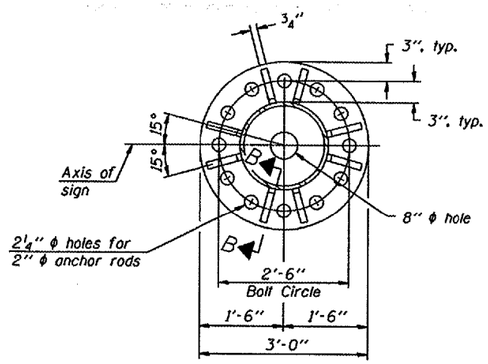
OSC-A-3 6/01/2007

NUMBER	REVISION	DATE

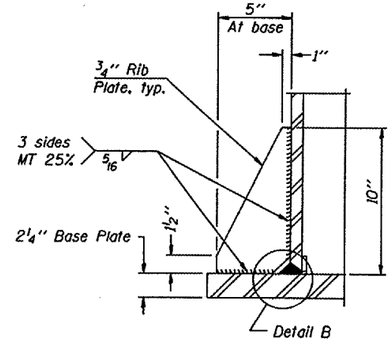
CANTILEVER SIGN STRUCTURES
JUNCTURE DETAILS
ALUMINUM TRUSS & STEEL POST

District 3
Overhead Sign Structure
Repair & Replacement

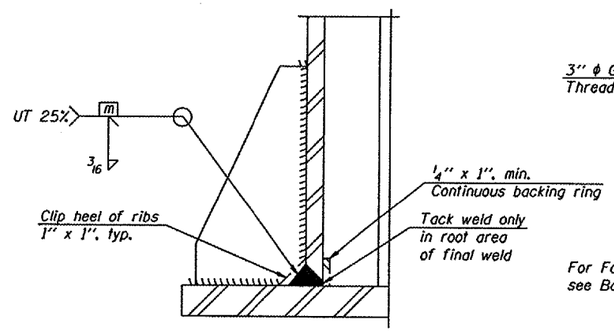
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



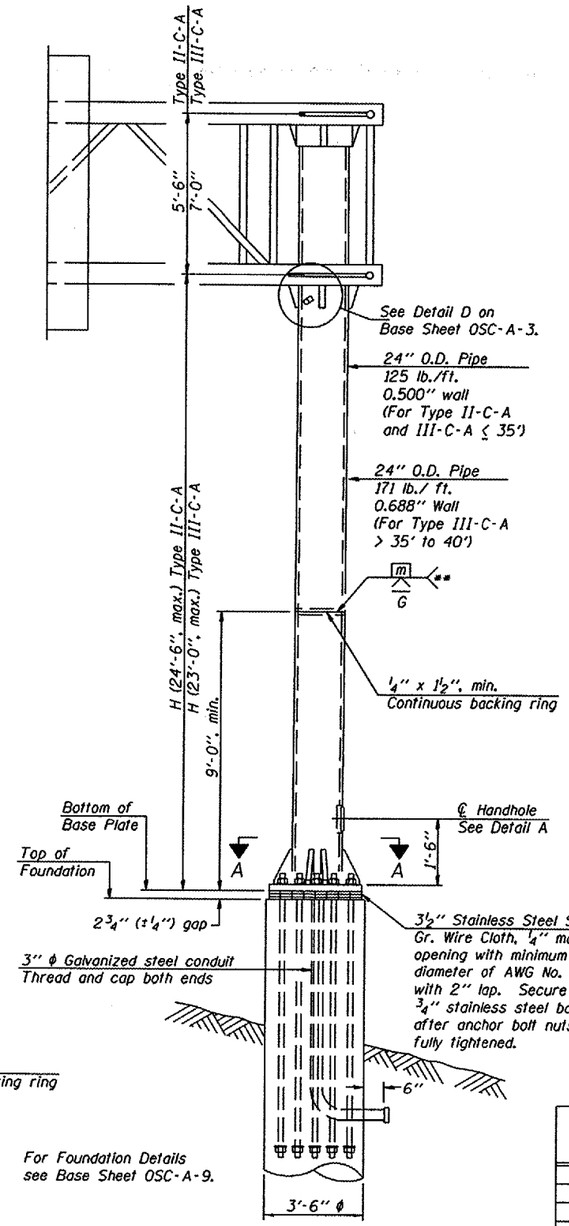
SECTION A-A



SECTION B-B

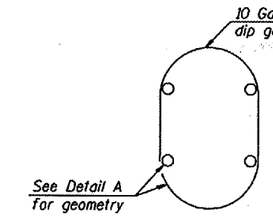


DETAIL B
(Typical rib)

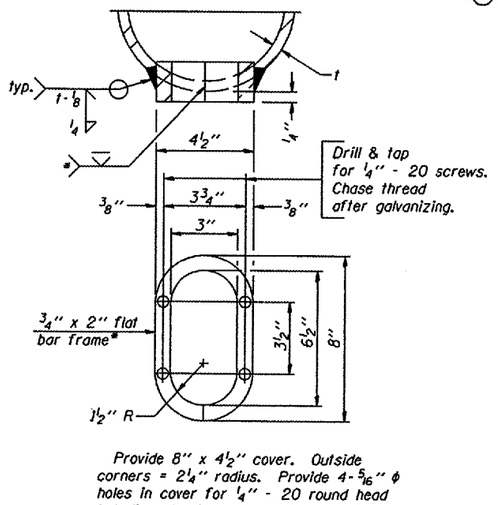


FRONT ELEVATION

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



HANDHOLE COVER

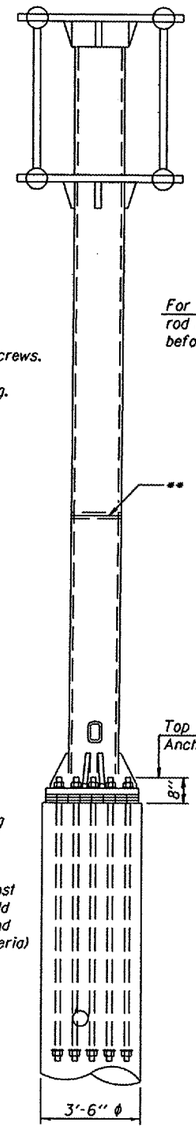


Provide 8" x 4 1/2" cover. Outside corners = 2 1/4" radius. Provide 4- 5/16" ϕ holes in cover for 1/4" - 20 round head hot dip galvanized or stainless steel machine screws. (See cover details.)

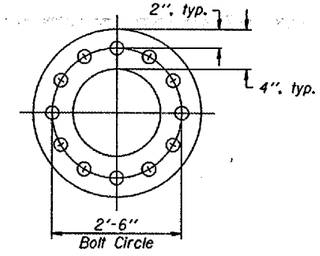
DETAIL A

* 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 μin or less.

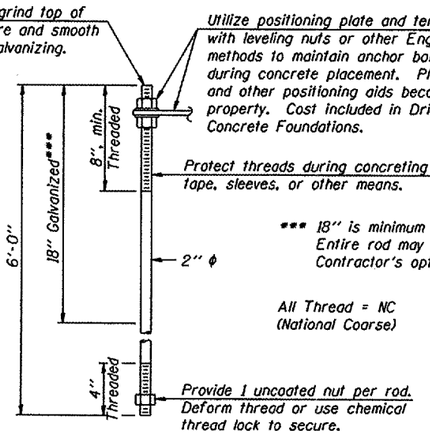
** Butt welded joint in post is only allowed for post heights (H) over 20 ft. in length. If used, weld procedure must be preapproved by Engineer and joint shall receive 100% RT or UT (tension criteria) at Contractor's expense.



SIDE ELEVATION



SUGGESTED POSITIONING PLATE



ANCHOR ROD DETAIL

Anchor rods shall conform to AASHTO M314 Grade 105 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
3C0531055R192.8	719 + 82	18' - 0"
3C0531055L194.4	804 + 17	18' - 1 1/4"

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

NUMBER	REVISION	DATE

DESIGNED	-
CHECKED	-
DRAWN	-
CHECKED	-

- 20

EXAMINED

ENGINEER OF BRIDGE DESIGN

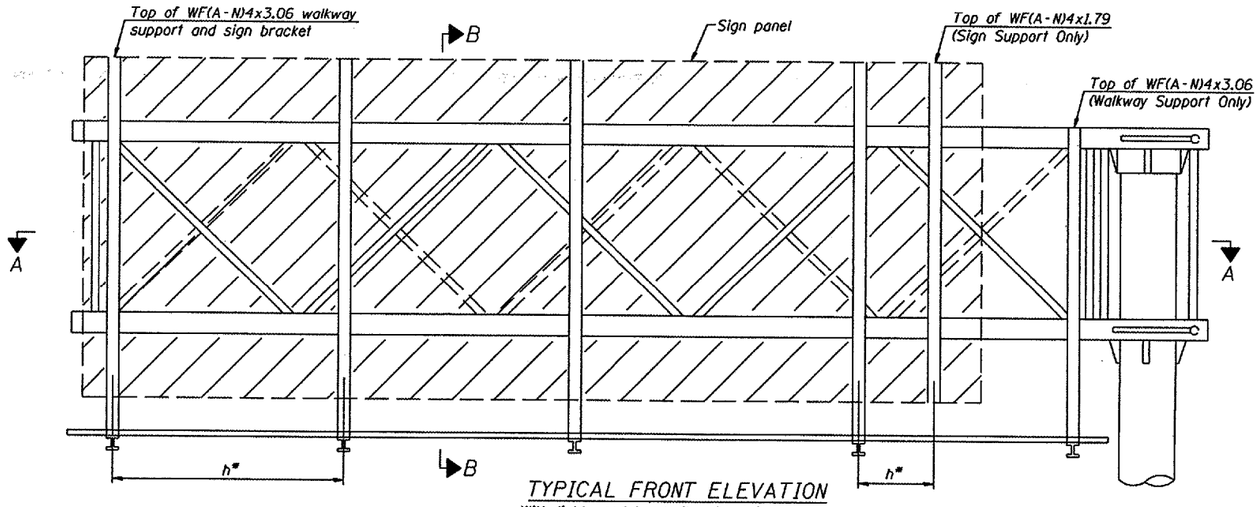
PASSED

ENGINEER OF BRIDGES AND STRUCTURES

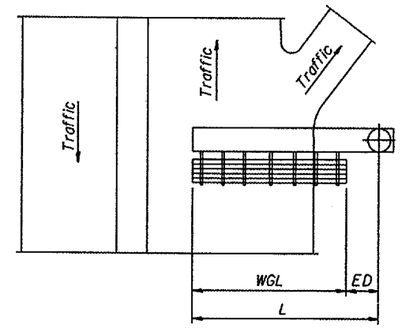
OSC-A-5 6/01/2007

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

District 3
Overhead Sign Structure
Repair & Replacement

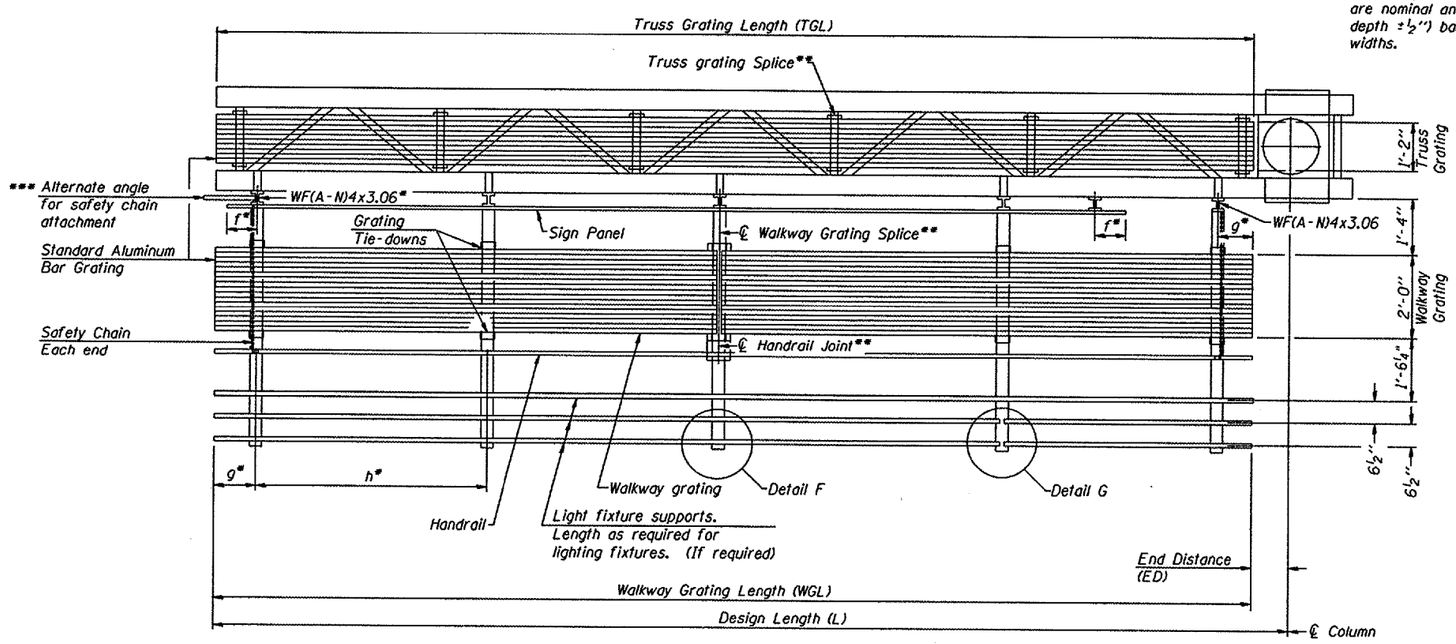


TYPICAL FRONT ELEVATION
With lights and handrail omitted for clarity.



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.



SECTION A-A

Structure Number	Station	WGL	ED	TGL
3C0531055R192.8	719 + 82	✳		28' - 6"
3C0531055L194.4	804 + 17	✳		28' - 6"

✳ Reuse existing walkway and walkway support brackets.

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. See alternate safety chain attachment on base sheet OSC-A-8

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 joint, 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.

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

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

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
PASSED
ENGINEER OF BRIDGE DESIGN
ENGINEER OF BRIDGES AND STRUCTURES

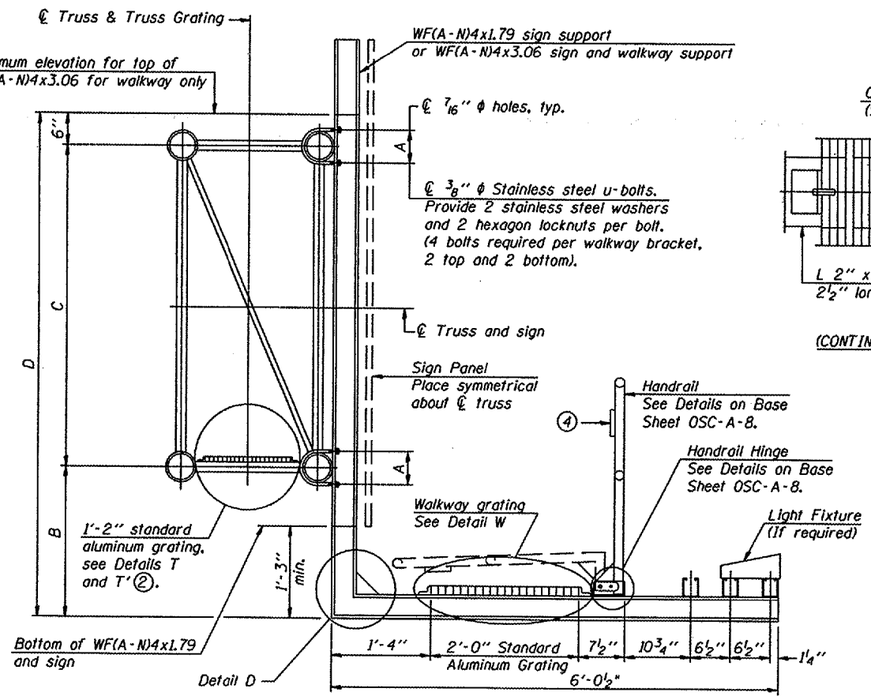
OSC-A-6 6/01/2007

CANTILEVER SIGN STRUCTURES
ALUMINUM WALKWAY DETAILS
ALUMINUM TRUSS & STEEL POST

District 3
Overhead Sign Structure
Repair & Replacement

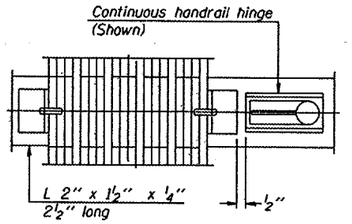
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

Various Routes
OVD SIN STR REP & REPL 2008-9
Various Counties
Sheet 56 of 105
Contract Number 44973

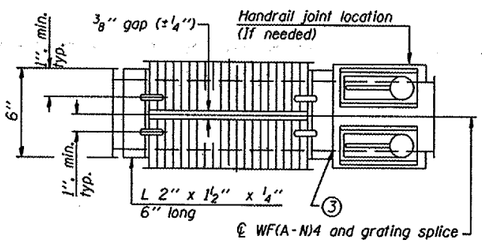


SECTION B-B

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



(CONTINUOUS WALKWAY GRATING)



(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.

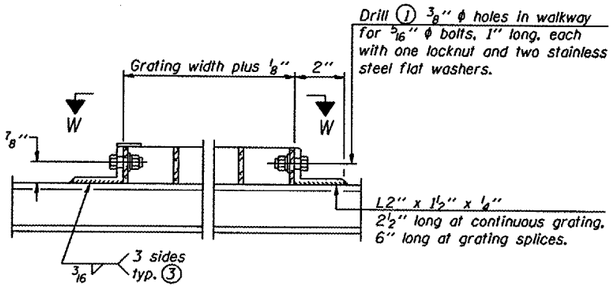
Cross bars (CB) shall be 3/16" x 1½" on 4" centers and conform to ASTM B221 Alloy 6063-T5 or 6061-T6.

OR

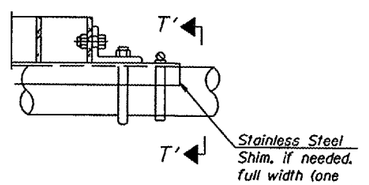
Aluminum Grating with modified "I" sections for main bearing bars shall meet the following requirements:

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.

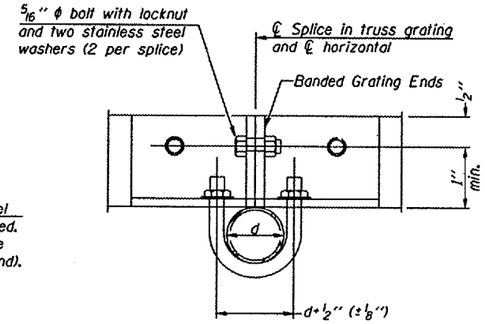
Cross bars shall conform to ASTM B221 Alloy 6063-T5 or T-42 and spaced on 4" centers.



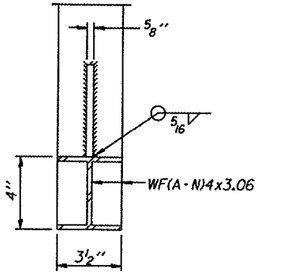
DETAIL W
(Walkway grating)



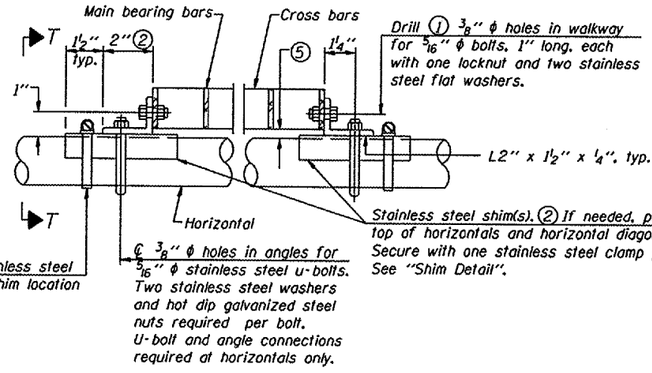
DETAIL T'
(Truss grating splice)
Details not shown same as Detail T.
Alternate materials may be used subject to the Engineer's review and approval.



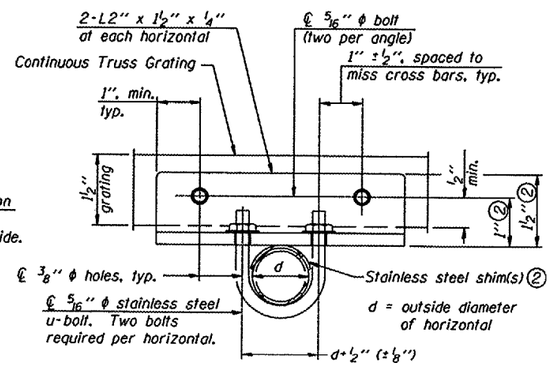
SECTION T'-T'



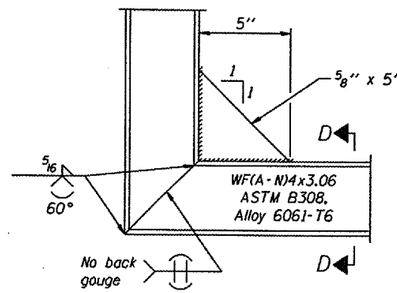
SECTION D-D



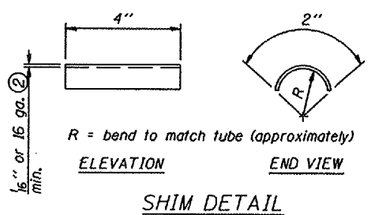
DETAIL T
(Continuous Truss grating)



SECTION T-T



DETAIL D



SHIM DETAIL

NUMBER	REVISION	DATE

DESIGNED -
CHECKED -
DRAWN -
CHECKED -

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

OSC-A-7 6/01/2007

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 OSC-A-8.)
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.

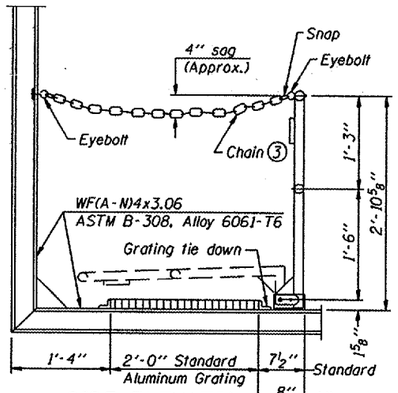
Reuse existing walkway and walkway support brackets.

Structure Number	Station	A	B	C	D

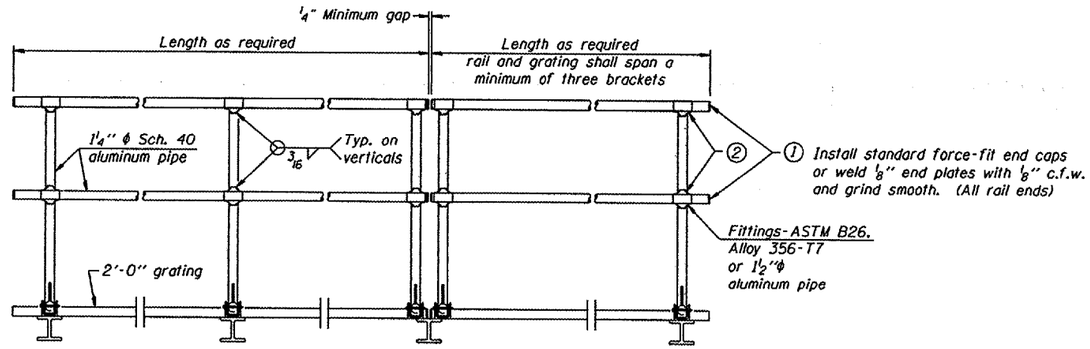
CANTILEVER SIGN STRUCTURES
WALKWAY DETAILS
ALUMINUM TRUSS & STEEL POST

District 3
Overhead Sign Structure
Repair & Replacement

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



SIDE ELEVATION
(Showing Safety Chain W/O Sign)



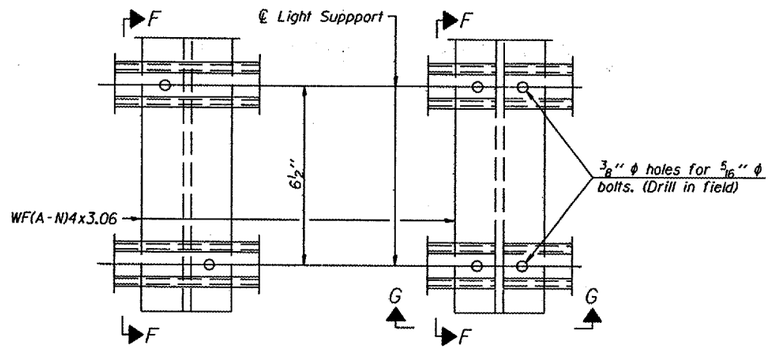
FRONT ELEVATION

HANDRAIL DETAILS

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

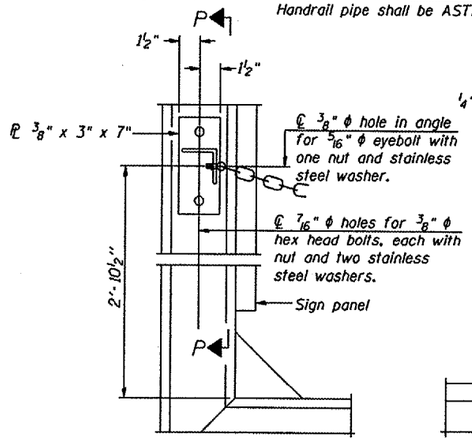
(1) Install standard force-fit end caps or weld ⅛" end plates with ⅛" c.f.w. and grind smooth. (All rail ends)

(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.)

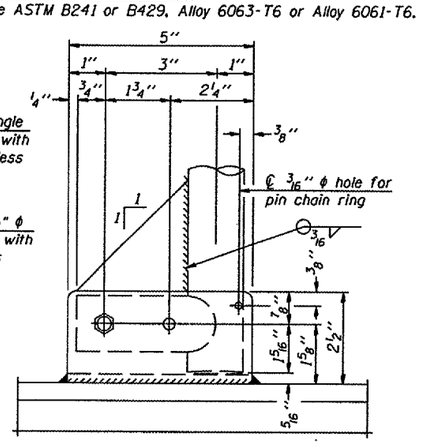


DETAIL F

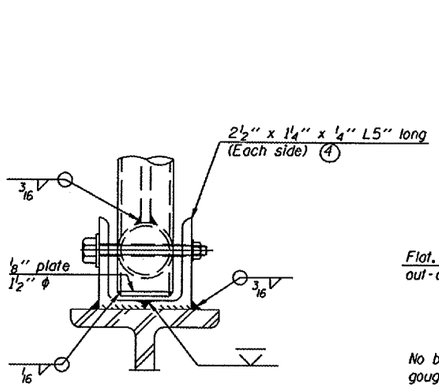
DETAIL G



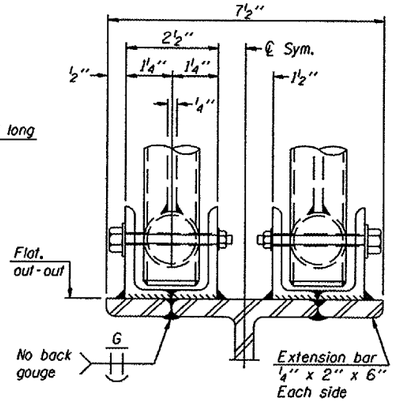
ALTERNATE SAFETY CHAIN ATTACHMENT
(With Sign Present)
Items not shown same as "Side Elevation" of "Handrail Details"



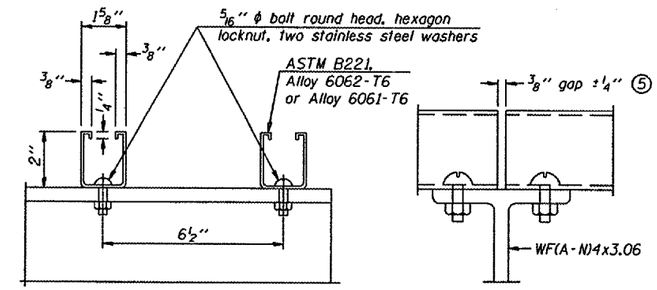
SIDE ELEVATION



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



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

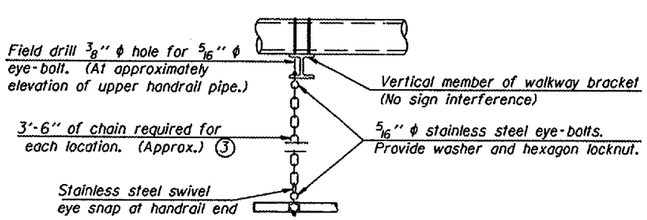


SECTION F-F

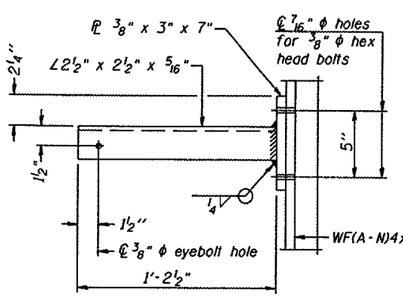
SECTION G-G

LIGHTING FIXTURE MOUNTS (IF REQUIRED)

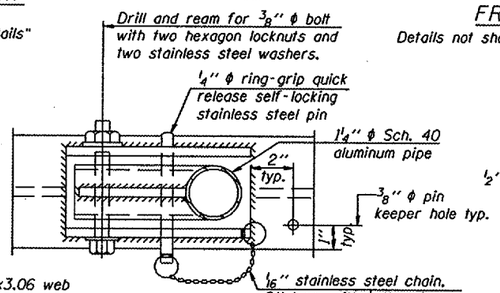
(5) Field cut ends of light support channels shall be free of burrs or hazardous projections and coated with zinc-rich primer or equivalent.



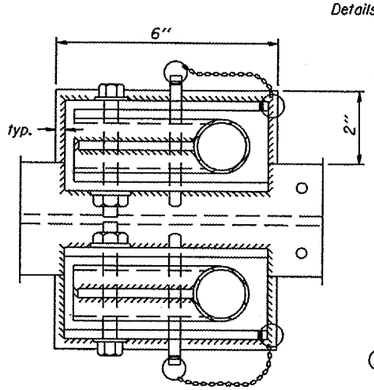
SAFETY CHAIN
One required for each end of each walkway.



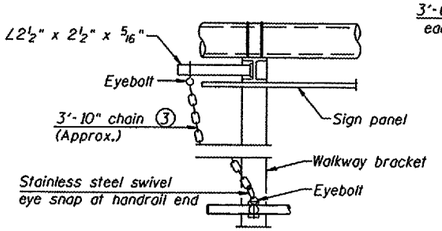
SECTION P-P



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" Type 304L stainless steel chain, approximately 12 links per foot.

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

This Sheet For Information Only

NUMBER	REVISION	DATE

DESIGNED -
CHECKED -
DRAWN -
CHECKED -

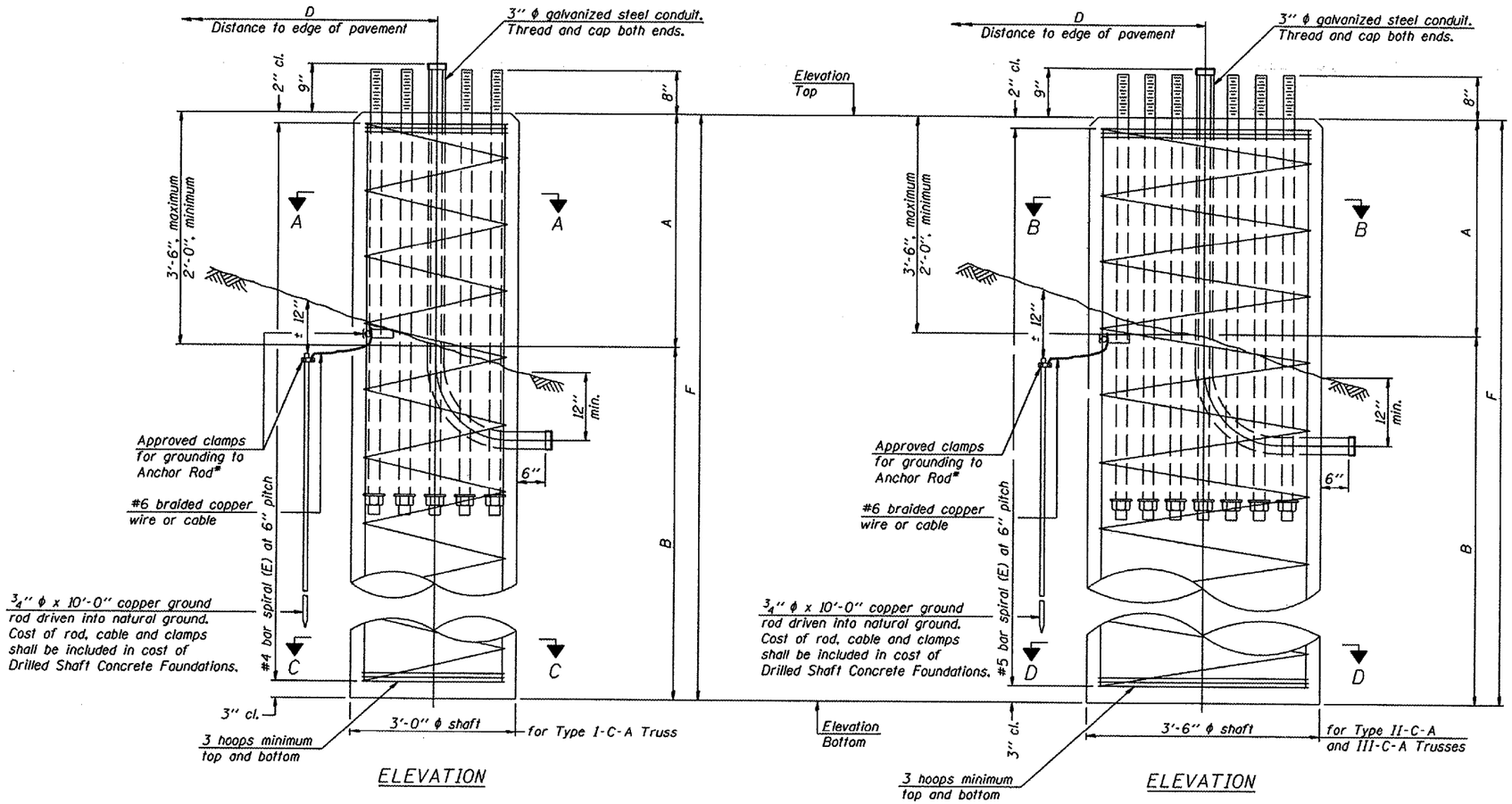
- 20
EXAMINED
PASSED
ENGINEER OF BRIDGE DESIGN
ENGINEER OF BRIDGES AND STRUCTURES

OSC-A-8 6/01/2007

CANTILEVER SIGN STRUCTURES
HANDRAIL DETAILS
ALUMINUM TRUSS & STEEL POST

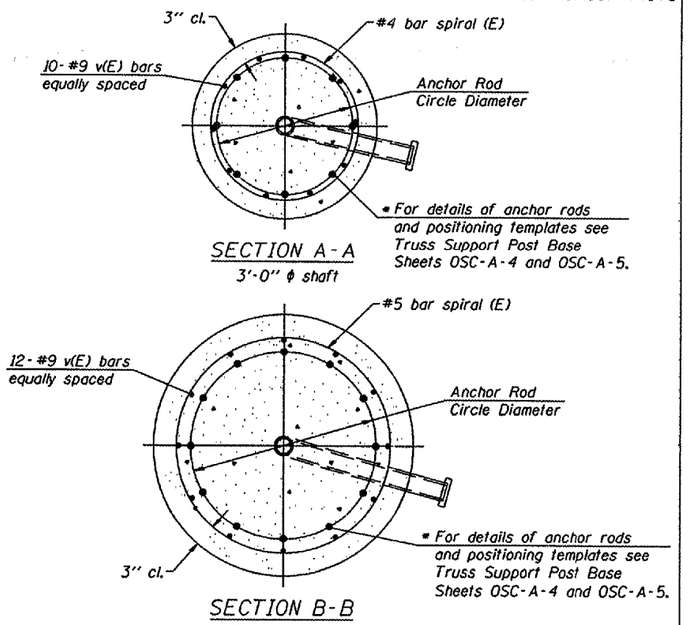
District 3
Overhead Sign Structure
Repair & Replacement

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



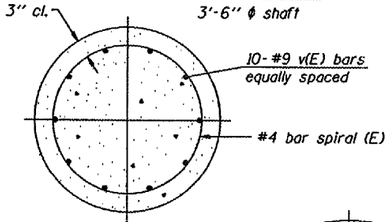
ELEVATION

ELEVATION

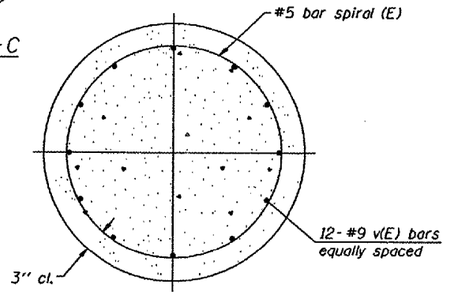


SECTION A-A
3'-0" ϕ shaft

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
3C0531055R192.8	719 + 82	II-C-A	3'-6"	N/A	N/A		3' - 0"	17'-0"	20'-0"	7.10
3C0531055L194.4	804 + 17	II-C-A	3'-6"	N/A	N/A		3' - 0"	17'-0"	20'-0"	7.10

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

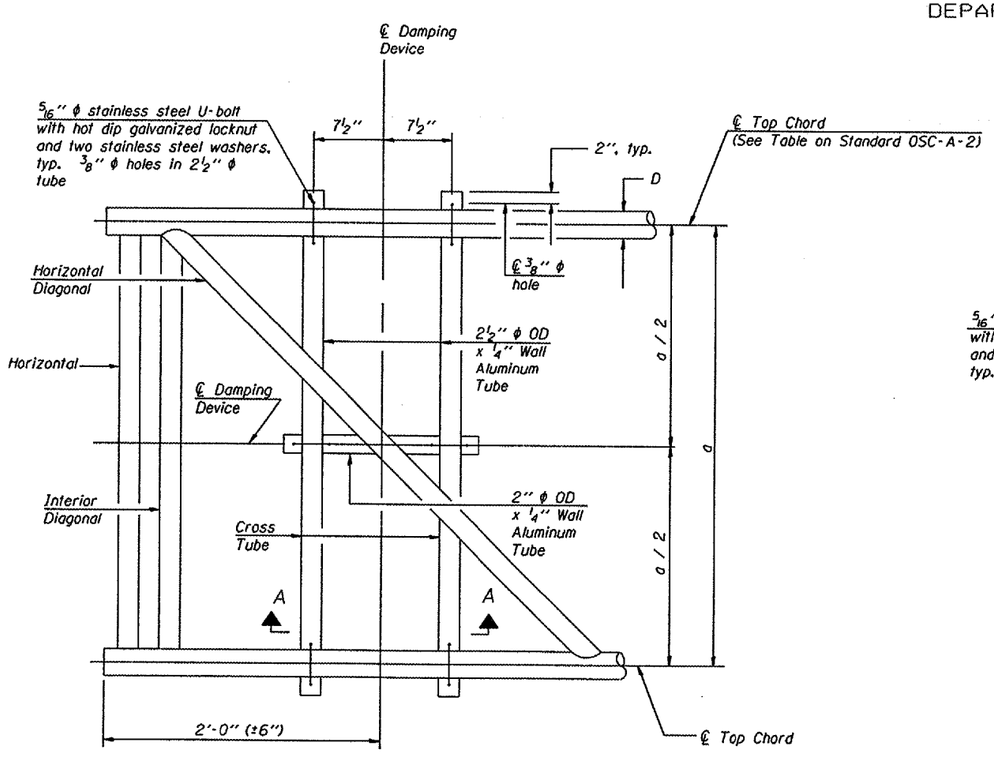
NUMBER	REVISION	DATE

OSC-A-9 6/01/2007

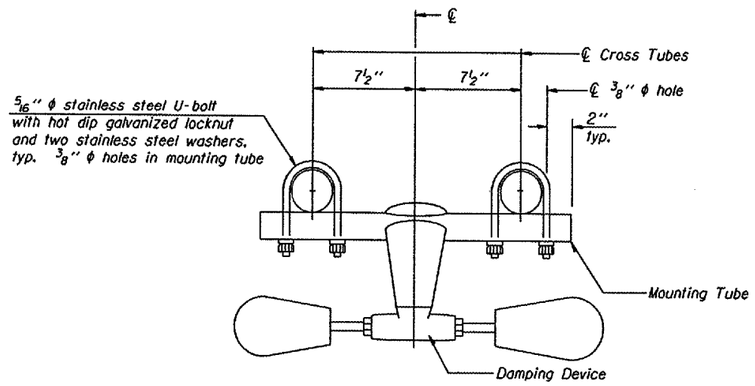
CANTILEVER SIGN STRUCTURES
DRILLED SHAFT
ALUMINUM TRUSS & STEEL POST

District 3
Overhead Sign Structure
Repair & Replacement

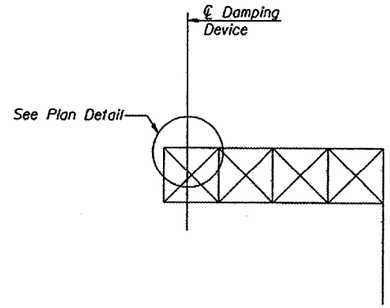
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



PLAN DETAIL



TRUSS DAMPING DEVICE CONNECTION DETAIL

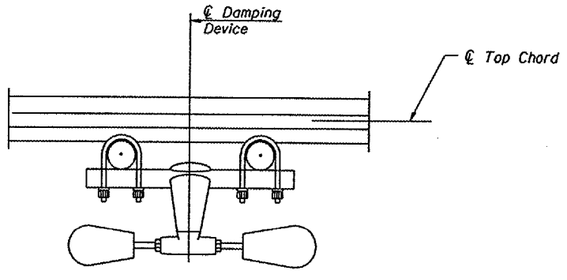


ELEVATION
Aluminum Cantilever Sign Structure

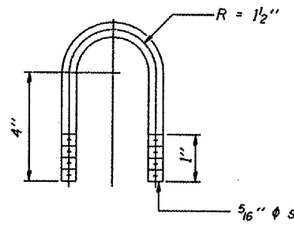
GENERAL NOTES

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

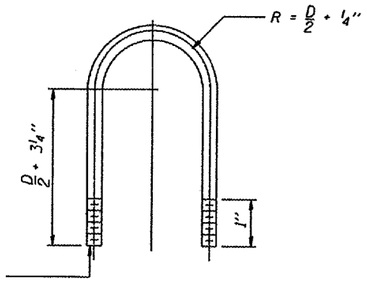
Materials: Aluminum tubes shall be ASTM B221 alloy 6061 temper T6



SECTION A-A



DAMPING DEVICE MOUNTING TUBE U-BOLT DETAIL
(Typical)



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

DESIGNED -	
CHECKED -	
DRAWN -	
CHECKED -	

- 20

EXAMINED

ENGINEER OF BRIDGE DESIGN

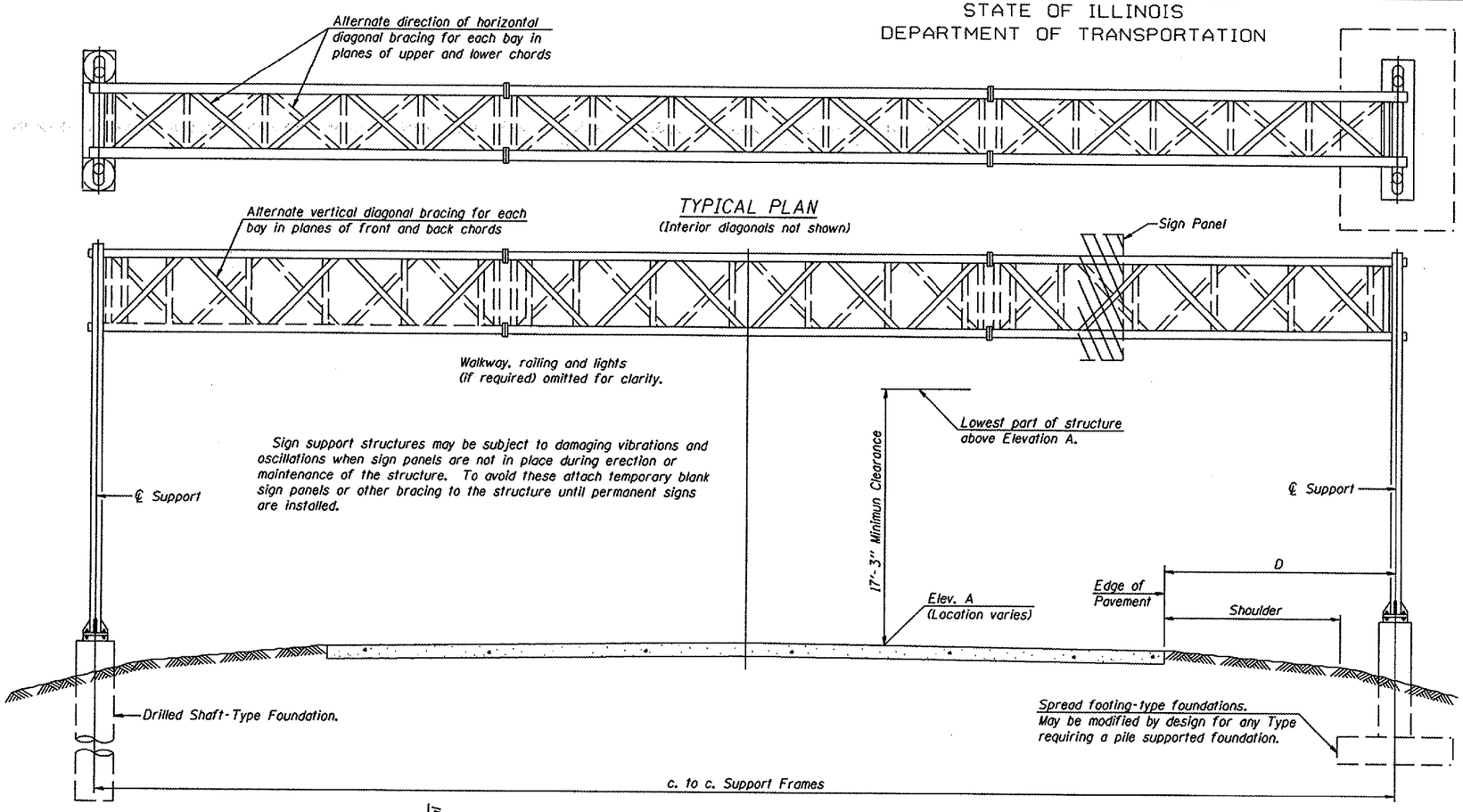
PASSED

ENGINEER OF BRIDGES AND STRUCTURES

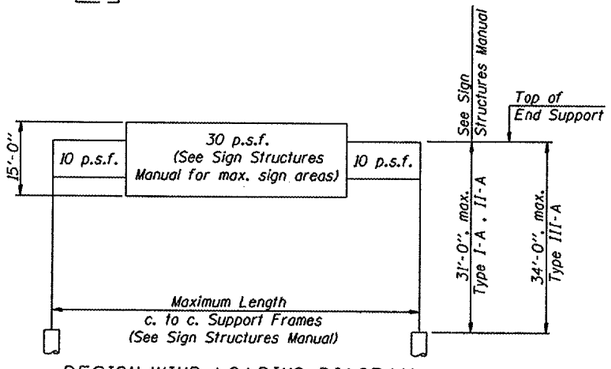
OSC-A-D 6/01/2007

CANTILEVER SIGN STRUCTURE
DAMPING DEVICE

District 3
Overhead Sign Structure
Repair & Replacement



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
3S050I080L078.9	784 + 06	II-A	96' - 0"	100.00	32' - 0"	14' - 0"	498.00

**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

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

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

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

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

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

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

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

ANCHOR RODS: Shall conform to 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.

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

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

NUMBER	REVISION	DATE

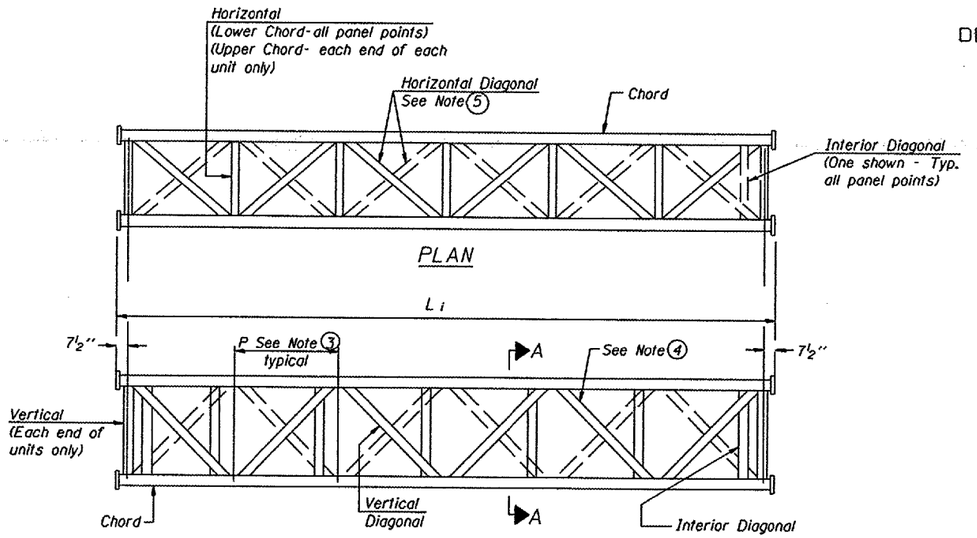
DESIGNED -
CHECKED -
DRAWN -
CHECKED -

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

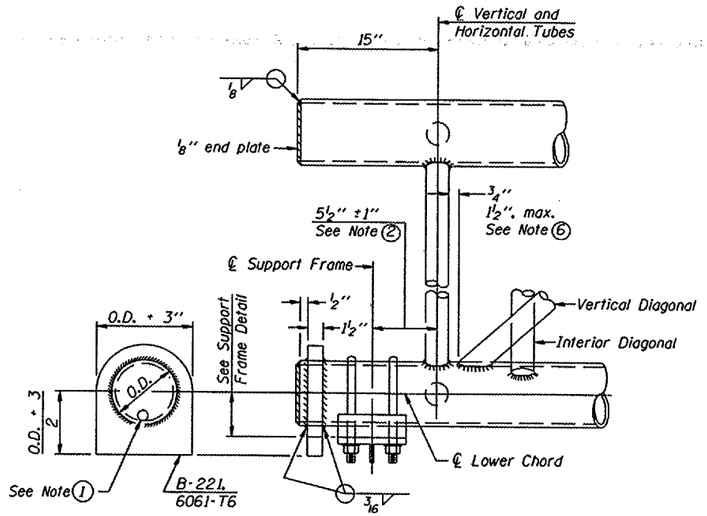
OS-A-1 6/01/2007

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

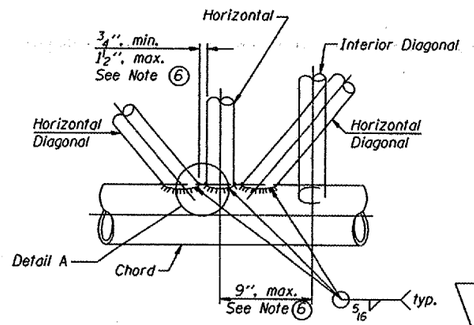
District 3
Overhead Sign Structure
Repair & Replacement

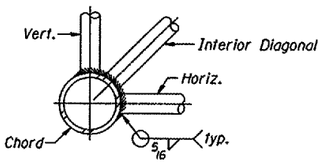


ELEVATION
TYPICAL INTERIOR UNIT
Even number of panels/interior unit required.

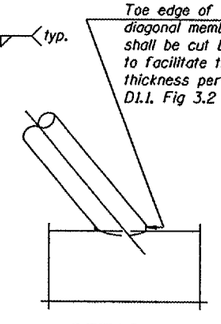


SUPPORT END DETAIL FOR EXTERIOR UNIT

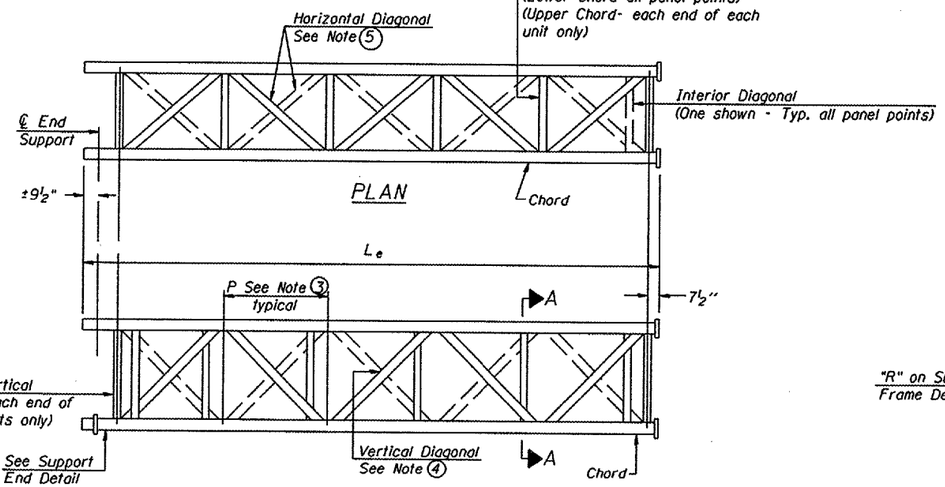




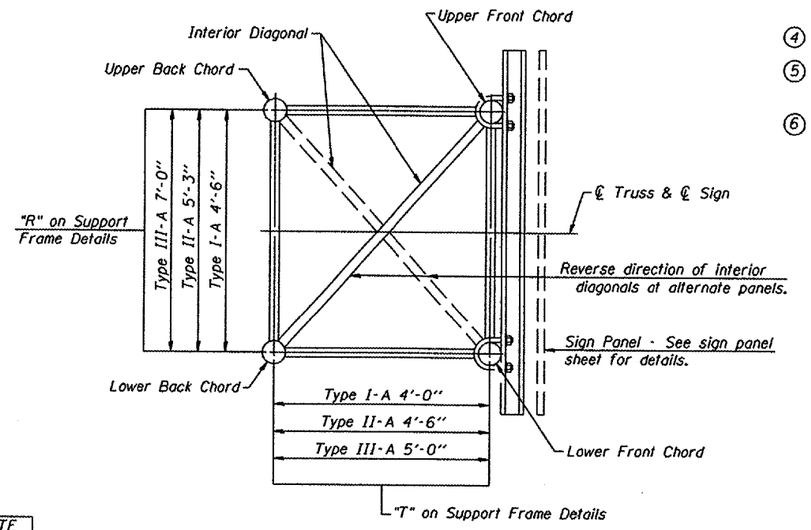
TYPICAL JOINT DETAILS



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

PASSED

ENGINEER OF BRIDGE DESIGN

ENGINEER OF BRIDGES AND STRUCTURES

OS-A-2 6/01/2007

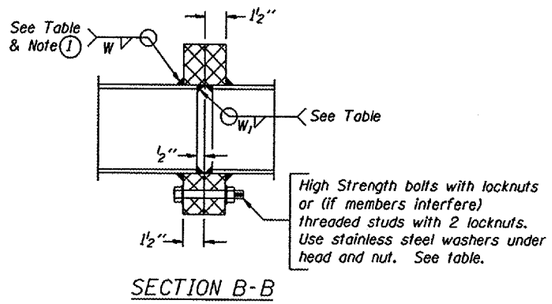
NUMBER	REVISION	DATE

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

District 3
Overhead Sign Structure
Repair & Replacement

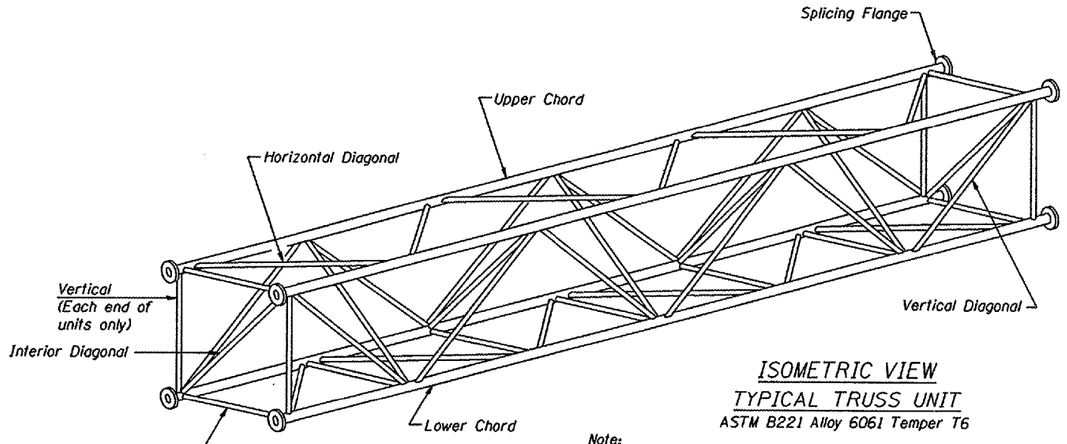
TRUSS UNIT TABLE

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		
3S050I080L078.9	784 + 06	II-A	6	32'-9"	5'-1 3/4"	1	6	32'-1 1/2"	5'-1 3/4"	6"	5/16"	3"	5/16"	2 3/4"	6	7/8"	3/8"	1/4"	10 1/4"	13 3/4"



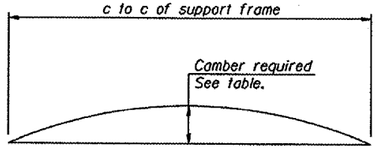
SECTION B-B

(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.



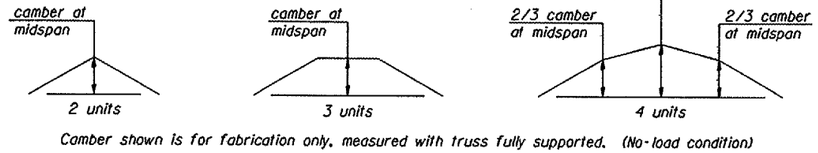
ISOMETRIC VIEW
TYPICAL TRUSS UNIT
ASTM B221 Alloy 6061 Temper T6

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.

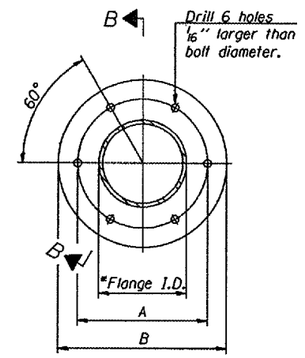


CAMBER DIAGRAM
Camber curve shown is theoretical. Actual camber attained by slope changes at splices between units.

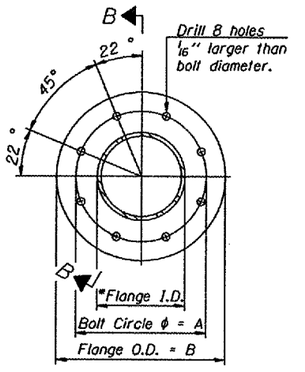
CAMBER ATTAINMENT EXAMPLES:



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 -	
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DRAWN -	
CHECKED -	

\- 20

EXAMINED

ENGINEER OF BRIDGE DESIGN

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ENGINEER OF BRIDGES AND STRUCTURES

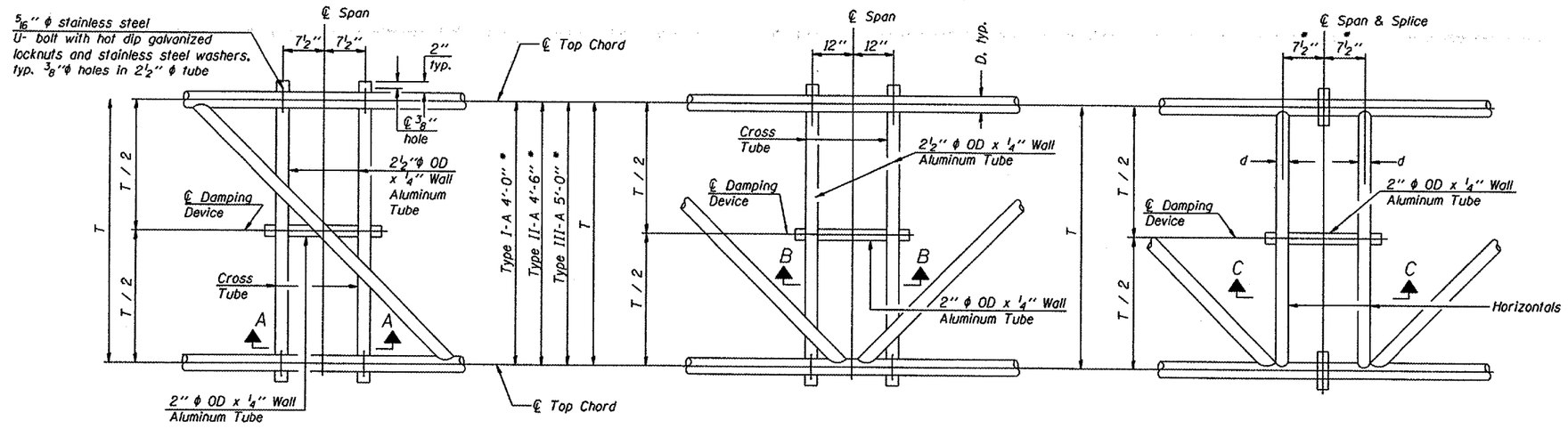
OS4-A-2 6/01/2007

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

District 3
Overhead Sign Structure
Repair & Replacement

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

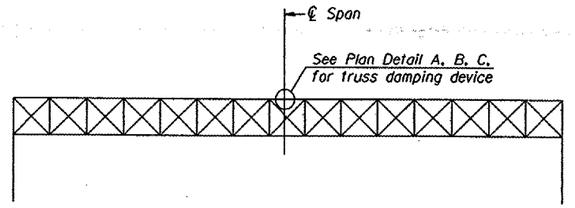
* Center of horizontal to center of splice dimension may vary. Verify before drilling holes in mounting tube.



PLAN DETAIL "A"
℄ Span between Panel Points

PLAN DETAIL "B"
℄ Span at Panel Point

PLAN DETAIL "C"
℄ Span at ℄ Chord Splice

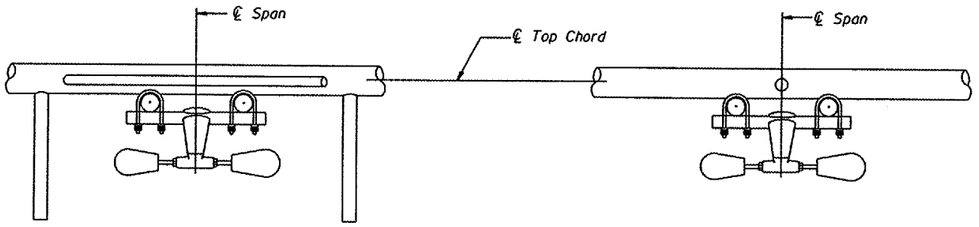


ELEVATION
Aluminum Overhead Sign Truss

NOTES

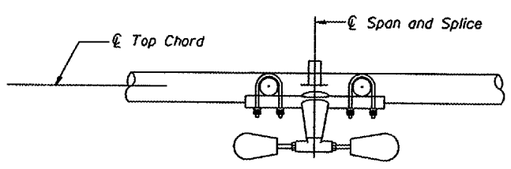
Damper: One damper per truss. (31 lbs. minimum Stockbridge-Type Aluminum - 29" minimum between ends of weights) Cost included in Overhead Sign Structure...

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

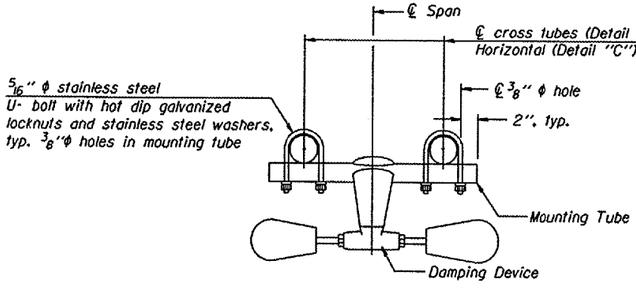


SECTION A-A

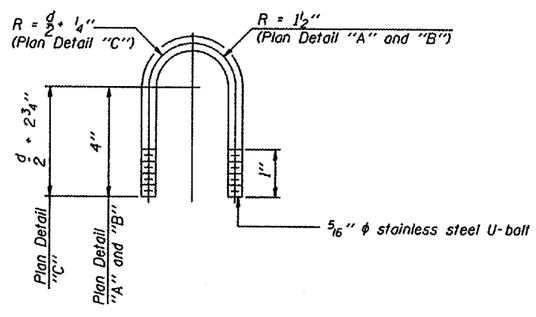
SECTION B-B



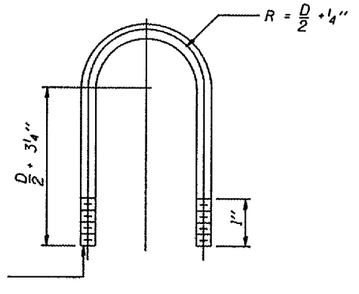
SECTION C-C



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 -	

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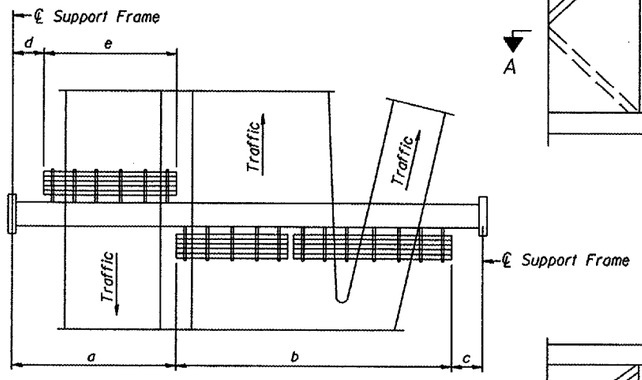
ENGINEER OF BRIDGES AND STRUCTURES

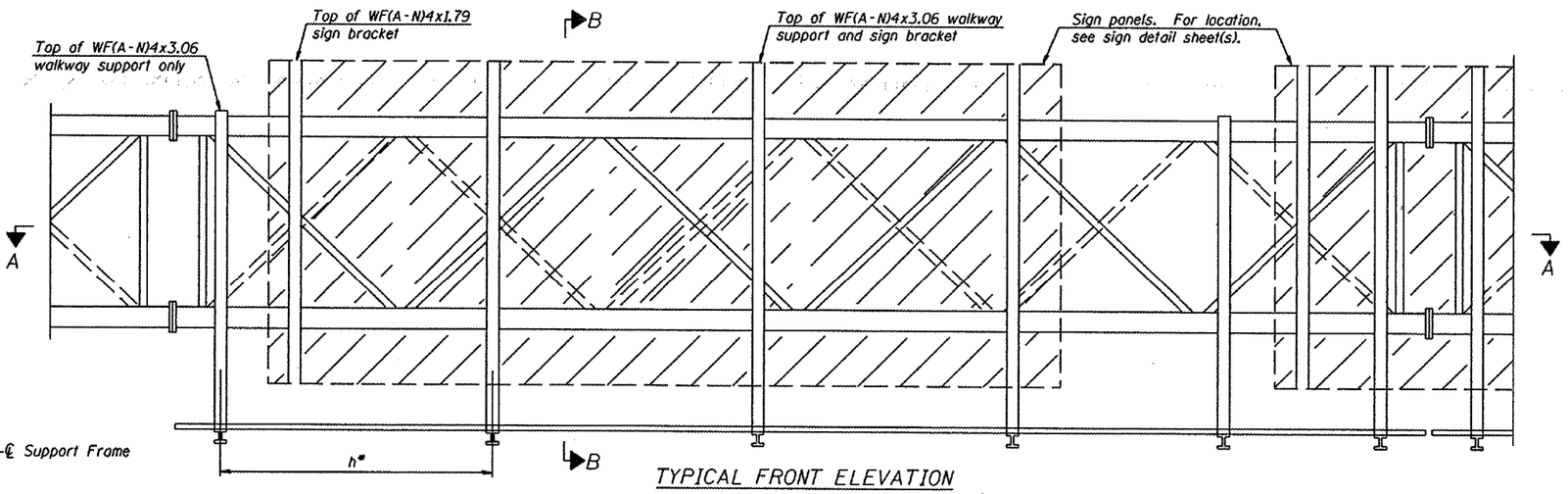
OS-A-D 6/01/2007

OVERHEAD SIGN STRUCTURE
DAMPING DEVICE

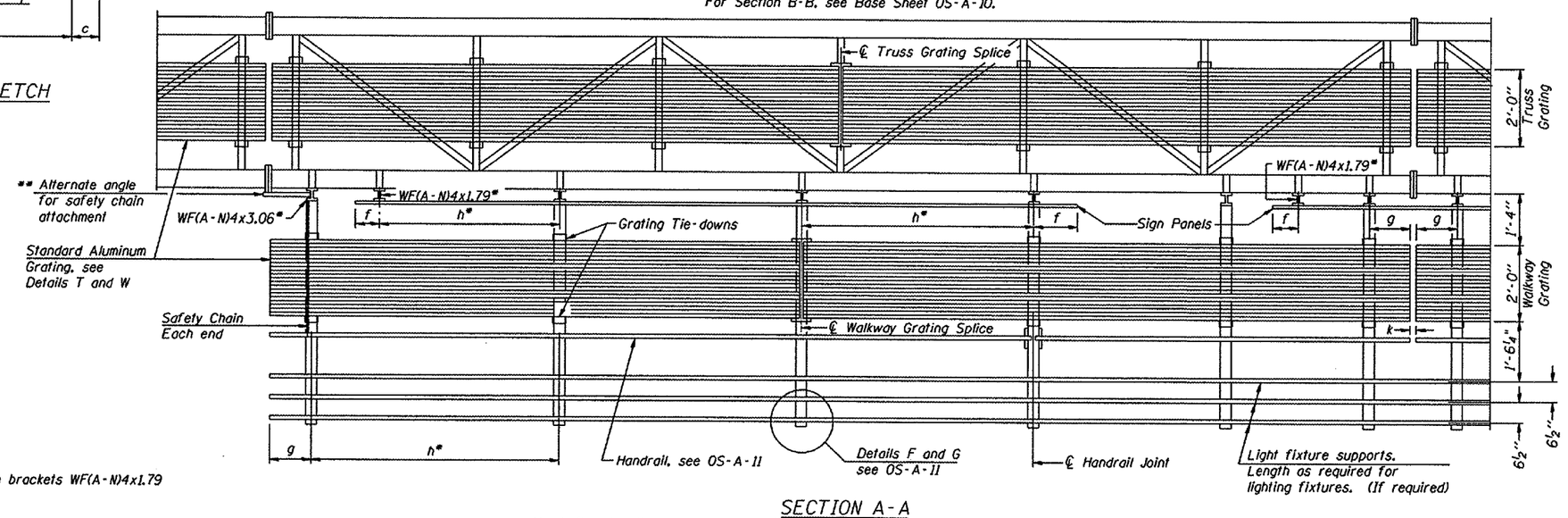
District 3
Overhead Sign Structure
Repair & Replacement



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

Structure Number	Station	a	b	c	d	e	Walkway Grating and Handrail Lengths

Reuse Existing Walkway and Walkway Support Brackets.

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".

NUMBER	REVISION	DATE

DESIGNED -
CHECKED -
DRAWN -
CHECKED -

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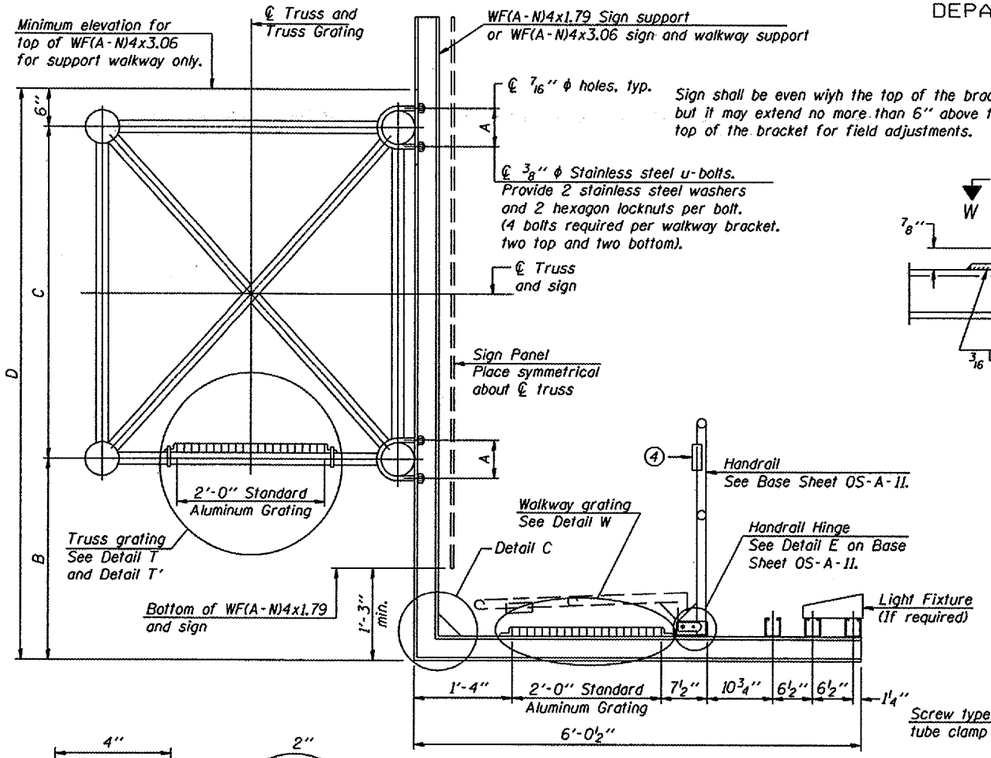
ENGINEER OF BRIDGES AND STRUCTURES

OS-A-9 6/01/2007

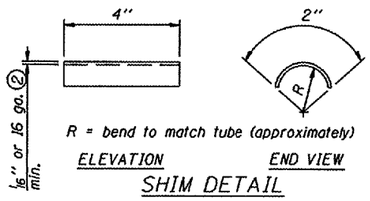
OVERHEAD SIGN STRUCTURES
ALUMINUM WALKWAY DETAILS

District 3
Overhead Sign Structure
Repair & Replacement

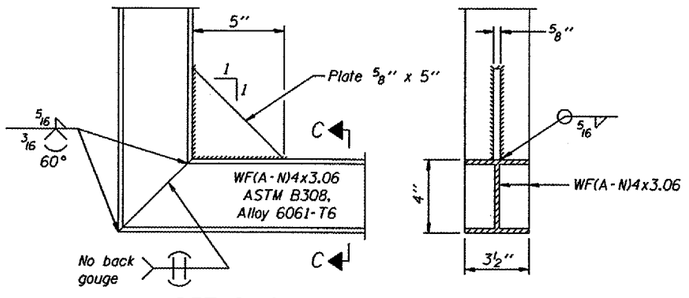
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



SECTION B-B

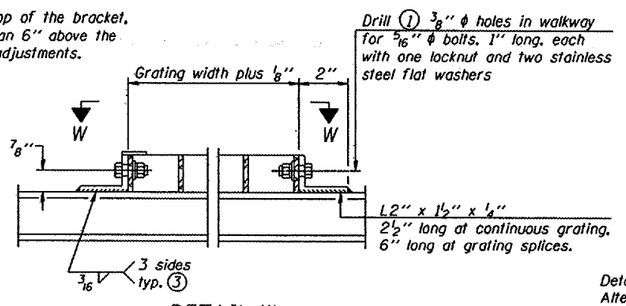


SHIM DETAIL

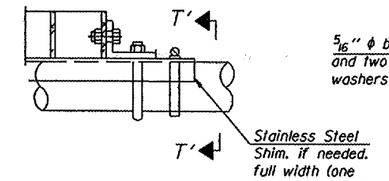


DETAIL C

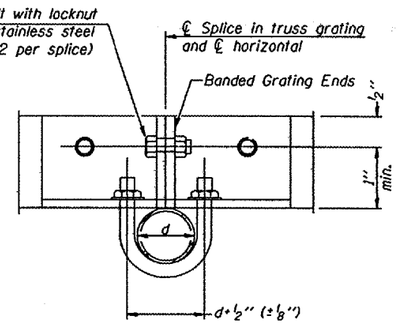
SECTION C-C



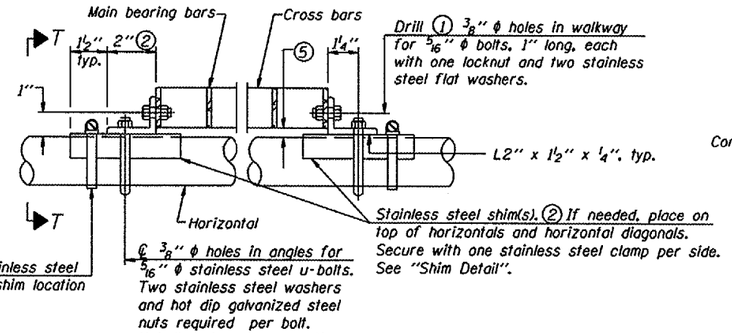
DETAIL W
(Walkway grating)



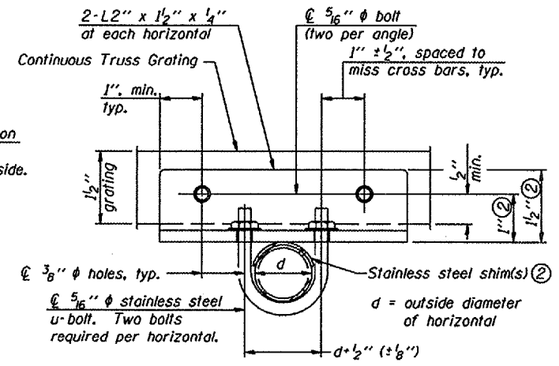
DETAIL T'
(Truss grating splice)
Details not shown same as Detail T. Alternate materials may be used subject to the Engineer's review and approval.



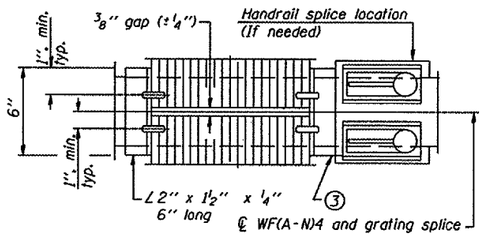
SECTION T'-T'



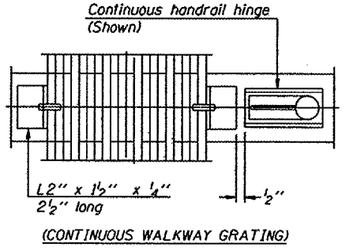
DETAIL T
(Continuous Truss grating)



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.

Reuse Existing Walkway Support Brackets.

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
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ENGINEER OF BRIDGES AND STRUCTURES

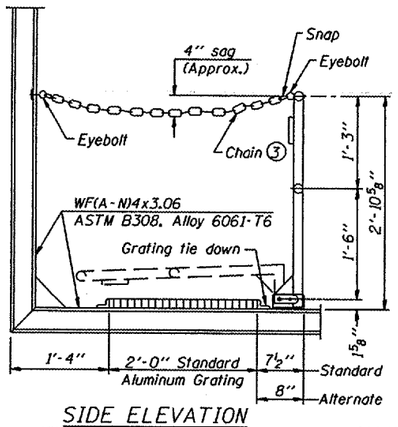
NUMBER	REVISION	DATE

OS-A-10 6/01/2007

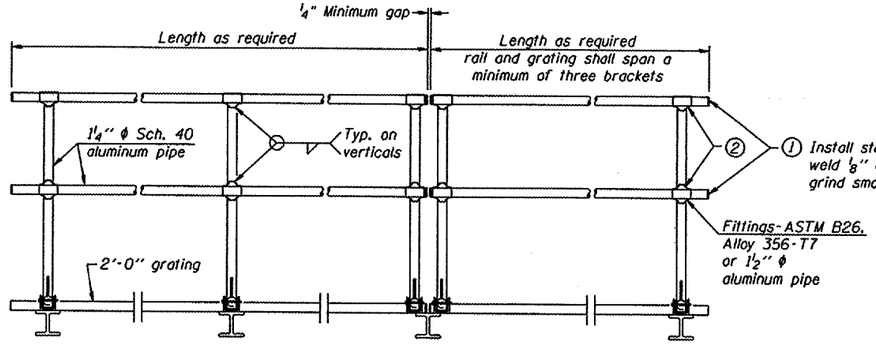
OVERHEAD SIGN STRUCTURES
ALUMINUM WALKWAY DETAILS

District 3
Overhead Sign Structure
Repair & Replacement

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



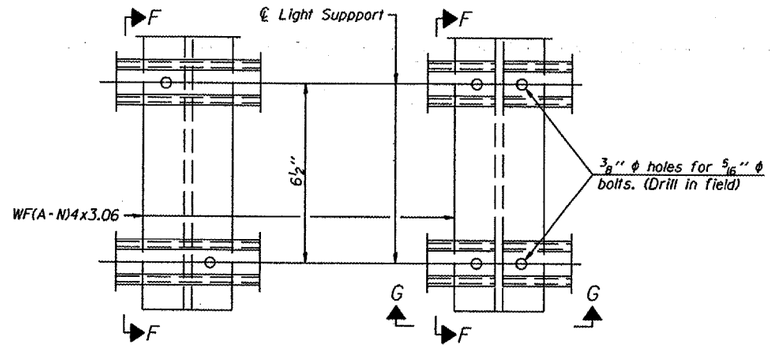
SIDE ELEVATION
(Showing safety chain w/o sign)



FRONT ELEVATION

① Install standard force-fit end caps or weld 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.)

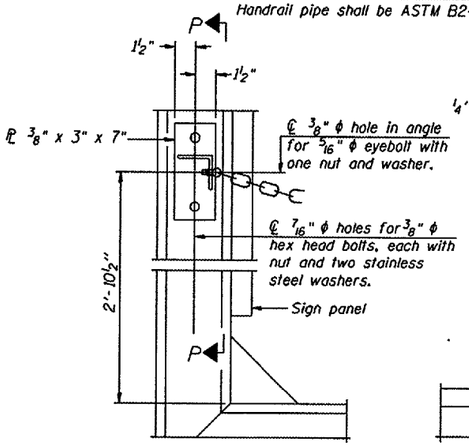


DETAIL F

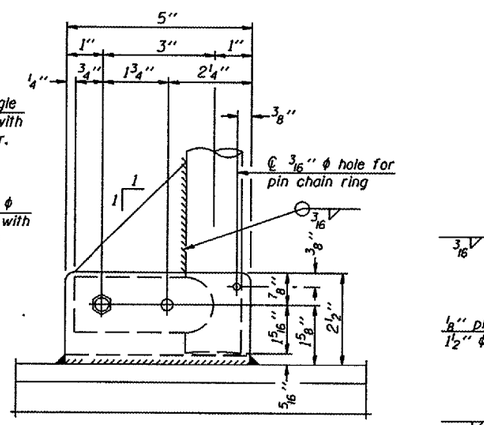
DETAIL G

HANDRAIL DETAILS

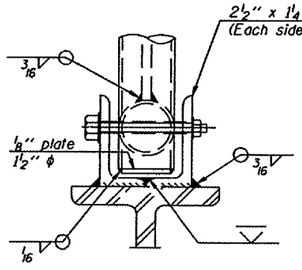
Handrail pipe shall be ASTM B241 or B429, Alloy 6063-T6 or Alloy 6061-T6.



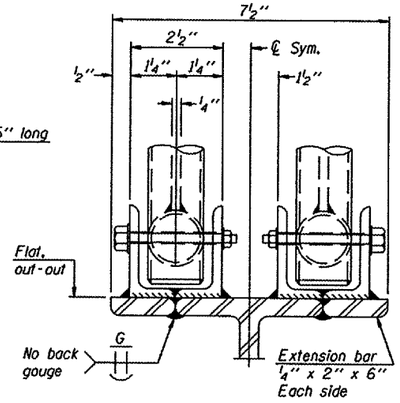
ALTERNATE SAFETY CHAIN ATTACHMENT
(With Sign Present)
Items not shown same as "Side Elevation" of "Handrail Details"



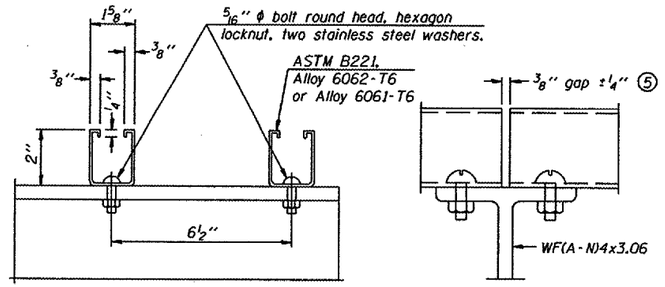
SIDE ELEVATION



FRONT ELEVATION
See "Elevation" at right for dimensions.



ELEVATION AT HANDRAIL JOINT (4)

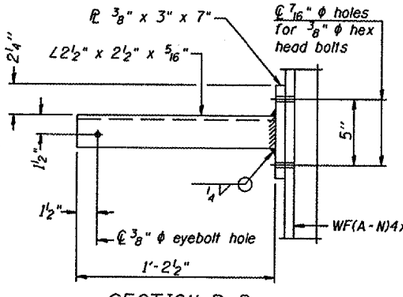


SECTION F-F

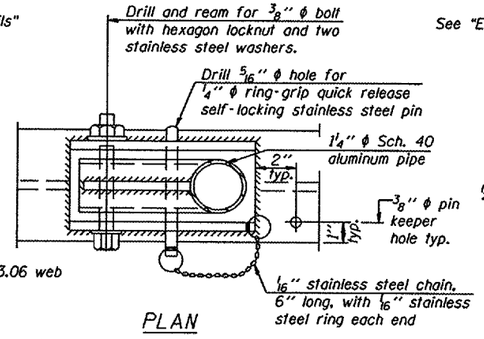
SECTION G-G

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.

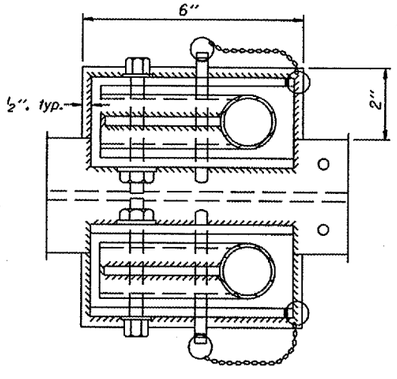


SECTION P-P

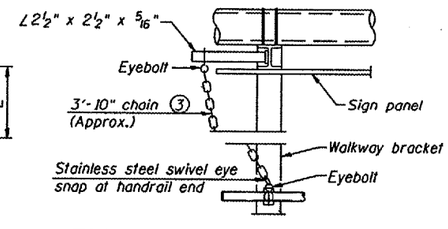


PLAN

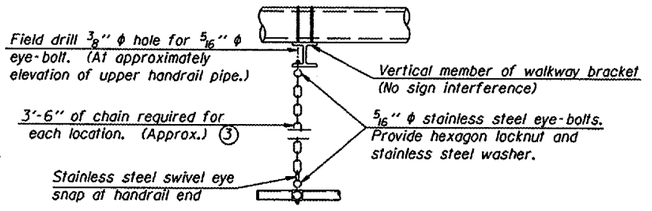
DETAIL E HANDRAIL HINGE



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" Type 304L stainless steel chain, approximately 12 links per foot.

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

This Sheet For Information Only

DESIGNED	-
CHECKED	-
DRAWN	-
CHECKED	-

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

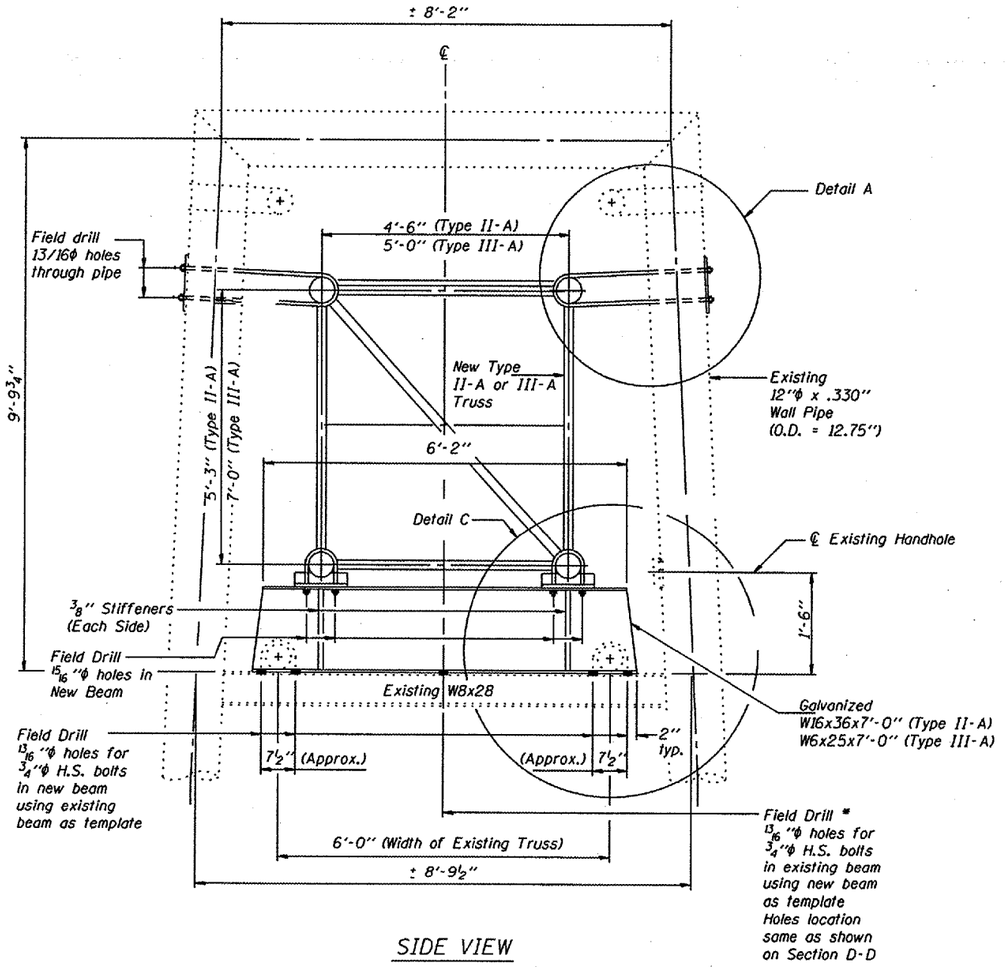
NUMBER	REVISION	DATE

OS-A-11 6/01/2007

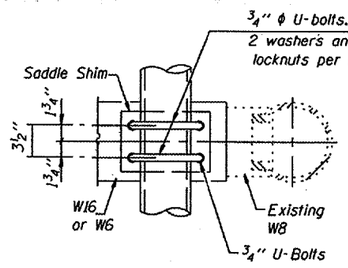
OVERHEAD SIGN STRUCTURES
ALUMINUM HANDRAIL DETAILS

District 3
Overhead Sign Structure
Repair & Replacement

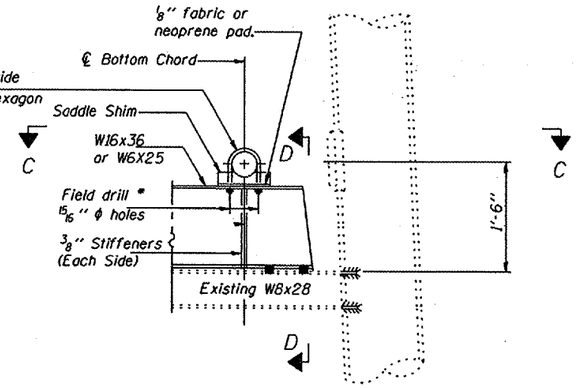
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



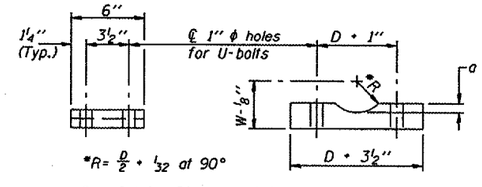
SIDE VIEW



SECTION C-C



DETAIL C



*R = D/2 + 1/32 at 90°

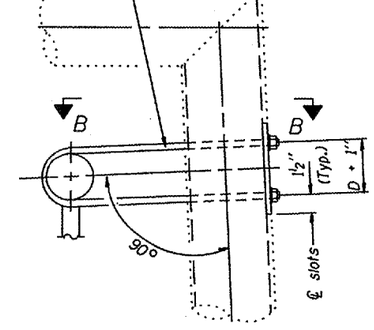
D = Outside Diameter of Chord.

SADDLE SHIM DETAIL

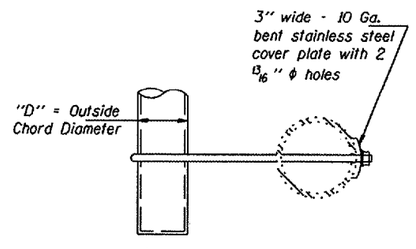
ASTM B26 Alloy 356-F
or
ASTM B209 Alloy 6061-T651
(4 required per sign truss)

Truss Chord Nominal Dia.	a	W
5½"	13/16"	4¾"
6"	⅞"	4¾"
6½"	15/16"	4¾"
7"	1"	4¾"
8½"	1¼"	5½"
9"	1⅜"	5¾"

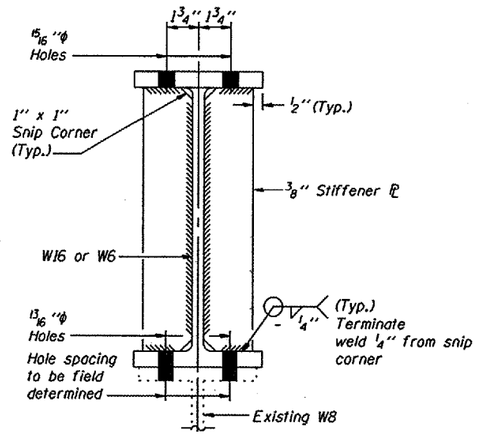
¾" ϕ stainless steel U-bolt. Provide two washers and two hexagon locknuts. Field drill 13/16" ϕ holes through pipe. (4 holes required per pipe)



DETAIL A



SECTION B-B



SECTION D- D

DESIGNED	
CHECKED	
DRAWN	
CHECKED	

20

EXAMINED

ENGINEER OF STRUCTURAL SERVICES

PASSED

ENGINEER OF BRIDGES AND STRUCTURES

OS-A-12-RETROFIT 12-06-04

OVERHEAD SIGN STRUCTURES
EXISTING SUPPORT FRAME
RETROFIT for ALUMINUM TRUSS

District 3
Overhead Sign Structure
Repair & Replacement

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District 3
Schedule of Overhead Sign Structure Repair & Replacement

Illinois Department of Transportation
Division of Highways
District #3, Ottawa

SOIL BORING LOG

Page 1 of 1

Date 8/25/06

ROUTE I-55 DESCRIPTION Limestone Rest Area Mast Arm LOGGED BY Larry Myers

SECTION Limestone Rest Area: Pontiac LOCATION SE 1/4, SEC. 6, TWP. 27N, RNG. 05E

COUNTY Livingston DRILLING METHOD Hollow Stem Auger HAMMER TYPE CME Automatic

STRUCT. NO. 3C053I055L1944
Station
BORING NO. #1: SBL
Station
Offset 25.00ft N. of exist. struct.
Ground Surface Elev. ft

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

	DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
Augered black, Silty Clay, and brown, Silty Clay Loam Till fill with large, Gravel pieces (debris)				
		4		
Hard, brown, Silty Clay Loam Till fill Black, Silty Clay topsoil approximatley 4-5'		9	4.0	13.8
		6	P	
	-5			
		3		
Very stiff, gray and brown, Silty Clay Loam fill with pockets of Loam		3	2.0	23.6
		3	P	
		2		
		2	3.0	14.5
		3	P	
Stiff, gray brown, Silty Clay Loam Till, with pockets of Silt and large rocks in Till up to cobble sized	-10			
		3		
		3	1.8	17.2
		4	B	
		5		
		5	1.8	13.8
		7	P	
	-15			
Hard, gray, Silty Clay Loam Till with Boulders @ 19.5' (End of log- initial hole)		8		
		12	4.0	11.0
		22	P	
Auger refusal due to a Cobble/Boulder @ 19.0' Moved 8' north and continued		6		
		8	4.5	11.1
		10	P	
	-20			

	DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
(Start of log: secondary hole)		12		
Hard, greenish gray, Silty Clay Loam (weathered and reworked, Shale with Limestone pieces) *(continued)*		12	4.5	10.3
		9	P	
		5		
		9	>4.5	12.7
		12	P	
	▼-25			
Gray, highly fractured, Limestone with weathered, Till matrix with free H20		5		
		22	>4.5	7.4
		28	P	
End of Boring				
	-30			
	-35			
	-40			

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)
The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)

BBS, from 137 (Rev. 8-99)

Illinois Department of Transportation
Division of Highways
District #3, Ottawa

SOIL BORING LOG

Page 1 of 1

Date 8/25/06

ROUTE I-55 DESCRIPTION Limestone Rest Area Mast Arm LOGGED BY Larry Myers

SECTION Limestone Rest Area: Pontiac LOCATION NE 1/4, SEC. 7, TWP. 27N, RNG. 05E

COUNTY Livingston DRILLING METHOD Hollow Stem Auger HAMMER TYPE CME Automatic

STRUCT. NO. 3C053I055R1928
Station
BORING NO. #2: NBL
Station
Offset 25.00ft N. of exist. struct.
Ground Surface Elev. ft

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

	DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
Augered brown, Silty Clay Loam Till fill with Gravel @ surface				
		3		
Hard, brown, Silty Clay Loam Till fill		5		
Hard, black, Silty Clay			4.0	20.3
			P	
Very stiff, gray brown, Silty Clay Loam Till with pockets of Silty Loam and Sand and Gravel	-5	8		
		3		
		4	2.1	18.9
		5	S	
		2		
		4	2.0	28.0
		6	S	
Soft, gray, Loam/Clay Loam	-10			
		2		
		2	0.5	16.1
		3	P	
	▼			
Very stiff, gray, Sandy Clay Loam Till with pockets of Sand and Gravel with free H20	▽	2		
		2	2.3	14.9
		10	P	
	-15			
Hard to very dense, gray, Limestone fragments in weathered, Shale matrix with pockets of green gray, Shale (weathered and reworked surface)		16		
		80		11.0
		27		
Very hard drilling from 15-25'		24		
		42		9.6
		100/2"		
	-20			

	DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
Hard to very dense, gray, Limestone fragments in weathered, Shale matrix with pockets of green gray, Shale (weathered and reworked surface)		100/5"		6.4
Very hard drilling from 15-25' *(continued)*				
	-25			
Hard, gray, Shale		100/5"		5.2
End of Boring				
	-30			
	-35			
	-40			

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)
The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)

BBS, from 137 (Rev. 8-99)

District 4
Schedule of Overhead Sign Structure Repair & Replacement

Location No.: 4-01	State I.D. No.: 4S048U150R011.6				
County: Knox	Route: US 150	M.P.: 11.6		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	74.00
REPAIR HANDRAIL LOCKING PIN CONNECTION				EACH	8.00
DISCONNECT / RECONNECT ELECTRIC SERVICE				EACH	1.00
RELOCATE ELECTRIC SERVICE				EACH	1.00
DRILLED SHAFT CONCRETE FOUNDATION				CU YD	12.70
REMOVE CONCRETE FOUNDATION OVERHEAD				EACH	2.00

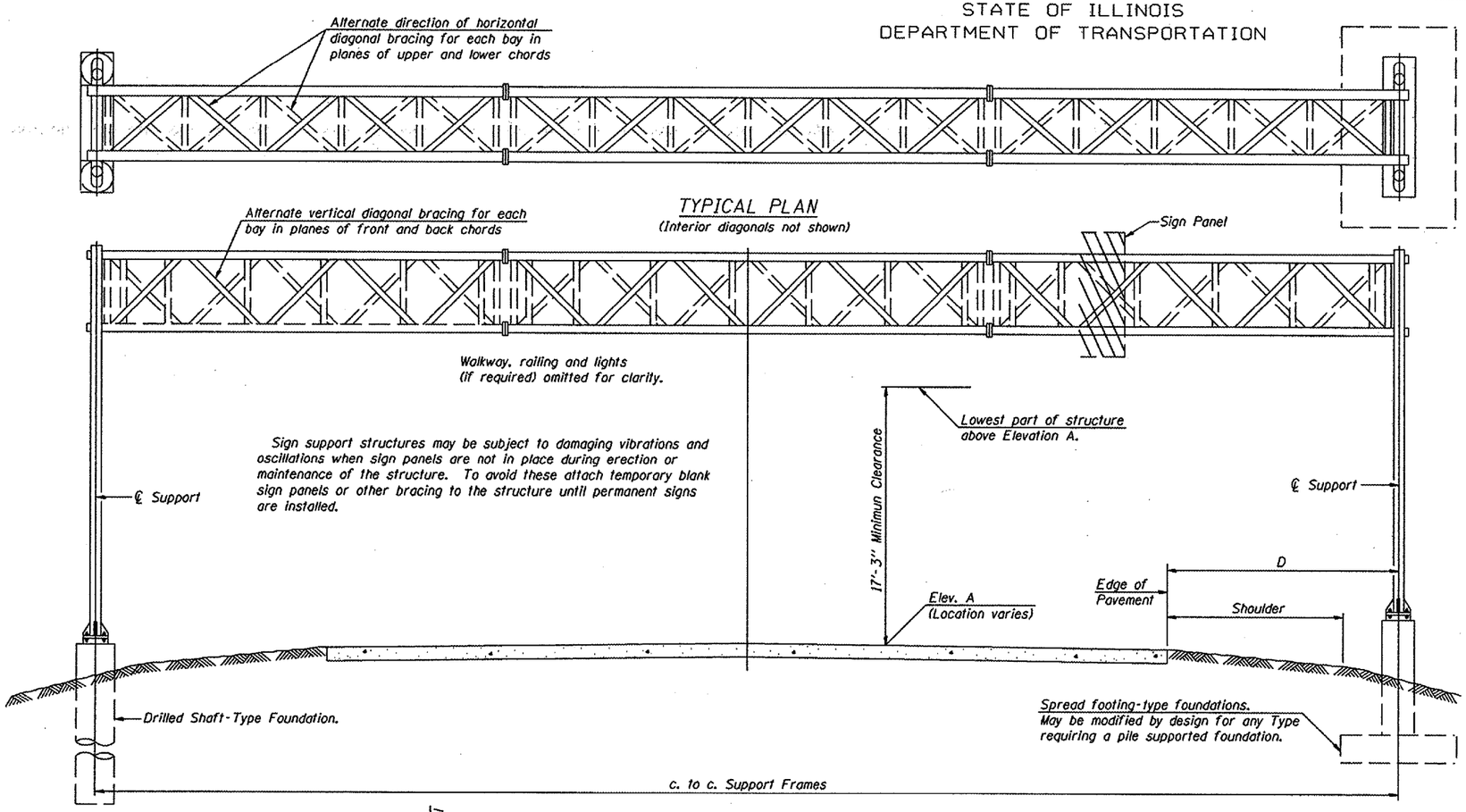
Location No.: 4-02	State I.D. No.: 4S048U034R005.0				
County: Knox	Route: US 34	M.P.: 5		Direction: EB	
Description of Work				Unit	Quantity
REMOVE & RE-ERECTOVERHEAD SIGN STRUCTURE - SPAN				EACH	1.00
STRUCTURAL STEEL SUPPORT OVERHEAD SIGN STRUCTURE				EACH	2.00
FURNISH & INSTALL SADDLE SHIM BLOCK				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
REPAIR HANDRAIL LOCKING PIN CONNECTION				EACH	8.00
DISCONNECT / RECONNECT ELECTRIC SERVICE				EACH	1.00
RELOCATE ELECTRIC SERVICE				EACH	1.00
DRILLED SHAFT CONCRETE FOUNDATION				CU YD	12.70
REMOVE CONCRETE FOUNDATION OVERHEAD				EACH	2.00

Location No.: 4-03	State I.D. No.: 4S048U034L005.4				
County: Knox	Route: US 34	M.P.: 5.4		Direction: WB	
Description of Work				Unit	Quantity
REMOVE & RE-ERECT OVERHEAD SIGN STRUCTURE-SPAN				EACH	1.00
STRUCTURAL STEEL SUPPORT OVERHEAD SIGN STRUCTURE				EACH	1.00
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	60.00
REPAIR HANDRAIL LOCKING PIN CONNECTION				EACH	8.00
DISCONNECT / RECONNECT ELECTRIC SERVICE				EACH	1.00
RELOCATE ELECTRIC SERVICE				EACH	1.00
DRILLED SHAFT CONCRETE FOUNDATION				CU YD	12.00
REMOVE CONCRETE FOUNDATION OVERHEAD				EACH	2.00

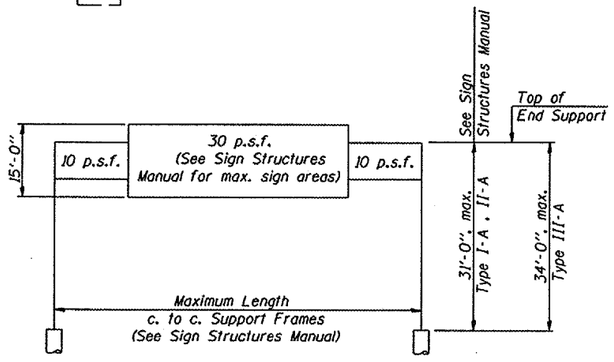
Location No.: 4-04	State I.D. No.: 4S048U034L005.6				
County: Knox	Route: US 34	M.P.: 5.6		Direction: WB	
Description of Work				Unit	Quantity
REMOVE & RE-ERECT OVERHEAD SIGN STRUCTURE-SPAN				EACH	1.00
STRUCTURAL STEEL SUPPORT OVERHEAD SIGN STRUCTURE				EACH	2.00
FURNISH & INSTALL SADDLE SHIM BLOCK				EACH	4.00
FURNISH & INSTALL INTERNAL TRUSS DAMPER				EACH	1.00
FURNISH & INSTALL SAFETY CHAIN				EACH	2.00
OVERHEAD SIGN STRUCTURE WALKWAY				FOOT	77.00
REPAIR HANDRAIL LOCKING PIN CONNECTION				EACH	8.00
DISCONNECT / RECONNECT ELECTRIC SERVICE				EACH	1.00
REPLACE / TIGHTEN CLIP PER SIGN				EACH	2.00
RELOCATE ELECTRIC SERVICE				EACH	1.00
DRILLED SHAFT CONCRETE FOUNDATION				CU YD	12.70
REMOVE CONCRETE FOUNDATION OVERHEAD				EACH	2.00

Location No.: 4-05	State I.D. No.: 4S048U034L008.0				
County: Knox	Route: US 34	M.P.: 8		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
[illegible]				[illegible]	[illegible]
FURNISH & INSTALL INTERNAL TRUSS DAMPER				EACH	1.00
FURNISH & INSTALL SAFETY CHAIN				EACH	2.00
OVERHEAD SIGN STRUCTURE WALKWAY				FOOT	96.00
REPAIR HANDRAIL LOCKING PIN CONNECTION				EACH	8.00
DISCONNECT / RECONNECT ELECTRIC SERVICE				EACH	1.00
DRILLED SHAFT CONCRETE FOUNDATIONS				CU YD	21.50
REMOVE CONCRETE FOUNDATION OVERHEAD				EACH	2.00
RELOCATE ELECTRIC SERVICE				EACH	1.00

Location No.: 4-06	State I.D. No.: 4C048U034L007.7				
County: Knox	Route: US 34	M.P.: 7.7		Direction: WB	
Description of Work				Unit	Quantity
REMOVE OVERHEAD SIGN STRUCTURE-CANTILEVER				EACH	1.00
REMOVE CONCRETE FOUNDATION OVERHEAD				EACH	1.00
OVERHEAD SIGN STRUCTURE CANTILEVER, TYPE II A				FOOT	30.00
DRILLED SHAFT CONCRETE FOUNDATION				CU YD	7.10
REMOVE & REINSTALL SIGN PANEL				SQ FT	104.00
REMOVE & REINSTALL WALKWAY				FOOT	18.00
DISCONNECT / RECONNECT ELECTRIC SERVICE				EACH	1.00
RELOCATE ELECTRIC SERVICE				EACH	1.00
FURNISH & INSTALL HANDRAIL				FOOT	18.00



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

**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

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

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

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

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

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

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

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

ANCHOR RODS: Shall conform to 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.

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

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

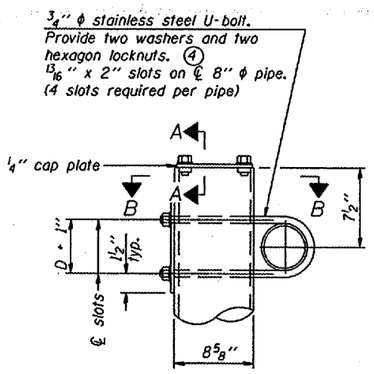
DESIGNED -
CHECKED -
DRAWN -
CHECKED -

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

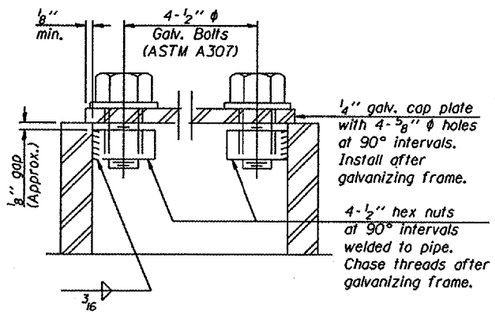
OS-A-1 6/01/2007

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

District 4
Overhead Sign Structure
Repair & Replacement

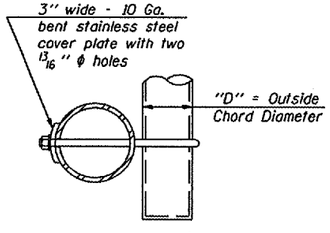


DETAIL A

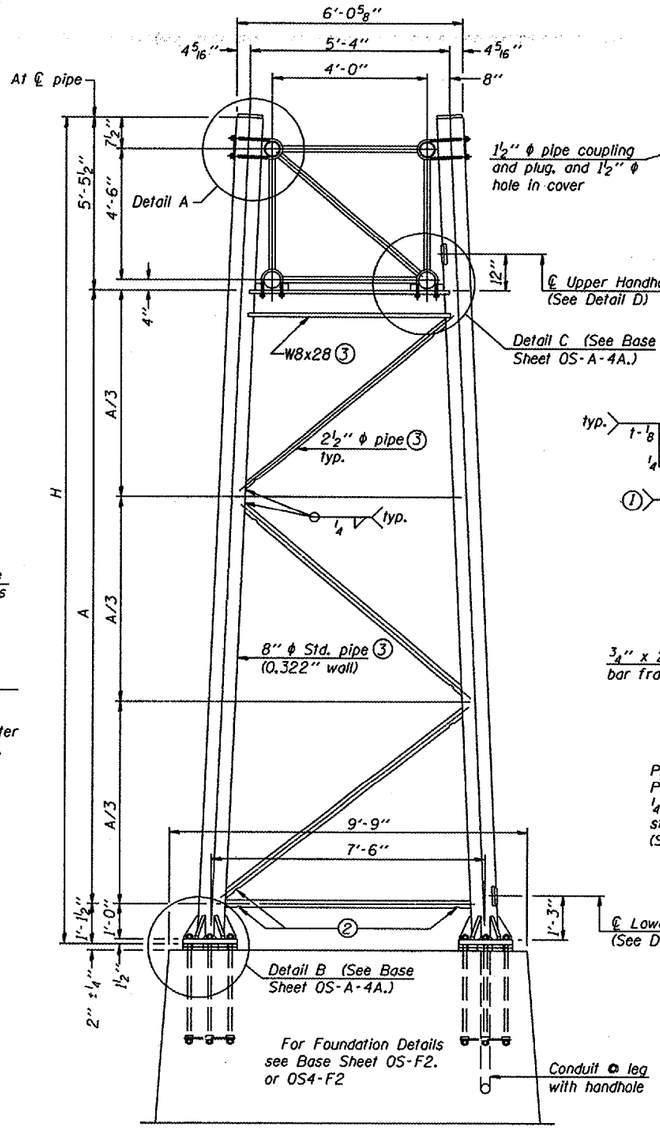


SECTION A-A

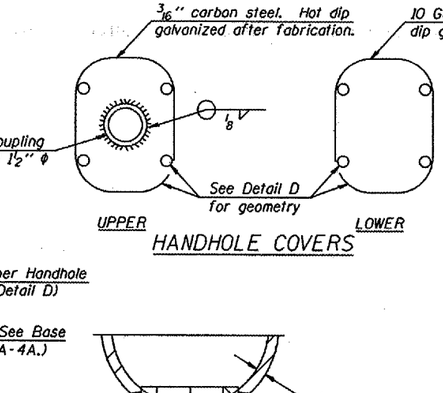
As an alternate to bolts, may use galvanized drive-fit caps installed after galvanizing frame.



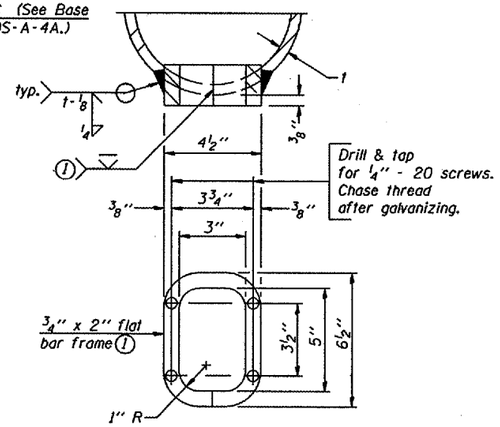
SECTION B-B



SIDE ELEVATION

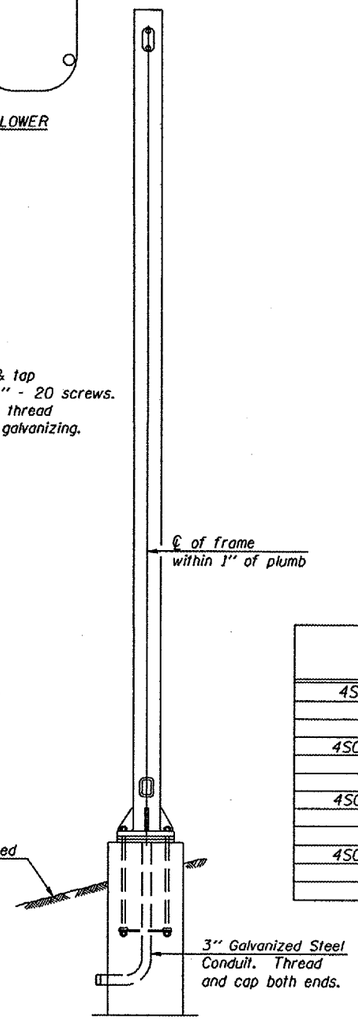


HANDHOLE COVERS



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.

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

Structure Number	Station	Support		H (6)	A
		Left	Right		
4S048U150R011.6	462 + 12	X		25'-8 1/4"	18'-11 3/4"
			X	27'-2 1/2"	20'-5"
4S048U034R005.0	481 + 17	X		24'-6 3/4"	17'-8"
			X	26'-6 3/4"	19'-6"
4S048U034L005.4	501 + 85	X		24'-7 3/4"	17'-11 1/4"
			X	25'-1 1/4"	18'-4 3/4"
4S048U034L005.6	510 + 73	X	X	24'-8"	17'-9 1/4"

8" ϕ PIPE TRUSS SUPPORT FRAME

NUMBER	REVISION	DATE

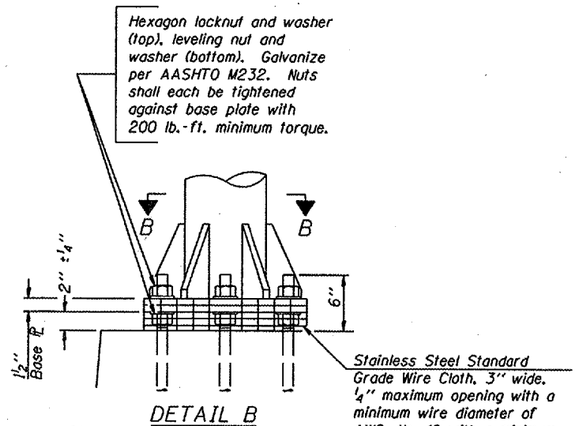
DESIGNED -
CHECKED -
DRAWN -
CHECKED -

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

OS-A-4 6/01/2007

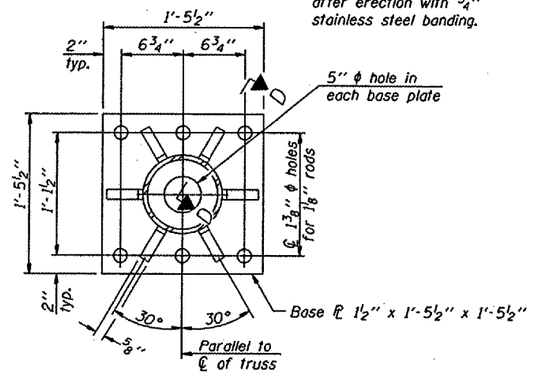
OVERHEAD SIGN STRUCTURES
SUPPORT FRAME FOR TYPE I-A ALUMINUM TRUSS

District 4
Overhead Sign Structure
Repair & Replacement

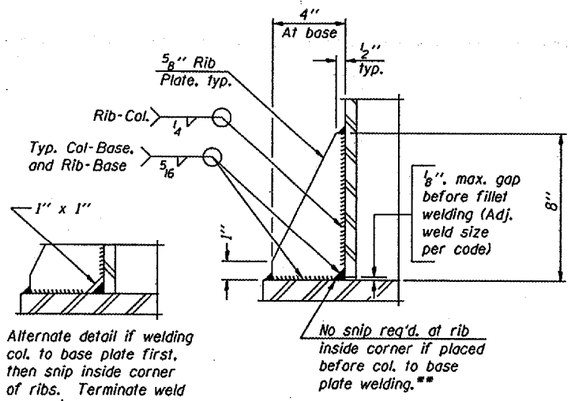


DETAIL B

Ribs shall be cut to fit slope of pipe.

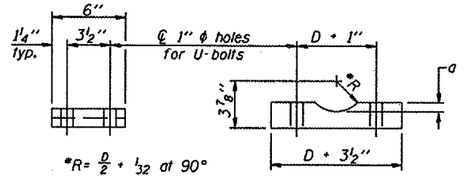


SECTION B-B



** 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

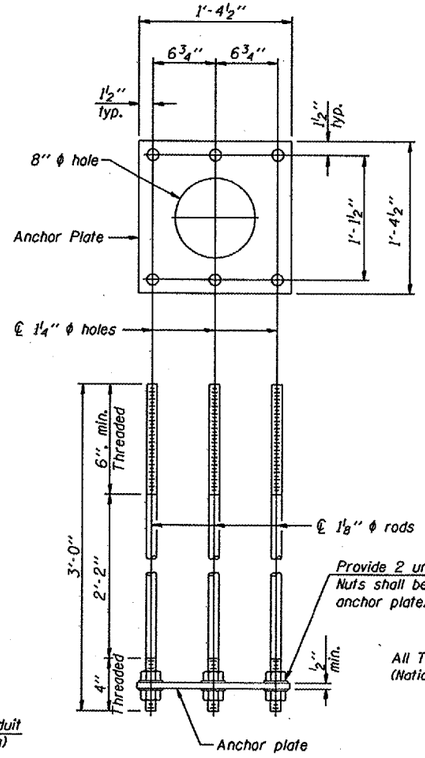


*R = D/2 + 1/32 at 90°
D = Outside Diameter of Chord.

SADDLE SHIM DETAIL

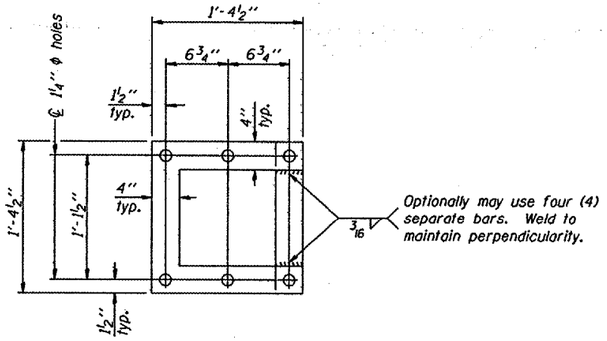
ASTM B26 Alloy 356-F
or
ASTM B209 Alloy 6061-T651
(4 required per sign truss)

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

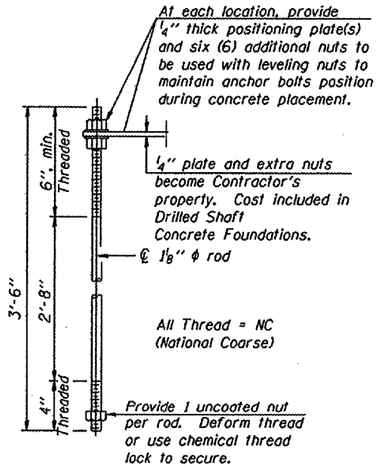


ANCHOR ROD DETAIL
Spread Footing Foundation

All Thread = NC (National Coarse)

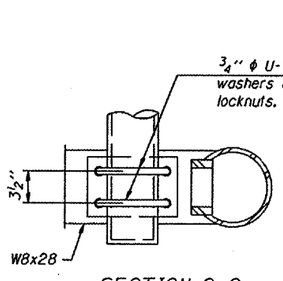


POSITIONING PLATE(S)

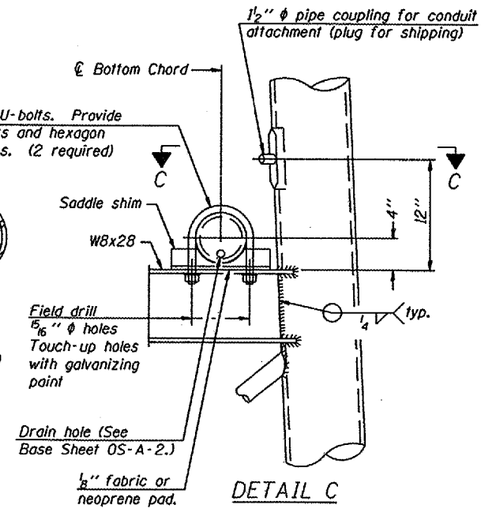


ANCHOR ROD DETAIL
Drilled Shaft Foundation

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

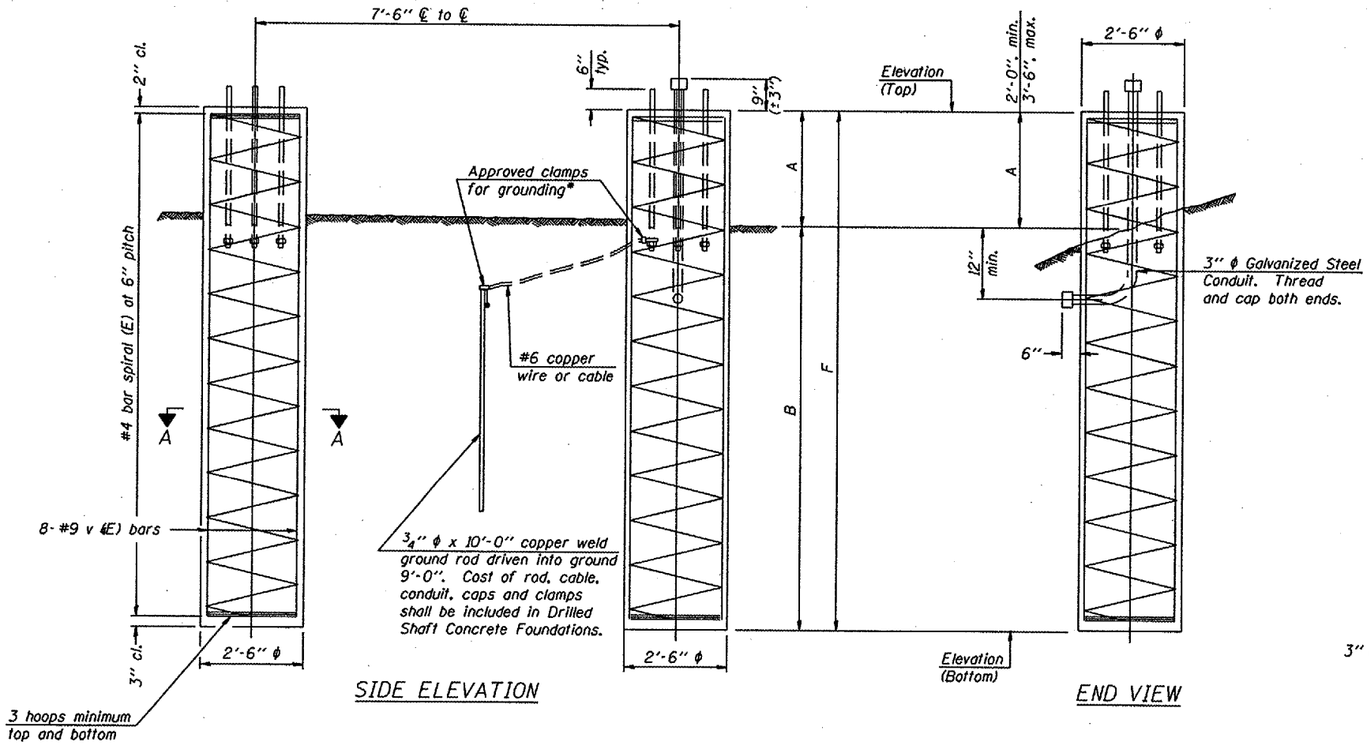
OS-A-4A 6/01/2007

OVERHEAD SIGN STRUCTURES
SUPPORT FRAME DETAILS ALUMINUM TRUSS

District 4
Overhead Sign Structure
Repair & Replacement

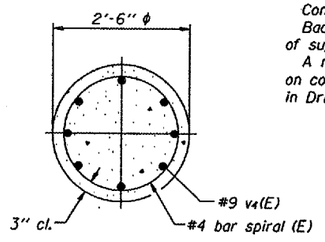
For anchor rod size and placement, see Support Frame Detail Sheet.

* 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
v (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.

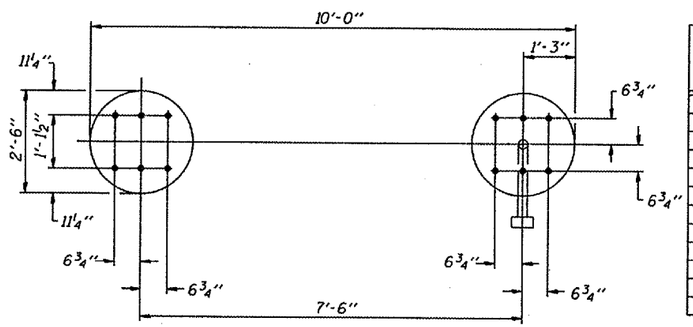
No sonotubes or decomposable forms shall be used below the lower conduit entrance.

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.



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	
4S048U150R011.6	462 + 12	784.91		3' - 0"	14' - 6"	17' - 6"	783.39		3' - 0"	14' - 6"	17' - 6"	12.70
4S048U034R005.0	481 + 17	796.02		3' - 0"	14' - 6"	17' - 6"	794.02		3' - 0"	14' - 6"	17' - 6"	12.70
4S048U034L005.4	501 + 85	789.11		3' - 0"	13' - 6"	16' - 6"	788.65		3' - 0"	13' - 6"	16' - 6"	12.00
4S048U034L005.6	510 + 73	784.50		3' - 0"	14' - 6"	17' - 6"	784.50		3' - 0"	14' - 6"	17' - 6"	12.70

DESIGNED -	
CHECKED -	
DRAWN -	
CHECKED -	

- 20

EXAMINED

ENGINEER OF BRIDGE DESIGN

PASSED

ENGINEER OF BRIDGES AND STRUCTURES

NUMBER	REVISION	DATE

OS4-F2

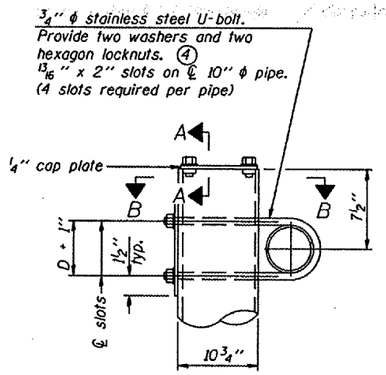
6/01/2007

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

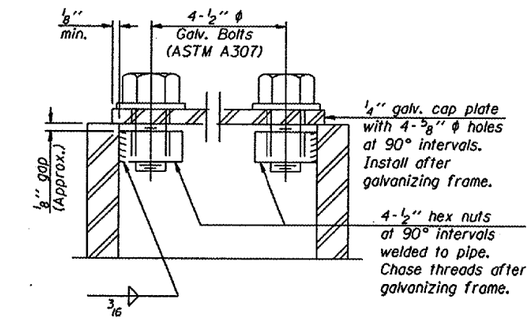
OVERHEAD SIGN STRUCTURES
DRILLED SHAFT DETAILS

District 4
Overhead Sign Structure
Repair & Replacement

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

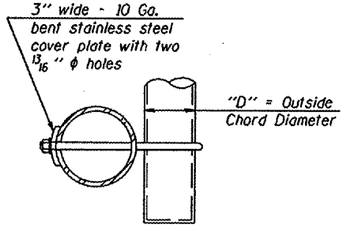


DETAIL A

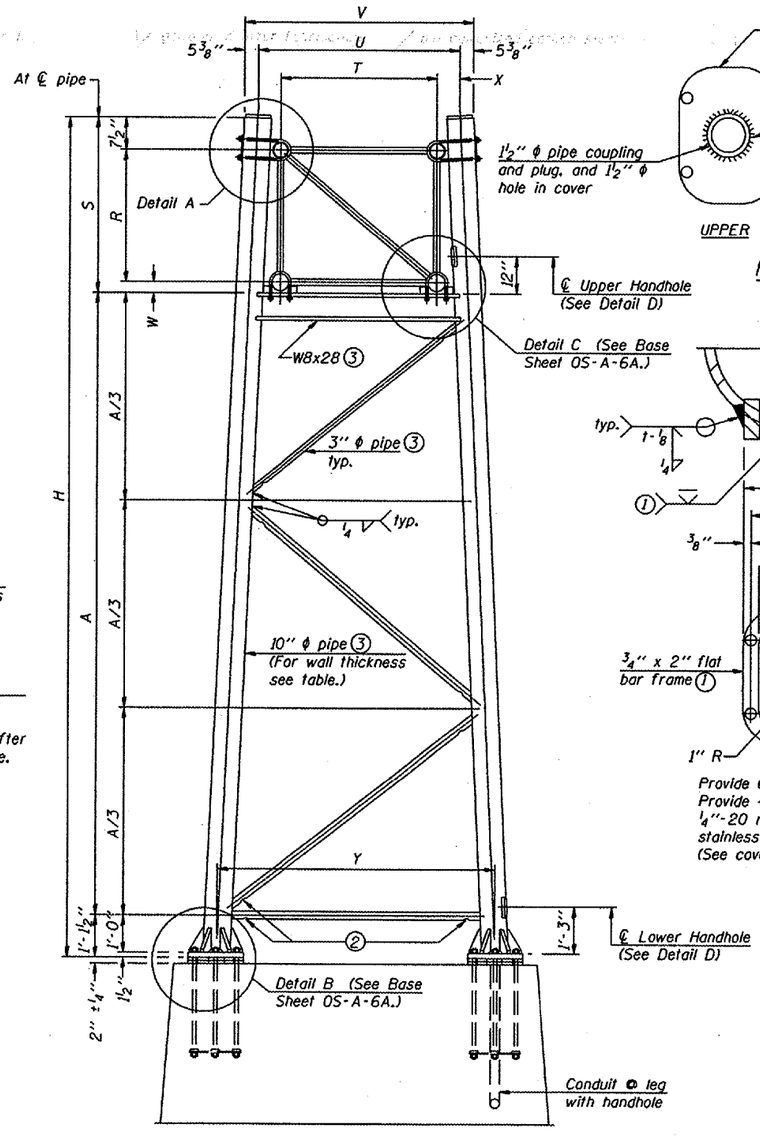


SECTION A-A

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

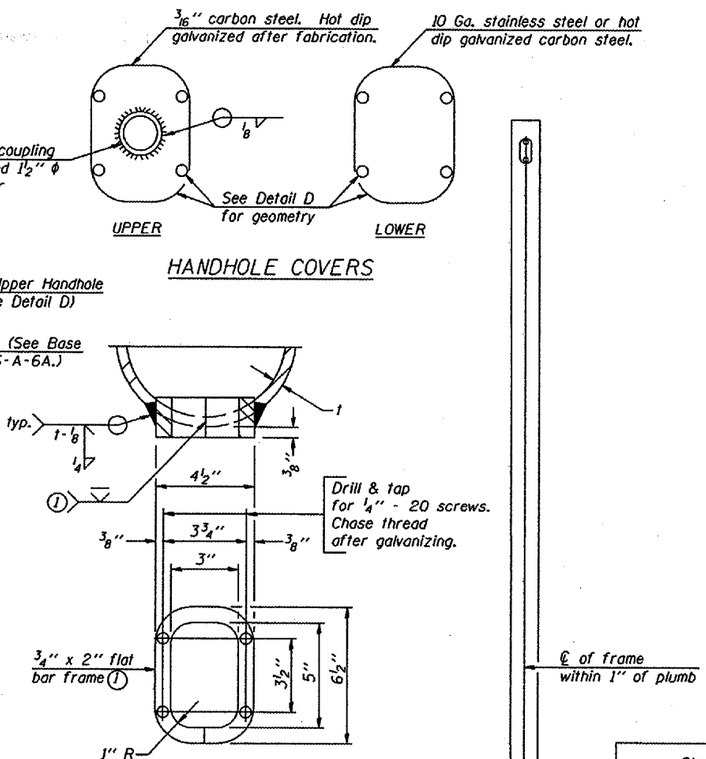


SECTION B-B

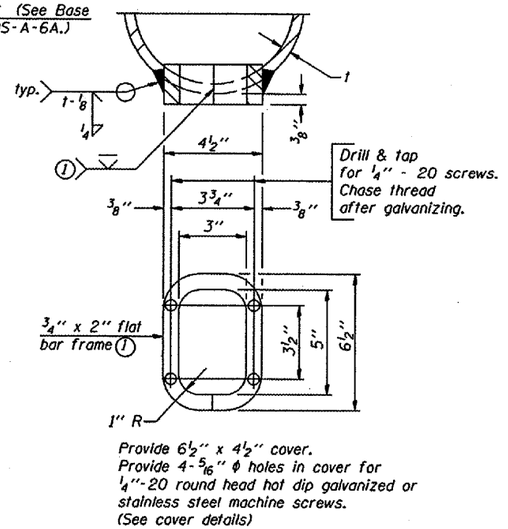


For Foundation Details, see base sheet OS-F3 (Spread Footing) or OS4-F3 (Drilled Shaft).

SIDE ELEVATION

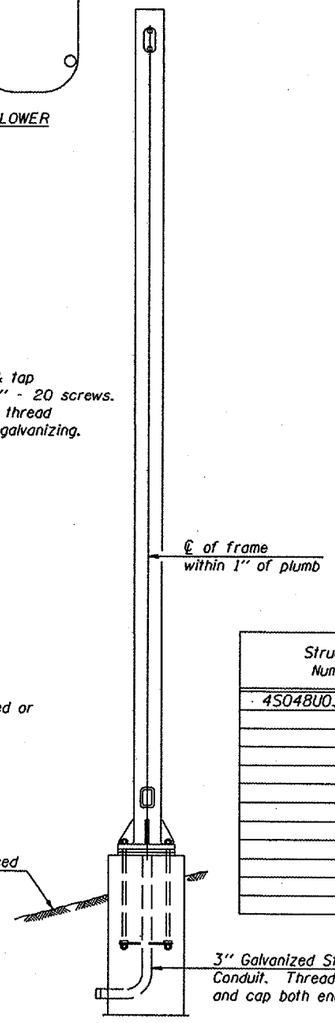


HANDHOLE COVERS



Provide 6 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.

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

Structure Number	Station	Support		Truss Type	Pipe Wall Thickness	H (6)	A
		Left	Right				
4S048U034L008.0	640 + 20	X		II-A	0.365(STD)	26'-10 1/4"	19'-2 3/8"
			X	II-A	0.365(STD)	28'-10 1/8"	21'-2 3/8"

10" ϕ PIPE TRUSS SUPPORT FRAME

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

NUMBER	REVISION	DATE

DESIGNED -
CHECKED -
DRAWN -
CHECKED -

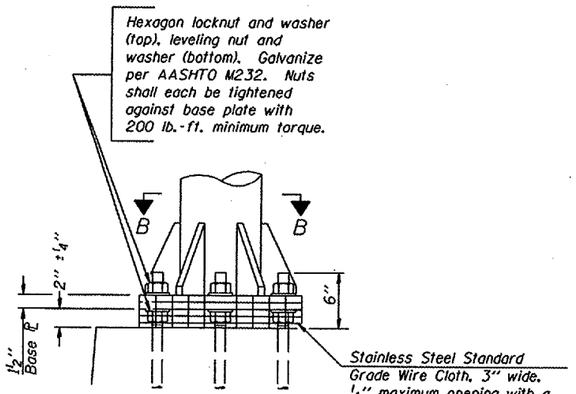
- 20
EXAMINED
ENGINEER OF BRIDGE DESIGN
PASSED
ENGINEER OF BRIDGES AND STRUCTURES

OS-A-6 6/01/2007

OVERHEAD SIGN STRUCTURES
SUPPORT FRAME FOR ALUMINUM TRUSS

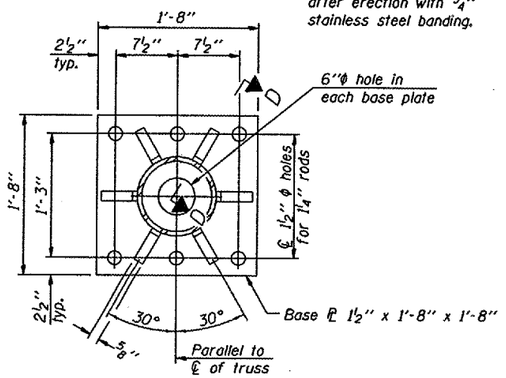
District 4
Overhead Sign Structure
Repair & Replacement

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

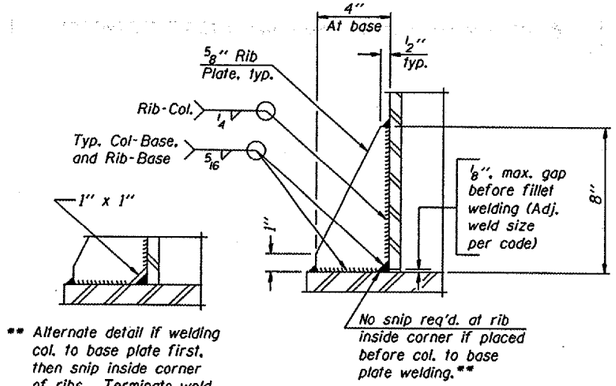


DETAIL B

Ribs shall be cut to fit slope of pipe.

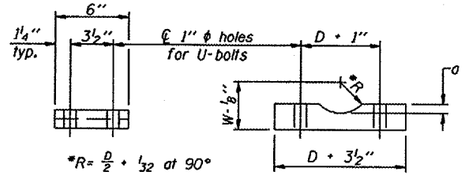


SECTION B-B



** 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

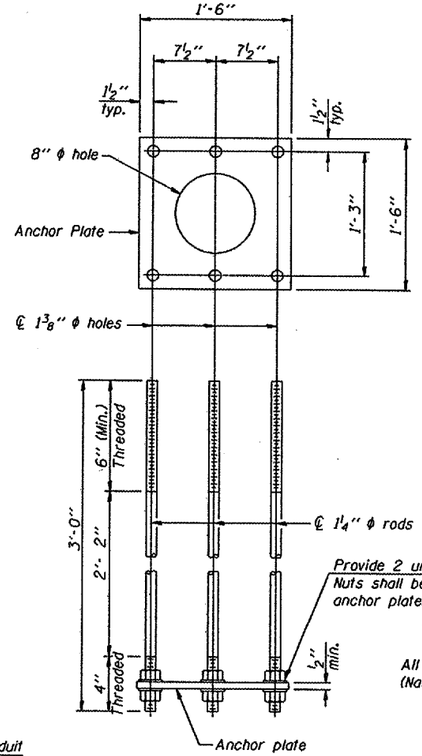


*$R = \frac{D}{2} + \frac{1}{32}$ at 90°

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

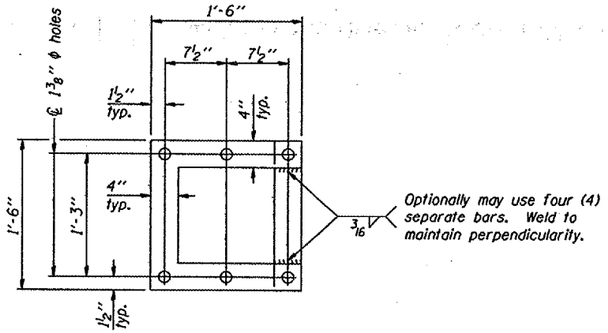
SADDLE SHIM DETAIL
ASTM B26 Alloy 356-F
or
ASTM B209 Alloy 6061-T651
(4 required per sign truss)

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

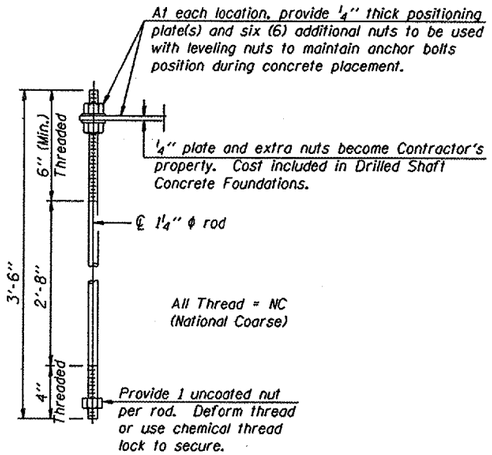


All Thread = NC (National Coarse)

ANCHOR ROD DETAIL
Spread Footing Foundation

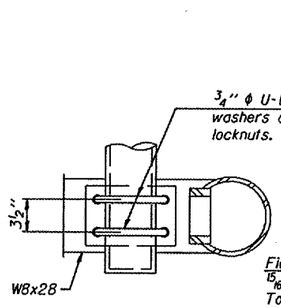


POSITIONING PLATE(S)

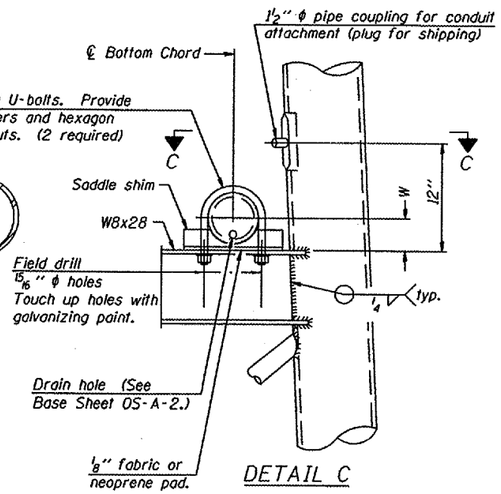


ANCHOR ROD DETAIL
Drilled Shaft Foundation

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

PASSED
ENGINEER OF BRIDGE DESIGN

ENGINEER OF BRIDGES AND STRUCTURES

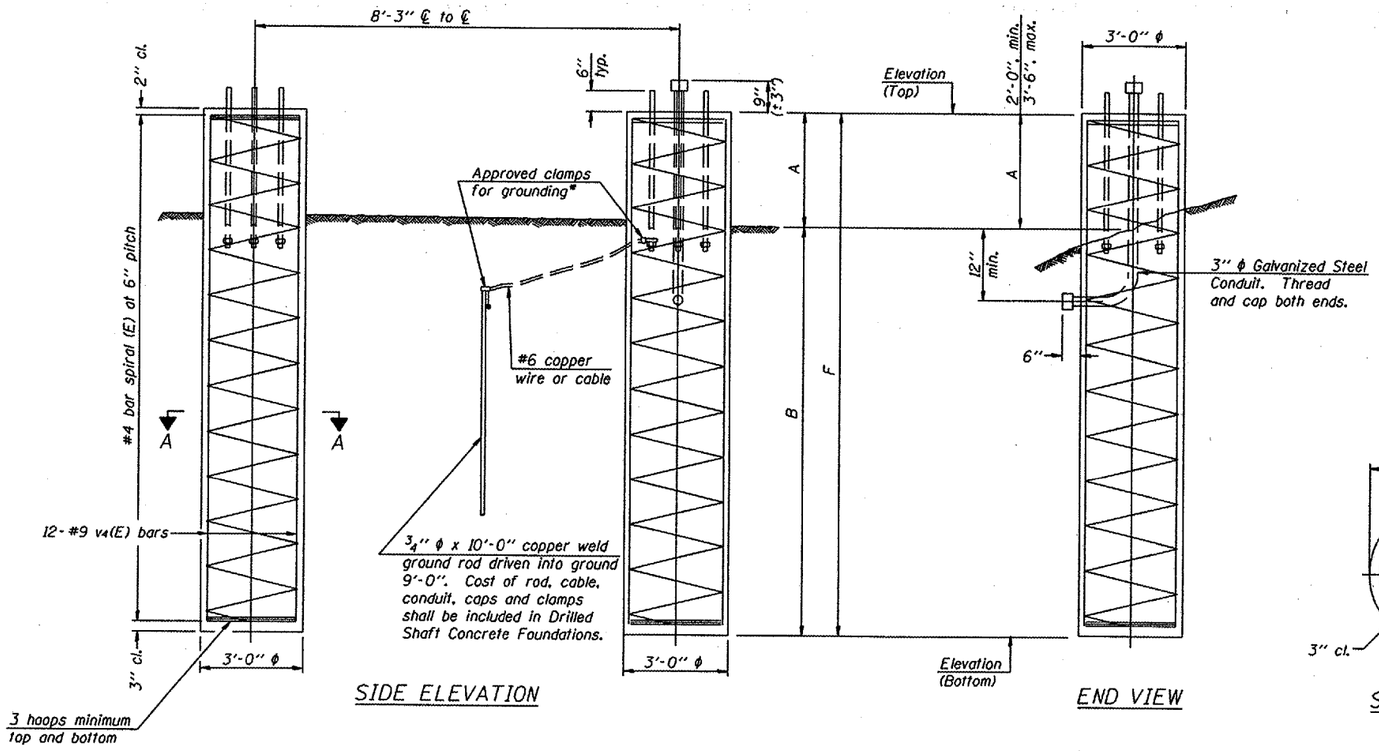
OS-A-6A 6/01/2007

OVERHEAD SIGN STRUCTURES
SUPPORT FRAME DETAILS ALUMINUM TRUSS

District 4
Overhead Sign Structure
Repair & Replacement

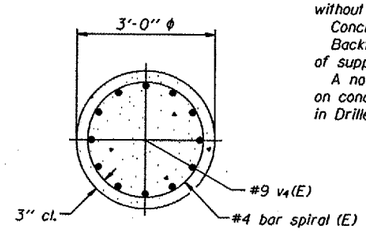
For anchor rod size and placement, see Support Frame Detail Sheet.

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

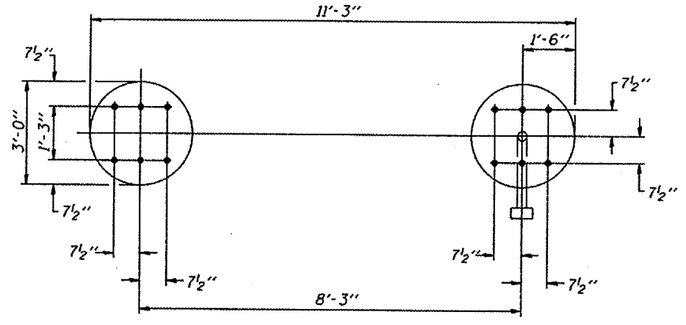


SIDE ELEVATION

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	
4S048U034L008.0	640 + 20	808.46		3' - 0"	17' - 6"	20' - 6"	806.46		3' - 0"	17' - 6"	20' - 6"	21.50

DESIGNED -	
CHECKED -	
DRAWN -	
CHECKED -	

- 20

EXAMINED

ENGINEER OF BRIDGE DESIGN

PASSED

ENGINEER OF BRIDGES AND STRUCTURES

NUMBER	REVISION	DATE

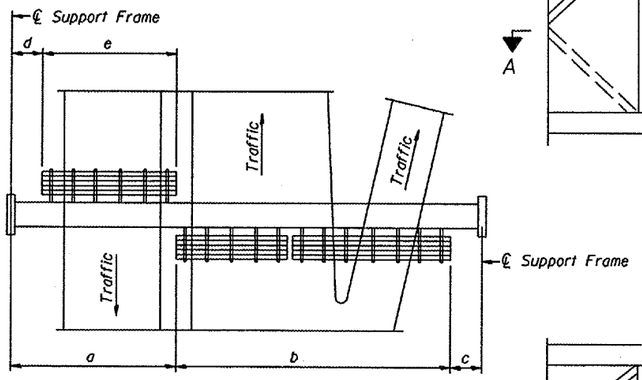
DETAILS FOR 10" ϕ SUPPORT FRAME
TYPE I-A or II-A TRUSS

OVERHEAD SIGN STRUCTURES
DRILLED SHAFT DETAILS

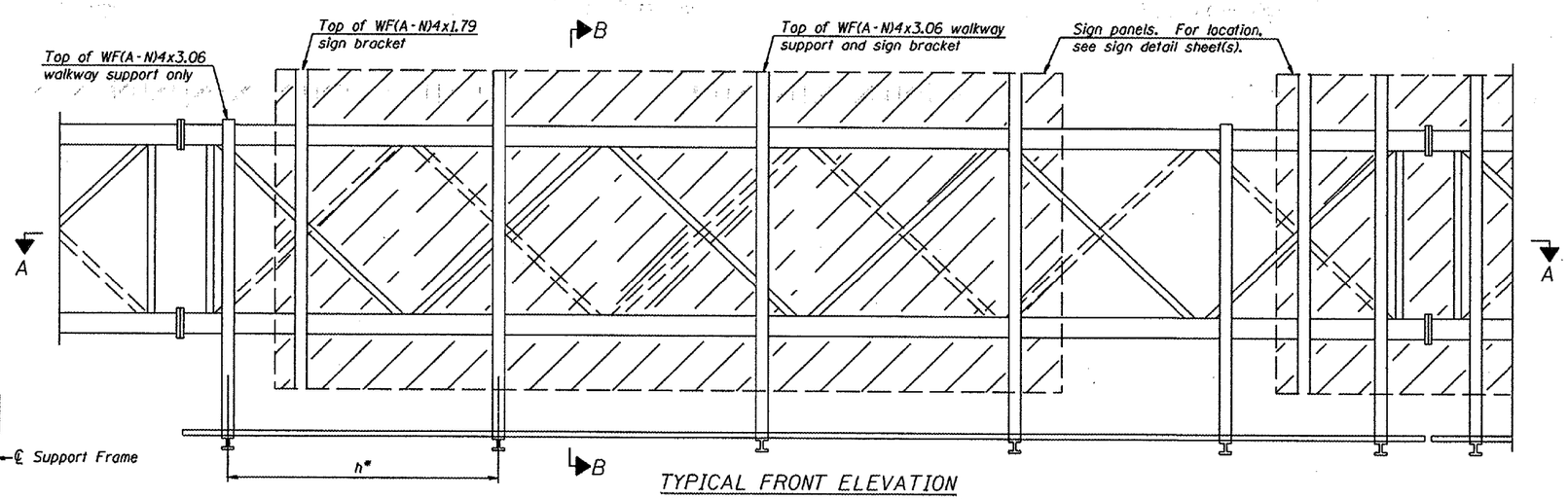
District 4
Overhead Sign Structure
Repair & Replacement

OS4-F3 6/01/2007

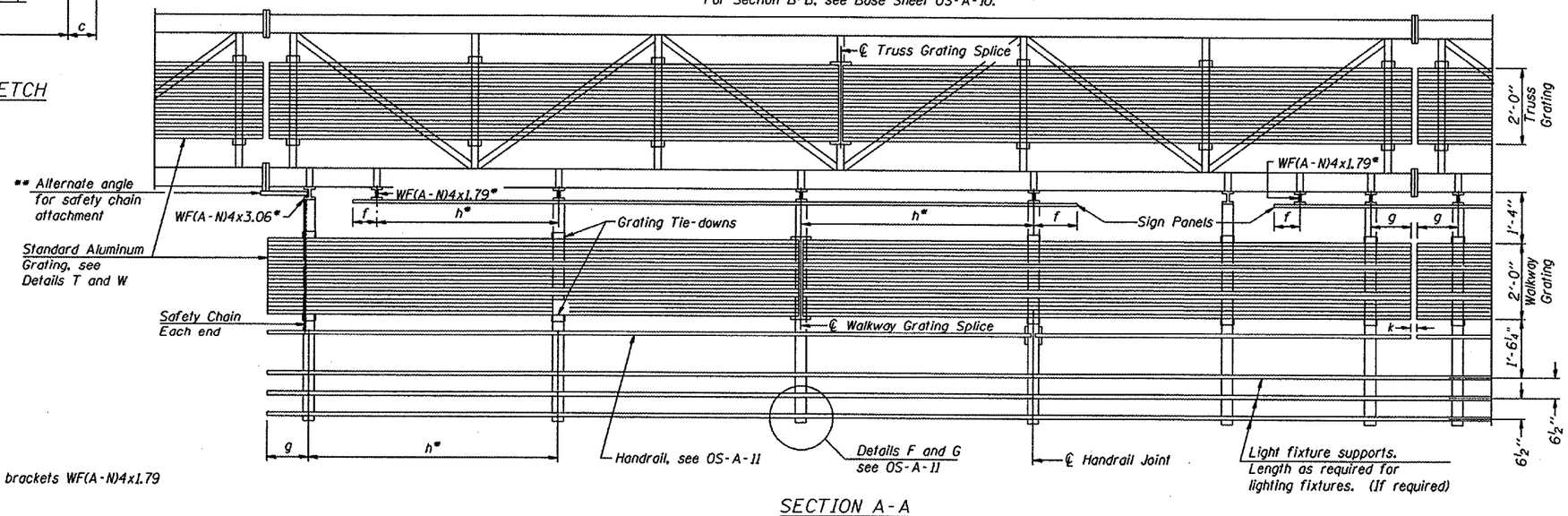
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



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

Structure Number	Station	a	b	c	d	e	Walkway Grating and Handrail Lengths
4S048U150R011.6	462 + 12	N/A	N/A	N/A	N/A	N/A	73'-6" ✳
4S048U034R005.0	481 + 17	N/A	N/A	N/A	N/A	N/A	71'-6" ✳
4S048U034L005.4	501 + 85	N/A	N/A	N/A	N/A	N/A	59'-6" ✳
4S048U034L005.6	510 + 73	N/A	N/A	N/A	N/A	N/A	76'-6" ✳
4S048U034L008.0	640 + 20	N/A	N/A	N/A	N/A	N/A	95'-6" ✳

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

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
PASSED
ENGINEER OF BRIDGE DESIGN
ENGINEER OF BRIDGES AND STRUCTURES

NUMBER	REVISION	DATE

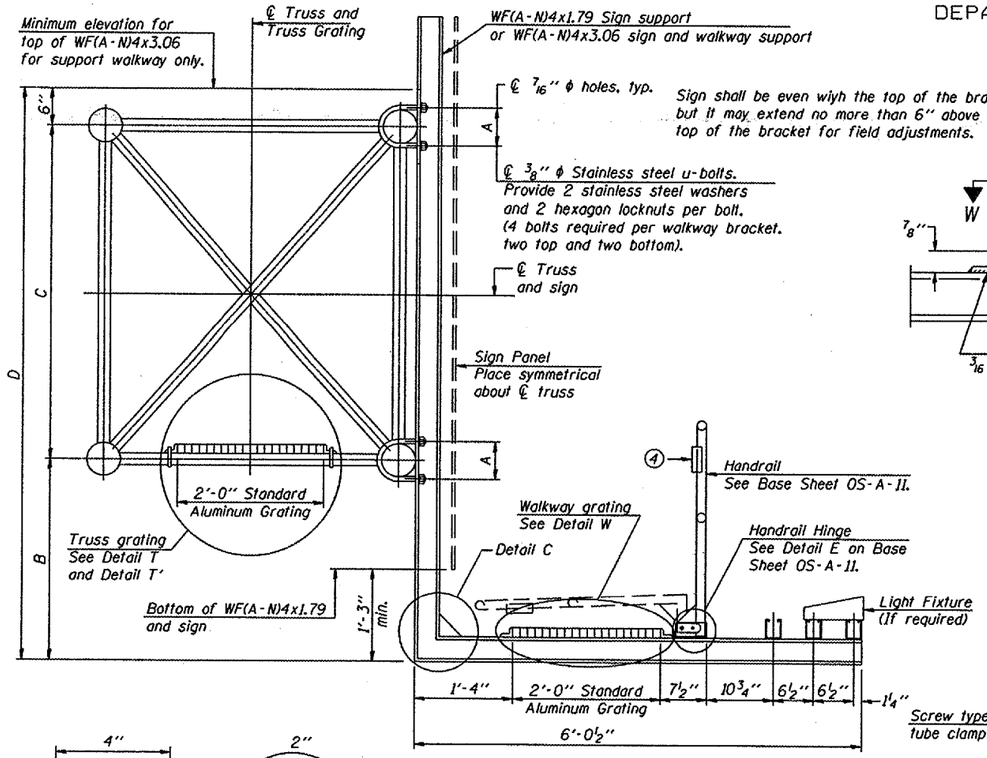
OVERHEAD SIGN STRUCTURES
ALUMINUM WALKWAY DETAILS

District 4
Overhead Sign Structure
Repair & Replacement

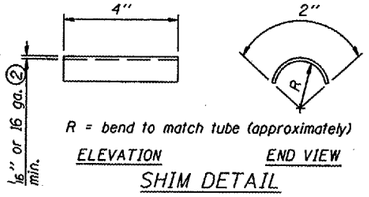
OS-A-9 6/01/2007

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

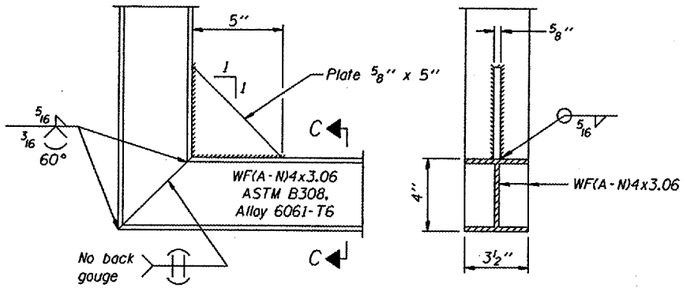
Various Routes
OVD SIN STR REP & REPL 2008-9
Various Counties
Sheet 78 of 105
Contract Number 44973



SECTION B-B

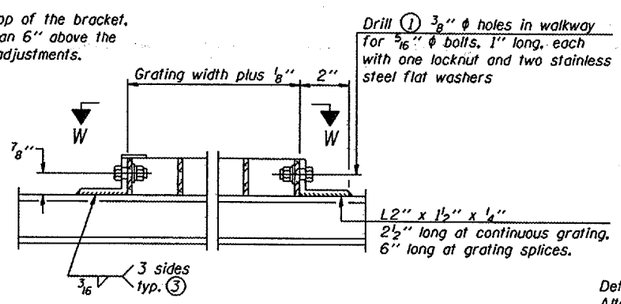


SHIM DETAIL

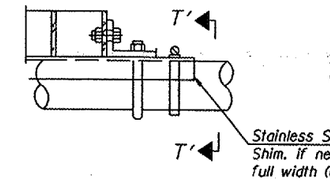


DETAIL C

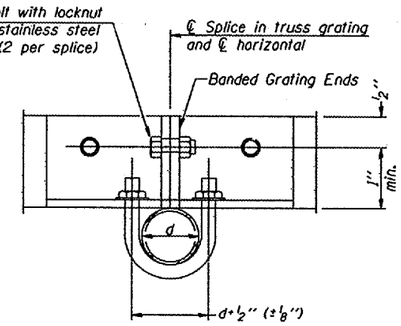
SECTION C-C



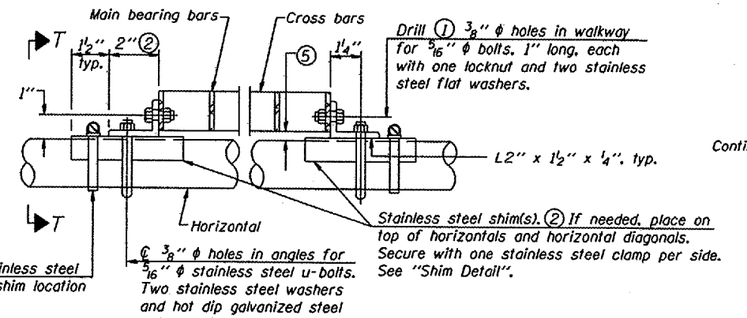
DETAIL W
(Walkway grating)



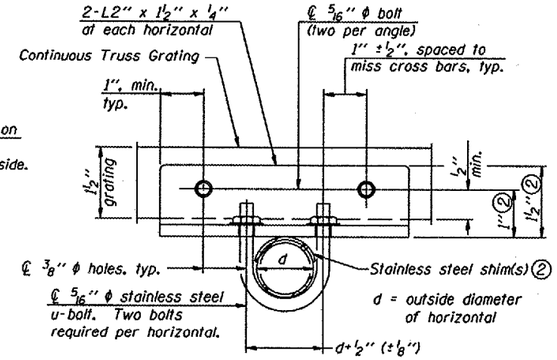
DETAIL T'
(Truss grating splice)
Details not shown same as Detail T. Alternate materials may be used subject to the Engineer's review and approval.



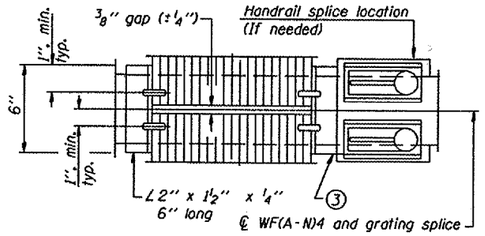
SECTION T'-T'



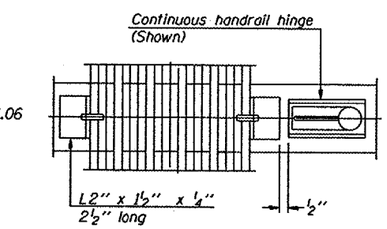
DETAIL T
(Continuous Truss grating)



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.

DESIGNED -	
CHECKED -	
DRAWN -	
CHECKED -	

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

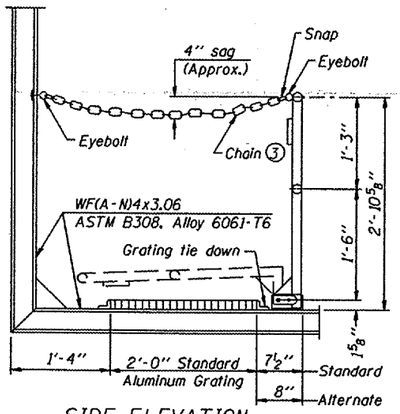
NUMBER	REVISION	DATE

OS-A-10 6/01/2007

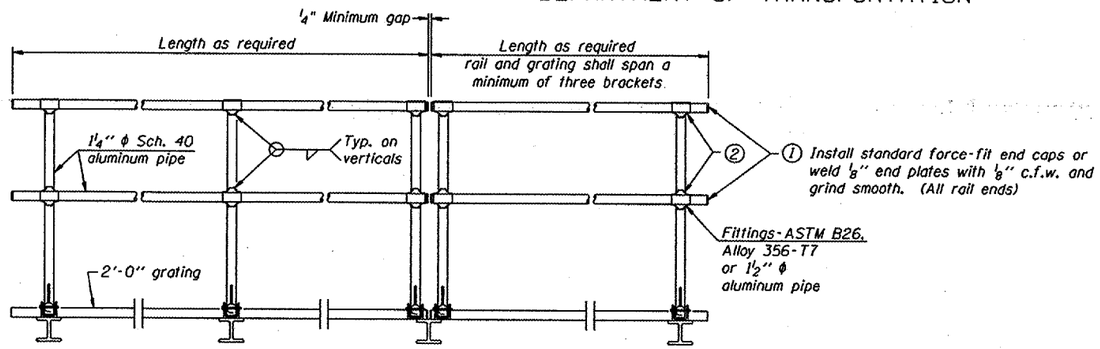
OVERHEAD SIGN STRUCTURES
ALUMINUM WALKWAY DETAILS

District 4
Overhead Sign Structure
Repair & Replacement

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

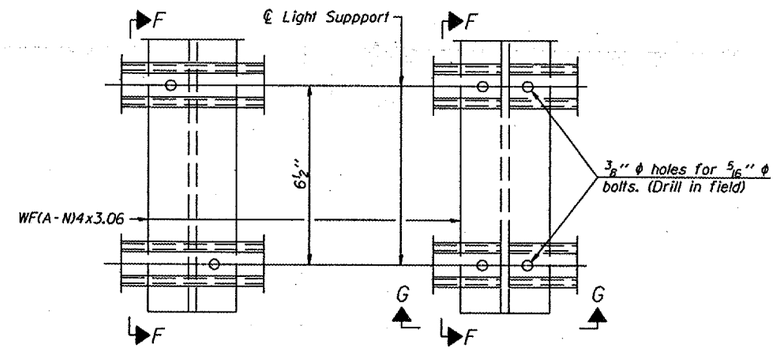


SIDE ELEVATION
(Showing safety chain w/o sign)



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.)

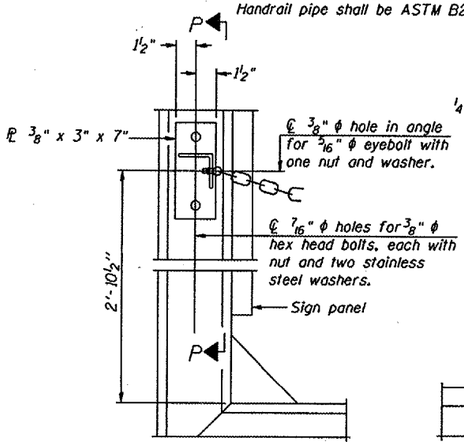


DETAIL F

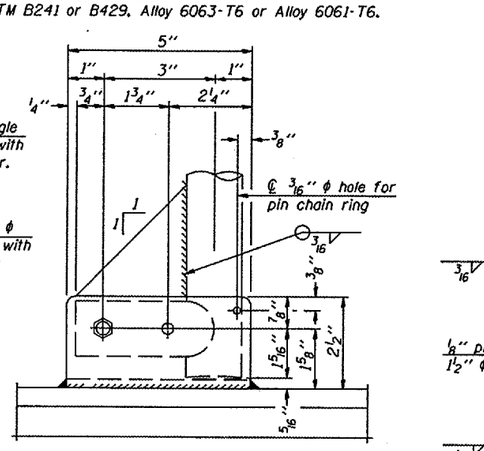
DETAIL G

HANDRAIL DETAILS

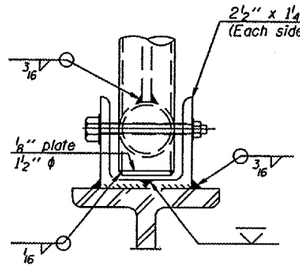
Handrail pipe shall be ASTM B241 or B429, Alloy 6063-T6 or Alloy 6061-T6.



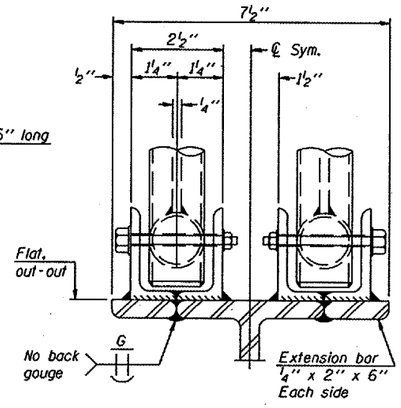
ALTERNATE SAFETY CHAIN ATTACHMENT
(With Sign Present)
Items not shown same as "Side Elevation" of "Handrail Details"



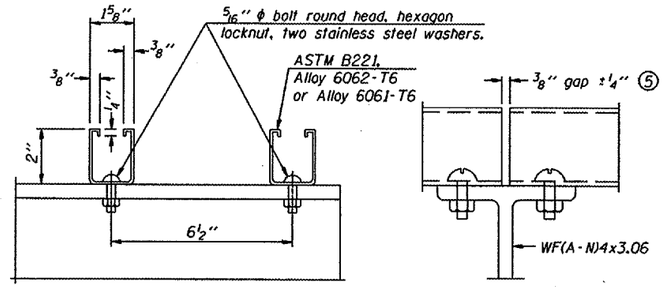
SIDE ELEVATION



FRONT ELEVATION
See "Elevation" at right for dimensions.



ELEVATION AT HANDRAIL JOINT (4)

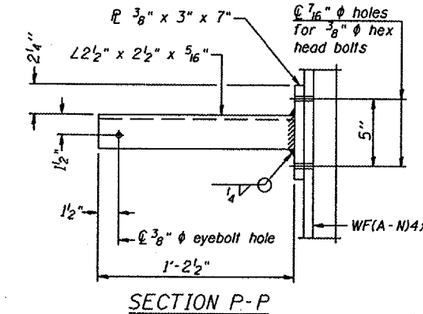


SECTION F-F

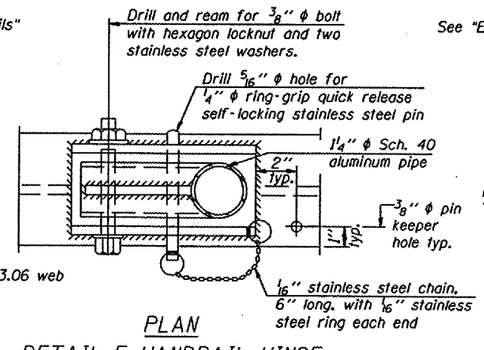
SECTION G-G

LIGHTING FIXTURE MOUNTS (IF REQUIRED)

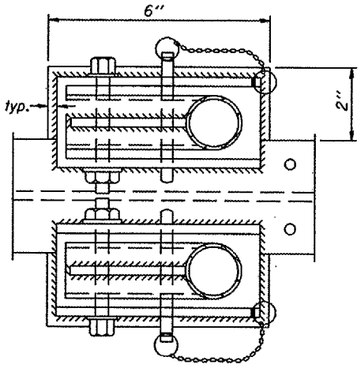
(5) Field cut ends of light support channels shall be free of burrs or hazardous projections and coated with zinc-rich primer or equivalent.



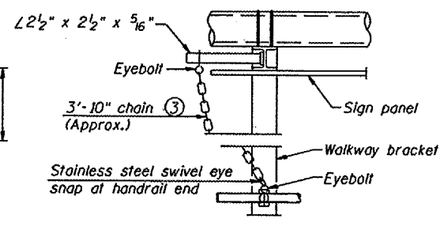
SECTION P-P



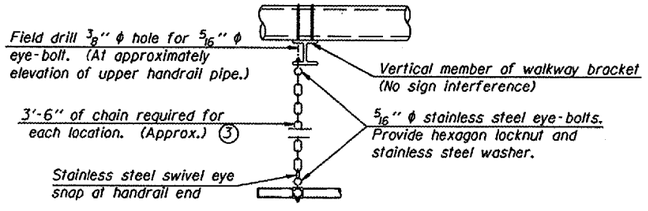
PLAN
DETAIL E HANDRAIL HINGE



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" Type 304L stainless steel chain, approximately 12 links per foot.

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

DESIGNED	-
CHECKED	-
DRAWN	-
CHECKED	-

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

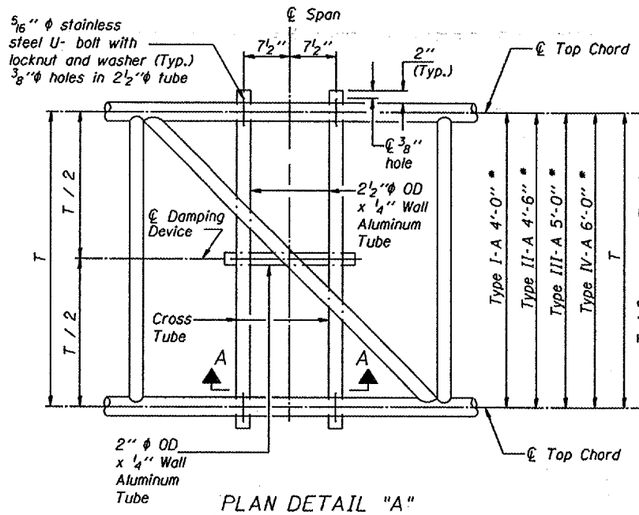
NUMBER	REVISION	DATE

OS-A-11 6/01/2007

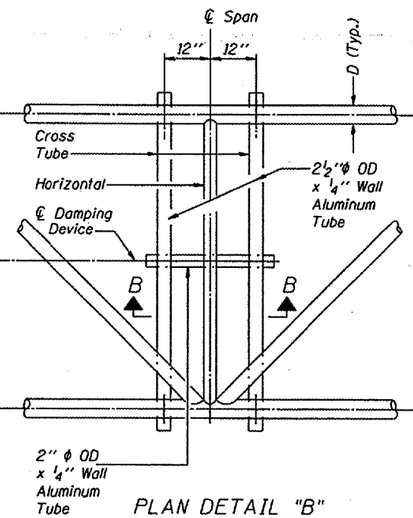
OVERHEAD SIGN STRUCTURES
ALUMINUM HANDRAIL DETAILS

District 4
Overhead Sign Structure
Repair & Replacement

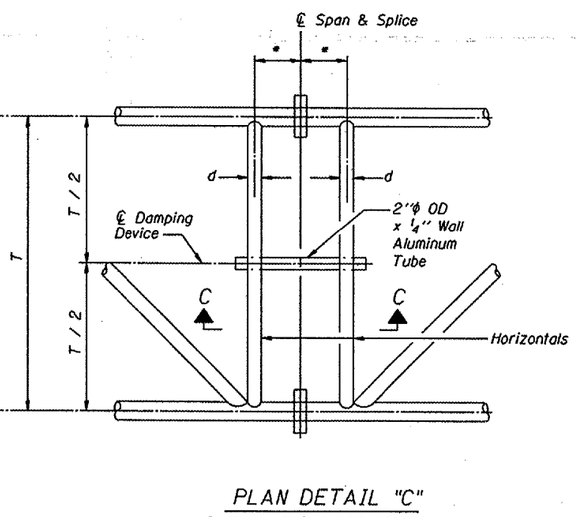
* Verify before drilling holes in mounting tube and cross tubes.



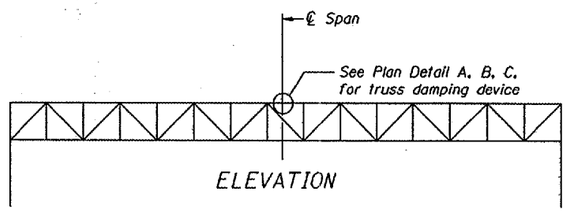
PLAN DETAIL "A"
℄ SPAN BETWEEN PANEL POINTS



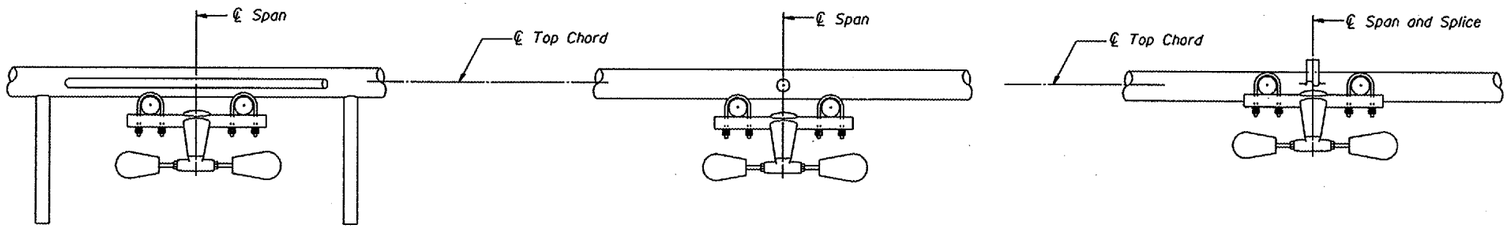
PLAN DETAIL "B"
℄ SPAN AT PANEL POINT



PLAN DETAIL "C"
℄ SPAN AT ℄ CHORD SPLICE



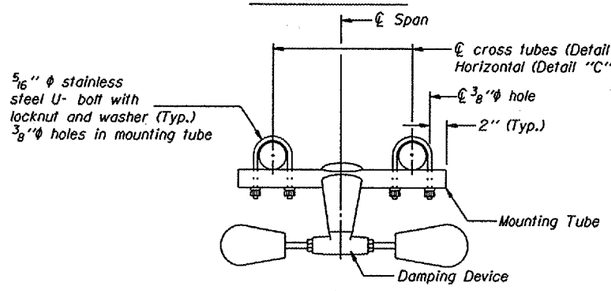
Aluminum Overhead Sign Truss



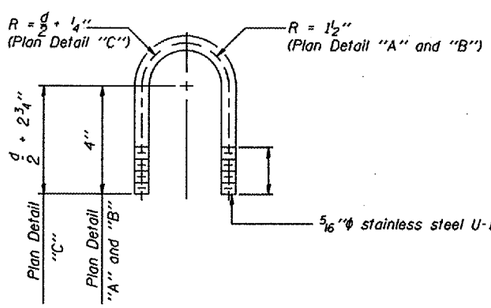
SECTION A-A

SECTION B-B

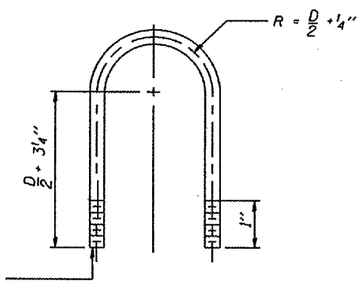
SECTION C-C



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

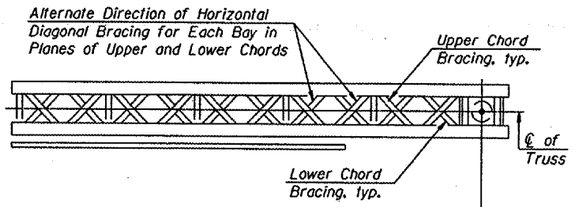
Fasteners: U-bolts shall be produced from ASTM A276 Type , 304, 304L, 316 or 316L, Condition A, cold finish, or an equivalent material acceptable to the Engineer. All nuts shall be stainless steel conforming to ASTM A194, Grade 8 (AISI Type 304) or Grade 8F (AISI Type 303). The nuts shall be "locknuts" 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 -	- 20
CHECKED -	EXAMINED
DRAWN -	PASSED
CHECKED -	ENGINEER OF BRIDGE DESIGN / ENGINEER OF BRIDGES AND STRUCTURES

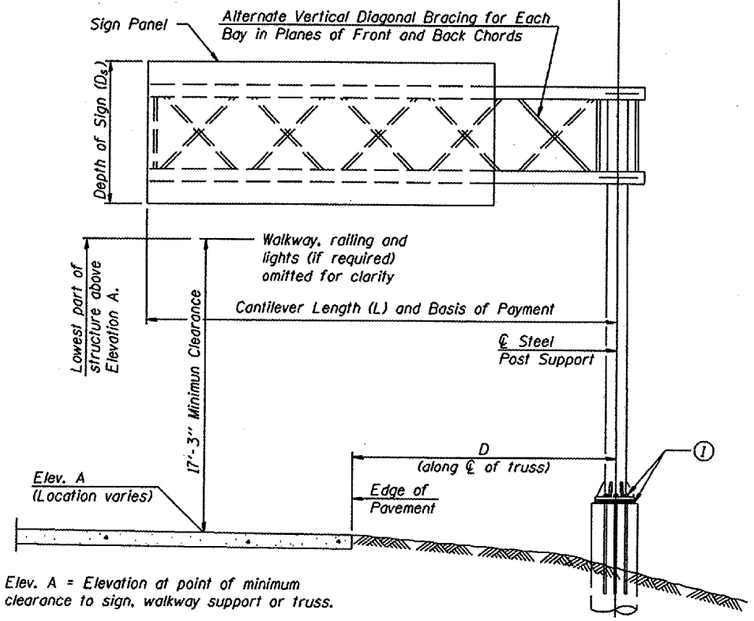
TRUSS DAMPER RETROFIT 07-01-2001

OVERHEAD SIGN STRUCTURE
DAMPING DEVICE

District 4
Overhead Sign Structure
Repair & Replacement



TYPICAL PLAN
(Walkway not shown)



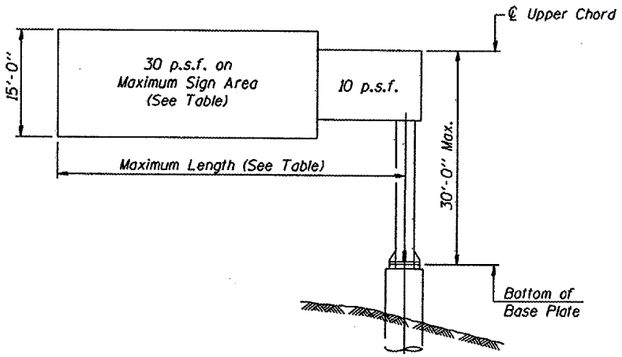
Elev. A = Elevation at point of minimum clearance to sign, walkway support or truss.

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
4C048U034L007.7	624 + 40	II-C-A	30' - 0"	825.30	22' - 0"	8' - 0"	104.00

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

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

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

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

ANCHOR RODS: Shall conform to AASHTO M314 Gr. 105 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.

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

* 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

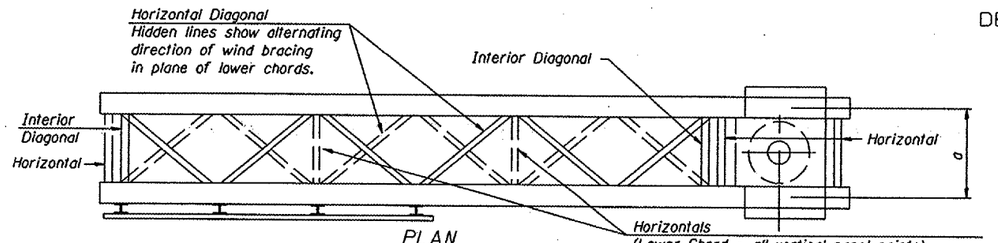
NUMBER	REVISION	DATE

OSC-A-1 6/01/2007

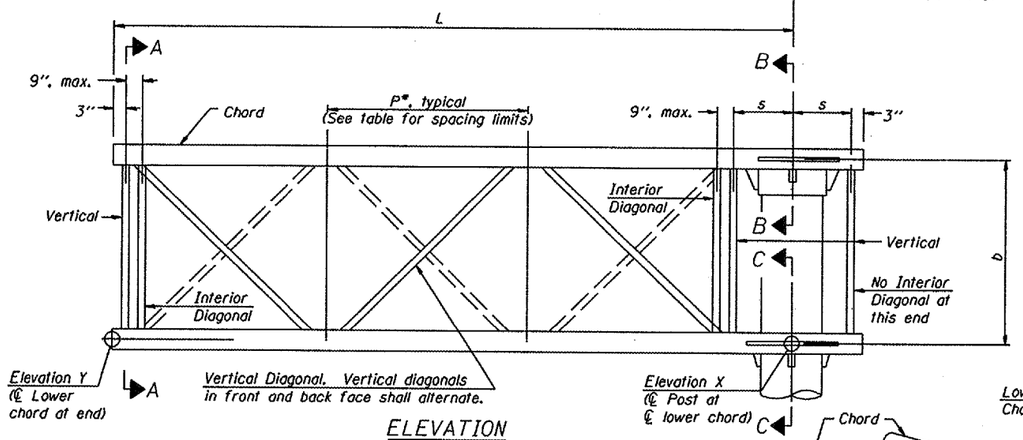
CANTILEVER SIGN STRUCTURES
GENERAL PLAN & ELEVATION
ALUMINUM TRUSS & STEEL POST

District 4
Overhead Sign Structure
Repair & Replacement

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



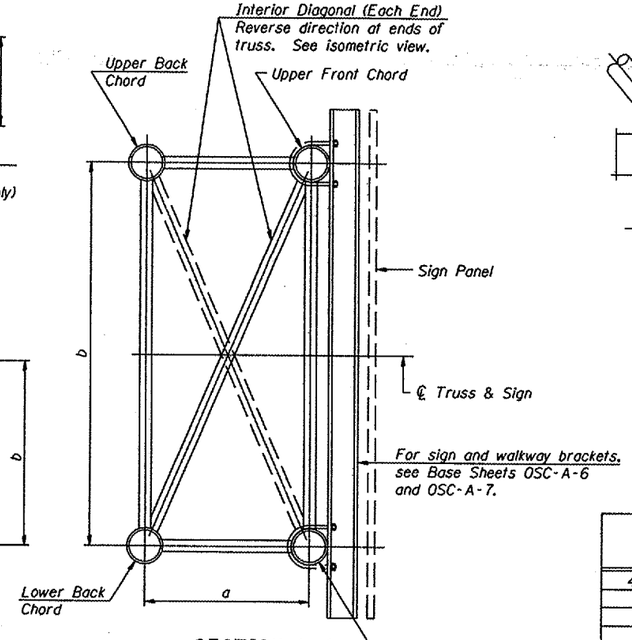
PLAN
(Walkway not shown)



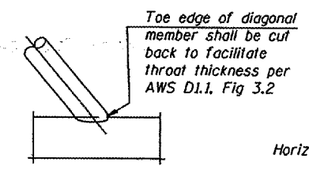
ELEVATION
(Sign and walkway omitted for clarity)

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

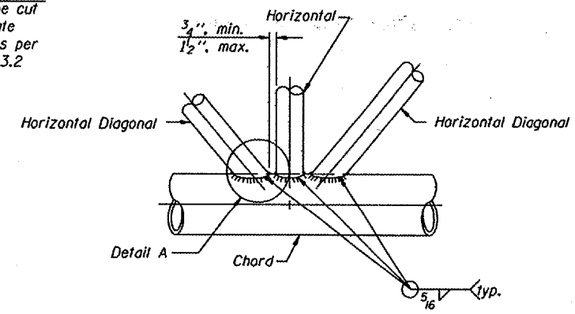
Note:
There are twice as many horizontal diagonals as there are vertical diagonals.



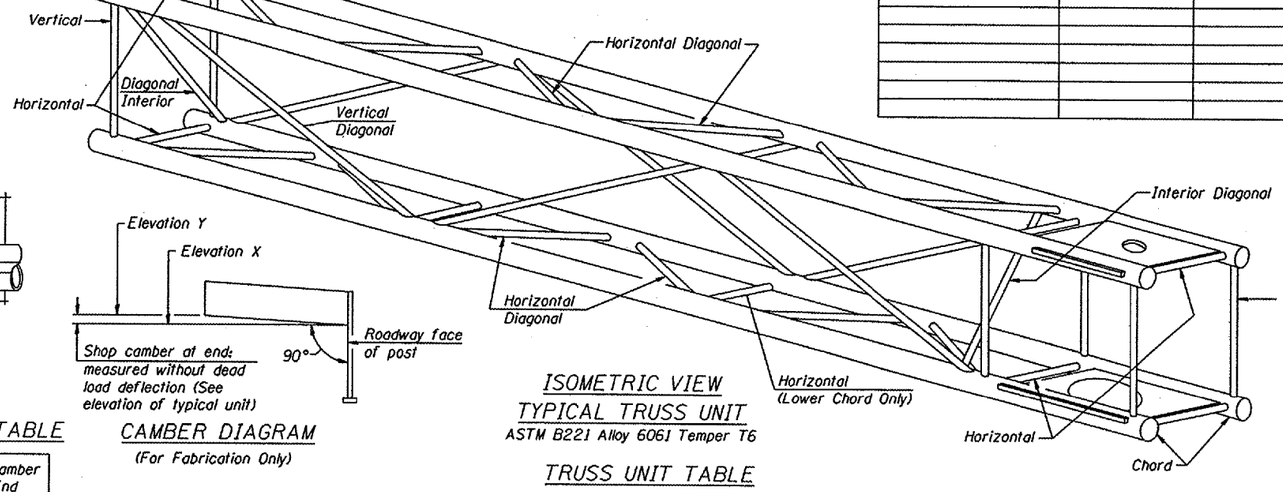
SECTION A-A



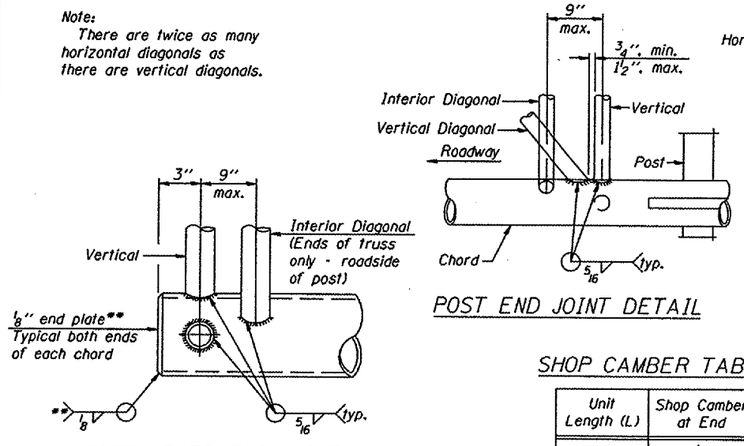
DETAIL A



TRUSS INTERIOR JOIN DETAIL



ISOMETRIC VIEW
TYPICAL TRUSS UNIT
ASTM B221 Alloy 6061 Temper T6



POST END JOINT DETAIL

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

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)*
4C048U034L007.7	624 + 40	II-C-A	30' - 0"	8	3' - 6"

NUMBER	REVISION	DATE

TRUSS UNIT TABLE

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

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

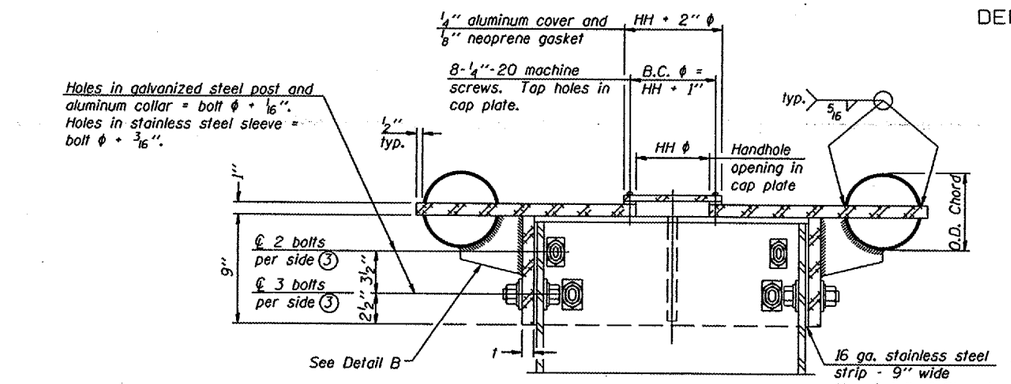
CANTILEVER SIGN STRUCTURES
TRUSS DETAILS
ALUMINUM TRUSS & STEEL POST

District 4
Overhead Sign Structure
Repair & Replacement

DESIGNED -	
CHECKED -	
DRAWN -	
CHECKED -	

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

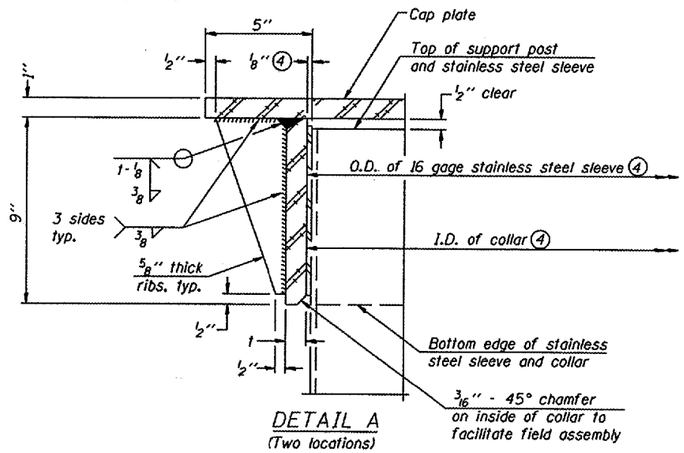
OSC-A-2 6/01/2007



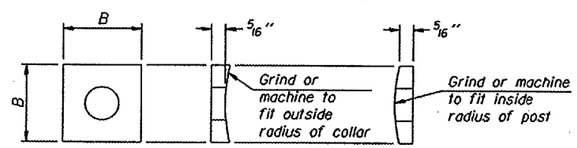
SECTION B-B

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.

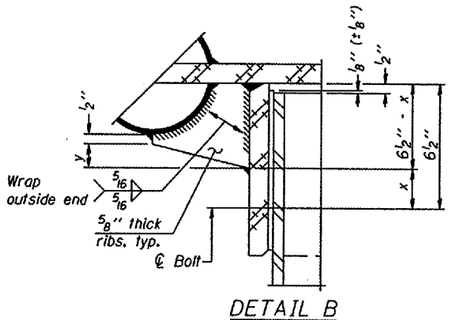


DETAIL A
(Two locations)

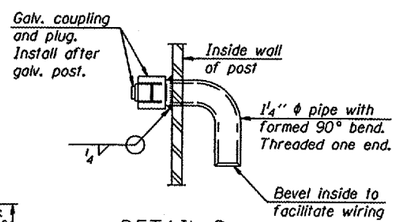


CONTOURED WASHERS

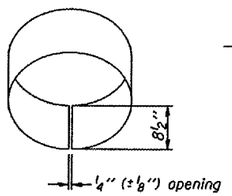
Bolt Size	Contoured Washers	
	Hole Dia.	B
7/8"	1"	2 1/2"
1"	1 1/8"	3"
1 1/4"	1 3/8"	3 1/4"



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

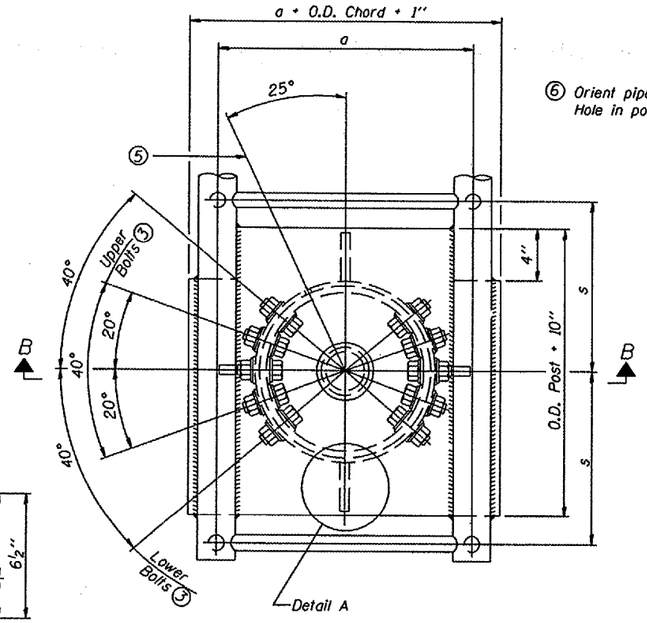


DETAIL D



DETAIL OF STAINLESS STEEL SLEEVE

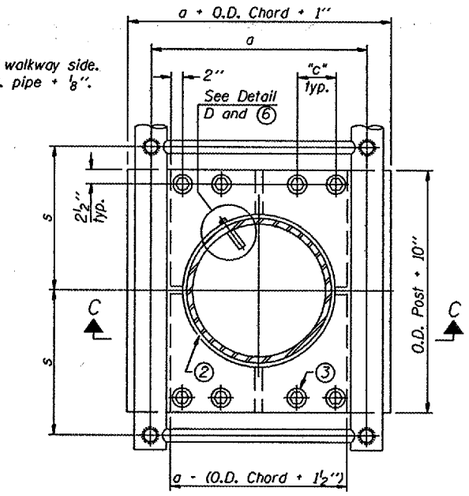
Weld to post after galvanizing.
(Prepare post surface to insure tight, uniform fit and allow welding.)
Welds to be 1 1/2" long at 6" cts. along top edge and at 1/4" opening.



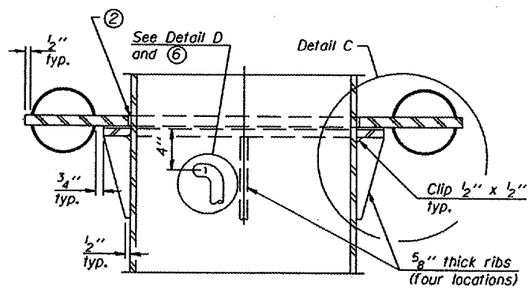
PLAN VIEW - TOP OF COLUMN

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

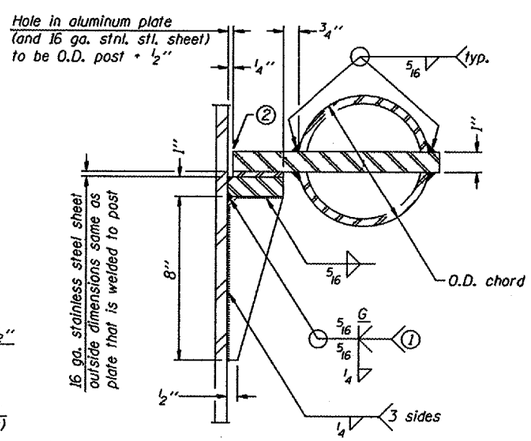
(6) Orient pipe toward walkway side. Hole in post = O.D. pipe + 1/8".



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

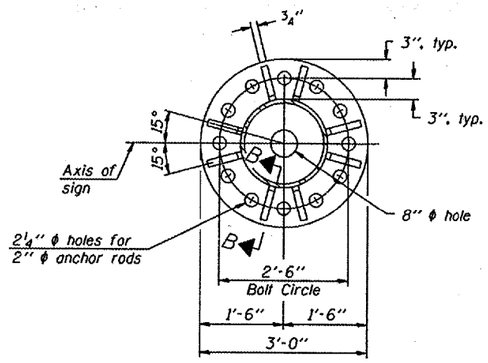
NUMBER	REVISION	DATE

CANTILEVER SIGN STRUCTURES
JUNCTURE DETAILS
ALUMINUM TRUSS & STEEL POST

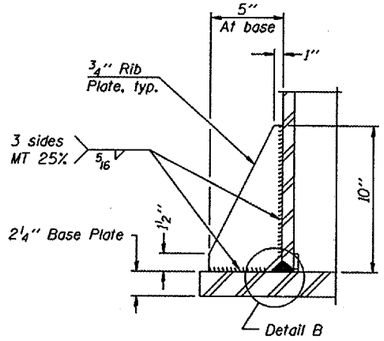
District 4
Overhead Sign Structure
Repair & Replacement

OSC-A-3 6/01/2007

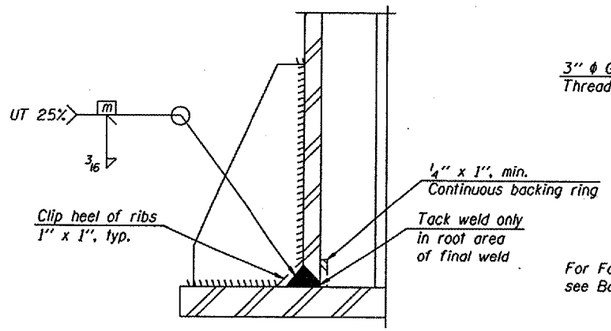
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



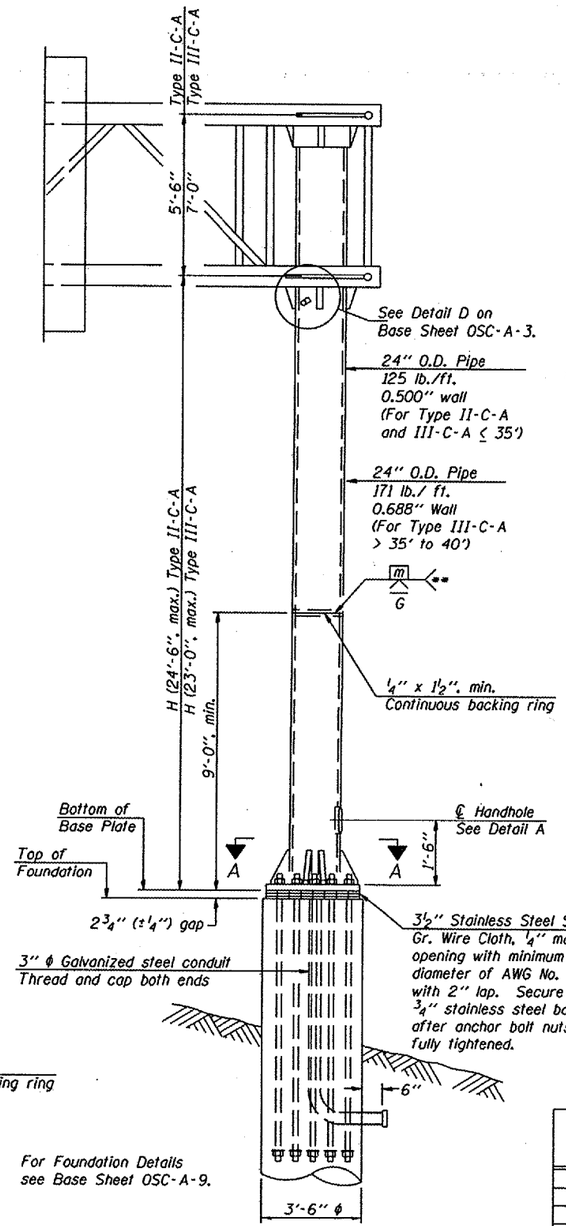
SECTION A-A



SECTION B-B

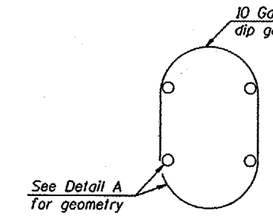


DETAIL B
(Typical rib)

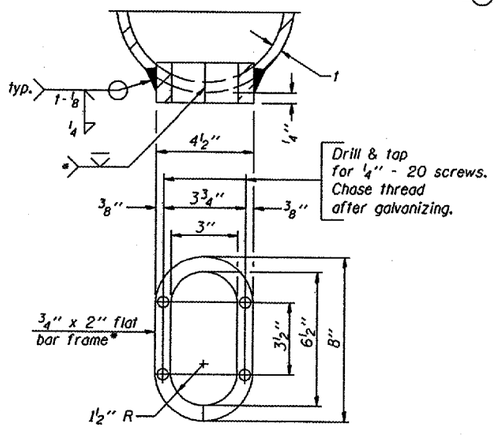


FRONT ELEVATION

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



HANDHOLE COVER

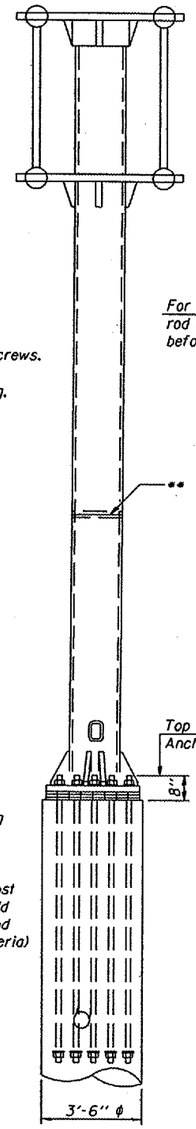


Provide 8" x 4 1/2" cover. Outside corners = 2 1/4" radius. Provide 4-5/16" ϕ holes in cover for 1/4" - 20 round head hot dip galvanized or stainless steel machine screws. (See cover details.)

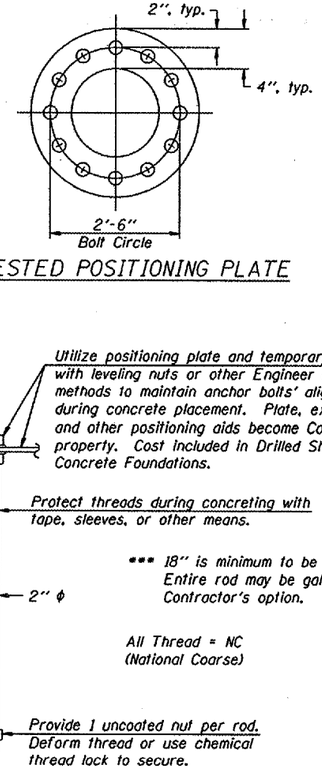
DETAIL A

* 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 μin or less.

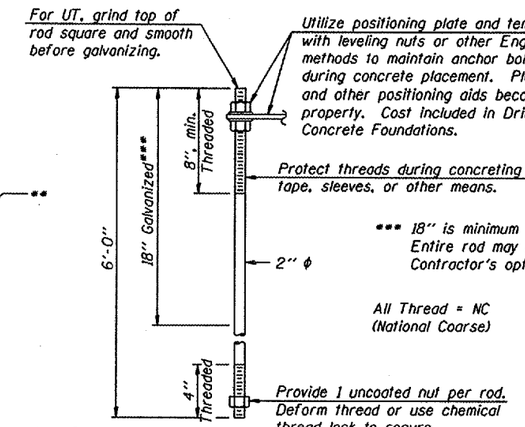
** Butt welded joint in post is only allowed for post heights (H) over 20 ft. in length. If used, weld procedure must be preapproved by Engineer and joint shall receive 100% RT or UT (tension criteria) at Contractor's expense.



SIDE ELEVATION



SUGGESTED POSITIONING PLATE



ANCHOR ROD DETAIL

Anchor rods shall conform to AASHTO M314 Grade 105 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
4C048U034L007.7	624 + 40	20' - 3"

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

NUMBER	REVISION	DATE

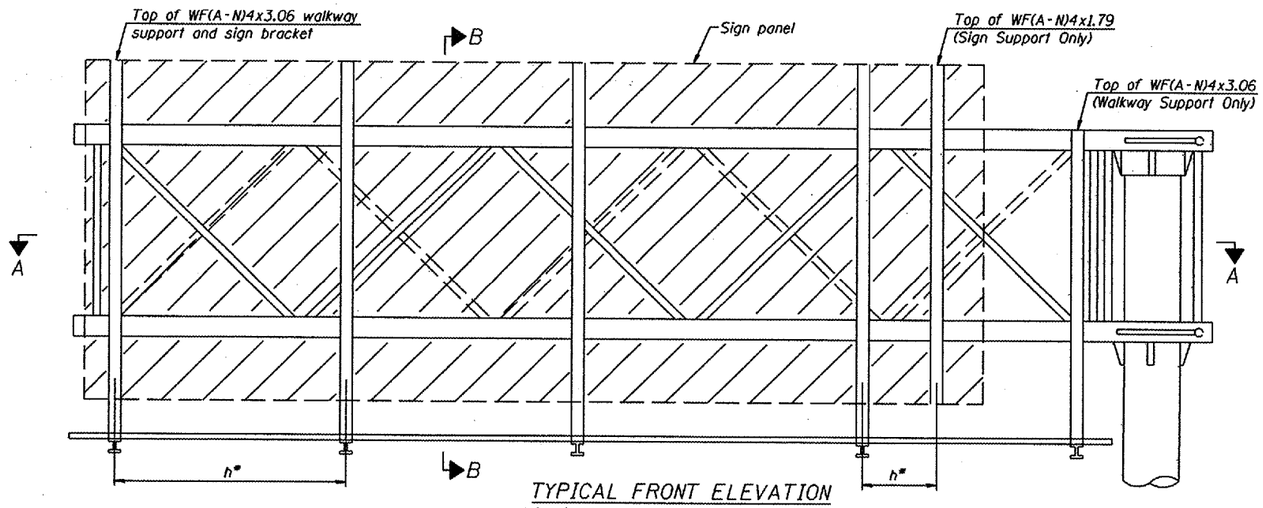
DESIGNED	-
CHECKED	-
DRAWN	-
CHECKED	-

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

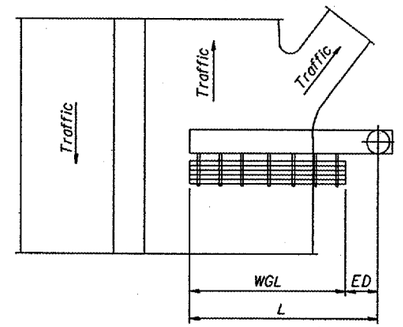
OSC-A-5 6/01/2007

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

District 4
Overhead Sign Structure
Repair & Replacement

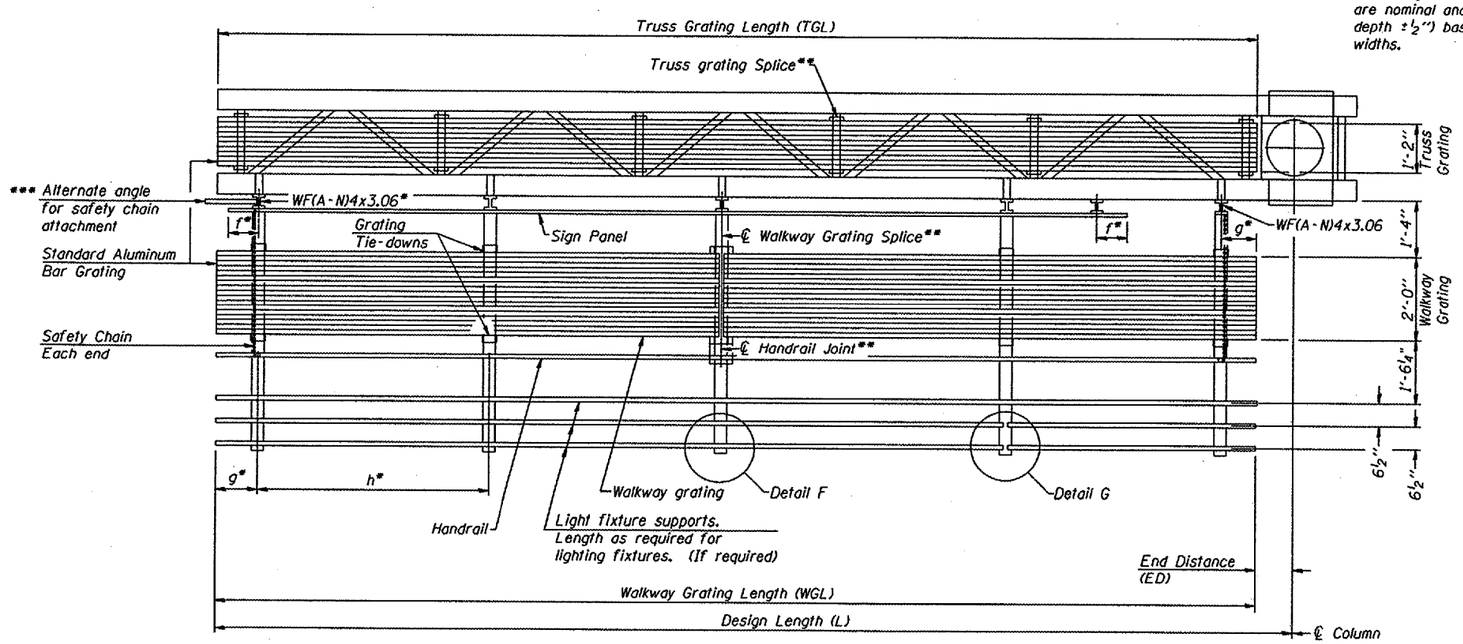


TYPICAL FRONT ELEVATION
With lights and handrail omitted for clarity.



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.



SECTION A-A

Structure Number	Station	WGL	ED	TGL
4C048U034L007.7	624 + 40	✳		28' - 6"

✳ Reuse Existing Walkway and Walkway Support Brackets.

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. See alternate safety chain attachment on base sheet OSC-A-8

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 joint, 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.

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

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

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 -

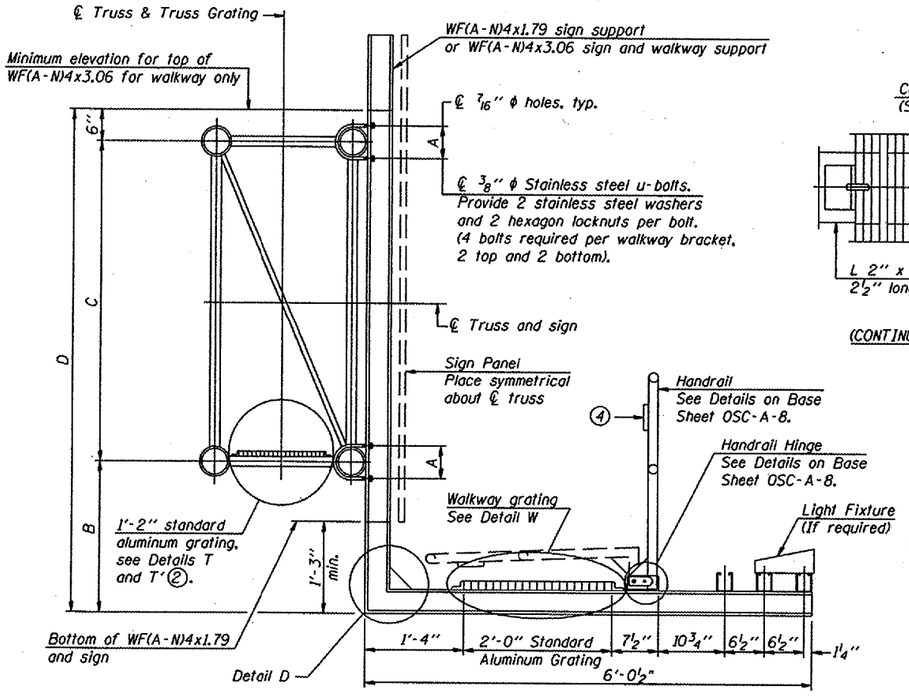
- , 20
EXAMINED
ENGINEER OF BRIDGE DESIGN
PASSED
ENGINEER OF BRIDGES AND STRUCTURES

OSC-A-6 6/01/2007

CANTILEVER SIGN STRUCTURES
ALUMINUM WALKWAY DETAILS
ALUMINUM TRUSS & STEEL POST

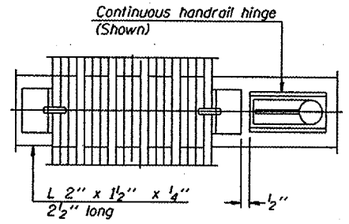
District 4
Overhead Sign Structure
Repair & Replacement

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

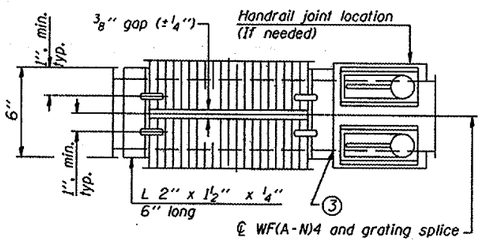


SECTION B-B

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

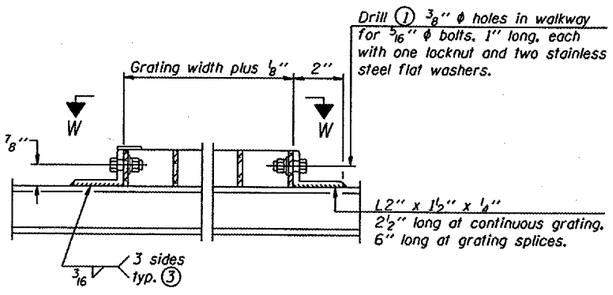


(CONTINUOUS WALKWAY GRATING)

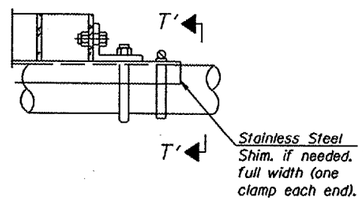


(AT WALKWAY GRATING SPLICE)

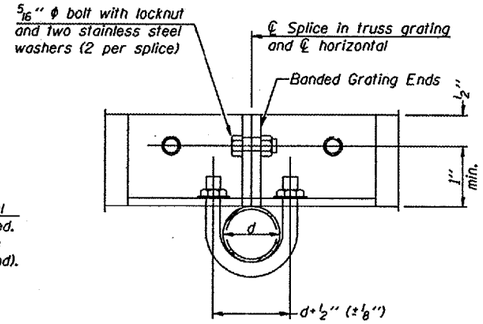
SECTION W-W



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.



SECTION T'-T'

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.

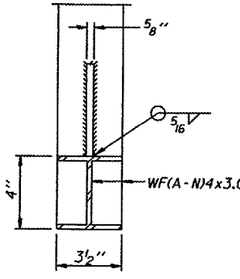
Cross bars (CB) shall be 3/16" x 1½" on 4" centers and conform to ASTM B221 Alloy 6063-T5 or 6061-T6.

OR

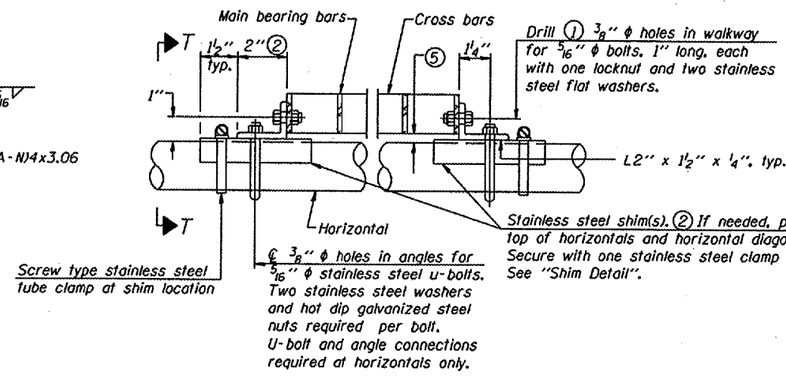
Aluminum Grating with modified "I" sections for main bearing bars shall meet the following requirements:

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.

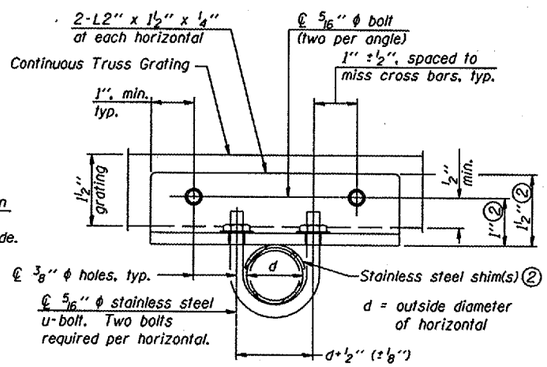
Cross bars shall conform to ASTM B221 Alloy 6063-T5 or T-42 and spaced on 4" centers.



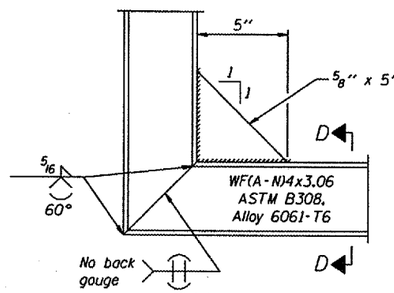
SECTION D-D



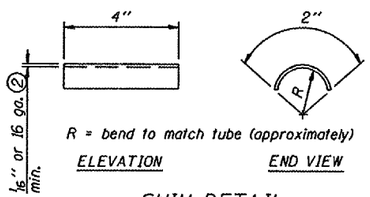
DETAIL T
(Continuous Truss grating)



SECTION T-T



DETAIL D



SHIM DETAIL

NUMBER	REVISION	DATE

DESIGNED -
CHECKED -
DRAWN -
CHECKED -

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

OSC-A-7 6/01/2007

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 OSC-A-8.)

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.

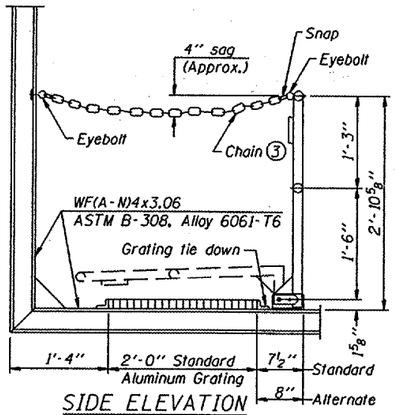
Reuse Existing Walkway Support Brackets.

Structure Number	Station	A	B	C	D

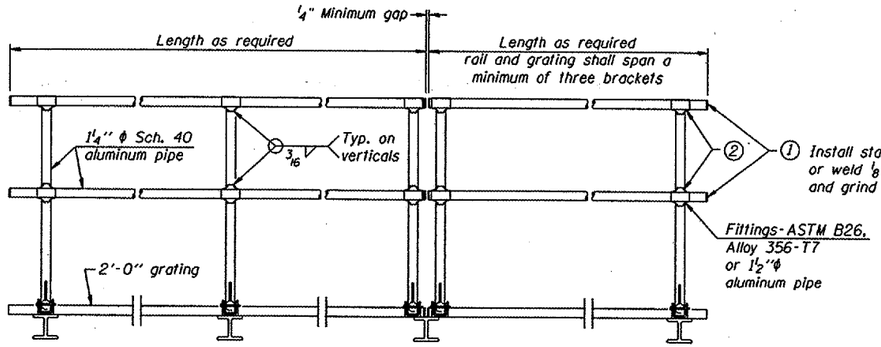
CANTILEVER SIGN STRUCTURES
WALKWAY DETAILS
ALUMINUM TRUSS & STEEL POST

District 4
Overhead Sign Structure
Repair & Replacement

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



SIDE ELEVATION
(Showing Safety Chain W/O Sign)



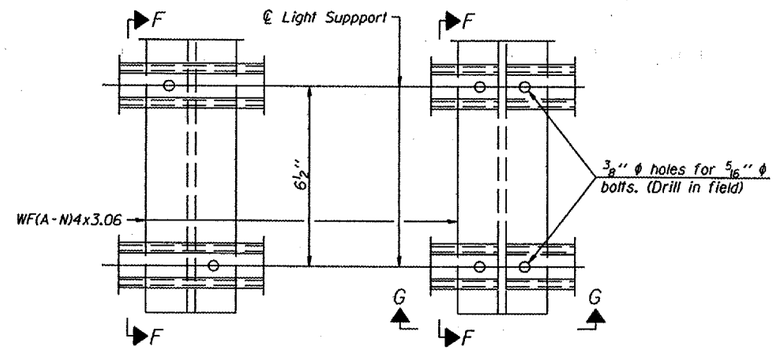
FRONT ELEVATION

① Install standard force-fit end caps or weld 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.)

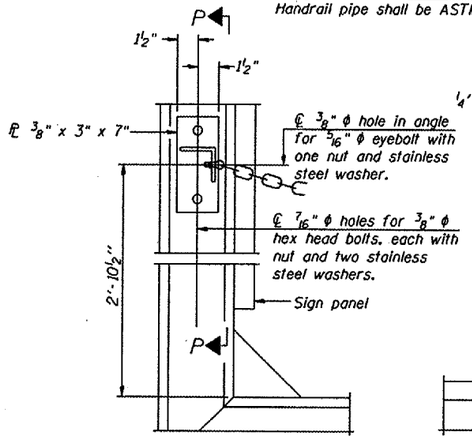
HANDRAIL DETAILS

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

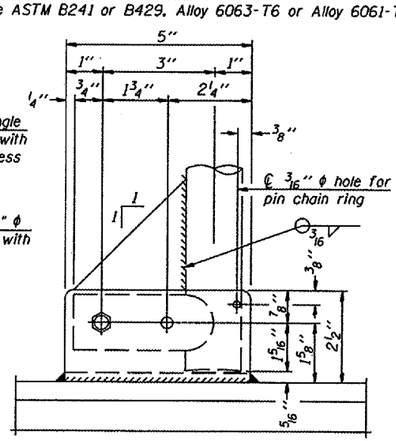


DETAIL F

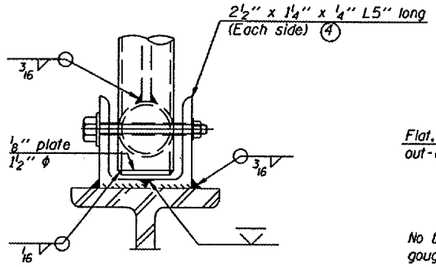
DETAIL G



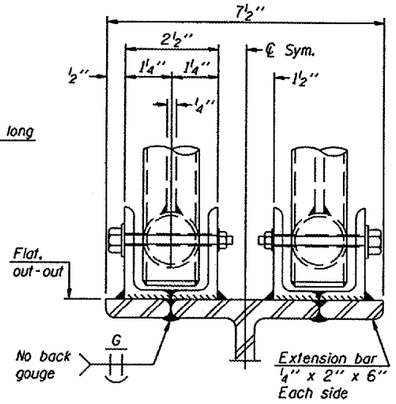
ALTERNATE SAFETY CHAIN ATTACHMENT
(With Sign Present)
Items not shown same as "Side Elevation" of "Handrail Details"



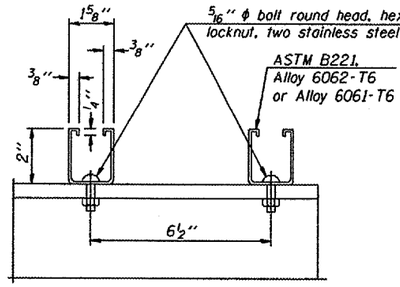
SIDE ELEVATION



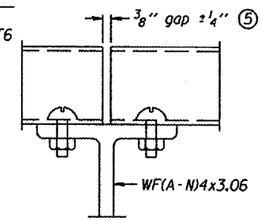
FRONT ELEVATION
Details not shown same as "ELEVATION" at right.



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



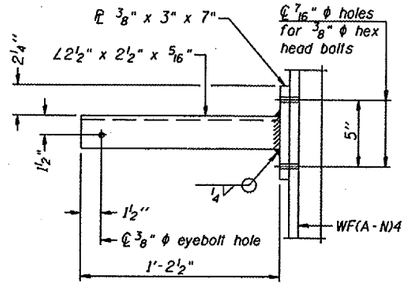
SECTION F-F



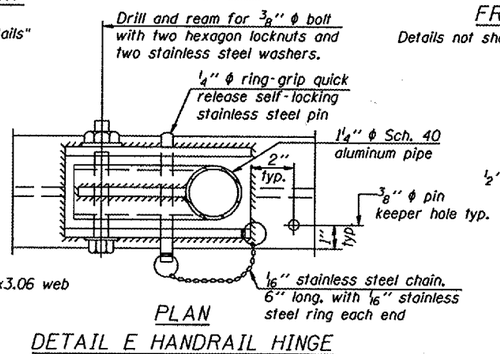
SECTION G-G

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.

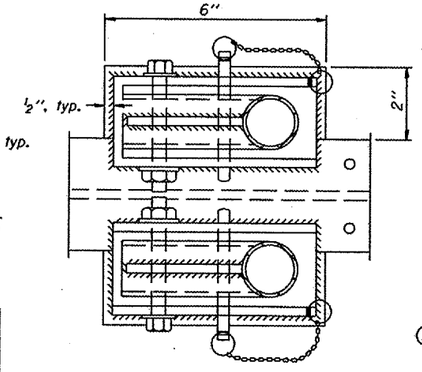


SECTION P-P

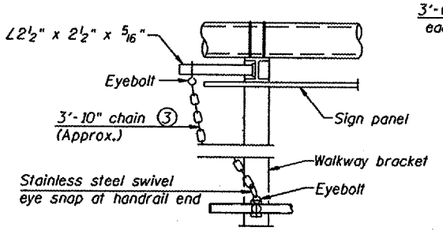


PLAN

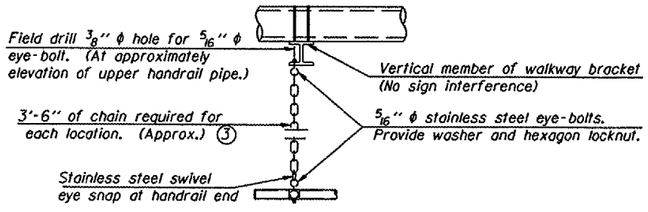
DETAIL E HANDRAIL HINGE



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" Type 304L stainless steel chain, approximately 12 links per foot.

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

DESIGNED -	
CHECKED -	
DRAWN -	
CHECKED -	

- 20

EXAMINED

ENGINEER OF BRIDGE DESIGN

PASSED

ENGINEER OF BRIDGES AND STRUCTURES

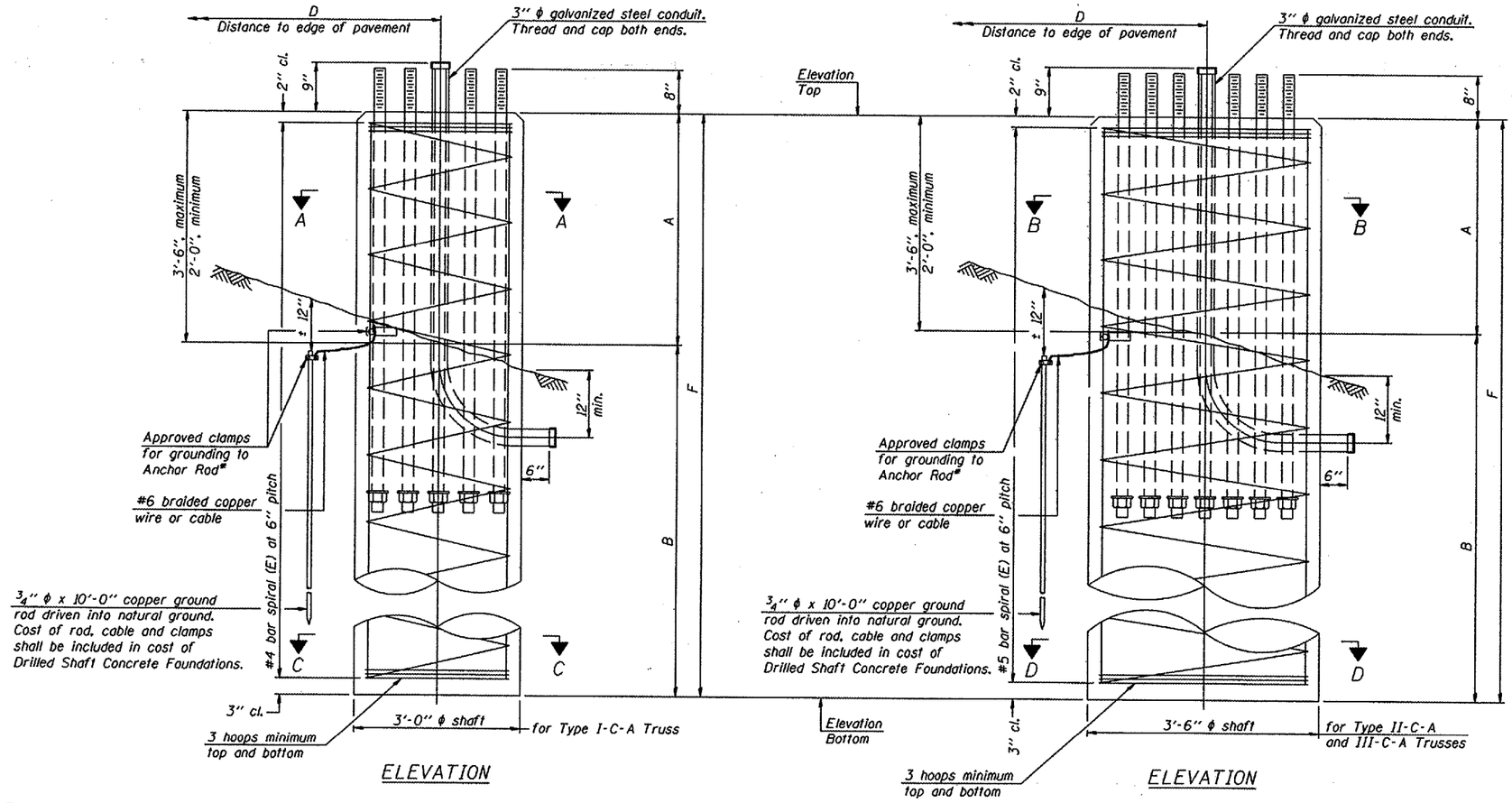
NUMBER	REVISION	DATE

OSC-A-8 6/01/2007

CANTILEVER SIGN STRUCTURES
HANDRAIL DETAILS
ALUMINUM TRUSS & STEEL POST

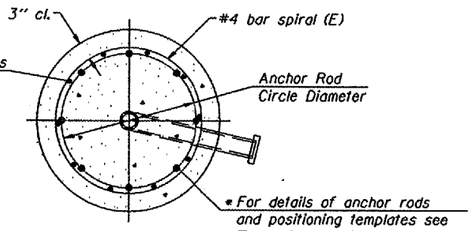
District 4
Overhead Sign Structure
Repair & Replacement

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

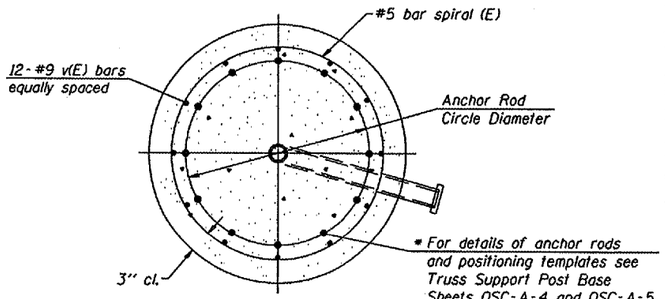


ELEVATION

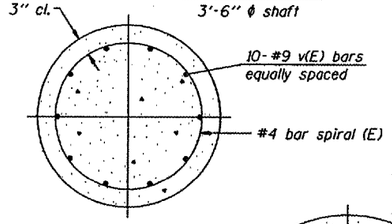
ELEVATION



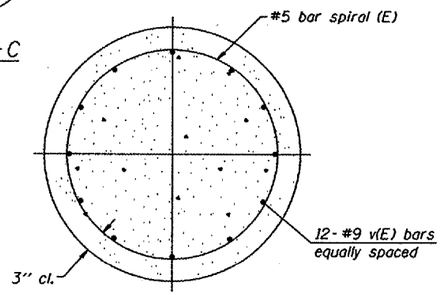
SECTION A-A
3'-0" ϕ shaft



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
4C048U034L007.7	624 + 40	II-C-A	3.5'	822.28			3' - 0"	17' - 0"	20' - 0"	7.1

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 -

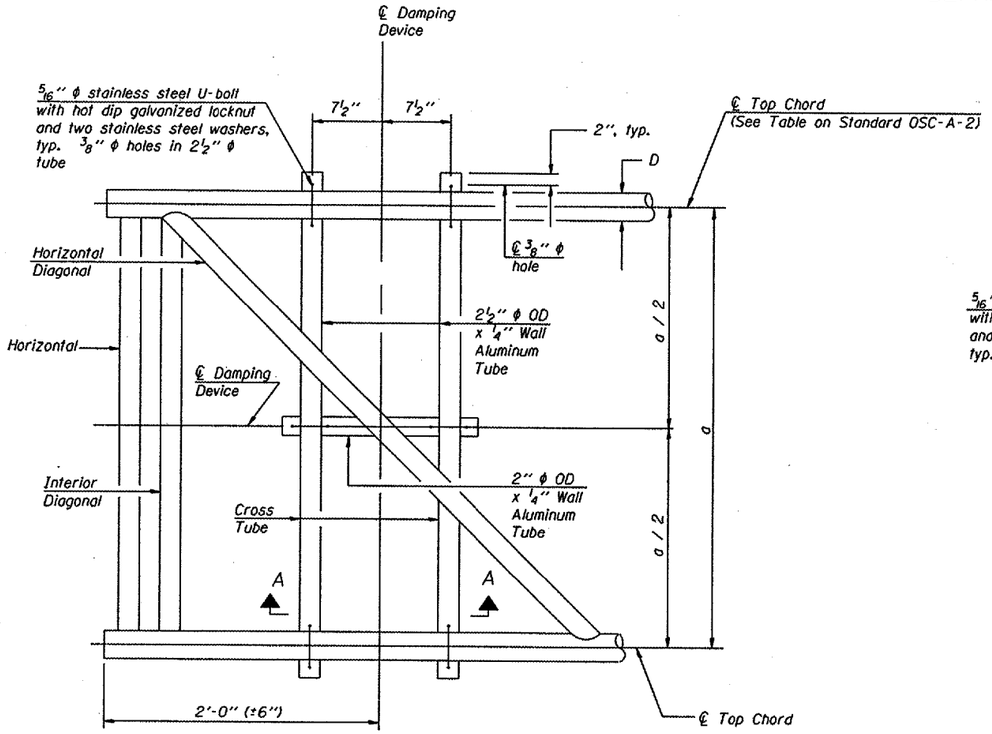
- 20
EXAMINED
ENGINEER OF BRIDGE DESIGN
PASSED
ENGINEER OF BRIDGES AND STRUCTURES

NUMBER	REVISION	DATE

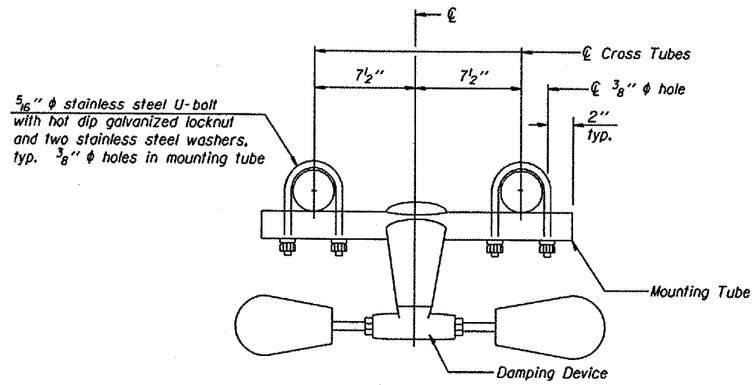
OSC-A-9 6/01/2007

CANTILEVER SIGN STRUCTURES
DRILLED SHAFT
ALUMINUM TRUSS & STEEL POST

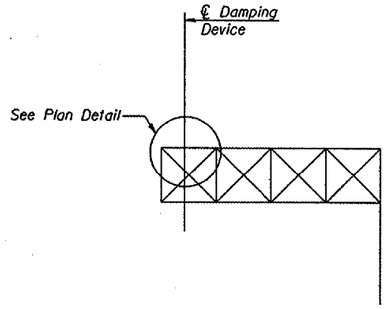
District 4
Overhead Sign Structure
Repair & Replacement



PLAN DETAIL



TRUSS DAMPING DEVICE CONNECTION DETAIL

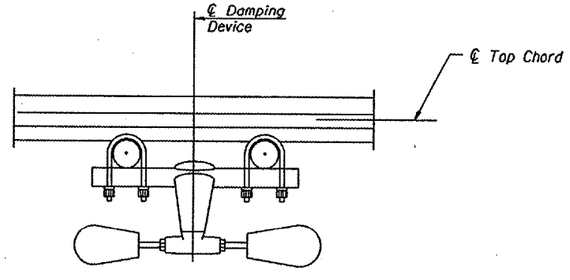


ELEVATION
Aluminum Cantilever Sign Structure

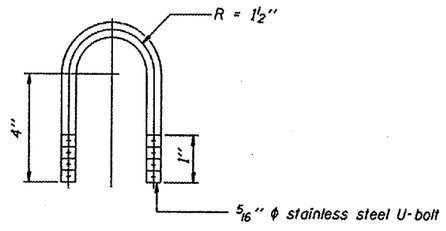
GENERAL NOTES

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

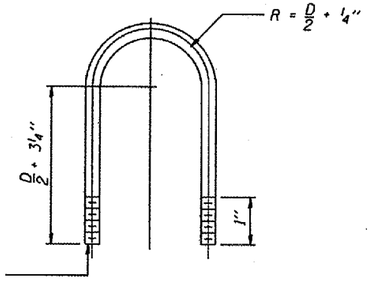
Materials: Aluminum tubes shall be ASTM B221 alloy 6061 temper T6



SECTION A-A



DAMPING DEVICE MOUNTING TUBE U-BOLT DETAIL
(Typical)



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

DESIGNED	-
CHECKED	-
DRAWN	-
CHECKED	-

- 20

EXAMINED

ENGINEER OF BRIDGE DESIGN

PASSED

ENGINEER OF BRIDGES AND STRUCTURES

OSC-A-D 6/01/2007

CANTILEVER SIGN STRUCTURE
DAMPING DEVICE

District 4
Overhead Sign Structure
Repair & Replacement

District 4
Schedule of Overhead Sign Structure Repair & Replacement

Illinois Department of Transportation
Division of Highways
IDOT

SOIL BORING LOG

Page 1 of 1

Date 7/24/07

ROUTE VARIOUS ROUTES DESCRIPTION Overhead Sign Truss US 34 to NB US 150 (Exist S.N. 4S048U034L005.4) KNOX CO LOGGED BY JAR

SECTION Sign Trusses LOCATION KNOX CO., SEC., TWP., RNG.

COUNTY VARIOUS DRILLING METHOD Hollow Stem Auger HAMMER TYPE AUTO

STRUCT. NO. Exist S.N. 4S048U034L005.4
Station 501+85 (US 34 Sta)

BORING NO. 250
Station 2+50 (Short Ramp)
Offset 43.00ft N of BL(Short Ramp)
Ground Surface Elev. 786.38 ft

Surface Water Elev. ft
Stream Bed Elev. ft

Groundwater Elev.:
First Encounter 765.4 ft ▼
Upon Completion 778.1 ft ▽
After 48 Hrs. 779.3 ft ▼

	DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
Dk. Brown SILTY CLAM				
		3		
		3	3.0	26.0
		5	P	
782.38				
Brown & Gray SILTY LOAM		2		
	-5	2	1.1	26.0
		4	B	
		1		
▽				
		2	0.7	26.0
		2	B	
▽				
		2		
	-10	3	2.5	23.0
		4	B	
		1		
		2	1.3	27.0
		2	B	
772.38				
Brown & Gray SILTY CLAY		1		
	-15	2	1.1	27.0
		3	B	
769.88				
Gray CLAY LOAM		2		
		3	1.9	18.0
		3	B	
767.38				
Brown & Gray CLAY LOAM TILL		2		
	-20	2	1.0	19.0

	DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
Brown & Gray CLAY LOAM TILL *(continued)*	▼	3	B	
		2		
		4	3.7	16.0
		7	B	
		6		
	-25	9	5.0	13.0
760.88		12	B	
EXIST TRUSS @ 2+73				
ASSUME SHORT RAMP STA				
INCREASES WEST TO EAST				
End of Boring				
	-30			
	-35			
	-40			

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)
The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)

BBS, from 137 (Rev. 8-99)

Illinois Department of Transportation
Division of Highways
IDOT

SOIL BORING LOG

Page 1 of 1

Date 7/24/07

ROUTE VARIOUS ROUTES DESCRIPTION Overhead Sign Truss US 34 to NB US 150 (Exist S.N. 4S048U034L005.4) KNOX CO LOGGED BY JAR

SECTION Sign Trusses LOCATION KNOX CO., SEC., TWP., RNG.

COUNTY VARIOUS DRILLING METHOD Hollow Stem Auger HAMMER TYPE AUTO

STRUCT. NO. Exist S.N. 4S048U034L005.4
Station 501+85 (US 34 Sta)

BORING NO. 273
Station 2+73 (Ramp)
Offset 23.00ft S of BL(Short Ramp)
Ground Surface Elev. 783.78 ft

Surface Water Elev. ft
Stream Bed Elev. ft

Groundwater Elev.:
First Encounter 769.8 ft ▼
Upon Completion 778.2 ft ▽
After 48 Hrs. 779.3 ft ▼

	DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
Brown & Gray SILTY LOAM				
		2		
		1	1.0	26.0
		2	B	
		1		
▽				
	-5	1	0.3	28.0
		2	B	
▽				
		1		
		2	1.0	26.0
		3	B	
774.78				
Brown & Gray SILTY CLAY		1		
	-10	1	1.3	27.0
		2	S	
772.38				
Gray CLAY LOAM		2		
		2	1.4	27.0
		3	B	
▼				
		2		
	-15	3	1.4	24.0
		3	B	
		1		
		2	1.2	23.0
		1	B	
764.78				
Brown & Gray CLAY LOAM TILL		3		
	-20	7	3.3	15.0

	DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
Brown & Gray CLAY LOAM TILL *(continued)*		12	B	
		4		
		6	5.8	12.0
		10	B	
759.78				
Gray SILTY CLAY		3		
	-25	14	4.6	15.0
758.28		24	S	
EXIST TRUSS @ 2+73				
ASSUME SHORT RAMP STA				
INCREASES WEST TO EAST				
End of Boring				
	-30			
	-35			
	-40			

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)
The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)

BBS, from 137 (Rev. 8-99)

District 4
Schedule of Overhead Sign Structure Repair & Replacement

Illinois Department of Transportation
Division of Highways
IDOT

SOIL BORING LOG

Page 1 of 1

Date 7/24/07

Overhead Sign Truss WB US 34

ROUTE VARIOUS ROUTES DESCRIPTION (Exist S.N. 4S048U034L005.6) KNOX CO. LOGGED BY JAR

SECTION Sign Trusses LOCATION KNOX CO. SEC. TWP. RNG.

COUNTY VARIOUS DRILLING METHOD Hollow Stem Auger HAMMER TYPE AUTO

STRUCT. NO. Exist S.N. 4S048U034L00.56
Station

BORING NO. 51051
Station 510+51
Offset 66.00ft LT Median CL
Ground Surface Elev. 782.60 ft

Surface Water Elev. ft
Stream Bed Elev. ft

Groundwater Elev.:
First Encounter 758.6 ft
Upon Completion 760.6 ft
After 48 Hrs. 778.4 ft

	DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
Dk. Brown SILTY CLAY LOAM		2		
		2	1.7	29.0
		2	B	
778.60 Brown & Gray SILTY LOAM	-5	2	1.5	23.0
		2	B	
		2		
		2	1.1	27.0
		2	B	
		1		
	-10	2	1.0	28.0
		2	B	
771.10 Gray CLAY LOAM		2		
		3	2.1	24.0
		4	B	
		2		
	-15	2	1.5	21.0
		3	B	
		2		
		2	0.6	23.0
		2	B	
763.60 Brown & Gray CLAY LOAM TILL		3		
	-20	5	3.1	14.0
Brown & Gray CLAY LOAM TILL *(continued)*		8	B	
		4		
		8	5.2	13.0
		10	B	
		4		
	-25	9	5.8	15.0
		13	B	
		7		
		11	4.5	14.0
		14	B	
		4		
	-30	6	3.5	22.0
		11	B	
752.10 End of Boring				
	-35			
	-40			

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)
The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)

BBS, from 137 (Rev. 8-99)

Illinois Department of Transportation
Division of Highways
IDOT

SOIL BORING LOG

Page 1 of 1

Date 7/24/07

Overhead Sign Truss WB US 34

ROUTE VARIOUS ROUTES DESCRIPTION (Exist S.N. 4S048U034L005.6) KNOX CO. LOGGED BY JAR

SECTION Sign Trusses LOCATION KNOX CO. SEC. TWP. RNG.

COUNTY VARIOUS DRILLING METHOD Hollow Stem Auger HAMMER TYPE AUTO

STRUCT. NO. Exist S.N. 4S048U034L00.56
Station

BORING NO. 51051
Station 510+51
Offset 66.00ft LT Median CL
Ground Surface Elev. 782.60 ft

Surface Water Elev. ft
Stream Bed Elev. ft

Groundwater Elev.:
First Encounter 758.6 ft
Upon Completion 760.6 ft
After 48 Hrs. 778.4 ft

	DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
Dk. Brown SILTY CLAY LOAM		2		
		2	1.7	29.0
		2	B	
778.60 Brown & Gray SILTY LOAM	-5	2	1.5	23.0
		2	B	
		2		
		2	1.1	27.0
		2	B	
		1		
	-10	2	1.0	28.0
		2	B	
771.10 Gray CLAY LOAM		2		
		3	2.1	24.0
		4	B	
		2		
	-15	2	1.5	21.0
		3	B	
		2		
		2	0.6	23.0
		2	B	
763.60 Brown & Gray CLAY LOAM TILL		3		
	-20	5	3.1	14.0
Brown & Gray CLAY LOAM TILL *(continued)*		8	B	
		4		
		8	5.2	13.0
		10	B	
		4		
	-25	9	5.8	15.0
		13	B	
		7		
		11	4.5	14.0
		14	B	
		4		
	-30	6	3.5	22.0
		11	B	
752.10 End of Boring				
	-35			
	-40			

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)
The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)

BBS, from 137 (Rev. 8-99)

District 4
Schedule of Overhead Sign Structure Repair & Replacement

Illinois Department of Transportation (Division of Highways, IDOT)

SOIL BORING LOG

Page 1 of 1

ROUTE VARIOUS ROUTES DESCRIPTION Overhead Sign Truss US 34 (Exist S.N. 4S048U034R005.0) KNOX CO LOGGED BY JAR
Date 7/23/07

SECTION Sign Trusses LOCATION KNOX CO., SEC., TWP., RNG.

COUNTY VARIOUS DRILLING METHOD HSA HAMMER TYPE AUTO

STRUCT. NO. Exist S.N. 4S048U034R005.0
Station 481+17 (Existing)

BORING NO. 48107
Station 481+07
Offset 75.00ft Rt Median CL
Ground Surface Elev. 791.52 ft

Surface Water Elev. ft
Stream Bed Elev. ft
Groundwater Elev.:
First Encounter 772.5 ft
Upon Completion 781.6 ft
After 48 Hrs. 783.0 ft

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
Brown & Gray SILTY CLAY LOAM			
	2		
	3		
	5	4.5	20.0
	6	B	
	2		
-5	3	2.1	27.0
	4	B	
785.02 Brown & Gray SILTY LOAM	1		
	2	1.0	29.0
	2	P	
▽			
	1		
▽ -10	1	0.5	26.0
	2	B	
	1		
	2	1.0	24.0
	3	B	
	1		
-15	1	0.6	26.0
	3	B	
775.02 Brown & Gray CLAY LOAM TILL	2		
	3	2.1	24.0
	5	B	
▼			
	2		
-20	3	1.5	20.0

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
Brown & Gray CLAY LOAM TILL (continued)			
	3	B	
	1		
	3	2.7	16.0
	6	B	
	12		
766.69 End of Boring	100@4"	2.1	11.0
		B	
-25			
-30			
-35			
-40			

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)
The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)

BBS, from 137 (Rev. 8-99)

Illinois Department of Transportation (Division of Highways, IDOT)

SOIL BORING LOG

Page 1 of 1

ROUTE VARIOUS ROUTES DESCRIPTION Overhead Sign Truss US 34 (Exist S.N. 4S048U034R005.0) KNOX CO LOGGED BY JAR
Date 7/23/07

SECTION Sign Trusses LOCATION KNOX CO., SEC., TWP., RNG.

COUNTY VARIOUS DRILLING METHOD HSA HAMMER TYPE AUTO

STRUCT. NO. Exist S.N. 4S048U034R005.0
Station 481+17 (Existing)

BORING NO. 48129
Station 481+29
Offset 0.00ft On Median CL
Ground Surface Elev. 792.72 ft

Surface Water Elev. ft
Stream Bed Elev. ft
Groundwater Elev.:
First Encounter 776.7 ft
Upon Completion 782.7 ft
After 48 Hrs. 783.6 ft

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
Brown & Gray SILTY CLAY LOAM			
	4		
	6	8.7	15.0
	8	S	
	3		
-5	3	1.9	29.0
	6	B	
786.22 Gray CLAY LOAM	2		
	2	2.3	27.0
	4	B	
783.72 ▽ Brown & Gray SILTY LOAM	1		
▽ -10	1	1.1	29.0
	3	B	
	1		
	1	1.0	25.0
	3	B	
	1		
-15	2	1.4	25.0
	2	B	
▼			
	1		
	1	1.3	23.0
	3	B	
773.72 Brown & Gray CLAY LOAM TILL	2		
-20	3	2.5	25.0

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
Brown & Gray CLAY LOAM TILL (continued)			
	5	B	
	3		
	4	2.5	19.0
	5	B	
	2		
-25	3	2.9	17.0
767.22 End of Boring	5	B	
-30			
-35			
-40			

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)
The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)

BBS, from 137 (Rev. 8-99)

District 4
Schedule of Overhead Sign Structure Repair & Replacement

Illinois Department of Transportation
Division of Highways
IDOT

SOIL BORING LOG

Page 1 of 1

Date 7/23/07

ROUTE VARIOUS ROUTES DESCRIPTION Overhead Sign Truss US150 (Exist S.N. 4S048U150R011.6) KNOX CO LOGGED BY JAR

SECTION Sign Trusses LOCATION KNOX CO., SEC., TWP., RNG.

COUNTY VARIOUS DRILLING METHOD Hollow Stem Auger HAMMER TYPE AUTOMATIC

STRUCT. NO. Exist S.N. 4S048U150R011.6
Station 462+12(Orig. Sta)

BORING NO. 18733
Station 18+733
Offset 0.00ft On Median CL
Ground Surface Elev. 783.91 ft

Surface Water Elev. ft
Stream Bed Elev. ft

Groundwater Elev.:
First Encounter 769.9 ft ▼
Upon Completion 765.3 ft ▽
After 48 Hrs. 778.6 ft ▽

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
Dk. Brown/Brown SILTY CLAY LOAM			
	2		
	8	1.5	17.0
	7	P	
779.91			
Brown & Gray SILTY LOAM	1		
-5	2	1.0	29.0
▽	2	P	
	1		
	1	0.5	26.0
	2	B	
	1		
-10	2	0.8	26.0
	1	B	
772.41			
Brown SILTY CLAY	1		
	2	1.2	26.0
	3	B	
769.91 ▼			
Brown CLAY LOAM TILL	2		
-15	3	1.8	23.0
	4	B	
	2		
	4	1.7	21.0
	4	B	
▽			
	3		
-20	4	1.3	22.0

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
Brown CLAY LOAM TILL (continued)	6	P	
	3		
	7	1.3	14.0
	9	P	
759.91			
Brown & Gray CLAY LOAM TILL	10		
-25	6	2.5	19.0
	9	B	
758.41			
End of Boring			
-30			
-35			
-40			

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)
The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)

BBS, from 137 (Rev. 8-99)

Illinois Department of Transportation
Division of Highways
IDOT

SOIL BORING LOG

Page 1 of 1

Date 7/23/07

ROUTE VARIOUS ROUTES DESCRIPTION Overhead Sign Truss US150 (Exist S.N. 4S048U150R011.6) KNOX CO LOGGED BY JAR

SECTION Sign Trusses LOCATION KNOX CO., SEC., TWP., RNG.

COUNTY VARIOUS DRILLING METHOD Hollow Stem Auger HAMMER TYPE AUTO

STRUCT. NO. Exist S.N. 4S048U150R011.6
Station 462+12(Orig. Sta)

BORING NO. 18742
Station 18+742
Offset 65.90ft Rt Median CL
Ground Surface Elev. 781.74 ft

Surface Water Elev. ft
Stream Bed Elev. ft

Groundwater Elev.:
First Encounter 773.7 ft ▼
Upon Completion 771.6 ft ▽
After 48 Hrs. 778.2 ft ▽

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
Dk. Brown/Brown SILTY CLAY LOAM			
	1		
	5	3.9	19.0
	4	S	
▽			
777.74			
Brown & Gray SILTY LOAM	1		
-5	2	0.7	26.0
	2	B	
	1		
▼	2	0.8	29.0
	2	B	
772.74			
Brown SILTY LOAM	1		
▽ -10	2	0.9	26.0
	2	B	
770.24			
Brown & Gray CLAY LOAM TILL	2		
	2	1.8	25.0
	4	B	
	1		
-15	2	2.1	26.0
	4	B	
	4		
	3	1.8	17.0
	4	B	
	3		
-20	6	5.0	14.0

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
Brown & Gray CLAY LOAM TILL (continued)	9	B	
	6		
	11	4.5	21.0
	13	P	
757.74			
Gray CLAY LOAM TILL	4		
-25	9	6.5	15.0
	18	S	
756.24			
End of Boring			
-30			
-35			
-40			

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)
The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)

BBS, from 137 (Rev. 8-99)

District 8
Schedule of Overhead Sign Structure Repair & Replacement

Location No.:	8-01	State I.D. No.:	8S060I270L004.4				
County:	Madison	Route:	I-270	M.P.:	4.4	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 SAFETY CHAIN	EACH	2.00
DISCONNECT/RECONNECT ELECTRIC SERVICE	EACH	1.00
FURNISH & INSTALL INTERNAL TRUSS DAMPER	EACH	1.00
OVERHEAD SIGN STRUCTURE WALKWAY	FOOT	92.00
OVERHEAD SIGN SUPPORT GROUT REPAIR	EACH	4.00

Location No.:	8-02	State I.D. No.:	8S060S159R003.8				
County:	Madison	Route:	Il 159	M.P.:	3.8	Direction:	NB

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 SAFETY CHAIN	EACH	2.00
DISCONNECT / RECONNECT ELECTRIC SERVICE	EACH	1.00
FURNISH & INSTALL INTERNAL TRUSS DAMPER	EACH	1.00
OVERHEAD SIGN STRUCTURE WAKWAY	FOOT	82.00
REPLACE U-BOLT	EACH	4.00
OVERHEAD SIGN SUPPORT GROUT REPAIR	EACH	4.00

Location No.:	8-03	State I.D. No.:	8S060I055R014.3				
County:	Madison	Route:	I-55	M.P.:	14.3	Direction:	NB

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
DISCONNECT / RECONNECT ELECTRIC SERVICE	EACH	1.00
FURNISH & INSTALL INTERNAL TRUSS DAMPER	EACH	1.00
REPLACE /TIGHTEN CLIPS PER SIGN	EACH	2.00
OVERHEAD SIGN STRUCTURE EALKWAY	FOOT	67.00

Location No.:	8-04	State I.D. No.:	8S067S003R018.1				
County:	Randolph	Route:	IL 3	M.P.:	18.1	Direction:	NB

Description of Work	Unit	Quantity
REMOVE & RE-ERECT OVERHEAD SIGN STRUCTURE - SPAN	EACH	1.00
STRUCTURAL STEEL SUPPORT OVERHEAD SIGN STRUSTURE	EACH	2.00
OVERHEAD SIGN STRUCTURE WALKWAY	FOOT	80.00
FURNISH & INSTALL TRUSS DAMPER	EACH	1.00
FURNISH & INSTALL SAFETY CHAIN	EACH	2.00
REPLACE / TIGHTEN CLIPS PER SIGN	EACH	2.00
DISCONNECT / RECONNECT ELECTRIC SERVICE	EACH	1.00
FURNISH & INSTALL SADDLE SHIM BLOCK	EACH	4.00
REPLACE U-BOLT	EACH	4.00

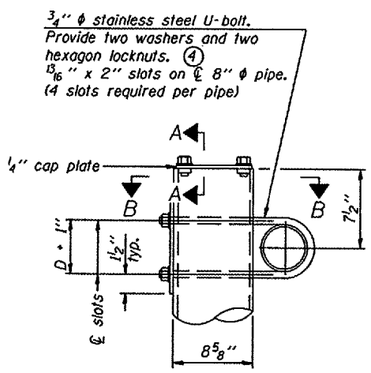
Location No.:	8-05	State I.D. No.:	8S082I064R018.4				
County:	St. Clair	Route:	I - 64	M.P.:	18.4	Direction:	EB

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
[illegible]	[illegible]	[illegible]
DISCONNECT / RECONNECT ELECTRIC SERVICE	EACH	1.00
REPLACE / TIGHTEN CLIPS PER SIGN	EACH	3.00
OVERHEAD SIGN STRUCTURE WALKWAY	FOOT	107.00
OVERHEAD SIGN STRUCTURE GROUT REPAIR	EACH	4.00

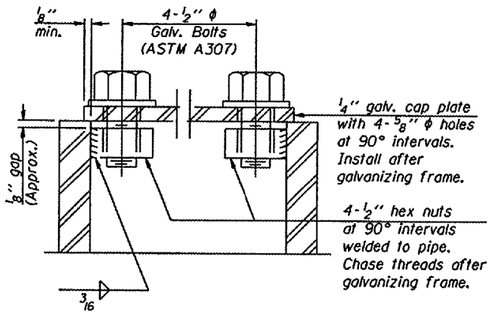
Location No.:	8-06	State I.D. No.:	8S082S015L013.6				
County:	St. Clair	Route:	IL 15	M.P.:	13.6	Direction:	WB

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 INTERNAL TRUSS DAMPER	EACH	1.00
REPLACE U-BOLT	EACH	4.00
FURNISH & INSTALL SADDLE SHIM BLOCK	EACH	4.00
FURNISH & INSTALL SAFETY CHAIN	EACH	2.00
DISCONNECT / RECONNECT ELECTRIC SERVICE	EACH	1.00
OVERHEAD SIGN STRUCTURE WALKWAY	FOOT	76.00
OVERHEAD SIGN SUPPORT GROUT REPAIR	EACH	4.00
REPLACE / TIGHTEN CLIPS PER SIGN	EACH	2.00
CONCRETE FOUNDATION REPAIR FOR OSS	EACH	2.00

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

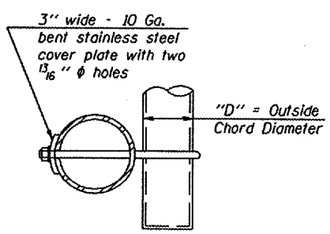


DETAIL A

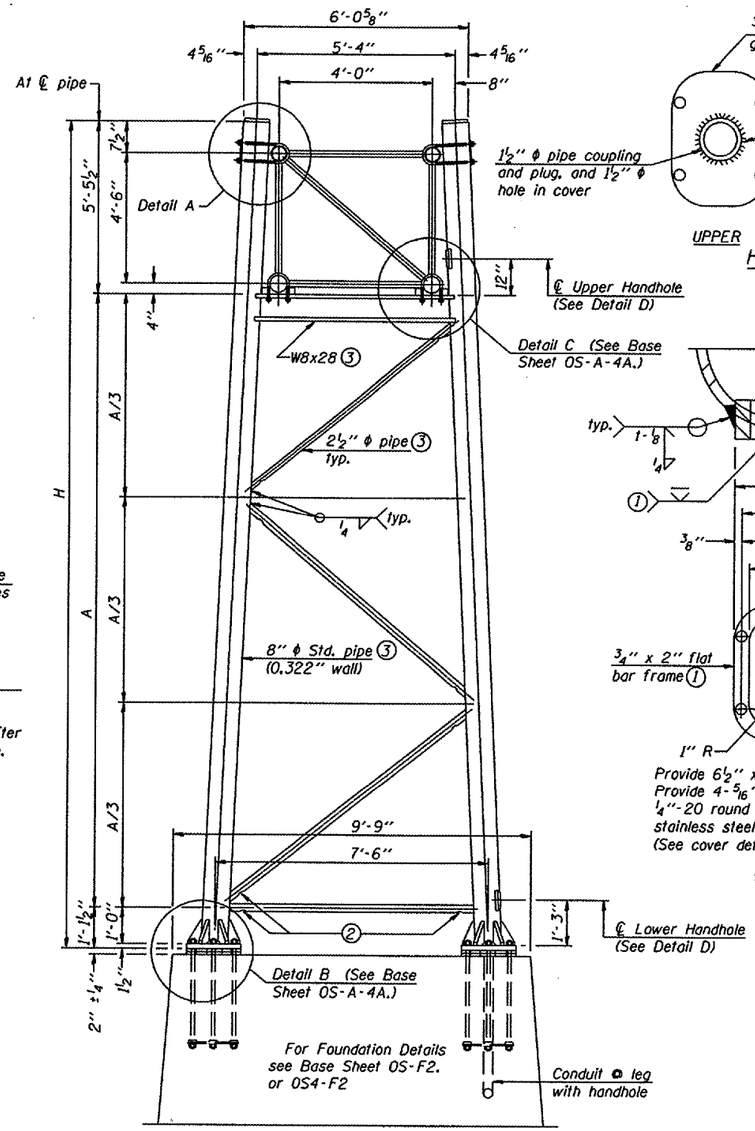


SECTION A-A

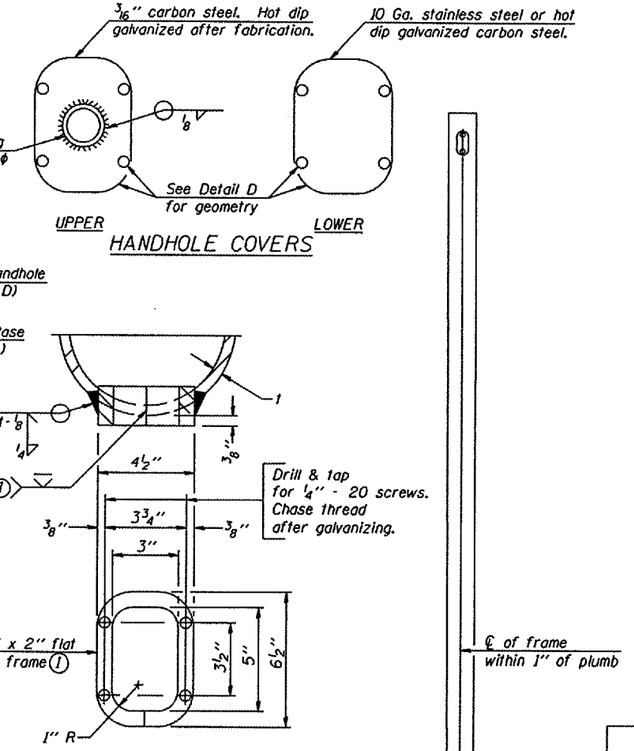
As an alternate to bolts, may use galvanized drive-fit caps installed after galvanizing frame.



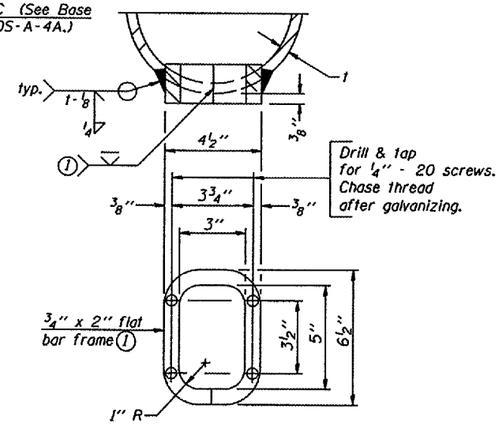
SECTION B-B



SIDE ELEVATION

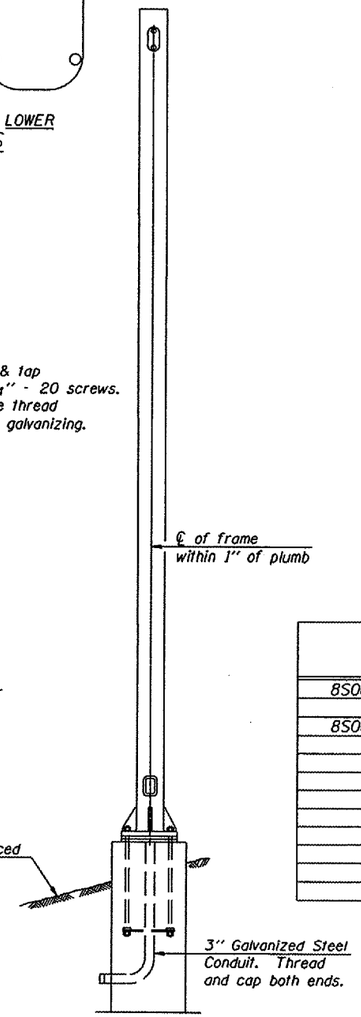


HANDHOLE COVERS



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

Structure Number	Station	Support		H (6)	A
		Left	Right		
8S060S159R003.8	129 + 50	X	X	24'-1 1/2"	16'-7 1/2"
8S060I055R014.3	698 + 65	X	X	23'-4 3/4"	16'-8 1/4"

8" ϕ PIPE TRUSS SUPPORT FRAME

NUMBER	REVISION	DATE

DESIGNED -	
CHECKED -	
DRAWN -	
CHECKED -	

- 20

EXAMINED

ENGINEER OF BRIDGE DESIGN

PASSED

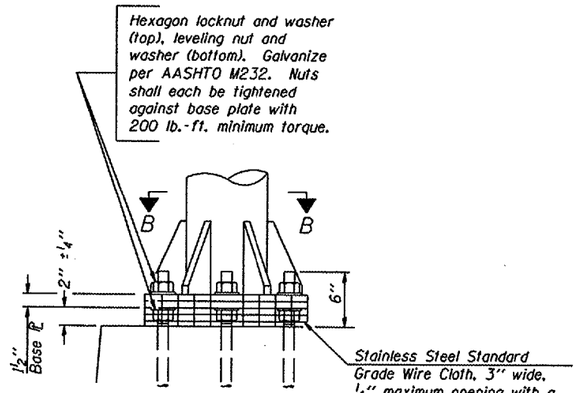
ENGINEER OF BRIDGES AND STRUCTURES

OS-A-4 6/01/2007

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

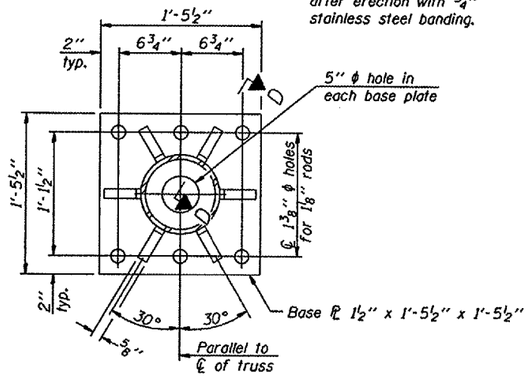
District 8
Overhead Sign Structure
Repair & Replacement

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

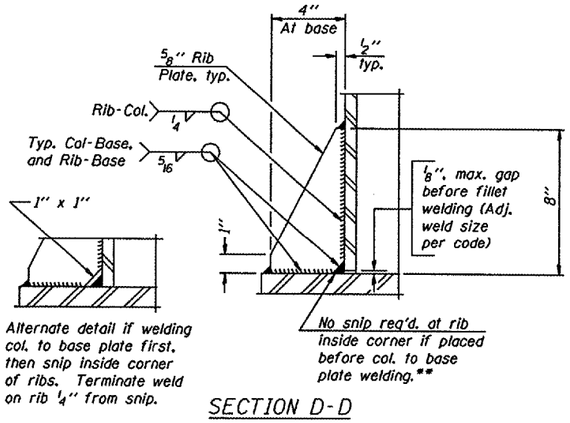


DETAIL B

Ribs shall be cut to fit slope of pipe.

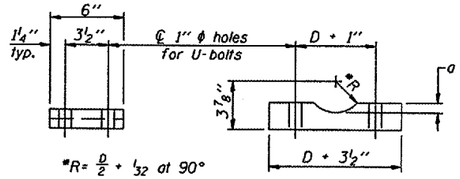


SECTION B-B



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

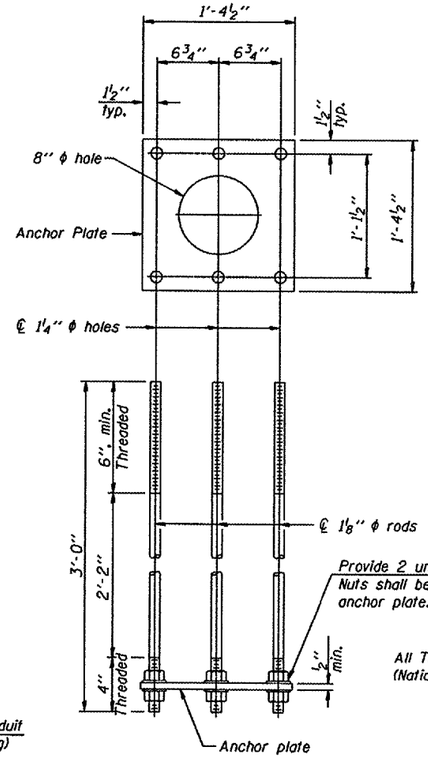
SECTION D-D



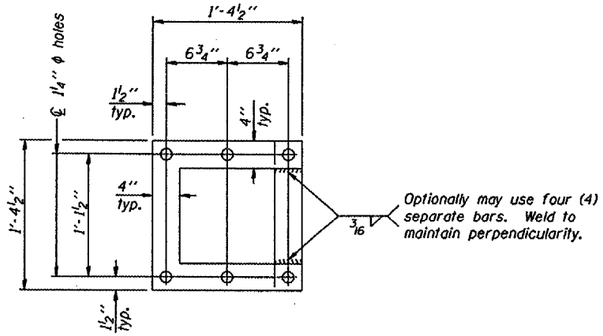
*R = D/2 + 1/32 at 90°
D = Outside Diameter of Chord.

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

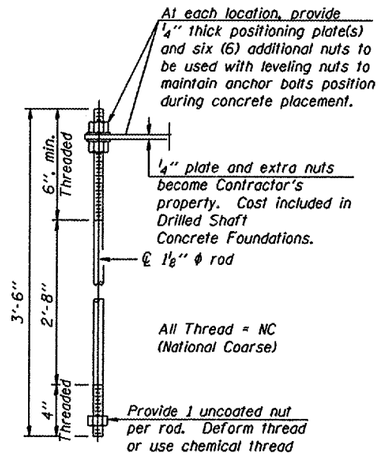
Truss Chord Nominal Dia.	a
5"	3/4"
5 1/2"	13/16"
6"	7/8"
6 1/2"	15/16"



ANCHOR ROD DETAIL
Spread Footing Foundation

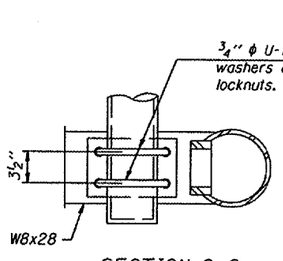


POSITIONING PLATE(S)

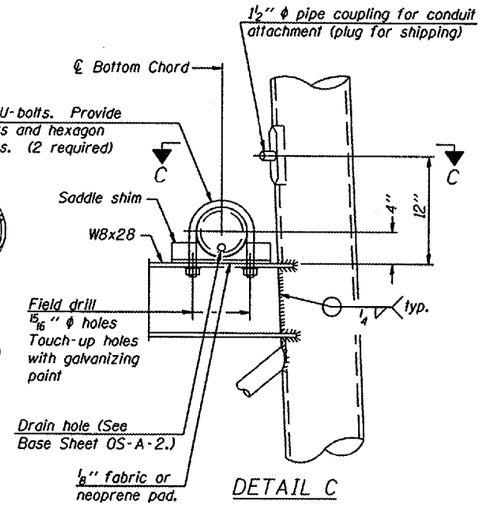


ANCHOR ROD DETAIL
Drilled Shaft Foundation

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

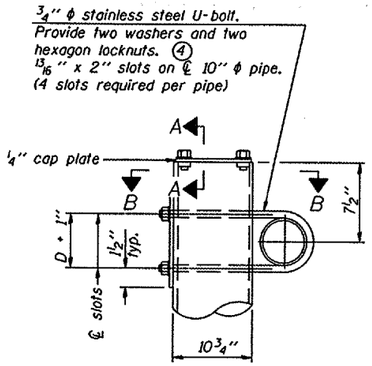
DESIGNED -	
CHECKED -	
DRAWN -	
CHECKED -	

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

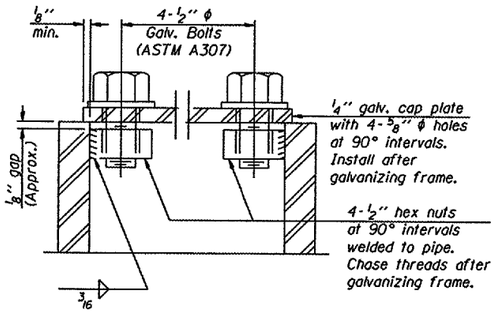
OS-A-4A 6/01/2007

OVERHEAD SIGN STRUCTURES
SUPPORT FRAME DETAILS ALUMINUM TRUSS

District 8
Overhead Sign Structure
Repair & Replacement

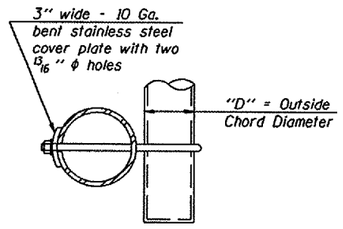


DETAIL A

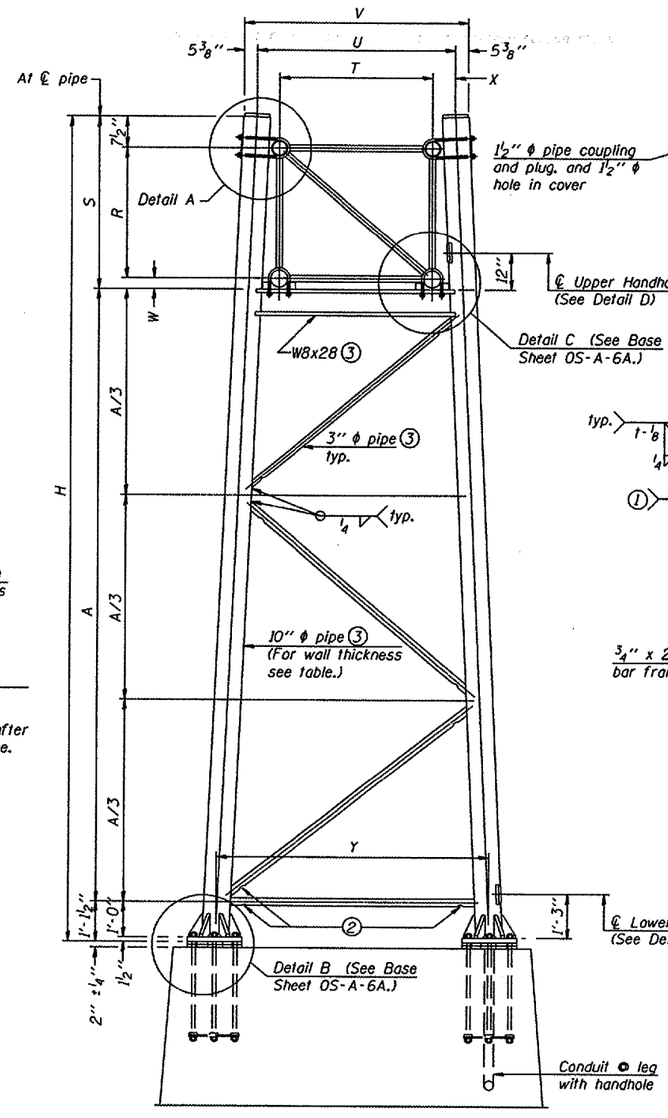


SECTION A-A

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

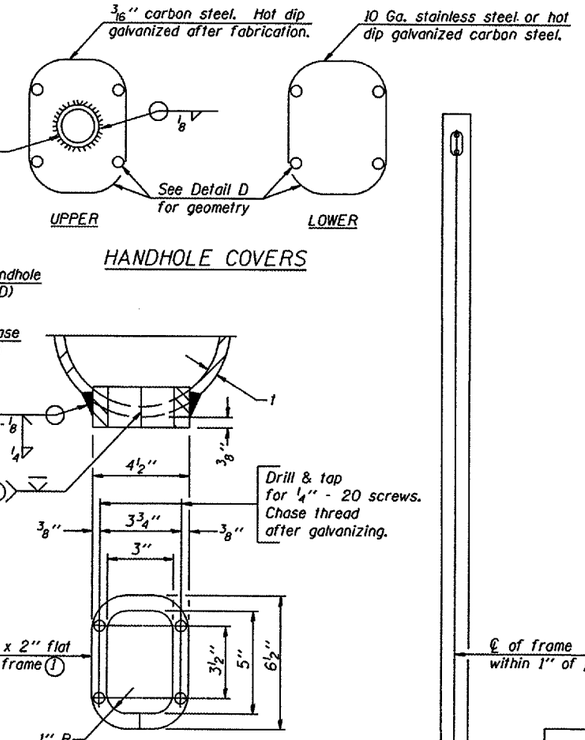


SECTION B-B

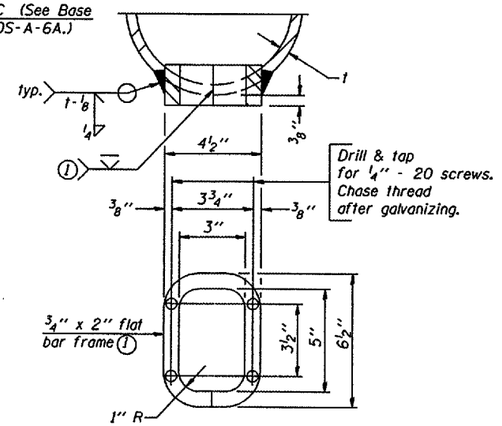


For Foundation Details, see base sheet OS-F3 (Spread Footing) or OS4-F3 (Drilled Shaft).

SIDE ELEVATION

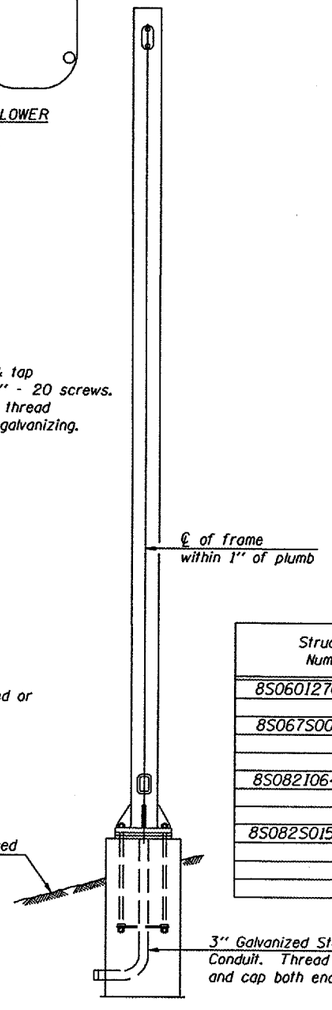


HANDHOLE COVERS



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 μin or less.

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

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

(4) See General Notes for fasteners.

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

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

Structure Number	Station	Support		Truss Type	Pipe Wall Thickness	H (6)	A
		Left	Right				
8S0601270L004.4	316 + 80	X	X	II-A	0.279	26'-10 1/4"	19'-2 1/2"
8S067S003R018.1	279 + 45	X		III-A	0.365(STD)	27'-8 3/4"	18'-2 1/2"
			X			29'-2 3/4"	19'-8 1/4"
8S082I064R018.4	895 + 13	X		III-A	0.365(STD)	30'-5"	20'-10 1/2"
			X			31'-5"	21'-10 1/2"
8S082S015L013.6	646 + 54	X		III-A	0.365(STD)	29'-8"	20'-1 1/2"
			X			29'-3 1/2"	19'-9"

10" ϕ PIPE TRUSS SUPPORT FRAME

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

NUMBER	REVISION	DATE

DESIGNED -	
CHECKED -	
DRAWN -	
CHECKED -	

- 20

EXAMINED

ENGINEER OF BRIDGE DESIGN

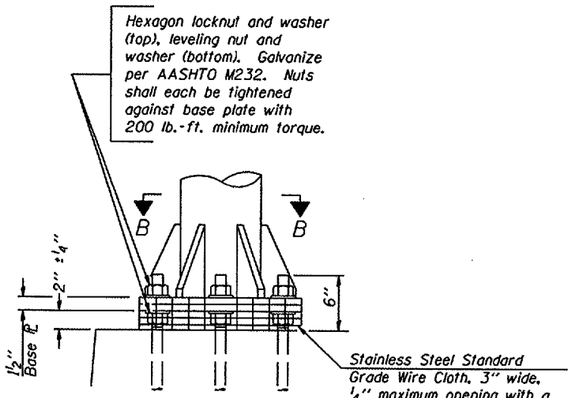
PASSED

ENGINEER OF BRIDGES AND STRUCTURES

OS-A-6 6/01/2007

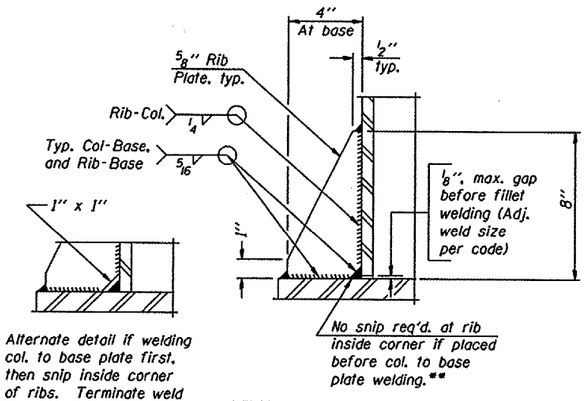
OVERHEAD SIGN STRUCTURES
SUPPORT FRAME FOR ALUMINUM TRUSS

District 8
Overhead Sign Structure
Repair & Replacement



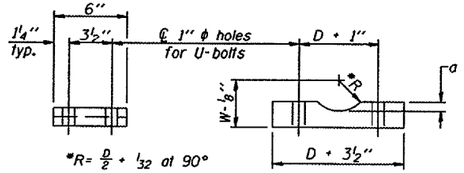
DETAIL B

Ribs shall be cut to fit slope of pipe.



** 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



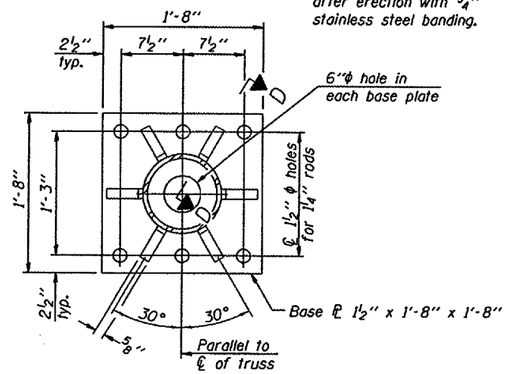
*R = D/2 + 1/32 at 90°

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

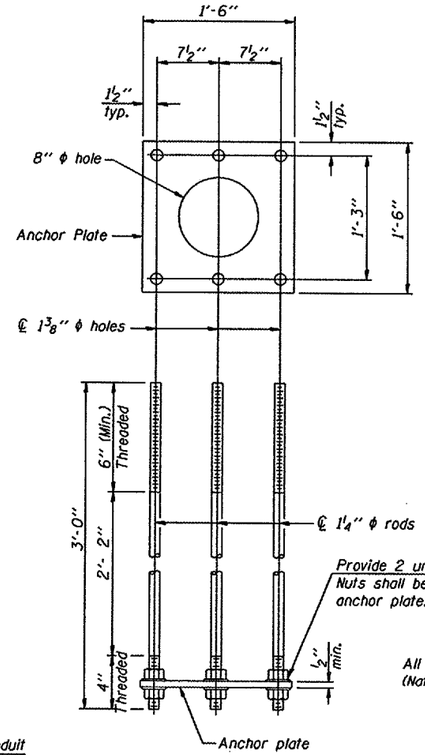
SADDLE SHIM DETAIL

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"

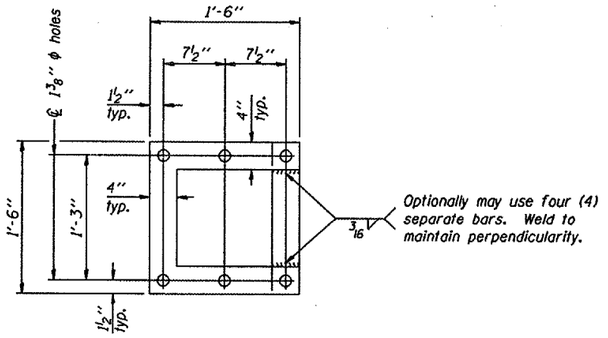


SECTION B-B

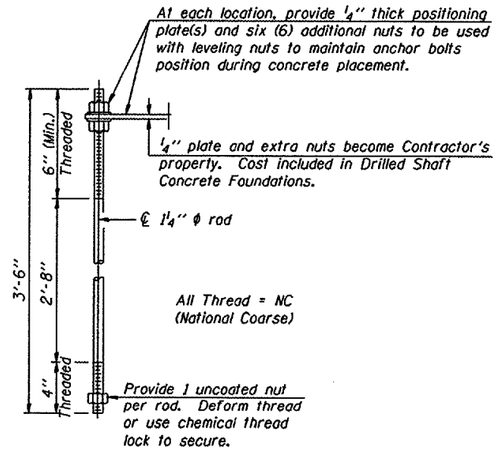


ANCHOR ROD DETAIL

Spread Footing Foundation



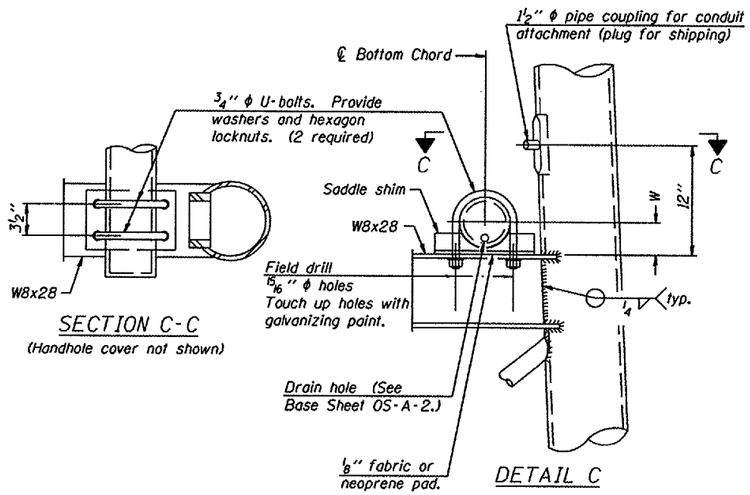
POSITIONING PLATE(S)



ANCHOR ROD DETAIL

Drilled Shaft Foundation

Anchor rods shall conform to AASHTO M314 Grade 36 or 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

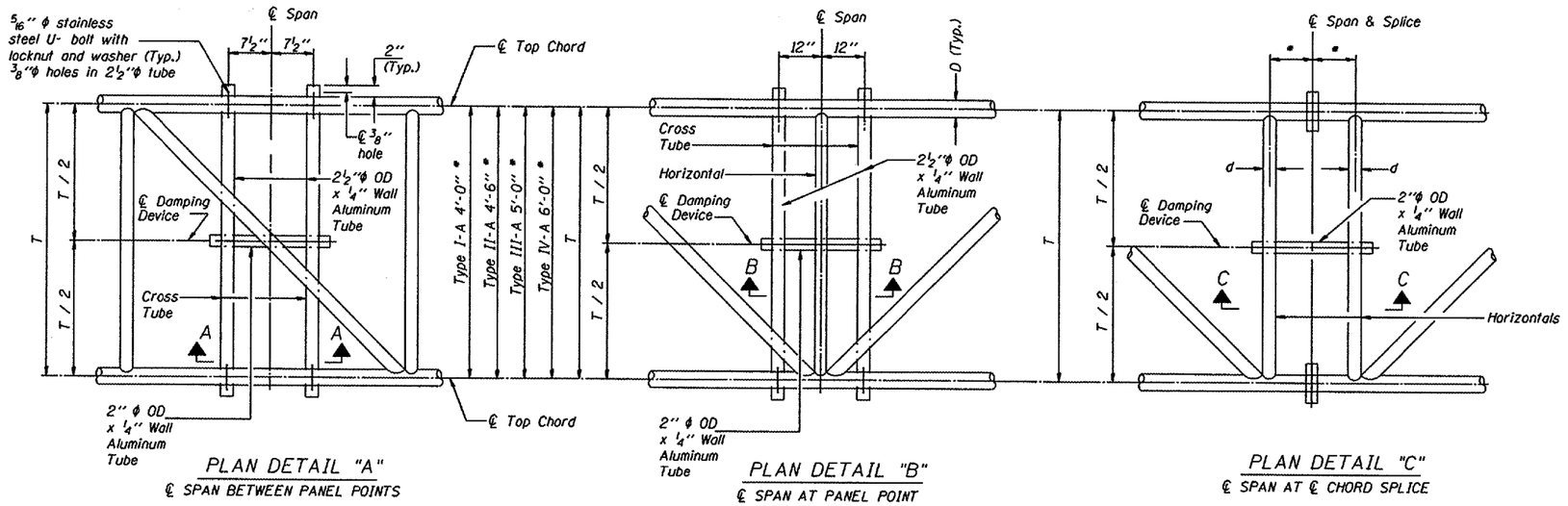
OS-A-6A 6/01/2007

OVERHEAD SIGN STRUCTURES
SUPPORT FRAME DETAILS ALUMINUM TRUSS

District 8
Overhead Sign Structure
Repair & Replacement

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

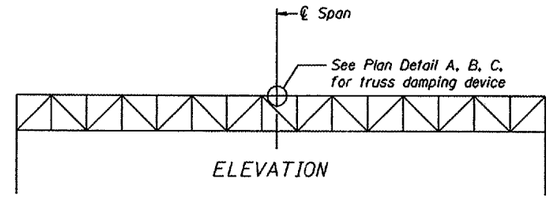
* Verify before drilling holes in mounting tube and cross tubes.



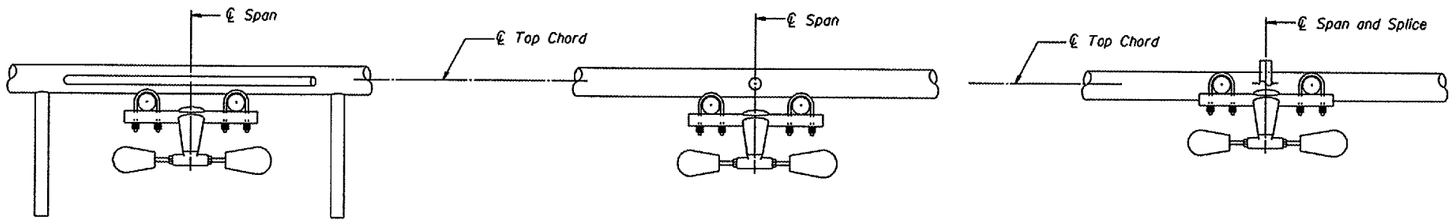
PLAN DETAIL "A"
℄ SPAN BETWEEN PANEL POINTS

PLAN DETAIL "B"
℄ SPAN AT PANEL POINT

PLAN DETAIL "C"
℄ SPAN AT ℄ CHORD SPLICE



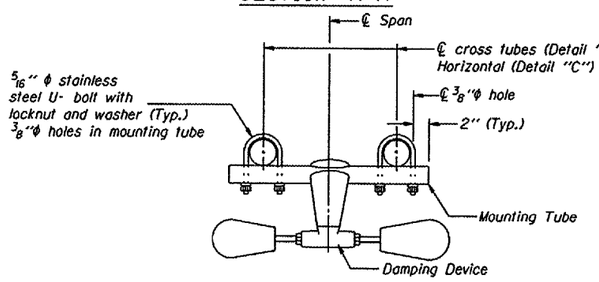
Aluminum Overhead Sign Truss



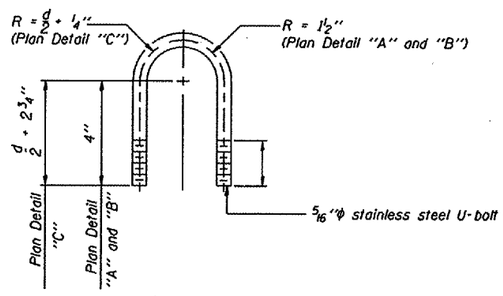
SECTION A-A

SECTION B-B

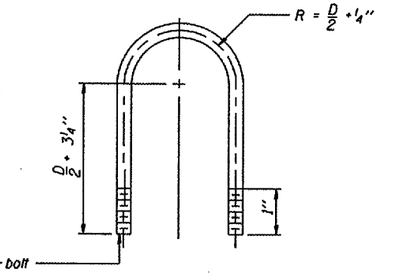
SECTION C-C



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.

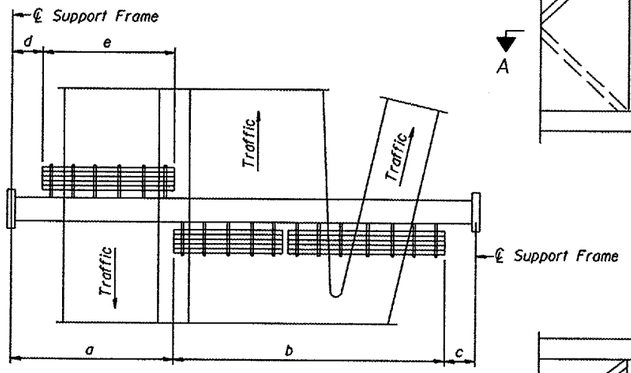
DESIGNED -	- 20
CHECKED -	EXAMINED
DRAWN -	ENGINEER OF BRIDGE DESIGN
CHECKED -	PASSED
	ENGINEER OF BRIDGES AND STRUCTURES

TRUSS DAMPER RETROFIT 07-01-2001

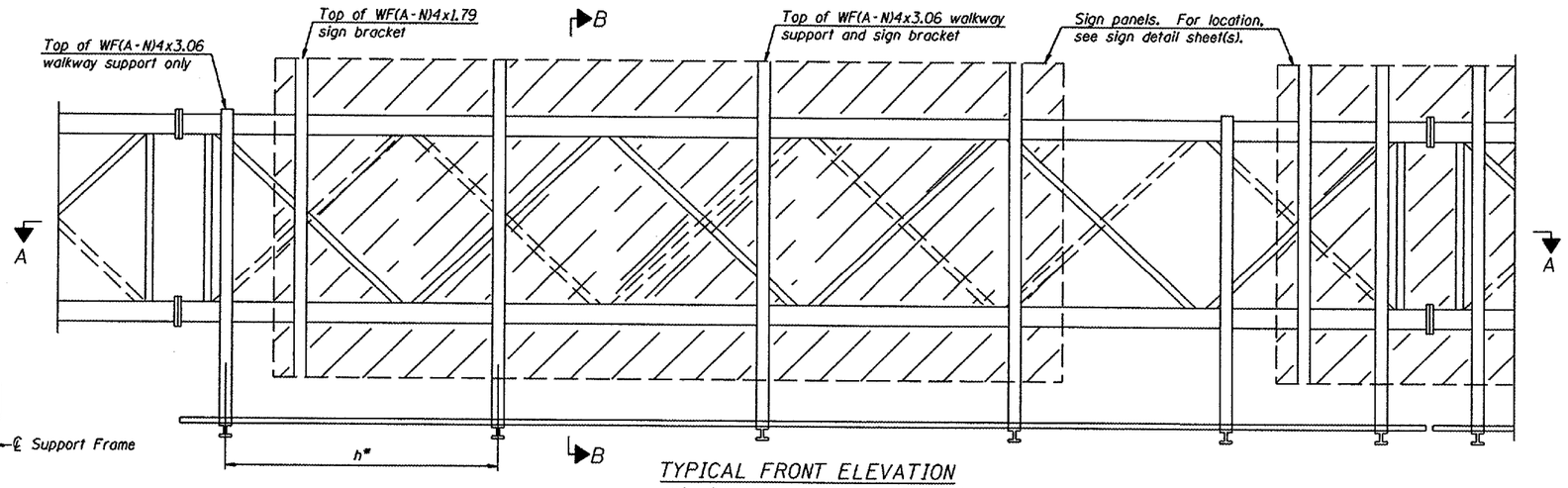
OVERHEAD SIGN STRUCTURE
DAMPING DEVICE

District 8
Overhead Sign Structure
Repair & Replacement

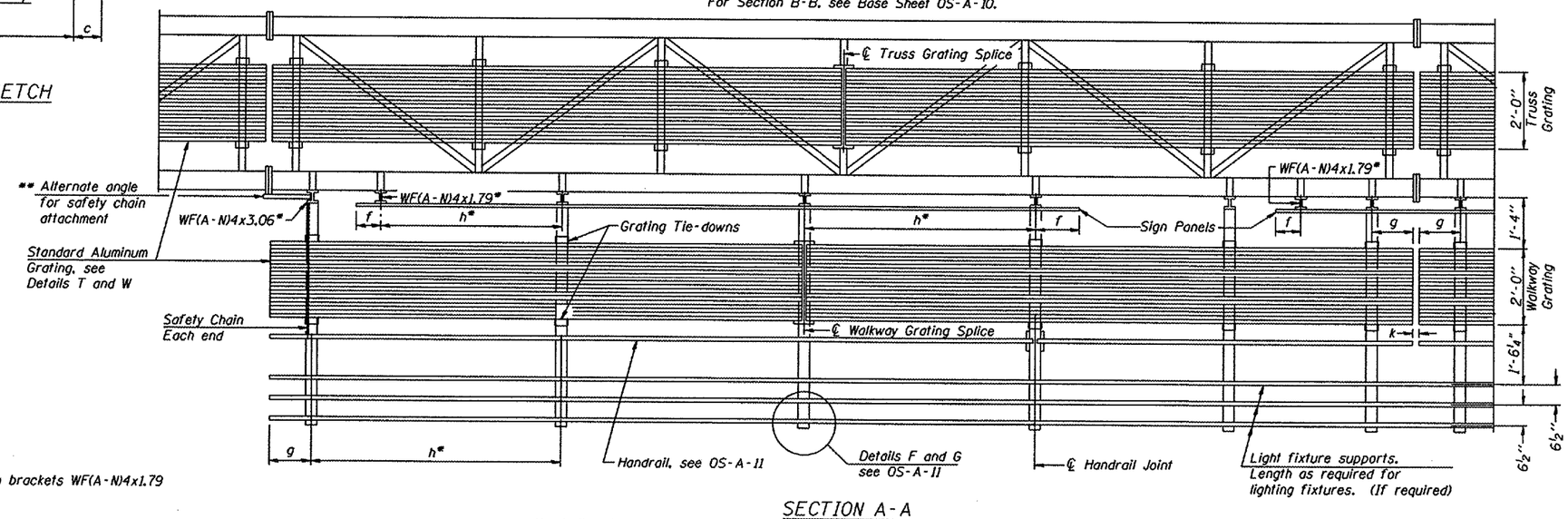
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



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

Structure Number	Station	a	b	c	d	e	Walkway Grating and Handrail Lengths
8S0601270L004.4	316 + 80	N/A	N/A	N/A	N/A	N/A	92' - 0"
8S060S159R003.8	129 + 50	N/A	N/A	N/A	N/A	N/A	82' - 0"
8S0601055R014.3	698 + 65	N/A	N/A	N/A	N/A	N/A	67' - 0"
8S067S003R018.1	279 + 45	N/A	N/A	N/A	N/A	N/A	80' - 0"
8S0821064R018.4	895 + 13	N/A	N/A	N/A	N/A	N/A	107' - 0"
8S082S015L013.6	646 + 54	N/A	N/A	N/A	N/A	N/A	76' - 0"

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

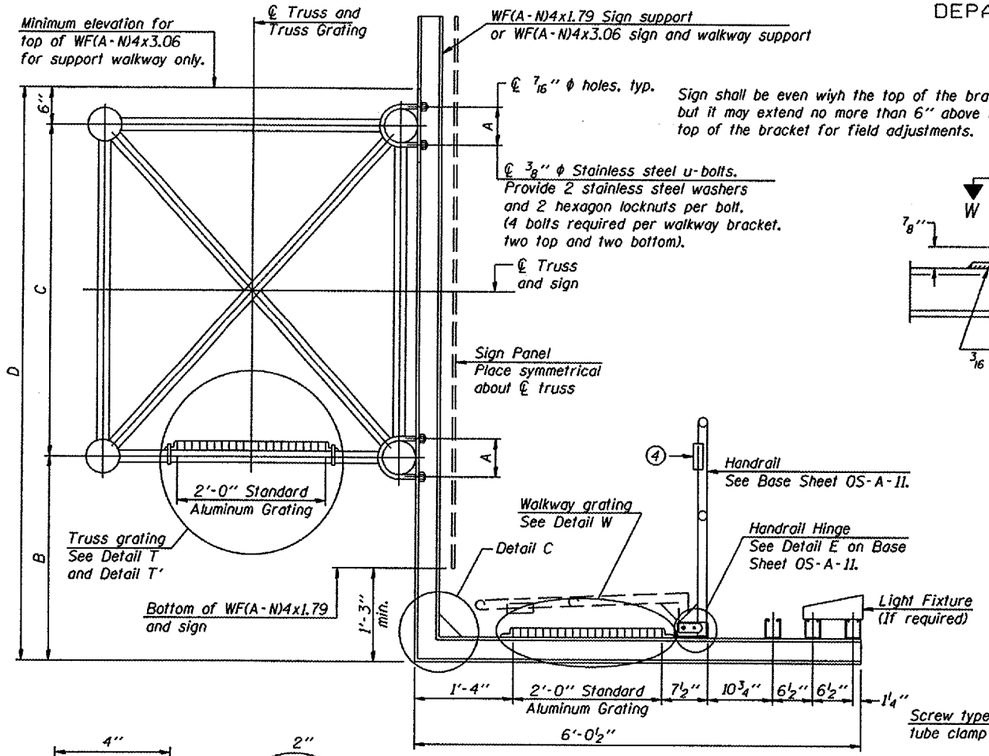
OS-A-9 6/01/2007

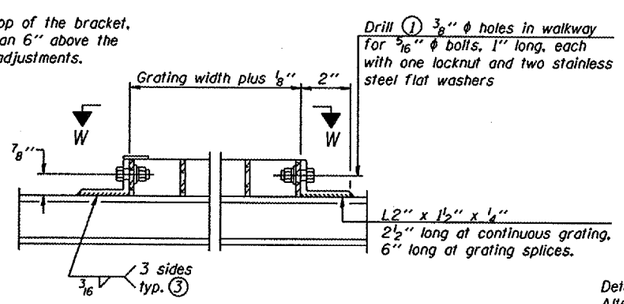
OVERHEAD SIGN STRUCTURES
ALUMINUM WALKWAY DETAILS

District 8
Overhead Sign Structure
Repair & Replacement

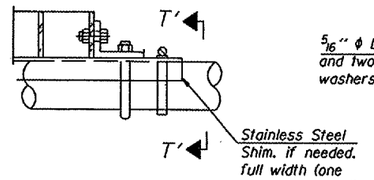
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

Various Routes
OVD SIN STR REP & REPL 2008-9
Various Counties
Sheet 101 of 105
Contract Number 44973

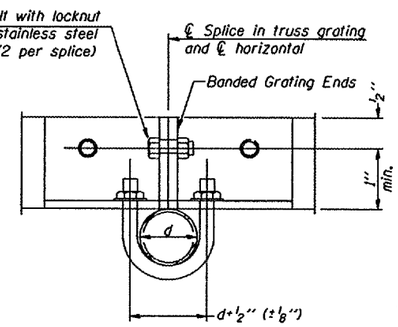




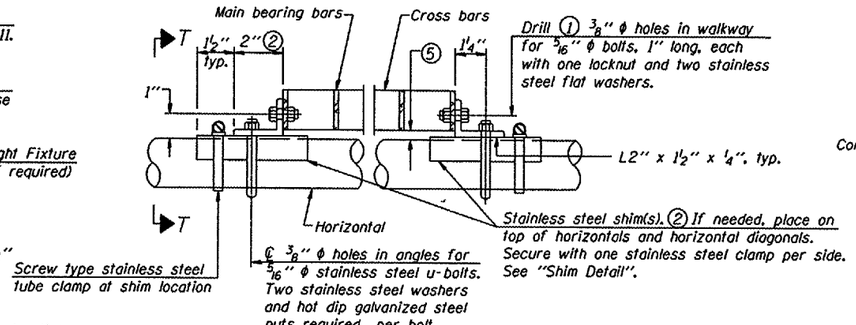
DETAIL W
(Walkway grating)



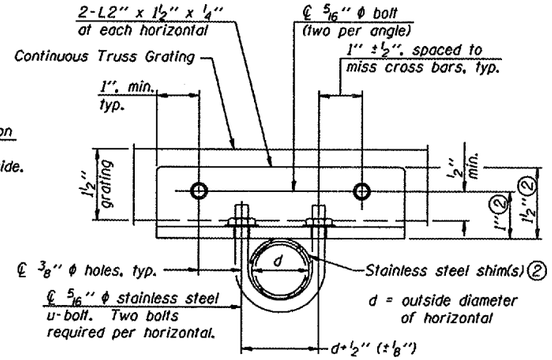
DETAIL T'
(Truss grating splice)
Details not shown same as Detail T. Alternate materials may be used subject to the Engineer's review and approval.



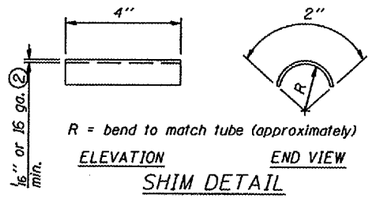
SECTION T'-T'



DETAIL T
(Continuous Truss grating)

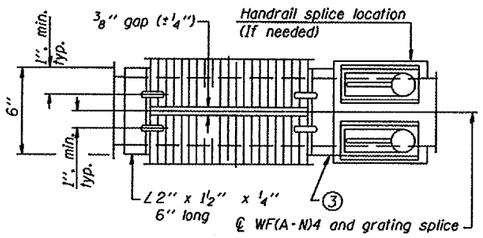


SECTION T-T

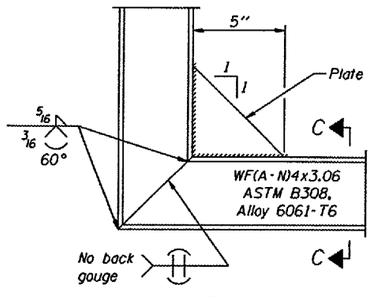


SHIM DETAIL

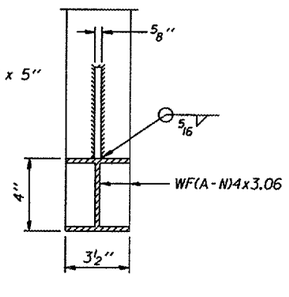
SECTION B-B



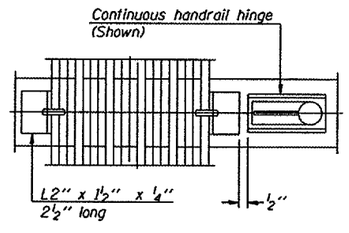
(AT WALKWAY GRATING SPLICE)



DETAIL C



SECTION C-C



(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.

OVERHEAD SIGN STRUCTURES
ALUMINUM WALKWAY DETAILS

District 8
Overhead Sign Structure
Repair & Replacement

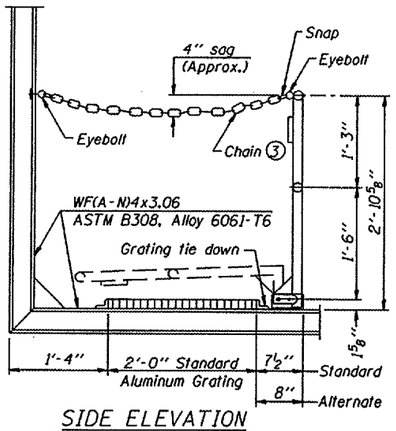
DESIGNED	-
CHECKED	-
DRAWN	-
CHECKED	-

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

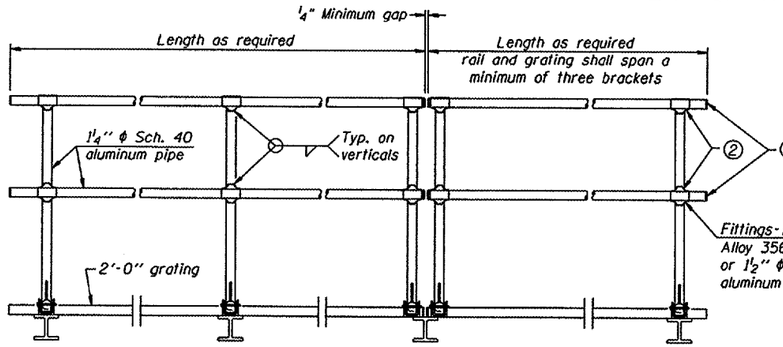
NUMBER	REVISION	DATE

OS-A-10 6/01/2007

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



SIDE ELEVATION
(Showing safety chain w/o sign)

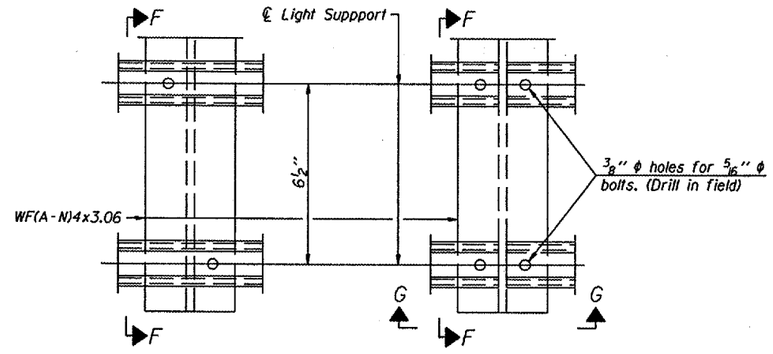


FRONT ELEVATION

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

Fittings-ASTM B26,
Alloy 356-T7
or 1½" ϕ
aluminum pipe

(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.)

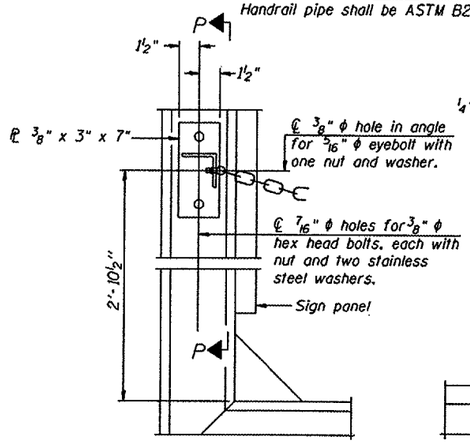


DETAIL F

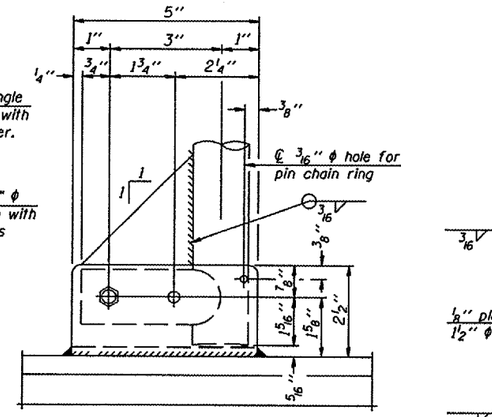
DETAIL G

HANDRAIL DETAILS

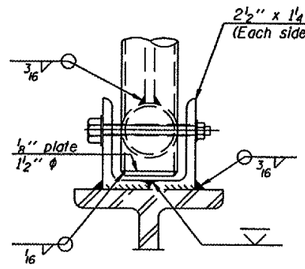
Handrail pipe shall be ASTM B241 or B429, Alloy 6063-T6 or Alloy 6061-T6.



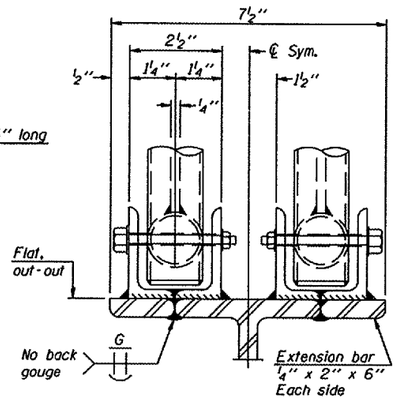
ALTERNATE SAFETY CHAIN ATTACHMENT
(With Sign Present)
Items not shown same as "Side Elevation" of "Handrail Details"



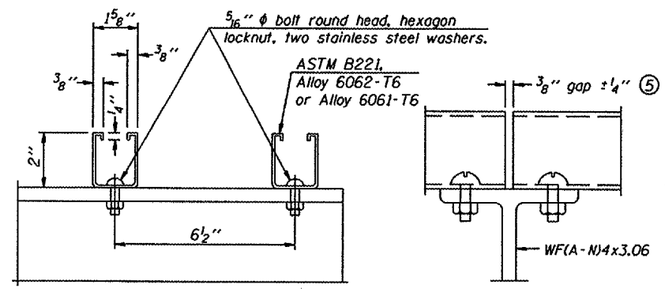
SIDE ELEVATION



FRONT ELEVATION
See "Elevation" at right for dimensions.



ELEVATION AT HANDRAIL JOINT (4)

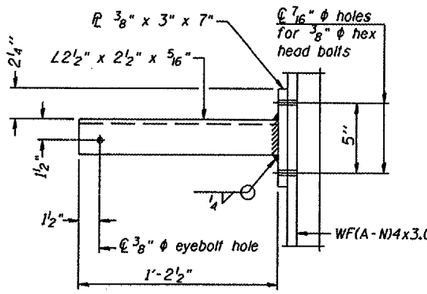


SECTION F-F

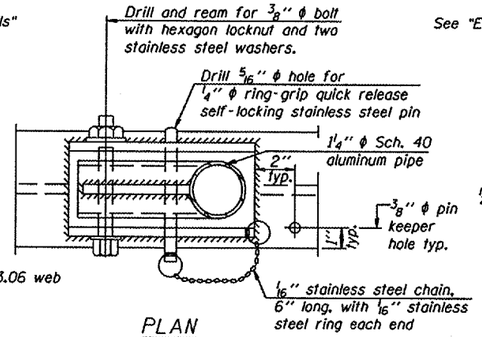
SECTION G-G

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.

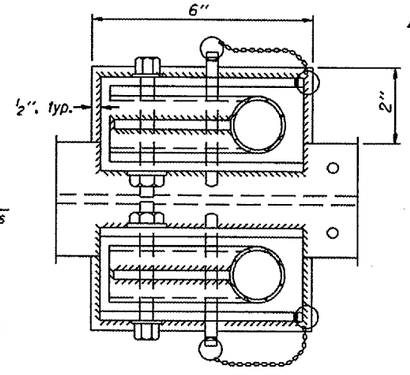


SECTION P-P

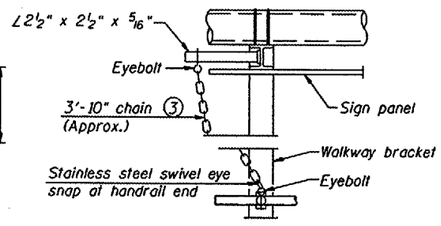


PLAN

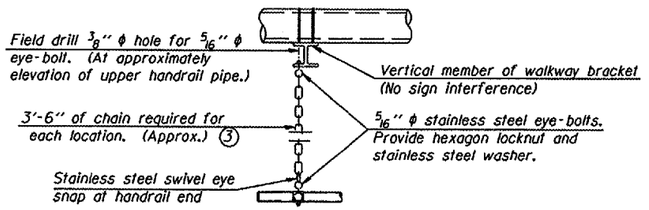
DETAIL E HANDRAIL HINGE



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) $^{3}/_{16}$" Type 304L stainless steel chain, approximately 12 links per foot.

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

OVERHEAD SIGN STRUCTURES
ALUMINUM HANDRAIL DETAILS

District 8
Overhead Sign Structure
Repair & Replacement

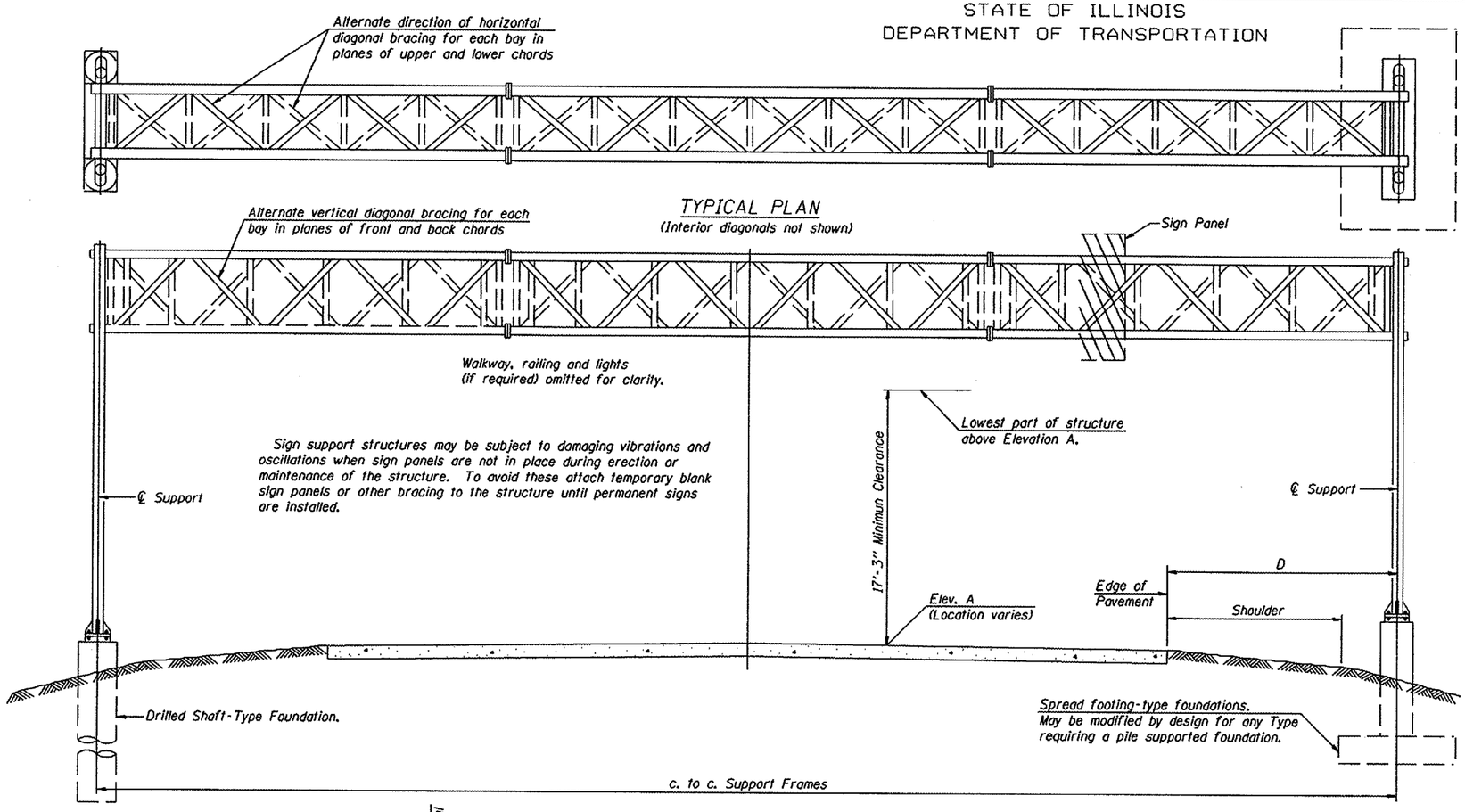
DESIGNED	-
CHECKED	-
DRAWN	-
CHECKED	-

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

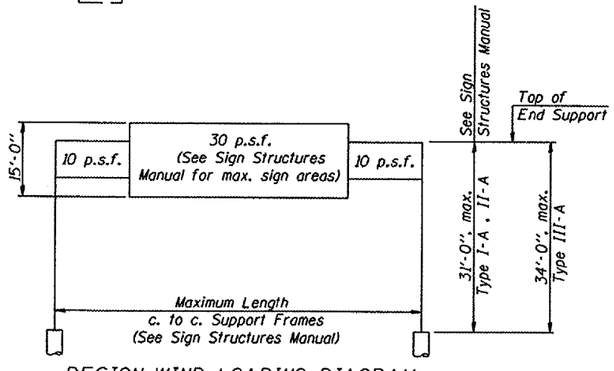
NUMBER	REVISION	DATE

OS-A-11 6/01/2007

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

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

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

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

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

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

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

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

ANCHOR RODS: Shall conform to 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.

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

* 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

TOTAL BILL OF MATERIAL

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

NUMBER	REVISION	DATE

DESIGNED -
CHECKED -
DRAWN -
CHECKED -

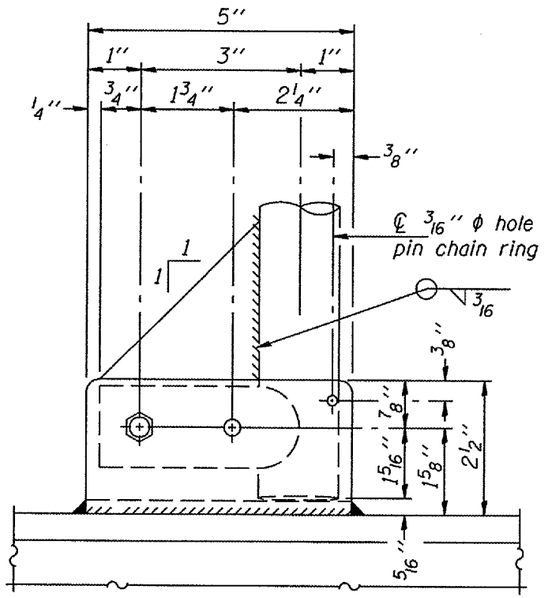
- 20
EXAMINED
ENGINEER OF BRIDGE DESIGN
PASSED
ENGINEER OF BRIDGES AND STRUCTURES

OS-A-1 6/01/2007

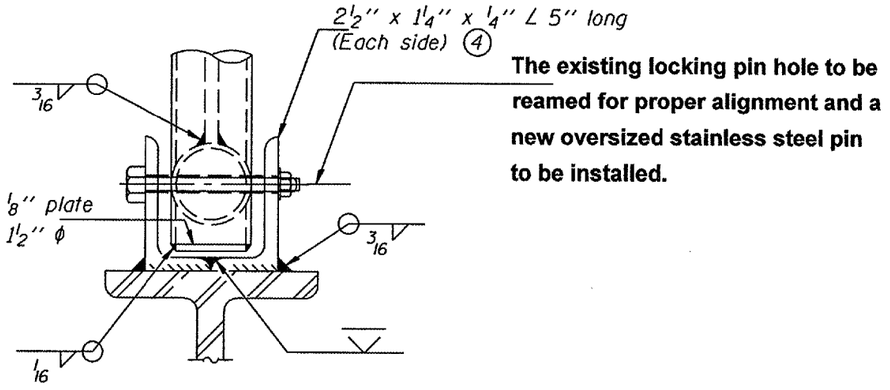
OVERHEAD SIGN STRUCTURES
GENERAL PLAN & ELEVATION
ALUMINUM TRUSS & STEEL SUPPORTS

District 8
Overhead Sign Structure
Repair & Replacement

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

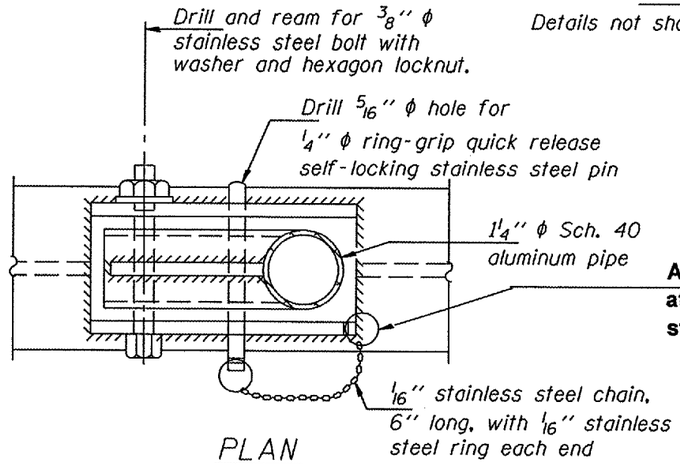


SIDE ELEVATION



FRONT ELEVATION

Details not shown same as "ELEVATION" at right.

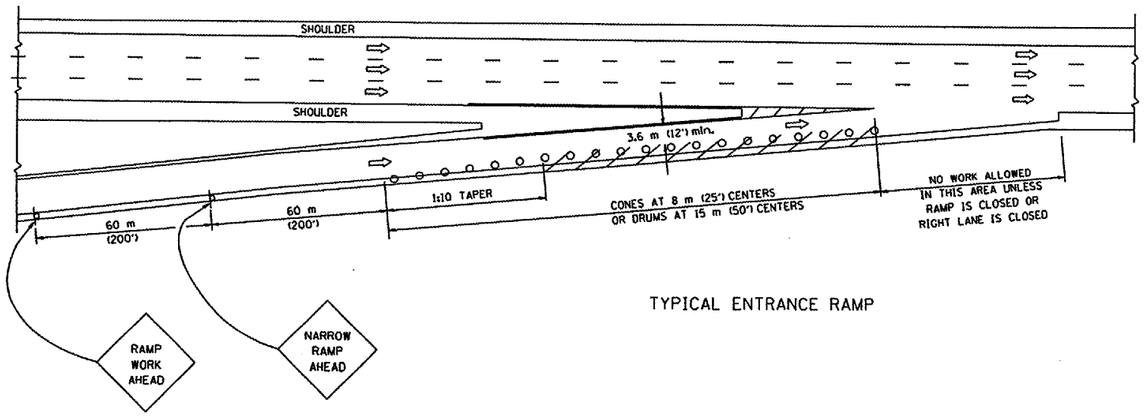


PLAN

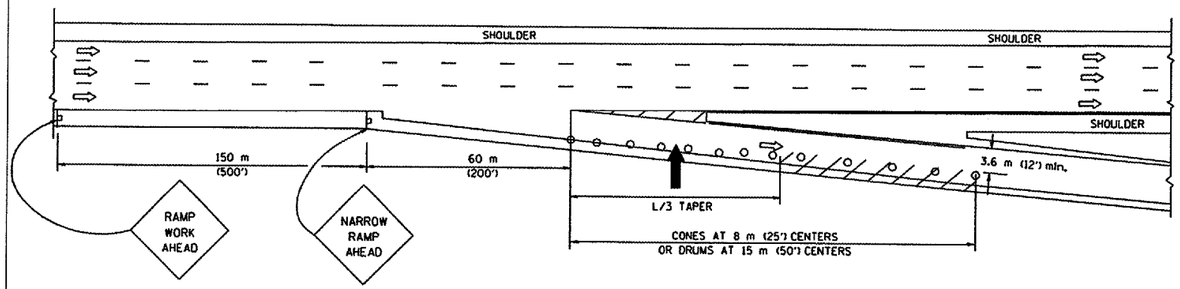
DETAIL E HANDRAIL HINGE

OVERHEAD SIGN STRUCTURES
HANDRAIL HINGE REPAIR DETAIL

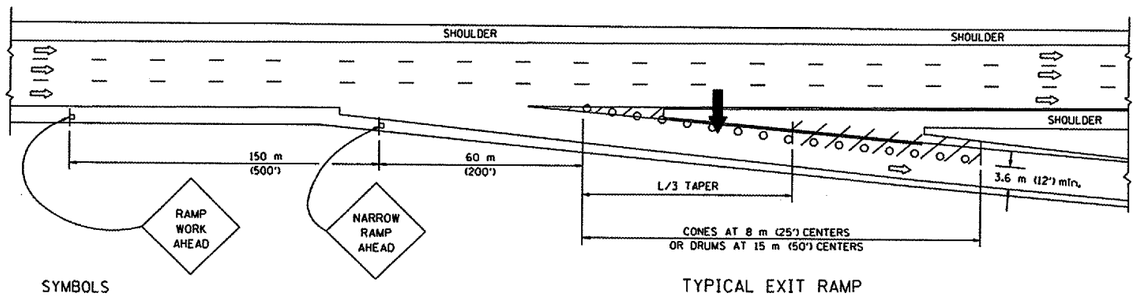
PARTIAL RAMP CLOSURE DETAILS



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:

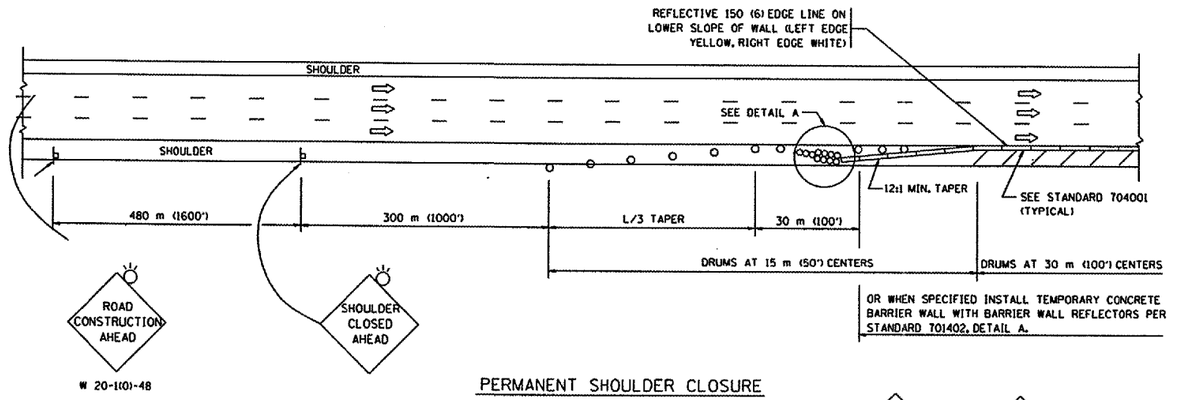
SPEED LIMIT	FORMULAS	
	METRIC	ENGLISH
80 km/h (45 mph) OR GREATER:	L=0.65(WXS)	L=(WXS)

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

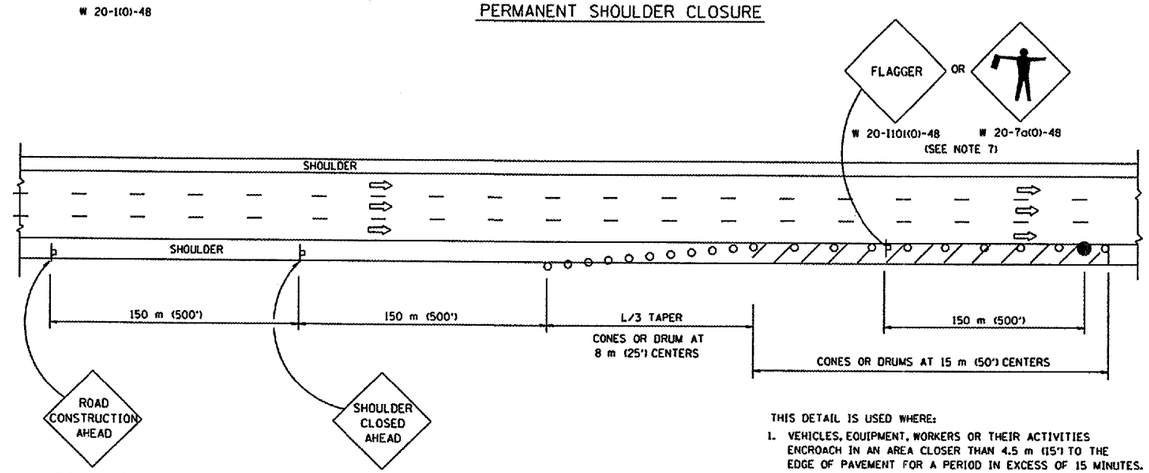
2. PLASTIC DRUMS WITH HIGH PERFORMANCE REFLECTIVE SHEETING AND STEADY BURNING LIGHTS ARE REQUIRED FOR ALL NIGHTIME CLOSURES.
3. ALL SIGNS SHALL BE POST MOUNTED IF THE CLOSURE TIME EXCEEDS FOUR DAYS.
4. FLASHING LIGHTS SHALL BE USED DURING THE HOURS OF DARKNESS AND SHALL BE INSTALLED ABOVE THE FIRST TWO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

SHOULDER CLOSURE DETAILS

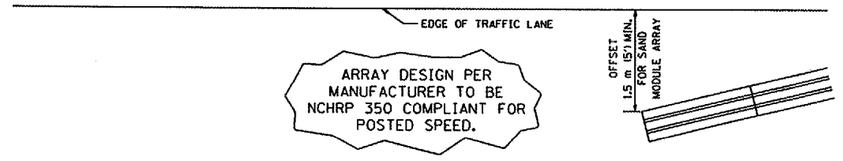


PERMANENT SHOULDER CLOSURE



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



DETAIL "A"
IMPACT ATTENTUATOR, 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
DRAWN BY
DESIGNED BY: DWS
DATE: $$DATE$$
CHECKED BY