4-28-06 Letting, Item 132

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PLANS FOR PROPOSED FEDERAL AID HIGHWAY

VARIOUS ROUTES
OVD SIN STR REP & REPL 2006-9
VARIOUS COUNTIES
C-60-010-06

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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

SUBMITTED / PASSED 3/6 2006

Joe H. Ooi
ENGINEER OF OPERATIONS

March 24, 2006
Mike Hine (KO)
ENGINEER OF DESIGN AND ENVIRONMENT

APPROVED March 24, 2006

Milton P. Sees P.E. (KO)
DIRECTOR DIVISION OF HIGHWAYS

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

CONTRACT NO. 44904

CODE NUMBER	PAY ITEM	UNIT	Y002 - 1C 100% STATE TOTAL QUANTITY	URBAN	RURAL
T9990700	REPLACE OVERHEAD SIGN WALKWAY	FOOT	36.00		36.00
T9990710	REMOVE & REINSTALL WALKWAY	FOOT	601.50	125.00	476.50
T9992300	OVERHEAD SIGN STRUCTURE WALKWAY	FOOT	529.00	245.00	284.00
T9992530	REPLACE/TIGHTEN CLIPS PER SIGN	EACH	6.00		6.00
T9992700	REMOVE & REINSTALL SIGN PANEL	SQ FT	5,478.00	1,185.50	4,292.50
T9995010	REMOVE & RE-ERECT OVERHEAD SIGN END SUPPORT	EACH	2.00		2.00
T9995200	REPLACE U-BOLT	EACH	16.00		16.00
T9995400	FURNISH & INSTALL SADDLE SHIM BLOCK	EACH	24.00	12.00	12.00
T9996200	REPAIR CONCRETE FOUNDATION FOR OVERHEAD SIGN STRUCTURE	EACH	4.00	1.00	3.00
T9996300	OVERHEAD SIGN SUPPORT GROUT REPAIR	EACH	69.00	30.00	39.00
T9997250	FURNISH & INSTALL INTERNAL TRUSS CLAMP	EACH	1.00		1.00
T9997255	FURNISH & INSTALL INTERNAK TRUSS DAMPER	EACH	12.00	4.00	8.00
T9997700	FURNISH & INSTALL SAFETY CHAIN	EACH	48.00	6.00	42.00
T9998600	TIGHTEN CANTILEVER CONNECTION	EACH	4.00		4.00
T9998700	FURNISH & INSTALL WALKWAY TIE DOWN BOLT	EACH	1.00		1.00
T9998815	REPAIR HANDRAIL LOCKING PIN CONNECTION	EACH	60.00		60.00
T9998820	FURNISH & INSTALL HANDRAIL	FOOT	518.00	518.00	
T9998897	REPLACE HANDRAIL SUPPORT	EACH	2.00		2.00
T9998910	FURNISH & INSTALL METAL SCREEN	EACH	12.00	8.00	4.00
T9998995	DISCONNECT/RECONNECT ELECTRIC SERVICE	EACH	19.00	3.00	16.00

CODE NUMBER	PAY ITEM	UNIT	Y002 - 1C 100% STATE TOTAL QUANTITY	URBAN	RURAL
X0321631	REMOVE LUMINAIRE	EACH	5.00		5.00
X0324397	RELOCATE ELECTRIC SERVICE	EACH	8.00		8.00
X7330100	PAINT OVERHEAD SIGN SUPPORT	EACH	5.00		5.00
Z0013300	CONCRETE REMOVAL SPECIAL	SQ YD	108.40		108.40
Z0030350	IMPACT ATTENUATORS, RELOCATE (NON-REDIRECTIVE) TEST LEVEL 3	EACH	2.00		2.00
67100100	MOBILIZATION	L SUM	1.00	0.28	0.72
70101700	TRAFFIC CONTROL & PROTECTION	L SUM	1.00	0.40	0.60
72400310	REMOVE SIGN PANEL - TYPE 1	SQ FT	82.000		82.00
7330100	OVERHEAD SIGN STRUCTURE-SPAN, TYPE I-A (4' - 0" X 4' - 6")	FOOT	434.33		434.33
73300200	OVERHEAD SIGN STRUCTURE-SPAN, TYPE II-A (4' - 6" X 5' - 3")	FOOT	926.00	234.00	692.00
73302170	OVERHEAD SIG STRUCTURE-CANTILEVER, TYPE II-C-A (36" X 5' - 6")	FOOT	30.00		30.00
73305100	OVERHEAD SIGN STRUCTURE WALKWAY (SPECIAL)	FOOT	88.00		88.00
73400200	DRILLED SHAFT CONCRETE FOUNDATION	CU YD	127.70		127.70
73600100	REMOVE OVERHEAD SIGN STRUCTURE-SPAN	EACH	15.000	3.00	12.00
73600200	REMOVE OVERHEAD SIGN STRUCTURE-CANTILEVER	EACH	4.000		4.00
73700300	REMOVE CONCRETE FOUNDATION-OVERHEAD	EACH	24.000	4.00	20.00
73800100	STRUCTURAL STEEL SUPPORT OVERHEAD SIGN STRUCTURE-SPAN	EACH	24.000	6.00	18.00

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

Summary of Quantities

CODE NUMBER	PAY ITEM	UNIT	Y002 - 1C 100% STATE TOTAL QUANTITY	URBAN	RURAL
73801100	REMOVE & RE-ERECT OVERHEAD SIGN STRUCTURE-SPAN	EACH	7.000	3.00	4.00
44003800	MEDIAN SURFACE REMOVAL	SQ FT	128.00		128.00
60618300	CONCRETE MEDIAN SURFACE 4 INCH	SQ FT	128.00		128.00
81012700	CONDUIT IN TRENCH, 2 1/2" DIA., PVC	FOOT	25.00		25.00
82103250	*LUMINAIRE, SODIUM VAPOR, HORIZONTAL MOUNT, PHOTOCELL CONTROL, 250 WATT*	*EACH*	*1.00*		*1.00*
81600115	UNIT DUCT, 2#10XLP, 1#10 XLP GROUND 3/4" POLYETHYLENE	FOOT	550.00		550.00
84200500	REMOVE EXISTING LIGHTING UNIT, SALAVGE	EACH	1.00		1.00
87301245	ELECTRIC CABLE IN CONDUIT, SIGNAL NO 14 5C	FOOT	686.00		686.00
87301255	ELECTRIC CABLE IN CONDUIT, SIGNAL NO 14 7C	FOOT	186.00		186.00
87700180	STEEL MAST ARM ASSEMBLT AND POLE, 28 FT	EACH	1.00		1.00
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87702880	STEEL COMBINATION MAST ARM ASSEMBLY AND POLE 30 FT	EACH	1.00		1.00
87800400	CONCRETE FOUNDATION, TYPE E 30 INCH DIAMETER	FOOT	23.50		23.50
88200110	TRAFFIC SIGNAL BACKPLATE, LOUVERED	EACH	4.00		4.00
89502300	REMOVE ELECTRIC CABLE FROM CONDUIT	FOOT	647.00		647.00
89502375	REMOVE EXISTING TRAFFIC SIGNAL EQUIPMENT	EACH	1.00		1.00
X8801300	SIGNAL HEAD, POLYCARBONATE, LED, 1 FACE, 3 SECTION, BRACKET MOUNTED	EACH	1.00		1.00
X8801310	SIGNAL HEAD, POLYCARBONATE, LED, 1 FACE, 3 SECTION, MAST ARM MOUNTED	EACH	2.00		2.00
X8801395	SIGNAL HEAD, POLYCARBONATE, LED, 1 FACE, 5 SECTION, BRACKET MOUNTED	EACH	1.00		1.00
X0325266	FURNISH & INSTALL SIGN SUPPORT BRACKET	EACH	16.00	16.00	
X0325265	REMOVE ELECTRIC SERVICE	EACH	3.00		3.00

Rev.

PAY ITEM	UNIT	Y002 - 1C 100% STATE TOTAL QUANTITY	DISTRICT 1	DISTRICT 2	DISTRICT 3	DISTRICT 4	DISTRICT 5	DISTRICT 6	DISTRICT 7	DISTRICT 8
REPLACE OVERHEAD SIGN WALKWAY	FOOT	36.00		20.00			16.00			
REMOVE & REINSTALL WALKWAY	FOOT	601.50		29.50	220.00		150.50	59.00	17.00	125.50
REMOVE & RE-ERECT OVERHEAD SIGN END SUPPORT	EACH	2.00				2.00				
OVERHEAD SIGN STRUCTURE WALKWAY	FOOT	529.00	245.00	216.00		68.00				
REPLACE/TIGHTEN CLIP PER SIGN	EACH	6.00		4.00		1.00		1.00		
REMOVE & REINSTALL SIGN PANEL	SQ FT	5,478.00		700.00	1,652.00		1,169.75	468.00	302.75	1,185.50
REPLACE U-BOLT	EACH	16.00		4.00		12.00				
FURNISH & INSTALL SADDLE SHIM BLOCK	EACH	24.00	12.00	12.00						
REPAIR CONCRETE FOUNDATION FOR OVERHEAD SIGN STRUCTURE	EACH	4.00	1.00			3.00				
OVERHEAD SIGN SUPPORT GROUT REPAIR	EACH	69.00	26.00	8.00	20.00	7.00			4.00	4.00
FURNISH & INSTALL INTERNAL TRUSS CLAMP	EACH	1.00				1.00				
FURNISH & INSTALL INTERNAL TRUSS DAMPER	EACH	12.00	3.00	3.00		5.00			1.00	
FURNISH & INSTALL SAFETY CHAIN	EACH	48.00	4.00	10.00	8.00	10.00	8.00	2.00	4.00	2.00
TIGHTEN CANTILEVER CONNECTION	EACH	4.00				4.00				
FURNISH & INSTALL WALKWAY TIE DOWN BOLT	EACH	1.00				1.00				
REPAIR HANDRAIL LOCKING PIN CONNECTION	EACH	60.00		9.00		33.00		6.00	12.00	
FURNISH & INSTALL HANDRAIL	FOOT	518.00	518.00							

PAY ITEM	UNIT	Y002 - 1C 100% STATE TOTAL QUANTITY	DISTRICT 1	DISTRICT 2	DISTRICT 3	DISTRICT 4	DISTRICT 5	DISTRICT 6	DISTRICT 7	DISTRICT 8
REPLACE HANDRAIL SUPPORT	EACH	2.00		2.00						
FURNISH & INSTALL METAL SCREEN	EACH	12.00						4.00		8.00
DISCONNECT/RECONNECT ELECTRIC SERVICE	EACH	19.00		5.00	5.00	1.00	3.00	1.00	1.00	3.00
REMOVE EXISTING LUMINAIRE	EACH	5.00		5.00						
RELOCATE ELECTRIC SERVICE	EACH	8.00		3.00		1.00	3.00		1.00	
								104.00		
PAINT OVERHEAD SIGN SUPPORT	EACH	5.00				5.00				
CONCRETE REMOVAL SPECIAL	SQ YD	108.40					108.40			
IMPACT ATTENUATORS, RELOCATE (NON-REDIRECTIVE) TEST LEVEL 3	EACH	2.00					2.00			
MOBILIZATION	L SUM	1.00	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.16
TRAFFIC CONTROL & PROTECTION	L SUM	1.00	0.25	0.10	0.10	0.10	0.10	0.10	0.10	0.15
REMOVE SIGN PANEL - TYPE 1	SQ FT	82.00							82.00	
OVERHEAD SIGN STRUCTURE-SPAN, TYPE I-A (4' - 0 X 4' - 6")	FOOT	434.33		134.00			300.33			
OVERHEAD SIGN STRUCTURE-SPAN TYPE II-A (4' - 6" X 5' - 3")	FOOT	926.00			588.00			104.00		234.00
OVERHEAD SIGN STRUCTURE-CANTILEVER, TYPE II-C-A (36" X 5' - 6")	FOOT	30.00							30.00	
OVERHEAD SIGN STRUCTURE WALKWAY (SPECIAL)	FOOT	88.00		68.00			20.00			
DRILL SHAFT CONCRETE FOUNDATIONS	CU YD	127.70		53.90		21.50	45.10		7.20	
REMOVE OVERHEAD SIGN STRUCTURE-SPAN	EACH	15.00		2.00	5.00		4.00	1.00		3.00

PAY ITEM	UNIT	Y002 - 1C 100% STATE TOTAL QUANTITY	DISTRICT 1	DISTRICT 2	DISTRICT 3	DISTRICT 4	DISTRICT 5	DISTRICT 6	DISTRICT 7	DISTRICT 8
REMOVE OVERHEAD SIGN STRUCTURE-CANTILEVER	EACH	4.00							4.00	
REMOVE CONCRETE FOUNDATION - OVERHEAD	EACH	24.00		8.00		2.00	6.00		4.00	4.00
STRUCTURAL STEEL SUPPORT OVERHEAD SIGN STRUCTURE-SPAN	EACH	24.00	6.00	10.00			8.00			
REMOVE & RE-ERECT OVERHEAD SIGN STRUCTURE-SPAN	EACH	7.00	3.00	3.00		1.00				
MEDIAN SURFACE REMOVAL	SQ FT	128.00							128.00	
CONCRETE MEDIAN SURFACE 4 INCH	SQ FT	128.00							128.00	
CONDUIT IN TRENCH, 2 1/2" DIA., PVC	FOOT	25.00							25.00	
UNIT DUCT, 2#10XLP, 1#10 XLP GROUND 3/4" POLYETHYLENE	FOOT	550.00							550.00	
LUMINAIRE, SODIUM VAPOR, HORIZONTAL MOUNT, PHOTOCELL CONTROL, 250 WATT	EACH	1.00							1.00	
REMOVAL OF EXISTING LIGHTING UNIT, SALVAGE	EACH	1.00							1.00	
ELECTRIC CABLE IN CONDUIT, SIGNAL NO. 14 5C	FOOT	686.00							686.00	
ELECTRIC CABLE IN CONDUIT, SIGNAL NO. 14 7C	FOOT	186.00							186.00	
STEEL MAST ARM ASSEMBLY AND POLE, 28 FT	EACH	1.00							1.00	
STEEL COMBINATION MAST ARM ASSEMBLY AND POLE 30 FT	EACH	1.00							1.00	
CONCRETE FOUNDATION, TYPE E 30 INCH DIAMETER	FOOT	23.50							23.50	
TRAFFIC SIGNAL BACKPLATE, LOUVERED	EACH	4.00							4.00	
REMOVE ELECTRIC CABLE FROM CONDUIT	FOOT	647.00							647.00	

PAY ITEM	UNIT	Y002 - 1C 100% STATE TOTAL QUANTITY	DISTRICT 1	DISTRICT 2	DISTRICT 3	DISTRICT 4	DISTRICT 5	DISTRICT 6	DISTRICT 7	DISTRICT 8
REMOVE EXISTING TRAFFIC SIGNAL EQUIPMENT	EACH	1.00							1.00	
SIGNAL HEAD, POLYCARBONATE, LED, 1 FACE,3 SECTION, BRACKET MOUNTED	EACH	1.00							1.00	
SIGNAL HEAD, POLYCARBONATE, LED, 1 FACE, 3 SECTION, MAST ARM MOUNTED	EACH	2.00							2.00	
SIGNAL HEAD, POLYCARBONATE, LED, 1 FACE, 5 SECTION, BRACKET MOUNTED	EACH	1.00							1.00	
FURNISH AND INSTALL SIGN SUPPORT BRACKETS	EACH	16.00	16.00							
REMOVE ELECTRIVAL SERVICE	EACH	3.00							3.00	

District 1
Schedule of Locations for Truss Repair & Replacement

Location No.:	1-01	State I.D. No.:	1C016I290R018.8 (CLE-1)P2				
County:	Cook	Route:	I-290	M.P.	18.8	Direction:	EB

Description of Work	Unit	Quantity
OVERHEAD SIGN SUPPORT GROUT REPAIR	Each	1.00
FURNISH & INSTALL HANDRAIL	Foot	19.00
This work shall be completed during District 1 night-time hours.		

Location No.:	1-02	State I.D. No.:	1S016I290R020.0 (TRE-3)O4				
County:	Cook	Route:	I-290	M.P.:	20	Direction:	EB

Description of Work	Unit	Quantity
OVERHEAD SIGN SUPPORT GROUT REPAIR	Each	2.00
FURNISH & INSTALL HANDRAIL	Foot	47.00
This work shall be completed during District 1 night-time hours.		

Location No.:	1-03	State I.D. No.:	1C016I290R021.0 (CLE-2)N2				
County:	Cook	Route:	I-290	M.P.:	21	Direction:	EB

Description of Work	Unit	Quantity
OVERHEAD SIGN SUPPORT GROUT REPAIR	Each	1.00
FURNISH & INSTALL HANDRAIL	Foot	21.50
This work shall be completed during District 1 night-time hours.		

Location No.:	1-04	State I.D. No.:	1C016I290R023.4 (C-8)L4				
County:	Cook	Route:	I-290	M.P.:	23.4	Direction:	EB

Description of Work	Unit	Quantity
FURNISH & INSTALL HANDRAIL	Foot	24.00
This work shall be completed during District 1 night-time hours.		

Location No.:	1-05	State I.D. No.:	1C016I290R027.3-0 (CLE-2)H2				
County:	Cook	Route:	I-290	M.P.:	27.3	Direction:	EB

Description of Work	Unit	Quantity
FURNISH & INSTALL HANDRAIL	Foot	24.00
This work shall be completed during District 1 night-time hours.		

Location No.:	1-06	State I.D. No.:	1C016I290R028.4 (CLE-1)H8				
County:	Cook	Route:	I-290	M.P.:	28.4	Direction:	EB

Description of Work	Unit	Quantity
FURNISH & INSTALL HANDRAIL	Foot	35.50
This work shall be completed during District 1 night-time hours.		

Location No.:	1-07	State I.D. No.:	1S016I290L014.2 (TW-4)X1				
County:	Cook	Route:	I-290	M.P.:	14.2	Direction:	WB

Description of Work	Unit	Quantity
OVERHEAD SIGN SUPPORT GTOUT REPAIR	Each	2.00
FURNISH & INSTALL HANDRAIL	Foot	63.00
This work shall be completed during District 1 night-time hours.		

Location No.:	1-08	State I.D. No.:	1S016I290L018.0 (TRW-2)R1				
County:	Cook	Route:	I-290	M.P.:	18.0	Direction:	WB

Description of Work	Unit	Quantity
OVERHEAD SIGN SUPPORT GROUT REPAIR	Each	2.00
FURNISH & INSTALL HANDRAIL	Foot	78.00
This work shall be completed duting District 1 night-time hours.		

Location No.:	1-09	State I.D. No.:	1C016I290L019.4 (CLW-5)P3				
County:	Cook	Route:	I-290	M.P.:	19.4	Direction:	WB

Description of Work	Unit	Quantity
OVERHEAD SIGN SUPPORT GROUT REPAIR	Each	1.00
FURNISH & INSTALL HANDRAIL	Foot	19.00
This work shall be completed during District 1 night-time hours.		

Location No.:	1-10	State I.D. No.:	1C016I290L019.8 (CLW-4)O1				
County:	Cook	Route:	I-290	M.P.:	19.8	Direction:	WB

Description of Work	Unit	Quantity
OVERHEAD SIGN SUPPORT GROUT REPAIR	Each	1.00
FURNISH & INSTALL HANDRAIL	Foot	17.50
This work shall be completed during District 1 night-time hours.		

Location No.:	1-11	State I.D. No.:	1S016I290L020.7 (TRW-1)N3				
County:	Cook	Route:	I-290	M.P.:	20.7	Direction:	WB

Description of Work	Unit	Quantity
OVERHEAD SIGN SUPPORT GROUT REPAIR	Each	2.00
FURNISH & INSTALL HANDRAIL	Foot	43.00
This work shall be completed during District 1 night-time hours.		

Location No.:	1-12	State I.D. No.:	1S016I290L023.0 (TRW-9)L1				
County:	Cook	Route:	I-290	M.P.:	23	Direction:	WB

Description of Work	Unit	Quantity
FURNISH & INSTALL HANDRAIL	Foot	56.50
This work shall be completed during District 1 night-time hours.		

Location No.:	1-13	State I.D. No.:	1C016I290L023.0 (CLW-3)K7				
County:	Cook	Route:	I-290	M.P.:	23	Direction:	WB

Description of Work	Unit	Quantity
FURNISH & INSTALL HANDRAIL	Foot	24.00
This work shall be completed during District 1 night-time hours.		

Location No.:	1-14	State I.D. No.:	1C016I290L027.6 (CLW-2)H7				
County:	Cook	Route:	I-290	M.P.:	27.6	Direction:	WB

Description of Work	Unit	Quantity
OVERHEAD SIGN SUPPORT GROUT REPAIR	Each	1.00
FURNISH & INSTALL HANDRAIL	Foot	23.00
This work shall be completed during District 1 night-time hours.		

Location No.:	1-15	State I.D. No.:	1C016I290L028.7 (CLW-1)H1				
County:	Cook	Route:	I-290	M.P.:	28.7	Direction:	WB

Description of Work	Unit	Quantity
OVERHEAD SIGN SUPPORT GROUT REPAIR	Each	1.00
FURNISH & INSTALL HANDRAIL	Foot	23.00
This work shall be completed during District 1 night-time hours.		

Location No.:	1-16	State I.D. No.:	1S022I055L273.2(TRS-10)D1				
County:	DuPage	Route:	I-55	M.P.:	273.2	Direction:	SB

Description of Work	Unit	Quantity
REMOVE & RE-ERECT OVERHEAD SIGN STRUCTURE-SPAN	Each	1.00
STRUCTURAL STEEL SUPPORT OVERHEAD SIGN STRUCTURE	Each	2.00
FURNISH & INSTALL INTERNAL TRUSS DAMPER	Each	1.00
OVERHEAD SIGN SUPPORT GROUT REPAIR	Each	4.00
FURNISH & INSTALL SAFETY CHAIN	Each	2.00
FURNISH & INSTALL SADDLE SHIM BLOCK	Each	4.00
OVERHEAD SIGN STRUCTURE WALKWAY	Foot	88.00
This work shall be completed during District 1 night-time hours.		

Location No.:	1-17	State I.D. No.:	1S022I055R272.7 (TRN-8)D2				
County:	DuPage	Route:	I-55	M.P.:	272.7	Direction:	SB

Description of Work	Unit	Quantity
REMOVE & RE-ERECT OVERHEAD SIGN STRUCTURE-SPAN	Each	1.00
STRUCTURAL STEEL SUPPORT OVERHEAD SIGN STRUCTURE	Each	2.00
FURNISH & INSTALL INTERNAL TRUSS DAMPER	Each	1.00
OVERHEAD SIGN SUPPORT GROUT REPAIR	Each	4.00
FURNISH & INSTALL SAFETY CHAIN	Each	2.00
REPAIR CONCRETE FOUNDATION FOR OVERHEAD SIGN STRUC	Each	1.00
FURNISH & INSTALL SADDLE SHIM BLOCK	Each	4.00
OVERHEADSIGN STRUCTURE WALKWAY	Foot	88.00
This work shall be completed during District 1 night-time hours.		

District 1
Schedule of Locations for Truss Repair & Replacement

Location No.:	1-18	State I.D. No.:	1S022S083R000.0 (BTN)D3		
County:	DuPage	Route:	IL - 83	M.P.:	0	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 INTERNAL TRUSS DAMPER	Each	1.00
OVERHEAD SIGN SUPPORT GROUT REPAIR	Each	4.00
OVERHEAD SIGN STRUCTURE WALKWAY	Foot	69.00
FURNISH & INSTALL SADDLE SHIM BLOCK	Each	4.00
This work shall be completed during District 1 night-time hours.		

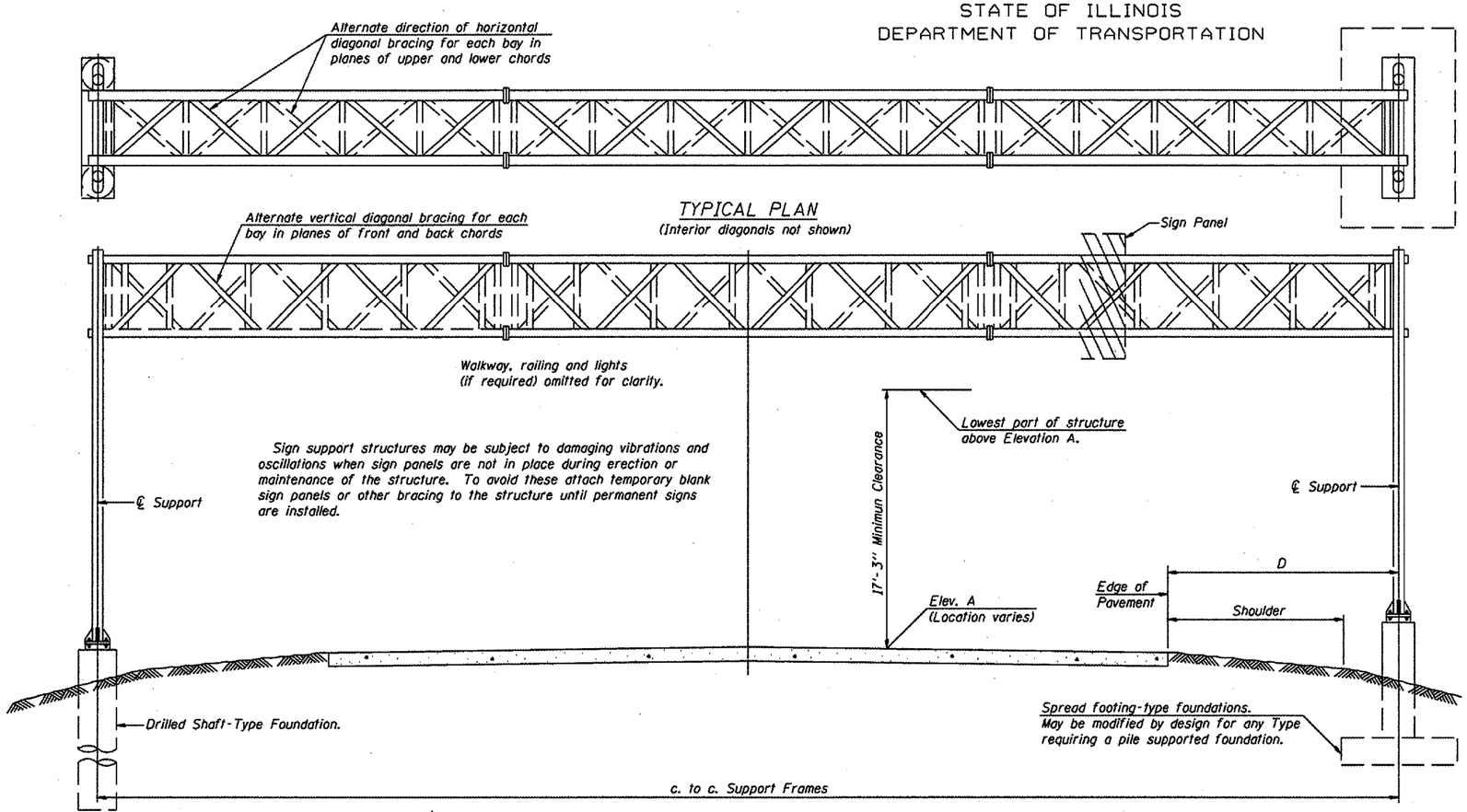
Location No.:	1-19	State I.D. No.:	1S016I090L079.6 (TW-7)		
County:	Cook	Route:	I-90	M.P.:	79.6	Direction:	WB

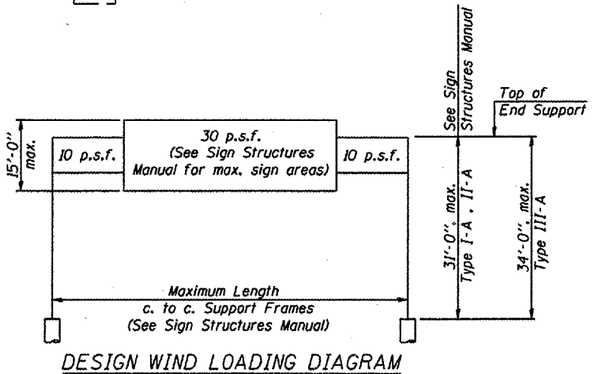
Description of Work	Unit	Quantity
FURNISH & INSTALL SIGN SUPPORT BRACKET	Each	8.00
This work shall be completed duting District 1 night-time hours.		

Location No.:	1-20	State I.D. No.:	1S016I090L079.7 (TW-8)E5		
County:	Cook	Route:	I-90	M.P.:	79.7	Direction:	WB

Description of Work	Unit	Quantity
FURNISH & INSTALL SIGN SUPPORT BRACKET	Each	8.00
This work shall be completed duting District 1 night-time hours.		

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION





DESIGN WIND LOADING DIAGRAM

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

TYPICAL ELEVATION

(Looking at Face of Signs**)

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

Structure Number	Station	Design Truss Type	c. to c. Supports	Elev. A	Dim. D	Height of Tallest Sign	Total Sign Area

**Looking upstation for structures with signs both sides.

GENERAL NOTES

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

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

LOADING: 90 M.P.H. WIND VELOCITY

WIND LOADING: 30 p.s.f. normal to Sign Panel Area and truss elements not behind sign Loading Diagram.

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

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

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

MATERIALS: Aluminum Alloys as shown throughout plans. All Structural Steel Pipe shall be ASTM A53 Grade B with a minimum yield of 35,000 p.s.i., or A500 Grade B or C with a minimum yield of 46,000 p.s.i. If A500 pipe is substituted for A53, then the outside diameter shall be as detailed and wall thickness greater than or equal to A53.
All Structural Steel Plates and Shapes shall conform to AASHTO M270 Gr. 36, Gr. 50 or Gr. 50W*. Stainless steel for shims, sleeves and handhole covers shall be ASTM A240, Type 302 or 304, or another alloy suitable for exterior exposure and acceptable to the Engineer.
The steel pipe and stiffening ribs at the base plate for the column shall have a minimum longitudinal Charpy V-Notch (CVN) energy of 15 lb.-ft. at 40° F. (Zone 2) before galvanizing.

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

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

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

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

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

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

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

This Sheet For Information Only

NUMBER	REVISION	DATE

TOTAL BILL OF MATERIAL

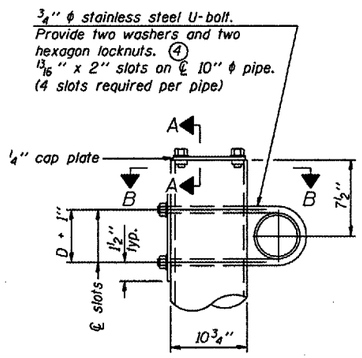
ITEM	UNIT	TOTAL
OVERHEAD SIGN STRUCTURE TYPE I-A (4'-0" x 4'-6")	Foot	
OVERHEAD SIGN STRUCTURE TYPE II-A (4'-6" x 5'-3")	Foot	
OVERHEAD SIGN STRUCTURE TYPE III-A (5'-0" x 7'-0")	Foot	
OVERHEAD SIGN STRUCTURE WALKWAY TYPE A	Foot	
CONCRETE FOUNDATIONS	Cu. Yds.	
DRILLED SHAFT CONCRETE FOUNDATIONS	Cu. Yds.	

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

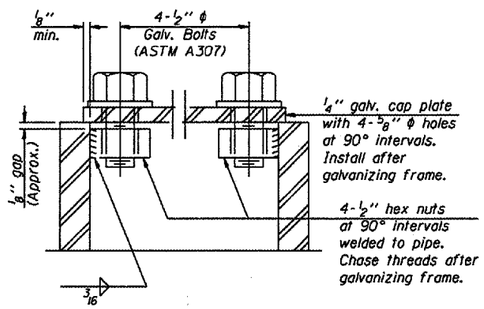
OS-A-1 1-7-05

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

District 1
End Support Replacement

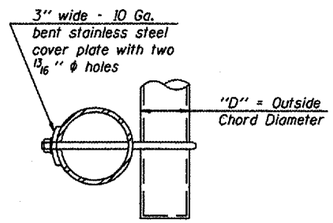


DETAIL A

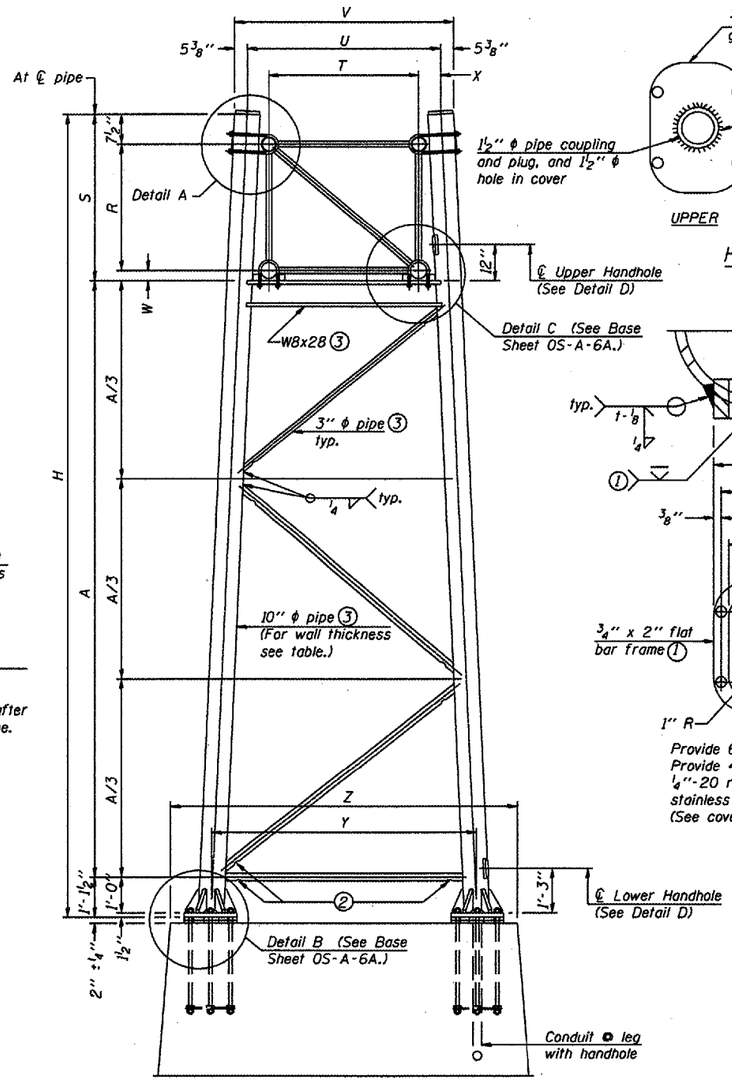


SECTION A-A

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

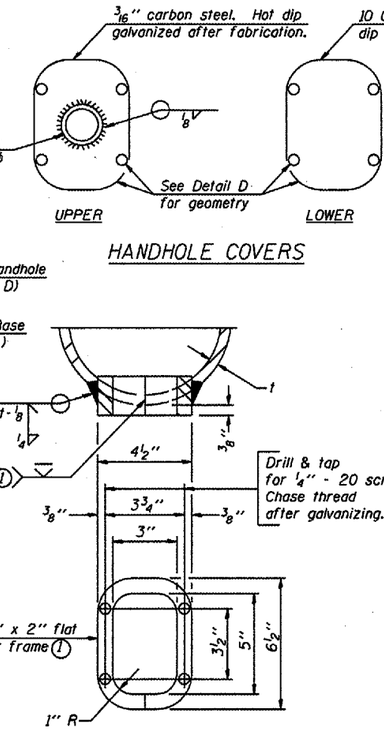


SECTION B-B



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

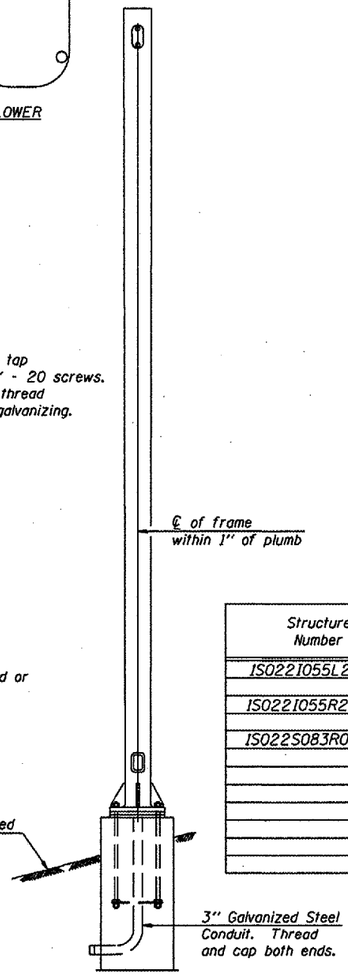
SIDE ELEVATION



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.

Structure Number	Station	Support		Truss Type	Pipe Wall Thickness	H	A
		Left	Right				
IS022I055L273.2	916 + 0	X	X	II-A	0.365(Std)	23'-10 1/4"	16'-4"
IS022I055R272.7	890 + 70	X	X	II-A	0.365(Std)	23'-10 1/4"	16'-4"
IS022S083R000.0	22 + 64	X	X	II-A	0.279	25'-2"	17'-6 1/4"

10" ϕ PIPE TRUSS SUPPORT FRAME

Truss Type	Dimensions								
	R	S	T	U	V	W	X	Y	Z
I-A	4'-6"	5'-5 1/2"	4'-0"	5'-6"	6'-4 3/4"	4"	9"	8'-3"	10'-9"
II-A (5)	5'-3"	6'-3 1/4"	4'-6"	6'-1"	6'-11 3/4"	4 3/4"	9 1/2"	8'-3"	10'-9"

NUMBER	REVISION	DATE

DESIGNED	-
CHECKED	-
DRAWN	-
CHECKED	-

- 20

EXAMINED

ENGINEER OF BRIDGE DESIGN

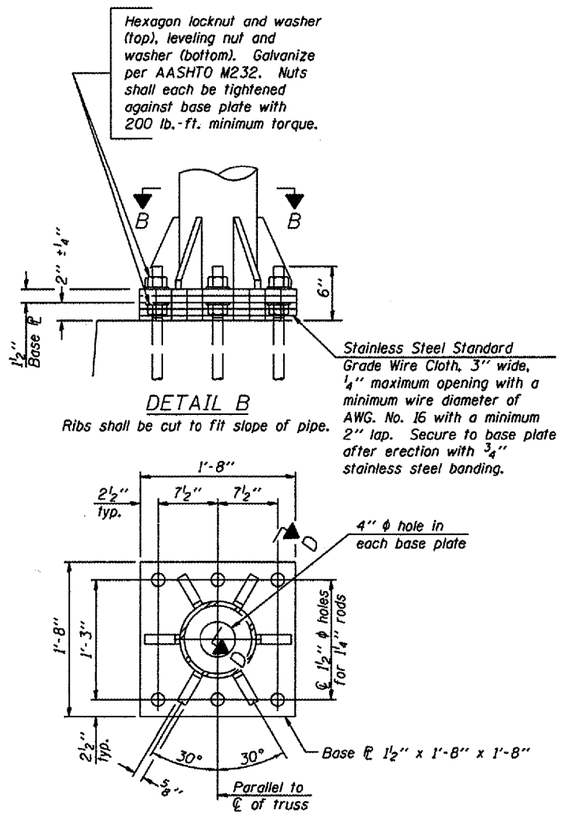
PASSED

ENGINEER OF BRIDGES AND STRUCTURES

OS-A-6 1-7-05

OVERHEAD SIGN STRUCTURES
SUPPORT FRAME for ALUMINUM TRUSS

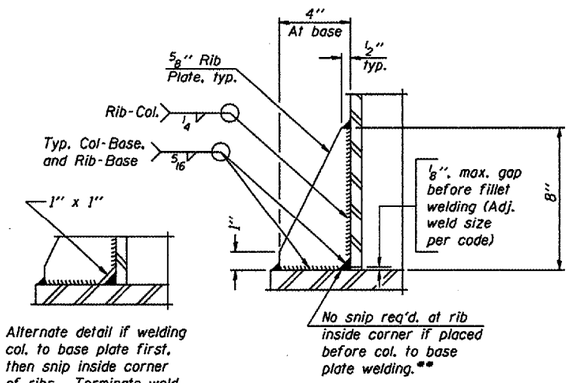
District 1
End Support Replacement



DETAIL B

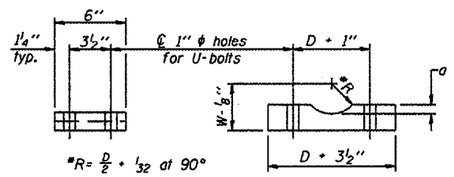
Ribs shall be cut to fit slope of pipe.

SECTION B-B



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

SECTION D-D



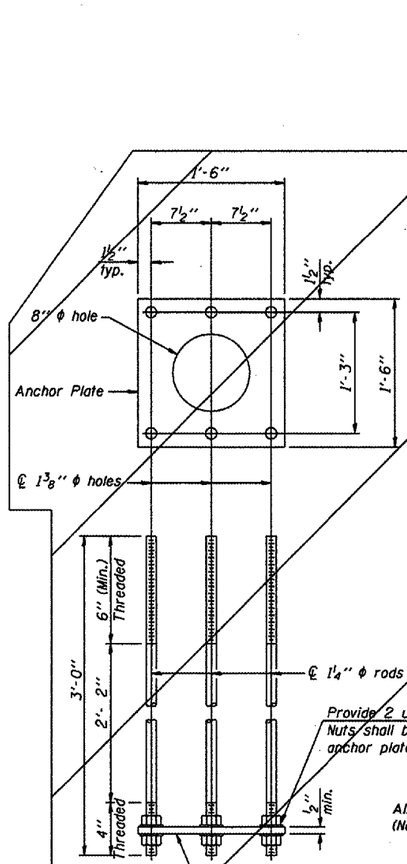
*R = D/2 + 1/32 at 90°

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

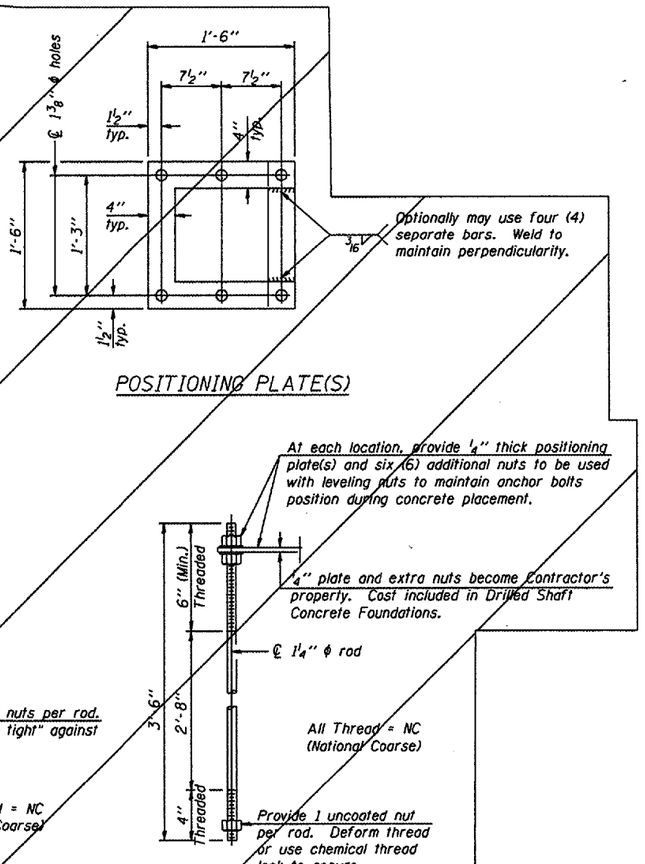
SADDLE SHIM DETAIL

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

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



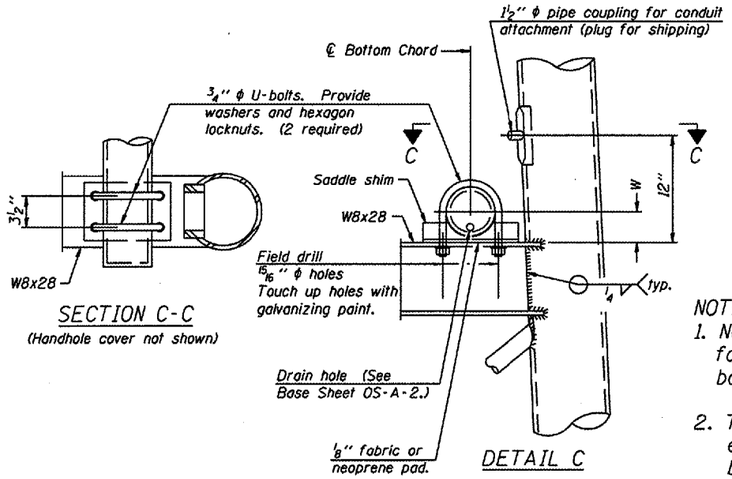
ANCHOR ROD DETAIL
Spread Footing Foundation



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

NOTES:

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

NUMBER	REVISION	DATE

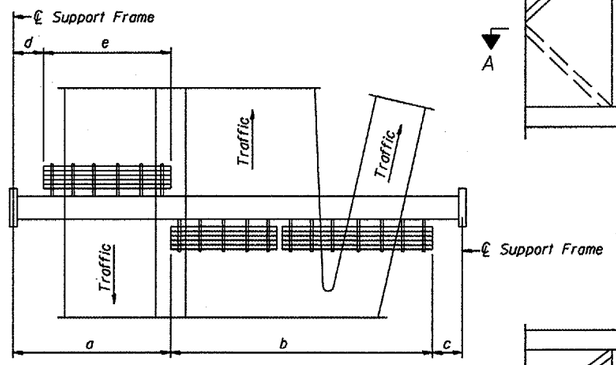
DESIGNED -
CHECKED -
DRAWN -
CHECKED -

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

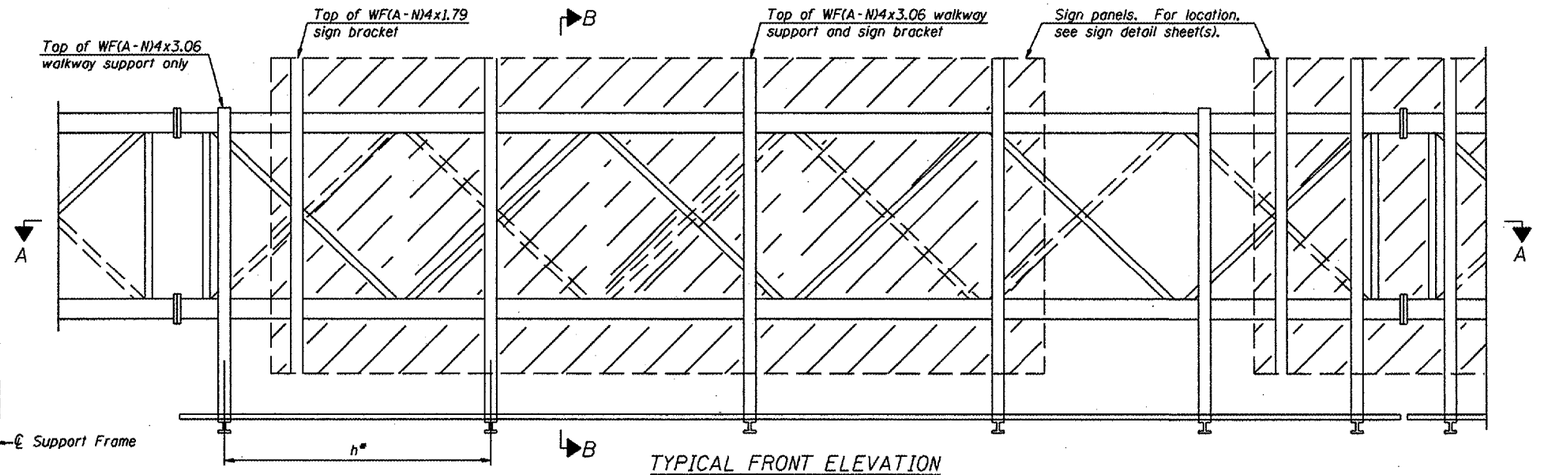
OS-A-6A 1-7-05

OVERHEAD SIGN STRUCTURES
SUPPORT FRAME DETAILS ALUMINUM TRUSS

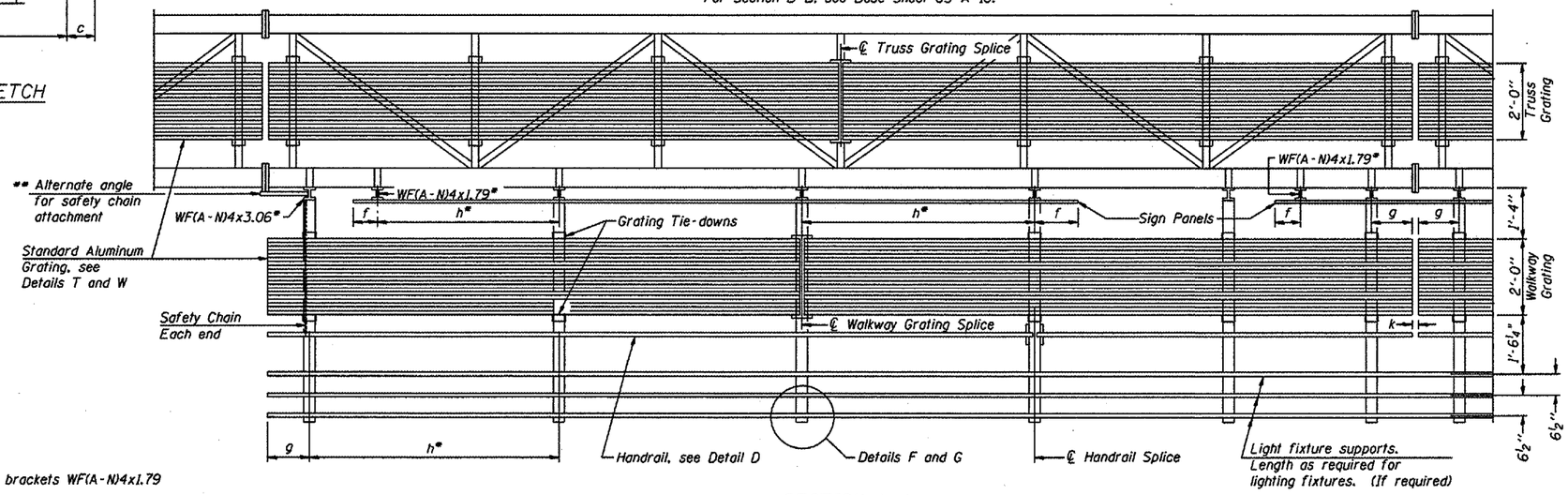
District 1
End Support Replacement



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



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



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

BRACKET TABLE

WF(A-N)4x1.79 or WF(A-N)4x3.06 ASTM B308, Alloy 6061-T6		
Sign Width		Number Brackets Required
Greater Than	Less Than or Equal To	
	8'-0"	2
8'-0"	14'-0"	3
14'-0"	20'-0"	4
20'-0"	26'-0"	5
26'-0"	32'-0"	6

Notes:

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

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

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

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

SECTION A-A

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

Structure Number	Station	a	b	c	d	e	Walkway Grating and Handrail Lengths
IS022I055L273.2	916 + 00 SB	N/A	N/A	N/A	N/A	N/A	88' - 0" *
IS022I055R272.7	890 + 70 NB	N/A	N/A	N/A	N/A	N/A	88' - 0" *
IS022S083R000.0	23 + 00 EB	N/A	N/A	N/A	N/A	N/A	69' - 0" *

* 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".

NUMBER	REVISION	DATE

DESIGNED -
CHECKED -
DRAWN -
CHECKED -

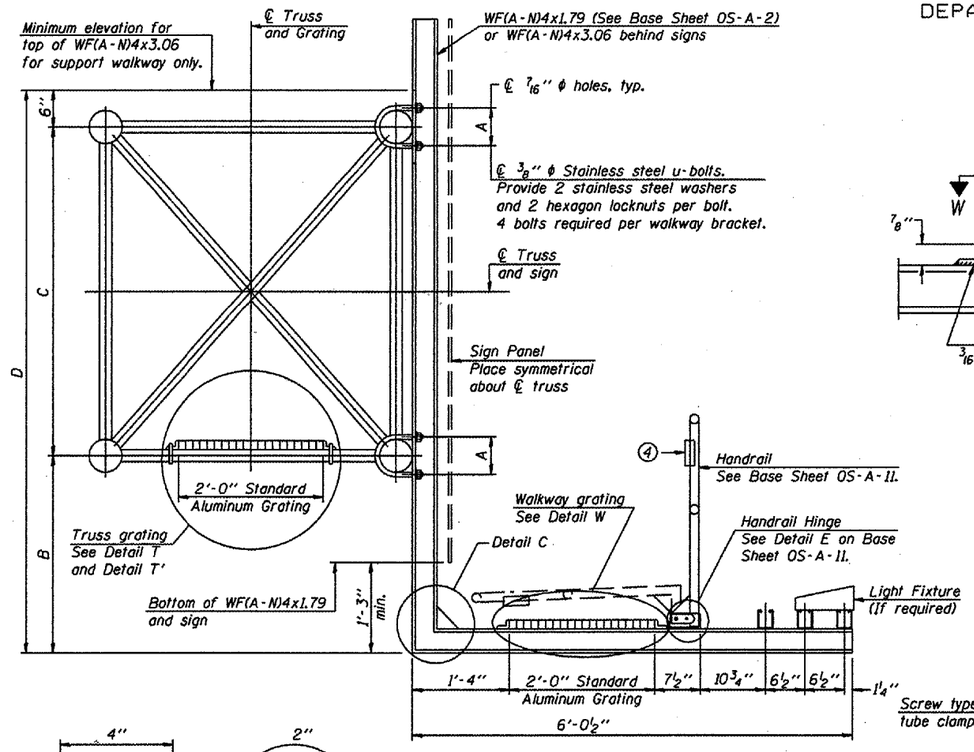
- 20
EXAMINED
ENGINEER OF BRIDGE DESIGN
PASSED
ENGINEER OF BRIDGES AND STRUCTURES

OS-A-9 1-7-05

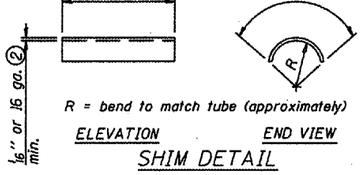
OVERHEAD SIGN STRUCTURES
ALUMINUM WALKWAY DETAILS

District 1
End Support Replacement

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



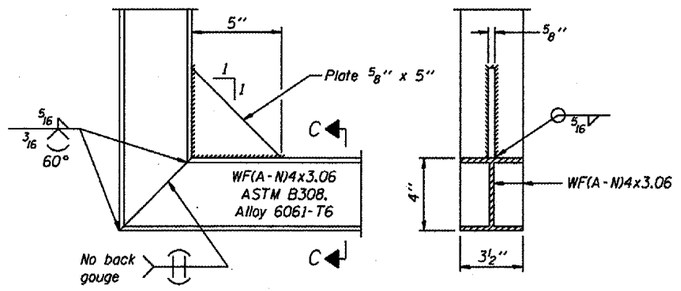
SECTION B-B



R = bend to match tube (approximately)

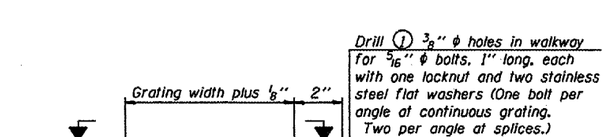
ELEVATION END VIEW

SHIM DETAIL

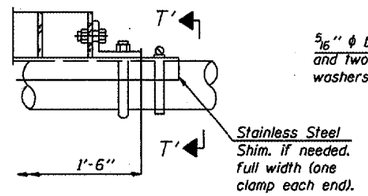


DETAIL C
(See Detail P, Base Sheet OS-A-11.)

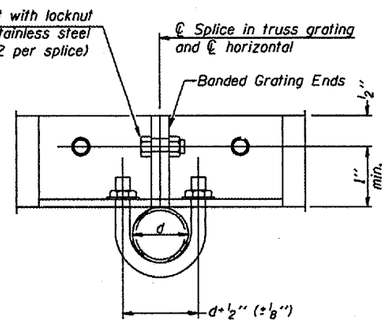
SECTION C-C



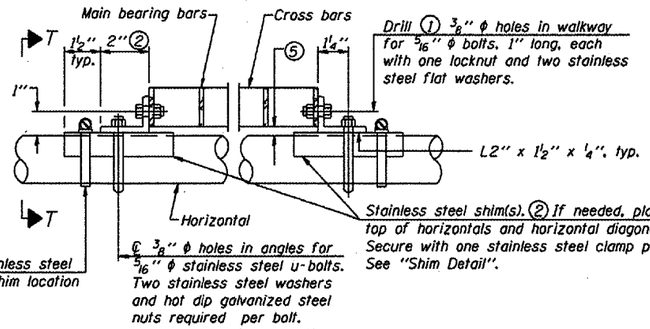
DETAIL W
(Walkway grating)



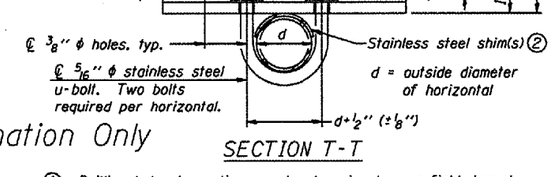
DETAIL T'
(Truss grating splice)
Details not shown same as Detail T.
Alternate materials may be used subject to the Engineer's review and approval.



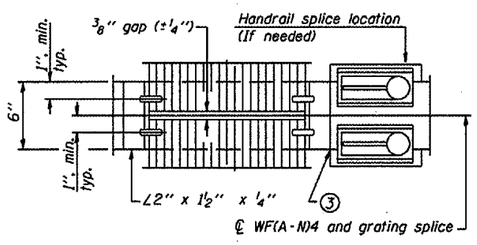
SECTION T'-T'



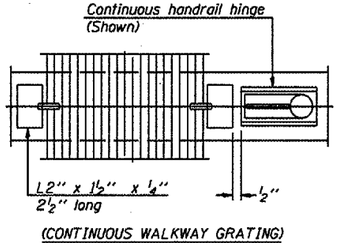
DETAIL T
(Continuous Truss grating)



SECTION T-T



(AT WALKWAY GRATING SPLICE)



(CONTINUOUS WALKWAY GRATING)

SECTION W-W

This Sheet For Information Only

SPECIFICATIONS FOR STANDARD ALUMINUM GRATING

Main Bearing Bars shall be 3/16" x 1½" on 1 3/16" centers and conform to ASTM B221 Alloy 6061-T6.
Cross bars shall be 3/16" x 1½" on 4" centers and conform to ASTM B221 Alloy 6063-T5 or 6061-T6.

OR

Aluminum Grating with modified "I" sections for main bearing bars shall meet the following requirements:
Main bars shall conform to ASTM B221 Alloy 6061-T6 and have a minimum section modulus equal to 0.0705 $in.^3$ per bar, a depth of 1½", spaced on 1 3/16" centers.
Cross bars shall conform to ASTM B221 Alloy 6063-T5 or T-42 and spaced on 4" centers.

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

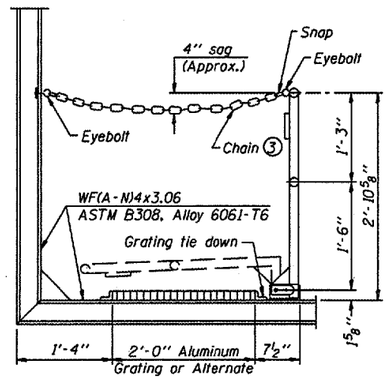
NUMBER	REVISION	DATE

OS-A-10 1-7-05

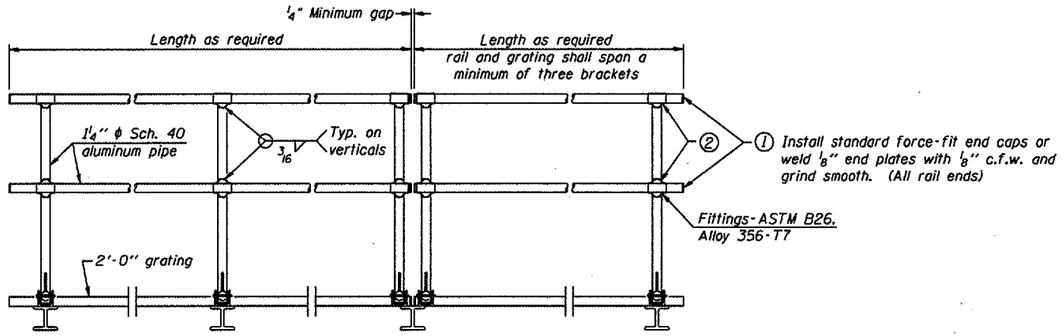
OVERHEAD SIGN STRUCTURES
ALUMINUM WALKWAY DETAILS

District 1
End Support Replacement

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



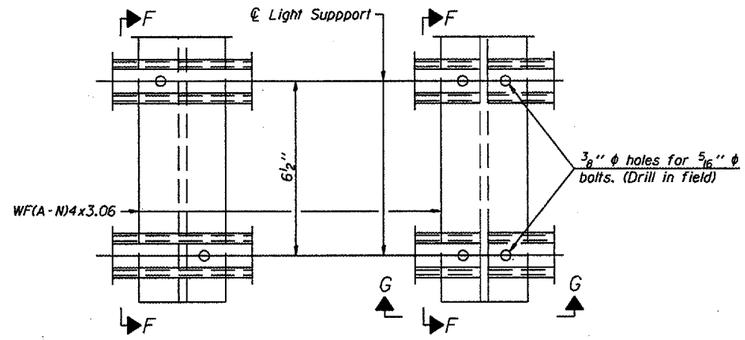
SIDE ELEVATION
(Showing safety chain w/o sign)



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.)

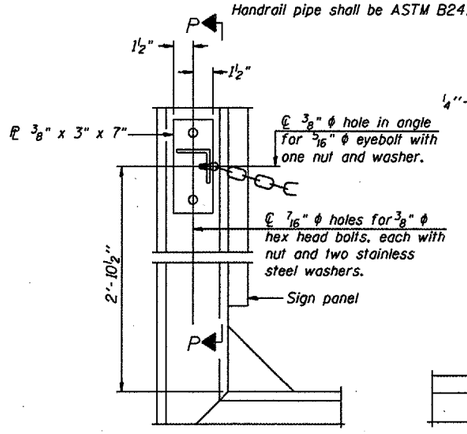


DETAIL F

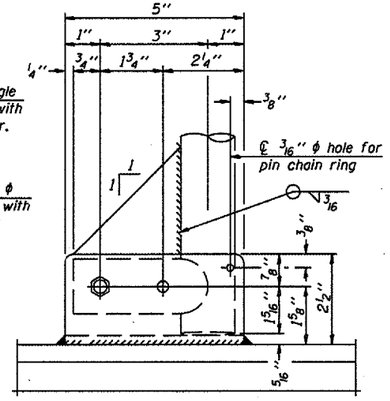
DETAIL G

HANDRAIL DETAILS

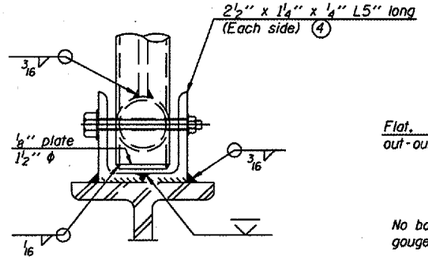
Handrail pipe shall be ASTM B241, Alloy 6063-T6 or Alloy 6061-T6.



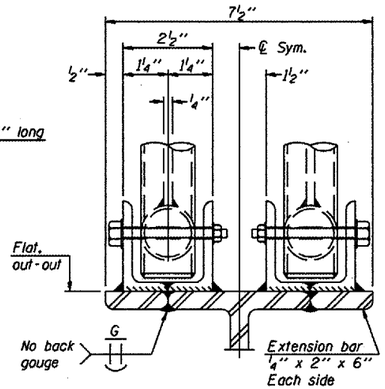
ALTERNATE SAFETY CHAIN ATTACHMENT
(With Sign Present)
Items not shown same as "Side Elevation" of "Handrail Details"



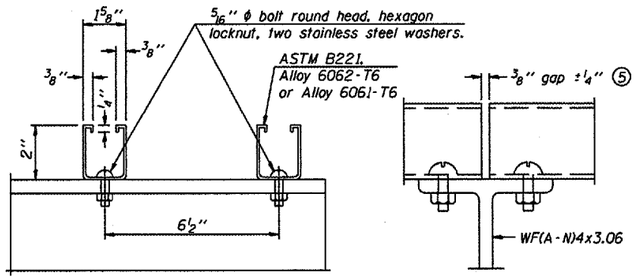
SIDE ELEVATION



FRONT ELEVATION
See "Elevation" at right for dimensions.



ELEVATION AT HANDRAIL JOINT (4)

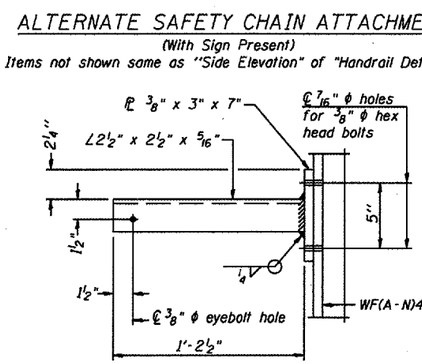


SECTION F-F

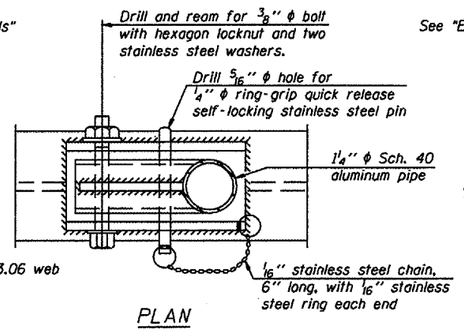
SECTION G-G

LIGHTING FIXTURE MOUNTS (IF REQUIRED)

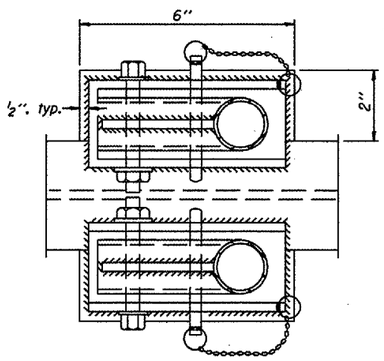
(5) Field cut ends of light support channels shall be free of burrs or hazardous projections and coated with zinc-rich primer or equivalent.



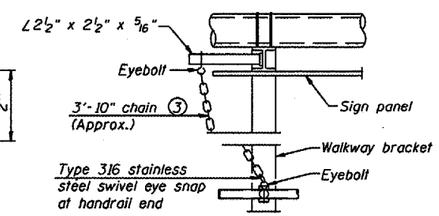
SECTION P-P



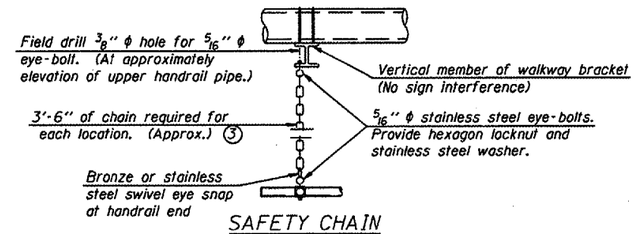
PLAN
DETAIL E HANDRAIL HINGE



PLAN AT HANDRAIL JOINT
Details not shown same as "PLAN"



ALTERNATE SAFETY CHAIN ATTACHMENT
Details not shown similar to "Safety Chain" Details
(Walkway omitted for clarity)



SAFETY CHAIN
One required for each end of each walkway.

(3) 3/16 " Type 304L or 316L 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 1
End Support Replacement

DESIGNED	-
CHECKED	-
DRAWN	-
CHECKED	-

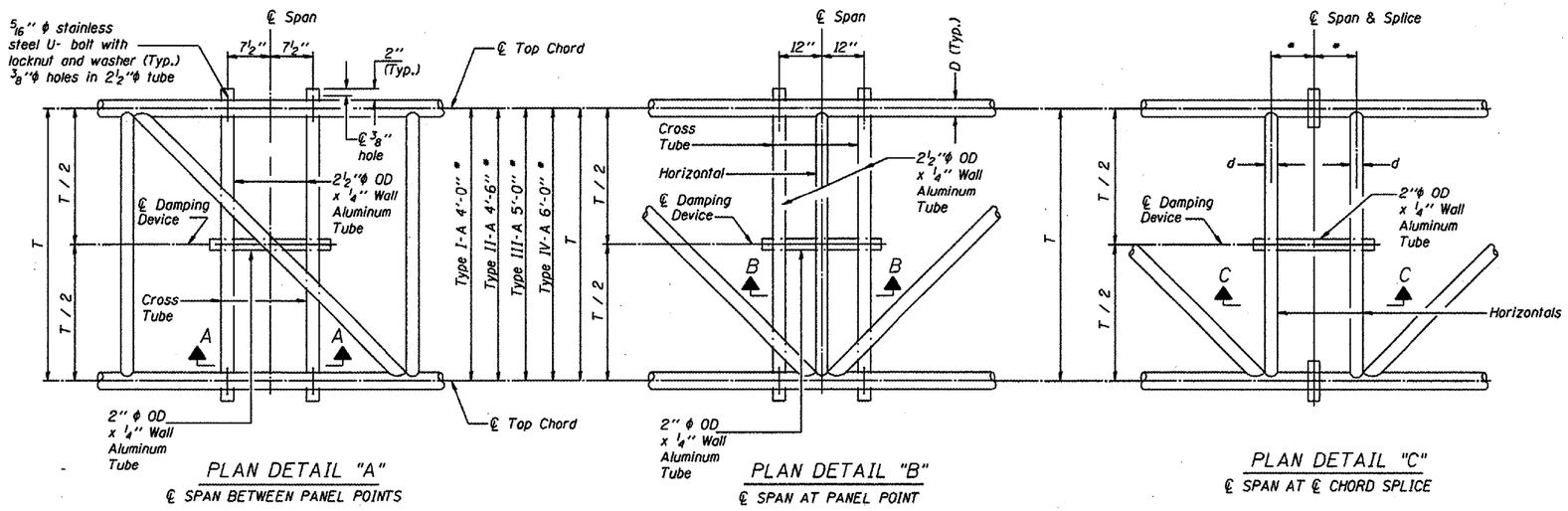
- 20
EXAMINED
ENGINEER OF BRIDGE DESIGN
PASSED
ENGINEER OF BRIDGES AND STRUCTURES

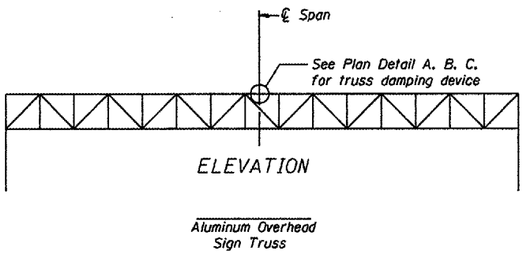
NUMBER	REVISION	DATE

OS-A-11 1-7-05

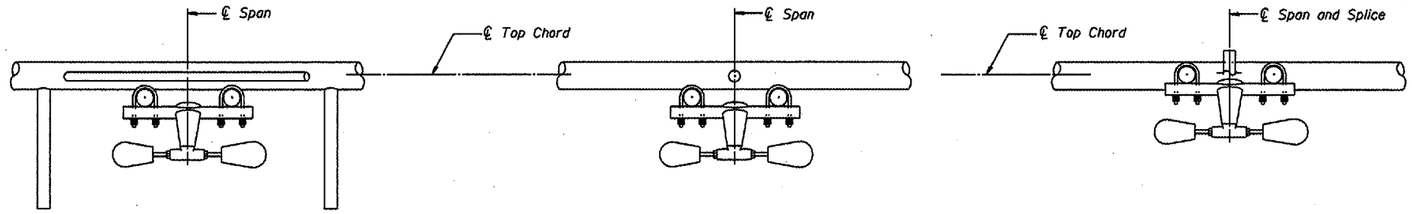
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

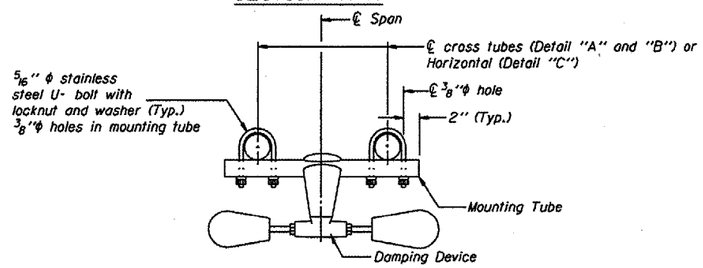
* Verify before drilling holes in mounting tube and cross tubes.



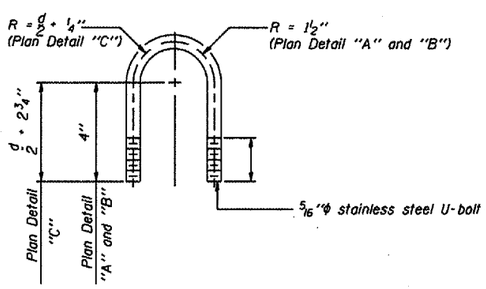


This detail applies to the following overhead sign structures:
1. IS022I055L273.2
2. IS022I055R272.7
3. IS022S083R000.0

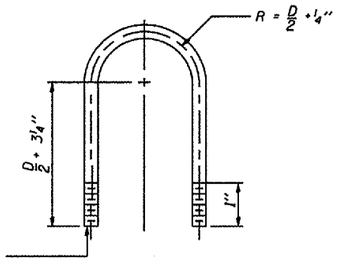




TRUSS DAMPING
(Typical)



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.

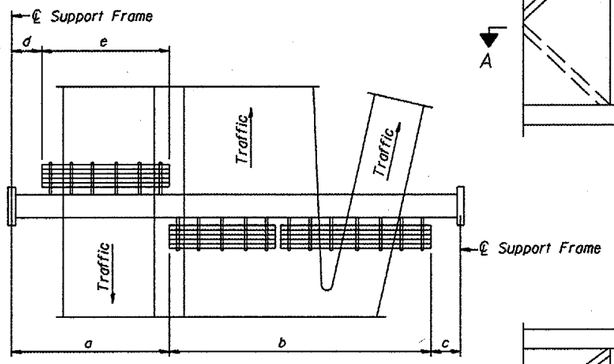
DESIGNED -	- 20
CHECKED -	EXAMINED ENGINEER OF BRIDGE DESIGN
DRAWN -	PASSED ENGINEER OF BRIDGES AND STRUCTURES
CHECKED -	

TRUSS DAMPER RETROFIT 07-01-2001

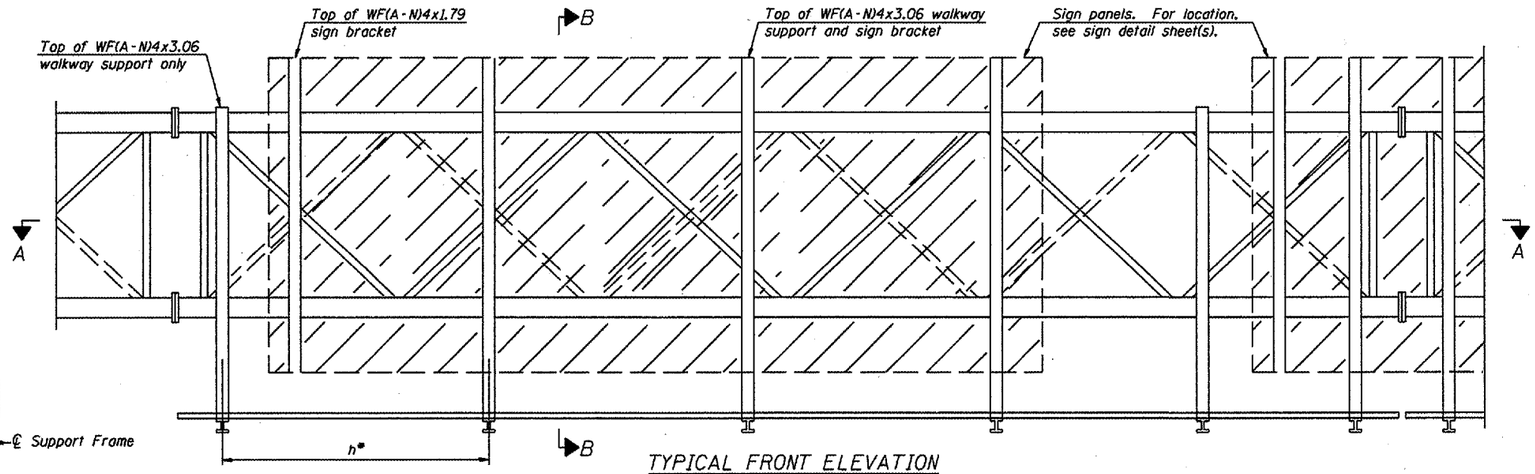
OVERHEAD SIGN STRUCTURE
DAMPING DEVICE

District 1
End Support Replacement

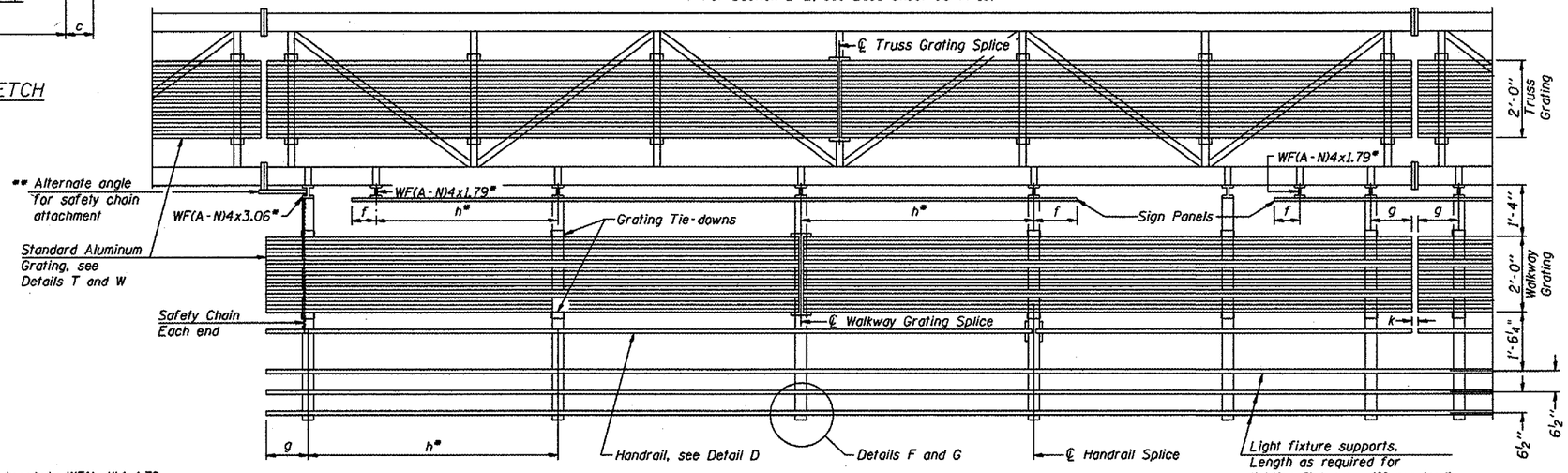
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



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



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



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

BRACKET TABLE

WF(A-N)4x1.79 or WF(A-N)4x3.06 ASTM B308, Alloy 6061-T6		
Sign Width		Number Brackets Required
Greater Than	Less Than or Equal To	
	8'-0"	2
8'-0"	14'-0"	3
14'-0"	20'-0"	4
20'-0"	26'-0"	5
26'-0"	32'-0"	6

Notes:

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

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

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

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

SECTION A-A

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

Structure Number	Station	a	b	c	d	e	Walkway Grating and Handrail Lengths
150161290R020.0	16 + 14.25 EB	N/A	N/A	N/A	N/A	N/A	47' - 0"*
150161290L014.2	907 + 35 WB	N/A	N/A	N/A	N/A	N/A	63' - 0"*
150161290L018.0	169 + 68.75 WB	N/A	N/A	N/A	N/A	N/A	78' - 0"*
150161290L020.7	35 + 23.25 WB	N/A	N/A	N/A	N/A	N/A	43' - 0"*
150161290L023.0	43 + 00 NB	N/A	N/A	N/A	N/A	N/A	56' - 6"*

*Lengths shown are for the replacement of existing handrails 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".

OVERHEAD SIGN STRUCTURES
ALUMINUM WALKWAY DETAILS

District 1
Handrail Replacement for
Vierendeel Sign
Structure-Span

DESIGNED	-
CHECKED	-
DRAWN	-
CHECKED	-

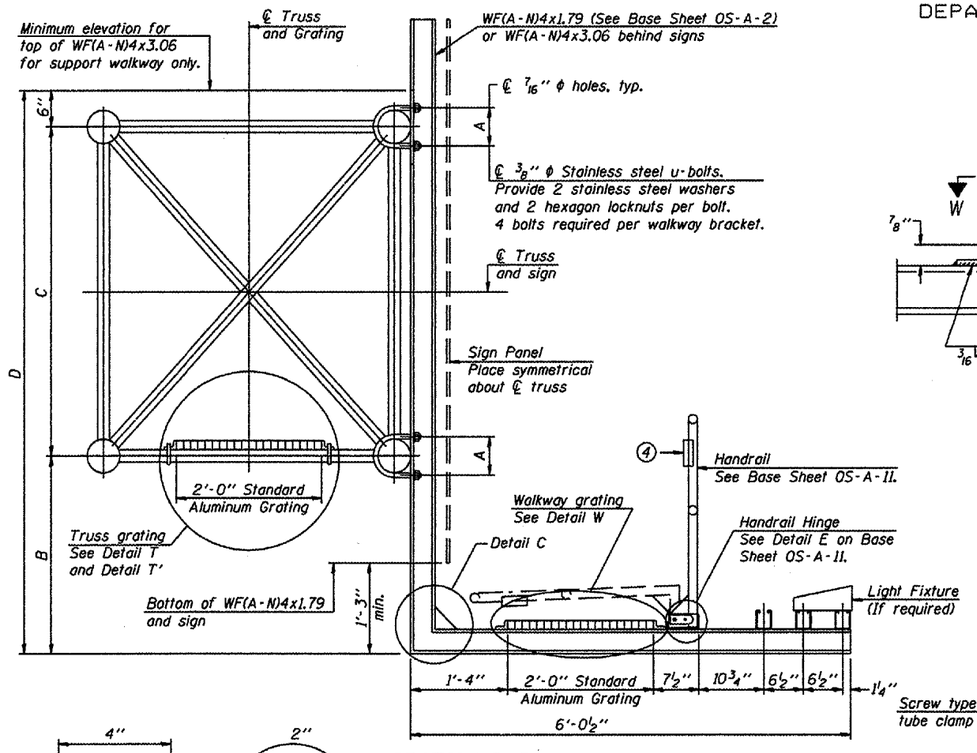
- 20
EXAMINED
ENGINEER OF BRIDGE DESIGN
PASSED
ENGINEER OF BRIDGES AND STRUCTURES

NUMBER	REVISION	DATE

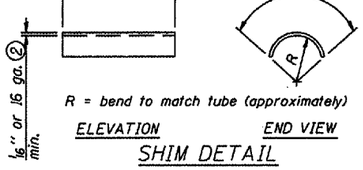
OS-A-9 1-7-05

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

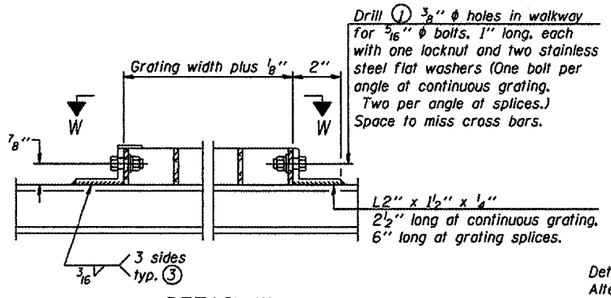
Various Routes
OVD SIN STR REP & REPL 2006-9
Various Counties
Sheet 19 of 114
Contract Number 44904



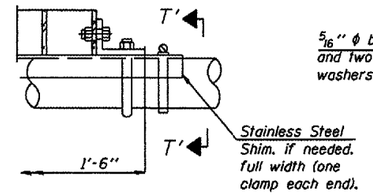
SECTION B-B



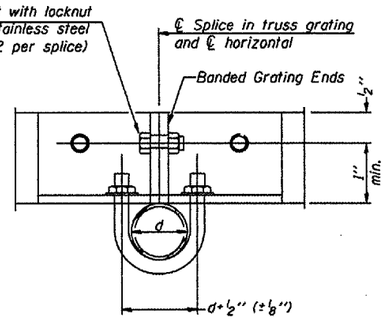
SHIM DETAIL



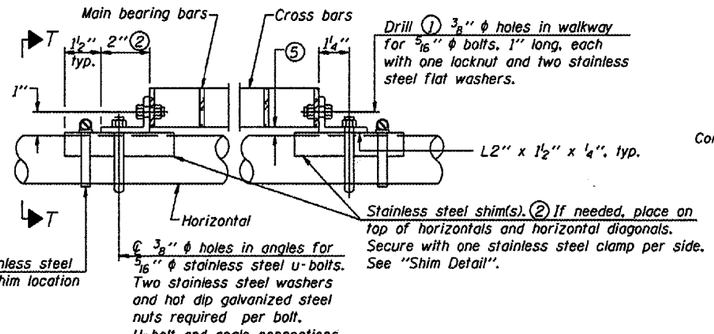
DETAIL W
(Walkway grating)



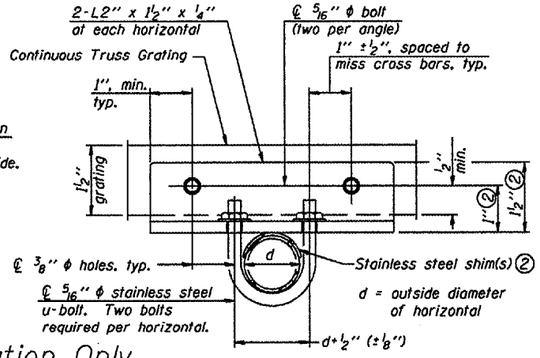
DETAIL T'
(Truss grating splice)
Details not shown same as Detail T.
Alternate materials may be used subject to the Engineer's review and approval.



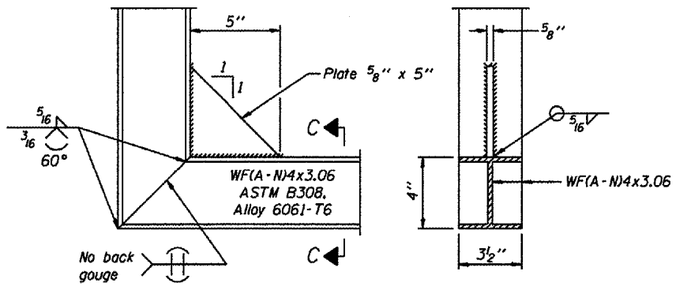
SECTION T'-T'



DETAIL T
(Continuous Truss grating)

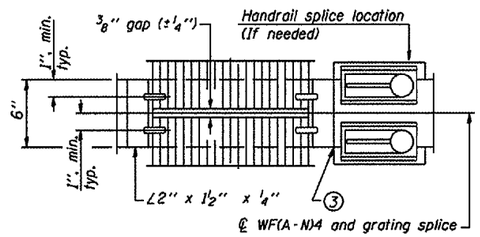


SECTION T-T

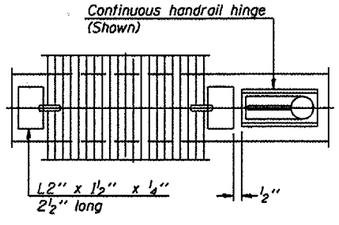


DETAIL C
(See Detail P, Base Sheet OS-A-11.)

SECTION C-C



(AT WALKWAY GRATING SPLICE)



(CONTINUOUS WALKWAY GRATING)

SECTION W-W

This Sheet For Information Only

SPECIFICATIONS FOR STANDARD ALUMINUM GRATING

Main Bearing Bars shall be 3/16" x 1½" on 1 3/16" centers and conform to ASTM B221 Alloy 6061-T6.
Cross bars shall be 3/16" x 1½" on 4" centers and conform to ASTM B221 Alloy 6063-T5 or 6061-T6.

OR

Aluminum Grating with modified "I" sections for main bearing bars shall meet the following requirements:
Main bars shall conform to ASTM B221 Alloy 6061-T6 and have a minimum section modulus equal to 0.0705 $in.^3$ per bar, a depth of 1½", spaced on 1 3/16" centers.
Cross bars shall conform to ASTM B221 Alloy 6063-T5 or T-42 and spaced on 4" centers.

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

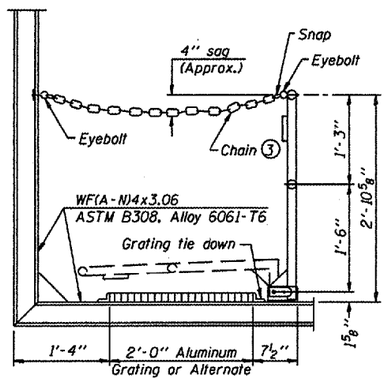
NUMBER	REVISION	DATE

OS-A-10 1-7-05

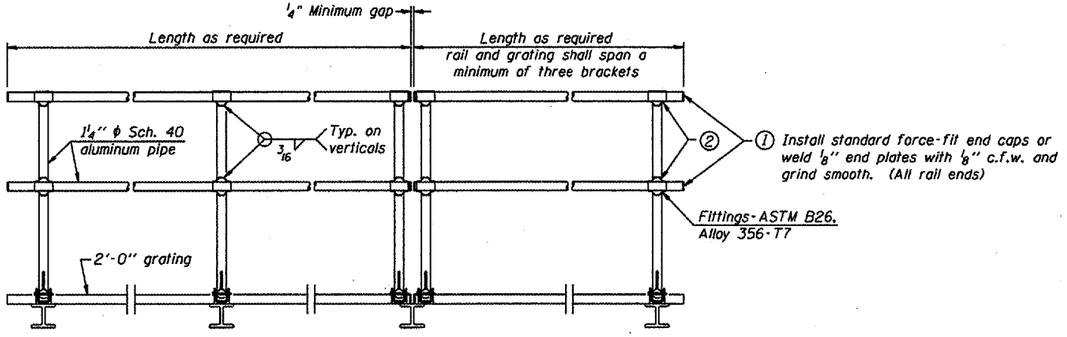
OVERHEAD SIGN STRUCTURES
ALUMINUM WALKWAY DETAILS

District 1
Handrail Replacement for
Vierendeel Sign
StructureS

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



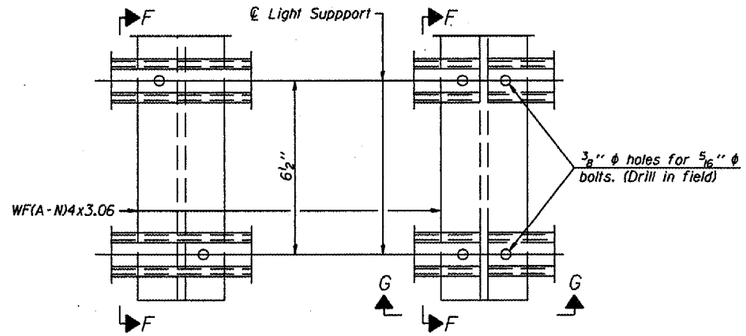
SIDE ELEVATION
(Showing safety chain w/o sign)



FRONT ELEVATION

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

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

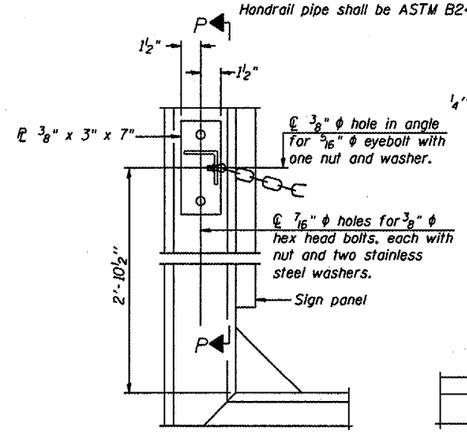


DETAIL F

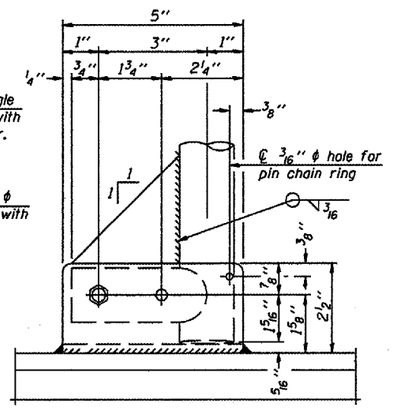
DETAIL G

HANDRAIL DETAILS

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

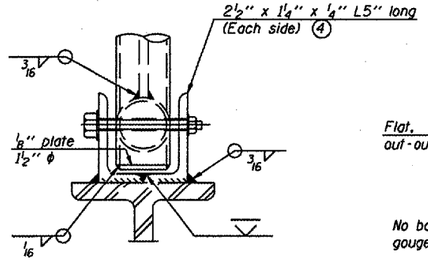


ALTERNATE SAFETY CHAIN ATTACHMENT
(With Sign Present)
Items not shown same as "Side Elevation" of "Handrail Details"

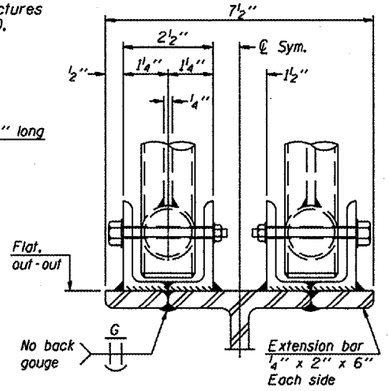


SIDE ELEVATION

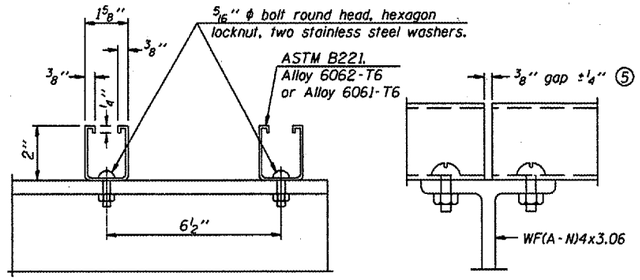
NOTE:
Replacement handrails for Vierendeel Sign Structures shall be fabricated using 1" Round, Schedule 80, Aluminum Pipe.



FRONT ELEVATION
See "Elevation" at right for dimensions.



ELEVATION AT HANDRAIL JOINT (4)

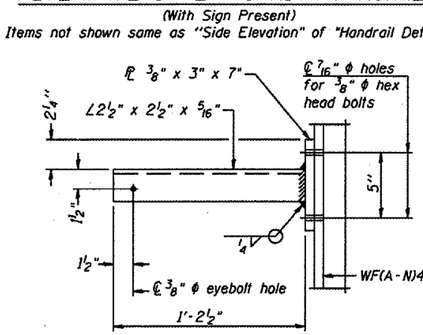


SECTION F-F

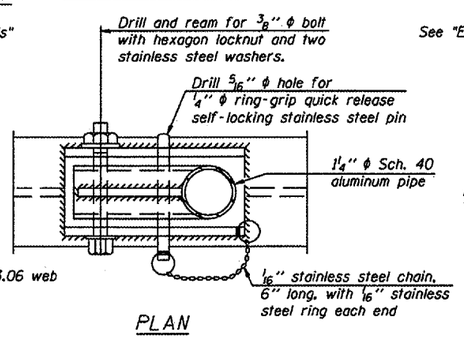
SECTION G-G

LIGHTING FIXTURE MOUNTS (IF REQUIRED)

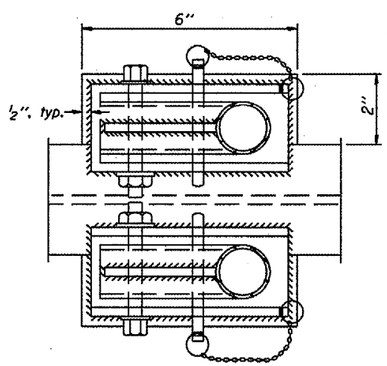
(5) Field cut ends of light support channels shall be free of burrs or hazardous projections and coated with zinc-rich primer or equivalent.



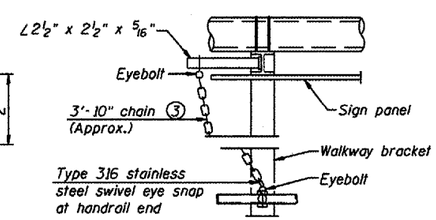
SECTION P-P



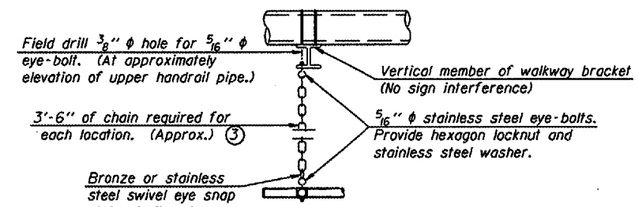
PLAN
DETAIL E HANDRAIL HINGE



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 or 316L stainless steel chain, approximately 12 links per foot.

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

NUMBER	REVISION	DATE

DESIGNED -
CHECKED -
DRAWN -
CHECKED -

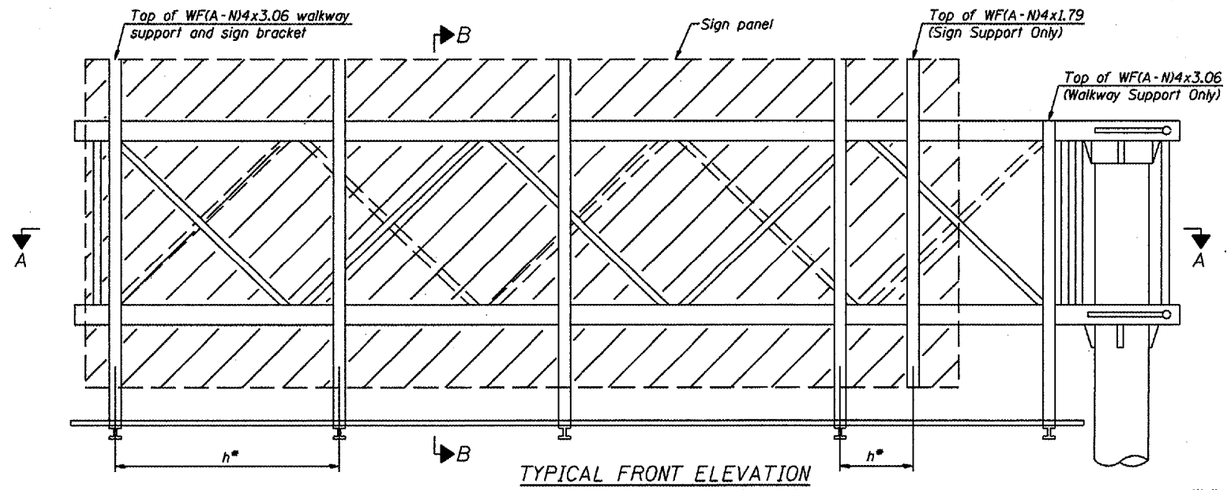
- 20
EXAMINED
ENGINEER OF BRIDGE DESIGN
PASSED
ENGINEER OF BRIDGES AND STRUCTURES

OS-A-11 1-7-05

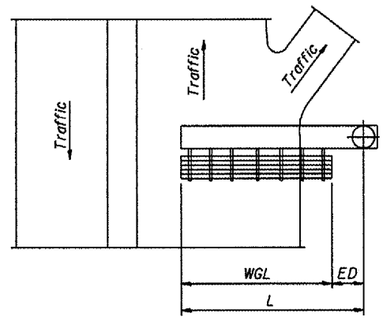
OVERHEAD SIGN STRUCTURES
ALUMINUM HANDRAIL DETAILS

District 1
Handrail Replacement for
Vierendeel Sign
Structures

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

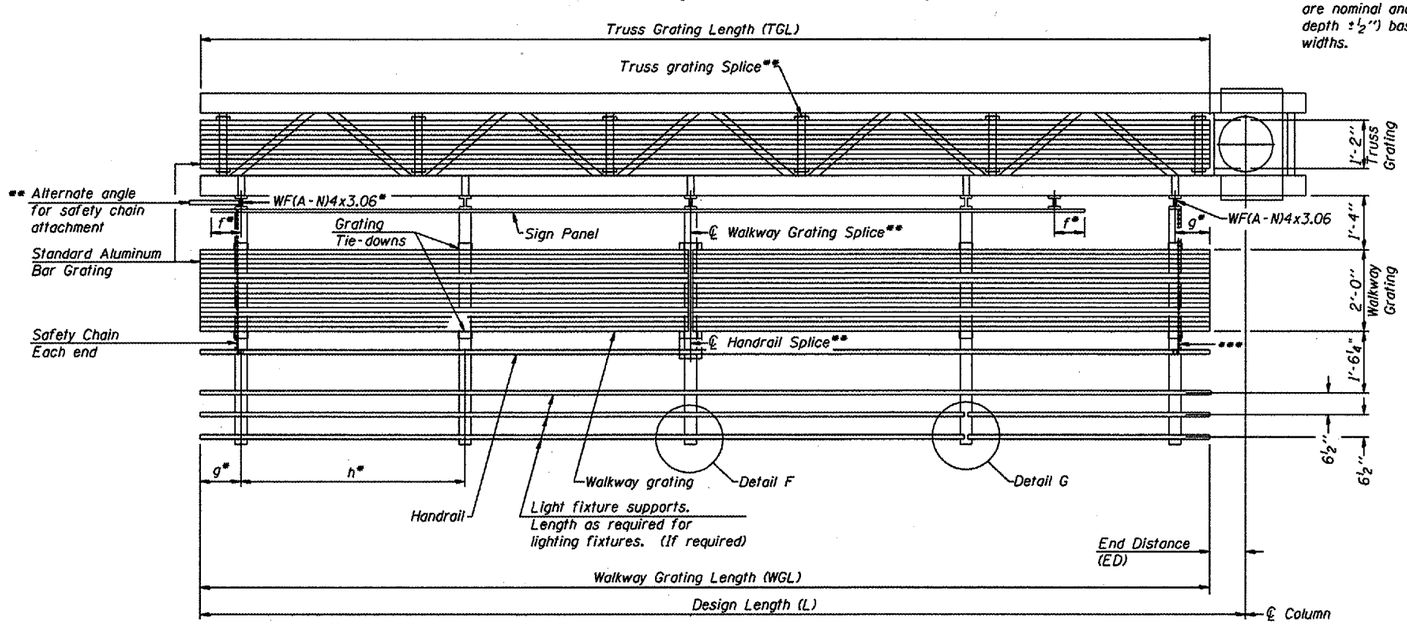


TYPICAL FRONT ELEVATION
With lights and handrail omitted for clarity.



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

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



Structure Number	Station	WGL	ED	TGL
IC0161290R018.8	N/A	19' - 0" *	N/A	N/A
IC0161290R021.0	N/A	21' - 6" *	N/A	N/A
IC0161290R023.4	N/A	24' - 0" *	N/A	N/A
IC0161290R027.3	N/A	24' - 0" *	N/A	N/A
IC0161290R028.4	N/A	35' - 6" *	N/A	N/A
IC0161290L019.4	N/A	19' - 0" *	N/A	N/A
IC0161290L019.8	N/A	17' - 6" *	N/A	N/A
IC0161290L023.0	N/A	24' - 0" *	N/A	N/A
IC0161290L027.6	N/A	23' - 0" *	N/A	N/A
IC0161290L028.7	N/A	23' - 0" *	N/A	N/A

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

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

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

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

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

SECTION A-A

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

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

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

BRACKET TABLE

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

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

NUMBER	REVISION	DATE

DESIGNED -
CHECKED -
DRAWN -
CHECKED -

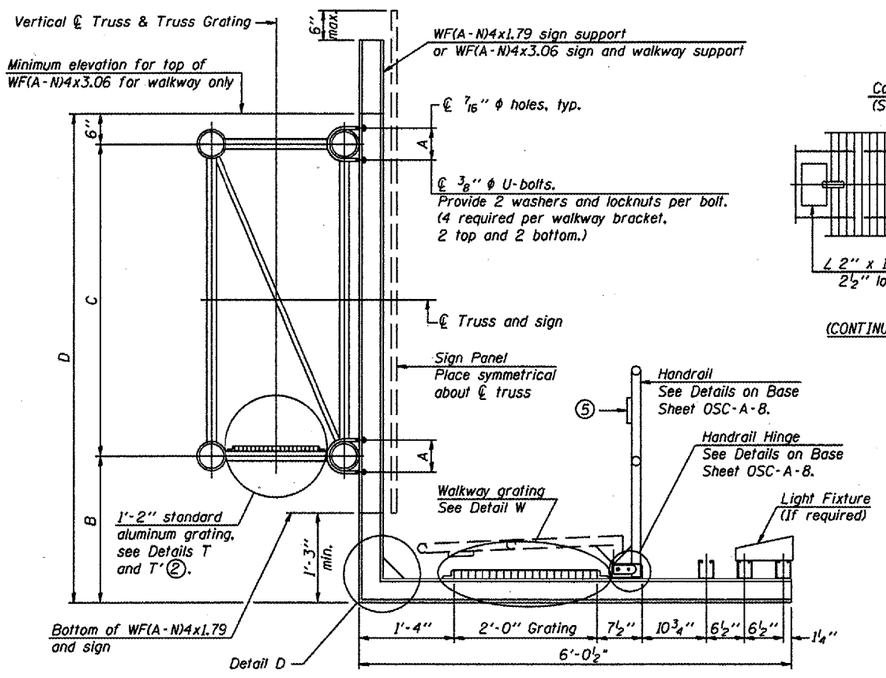
- 20
EXAMINED
ENGINEER OF BRIDGE DESIGN
PASSED
ENGINEER OF BRIDGES AND STRUCTURES

OSC-A-6 1-7-05

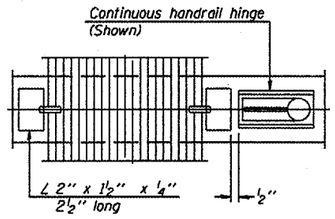
CANTILEVER SIGN STRUCTURES
ALUMINUM WALKWAY DETAILS
ALUMINUM TRUSS & STEEL POST

District 1
Handrail Replacement for
Vierendeel Sign
Structure-Cantilever

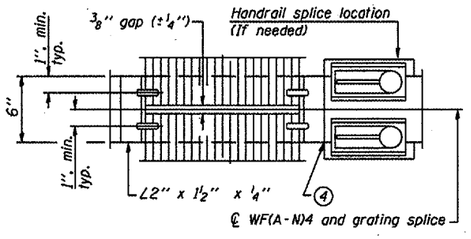
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



SECTION B-B



(CONTINUOUS WALKWAY GRATING)



(AT WALKWAY GRATING SPLICE)

SECTION W-W

SPECIFICATIONS FOR STANDARD ALUMINUM GRATING

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

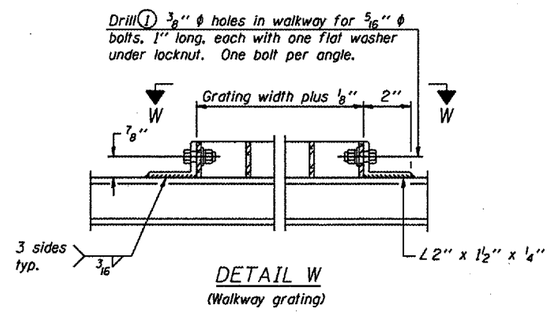
Cross bars (CB) shall be 3/16" x 1½" on 4" centers and conform to ASTM B221 Alloy 6063-T5 or 6061-T6.

OR

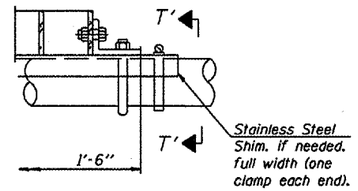
Aluminum Grating with modified "I" sections for main bearing bars shall meet the following requirements:

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

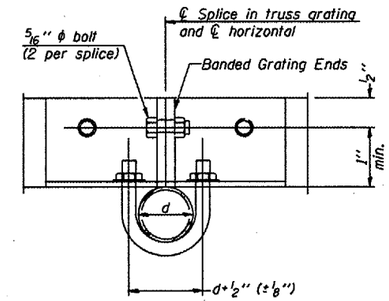
Cross bars shall conform to ASTM B221 Alloy 6063-T5 or T-42 and spaced on 4" centers.



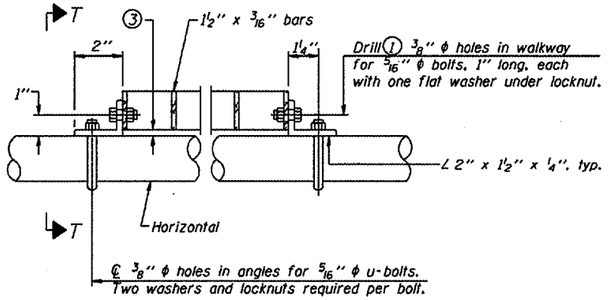
DETAIL W
(Walkway grating)



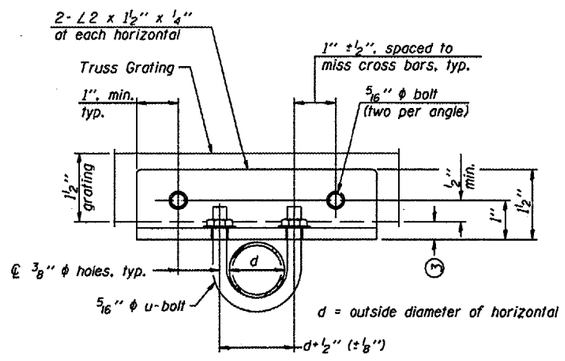
DETAIL T'
(Truss grating splice)
Details not shown same as Detail T.
Alternate materials may be used subject to the Engineer's review and approval.



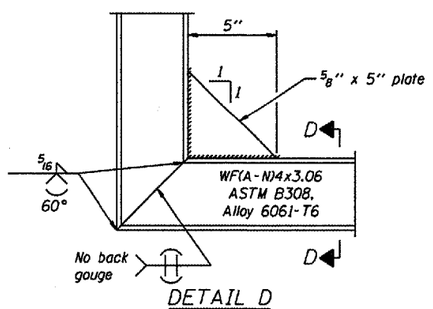
SECTION T-T'



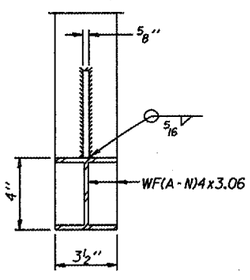
DETAIL T
(Truss grating at horizontal)



SECTION T-T



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



SECTION D-D

This Sheet For Information Only

NUMBER	REVISION	DATE

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

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

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

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

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

Structure Number	Station	A	B	C	D

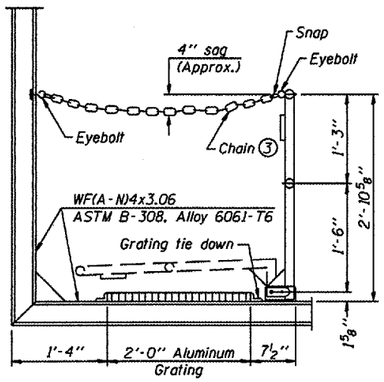
DESIGNED	-
CHECKED	-
DRAWN	-
CHECKED	-

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

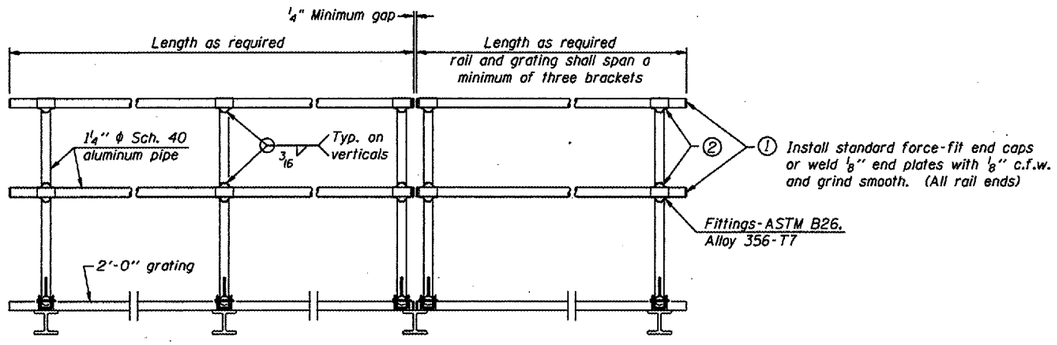
OSC-A-7 1-7-05

CANTILEVER SIGN STRUCTURES
WALKWAY DETAILS
ALUMINUM TRUSS & STEEL POST

District 1
Handrail Replacement for
Vierendeel Sign
Structure-Cantilever

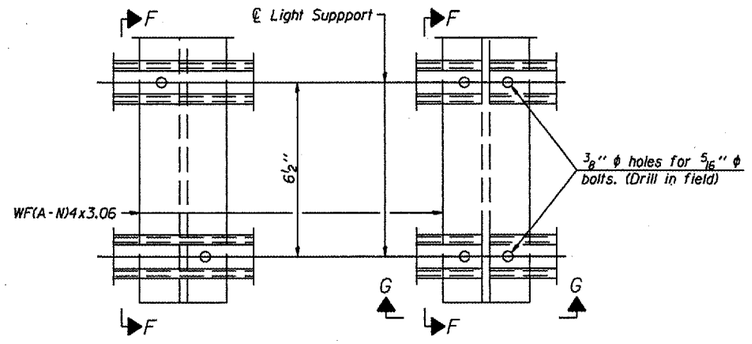


SIDE ELEVATION
(Showing Safety Chain W/O Sign)



FRONT ELEVATION

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

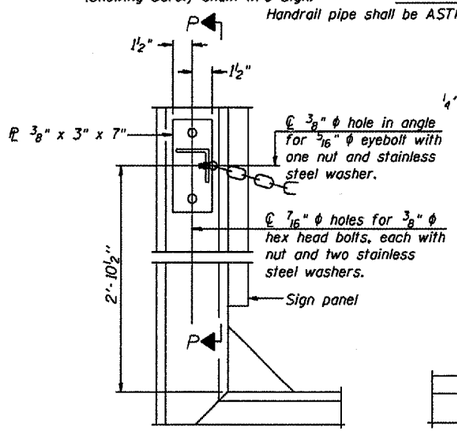


DETAIL F

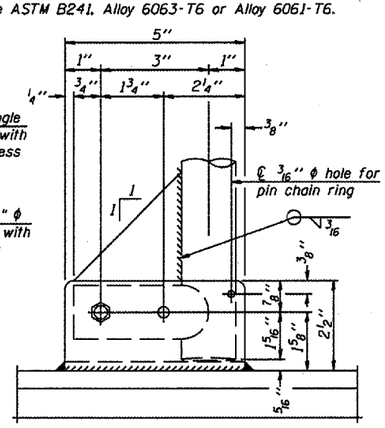
DETAIL G

HANDRAIL DETAILS

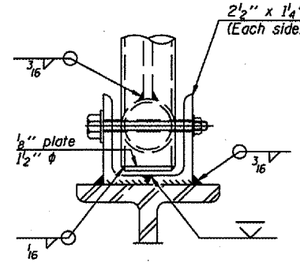
Handrail pipe shall be ASTM B241, Alloy 6063-T6 or Alloy 6061-T6.



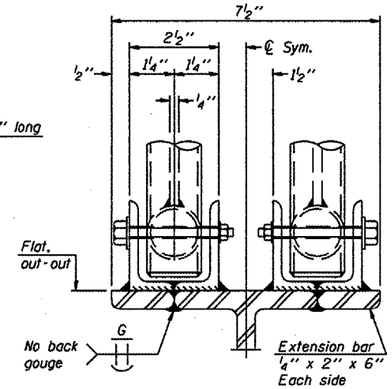
ALTERNATE SAFETY CHAIN ATTACHMENT
(With Sign Present)
Items not shown same as "Side Elevation" of "Handrail Details"



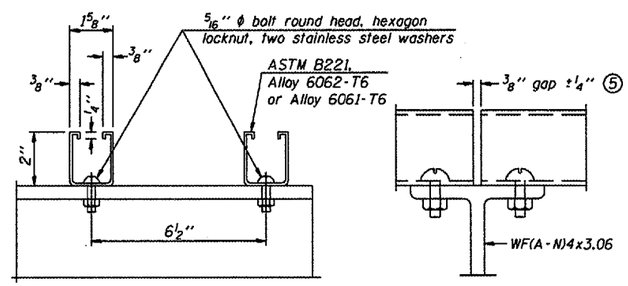
SIDE ELEVATION



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



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

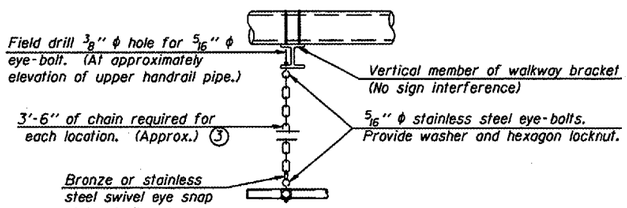


SECTION F-F

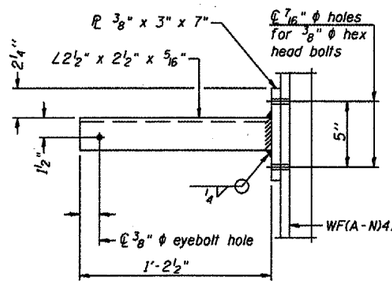
SECTION G-G

LIGHTING FIXTURE MOUNTS (IF REQUIRED)

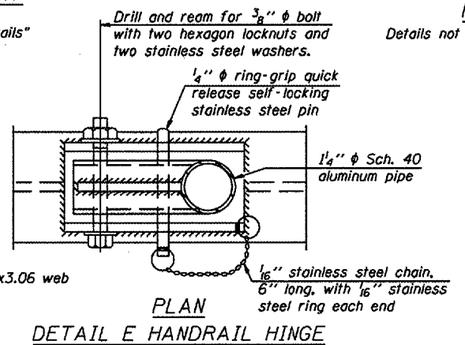
(5) Field cut ends of light support channels shall be free of burrs or hazardous projections and coated with zinc-rich primer or equivalent.



SAFETY CHAIN
One required for each end of each walkway.

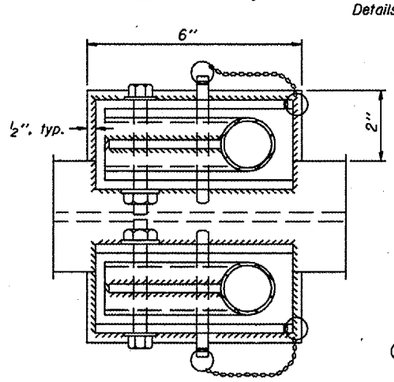


SECTION P-P

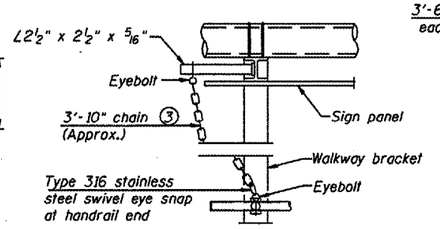


PLAN

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 or 316L stainless steel chain, approximately 12 links per foot.

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

NUMBER	REVISION	DATE

DESIGNED -
CHECKED -
DRAWN -
CHECKED -

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

OSC-A-8 1-7-05

CANTILEVER SIGN STRUCTURES
HANDRAIL DETAILS
ALUMINUM TRUSS & STEEL POST

District 1
Handrail Replacement for
Vierendeel Sign
Structure-Cantilever

District 2
Schedule of Locations for Overhead Sign Structure Replacement

Location No.:	2-01	State I.D. No.:	2S101U020R009.5				
County:	Winnebago	Route:	US 20	M.P.:	9.5	Direction:	EB

Description of Work	Unit	Quantity
REMOVE & RE-ERECT OVERHEAD SIGN STRUCTURE-SPAN	EACH	1.00
STRUCTURAL STEEL SUPPORT OVERHEAD SIGN STRUCTURE	EACH	2.00
FURNISH & INSTALL SADDLE SHIM BLOCK	EACH	4.00
FURNISH & INSTALL INTERNAL TRUSS DAMPER	EACH	1.00
FURNISH & INSTALL SAFETY CHAIN	EACH	2.00
OVERHEAD SIGN STRUCTURE WALKWAY	FOOT	54.00
OVERHEAD SIGN SUPPORT GROUT REPAIR	EACH	4.00
REPAIR HANDRAIL LOCKING PIN CONNECTION	EACH	5.00
REPLACE / TIGHTEN CLIPS PER SIGN	EACH	2.00
DISCONNECT / RECONNECT ELECTRIC SERVICE	EACH	1.00

Location No.:	2-02	State I.D. No.:	2S006I080R059.9				
County:	Bureau	Route:	I - 80	M.P.:	59.9	Direction:	EB

Description of Work	Unit	Quantity
REMOVE & RE-ERECT OVERHEAD SIGN STRUCTURE - SPAN	EACH	1.00
STRUCTURAL STEEL SUPPORT OVERHEAD SIGN STRUCTURE	EACH	1.00
FURNISH & INSTALL SADDLE SHIM BLOCK	EACH	4.00
FURNISH & INSTALL INTERNAL TRUSS DAMPER	EACH	1.00
REPLACE / TIGHTEN CLIPS PER SIGN	EACH	2.00
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
OVERHEAD SIGN STRUCTURE WALKWAY	FOOT	88.00
OVERHEAD SIGN STRUCTURE WALKWAY, SPECIAL	FOOT	30.00
FURNISH & INSTALL SAFETY CHAIN	EACH	2.00
REMOVE EXISTING LUMINAIRE	EACH	2.00

Location No.:	2-03	State I.D. No.:	2S037I080L010.2				
County:	Henry	Route:	I - 80	M.P.:	10.2	Direction:	WB

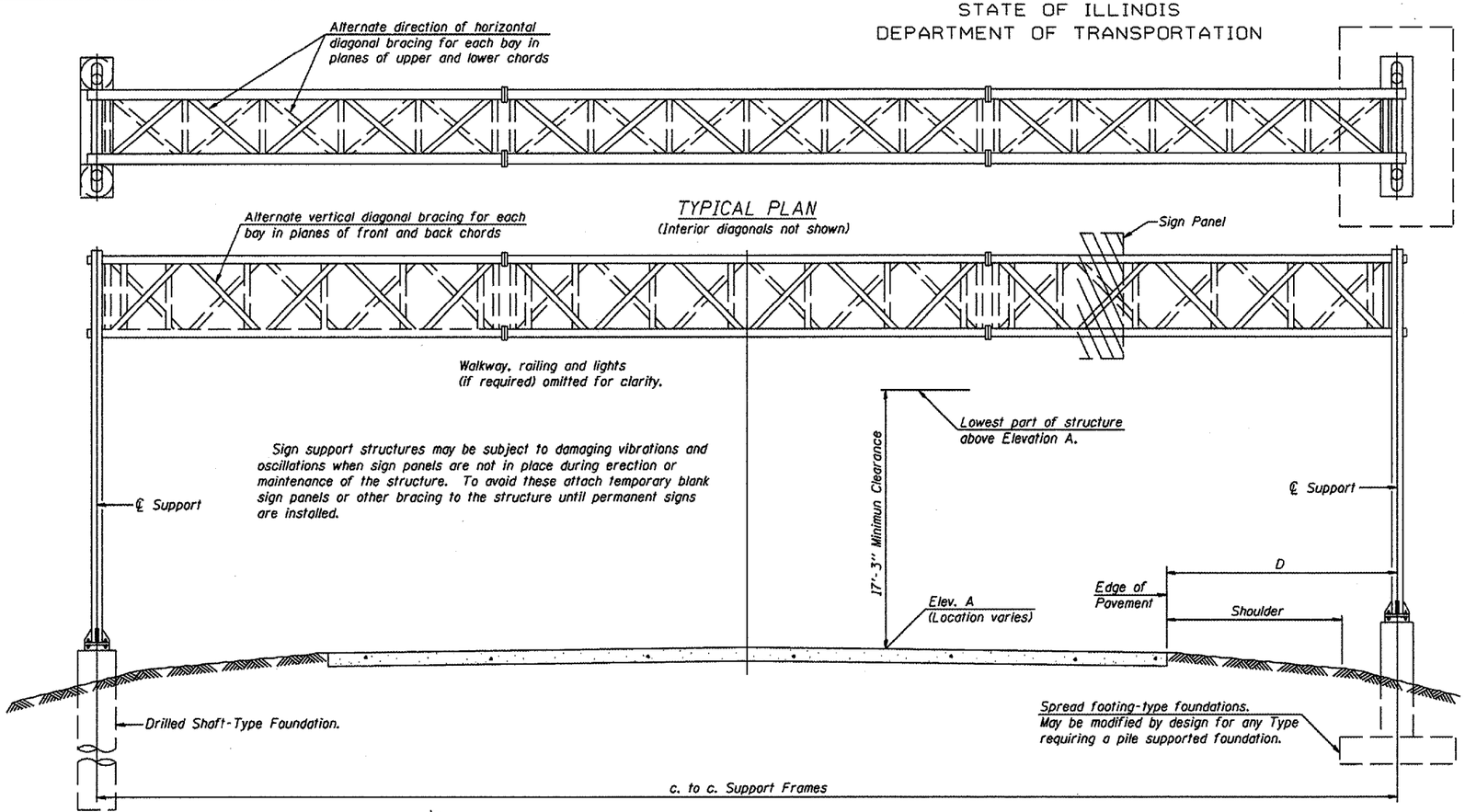
Description of Work	Unit	Quantity
REMOVE & RE-ERECT OVERHEAD SIGN STRUCTURE-SPAN	EACH	1.00
STRUCTURAL STEEL SUPPORT OVERHEAD SIGN STRUCTURE	EACH	2.00
FURNISH & INSTALL SADDLE SHIM BLOCK	EACH	4.00
FURNISH & INSTALL INTERNAL TRUSS DAMPER	EACH	1.00
FURNISH & INSTALL SAFETY CHAIN	EACH	2.00
OVERHEAD SIGN SUPPORT GROUT REPAIR	EACH	4.00
REPLACE U-BOLT	EACH	4.00
REPLACE HANDRAIL SUPPORT	EACH	2.00
DISCONNECT / RECONNECT ELECTRIC SERVICE	EACH	1.00
REPLACE OVERHEAD SIGN WALKWAY	FOOT	20.00
OVERHEAD SIGN STRUCTURE WALKWAY	FOOT	74.00

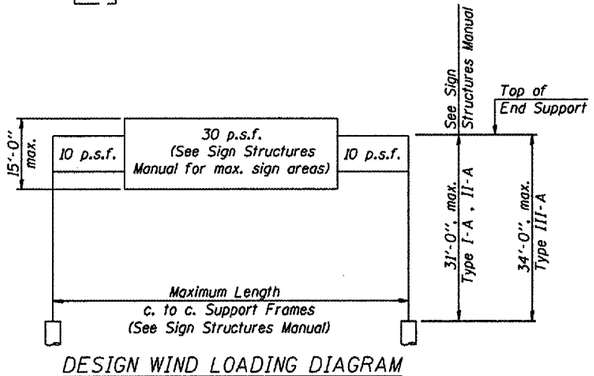
Location No.:	2-04	State I.D. No.:	2S037I080L011.4				
County:	Henry	Route:	I - 80	M.P.:	11.4	Direction:	WB

Description of Work	Unit	Quantity
REMOVE OVERHEAD SIGN STRUCTURE - SPAN	EACH	1.00
STRUCTURAL STEEL SUPPORT OVERHEAD SIGN STRUCTURE	EACH	2.00
OVERHEAD SIGN STRUCTURE-SPAN TYPE I-A	FOOT	50.00
DRILLED SHAFT CONCRETE FOUNDATIONS	CU YD	12.00
REMOVE CONCRETE FOUNDATION - OVERHEAD	EACH	4.00
REMOVE & REINSTALL SIGN PANEL	SQ FT	432.00
DISCONNECT / RECONNECT ELECTRIC SERVICE	EACH	1.00
RELOCATE ELECTRIC SERVICE	EACH	1.00
OVERHEAD SIGN STRUCTURE WALKWAY, SPECIAL	FOOT	38.00
FURNISH & INSTALL SAFETY CHAIN	EACH	2.00
REMOVE EXISTING LUMINAIRE	EACH	3.00

Location No.:	2-05	State I.D. No.:	2S050I080R073.4				
County:	LaSalle	Route:	I - 80	M.P.:	73.4	Direction:	EB

Description of Work	Unit	Quantity
REMOVE OVERHEAD SIGN STRUCTURE-SPAN	EACH	1.00
STRUCTURAL STEEL SUPPORT OVERHEAD SIGN STRUCTURE	EACH	2.00
OVERHEAD SIGN STRUCTURE-SPAN TYPE I-A	FOOT	84.00
REMOVE & REINSTALL WALKWAY	FOOT	29.50
REMOVE & REINSTALL SIGN PANEL	SQ FT	268.00
DRILLED SHAFT CONCRETE FOUNDATION	CU YD	20.40
REMOVE CONCRETE FOUNDATION OVERHEAD	EACH	2.00
REPAIR HANDRAIL LOCKING PIN CONNECTION	EACH	4.00
RELOCATE ELECTRIC SERVICE	EACH	1.00
DISCONNECT / RECONNECT ELECTRIC SERVICE	EACH	1.00
FURNISH & INSTALL SAFETY CHAIN	EACH	2.00





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
2S037I080L011.4	1026 + 40	I-A	50' - 0"	695.89	15' - 6"	12' - 6"	431.50
2S050I080R073.4	486 + 00	I-A	84' - 0"	652.72	35' - 0"	14' - 6"	268.25

**Looking upstation for structures with signs both sides.

GENERAL NOTES

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

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

LOADING: 90 M.P.H. WIND VELOCITY

WIND LOADING: 30 p.s.f. normal to Sign Panel Area and truss elements not behind sign Loading Diagram.

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

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

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

MATERIALS: Aluminum Alloys as shown throughout plans. All Structural Steel Pipe shall be ASTM A53 Grade B with a minimum yield of 35,000 p.s.i., or A500 Grade B or C with a minimum yield of 46,000 p.s.i. If A500 pipe is substituted for A53, then the outside diameter shall be as detailed and wall thickness greater than or equal to A53.
All Structural Steel Plates and Shapes shall conform to AASHTO M270 Gr. 36, Gr. 50 or Gr. 50W•. Stainless steel for shims, sleeves and handhole covers shall be ASTM A240, Type 302 or 304, or another alloy suitable for exterior exposure and acceptable to the Engineer.
The steel pipe and stiffening ribs at the base plate for the column shall have a minimum longitudinal Charpy V-Notch (CVN) energy of 15 lb.-ft. at 40° F. (Zone 2) before galvanizing.

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

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

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

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

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

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

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

TOTAL BILL OF MATERIAL

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

NUMBER	REVISION	DATE

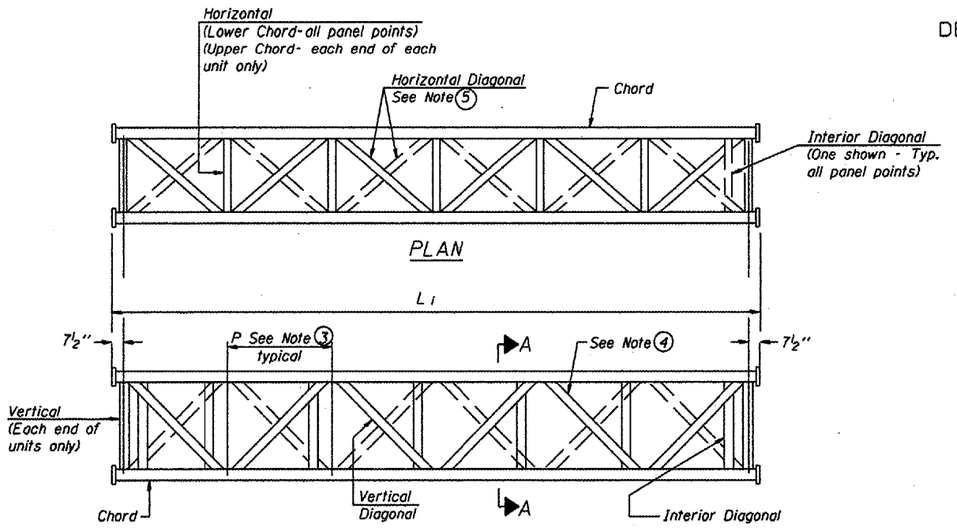
DESIGNED -
CHECKED -
DRAWN -
CHECKED -

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

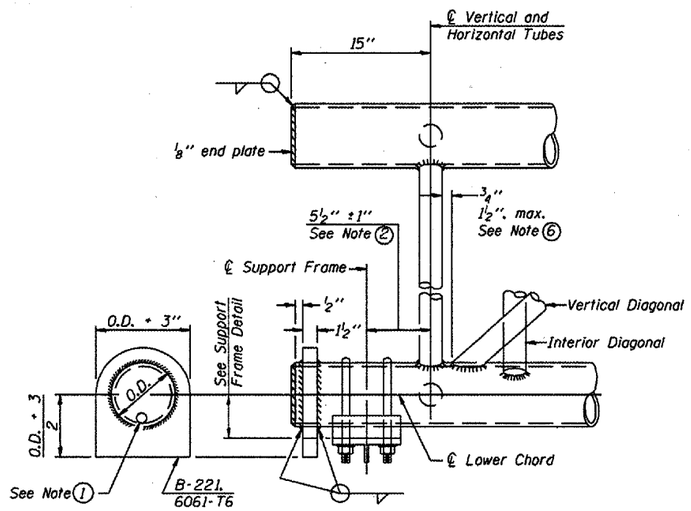
OS-A-1 1-7-05

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

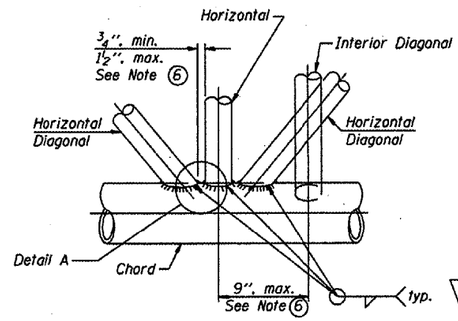
District 2
Overhead Sign
Structure Replacement

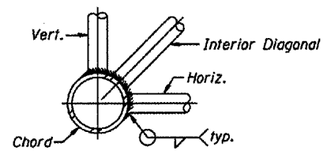


ELEVATION
TYPICAL INTERIOR UNIT
Even number of panels/interior unit required.

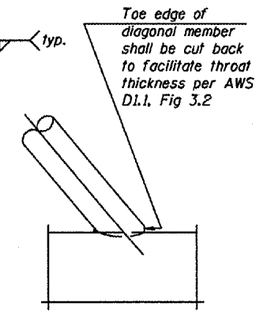


SUPPORT END DETAIL FOR EXTERIOR UNIT

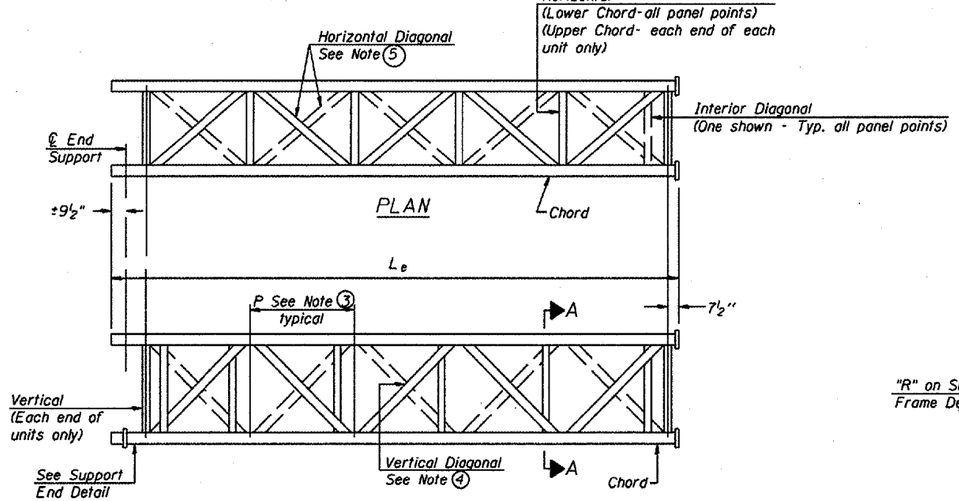




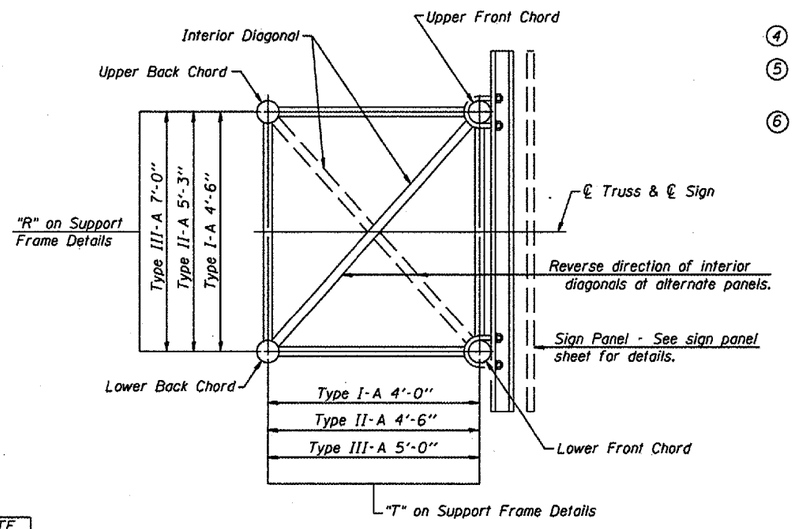
TYPICAL JOINT DETAILS



DETAIL A



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



SECTION A-A

NOTES

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

DESIGNED	-
CHECKED	-
DRAWN	-
CHECKED	-

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

OS-A-2 1-7-05

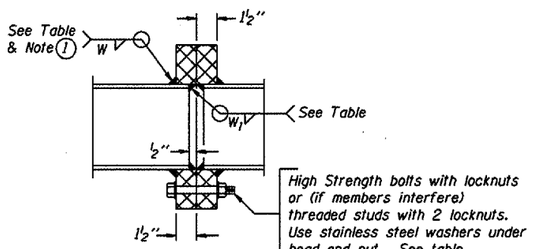
NUMBER	REVISION	DATE

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

District 2
Overhead Sign
Structure Replacement

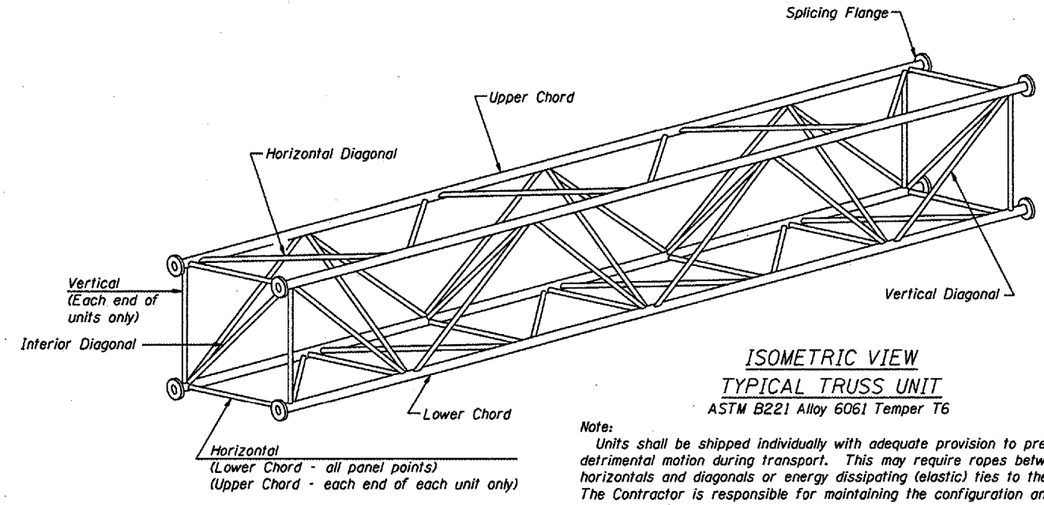
TRUSS UNIT TABLE

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		
2S037I080L011.4	1026 + 40	I-A	5	25'-10"	4'-9 1/2"					5"	1/4"	2 1/2"	1/4"	1 1/4"	6	7/8"	5/16"	1/4"	8 3/4"	11 3/4"
2S050I080R073.4	486 + 00	I-A	6	28'-9"	4'-5 3/4"	1	6	28'-1 1/2"	4'-5 3/4"	5"	5/16"	2 1/2"	5/16"	2 1/2"	6	7/8"	5/16"	1/4"	8 3/4"	11 3/4"



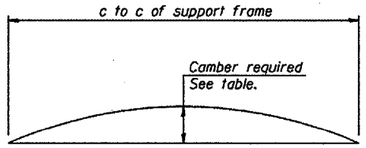
SECTION B-B

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



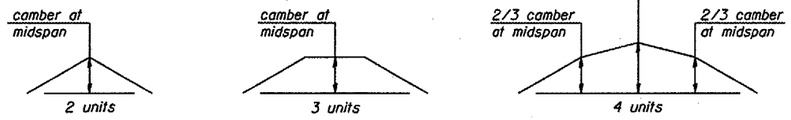
ISOMETRIC VIEW
TYPICAL TRUSS UNIT
ASTM B221 Alloy 6061 Temper T6

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

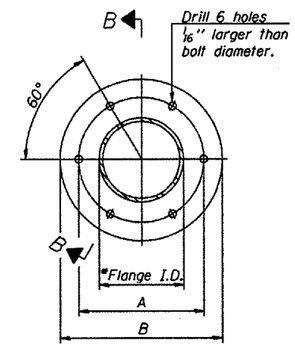


CAMBER DIAGRAM
Camber curve shown is theoretical. Actual camber attained by slope changes at splices between units.

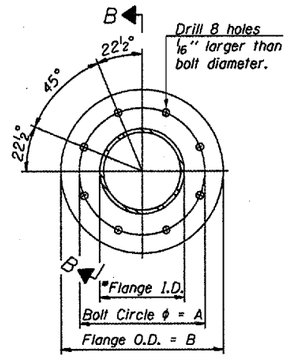
CAMBER ATTAINMENT EXAMPLES:



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



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



TRUSS TYPES II-A & III-A

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

NUMBER	REVISION	DATE

DESIGNED	-
CHECKED	-
DRAWN	-
CHECKED	-

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

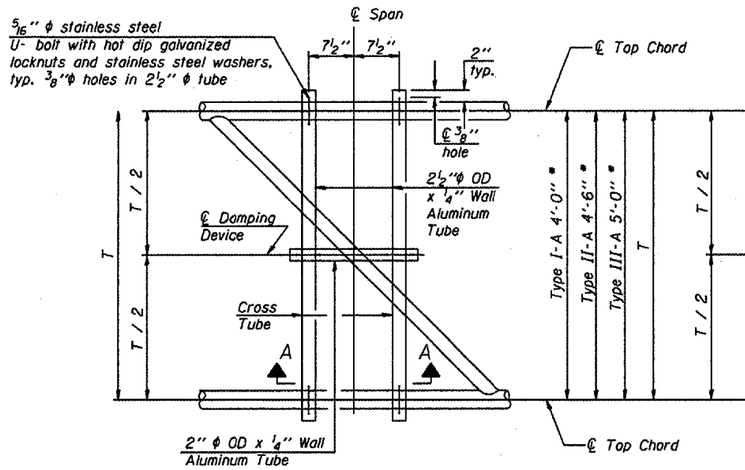
OS4-A-2 1-7-05

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

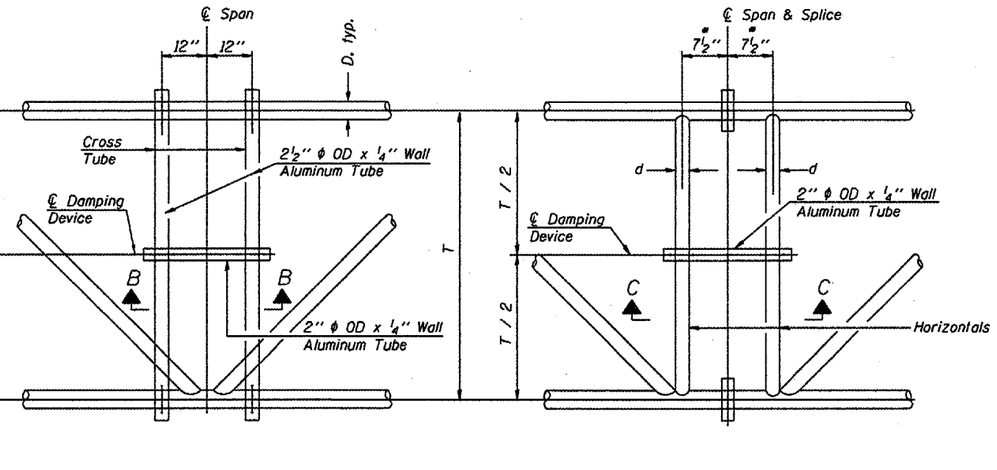
District 2
Overhead Sign
Structure Replacement

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

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

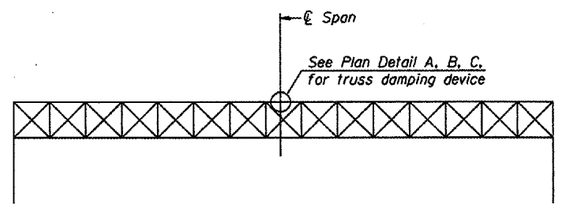


PLAN DETAIL "A"
℄ Span between Panel Points



PLAN DETAIL "B"
℄ Span at Panel Point

PLAN DETAIL "C"
℄ Span at ℄ Chord Splice

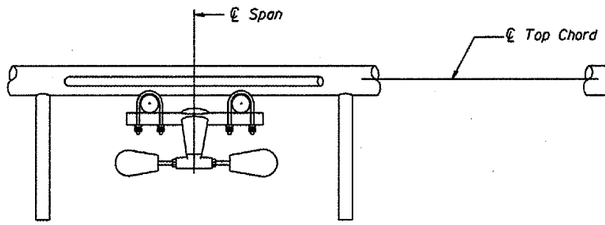


ELEVATION
Aluminum Overhead Sign Truss

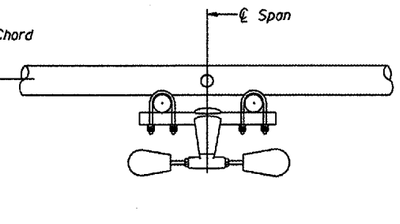
NOTES

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

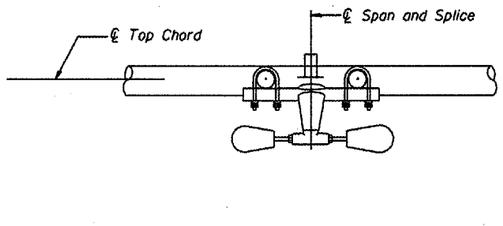
Materials: Aluminum tubes shall be ASTM B221 alloy 6061 temper T6. Cost included in Overhead Sign Structure...



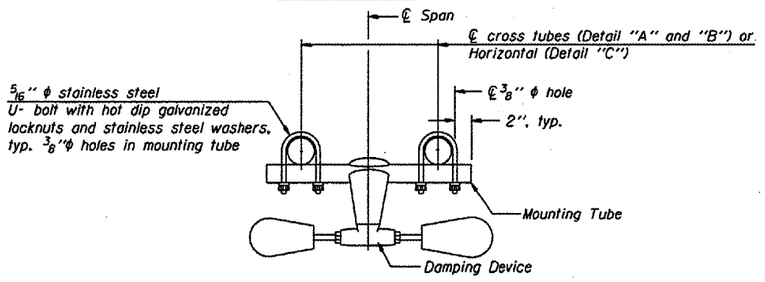
SECTION A-A



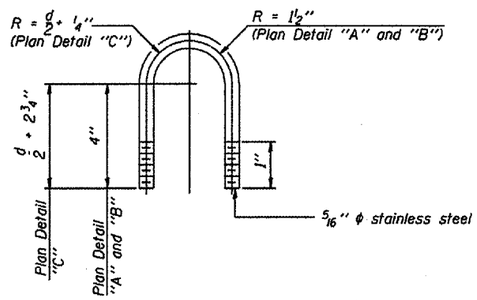
SECTION B-B



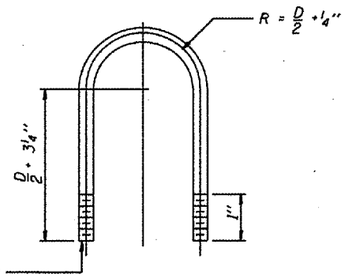
SECTION C-C



TRUSS DAMPING
DEVICE CONNECTION DETAIL
(Typical)



DAMPING DEVICE MOUNTING
TUBE U-BOLT DETAIL
(Typical)



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

This detail applies to the following overhead sign structures:
1. 2S037I080L011.4
2. 2S050I080R073.4

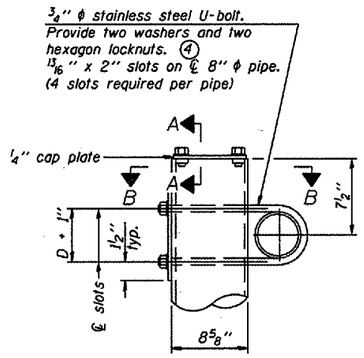
DESIGNED	-
CHECKED	-
DRAWN	-
CHECKED	-

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

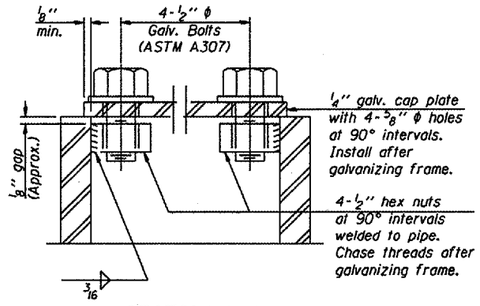
OS-A-D 1-7-05

OVERHEAD SIGN STRUCTURE
DAMPING DEVICE

District 2
Overhead Sign
Structure Replacement

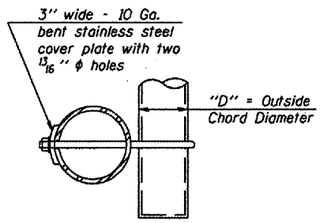


DETAIL A

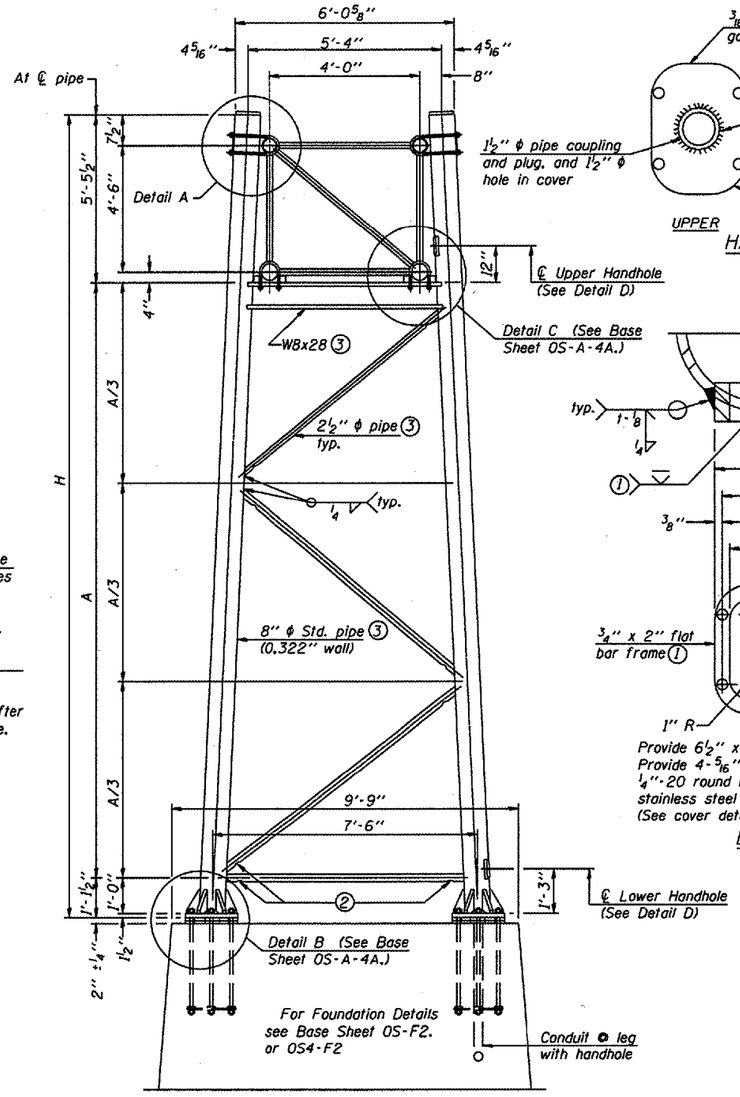


SECTION A-A

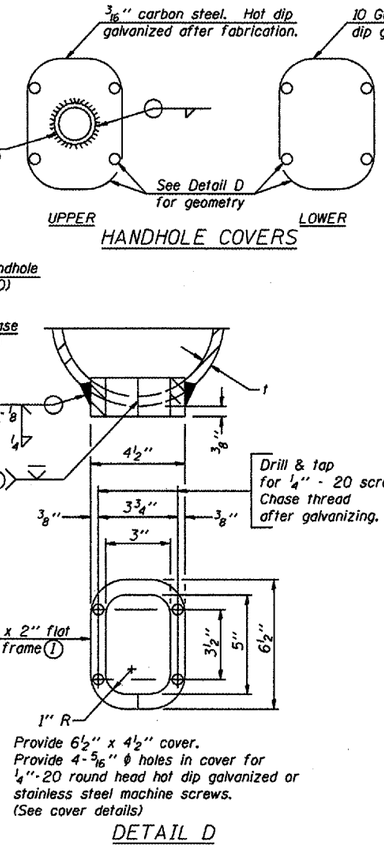
As an alternate to bolts, may use galvanized drive-fit caps installed after galvanizing frame.



SECTION B-B



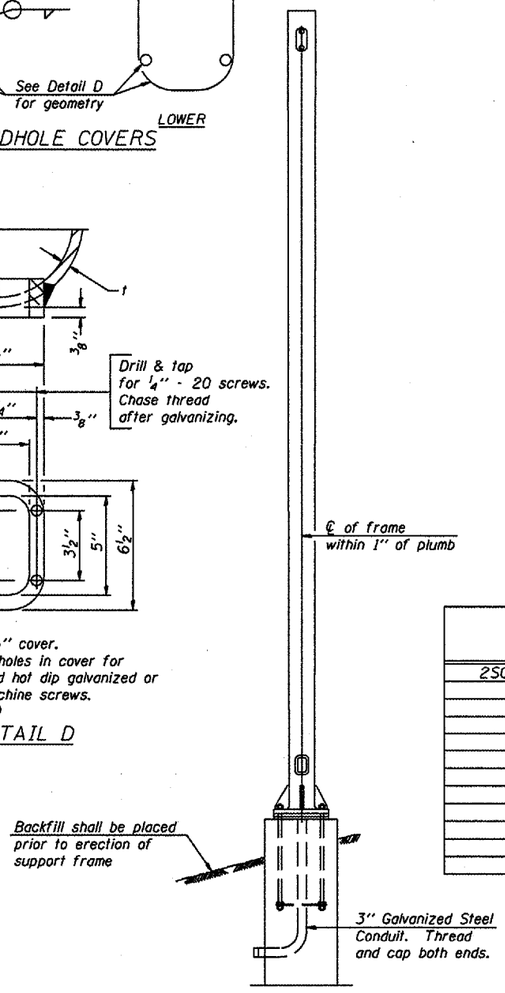
SIDE ELEVATION



HANDHOLE COVERS

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

DETAIL D



END ELEVATION

Support Design Loads: See Base Sheet OS-A-1 for design and loading criteria.
Load combinations checked include deadload plus:
a) 100% wind normal to sign, 20% parallel to sign
b) 60% wind normal to sign, 30% parallel to sign

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

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

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

(4) See General Notes for fasteners.

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

Structure Number	Station	Support		H	A
		Left	Right		
2S0371080L011.4	1026 + 40	X	X	23'-10 1/4"	16'-4"

8" ϕ PIPE TRUSS SUPPORT FRAME

DESIGNED -	
CHECKED -	
DRAWN -	
CHECKED -	

- 20

EXAMINED

ENGINEER OF BRIDGE DESIGN

PASSED

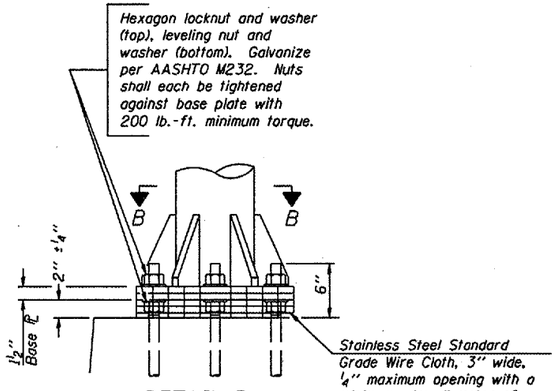
ENGINEER OF BRIDGES AND STRUCTURES

NUMBER	REVISION	DATE

OS-A-4 1-7-05

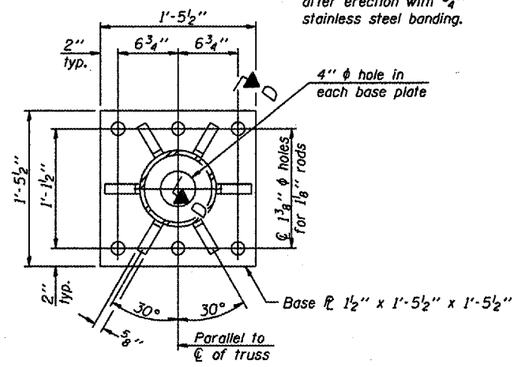
OVERHEAD SIGN STRUCTURES
SUPPORT FRAME for TYPE I-A ALUMINUM TRUSS

District 2
Overhead Sign
Structure Replacement

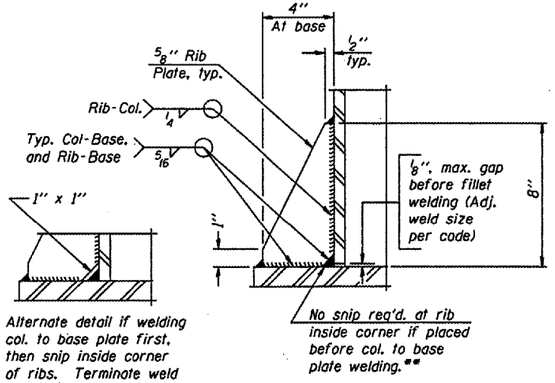


DETAIL B

Ribs shall be cut to fit slope of pipe.

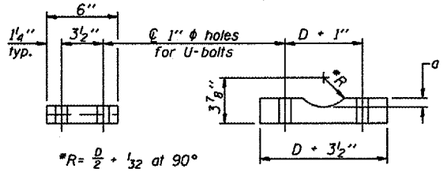


SECTION B-B



** 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



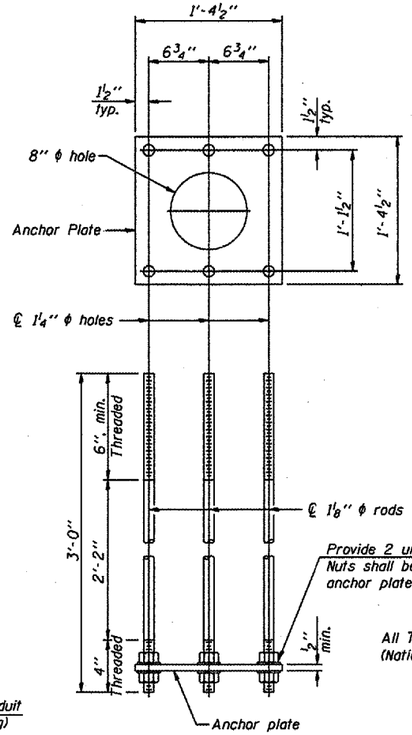
*R = D/2 + 1/32 at 90°

D = Outside Diameter of Chord.

SADDLE SHIM DETAIL

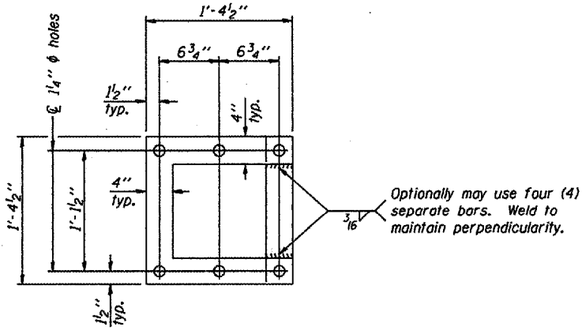
ASTM B26 Alloy 356-F
or
ASTM B209 Alloy 6061-T651
(4 required per sign truss)

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

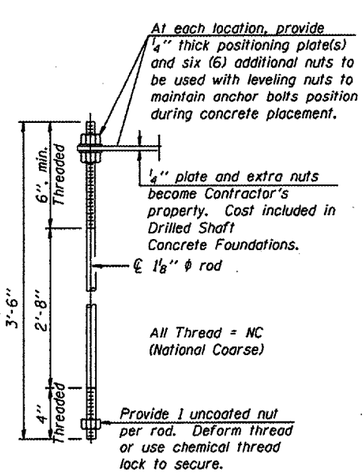


ANCHOR ROD DETAIL

Spread Footing Foundation



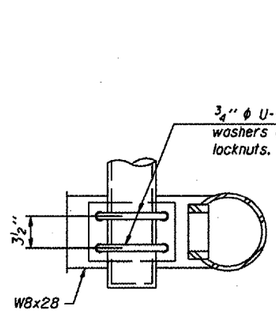
POSITIONING PLATE(S)



ANCHOR ROD DETAIL

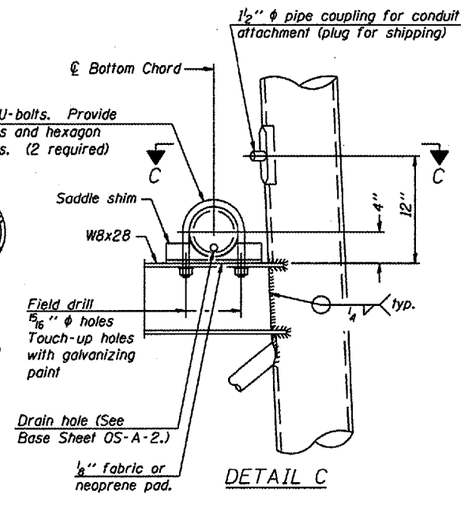
Drilled Shaft Foundation

Anchor rods shall conform to AASHTO M314 Grade 36 or 55 and meet Charpy V-Notch (CVN) energy of 15 lb.-ft. at 40° F. Galvanize upper 12" per AASHTO M232. No welding shall be permitted on rods.



SECTION C-C

(Handhole cover not shown)



DETAIL C

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

NUMBER	REVISION	DATE

DESIGNED	-
CHECKED	-
DRAWN	-
CHECKED	-

- 20

EXAMINED

ENGINEER OF BRIDGE DESIGN

PASSED

ENGINEER OF BRIDGES AND STRUCTURES

OS-A-4A 1-7-05

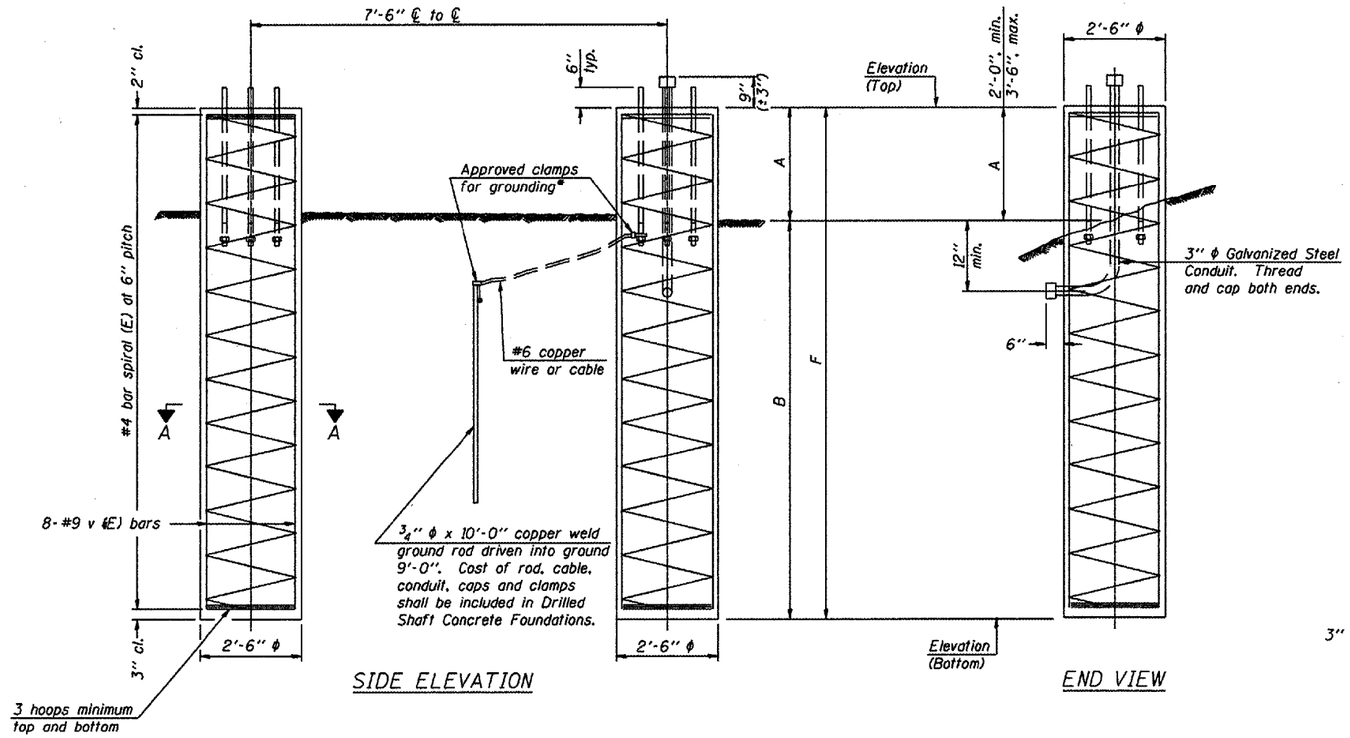
OVERHEAD SIGN STRUCTURES
SUPPORT FRAME DETAILS ALUMINUM TRUSS

District 2
Overhead Sign
Structure Replacement

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

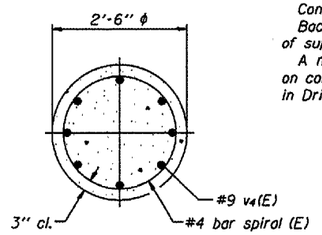
For anchor rod size and placement, see Support Frame Detail Sheet.

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



SIDE ELEVATION

END VIEW



SECTION A-A

BAR LIST - EACH FOUNDATION

Bar	Number	Size	Length	Shape
v4(E)	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.

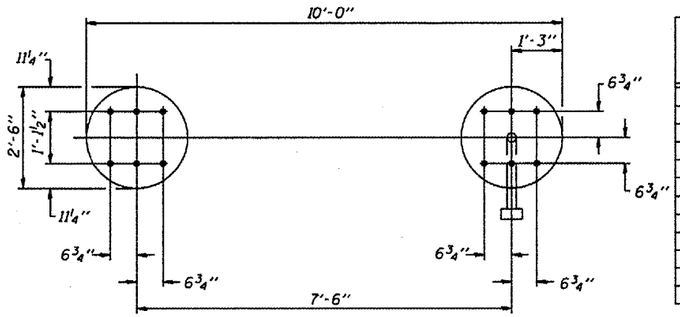
No sonotubes or decomposable forms shall be used below the lower conduit entrance.

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	
250371080L011.4	1026 + 40	N/A		3' - 0"	13' - 6"	16' - 6"	N/A		3' - 0"	13' - 6"	16' - 6"	12.00

DESIGNED -
CHECKED -
DRAWN -
CHECKED -

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

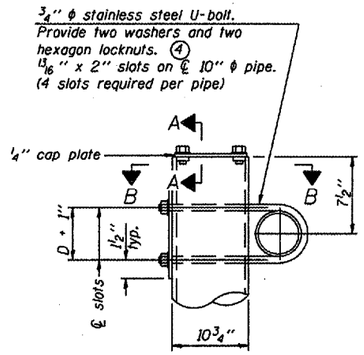
NUMBER	REVISION	DATE

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

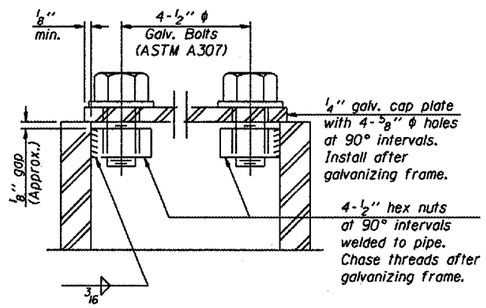
OVERHEAD SIGN STRUCTURES
DRILLED SHAFT DETAILS

District 2
Overhead Sign
Structure Replacement

OS4-F2 1-7-05

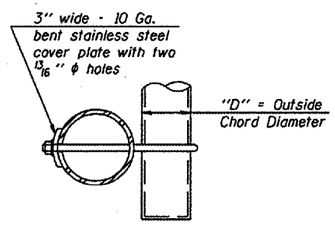


DETAIL A

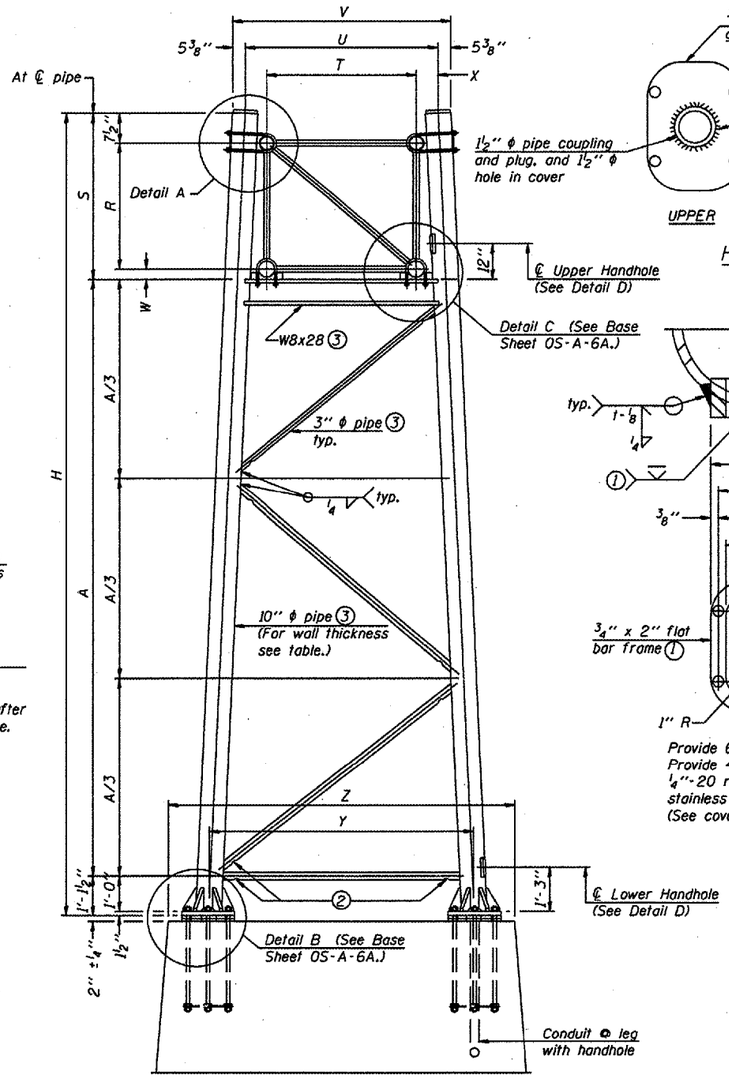


SECTION A-A

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

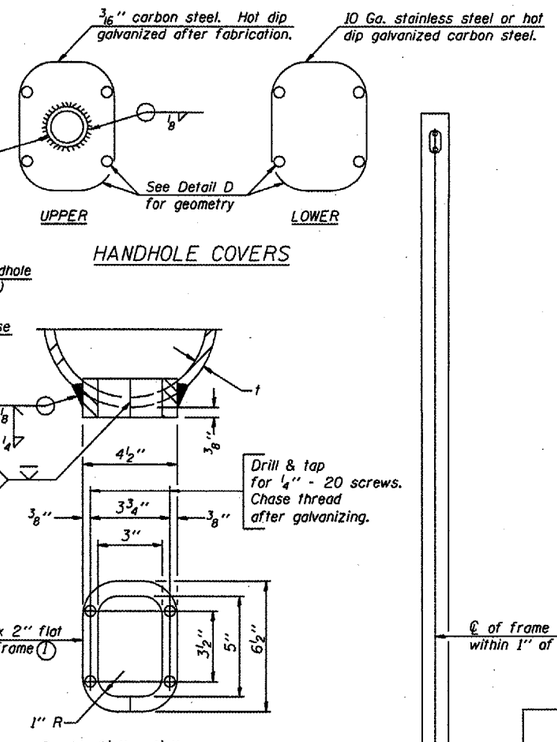


SECTION B-B



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

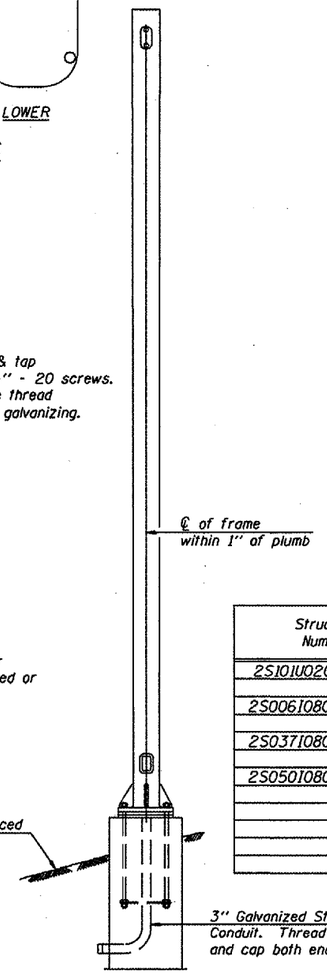
SIDE ELEVATION



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.

Structure Number	Station	Support		Truss Type	Pipe Wall Thickness	H	A
		Left	Right				
2S101U020R009.5	61 + 50	X	X	II-A	0.365(Std)	24'-0"	17'-7 1/2"
2S0061080R059.9	1316 + 20	X	X	II-A	0.365(Std)	26'-3 3/4"	18'-8"
2S037I080L010.2	567 + 50	X	X	III-A	0.365(Std)	26'-1 1/2"	16'-10 1/4"
2S0501080R073.4	486 + 00	X	X	I-A	0.279	29'-8 1/2"	23'-1 1/2"

The "H" and "A" dimensions shown were taken from the existing end support details for Structure No. 2S101U020R009.5, Structure No. 2S0061080R059.9 and Structure No. 2S037I080L010.2.

10" ϕ PIPE TRUSS SUPPORT FRAME

Truss Type	Dimensions								
	R	S	T	U	V	W	X	Y	Z
I-A	4'-6"	5'-5 1/2"	4'-0"	5'-6"	6'-4 3/4"	4"	9"	8'-3"	10'-9"
II-A (5)	5'-3"	6'-3 1/4"	4'-6"	6'-1"	6'-11 3/4"	4 3/4"	9 1/2"	8'-3"	10'-9"

NUMBER	REVISION	DATE

DESIGNED -	
CHECKED -	
DRAWN -	
CHECKED -	

- 20

EXAMINED

ENGINEER OF BRIDGE DESIGN

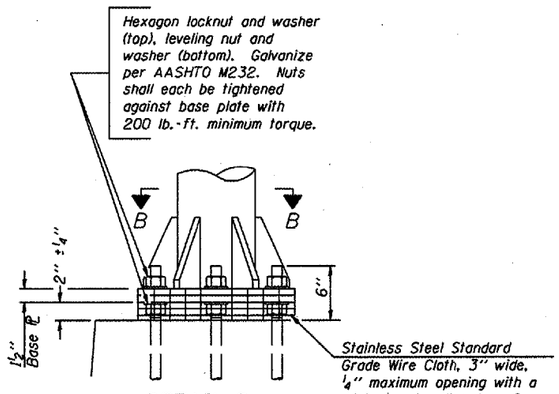
PASSED

ENGINEER OF BRIDGES AND STRUCTURES

OS-A-6 1-7-05

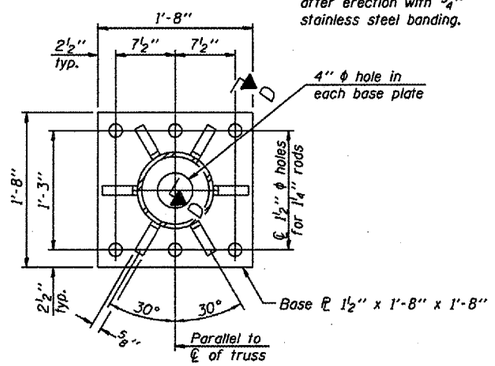
OVERHEAD SIGN STRUCTURES
SUPPORT FRAME for ALUMINUM TRUSS

District 2
Overhead Sign
Structure Replacement

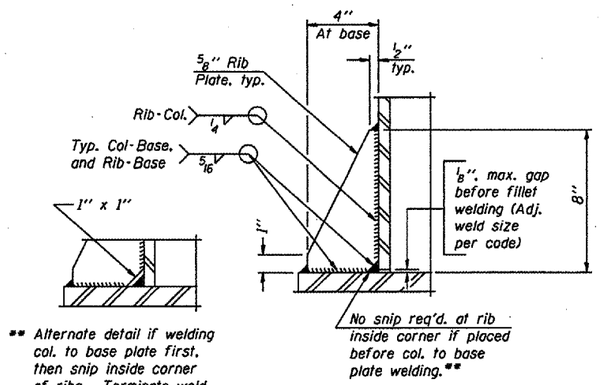


DETAIL B

Ribs shall be cut to fit slope of pipe.

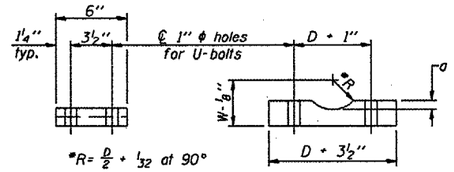


SECTION B-B



** 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

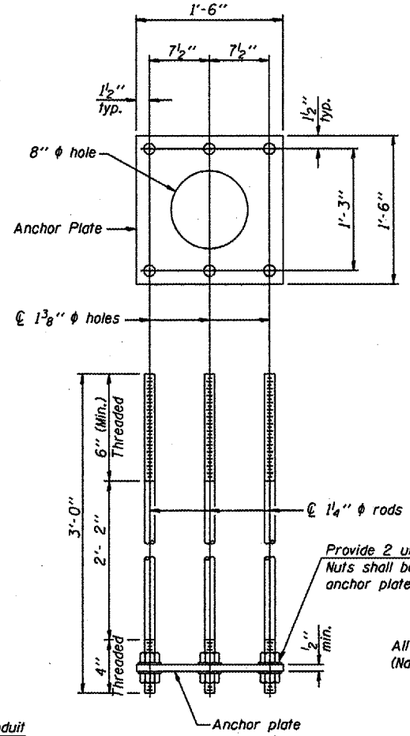


*R = D/2 + 1/32 at 90°

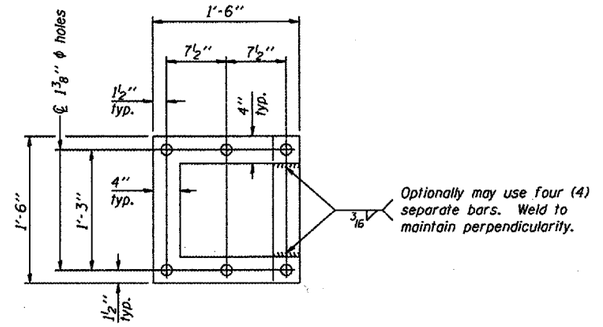
D = Outside Diameter of Chord.
For W, see Base Sheet OS-A-6.

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

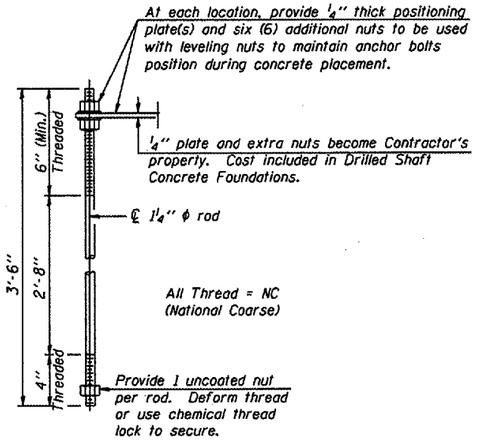
Truss Chord Nominal Dia.	a
5"	¾"
5½"	13/16"
6"	⅞"
6½"	15/16"
7"	1"



ANCHOR ROD DETAIL
Spread Footing Foundation

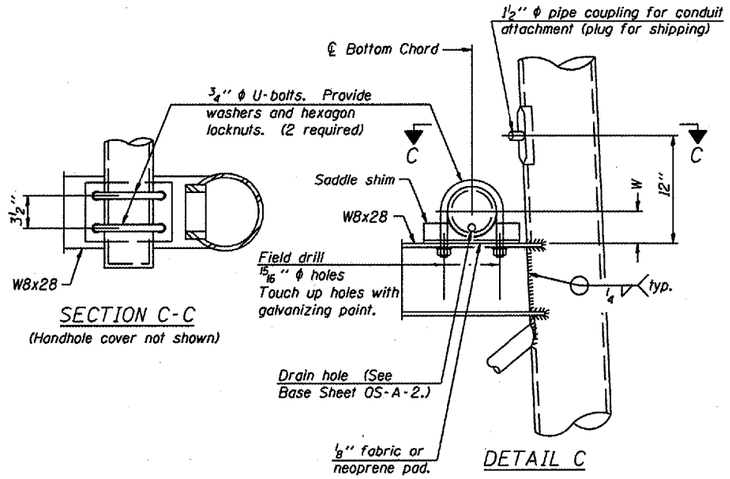


POSITIONING PLATE(S)



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

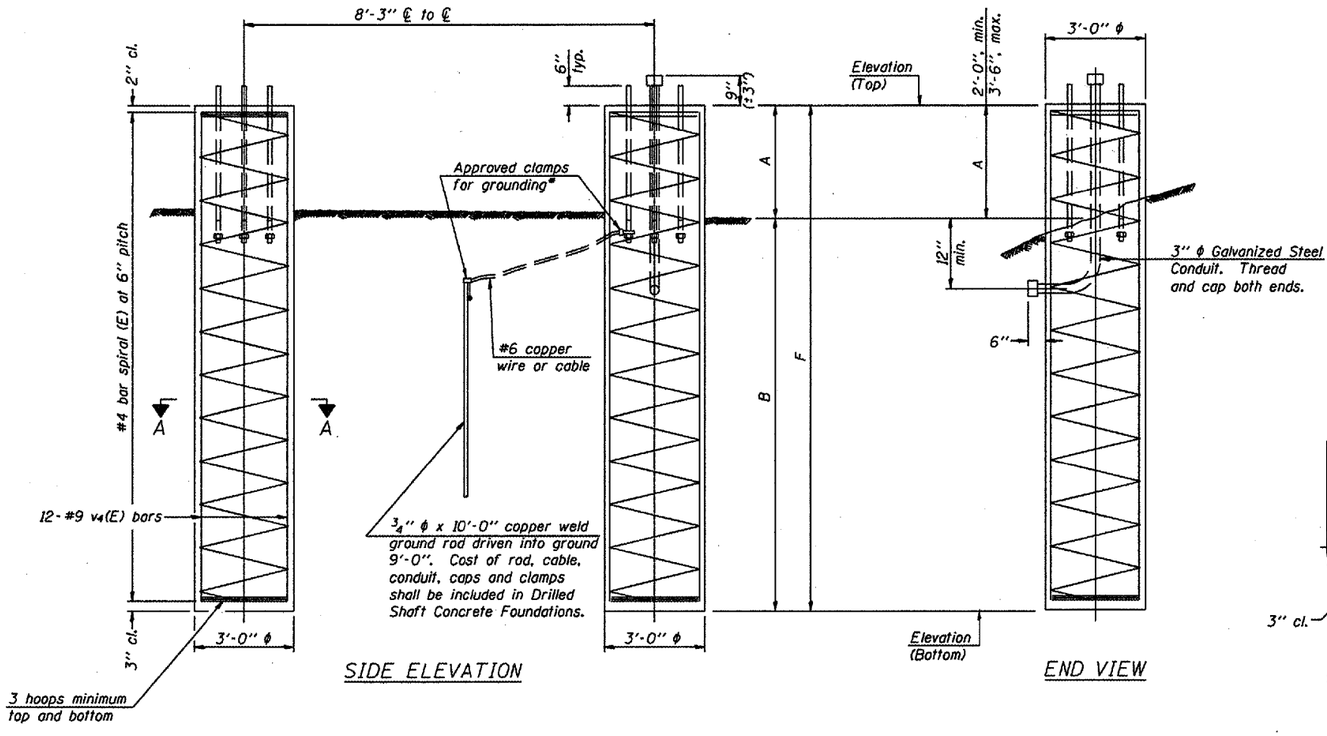
OS-A-6A 1-7-05

OVERHEAD SIGN STRUCTURES
SUPPORT FRAME DETAILS ALUMINUM TRUSS

District 2
Overhead Sign
Structure Replacement

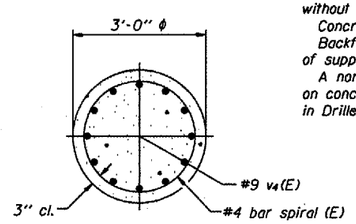
For anchor rod size and placement, see Support Frame Detail Sheet.

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



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.

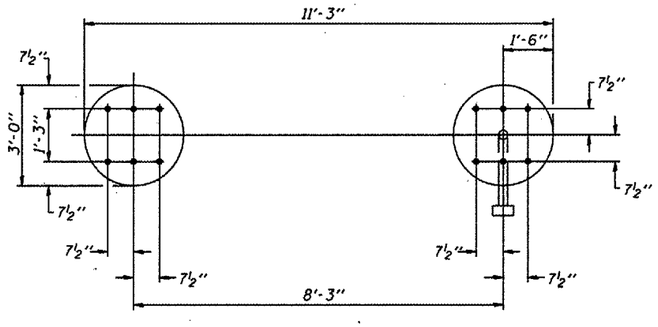
No sonotubes or decomposable forms shall be used below the lower conduit entrance.

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	
2S0501080R073.4	486 + 00	651.47		3' - 0"	16' - 6"	19' - 6"	651.47		3' - 0"	16' - 6"	19' - 6"	20.40
2S0061080R059.9	1316 + 20	707.30		3' - 0"	17' - 6"	20' - 6"	707.30		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

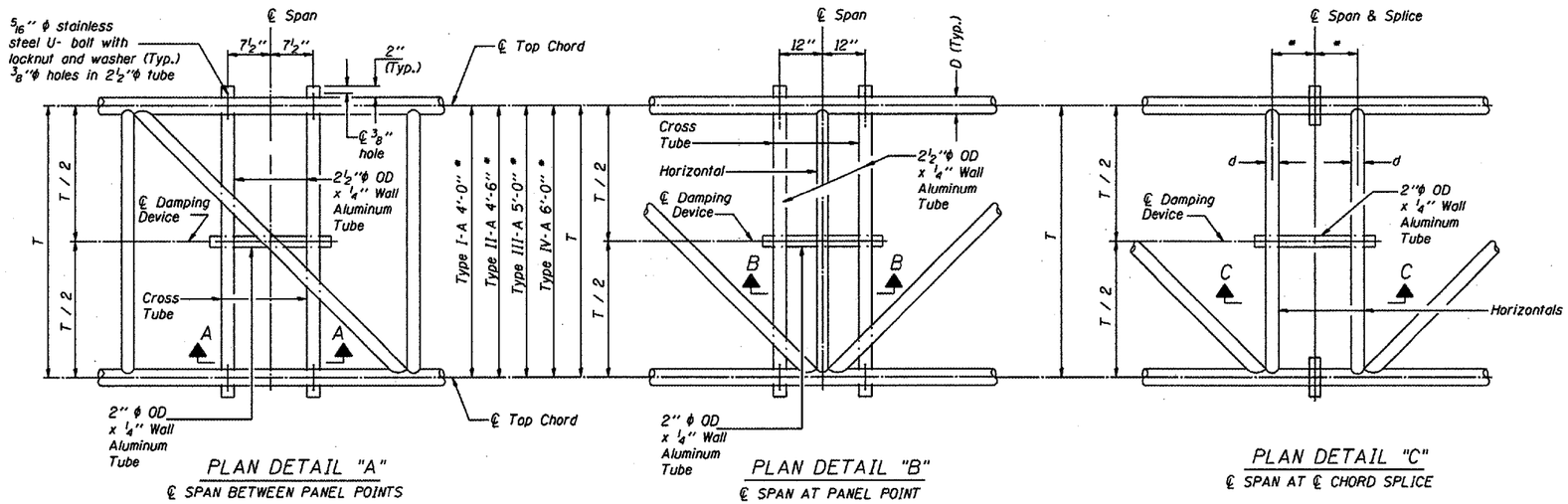
OVERHEAD SIGN STRUCTURES
DRILLED SHAFT DETAILS

District 2
Overhead Sign
Structure Replacement

OS4-F3 1-7-05

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

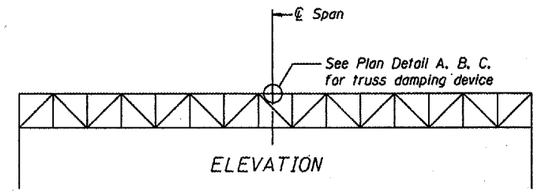
* Verify before drilling holes in mounting tube and cross tubes.

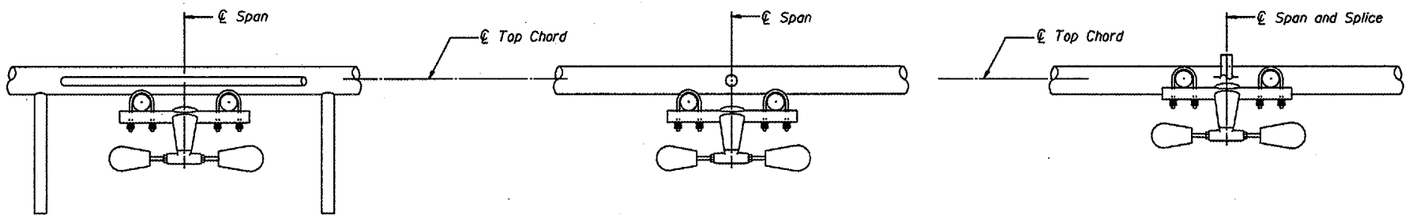


PLAN DETAIL "A"
℄ SPAN BETWEEN PANEL POINTS

PLAN DETAIL "B"
℄ SPAN AT PANEL POINT

PLAN DETAIL "C"
℄ SPAN AT ℄ CHORD SPLICE



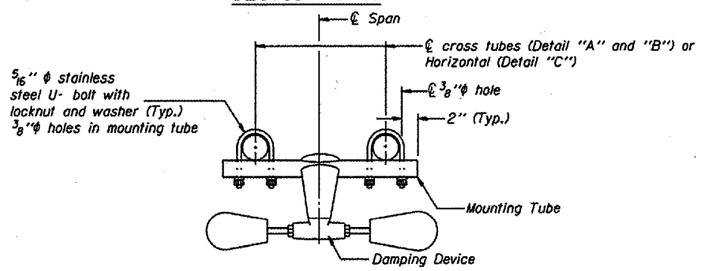


SECTION A-A

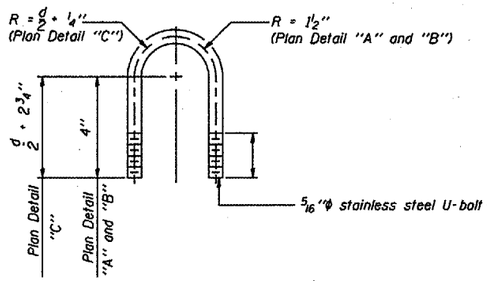
SECTION B-B

SECTION C-C

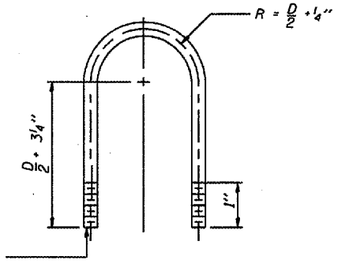
This detail applies to the following overhead sign structures:
1. 2S101U020R009.5
2. 2S006I080R059.9
3. 2S037I080L010.2



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.

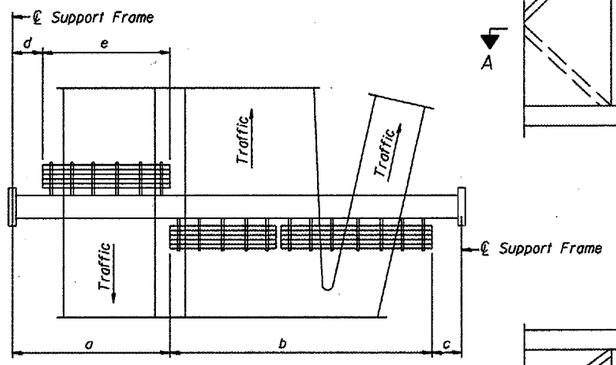
DESIGNED -	- 20
CHECKED -	EXAMINED
DRAWN -	ENGINEER OF BRIDGE DESIGN
CHECKED -	PASSED
	ENGINEER OF BRIDGES AND STRUCTURES

TRUSS DAMPER RETROFIT 07-01-2001

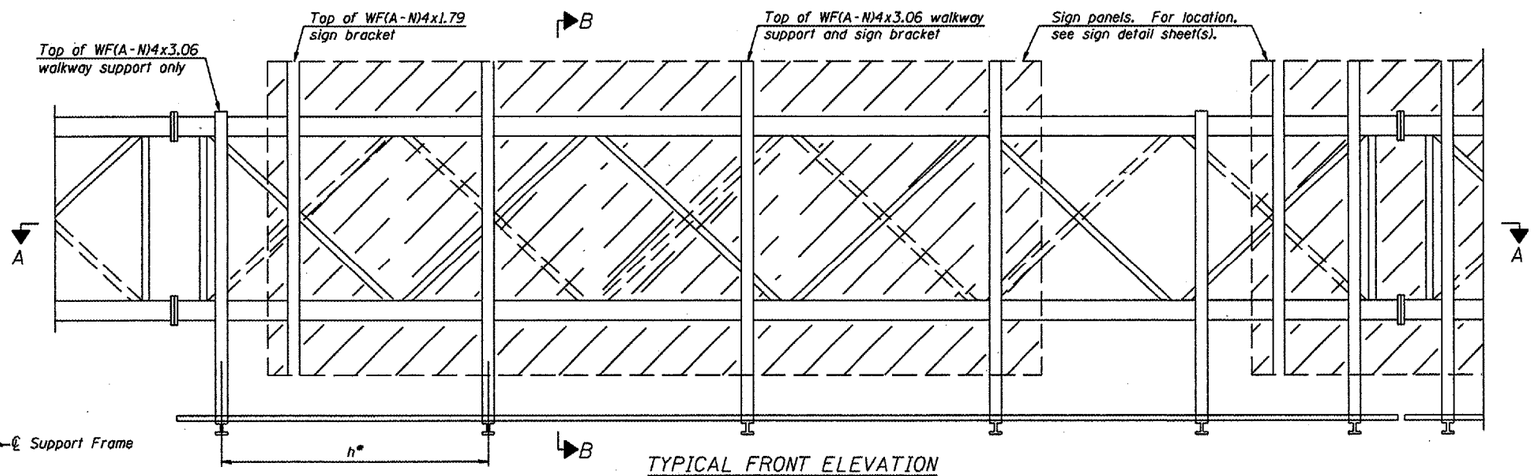
OVERHEAD SIGN STRUCTURE
DAMPING DEVICE

District 2
Overhead Sign
Structure Replacement

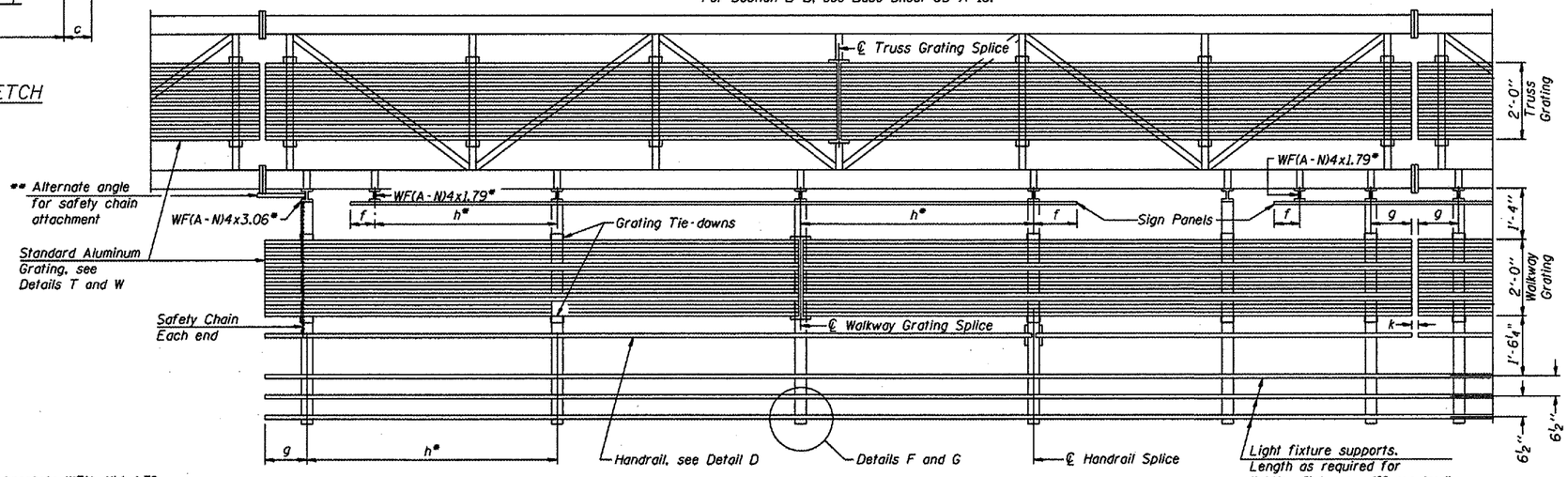
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



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



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



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

BRACKET TABLE

WF(A-N)4x1.79 or WF(A-N)4x3.06 ASTM B308, Alloy 6061-T6		
Sign Width		Number Brackets Required
Greater Than	Less Than or Equal To	
	8'-0"	2
8'-0"	14'-0"	3
14'-0"	20'-0"	4
20'-0"	26'-0"	5
26'-0"	32'-0"	6

Notes:

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

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

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

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

SECTION A-A

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

Structure Number	Station	a	b	c	d	e	Walkway Grating and Handrail Lengths
2S006I080R059.5	1316 + 20	N/A	30' - 0"	31' - 6"	N/A	N/A	30' - 0"
2S037I080L011.4	1026 + 40	N/A	38' - 0"	8' - 0"	N/A	N/A	38' - 0"
The length shown for the following structures is for internal truss grating installation.							
2S101U020R009.5	61 + 50	N/A	N/A	N/A	N/A	N/A	54' - 0"
2S006I080R059.9	1316 + 20	N/A	N/A	N/A	N/A	N/A	88' - 0"
2S037I080L010.2	567 + 50	N/A	N/A	N/A	N/A	N/A	74' - 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

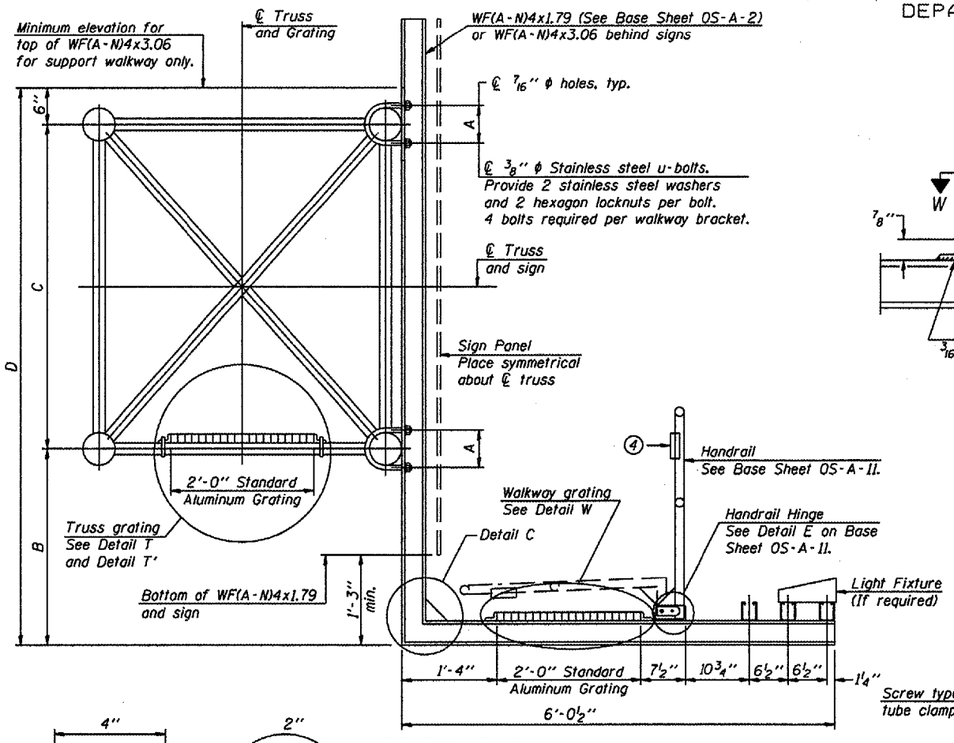
NUMBER	REVISION	DATE

OS-A-9 1-7-05

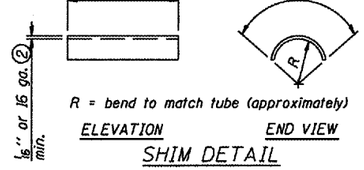
OVERHEAD SIGN STRUCTURES
ALUMINUM WALKWAY DETAILS

District 2
Overhead Sign
Structure Replacement

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

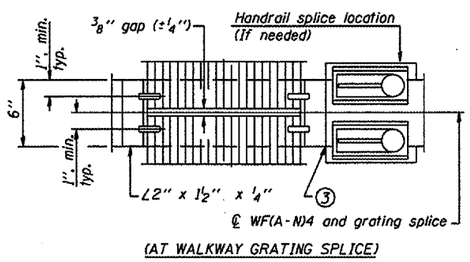


SECTION B-B

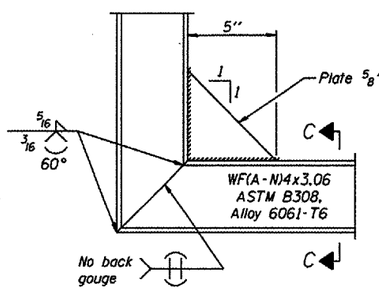


R = bend to match tube (approximately)

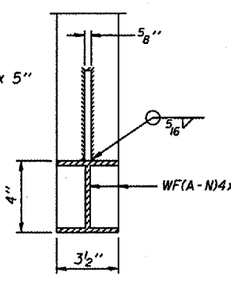
SHIM DETAIL



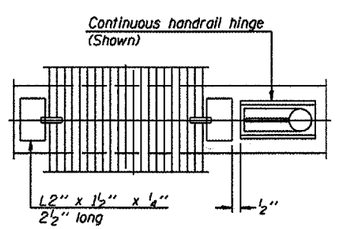
(AT WALKWAY GRATING SPLICE)



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

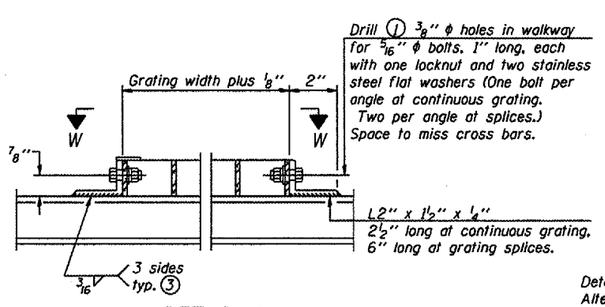


SECTION C-C

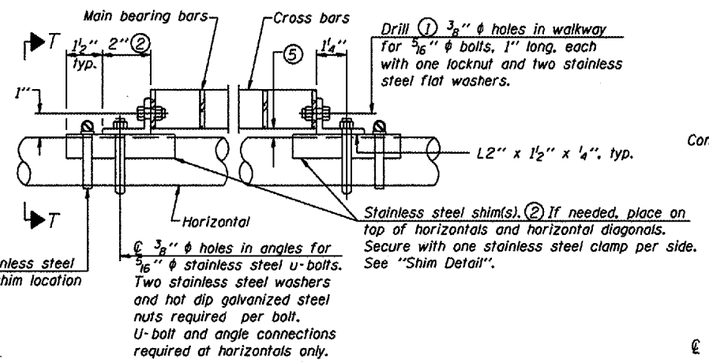


(CONTINUOUS WALKWAY GRATING)

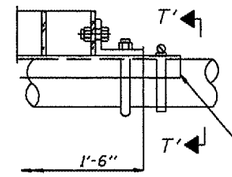
SECTION W-W



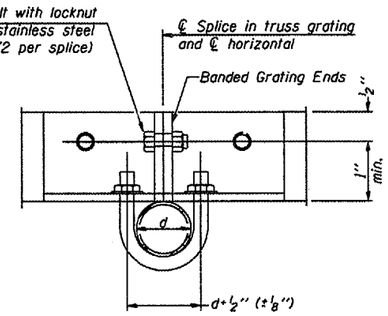
DETAIL W
(Walkway grating)



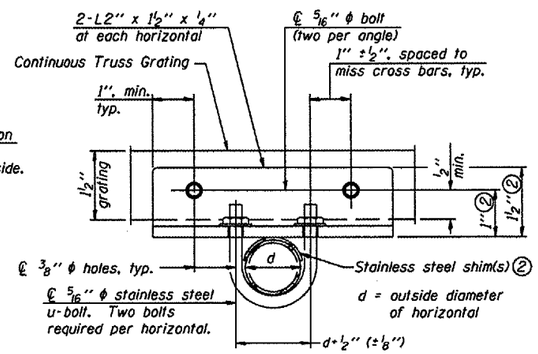
DETAIL T
(Continuous Truss grating)



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



SECTION T'-T'



SECTION T-T

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
2S006I080R059.5	1316 + 20	5 7/8"	3'-10 1/2"	5' - 3"	9' - 8"
2S037I080L011.4	1026 + 40	5 3/8"	5' - 3"	4' - 6"	10' - 6"

At all other locations 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

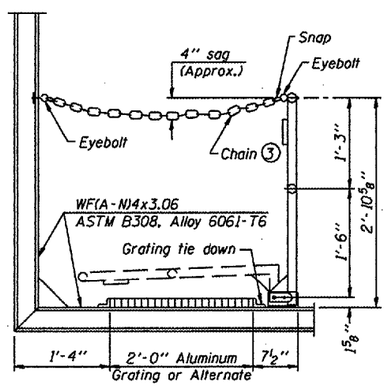
NUMBER	REVISION	DATE

OS-A-10 1-7-05

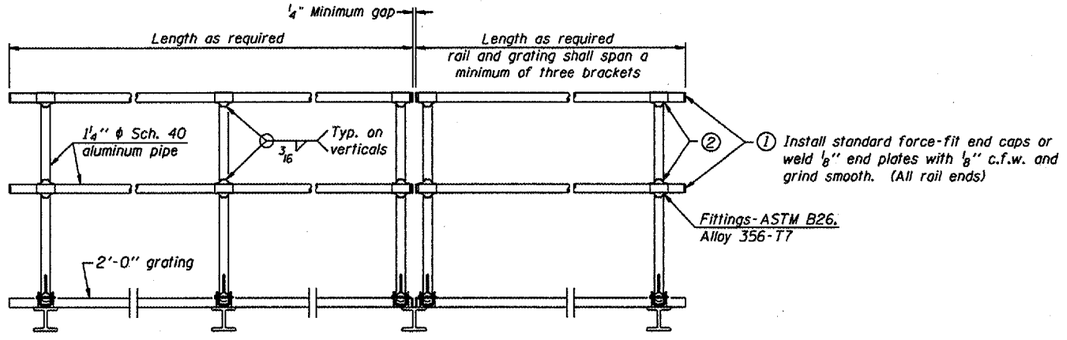
OVERHEAD SIGN STRUCTURES
ALUMINUM WALKWAY DETAILS

District 2
Overhead Sign
Structure Replacement

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

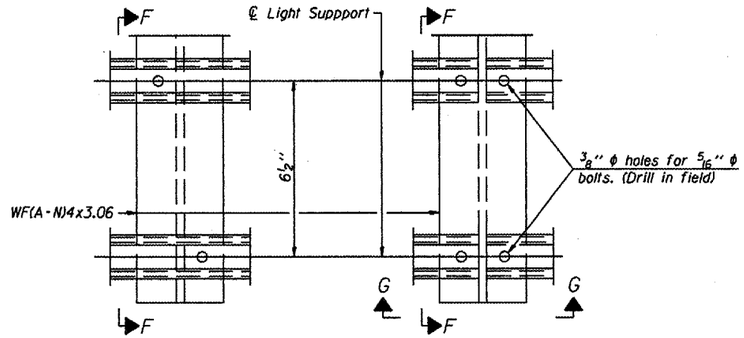


SIDE ELEVATION
(Showing safety chain w/o sign)



FRONT ELEVATION

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

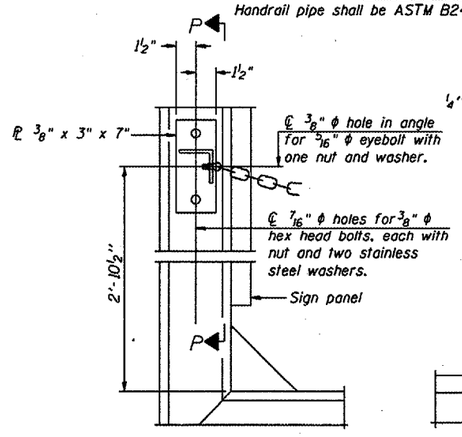


DETAIL F

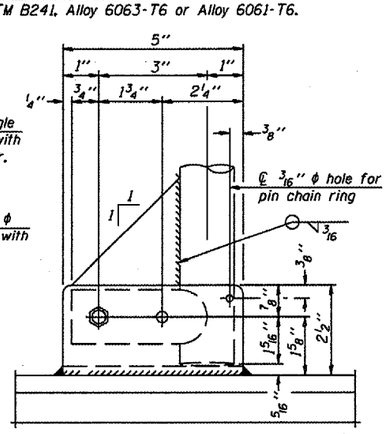
DETAIL G

HANDRAIL DETAILS

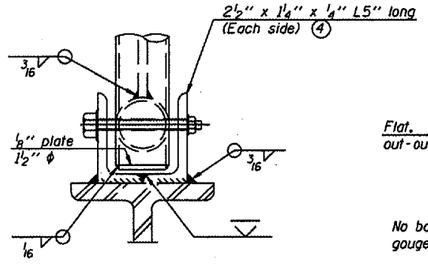
Handrail pipe shall be ASTM B241, Alloy 6063-T6 or Alloy 6061-T6.



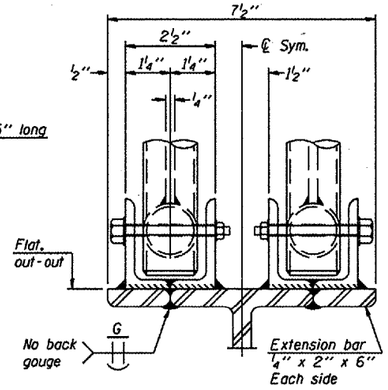
ALTERNATE SAFETY CHAIN ATTACHMENT
(With Sign Present)
Items not shown same as "Side Elevation" of "Handrail Details"



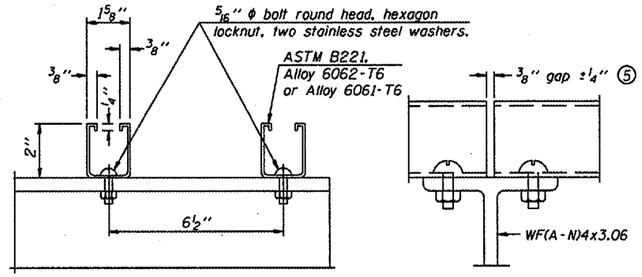
SIDE ELEVATION



FRONT ELEVATION
See "Elevation" at right for dimensions.



ELEVATION AT HANDRAIL JOINT (4)

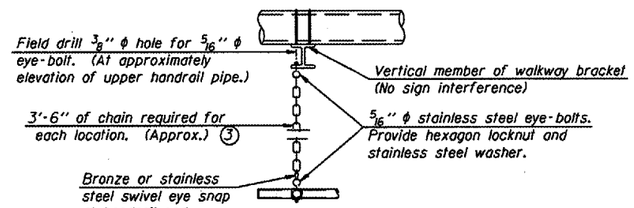


SECTION F-F

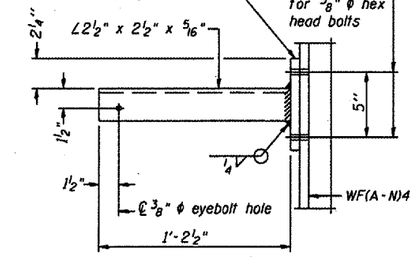
SECTION G-G

LIGHTING FIXTURE MOUNTS (IF REQUIRED)

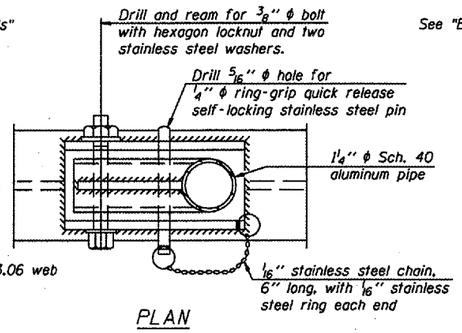
(5) Field cut ends of light support channels shall be free of burrs or hazardous projections and coated with zinc-rich primer or equivalent.



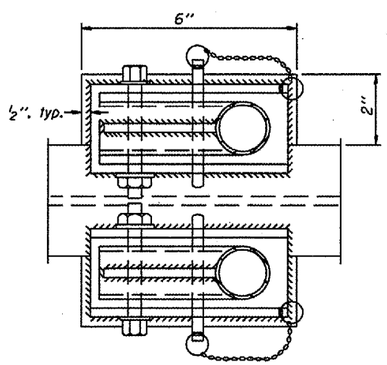
SAFETY CHAIN
One required for each end of each walkway.



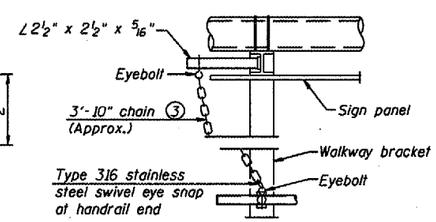
SECTION P-P



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 or 316L 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 1-7-05

OVERHEAD SIGN STRUCTURES
ALUMINUM HANDRAIL DETAILS

District 2
Overhead Sign
Structure Replacement

District 3
Schedule of Locations for Overhead Sign Structure Replacement

Location No.:	3-01	State I.D. No.:	3S050I039L059.6				
County:	LaSalle	Route:	I-39	M.P.:	59.6	Direction:	SB

Description of Work	Unit	Quantity
REMOVE OVERHEAD SIGN STRUCTURE-SPAN	EACH	1.00
OVERHEAD SIGN STRUCTURE-SPAN, TYPE II-A	FOOT	108.00
REMOVE & REINSTALL SIGN PANEL	SQ FT	342.50
REMOVE & REINSTALL WALKWAY	FOOT	31.00
OVERHEAD SIGN SUPPORT GROUT REPAIR	EACH	4.00
FURNISH & INSTALL SAFETY CHAIN	EACH	2.00
DISCONNECT/RECONNECT ELECTRIC SERVICE	EACH	1.00
This structure is being downsized from a Type IV truss to a		
Type II truss.		

Location No.:	3-02	State I.D. No.:	3S050I039R057.7				
County:	LaSalle	Route:	I-39	M.P.:	57.7	Direction:	NB

Description of Work	Unit	Quantity
REMOVE OVERHEAD SIGN STRUCTURE - SPAN	EACH	1.00
OVERHEAD SIGN STRUCTURE-SPAN, TYPE II-A	FOOT	124.00
REMOVE & REINSTALL SIGN PANEL	SQ FT	299.00
REMOVE & REINSTALL WALKWAY	FOOT	44.00
OVERHEAD SIGN SUPPORT GRPOUT REPAIR	EACH	4.00
DISCONNECT/RECONNECT ELECTRIC SERVICE	EACH	1.00
This structure is being downsized from a Type IV truss to a		
Type II truss.		

Location No.:	3-03	State I.D. No.:	3S050I039R057.2				
County:	LaSalle	Route:	I-39	M.P.:	57.2	Direction:	NB

Description of Work	Unit	Quantity
REMOVE OVERHEAD SIGN STRUCTURE-SPAN	EACH	1.00
OVERHEAD SIGN STRUCTURE-SPAN, TYPE II-A	FOOT	124.00
REMOVE & REINSTALL SIGN PANEL	SQ FT	299.00
REMOVE & REINSTALL WALKWAY	FOOT	44.00
OVERHEAD SIGN SUPPORT GROUT REPAIR	EACH	4.00
FURNISH & INSTALL SAFETY CHAIN	EACH	2.00
DISCONNECT/RECONNECT ELECTRIC SERVICE	EACH	1.00
This structure is being downsized from a Type IV truss to a		
Type II truss.		

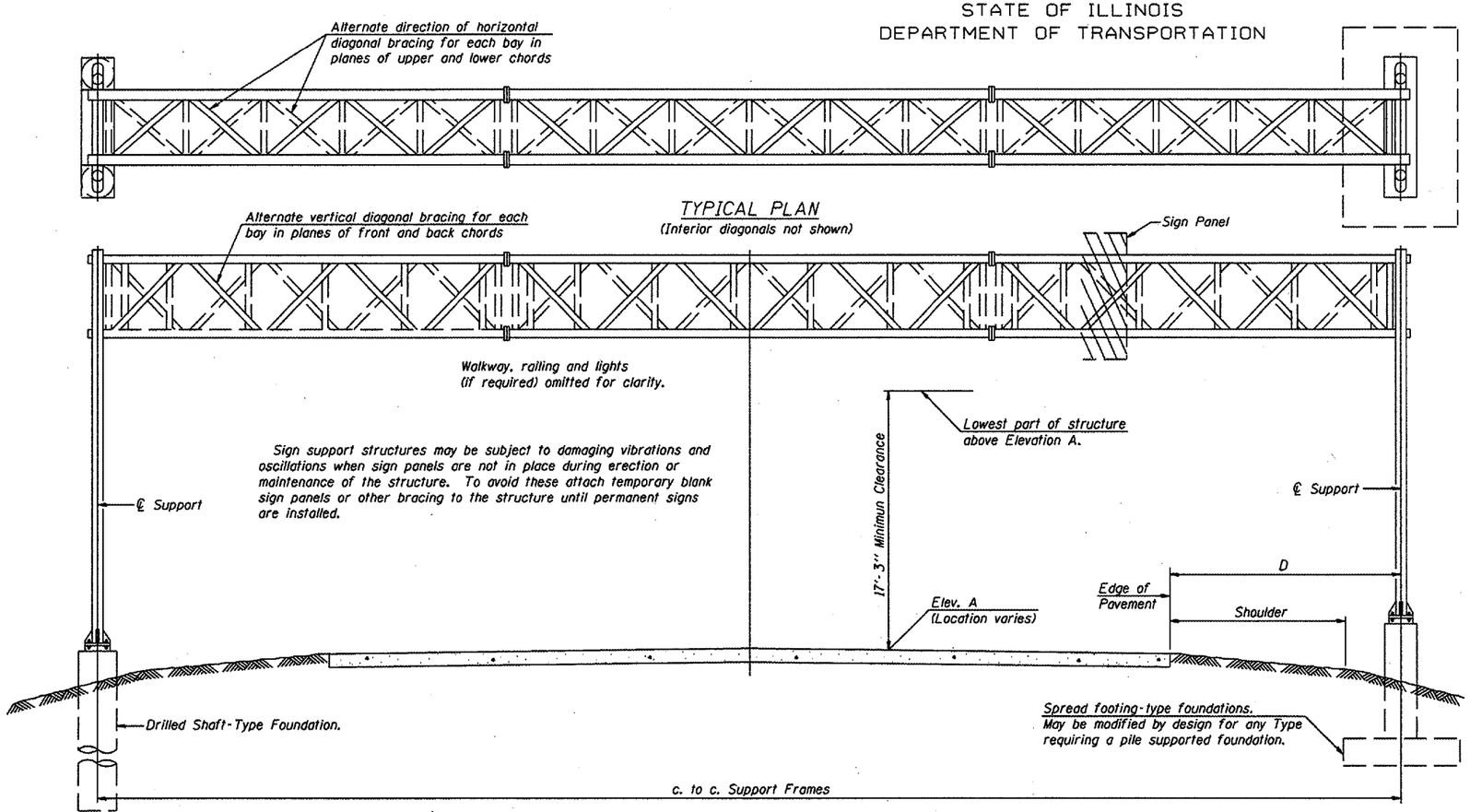
Location No.:	3-04	State I.D. No.:	3S050I039R058.3				
County:	LaSalle	Route:	I-39	M.P.:	58.3	Direction:	NB

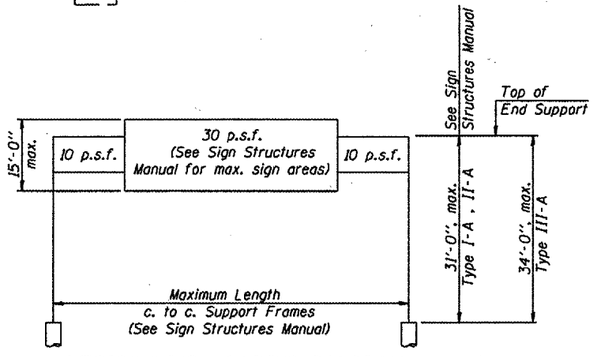
Description of Work	Unit	Quantity
REMOVE OVERHEAD SIGN STRUCTURE-SPAN	EACH	1.00
OVERHEAD SIGN STRUCTURE-SPAN, TYPE II-A	FOOT	124.00
REMOVE & REINSTALL SIGN PANEL	SQ FT	413.25
REMOVE & REINSTALL WALKWAY	FOOT	49.00
OVERHEAD SIGN SUPPORT GROUT REPAIR	EACH	4.00
FURNISH & INSTALL SAFETY CHAIN	EACH	2.00
DISCONNECT/RECONNECT ELECTRIC SERVICE.	EACH	1.00
This structure is being downsized from a Type IV truss to a		
Type II truss.		

Location No.:	3-05	State I.D. No.:	3S050I-39L060.3				
County:	LaSalle	Route:	I-39	M.P.:	60.3	Direction:	SB

Description of Work	Unit	Quantity
REMOVE OVERHEAD SIGN STRUCTURE-SPAN	EACH	1.00
OVERHEAD SIGN STRUCTURE-SPAN, TYPE II-A	FOOT	108.00
REMOVE & REINSTALL SIGN PANEL	SQ FT	298.25
REMOVE & REINSTALL WALKWAY	FOOT	52.00
FURNISH & INSTALL SAFETY CHAIN	EACH	2.00
OVERHEAD SIGN SUPPORT GROUT REPAIR	EACH	4.00
DISCONNECT/RECONNECT ELECTRIC SERVICE	EACH	1.00
This structure is being downsized from a Type IV truss to a		
Type II truss.		

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION





DESIGN WIND LOADING DIAGRAM

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

TYPICAL ELEVATION

(Looking at Face of Signs**)

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

Structure Number	Station	Design Truss Type	c. to c. Supports	Elev. A	Dim. D	Height of Tallest Sign	Total Sign Area
3S050I039L059.6	1072 + 00	II-A	108' - 0"	100.00	42' - 0"	15' - 0"	342.50
3S050I039R057.7	975 + 00	II-A	124' + 0"	636.27	40' - 0"	12' - 0"	299.00
3S050I039R057.2	949 + 00	II-A	124' + 0"	605.74	40' - 0"	12' - 0"	299.00
3S050I039R058.3	1002 +96	II-A	124' + 0"	100.00	42' - 0"	12' - 0"	413.25
3S050I039L060.3	1106 + 75	II-A	108' - 0"	100.00	42' - 0"	10' - 6"	298.25

**Looking upstation for structures with signs both sides.

GENERAL NOTES

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

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

LOADING: 90 M.P.H. WIND VELOCITY

WIND LOADING: 30 p.s.f. normal to Sign Panel Area and truss elements not behind sign Loading Diagram.

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

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

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

MATERIALS: Aluminum Alloys as shown throughout plans. All Structural Steel Pipe shall be ASTM A53 Grade B with a minimum yield of 35,000 p.s.i., or A500 Grade B or C with a minimum yield of 46,000 p.s.i. If A500 pipe is substituted for A53, then the outside diameter shall be as detailed and wall thickness greater than or equal to A53.

All Structural Steel Plates and Shapes shall conform to AASHTO M270 Gr. 36, Gr. 50 or Gr. 50W*. Stainless steel for shims, sleeves and handhole covers shall be ASTM A240, Type 302 or 304, or another alloy suitable for exterior exposure and acceptable to the Engineer.

The steel pipe and stiffening ribs at the base plate for the column shall have a minimum longitudinal Charpy V-Notch (CVN) energy of 15 lb.-ft. at 40° F. (Zone 2) before galvanizing.

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

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

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

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

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

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

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

TOTAL BILL OF MATERIAL

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

NUMBER	REVISION	DATE

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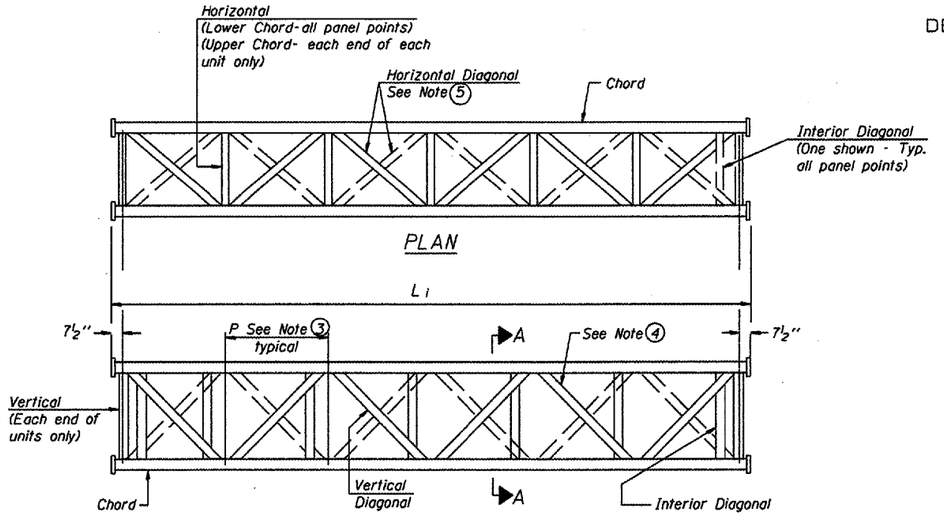
ENGINEER OF BRIDGE DESIGN
PASSED
ENGINEER OF BRIDGES AND STRUCTURES

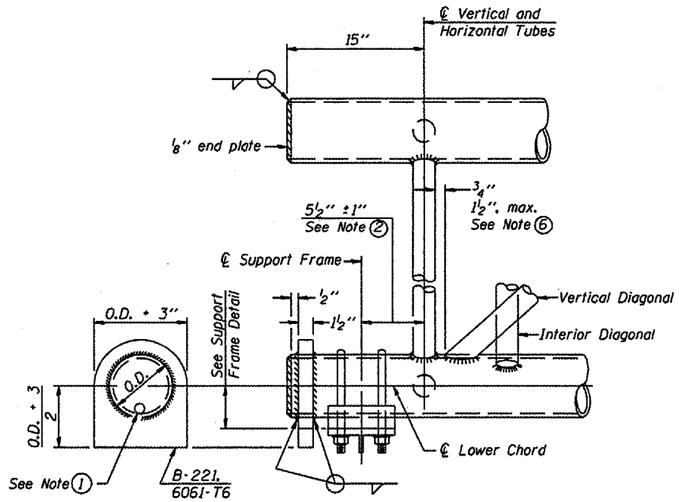
OS-A-1 1-7-05

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

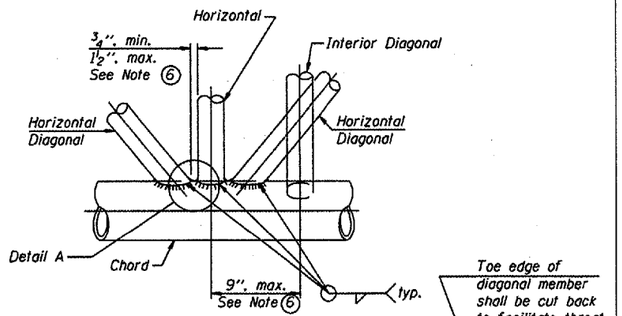
District 3
Overhead Sign
Structure Replacement



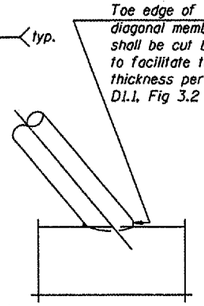
ELEVATION
TYPICAL INTERIOR UNIT
Even number of panels/interior unit required.



SUPPORT END DETAIL FOR EXTERIOR UNIT

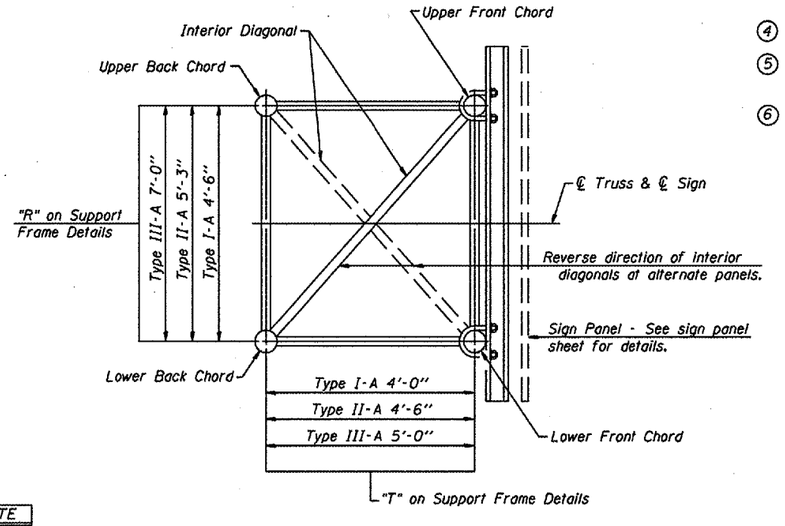


TYPICAL JOINT DETAILS



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.

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NUMBER	REVISION	DATE

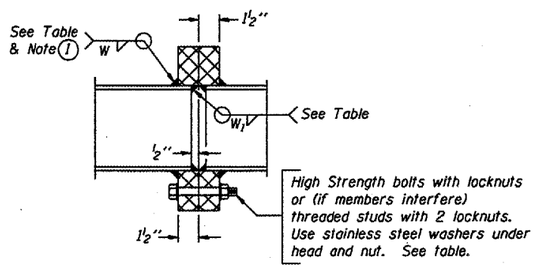
OS-A-2 1-7-05

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

District 3
Overhead Sign
Structure Replacement

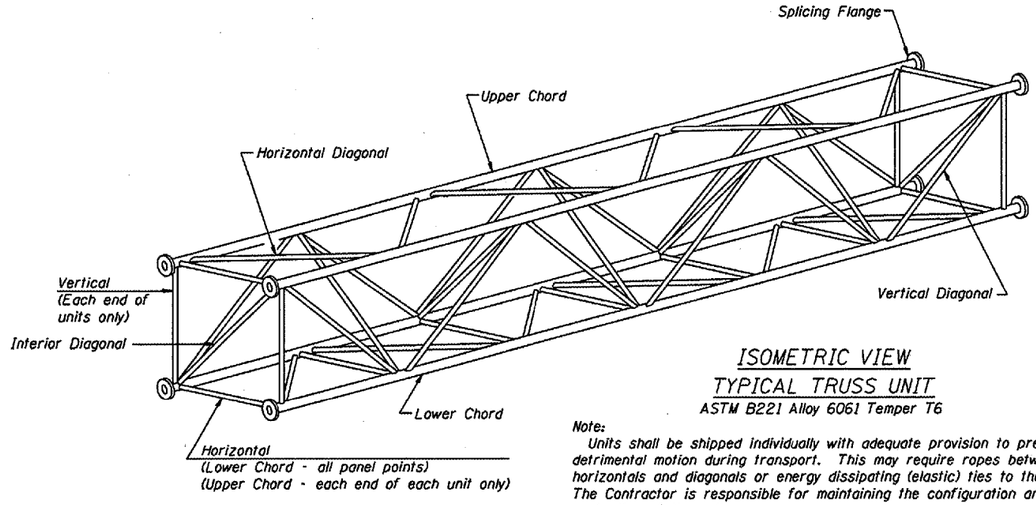
TRUSS UNIT TABLE

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		
3S0501039L059.6	1072 + 00	II-A	7	38'-5 3/4"	5'-2 3/4"	1	6	32'-7 1/2"	5'-2 3/4"	6 1/2"	5/16"	3"	5/16"	3 1/2"	6	1"	3/8"	1/4"	11"	14 1/2"
3S0501039R057.7	975 + 00	II-A	6	31' - 9"	4'-11 3/4"	2	6	31'-1 1/2"	4'-11 3/4"	7"	3/8"	3"	5/16"	4 1/2"	8	1"	7/16"	5/16"	11 1/2"	15"
3S0501039R057.2	949 + 00	II-A	6	31' - 9"	4'-11 3/4"	2	6	31'-1 1/2"	4'-11 3/4"	7"	3/8"	3"	5/16"	4 1/2"	8	1"	7/16"	5/16"	11 1/2"	15"
3S0501039R058.3	1002 + 96	II-A	6	31' - 9"	4'-11 3/4"	2	6	31'-1 1/2"	4'-11 3/4"	7"	3/8"	3"	5/16"	4 1/2"	8	1"	7/16"	5/16"	11 1/2"	15"
3S0501039L060.3	1106 + 75	II-A	7	38'-5 3/4"	5'-2 3/4"	1	6	32'-7 1/2"	5'-2 3/4"	6 1/2"	5/16"	3"	5/16"	3 1/2"	6	1"	3/8"	1/4"	11"	14 1/2"



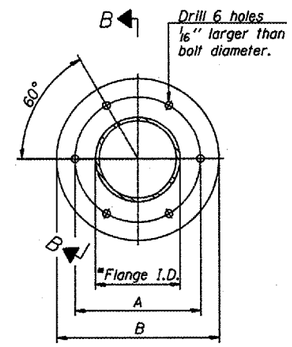
SECTION B-B

(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.

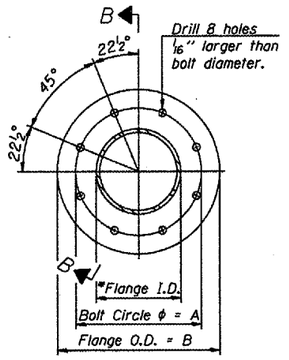


ISOMETRIC VIEW
TYPICAL TRUSS UNIT
ASTM B221 Alloy 6061 Temper T6

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.

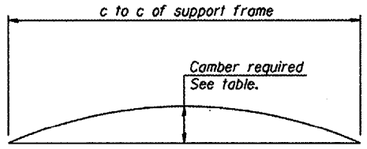


TRUSS TYPES I-A, II-A, & III-A



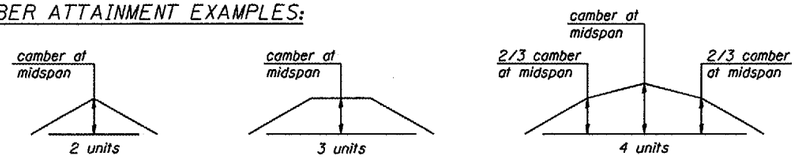
TRUSS TYPES II-A & III-A

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".



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)

NUMBER	REVISION	DATE

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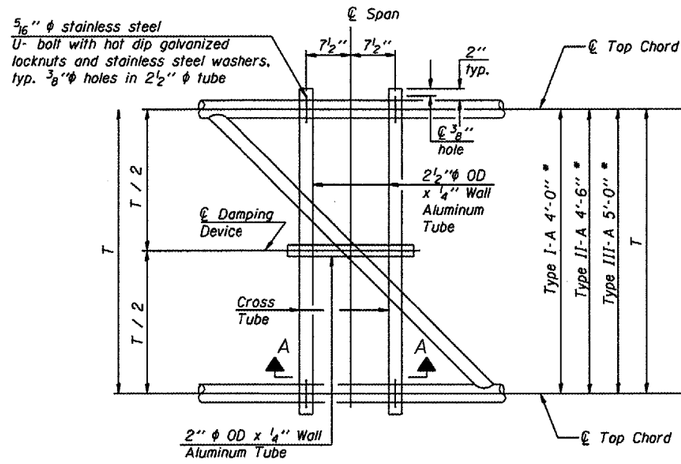
OS4-A-2 1-7-05

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

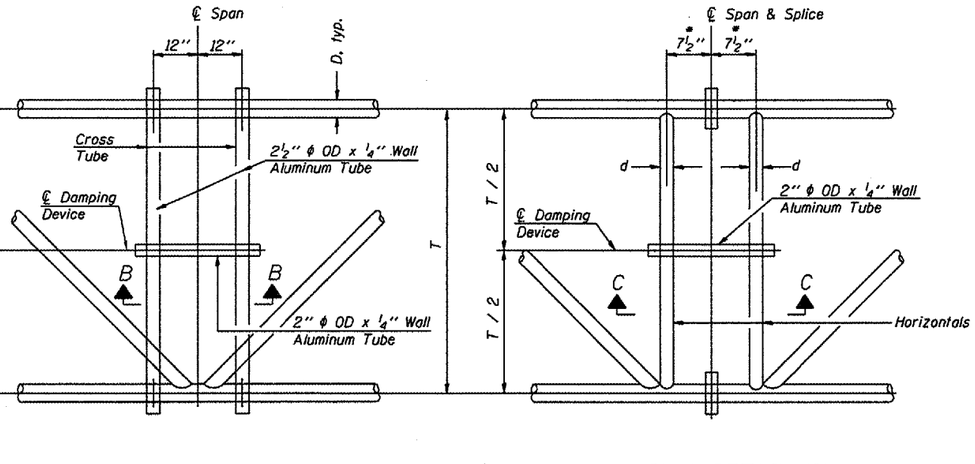
District 3
Overhead Sign
Structure Replacement

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

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

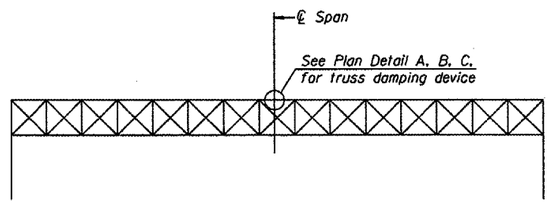


PLAN DETAIL "A"
℄ Span between Panel Points



PLAN DETAIL "B"
℄ Span at Panel Point

PLAN DETAIL "C"
℄ Span at ℄ Chord Splice

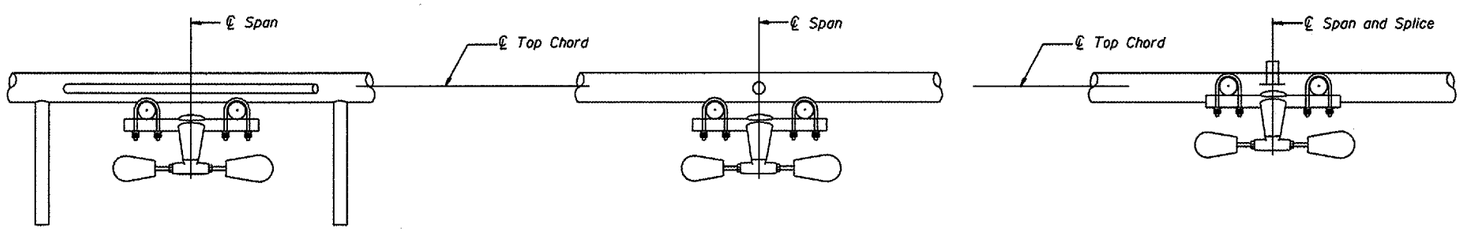


ELEVATION
Aluminum Overhead Sign Truss

NOTES

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

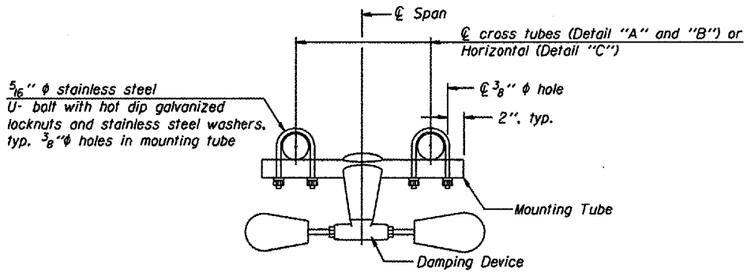
Materials: Aluminum tubes shall be ASTM B221 alloy 6061 temper T6. Cost included in Overhead Sign Structure...



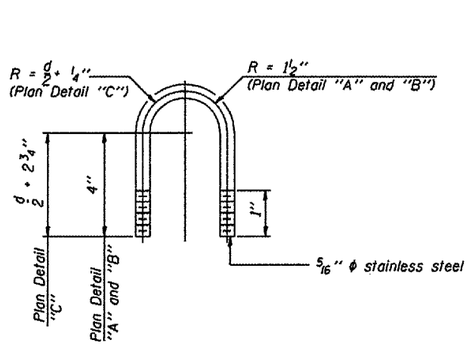
SECTION A-A

SECTION B-B

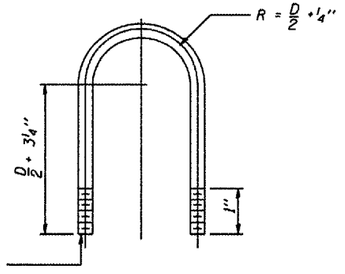
SECTION C-C



TRUSS DAMPING DEVICE CONNECTION DETAIL
(Typical)



DAMPING DEVICE MOUNTING TUBE U-BOLT DETAIL
(Typical)



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

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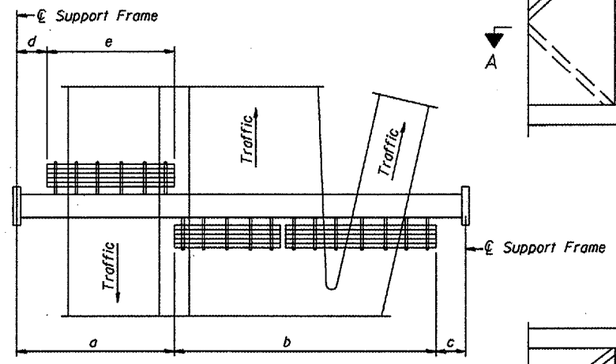
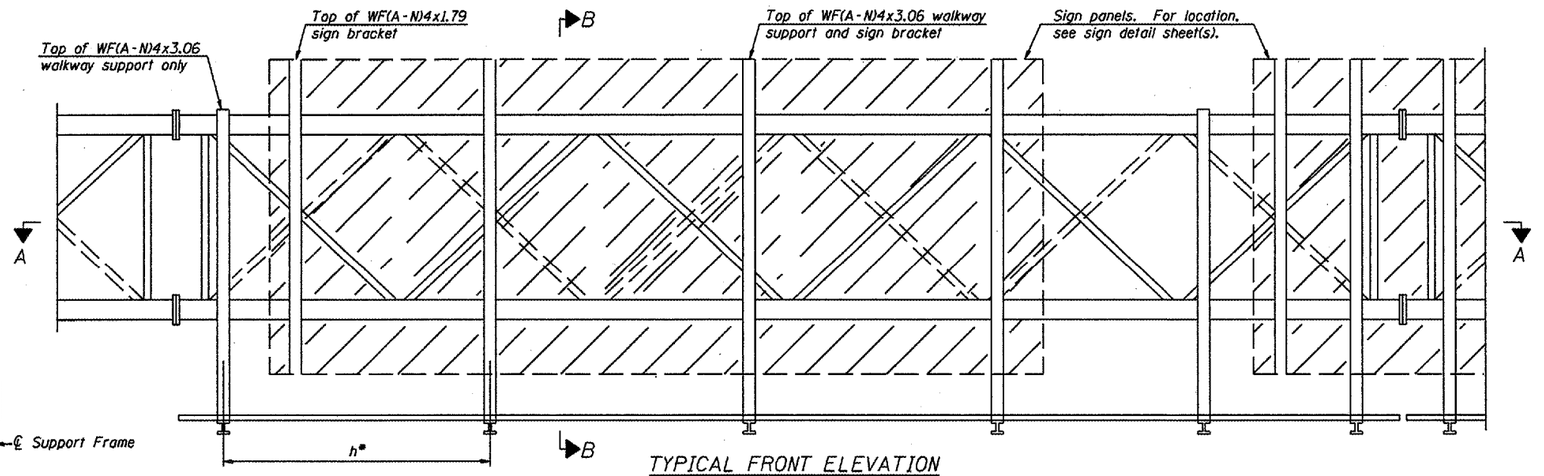
OVERHEAD SIGN STRUCTURE
DAMPING DEVICE

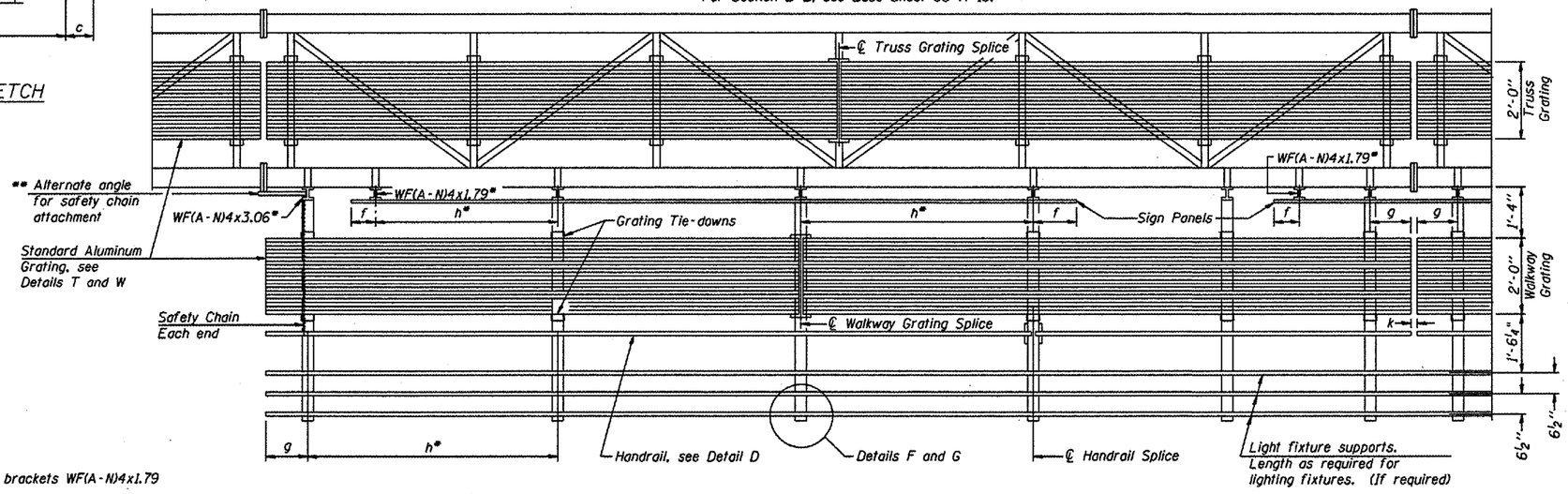
District 3
Overhead Sign
Structure Replacement



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



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



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

BRACKET TABLE

WF(A-N)4x1.79 or WF(A-N)4x3.06 ASTM B308, Alloy 6061-T6		
Sign Width		Number Brackets Required
Greater Than	Less Than or Equal To	
	8'-0"	2
8'-0"	14'-0"	3
14'-0"	20'-0"	4
20'-0"	26'-0"	5
26'-0"	32'-0"	6

Notes:

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

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

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

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

SECTION A-A

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

Structure Number	Station	a	b	c	d	e	Walkway Grating and Handrail Lengths
3S0501039L059.6	1072 + 00	N/A	N/A	N/A	N/A	N/A	109' - 7" *
3S0501039R057.7	975 + 00	N/A	N/A	N/A	N/A	N/A	125' - 9" *
3S0501039R057.2	949 + 00	N/A	N/A	N/A	N/A	N/A	125' - 9" *
3S0501039R058.3	1002 + 96	N/A	N/A	N/A	N/A	N/A	125' - 9" *
3S0501039L060.3	1106 + 75	N/A	N/A	N/A	N/A	N/A	109' - 7" *

* 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".

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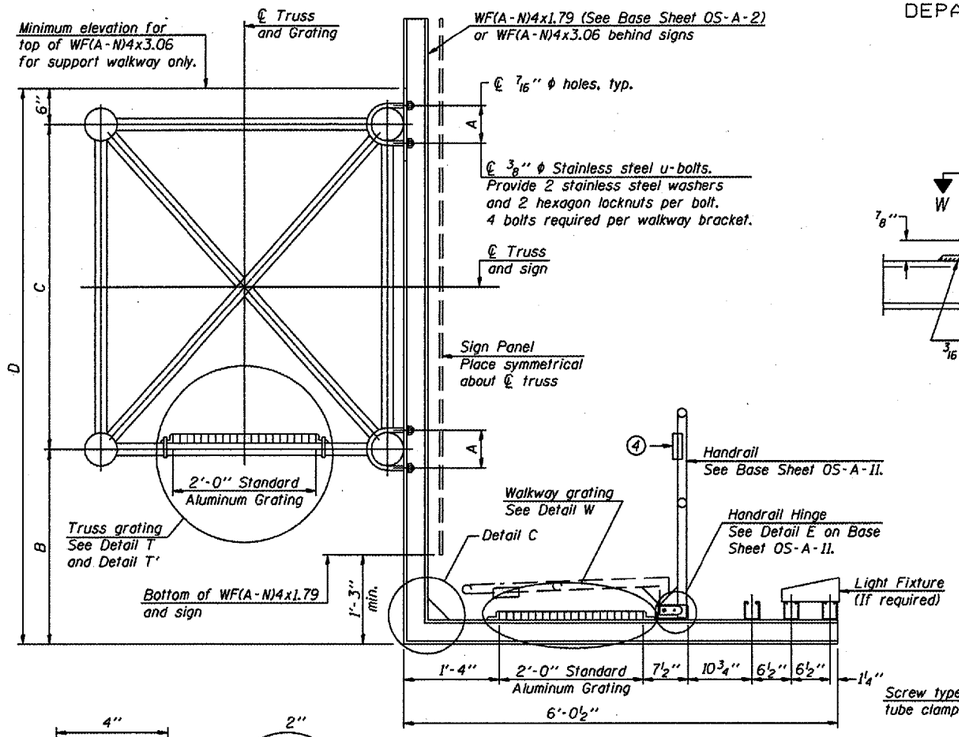
NUMBER	REVISION	DATE

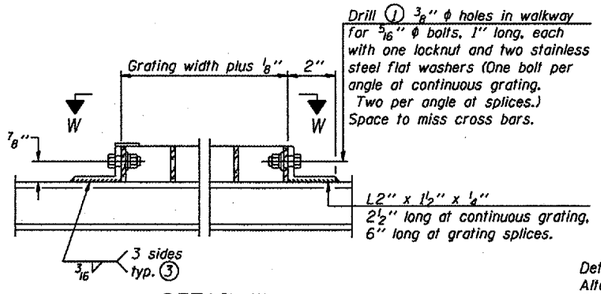
OS-A-9 1-7-05

OVERHEAD SIGN STRUCTURES
ALUMINUM WALKWAY DETAILS

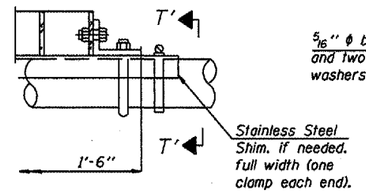
District 3
Overhead Sign
Structure Replacement

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

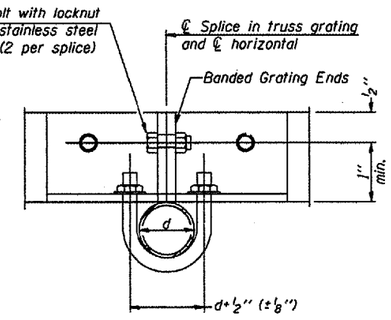




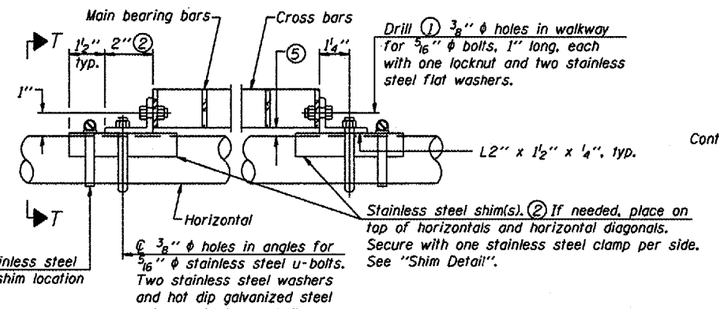
DETAIL W
(Walkway grating)



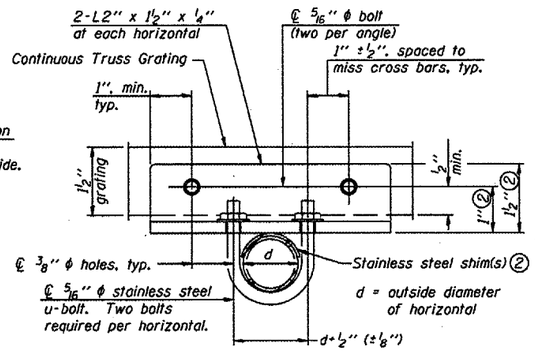
DETAIL T'
(Truss grating splice)
Details not shown same as Detail T. Alternate materials may be used subject to the Engineer's review and approval.



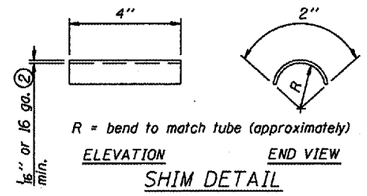
SECTION T'-T'



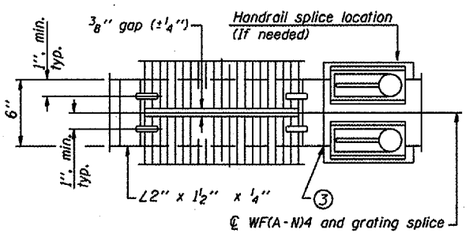
DETAIL T
(Continuous Truss grating)



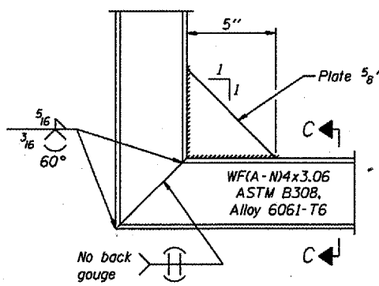
SECTION T-T



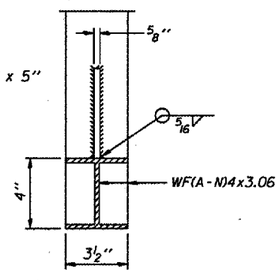
SHIM DETAIL



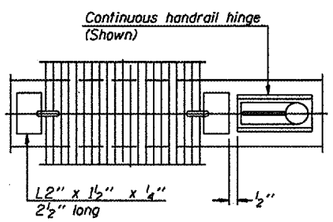
(AT WALKWAY GRATING SPLICE)



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



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 "T" sections for main bearing bars shall meet the following requirements:
Main bars shall conform to ASTM B221 Alloy 6061-T6 and have a minimum section modulus equal to 0.0705 in.^{3} per bar, a depth of 1½", spaced on 1 3/16" centers.
Cross bars shall conform to ASTM B221 Alloy 6063-T5 or T-42 and spaced on 4" centers.

Structure Number	Station	A	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	-
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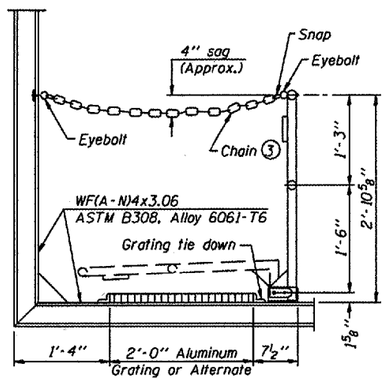
OVERHEAD SIGN STRUCTURES
ALUMINUM WALKWAY DETAILS

District 3
Overhead Sign
Structure Replacement

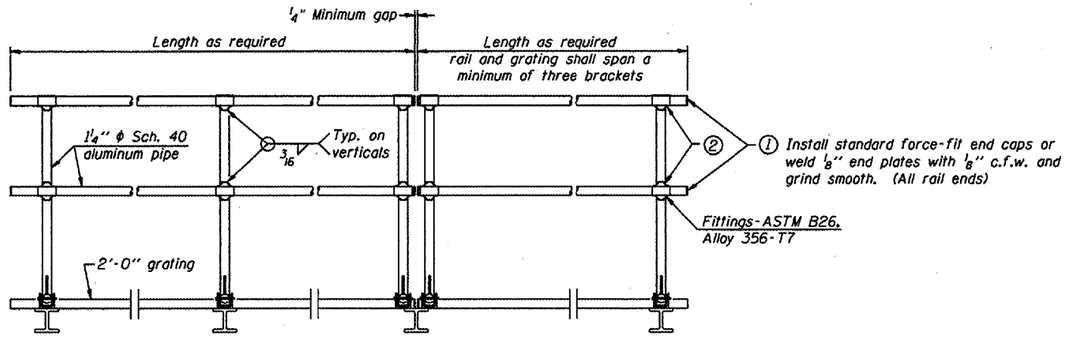
OS-A-10 1-7-05

Existing walkway and walkway support brackets to be reused.

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

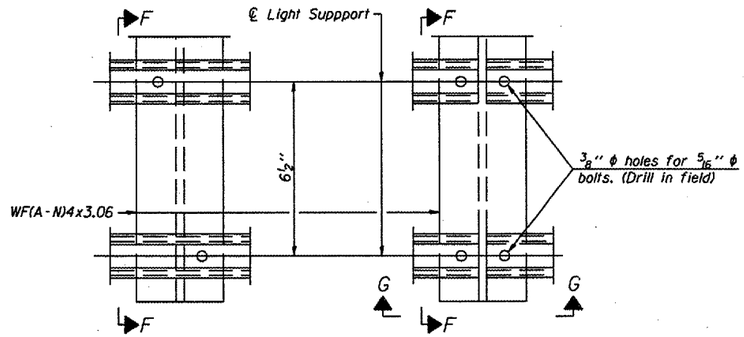


SIDE ELEVATION
(Showing safety chain w/o sign)



FRONT ELEVATION

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

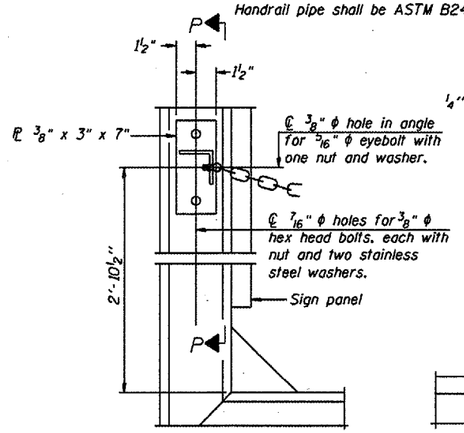


DETAIL F

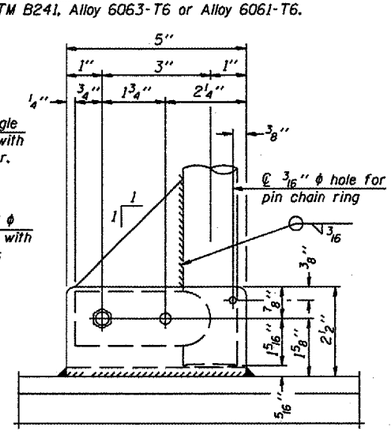
DETAIL G

HANDRAIL DETAILS

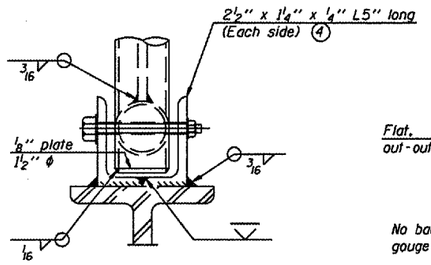
Handrail pipe shall be ASTM B241, Alloy 6063-T6 or Alloy 6061-T6.



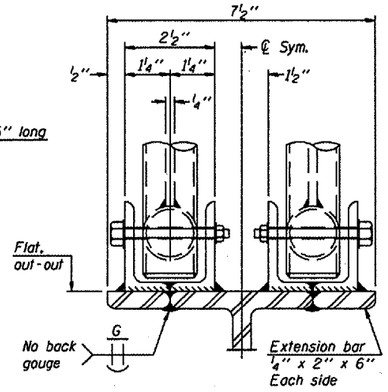
ALTERNATE SAFETY CHAIN ATTACHMENT
(With Sign Present)
Items not shown same as "Side Elevation" of "Handrail Details"



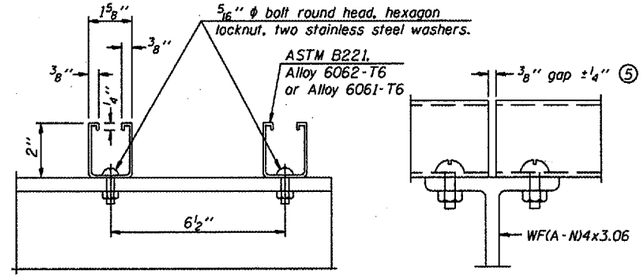
SIDE ELEVATION



FRONT ELEVATION
See "Elevation" at right for dimensions.



ELEVATION AT HANDRAIL JOINT (4)

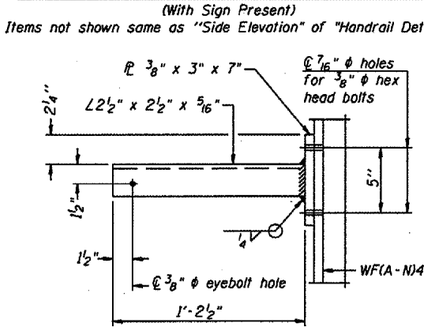


SECTION F-F

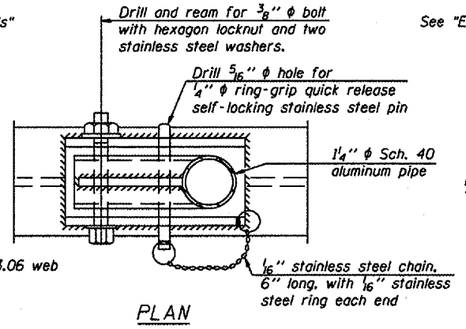
SECTION G-G

LIGHTING FIXTURE MOUNTS (IF REQUIRED)

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

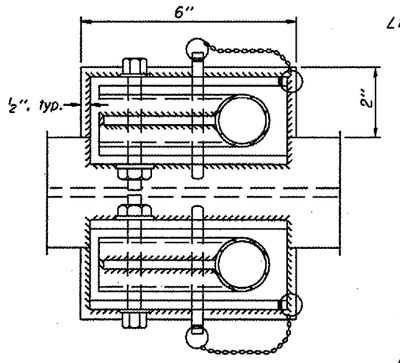


SECTION P-P

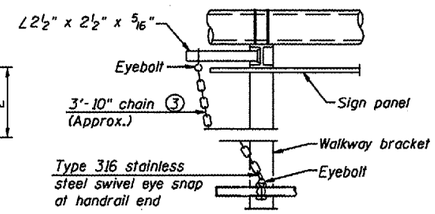


PLAN

DETAIL E HANDRAIL HINGE



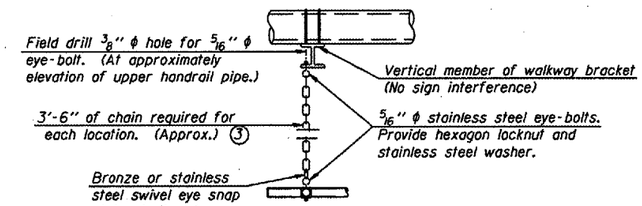
PLAN AT HANDRAIL JOINT
Details not shown same as "PLAN"



ALTERNATE SAFETY CHAIN ATTACHMENT
Details not shown similar to "Safety Chain" Details
(Walkway omitted for clarity)

(3) 3/16 " Type 304L or 316L stainless steel chain, approximately 12 links per foot.

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



SAFETY CHAIN
One required for each end of each walkway.

OVERHEAD SIGN STRUCTURES
ALUMINUM HANDRAIL DETAILS

District 3
Overhead Sign
Structure Replacement

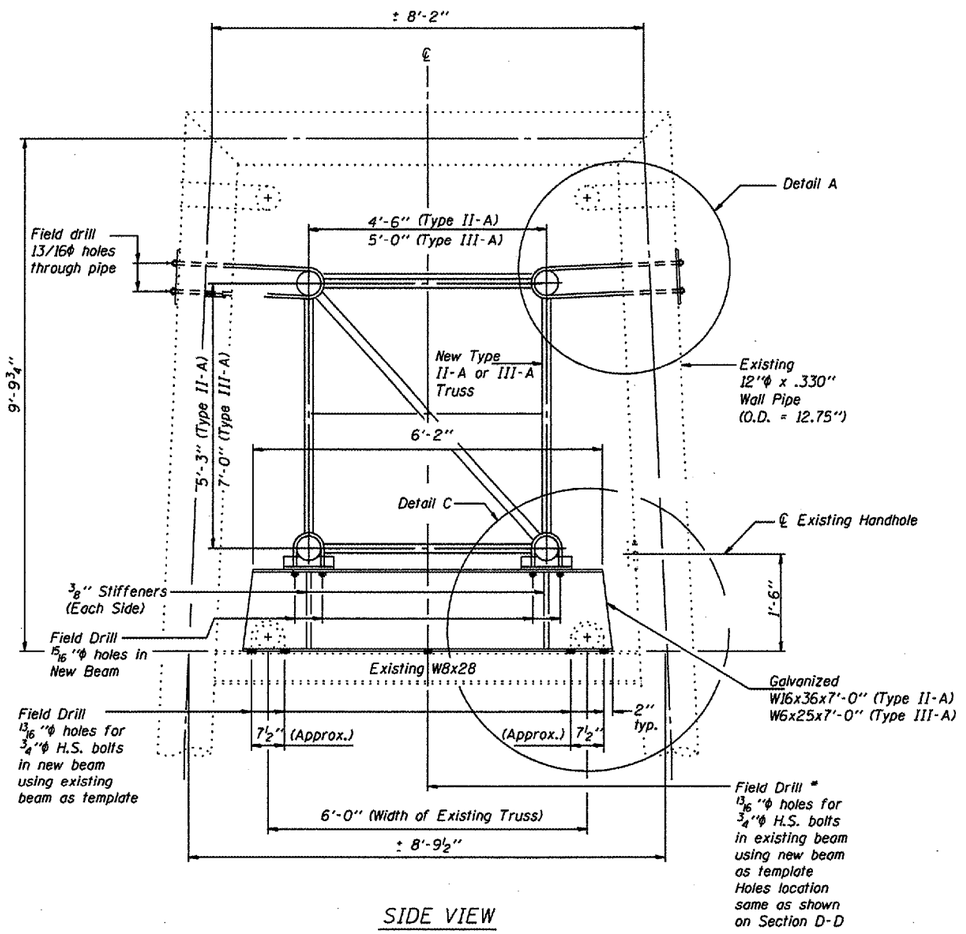
DESIGNED	-
CHECKED	-
DRAWN	-
CHECKED	-

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

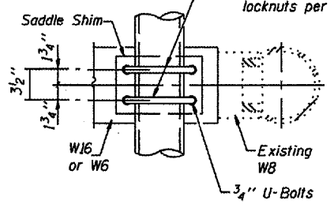
NUMBER	REVISION	DATE

OS-A-11 1-7-05

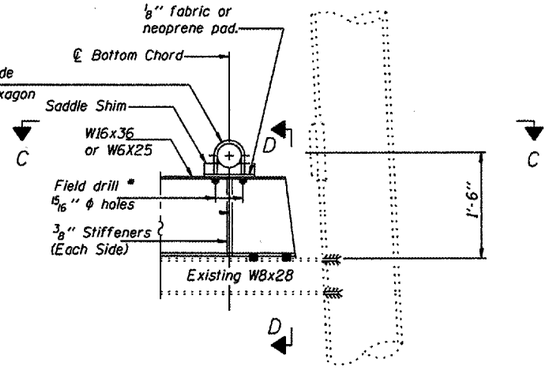
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



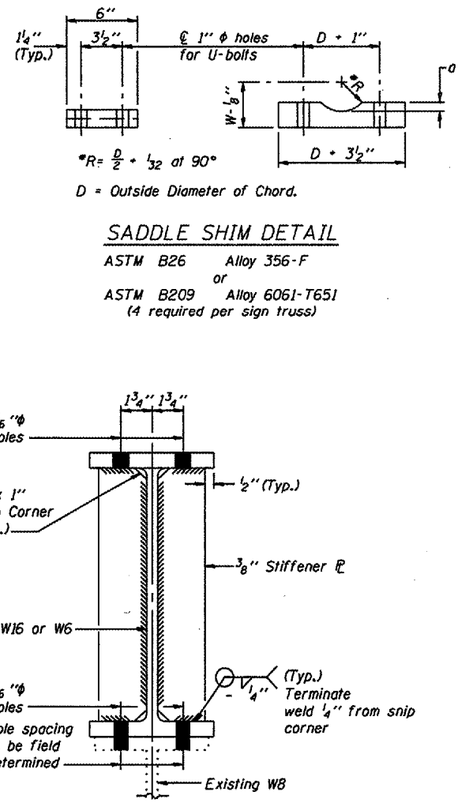
SIDE VIEW



SECTION C-C



DETAIL C

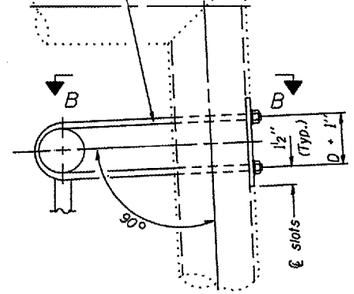


SADDLE SHIM DETAIL

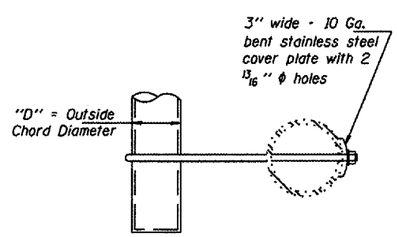
ASTM B26 Alloy 356-F
or
ASTM B209 Alloy 6061-T651
(4 required per sign truss)

Truss Chord Nominal Dia.	a	W
5½"	13/16"	4¾"
6"	7/8"	4¾"
6½"	15/16"	4¾"
7"	1"	4¾"
8½"	1¼"	5½"
9"	1⅜"	5¾"

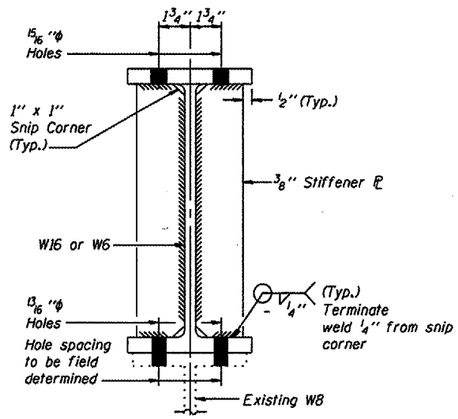
¾" ϕ stainless steel U-bolt. Provide two washers and two hexagon locknuts. Field drill 13/16" ϕ holes through pipe, (4 holes required per pipe)



DETAIL A



SECTION B-B



SECTION D- D

This detail applies to the following overhead sign structures that are being downsized:
1. 3S0501039R059.9
2. 3S0501039R057.7
3. 3S0501039R057.2
4. 3S0501039R058.3
5. 3S0501039L060.3

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 Replacement

District 4
Schedule of Locations for Truss Repair & Replacement

Location No.:	4-01	State I.D. No.:	4S090I474R012.7				
County:	Tazewell	Route:	I-474	M.P.:	12.7	Direction:	EB

Description of Work	Unit	Quantity
REMOVE & RE-ERECT OVERHEAD SIGN STRUCTURE-SPAN	EACH	1.00
REMOVE CONCRETE FOUNDATION OVERHEAD	EACH	2.00
FURNISH & INSTALL INTERNAL TRUSS DAMPER	EACH	1.00
REPAIR HANDRAIL LOCKING PIN CONNECTION	EACH	10.00
FURNISH & INSTALL SAFETY CHAIN	EACH	2.00
PAINT OVERHEAD SIGN SUPPORT	EACH	2.00
REPLACE / TIGHTEN CLIP PER SIGN	EACH	1.00
FURNISH & INSTALL WALKWAY TIE DOWN BOLT	EACH	1.00
DRILLED SHAFT CONCRETE FOUNDATION	CU YD	21.50
RELOCATE ELECTRIC SERVICE	EACH	1.00
OVERHEAD SIGN STRUCTURE WALKWAY	FOOT	68.00
REMOVE & RE-ERECT OVERHEAD SIGN END SUPPORT	EACH	2.00
DISCONNECT/RECONNECT ELECTRIC SERVICE	EACH	1.00

Location No.:	4-02	State I.D. No.:	4C072I474L003.41				
County:	Peoria	Route:	I-474	M.P.:	3.41	Direction:	WB

Description of Work	Unit	Quantity
OVERHEADSIGN SUPPORT GROUT REPAIR	EACH	1.00
REPAIR CONCRETE FOUNDATION FOR OVERHEAD SIGN STRUCTURE	EACH	1.00
FURNISH & INSTALL SAFETY CHAIN	EACH	2.00
REPAIR HANDRAIL LOCKING PIN CONNECTION	EACH	4.00
PAINT OVERHEAD SIGN SUPPORT	EACH	1.00
FURNISH & INSTALL INTERNAL TRUSS DAMPER	EACH	1.00

Location No.:	4-03	State I.D. No.:	4C090S116L005.9				
County:	Tazewell	Route:	IL 116	M.P.:	5.9	Direction:	WB

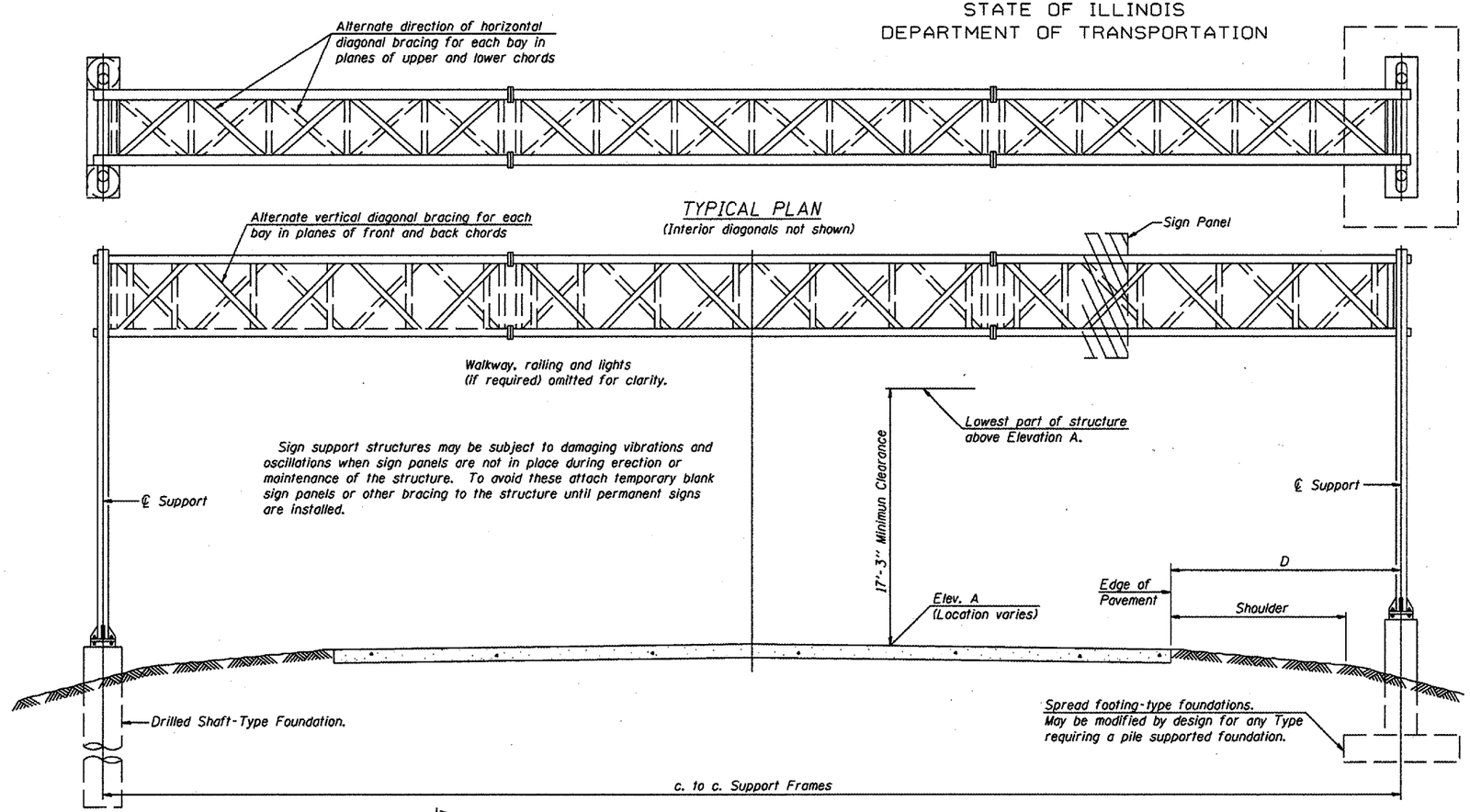
Description of Work	Unit	Quantity
OVERHEAD SIGN SUPPORT GROUT REPAIR	EACH	1.00
TIGHTEN CANTILEVER CONNECTION	EACH	2.00
REPAIR HANDRAIL LOCKING PIN CONNECTION	EACH	5.00
FURNISH & INSTALL SAFETY CHAIN	EACH	2.00
FURNISH & INSTALL INTERNAL TRUSS DAMPER	EACH	1.00

Location No.:	4-04	State I.D. No.:	4C072U024R022.76				
County:	Peoria	Route:	US - 24	M.P.:	22.76	Direction:	EB

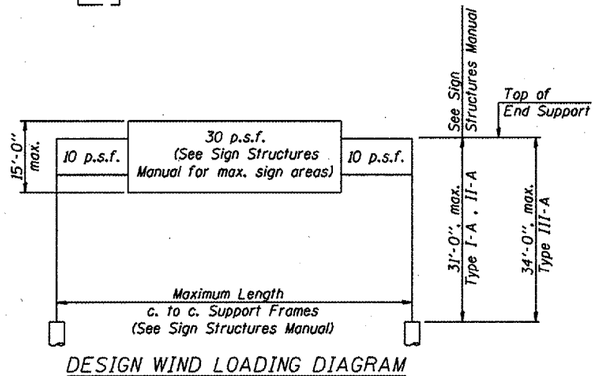
Description of Work	Unit	Quantity
OVERHEAD SIGN SUPPORT GROUT REPAIR	EACH	1.00
TIGHTEN CANTILEVER CONNECTION	EACH	2.00
REPAIR HANDRAIL LOCKING PIN CONNECTION	EACH	5.00
FURNISH & INSTALL SAFETY CHAIN	EACH	2.00
FURNISH & INSTALL INTERNAL TRUSS DAMPER	EACH	1.00

Location No.:	4-05	State I.D. No.:	4S090I474R012.2				
County:	Tazewell	Route:	I - 474	M.P.:	12.2	Direction:	EB

Description of Work	Unit	Quantity
OVERHEAD SIGN SUPPORT GROUT REPAIR	EACH	4.00
REPAIR CONCRETE FOUNDATION FOR OVERHEAD SIGN STRUCTURE	EACH	2.00
REPAIR HANDRAIL LOCKING PIN CONNECTION	EACH	9.00
FURNISH & INSTALL SAFETY CHAIN	EACH	2.00
FURNISH & INSTALL INTERNAL TRUSS DAMPER	EACH	1.00
FURNISH & INSTALL INTERNAL TRUSS CLAMP	EACH	1.00
PAINT OVERHEAD SIGN SUPPORT	EACH	2.00
REPLACE U-BOLT	EACH	12.00



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

WIND LOADING: 30 p.s.f. normal to Sign Panel Area and truss elements not behind sign Loading Diagram.

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

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

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

MATERIALS: Aluminum Alloys as shown throughout plans. All Structural Steel Pipe shall be ASTM A53 Grade B with a minimum yield of 35,000 p.s.i., or A500 Grade B or C with a minimum yield of 46,000 p.s.i. If A500 pipe is substituted for A53, then the outside diameter shall be as detailed and wall thickness greater than or equal to A53.
All Structural Steel Plates and Shapes shall conform to AASHTO M270 Gr. 36, Gr. 50 or Gr. 50W*. Stainless steel for shims, sleeves and handhole covers shall be ASTM A240, Type 302 or 304, or another alloy suitable for exterior exposure and acceptable to the Engineer.
The steel pipe and stiffening ribs at the base plate for the column shall have a minimum longitudinal Charpy V-Notch (CVN) energy of 15 lb.-ft. at 40° F. (Zone 2) before galvanizing.

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

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

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

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

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

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

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

This Sheet For Information Only

NUMBER	REVISION	DATE

TOTAL BILL OF MATERIAL

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

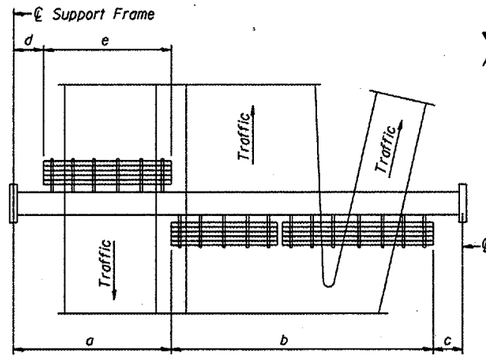
DESIGNED -	
CHECKED -	
DRAWN -	
CHECKED -	

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

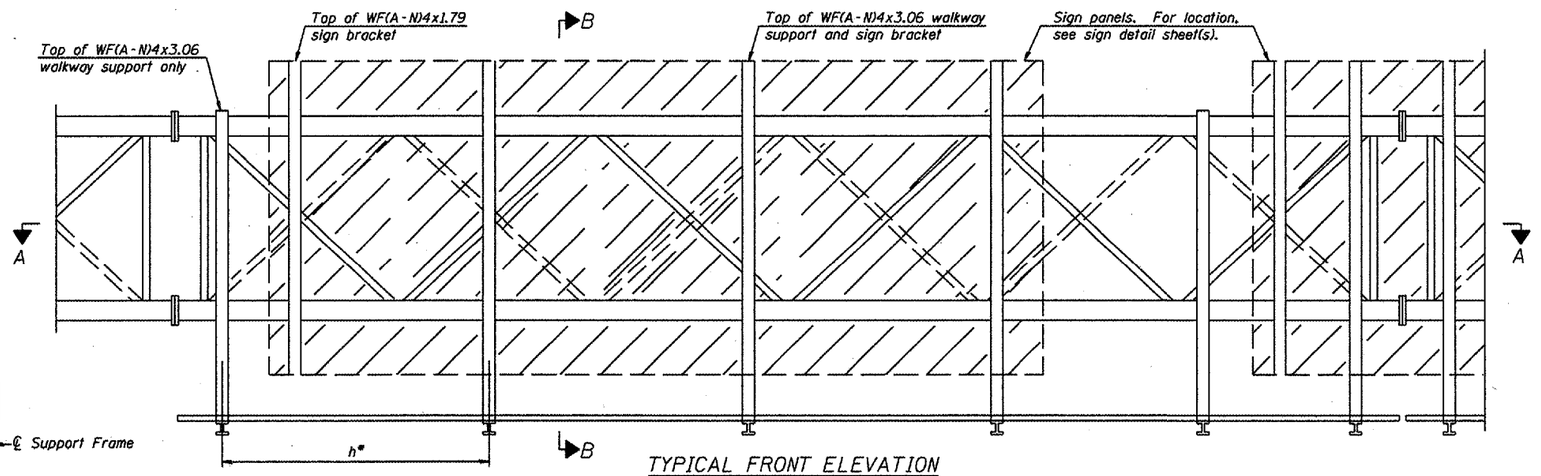
OS-A-1 1-7-05

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

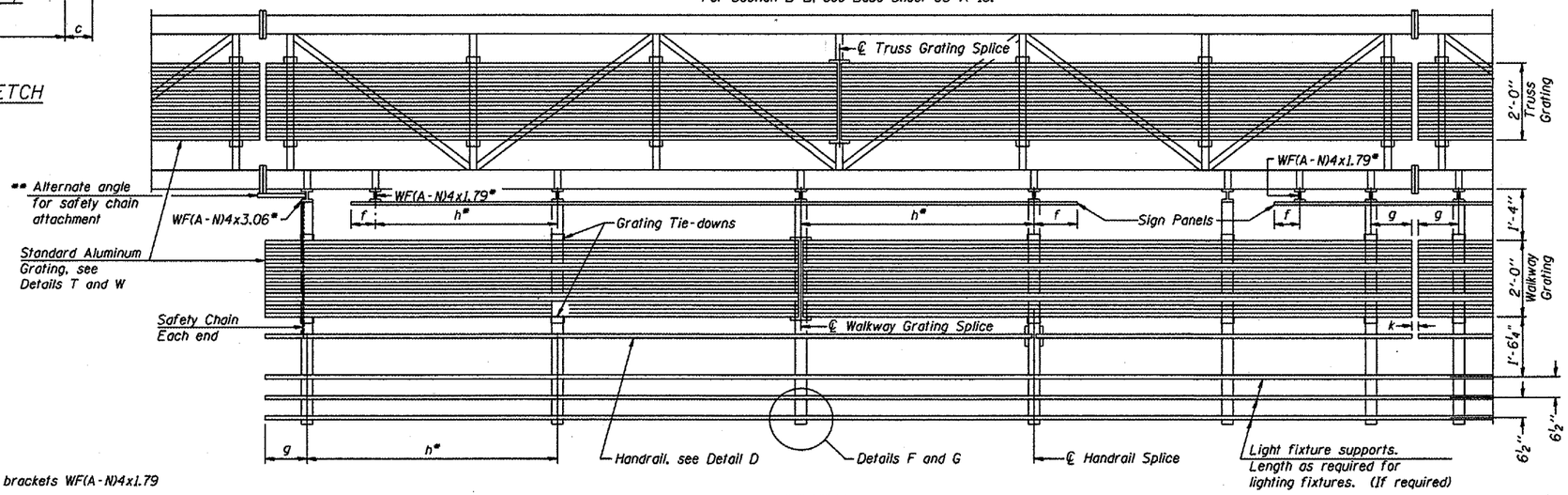
District 4
Overhead Sign Structure
Repair and Replacement



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



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



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

BRACKET TABLE

WF(A-N)4x1.79 or WF(A-N)4x3.06 ASTM B308, Alloy 6061-T6		
Sign Width		Number Brackets Required
Greater Than	Less Than or Equal To	
	8'-0"	2
8'-0"	14'-0"	3
14'-0"	20'-0"	4
20'-0"	26'-0"	5
26'-0"	32'-0"	6

Notes:

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

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

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

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

SECTION A-A

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

Structure Number	Station	a	b	c	d	e	Walkway Grating and Handrail Lengths
4S0901474R012.7	304 + 50	N/A	N/A	N/A	N/A	N/A	68' - 0" *

* 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
ENGINEER OF BRIDGE DESIGN
PASSED
ENGINEER OF BRIDGES AND STRUCTURES

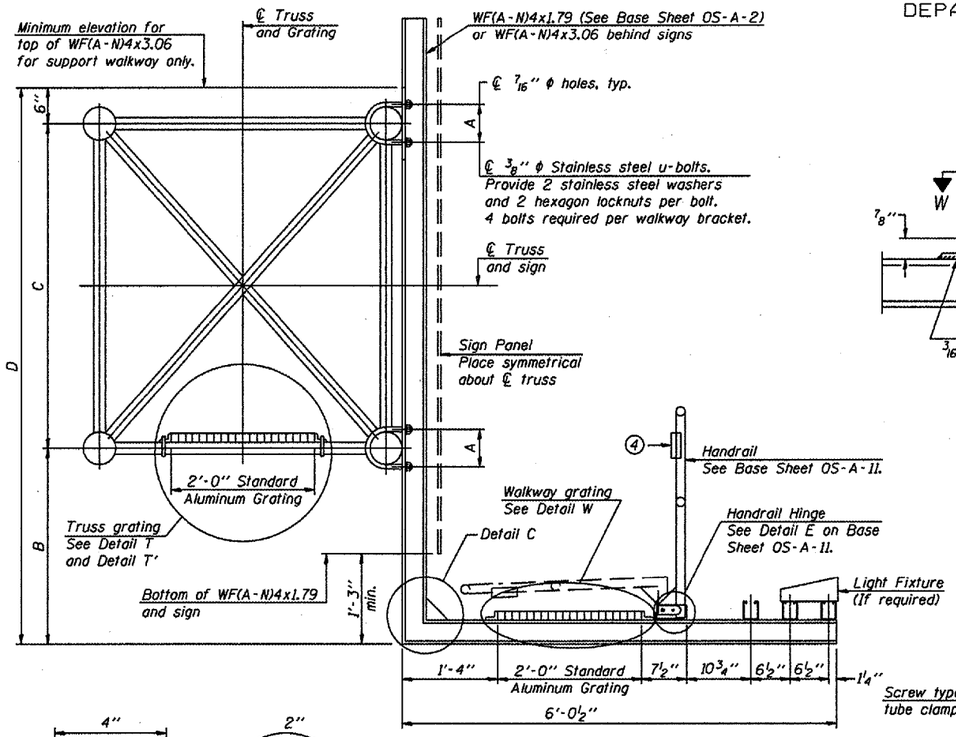
NUMBER	REVISION	DATE

OS-A-9 1-7-05

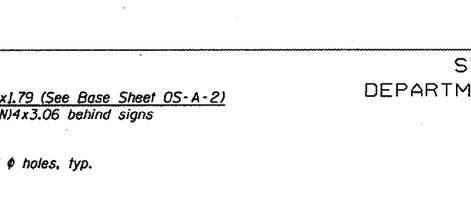
OVERHEAD SIGN STRUCTURES
ALUMINUM WALKWAY DETAILS

District 4
Overhead Sign Structure
Repair and Replacement

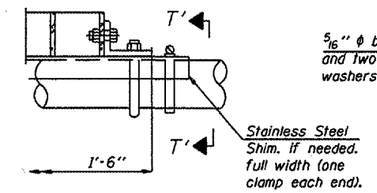
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



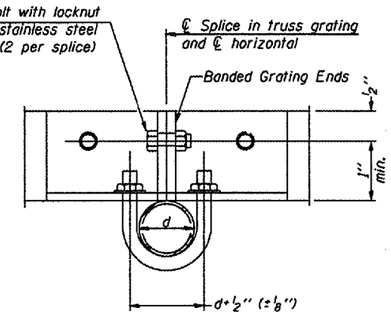
SECTION B-B



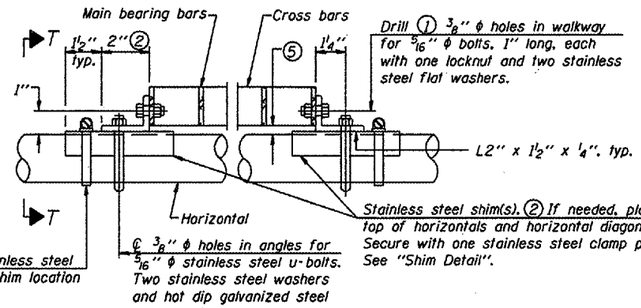
DETAIL W
(Walkway grating)



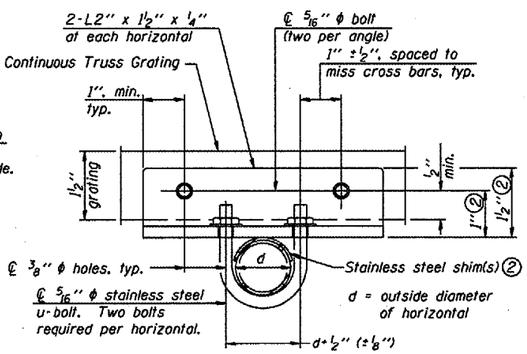
DETAIL T'
(Truss grating splice)
Details not shown same as Detail T. Alternate materials may be used subject to the Engineer's review and approval.



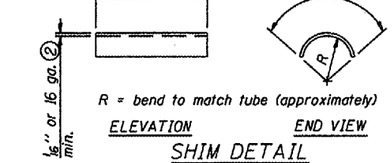
SECTION T'-T'



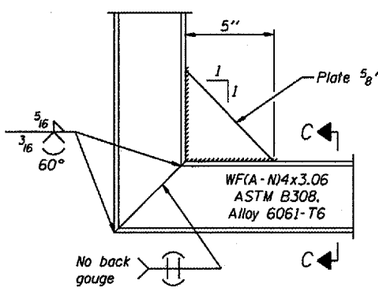
DETAIL T
(Continuous Truss grating)



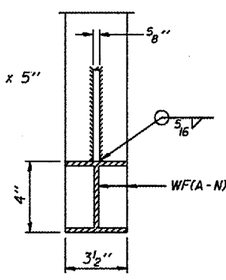
SECTION T-T



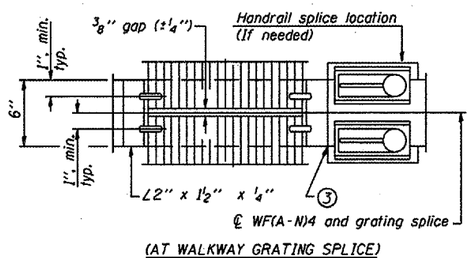
SHIM DETAIL



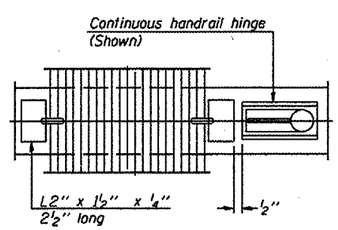
DETAIL C
(See Detail P, Base Sheet OS-A-11.)



SECTION C-C



(AT WALKWAY GRATING SPLICE)



(CONTINUOUS WALKWAY GRATING)

SECTION W-W

SPECIFICATIONS FOR STANDARD ALUMINUM GRATING

Main Bearing Bars shall be 3/16" x 1½" on 1 3/16" centers and conform to ASTM B221 Alloy 6061-T6.

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

OR

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

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

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

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

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

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

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

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

Structure Number	Station	A	B	C	D

NUMBER	REVISION	DATE

DESIGNED -
CHECKED -
DRAWN -
CHECKED -

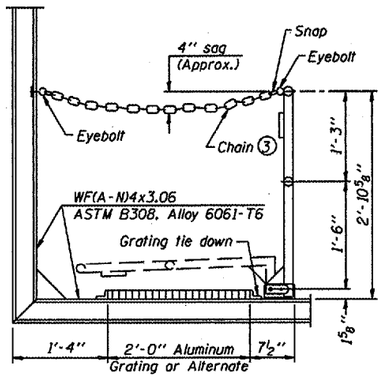
- 20
EXAMINED
ENGINEER OF BRIDGE DESIGN
PASSED
ENGINEER OF BRIDGES AND STRUCTURES

OS-A-10 1-7-05

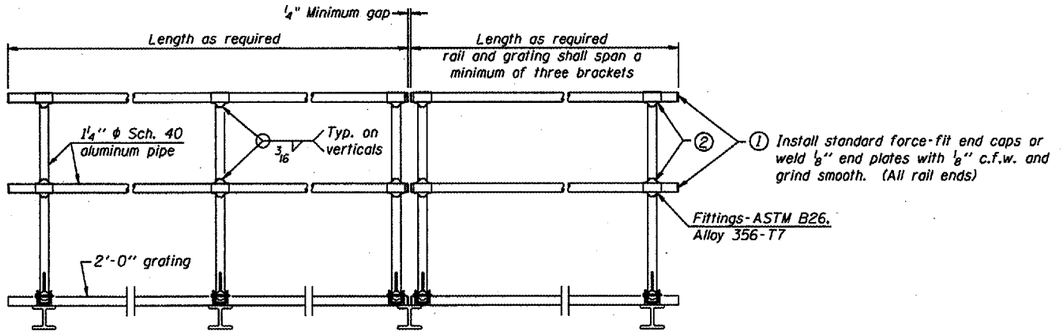
Existing Walkway and Walkway Support Brackets to be Reused.

OVERHEAD SIGN STRUCTURES
ALUMINUM WALKWAY DETAILS

District 4
Overhead Sign Structure
Repair and Replacement



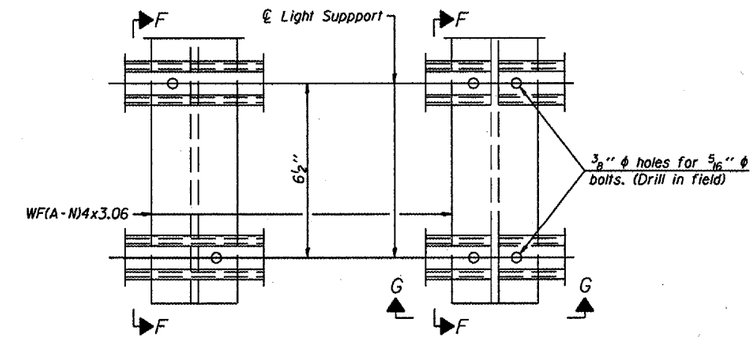
SIDE ELEVATION
(Showing safety chain w/o sign)



FRONT ELEVATION

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

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

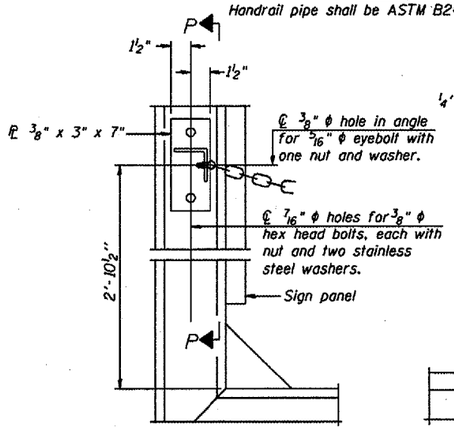


DETAIL F

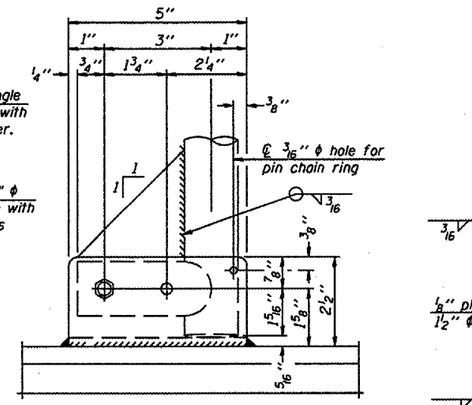
DETAIL G

HANDRAIL DETAILS

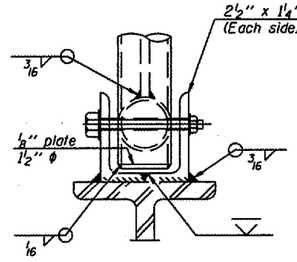
Handrail pipe shall be ASTM B241, Alloy 6063-T6 or Alloy 6061-T6.



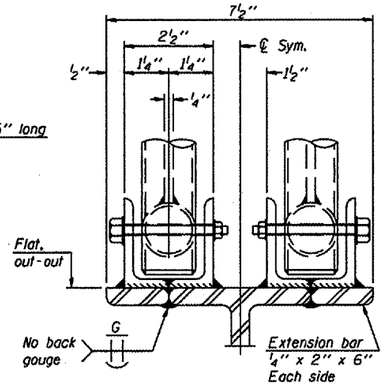
ALTERNATE SAFETY CHAIN ATTACHMENT
(With Sign Present)
Items not shown same as "Side Elevation" of "Handrail Details"



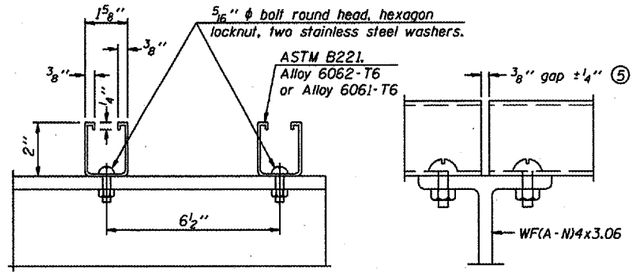
SIDE ELEVATION



FRONT ELEVATION
See "Elevation" at right for dimensions.



ELEVATION AT HANDRAIL JOINT (4)

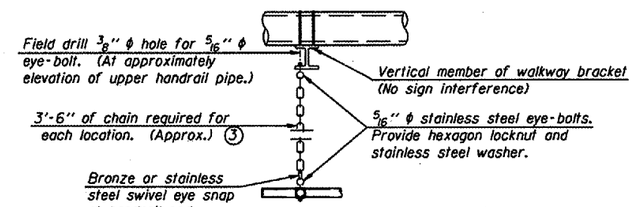


SECTION F-F

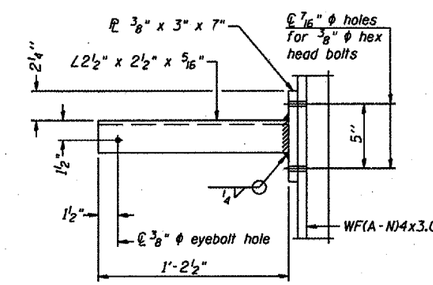
SECTION G-G

LIGHTING FIXTURE MOUNTS (IF REQUIRED)

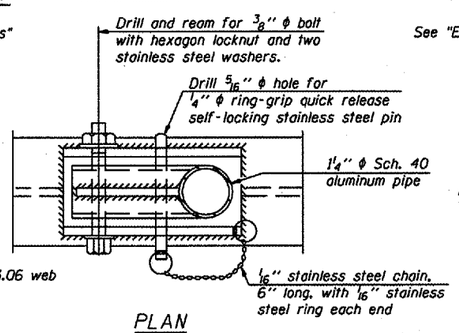
(5) Field cut ends of light support channels shall be free of burrs or hazardous projections and coated with zinc-rich primer or equivalent.



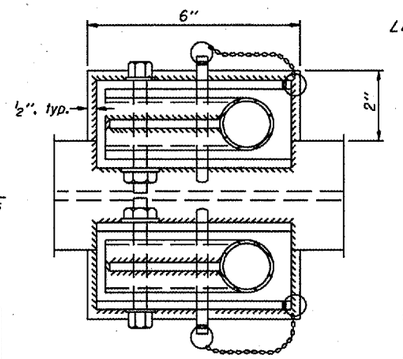
SAFETY CHAIN
One required for each end of each walkway.



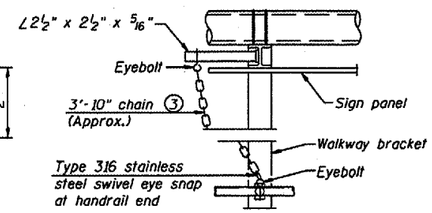
SECTION P-P



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 or 316L 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 4
Overhead Sign Structure
Repair and Replacement

DESIGNED	-
CHECKED	-
DRAWN	-
CHECKED	-

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

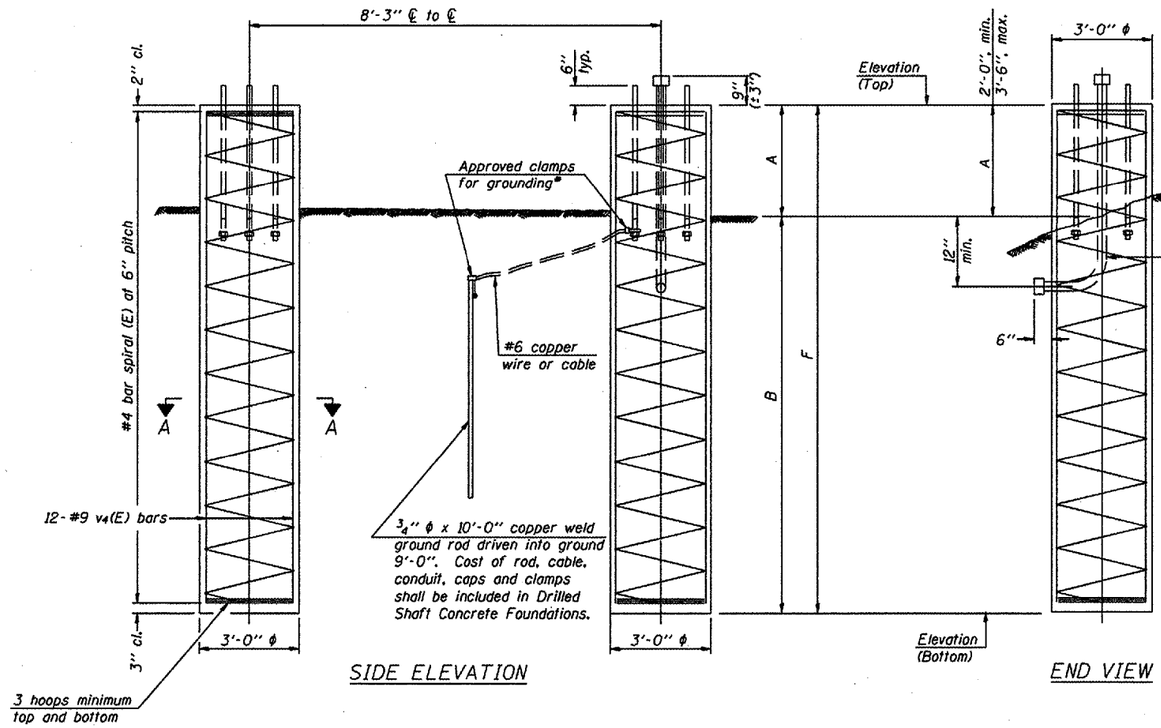
NUMBER	REVISION	DATE

OS-A-11 1-7-05

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

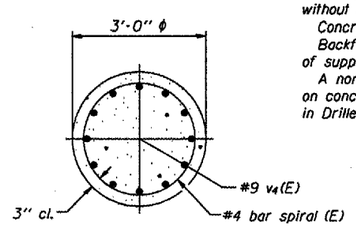
For anchor rod size and placement, see Support Frame Detail Sheet.

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

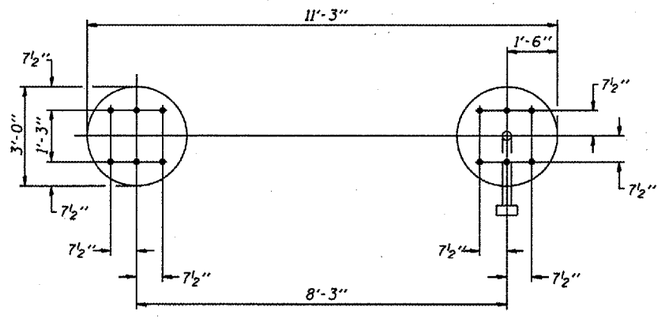


SIDE ELEVATION

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	
4S0901474R012.7	304 + 50	376.65		3' - 0"	16' - 6"	19' - 6"	376.65		3' - 0"	16' - 6"	19' - 6"	20.40

DESIGNED -
CHECKED -
DRAWN -
CHECKED -

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

NUMBER	REVISION	DATE

OS4-F3 1-7-05

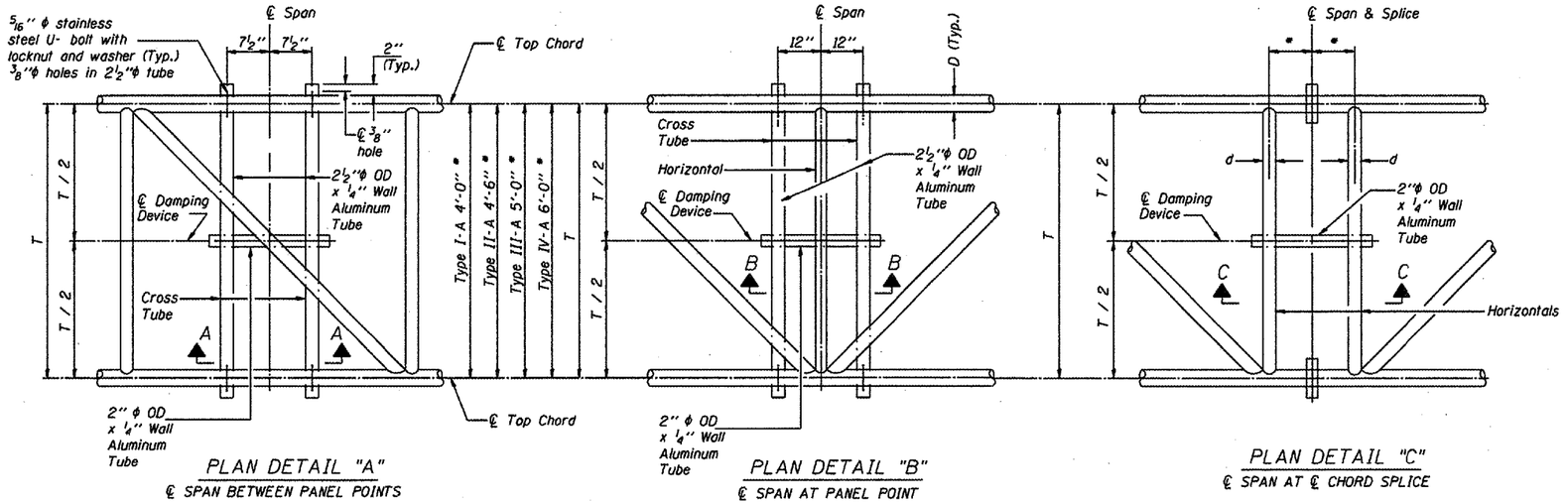
DETAILS FOR 10" ϕ SUPPORT FRAME
TYPE I-A or II-A TRUSS

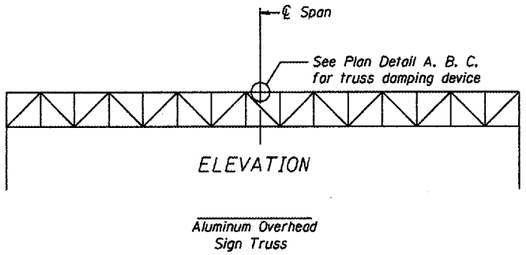
OVERHEAD SIGN STRUCTURES
DRILLED SHAFT DETAILS

District 4
Overhead Sign Structure
Repair and Replacement

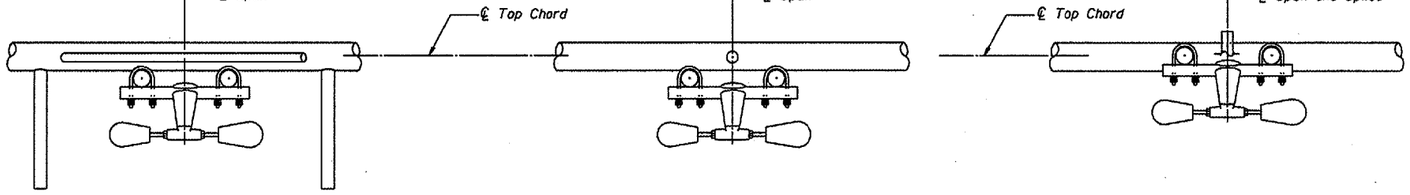
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

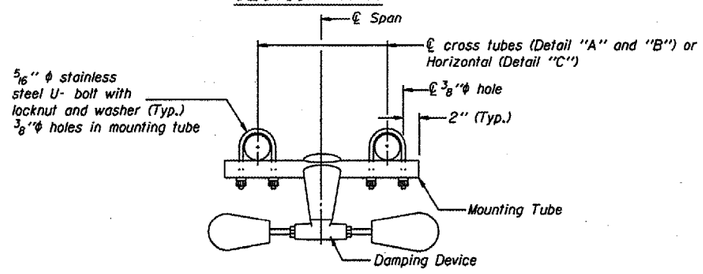
* Verify before drilling holes in mounting tube and cross tubes.

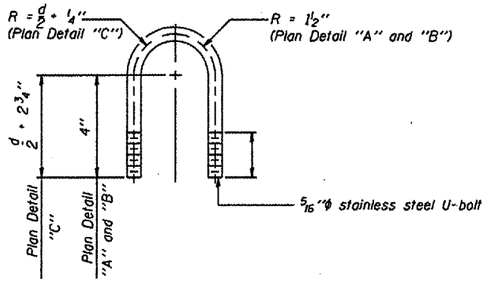


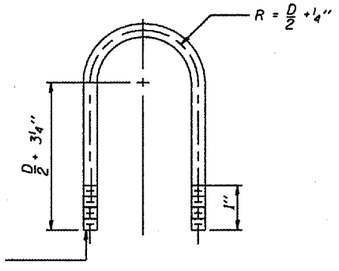


This detail applies to the following overhead sign structures:
1. 4S0901474R012.7
2. 4S0901474R012.2









GENERAL NOTES

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

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

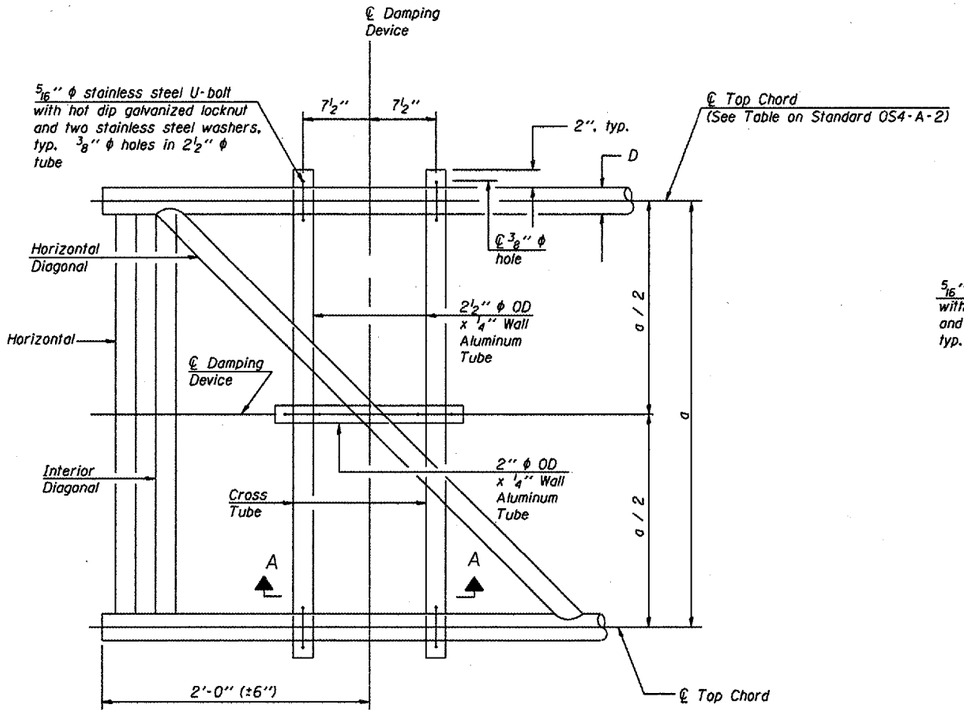
Fasteners: U-bolts shall be produced from ASTM A276 Type 304, 304L, 316 or 316L, Condition A, cold finish, or an equivalent material acceptable to the Engineer. All nuts shall be stainless steel conforming to ASTM A194, Grade 8 (AISI Type 304) or Grade 8F (AISI Type 303). The nuts shall be "locknuts" 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

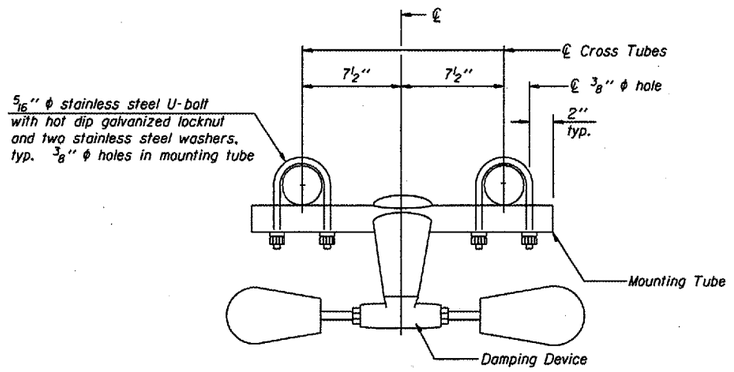
TRUSS DAMPER RETROFIT 07-01-2001

OVERHEAD SIGN STRUCTURE
DAMPING DEVICE

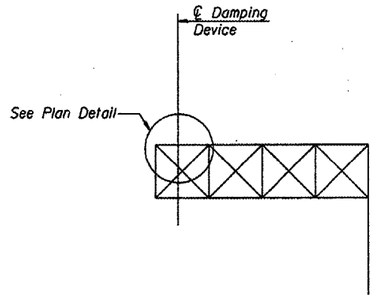
District 4
Overhead Sign Structure
Repair and Replacement



PLAN DETAIL



TRUSS DAMPING DEVICE CONNECTION DETAIL

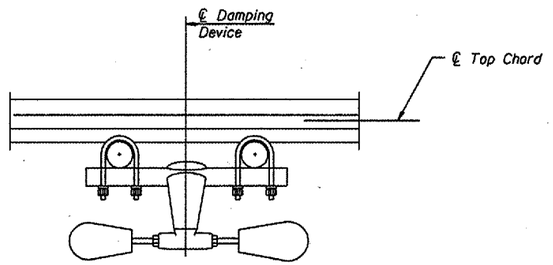


ELEVATION
Aluminum Cantilever Sign Structure

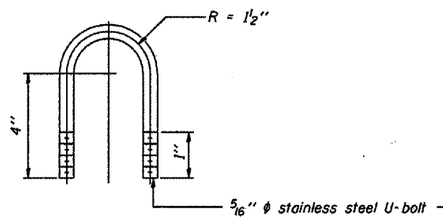
GENERAL NOTES

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

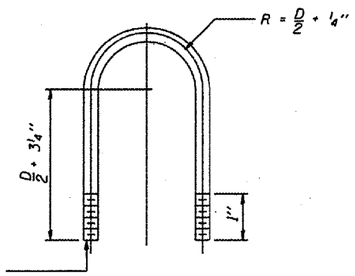
Materials: Aluminum tubes shall be ASTM B221 alloy 6061 temper T6



SECTION A-A



DAMPING DEVICE MOUNTING TUBE U-BOLT DETAIL
(Typical)



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

This detail applies to the following overhead sign structures:
1. 4C072I474L003.41
2. 4C090S116L005.9
3. 4C072U024R022.76

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

OSC-A-D 1-7-05

CANTILEVER SIGN STRUCTURE
DAMPING DEVICE

District 4
Overhead Sign Structure
Repair and Replacement

Illinois Department of Transportation
Division of Highways
IDOT

SOIL BORING LOG

Page 1 of 1

Date 1/19/05

ROUTE VARIOUS ROUTES DESCRIPTION EB I-474 approx 2 mi. west of 474/74 interchange Taz. Co LOGGED BY JAR

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

COUNTY Peoria & Tazewell DRILLING METHOD Hollow Stem Auger HAMMER TYPE AUTO

STRUCT. NO. 4S090I474RS12.7
Station

BORING NO. 18
Station 20+981
Offset 14.80ft Right of CL
Ground Surface Elev. 734.35 ft

Surface Water Elev. ft
Stream Bed Elev. ft

Groundwater Elev.:
First Encounter none ft
Upon Completion none ft
After 24 Hrs. 729.5 ft ▽

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
	3		
	7	2.5	17.9
	7	P	
730.35			
Brown CLAY LOAM	1		
▽-5	3	1.0	20.9
	4	B	
727.85			
Brown, Grey SILTY LOAM	2		
	4	1.3	21.5
	6	B	
725.35			
Brown CLAY LOAM	2		
-10	3	1.7	14.4
	6	B	
722.85			
Brown, Grey CLAY LOAM TILL	3		
	6	1.7	13.1
	8	B	
	1		
-15	4	1.7	13.8
	5	B	
	2		
	3	1.4	14.1
	6	B	
poor recovery (rock)	5		
-20	6	1.4	14.8
Brown, Grey CLAY LOAM TILL (continued)	7	P	
	3		
	5	1.6	13.9
	6	B	
-25	5	1.6	13.8
	6	B	
	2		
	5	1.6	14.1
	6	B	
-30	5	1.2	14.5
	6	B	
703.85			
End of Boring			
-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 1/18/05

ROUTE VARIOUS ROUTES DESCRIPTION EB I-474 approx 2 mi. west of 474/74 interchange Taz. Co LOGGED BY JAR

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

COUNTY Peoria & Tazewell DRILLING METHOD Hollow Stem Auger HAMMER TYPE AUTO

STRUCT. NO. 4S090I474RS12.7
Station

BORING NO. 19
Station 20+988
Offset 72.10ft Right of CL
Ground Surface Elev. 734.85 ft

Surface Water Elev. ft
Stream Bed Elev. ft

Groundwater Elev.:
First Encounter none ft
Upon Completion 715.1 ft ▽
After 24 Hrs. 732.8 ft ▽

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
Brown CLAY LOAM	2		
▽	3	2.3	23.4
	5	B	
730.85			
Brown SANDY CLAY LOAM	1		
-5	1	0.5	27.4
	1	P	
728.35			
Grey CLAY LOAM TILL	3		
	5	3.3	14.7
	9	B	
	2		
-10	5	3.3	13.3
	7	B	
	2		
	4	1.7	14.4
	6	B	
	2		
-15	4	1.7	15.1
	6	B	
	2		
	4	1.6	14.6
	6	B	
	2		
▽-20	4	1.2	10.2
Grey CLAY LOAM TILL (continued)	5	B	
	3		
	4	1.7	14.4
	6	B	
-25	4	1.7	14.4
	6	B	
	3		
	5	1.7	14.4
	6	B	
-30	5	1.5	14.1
	7	B	
704.35			
End of Boring			
-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)

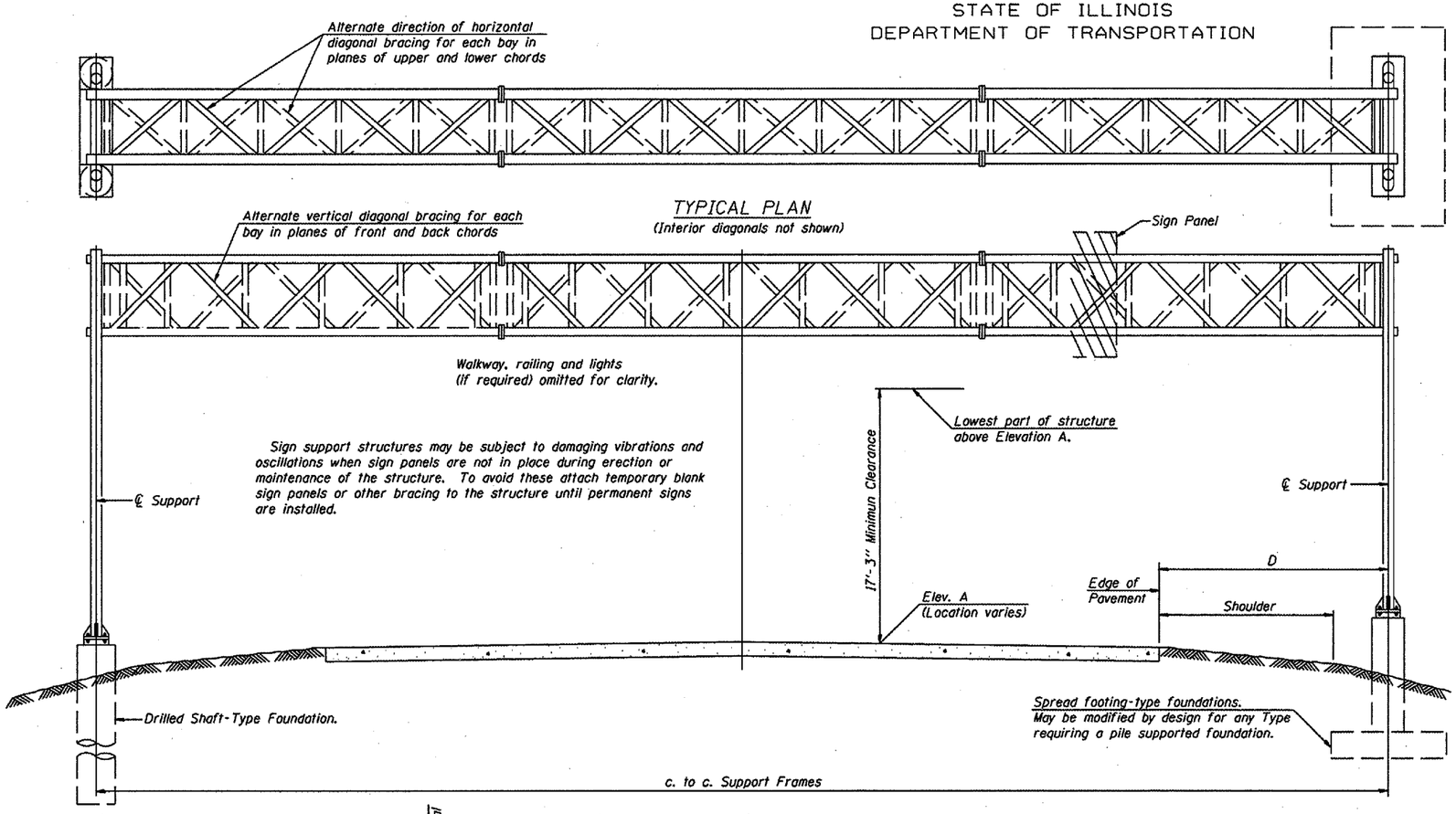
District 5
Schedule of Locations for Overhead Sign Structure Repair and Replacement

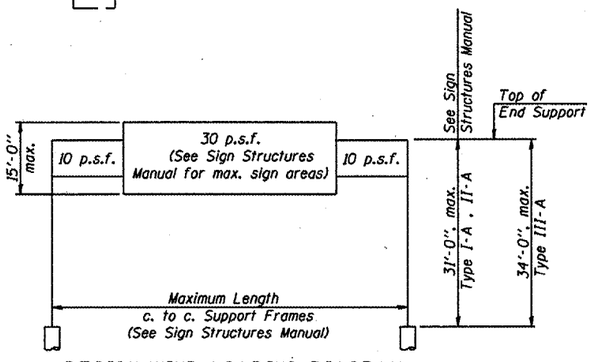
Location No.: 5-01	State I.D. No.: 5S010I072L182.12				
County: Champaign	Route: I - 72	M.P.: 182.12	Direction: WB		
Description of Work				Unit	Quantity
REMOVE OVERHEAD SIGN STRUCTURE-SPAN				EACH	1.00
OVERHEAD SIGN STRUCTURE-SPAN, TYPE I A				FOOT	76.00
DRILLED SHAFT CONCRETE FOUNDATION				CU YD	12.70
REMOVE CONCRETE FOUNDATION-OVERHEAD				EACH	2.00
STRUCTURAL STEEL SUPPORT OVERHEAD SIGN STRUCTURE				EACH	2.00
RELOCATE ELECTRIC SERVICE				EACH	1.00
REMOVE & REINSTALL SIGN PANEL				SQ FT	379.00
REMOVE & REINSTALL WALKWAY				FOOT	61.00
FURNISH & INSTALL SAFETY CHAIN				EACH	2.00
DISCONNECT/RECONNECT ELECTRIC SERVICE				EACH	1.00
Existing design plans are not available for this structure.					

Location No.: 5-02	State I.D. No.: 5S010I057R239.96				
County: Champaign	Route: I - 57	M.P.: 239.96	Direction: NB		
Description of Work				Unit	Quantity
REMOVE OVERHEAD SIGN STRUCTURE-SPAN				EACH	1.00
OVERHEAD SIGN STRUCTURE SPAN, TYPE I A				FOOT	60.33
DRILLED SHAFT CONCRETE FOUNDATION				CU YD	12.00
REMOVE CONCRETE FOUNDATION OVERHEAD				EACH	2.00
REMOVE & REINSTALL SIGN PANEL				SQ FT	276.25
REMOVE & REINSTALL WALKWAY				FOOT	36.50
RELOCATE ELECTRIC SERVICE				EACH	1.00
FURNISH & INSTALL SAFETY CHAIN				EACH	2.00
STRUCTURAL STEEL SUPPORT OVERHEAD SIGN STRUCTURE				EACH	2.00
DISCONNECT/RECONNECT ELECTRIC SERVICE				EACH	1.00

Location No.: 5-03	State I.D. No.: 5S010I074R178.7				
County: Champaign	Route: I - 74	M.P.: 178.7	Direction: EB		
Description of Work				Unit	Quantity
REMOVE OVERHEAD SIGN STRUCTURE-SPAN				EACH	1.00
OVERHEAD SIGN STRUCTURE-SPAN TYPE I A				FOOT	78.00
STRUCTURAL STEEL SUPPORT OVERHEAD SIGN STRUCTURE				EACH	2.00
REMOVE & REINSTALL SIGN PANEL				SQ FT	182.00
OVERHEAD SIGN STRUCTURE WALKWAY (SPECIAL)				FOOT	20.00
FURNISH & INSTALL SAFETY CHAIN				EACH	2.00

Location No.: 5-04	State I.D. No.: 5S092I074R214.0				
County: Vermilion	Route: I - 74	M.P.: 214.00	Direction: EB		
Description of Work				Unit	Quantity
REMOVE OVERHEAD SIGN STRUCTURE-SPAN				EACH	1.00
OVERHEAD SIGN STRUCTURE-SPAN TYPE I A				FOOT	86.00
DRILLED SHAFT CONCRETE FOUNDATION				CU YD	20.40
REMOVE CONCRETE FOUNDATION-OVERHEAD				EACH	2.00
STRUCTURAL STEEL SUPPORT OVERHEAD SIGN STRUCTURE				EACH	2.00
REMOVE & REINSTALL SIGN PANEL				SQ FT	332.50
REMOVE & REINSTALL WALKWAY				FOOT	53.00
RELOCATE ELECTRIC SERVICE				EACH	1.00
CONCRETE REMOVAL (SPECIAL)				SQ YD	108.40
IMPACT ATTENUATORS, RELOCATE (NON-DIRECTIVE) TL 3				EACH	2.00
REPLACE OVERHEAD SIGN WALKWAY				FOOT	16.00
FURNISH & INSTALL SAFETY CHAIN				EACH	2.00
DISCONNECT/RECONNECT ELECTRIC SERVICE				EACH	1.00
This locations will require additional traffic control due to being					
located on a collector distributor route.					





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
5S010I072L182.2*	N/A	I-A	76' - 0"	N/A	N/A	9' - 6"	379.0
5S010I057R239.9	582 + 20	I-A	61' - 0"	771.17	13' - 0"	11' - 6"	276.25
5S010I074R178.7	1824 + 00	I-A	78' - 0"	824.44	32' - 0"	13' - 0"	182.00
5S092I074R214.0	1913 + 00	I-A	86' - 0"	623.26	20' - 0"	11 ' - 6"	332.50

**Looking upstation for structures with signs both sides.
* Existing overhead sign structure details not available.

GENERAL NOTES

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

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

LOADING: 90 M.P.H. WIND VELOCITY

WIND LOADING: 30 p.s.f. normal to Sign Panel Area and truss elements not behind sign Loading Diagram.

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

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

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

MATERIALS: Aluminum Alloys as shown throughout plans. All Structural Steel Pipe shall be ASTM A53 Grade B with a minimum yield of 35,000 p.s.i., or A500 Grade B or C with a minimum yield of 46,000 p.s.i. If A500 pipe is substituted for A53, then the outside diameter shall be as detailed and wall thickness greater than or equal to A53.
All Structural Steel Plates and Shapes shall conform to AASHTO M270 Gr. 36, Gr. 50 or Gr. 50W*. Stainless steel for shims, sleeves and handhole covers shall be ASTM A240, Type 302 or 304, or another alloy suitable for exterior exposure and acceptable to the Engineer.
The steel pipe and stiffening ribs at the base plate for the column shall have a minimum longitudinal Charpy V-Notch (CVN) energy of 15 lb.-ft. at 40° F. (Zone 2) before galvanizing.

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

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

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

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

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

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

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

TOTAL BILL OF MATERIAL

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

NUMBER	REVISION	DATE

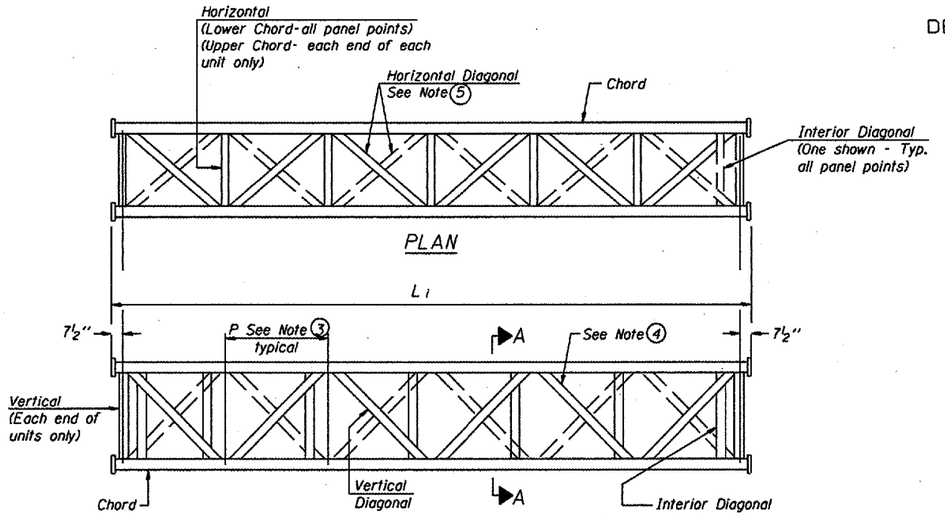
DESIGNED	-
CHECKED	-
DRAWN	-
CHECKED	-

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

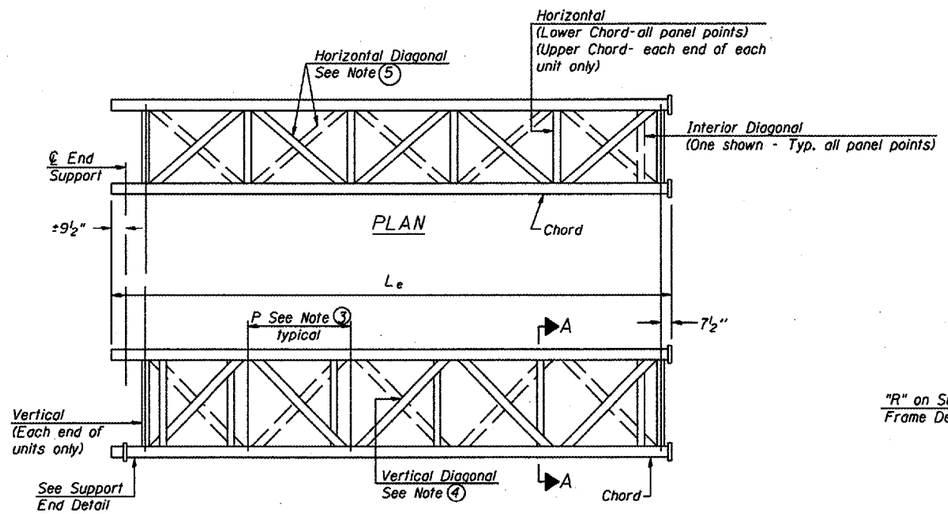
OS-A-1 1-7-05

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

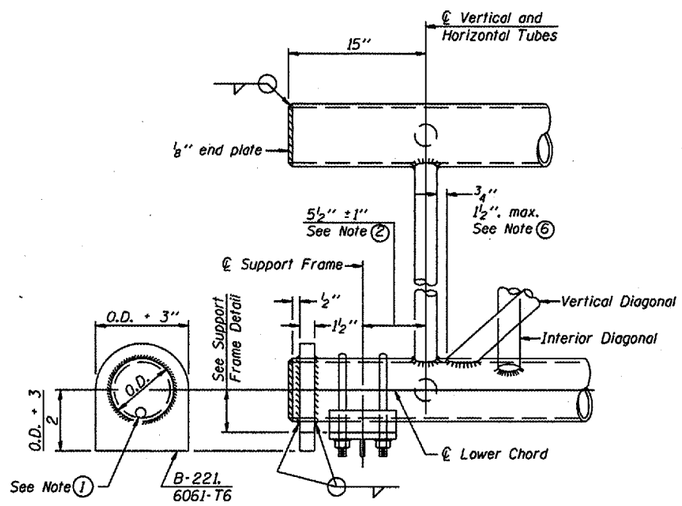
District 5
Overhead Sign Structure
Repair and Replacement



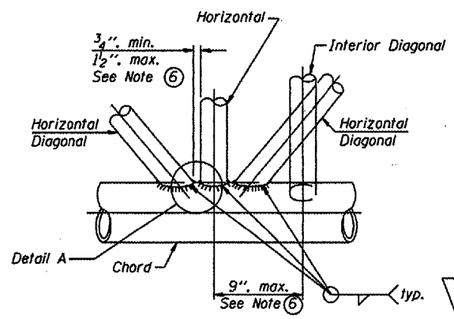
ELEVATION
TYPICAL INTERIOR UNIT
Even number of panels/interior unit required.

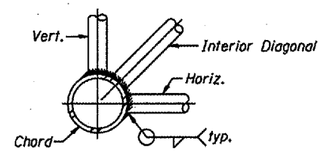


ELEVATION
TYPICAL EXTERIOR UNIT
Even or odd number of panels/exterior units allowed.

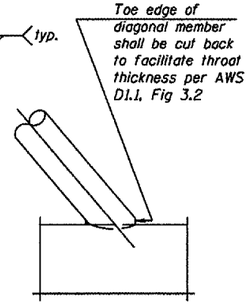


SUPPORT END DETAIL FOR EXTERIOR UNIT

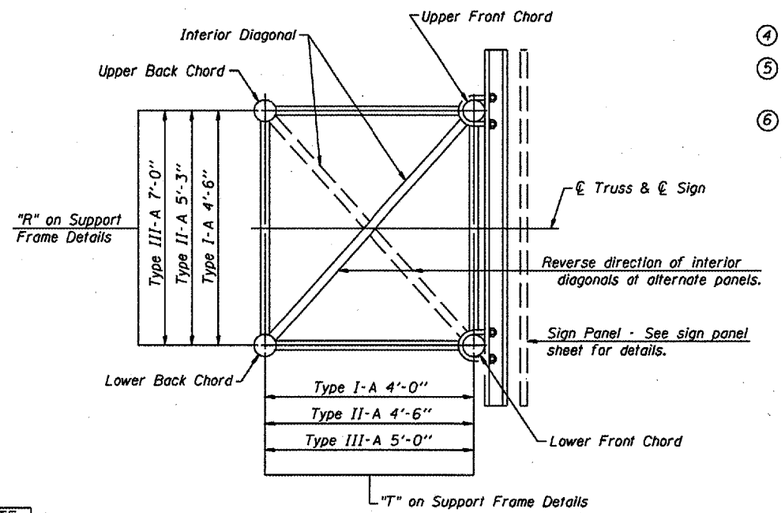




TYPICAL JOINT DETAILS



DETAIL A



SECTION A-A

NOTES

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

DESIGNED	-
CHECKED	-
DRAWN	-
CHECKED	-

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

NUMBER	REVISION	DATE

OS-A-2 1-7-05

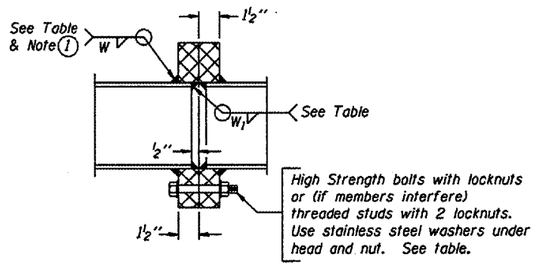
OVERHEAD SIGN STRUCTURES
ALUMINUM TRUSS DETAILS
FOR TRUSS TYPES I-A, II-A and III-A

District 5
Overhead Sign Structure
Repair and Replacement

TRUSS UNIT TABLE

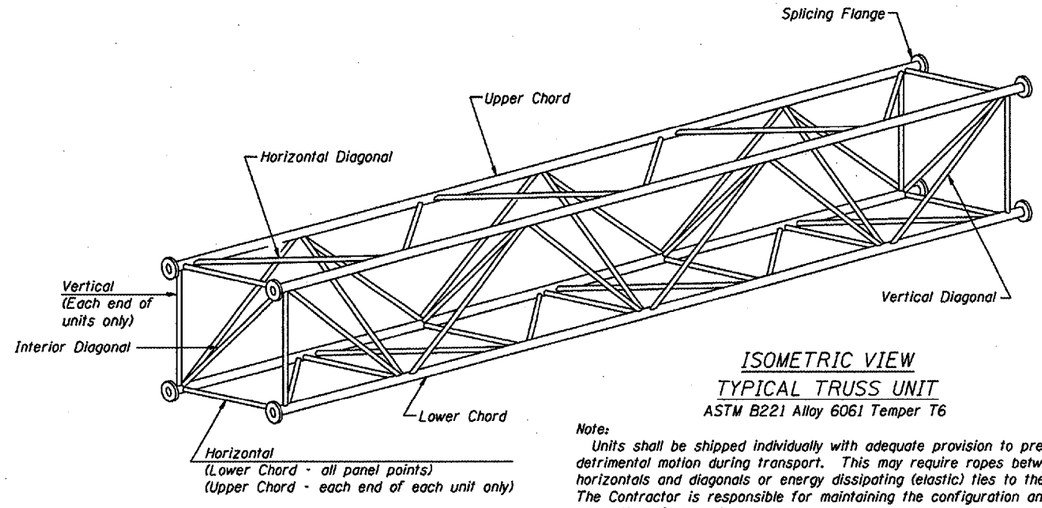
Structure Number	Station	Design Truss Type	Exterior Units (2)			Interior Unit				Upper & Lower Chord		Verticals; Horizontals; Vertical, Horizontal, and Interior Diagonals		Camber at Midspan	Splicing Flange					
			No. Panels per Unit	Unit Lgth.(L_e)	Panel Lgth.(P)	No. Req'd.	No. Panels per Unit	Unit Lgth.(L_i)	Panel Lgth.(P)	O.D.	Wall	O.D.	Wall		Bolts		Weld Sizes		A	B
															No./Splice	Dia.	W	W_1		
5S0101072L182.2 *	N/A	I-A	8	38'-10 1/2"	4'-7 1/2"					5"	5/16"	2 1/2"	5/16"	2"	6	7/8"	5/16"	1/4"	8 3/4"	11 3/4"
5S0101057R239.9	582 + 20	I-A	6	31'-4 1/2"	4'-11"					5"	1/4"	2 1/2"	1/4"	1 1/2"	6	7/8"	5/16"	1/4"	8 3/4"	11 3/4"
5S0101074R178.7	1824 + 00	I-A	8	39'-10 1/2"	4'-9"					5"	5/16"	2 1/2"	5/16"	2"	6	7/8"	5/16"	1/4"	8 3/4"	11 3/4"
5S0921074R214.0	1913 + 00	I-A	6	29'-4 1/2"	4'-7"	1	6	28' - 9"	4' - 7"	5"	5/16"	2 1/2"	5/16"	2 1/2"	6	7/8"	5/16"	1/4"	8 3/4"	11 3/4"

* Existing overhead sign structure details not available.



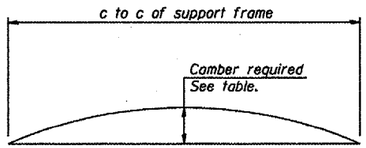
SECTION B-B

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



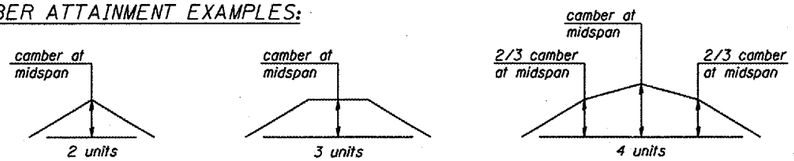
ISOMETRIC VIEW
TYPICAL TRUSS UNIT
ASTM B221 Alloy 6061 Temper T6

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

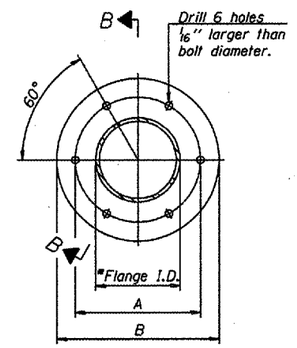


CAMBER DIAGRAM
Camber curve shown is theoretical. Actual camber attained by slope changes at splices between units.

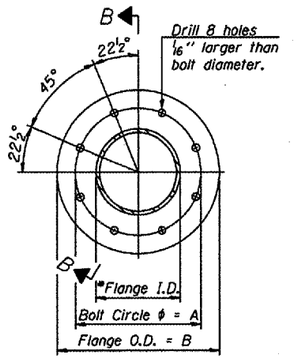
CAMBER ATTAINMENT EXAMPLES:



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



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



TRUSS TYPES II-A & III-A

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

NUMBER	REVISION	DATE

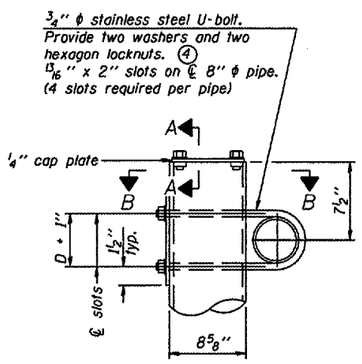
DESIGNED -	
CHECKED -	
DRAWN -	
CHECKED -	

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

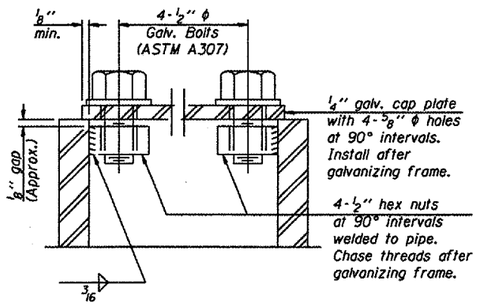
OS4-A-2 1-7-05

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

District 5
Overhead Sign Structure
Repair and Replacement

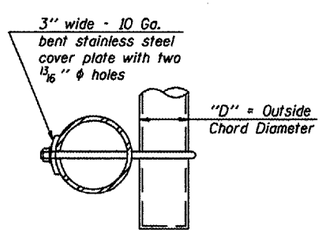


DETAIL A

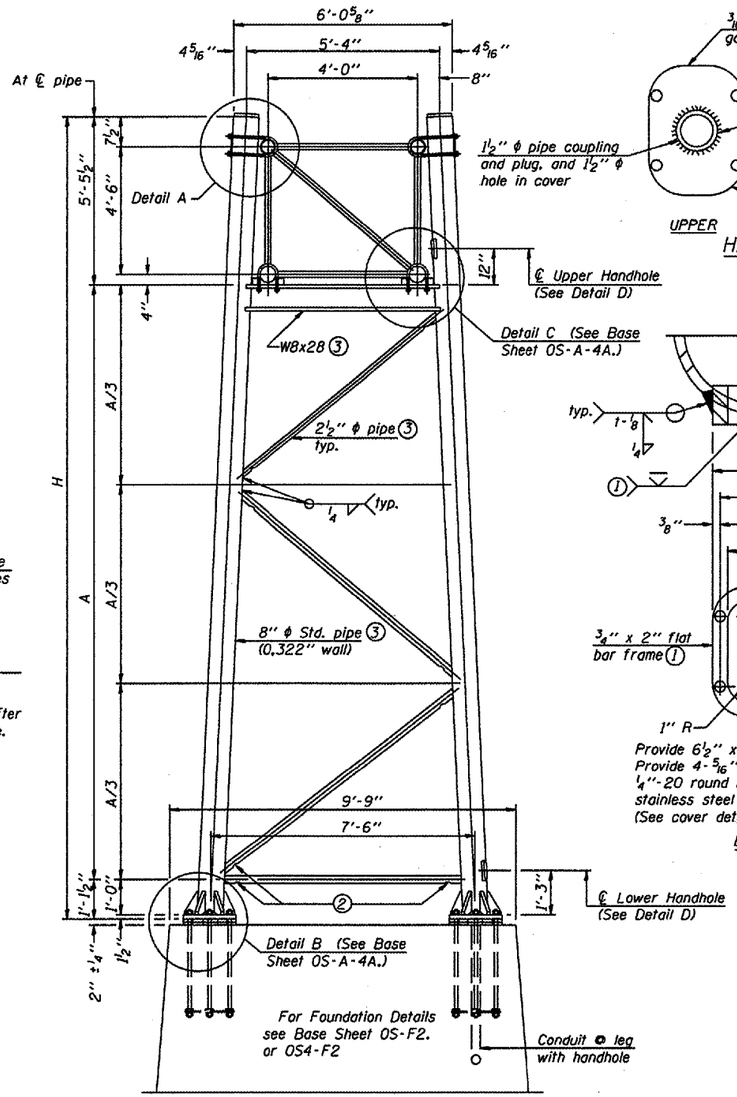


SECTION A-A

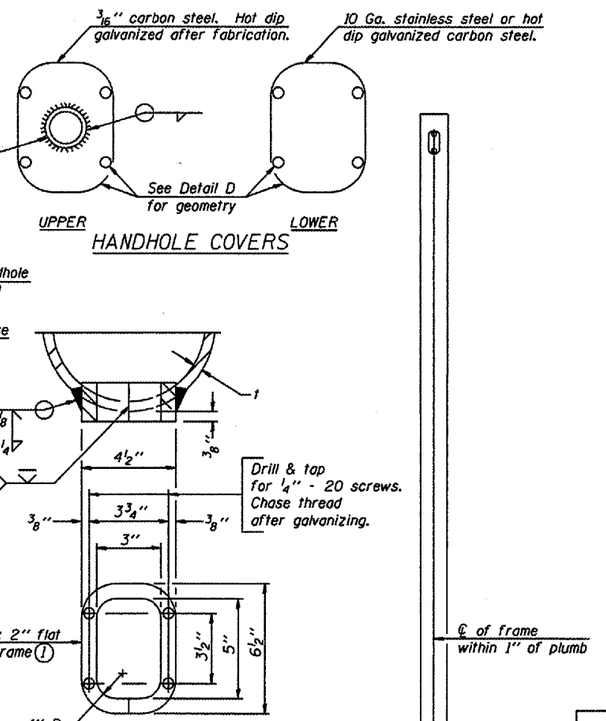
As an alternate to bolts, may use galvanized drive-fit caps installed after galvanizing frame.



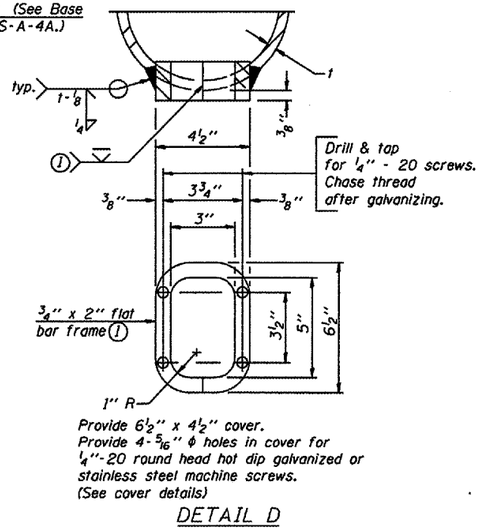
SECTION B-B



SIDE ELEVATION

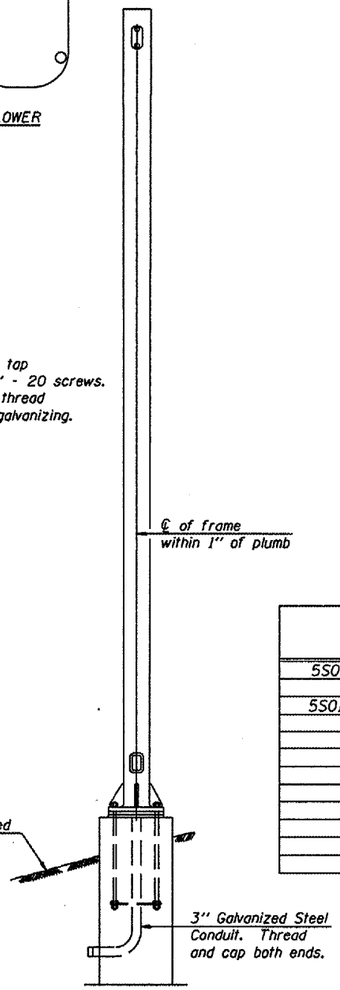


HANDHOLE COVERS



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

DETAIL D



END ELEVATION

Support Design Loads: See Base Sheet OS-A-1 for design and loading criteria.
Load combinations checked include deadload plus:
a) 100% wind normal to sign, 20% parallel to sign
b) 60% wind normal to sign, 30% parallel to sign

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

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

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

(4) See General Notes for fasteners.

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

Structure Number	Station	Support		H	A
		Left	Right		
5S0101072L182.2 *	N/A	X	X	26'-2 1/2"	19'-7 1/2"
5S0101057R239.9	582 + 20	X	X	24' - 6"	17' - 11"

* Existing overhead sign structure details not available.

8" ϕ PIPE TRUSS SUPPORT FRAME

NUMBER	REVISION	DATE

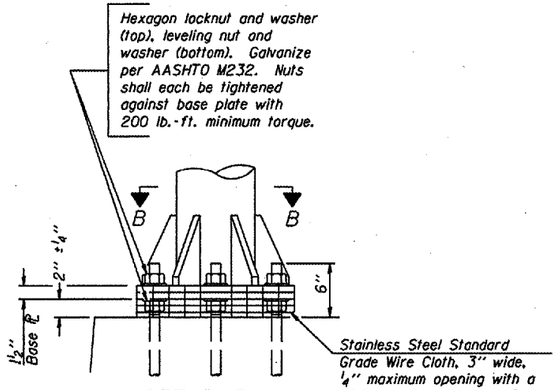
DESIGNED -
CHECKED -
DRAWN -
CHECKED -

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

OS-A-4 1-7-05

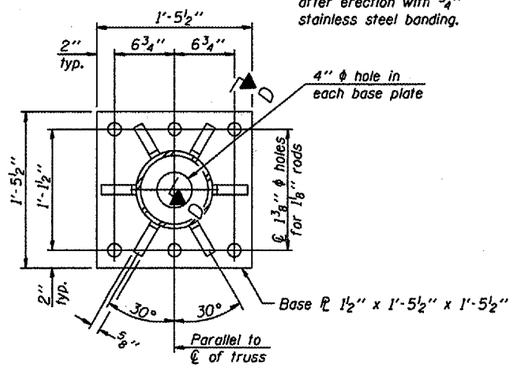
OVERHEAD SIGN STRUCTURES
SUPPORT FRAME for TYPE I-A ALUMINUM TRUSS

District 5
Overhead Sign Structure
Repair and Replacement

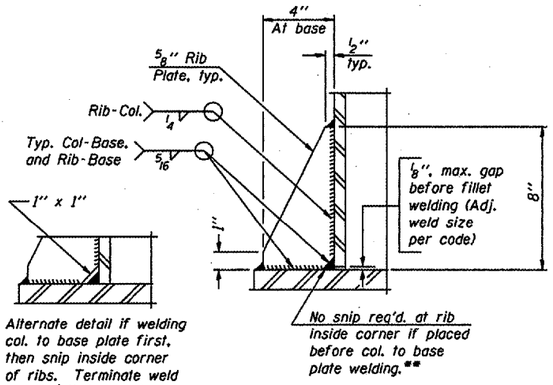


DETAIL B

Ribs shall be cut to fit slope of pipe.

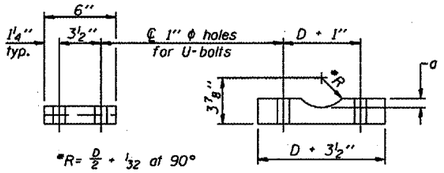


SECTION B-B



** 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



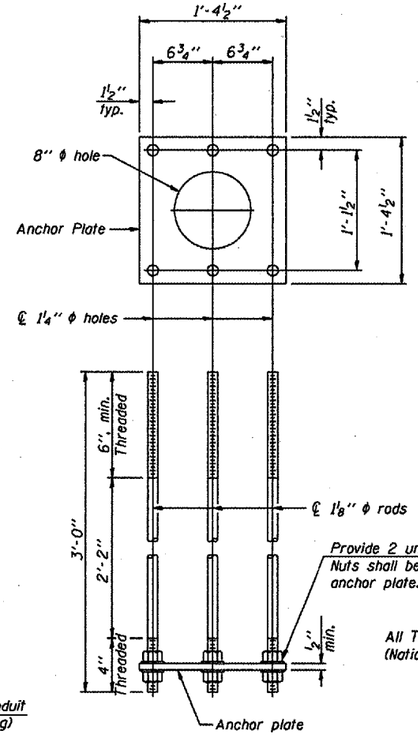
*R = D/2 + 1/32 at 90°

D = Outside Diameter of Chord.

SADDLE SHIM DETAIL

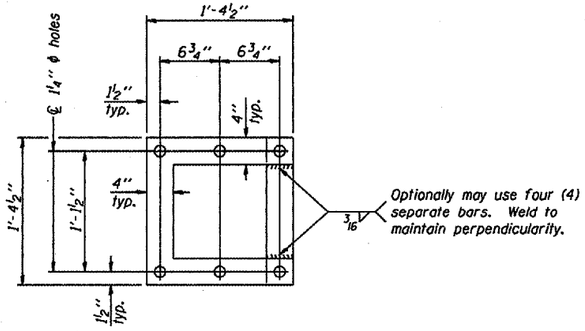
ASTM B26 Alloy 356-F
or
ASTM B209 Alloy 6061-T651
(4 required per sign truss)

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

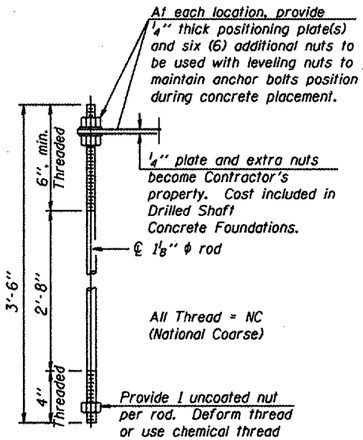


ANCHOR ROD DETAIL

Spread Footing Foundation



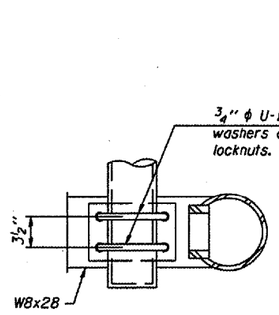
POSITIONING PLATE(S)



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

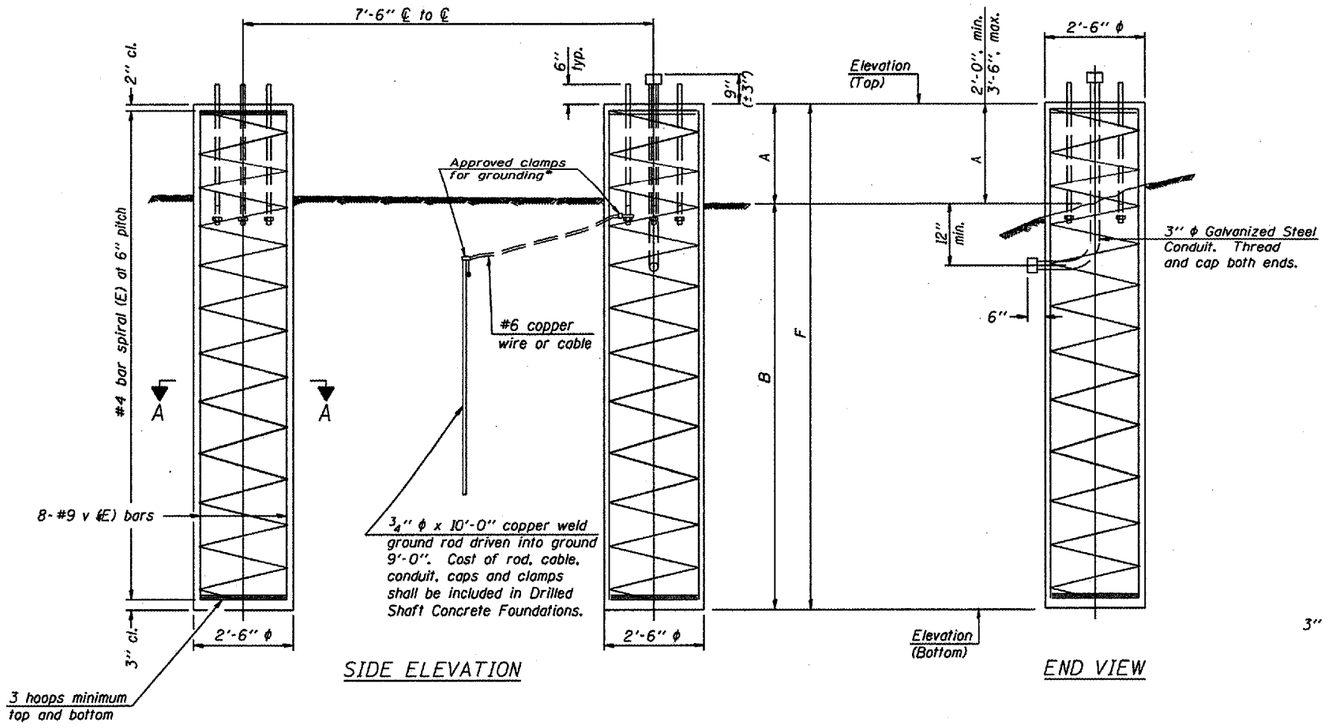
OS-A-4A 1-7-05

OVERHEAD SIGN STRUCTURES
SUPPORT FRAME DETAILS ALUMINUM TRUSS

District 5
Overhead Sign Structure
Repair and Replacement

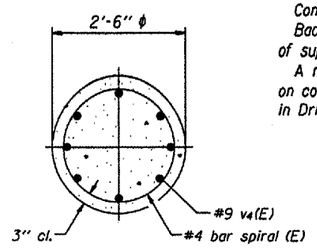
For anchor rod size and placement, see Support Frame Detail Sheet.

* 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.

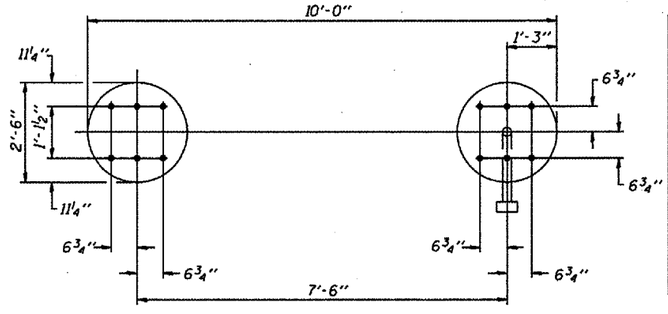
No sonotubes or decomposable forms shall be used below the lower conduit entrance.

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	
5S0101072L182.2	N/A	N/A		3' - 0"	14' - 6"	17' - 6"	N/A		3' - 0"	14' - 6"	17' - 6"	12.70
5S0101057R239.9	582 + 20	773.87 *		3' - 0"	13' - 6"	16' - 6"	773.87		3' - 0"	13' - 6"	16' - 6"	12.00

*Elevations were taken from existing sign structure details.

The Contractor shall be responsible for staking and laying out the new concrete foundations.

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

DESIGNED	-
CHECKED	-
DRAWN	-
CHECKED	-

- 20

EXAMINED

ENGINEER OF BRIDGE DESIGN

PASSED

ENGINEER OF BRIDGES AND STRUCTURES

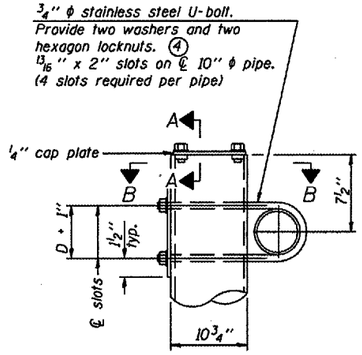
NUMBER	REVISION	DATE

OVERHEAD SIGN STRUCTURES
DRILLED SHAFT DETAILS

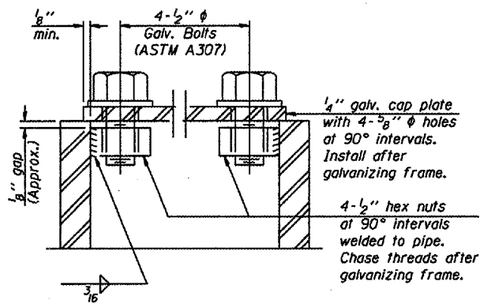
District 5
Overhead Sign Structure
Repair and Replacement

OS4-F2 1-7-05

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

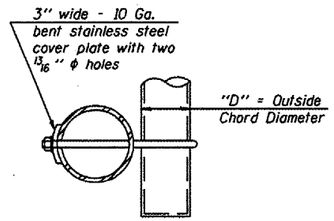


DETAIL A

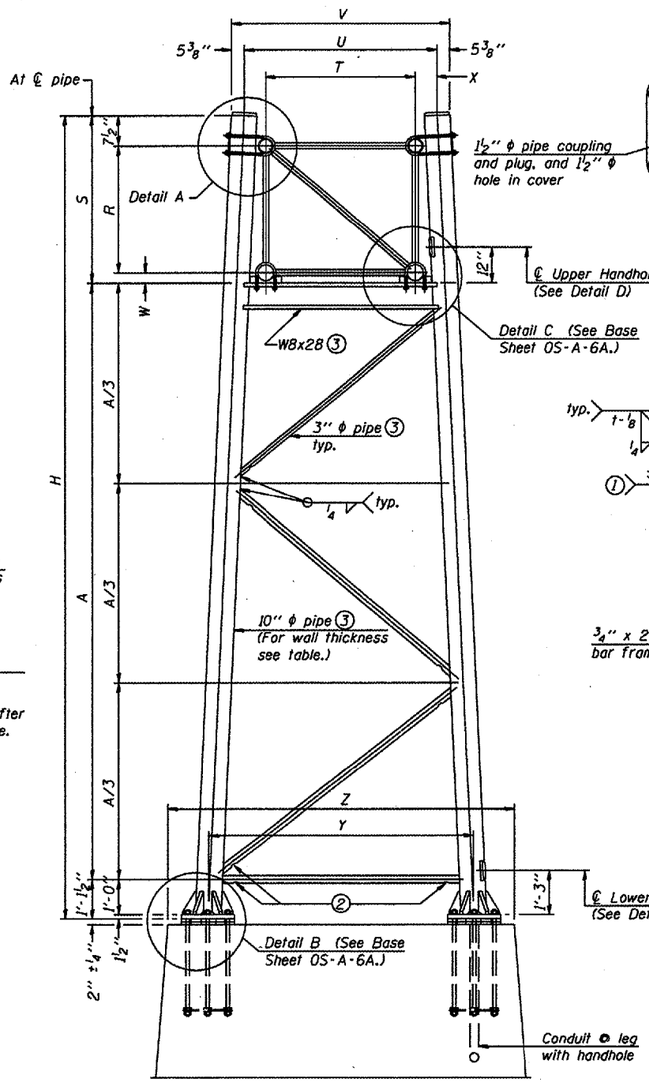


SECTION A-A

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

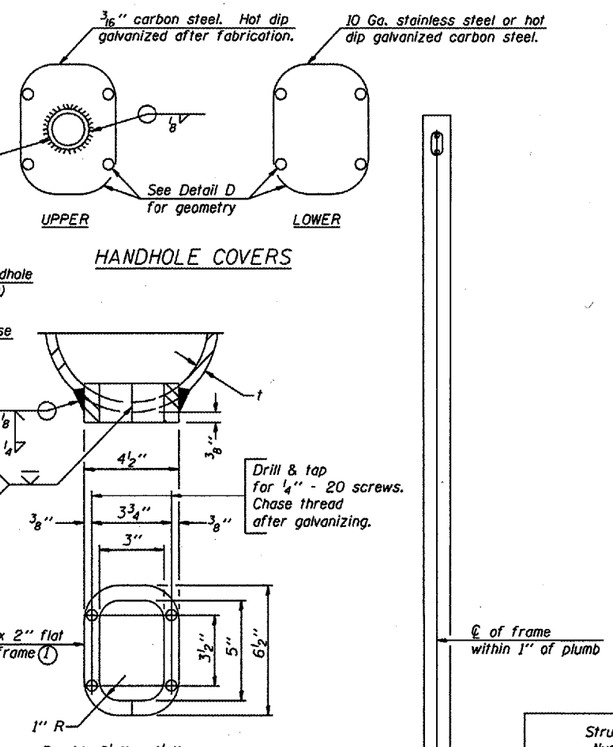


SECTION B-B



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

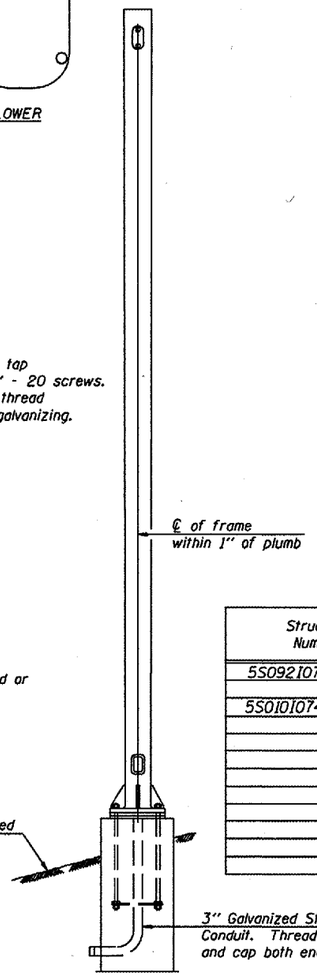
SIDE ELEVATION



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.

Structure Number	Station	Support		Truss Type	Pipe Wall Thickness	H	A
		Left	Right				
5S092I074R214.0	1913 + 00	X	X	I-A	0.279	28'-6"	21'-11"
5S0101074R178.7*	1824 + 00	X	X	I-A	0.279	27'-1 3/4"	21'-0 3/4"

* End supports to be installed on existing concrete foundations.

10" ϕ PIPE TRUSS SUPPORT FRAME

Truss Type	Dimensions								
	R	S	T	U	V	W	X	Y	Z
I-A	4'-6"	5'-5 1/2"	4'-0"	5'-6"	6'-4 3/4"	4"	9"	8'-3"	10'-9"
II-A (5)	5'-3"	6'-3 1/4"	4'-6"	6'-1"	6'-11 3/4"	4 3/4"	9 1/2"	8'-3"	10'-9"

NUMBER	REVISION	DATE

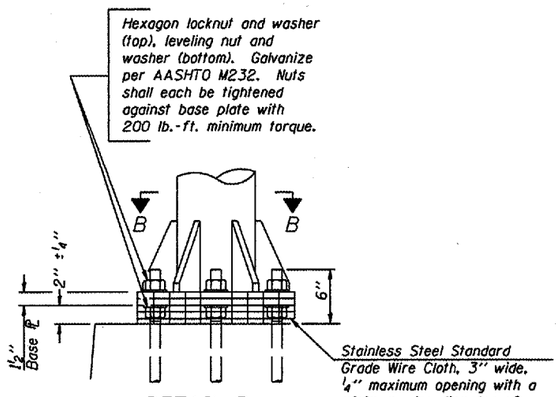
DESIGNED -	
CHECKED -	
DRAWN -	
CHECKED -	

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

OS-A-6 1-7-05

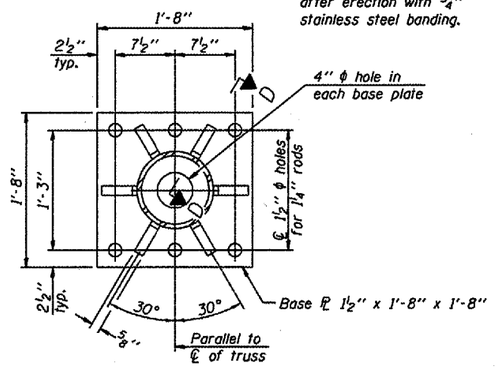
OVERHEAD SIGN STRUCTURES
SUPPORT FRAME for ALUMINUM TRUSS

District 5
Overhead Sign Structure
Repair and Replacement

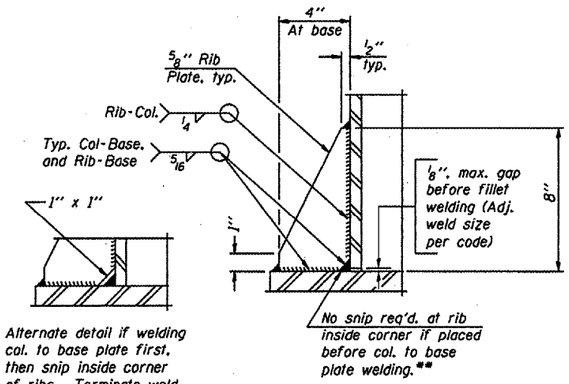


DETAIL B

Ribs shall be cut to fit slope of pipe.

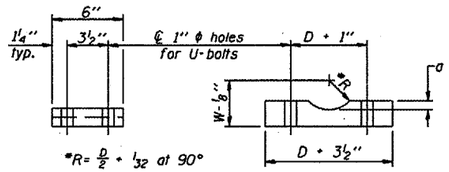


SECTION B-B



** 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



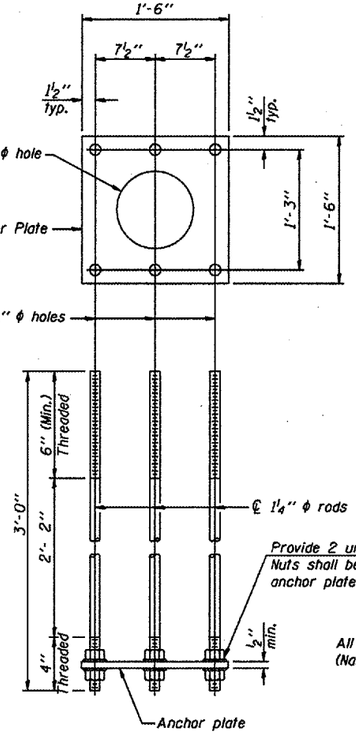
*R= $\frac{D}{2}$ + $\frac{1}{32}$ at 90°

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

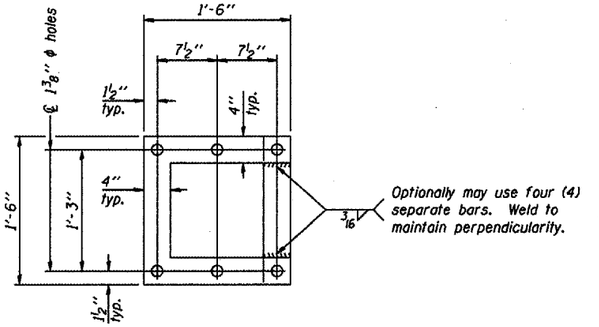
SADDLE SHIM DETAIL

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

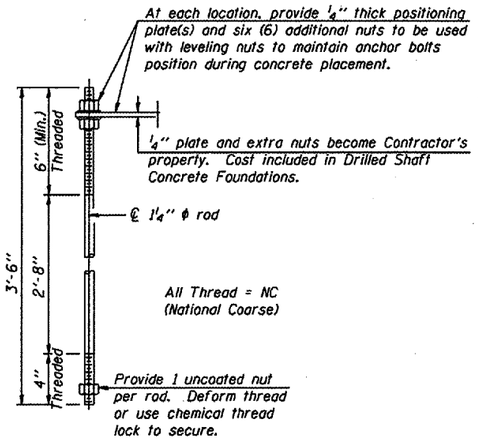
Truss Chord Nominal Dia.	a
5"	¾"
5½"	13/16"
6"	⅞"
6½"	15/16"
7"	1"



ANCHOR ROD DETAIL
Spread Footing Foundation



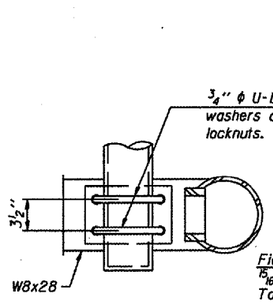
POSITIONING PLATE(S)



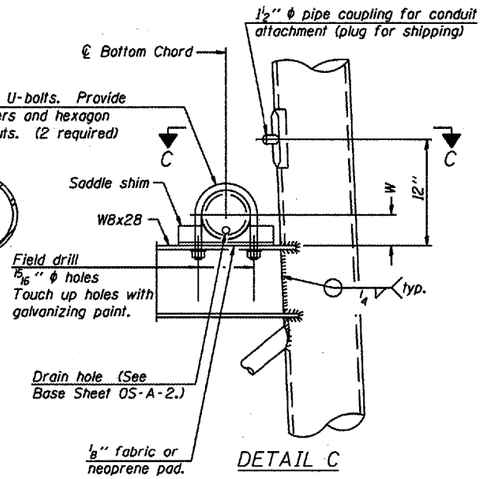
ANCHOR ROD DETAIL
Drilled Shaft Foundation

Anchor Rod Details apply to Structure No. 5S0921074R214.0 Only.

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

NOTES: Structure No. 5S0101074R178.7

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

NUMBER	REVISION	DATE

DESIGNED	-
CHECKED	-
DRAWN	-
CHECKED	-

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

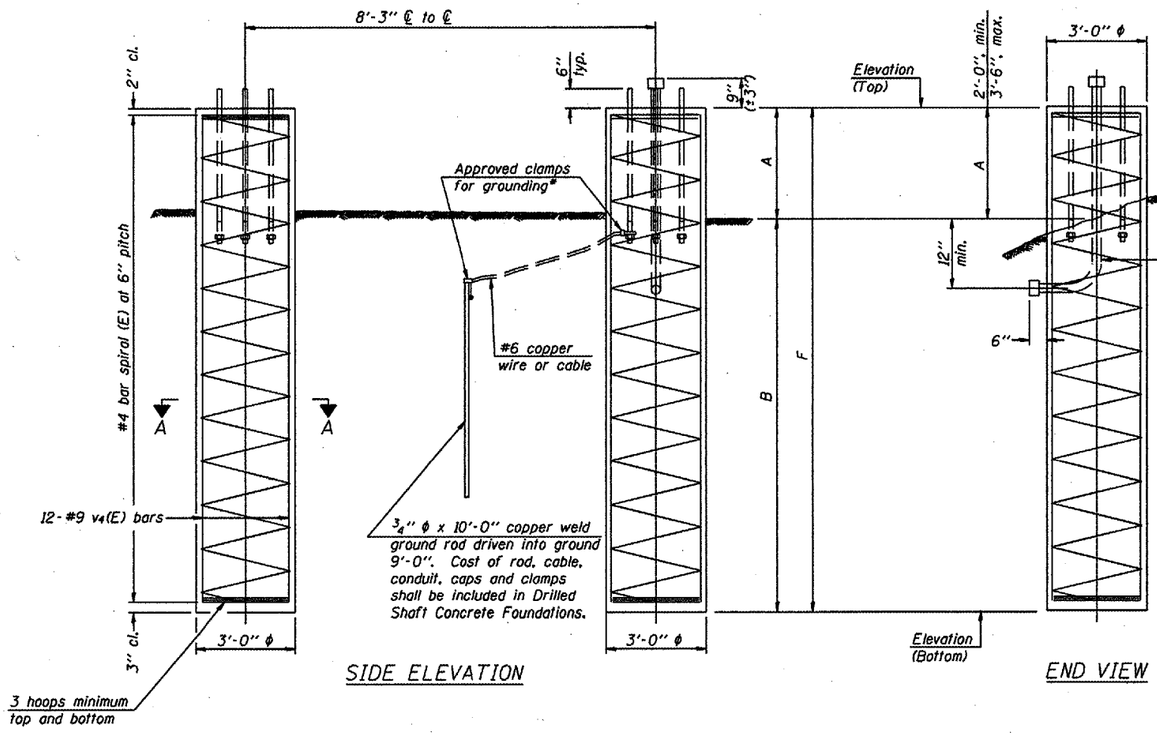
OS-A-6A 1-7-05

OVERHEAD SIGN STRUCTURES
SUPPORT FRAME DETAILS ALUMINUM TRUSS

District 5
Overhead Sign Structure
Repair and Replacement

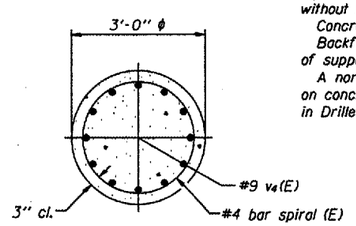
For anchor rod size and placement, see Support Frame Detail Sheet.

* 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.

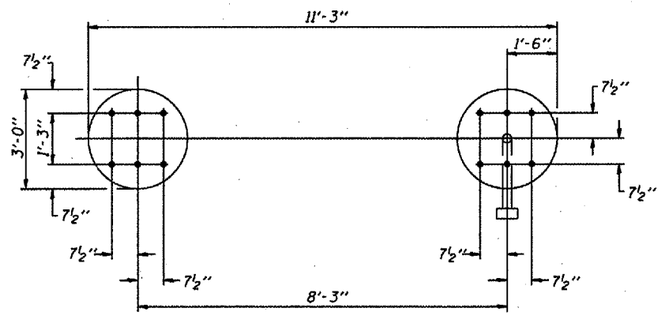
No sonotubes or decomposable forms shall be used below the lower conduit entrance.

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	
5S0921074R214.0	1913 + 00	621.97 *		3' - 0"	16' - 6"	19' - 6"	621.97		3' - 0"	16' - 6"	19' - 6"	20.40

* Elevations were taken from existing sign structure details.

The Contractor shall be responsible for staking and laying out the new concrete foundations.

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

DESIGNED -	
CHECKED -	
DRAWN -	
CHECKED -	

- 20

EXAMINED

ENGINEER OF BRIDGE DESIGN

PASSED

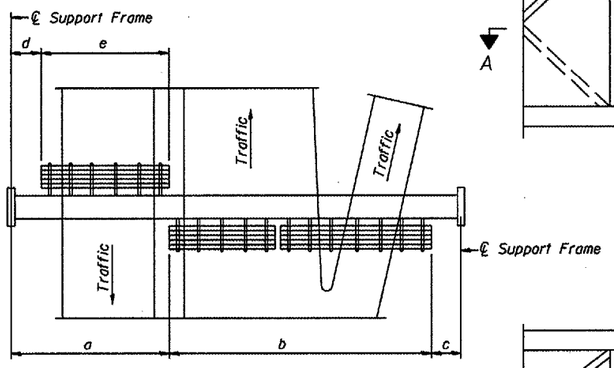
ENGINEER OF BRIDGES AND STRUCTURES

NUMBER	REVISION	DATE

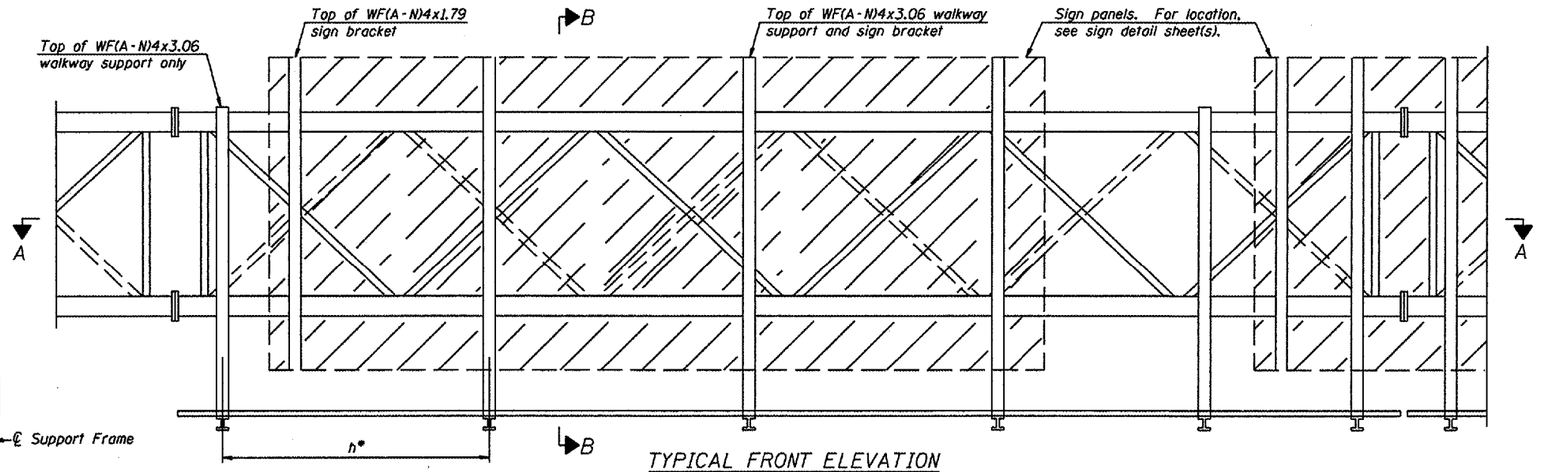
OS4-F3 1-7-05

OVERHEAD SIGN STRUCTURES
DRILLED SHAFT DETAILS

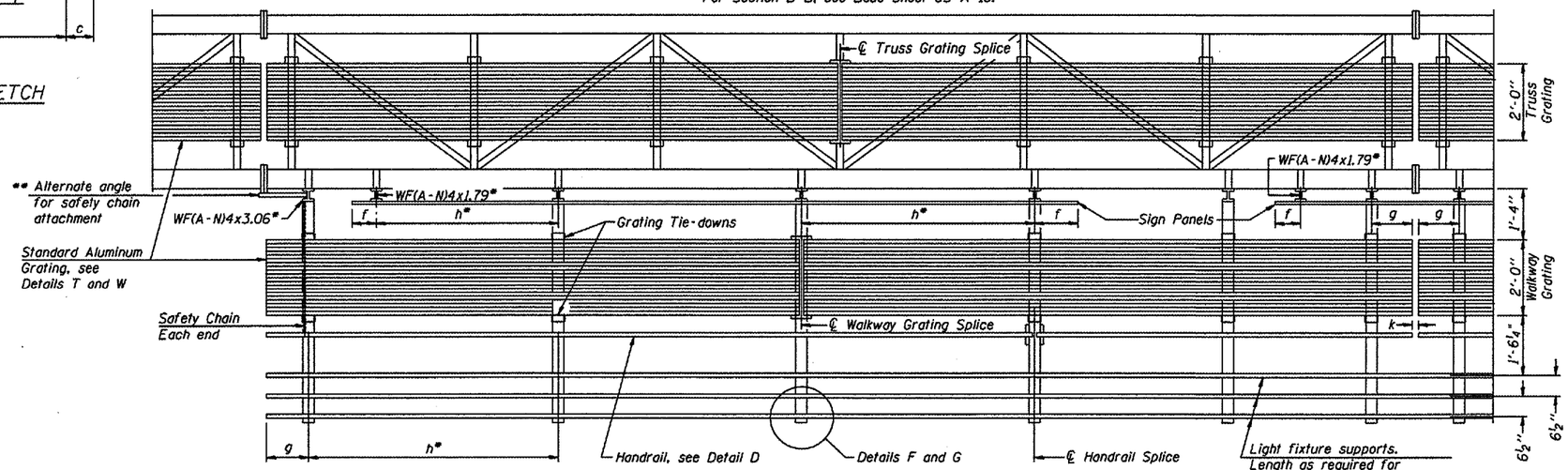
District 5
Overhead Sign Structure
Repair and Replacement



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



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



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

BRACKET TABLE

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

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

Notes:

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

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

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

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

SECTION A-A

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

Structure Number	Station	a	b	c	d I-A	e	Walkway Grating and Handrail Lengths
5S0101072L182.2	N/A	N/A	N/A	N/A	N/A	N/A	77' - 9" *
5S0101057R239.9	582 + 20	N/A	N/A	N/A	N/A	N/A	62' - 9" *
5S0101074R178.7	1824 + 00	N/A	20' - 0"	30' - 0"	N/A	N/A	79' - 9" *
5S0921074R214.0	1913 + 00	N/A	16' - 0"	N/A	N/A	N/A	87' - 6" *

*Length shown is for internal truss grating to be installed.
Structure No. 5S0101074R178.7 includes the installation of walkway, walkway support brackets, handrail and light support channels.
Structure No. 5S0101074R178.7 includes the replacement of walkway, walkway support brackets, handrail and light support channels.

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	-

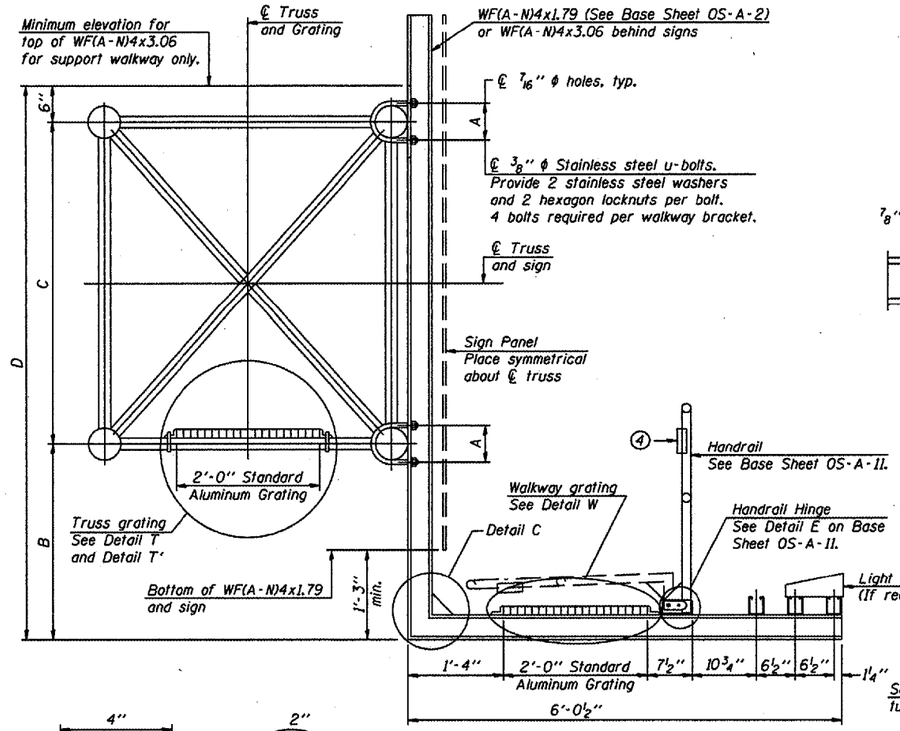
- 20
EXAMINED
ENGINEER OF BRIDGE DESIGN
PASSED
ENGINEER OF BRIDGES AND STRUCTURES

NUMBER	REVISION	DATE

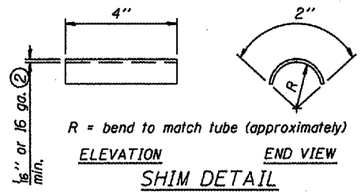
OVERHEAD SIGN STRUCTURES
ALUMINUM WALKWAY DETAILS

District 5
Overhead Sign Structure
Repair and Replacement

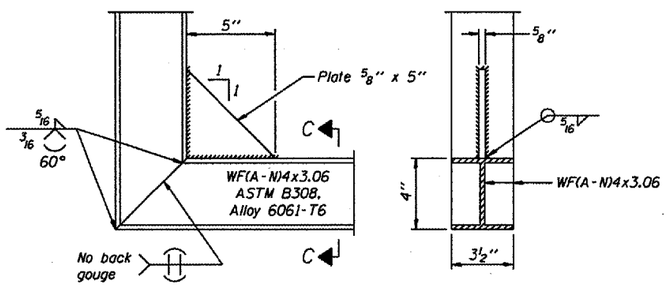
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



SECTION B-B

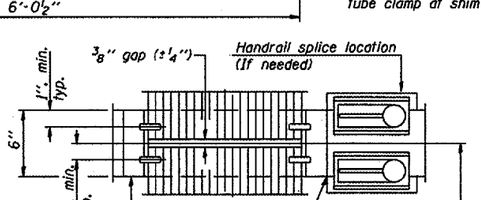


SHIM DETAIL

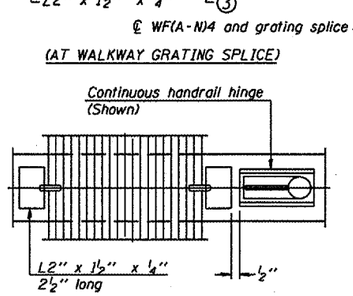


DETAIL C
(See Detail P, Base Sheet OS-A-11.)

SECTION C-C

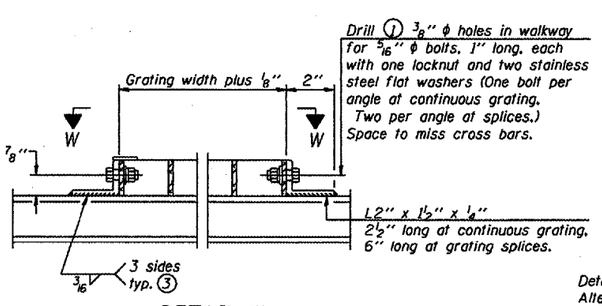


(AT WALKWAY GRATING SPLICE)

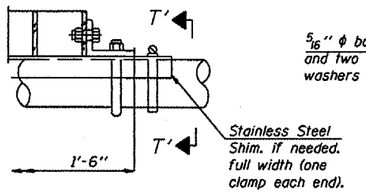


(CONTINUOUS WALKWAY GRATING)

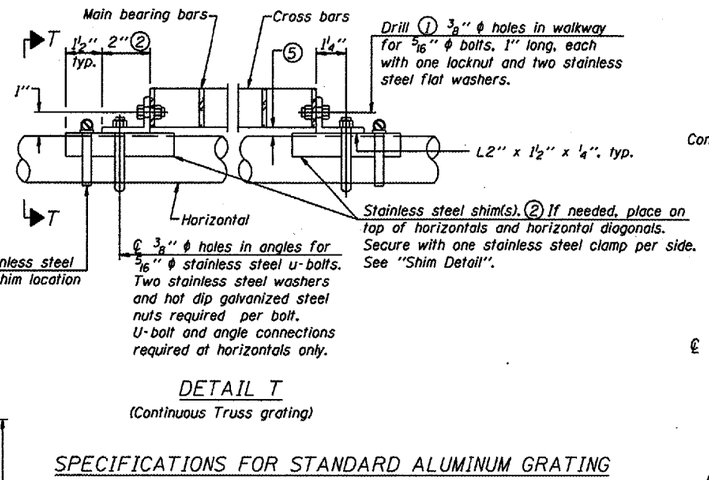
SECTION W-W



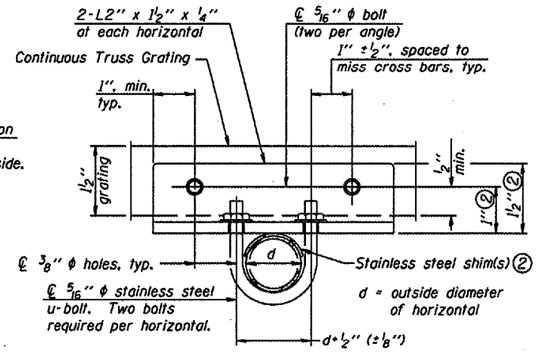
DETAIL W
(Walkway grating)



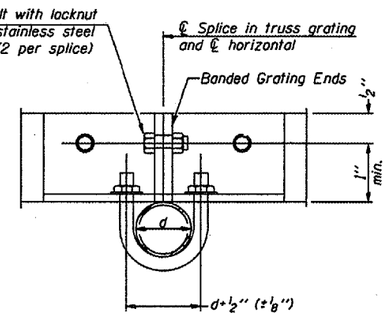
DETAIL T'
(Truss grating splice)
Details not shown same as Detail T. Alternate materials may be used subject to the Engineer's review and approval.



DETAIL T
(Continuous Truss grating)



SECTION T-T



SECTION T'-T'

SPECIFICATIONS FOR STANDARD ALUMINUM GRATING

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

OR

Aluminum Grating with modified "t" sections for main bearing bars shall meet the following requirements:
Main bars shall conform to ASTM B221 Alloy 6061-T6 and have a minimum section modulus equal to 0.0705 in.^{3} per bar, a depth of 1 1/2", spaced on 1 3/16" centers.
Cross bars shall conform to ASTM B221 Alloy 6063-T5 or T-42 and spaced on 4" centers.

Structure Number	Station	A	B	C	D
5S0101074R178.7 *	1824+00	5 3/8"	5' - 6"	4' - 6"	14' - 3"
5S0921074R214.0 *	1913+00	5 3/8"	3' - 5"	5' - 3"	10' - 9"

* The Contractor shall field verify the dimensions for all walkway support brackets.

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

DESIGNED	-
CHECKED	-
DRAWN	-
CHECKED	-

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

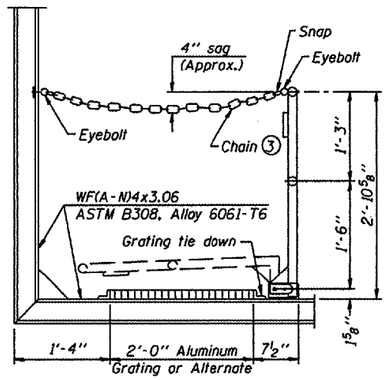
NUMBER	REVISION	DATE

OS-A-10 1-7-05

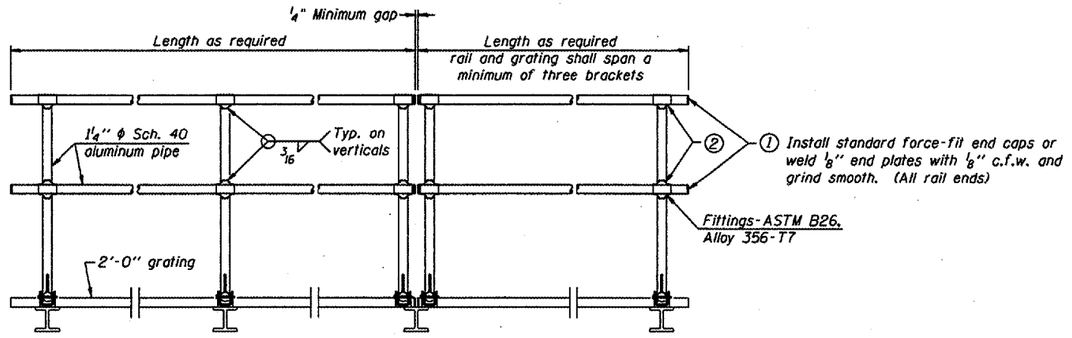
OVERHEAD SIGN STRUCTURES
ALUMINUM WALKWAY DETAILS

District 5
Overhead Sign Structure
Repair and Replacement

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



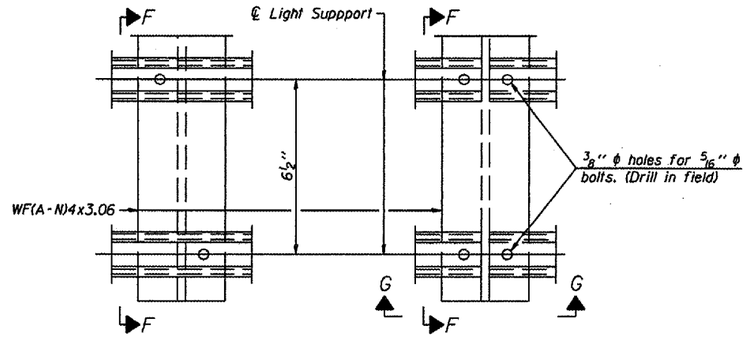
SIDE ELEVATION
(Showing safety chain w/o sign)



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.)

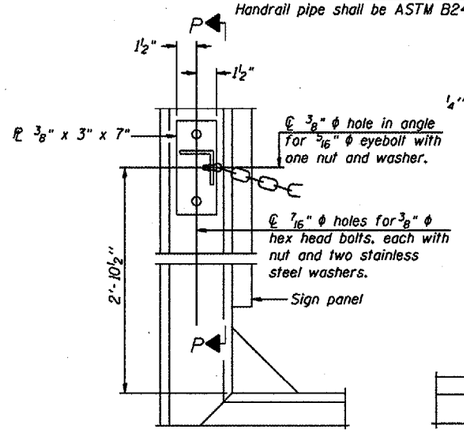


DETAIL F

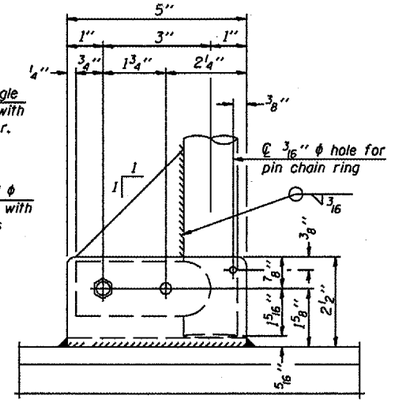
DETAIL G

HANDRAIL DETAILS

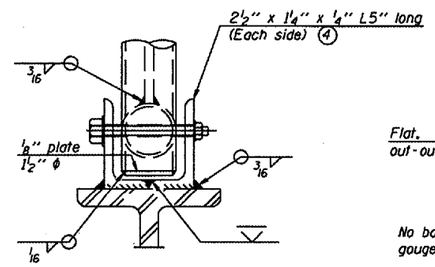
Handrail pipe shall be ASTM B241, Alloy 6063-T6 or Alloy 6061-T6.



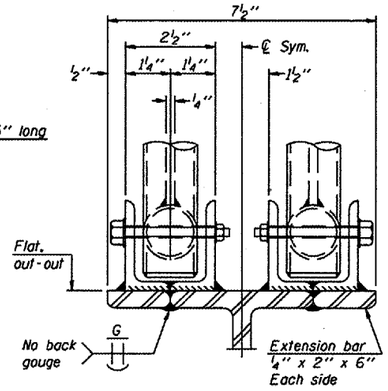
ALTERNATE SAFETY CHAIN ATTACHMENT
(With Sign Present)
Items not shown same as "Side Elevation" of "Handrail Details"



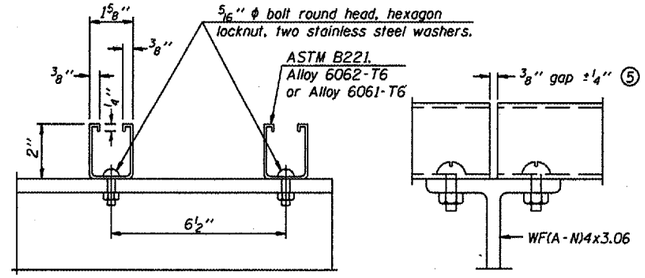
SIDE ELEVATION



FRONT ELEVATION
See "Elevation" at right for dimensions.



ELEVATION AT HANDRAIL JOINT (4)

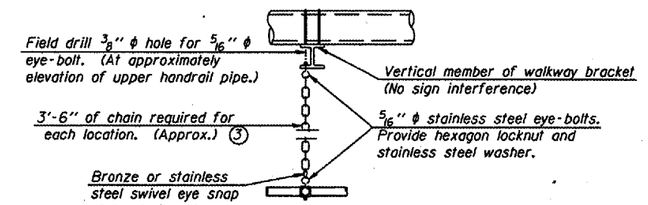


SECTION F-F

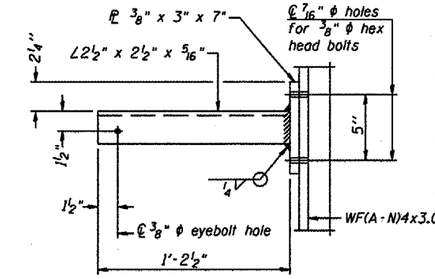
SECTION G-G

LIGHTING FIXTURE MOUNTS (IF REQUIRED)

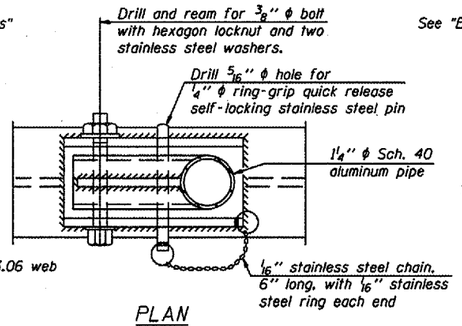
(5) Field cut ends of light support channels shall be free of burrs or hazardous projections and coated with zinc-rich primer or equivalent.



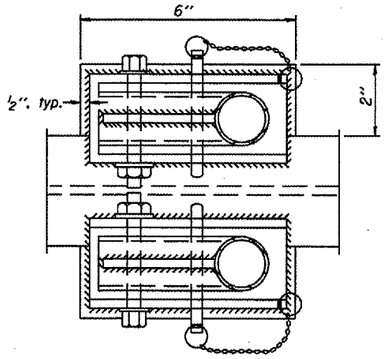
SAFETY CHAIN
One required for each end of each walkway.



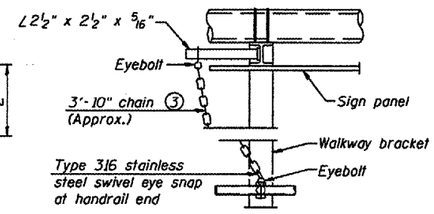
SECTION P-P



PLAN
DETAIL E HANDRAIL HINGE



PLAN AT HANDRAIL JOINT
Details not shown same as "PLAN"



ALTERNATE SAFETY CHAIN ATTACHMENT
Details not shown similar to "Safety Chain" Details
(Walkway omitted for clarity)

(3) 3/16 " Type 304L or 316L 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

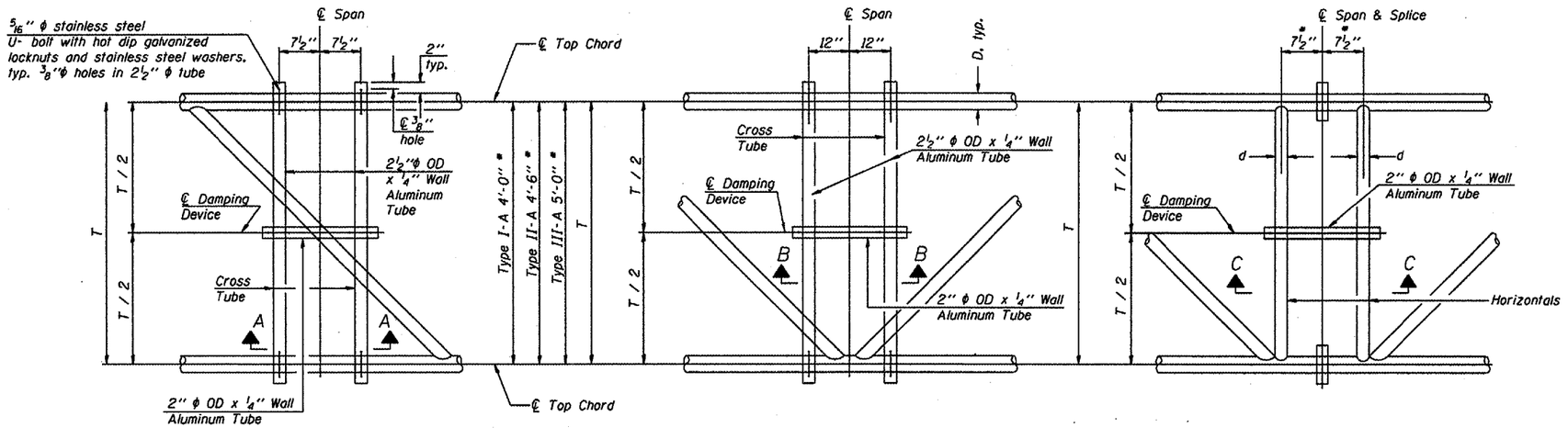
NUMBER	REVISION	DATE

OS-A-11 1-7-05

OVERHEAD SIGN STRUCTURES
ALUMINUM HANDRAIL DETAILS

District 5
Overhead Sign Structure
Repair and Replacement

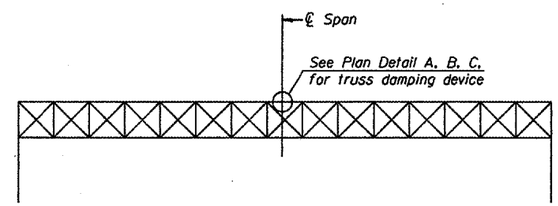
* Center of horizontal to center of splice dimension may vary. Verify before drilling holes in mounting tube.



PLAN DETAIL "A"
℄ Span between Panel Points

PLAN DETAIL "B"
℄ Span at Panel Point

PLAN DETAIL "C"
℄ Span at ℄ Chord Splice

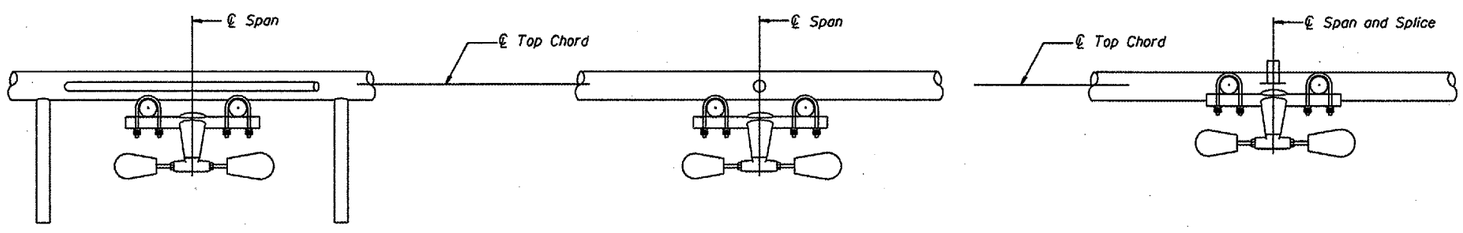


ELEVATION
Aluminum Overhead Sign Truss

NOTES

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

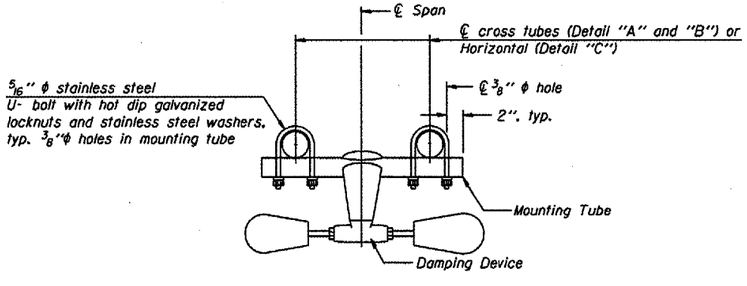
Materials: Aluminum tubes shall be ASTM B221 alloy 6061 temper T6. Cost included in Overhead Sign Structure...



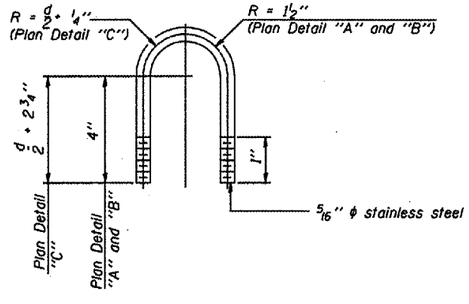
SECTION A-A

SECTION B-B

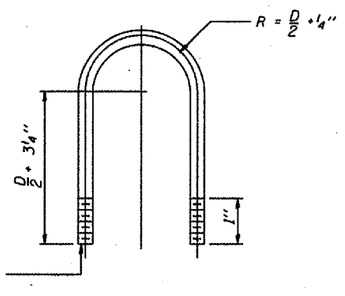
SECTION C-C



TRUSS DAMPING DEVICE CONNECTION DETAIL
(Typical)



DAMPING DEVICE MOUNTING TUBE U-BOLT DETAIL
(Typical)



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

DESIGNED	-
CHECKED	-
DRAWN	-
CHECKED	-

- 20

EXAMINED

ENGINEER OF BRIDGE DESIGN

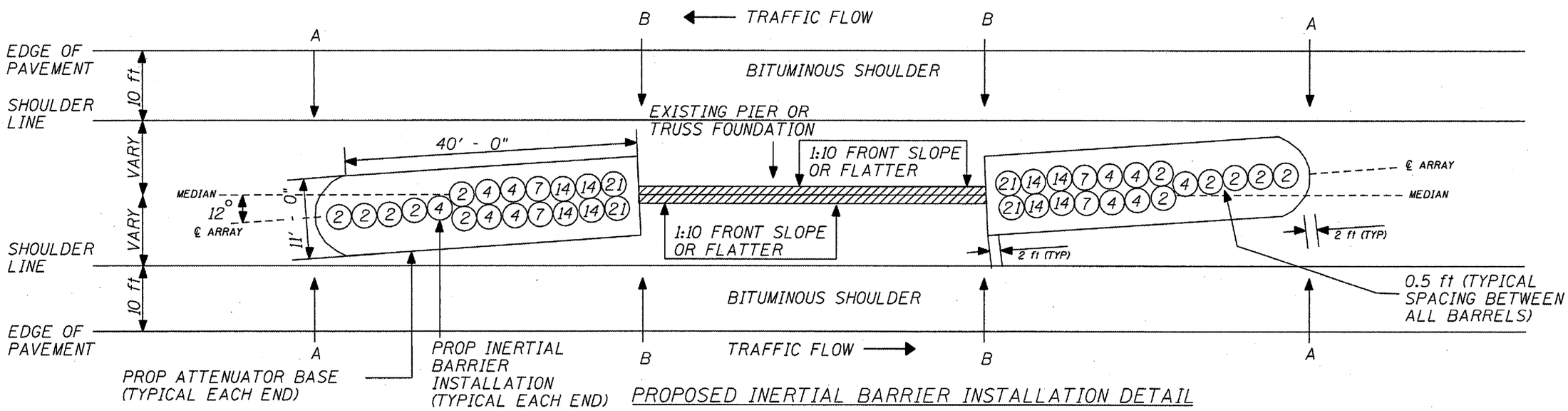
PASSED

ENGINEER OF BRIDGES AND STRUCTURES

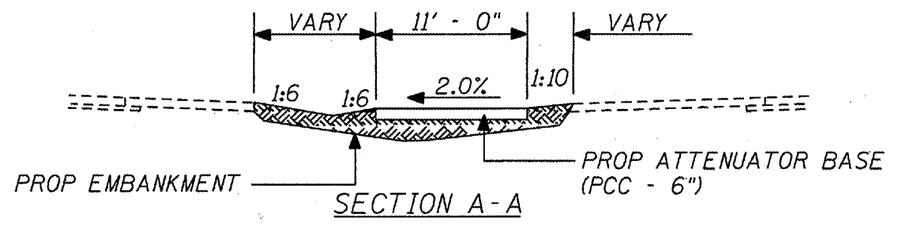
OS-A-D 1-7-05

OVERHEAD SIGN STRUCTURE
DAMPING DEVICE

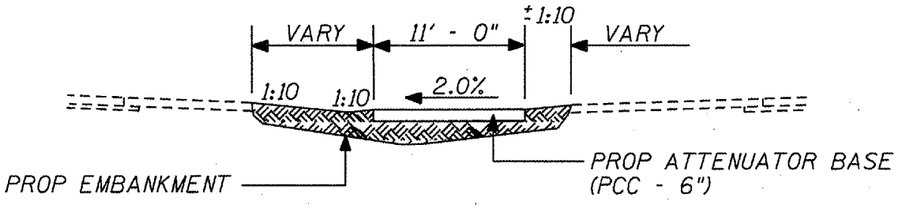
District 5
Overhead Sign Structure
Repair and Replacement



PROPOSED INERTIAL BARRIER INSTALLATION DETAIL



SECTION A-A



SECTION B-B

Location	Concrete Removal (Special) SQ YD	Attenuator Base SQ YD	Relocate Impact Attenuator EACH
STATION 1913 + 00	108.4	108.4	2

THE FIGURES WITHIN EACH CIRCLE ON THE LAYOUT DETAIL INDICATE THE AMOUNT OF SAND IN POUNDS X 100 CONTAINED IN EACH MODULE

LONGITUDINAL GRADE OF ATTENUATOR BASE SHALL MATCH THE MAINLINE PROFILE

ALL DISTURBED AREAS SHALL RECEIVE SEEDING, CLASS 2 AND FERTILIZER AT THE FOLLOWING RATES:
RATIO 1:1:1
RATE 270 lb NUTRIENTS/ACRE
(90 lb NITROGEN, 90 lb PHOSPHORUS, 90lb POTASSIUM)
SEEDING AND FERTILIZER NUTRIENTS ARE INCLUDED IN THE COST FOR INERTIAL BARRIER INSTALLATION

THE CONTRACTOR AND THE ENGINEER SHALL DETERMINE THE LAYOUT FOR THE IMPACT ATTENUATORS

NOTE:
THIS DETAIL APPLIES TO:
STRUCTURE NO. 550921074R214.0

DESIGNED -
CHECKED -
DRAWN -
CHECKED -

- 20

EXAMINED
ENGINEER OF BRIDGE DESIGN

PASSED
ENGINEER OF BRIDGES AND STRUCTURES

IMPACT ATTENUATOR DETAIL

District 5
Overhead Sign Structure
Repair and Replacement

Illinois Department of Transportation
Division of Highways
IDOT - Dist 5

SOIL BORING LOG

Page 1 of 1

Date 2/1/05

ROUTE I-74 DESCRIPTION Overhead Sign Trusses I-74EB & WB LOGGED BY CNA

SECTION _____ LOCATION SE, SEC. 34, TWP. 20N, RNG. 8E, 3rd PM

COUNTY Champaign DRILLING METHOD Hollow Stem Auger HAMMER TYPE Automatic

STRUCT. NO. _____
Station _____

BORING NO. 3 5S010I057R239.96
Station 522+05
Offset 25.0 ft Lt.
Ground Surface Elev. 769.1 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 (%)
769.1			
Brown Clay Loam Till to Silty Clay Loam Till (Soil boring for overhead sign truss on I-57NB at offramp to I-74EB)			
	1		
-5	4 4	2.9 B	15
	2		
	3 3	2.3 B	18
	3		
-10	3 4	3.1 B	14
	3		
757.1	5 9	3.3 S	13
Gray Clay Loam Till			
	3		
-15	6 5	3.5 S	12
	1		
	3 5	1.7 B	12
	1		
-20	3 5	1.6 B	12

Gray Clay Loam Till *(continued)*

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
	2		
-25	3 4	1.6 B	12
744.1			
End of Boring			
-30			
-35			
-40			

2/16/2005 8:46:44 AM S:\SOILS\BORING LOGS\CHAMPAIGN CNTY\I-74&I-57 INT SIGN TRUSS.GPJ

An assumed centerline elevation of 100.00 and station of 10+00 is used when this information is not available.

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. 8-9

Illinois Department of Transportation
Division of Highways
IDOT - Dist 5

SOIL BORING LOG

Page 1 of 1

Date 2/4/05

ROUTE I-74 DESCRIPTION Overhead Sign Trusses I-74EB at IL Rt. 1 Exit LOGGED BY CNA

SECTION _____ LOCATION SW. SEC. 17, TWP. 19N, RNG. 10W, 2nd PM

COUNTY Vermilion DRILLING METHOD Hollow Stem Auger HAMMER TYPE Automatic

STRUCT. NO. _____
Station _____

BORING NO. 1 5S092I074R214.00
Station 13+09
Offset 37.0 ft Rt.
Ground Surface Elev. 623.1 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 (%)
(Pavement)			
622.1			
Pink Sandy Clay Loam Till			
(Note: Soil boring for overhead sign truss in I-74EB just west of offramp to IL Rt. 1)	17		
618.6	18		
-5 Gray Silty Shale (Bedrock)	22		
	12		
	16 12	10.0 S	13
	4		
-10	8 12	7.0 S	14
	8		
	14 24	6.3 S	12
	8		
608.1 -15	19 29		10
End of Boring			
-20			

2/16/2005 8:52:34 AM S:\SOILS\BORING LOGS\VERMILION CNTY\I-74&RT. 1 OVERHEAD TRUSS.GPJ

An assumed centerline elevation of 100.00 and station of 10+00 is used when this information is not available.

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. 8-9

Illinois Department of Transportation
Division of Highways
IDOT - Dist 5

SOIL BORING LOG

Date 1/27/05

ROUTE I-72 DESCRIPTION Overhead Sign Trusses 1-72EB & WB LOGGED BY CNA

SECTION _____ LOCATION SE, SEC. 8, TWP. 19N, RNG. 8E, 3rd PM

COUNTY Champaign DRILLING METHOD Hollow Stem Auger HAMMER TYPE Automatic

STRUCT. NO. _____
Station _____

BORING NO. 1 5S010I072L182.12
Station 1973+47
Offset 49.0 ft Lt.
Ground Surface Elev. 96.1 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 (%)	Material
96.1				Brown Sandy Clay Loam (Embankment) (Note: Soil boring for overhead sign truss on I-72WB at offramp to I-57NB)
	5			
-5	7 11	4.8 S	18	
	2			
	4 4	2.1 B	21	
	2			
-10	4 5	2.1 B	21	
	2			
84.1	4 6	2.7 B	12	Brown Sandy Clay Loam Till
82.1	2			
	3 6	2.7 B	16	Gray Clay Loam Till
-15				
	4			
	5 9	3.5 B	12	
	2			
-20	6 6	4.3 B	30	

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)	Material
				Gray Clay Loam Till *(continued)*
	1			(Note: Used top of existing north foundation as benchmark elevation of 100.0')
71.1 -25	3 3	1.4 B	13	
				End of Boring
-30				
-35				
-40				

An assumed centerline elevation of 100.00 and station of 10+00 is used when this information is not available.

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

2/16/2005 8:47:32 AM S:\SOILS\BORING LOGS\CHAMPAIGN CNTY\I-72&I-57 INT SIGNTRUSSES.GPJ

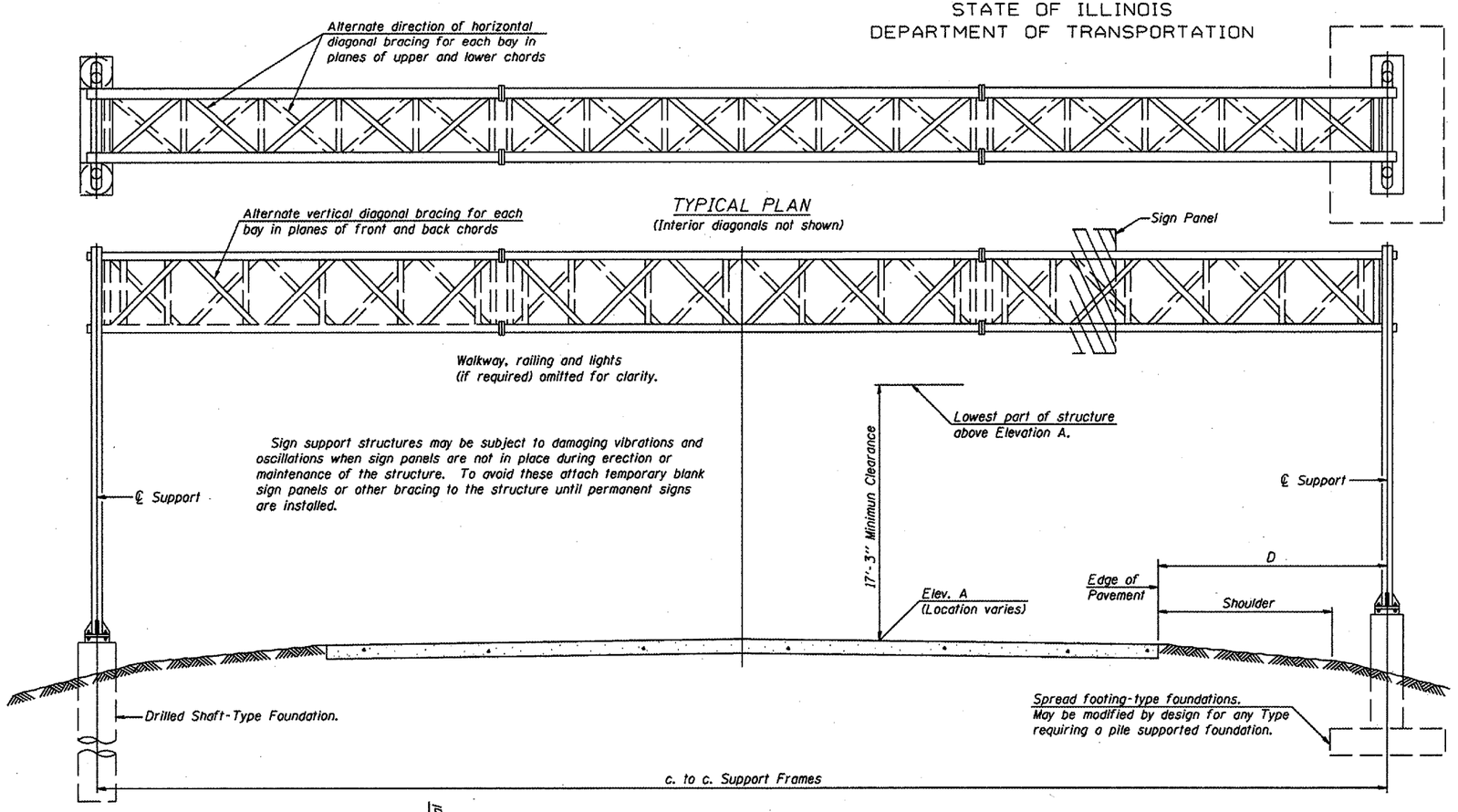
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

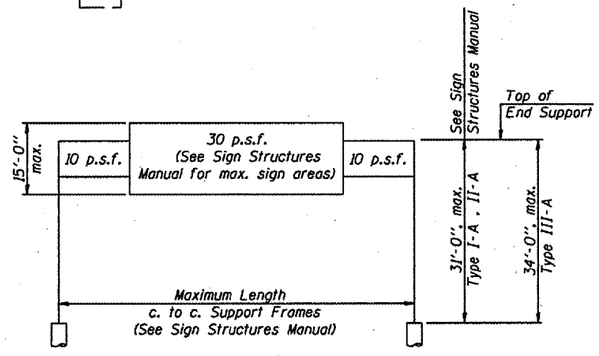
District 6
Schedule of Locations for Truss Repair & Replacement

Location No.:	6-01	State I.D. No.:	6S075I072L004.9				
County:	Pike	Route:	I-72	M.P.:	4.9	Direction:	WB

Description of Work	Unit	Quantity
REMOVE OVERHEAD SIGN STRUCTURE-SPAN	EACH	1.00
OVERHEAD SIGN STRUCTURE-SPAN TYPE II-A	FOOT	104.00
REMOVE & REINSTALL SIGN PANEL	SQ FT	468.00
REMOVE & REINSTALL WALKWAY	FOOT	59.00
REPAIR HANDRAIL LOCKING PIN CONNECTION	EACH	6.00
FURNISH & INSTALL SAFETY CHAIN	EACH	2.00
FURNISH & INSTALL METAL SCREEN	EACH	4.00
DISCONNECT / RECONNECT ELECTRIC SERVICE	EACH	1.00
REPLACE/TIGHTEN CLIP PER SIGN	EACH	1.00
This structure is being downsized from a Type IV truss to		
a Type II truss.		

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION





DESIGN WIND LOADING DIAGRAM

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

TYPICAL ELEVATION

(Looking at Face of Signs**)

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

Structure Number	Station	Design Truss Type	c. to c. Supports	Elev. A	Dim. D	Height of Tallest Sign	Total Sign Area
6S075I072L004.9	1060 + 00	II-A	104 - 0"	465.19	41' - 6"	12' - 6"	468.00

**Looking upstation for structures with signs both sides.

GENERAL NOTES

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

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

LOADING: 90 M.P.H. WIND VELOCITY

WIND LOADING: 30 p.s.f. normal to Sign Panel Area and truss elements not behind sign Loading Diagram.

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

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

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

MATERIALS: Aluminum Alloys as shown throughout plans. All Structural Steel Pipe shall be ASTM A53 Grade B with a minimum yield of 35,000 p.s.i., or A500 Grade B or C with a minimum yield of 46,000 p.s.i. If A500 pipe is substituted for A53, then the outside diameter shall be as detailed and wall thickness greater than or equal to A53.
All Structural Steel Plates and Shapes shall conform to AASHTO M270 Gr. 36, Gr. 50 or Gr. 50W*. Stainless steel for shims, sleeves and handhole covers shall be ASTM A240, Type 302 or 304, or another alloy suitable for exterior exposure and acceptable to the Engineer.
The steel pipe and stiffening ribs at the base plate for the column shall have a minimum longitudinal Charpy V-Notch (CVN) energy of 15 lb.-ft. at 40° F. (Zone 2) before galvanizing.

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

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

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

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

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

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

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

TOTAL BILL OF MATERIAL

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

NUMBER	REVISION	DATE

DESIGNED -	
CHECKED -	
DRAWN -	
CHECKED -	

- , 20

EXAMINED

ENGINEER OF BRIDGE DESIGN

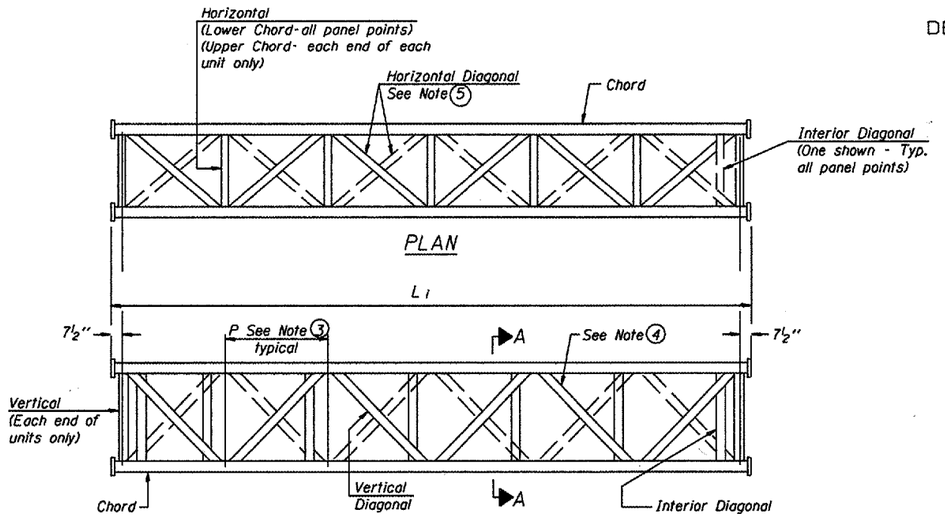
PASSED

ENGINEER OF BRIDGES AND STRUCTURES

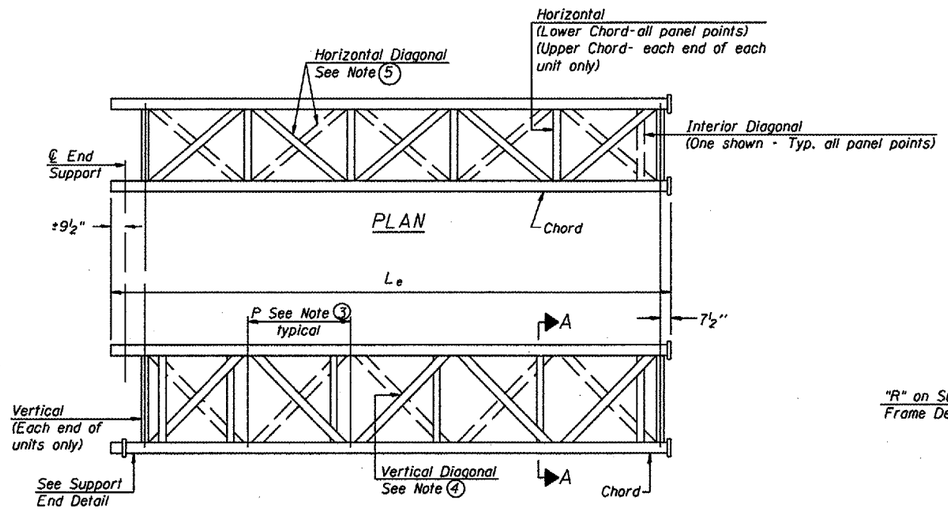
OS-A-1 1-7-05

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

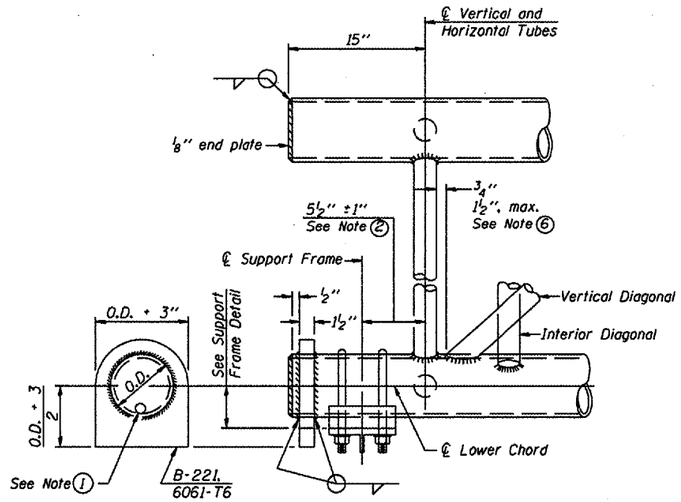
District 6
Overhead Sign
Structure Replacement



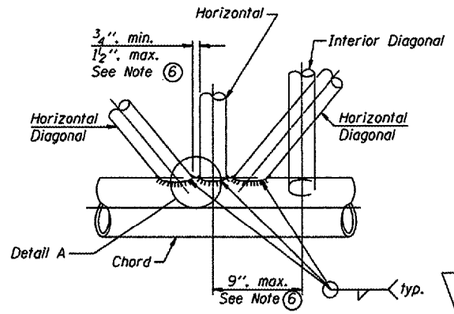
ELEVATION
TYPICAL INTERIOR UNIT
Even number of panels/interior unit required.

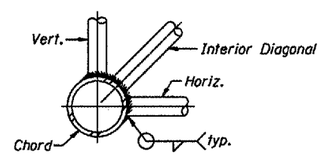


ELEVATION
TYPICAL EXTERIOR UNIT
Even or odd number of panels/exterior units allowed.

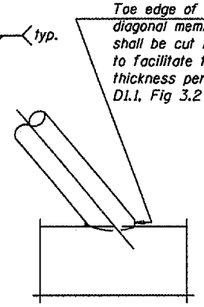


SUPPORT END DETAIL FOR EXTERIOR UNIT

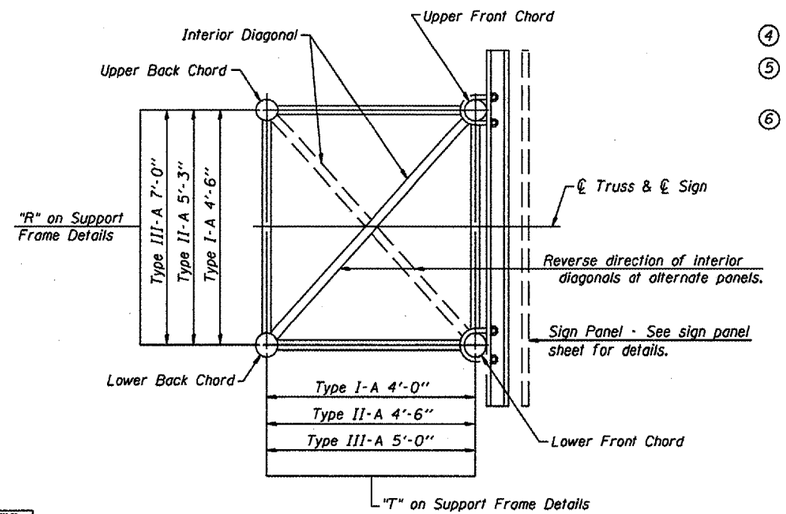




TYPICAL JOINT DETAILS



DETAIL A



SECTION A-A

NOTES

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

DESIGNED -	
CHECKED -	
DRAWN -	
CHECKED -	

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

NUMBER	REVISION	DATE

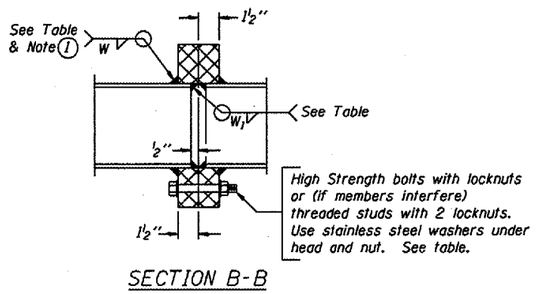
OS-A-2 1-7-05

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

District 6
Overhead Sign
Structure Replacement

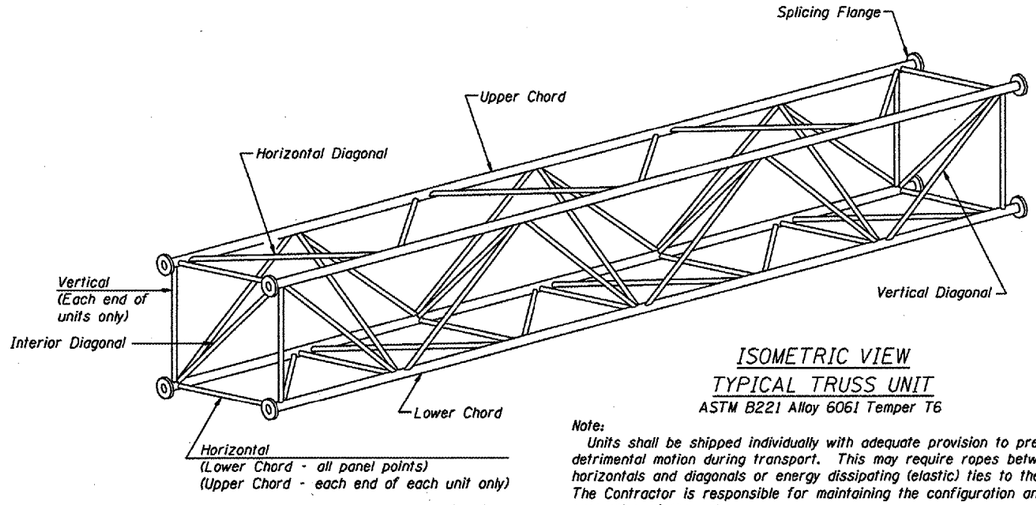
TRUSS UNIT TABLE

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		
6S0751072L004.9	1060 + 00	II-A	7	37'-0 1/4"	5'-0 1/4"	1	6	31'-4 1/2"	5'-0 1/4"	6 1/2"	5/16"	3"	5/16"	3 1/4"	6	1"	3/8"	1/4"	11"	14 1/2"



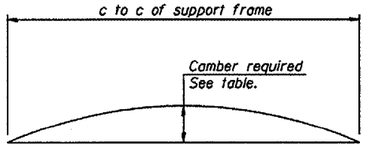
SECTION B-B

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



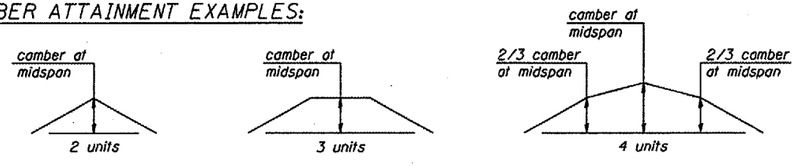
ISOMETRIC VIEW
TYPICAL TRUSS UNIT
ASTM B221 Alloy 6061 Temper T6

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

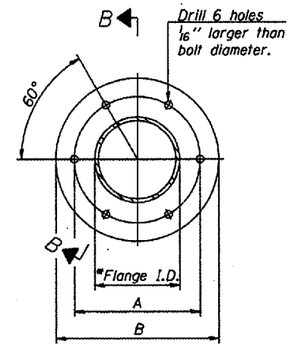


CAMBER DIAGRAM
Camber curve shown is theoretical. Actual camber attained by slope changes at splices between units.

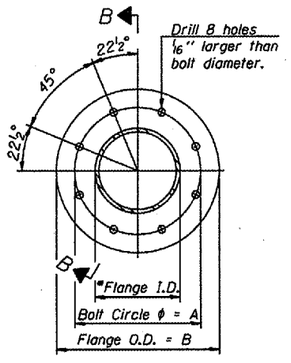
CAMBER ATTAINMENT EXAMPLES:



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



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



TRUSS TYPES II-A & III-A

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

NUMBER	REVISION	DATE

DESIGNED	-
CHECKED	-
DRAWN	-
CHECKED	-

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

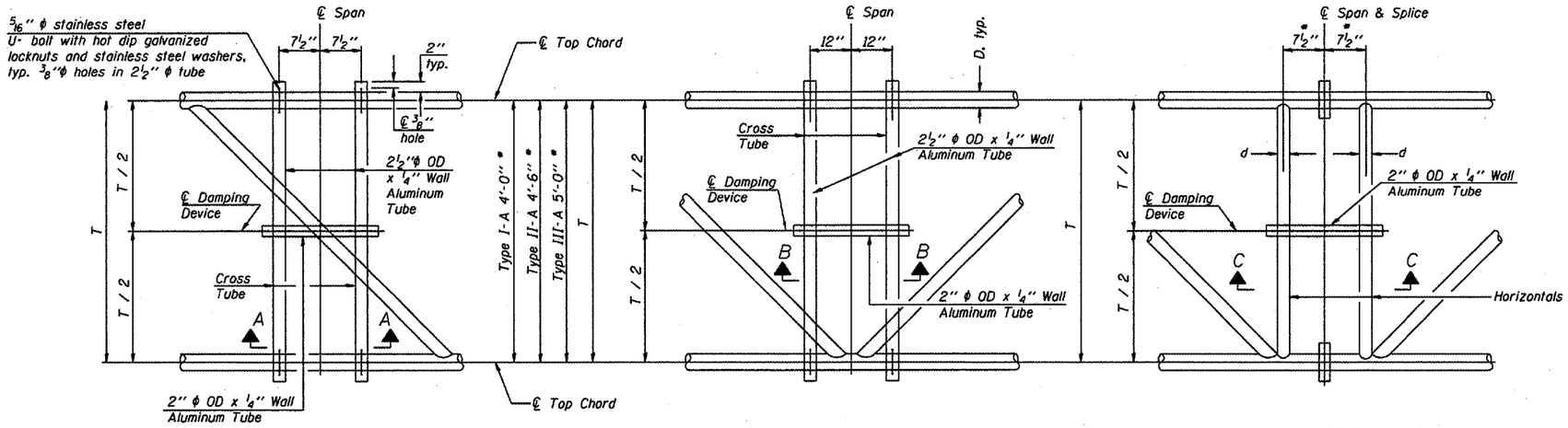
OS4-A-2 1-7-05

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

District 6
Overhead Sign
Structure Replacement

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

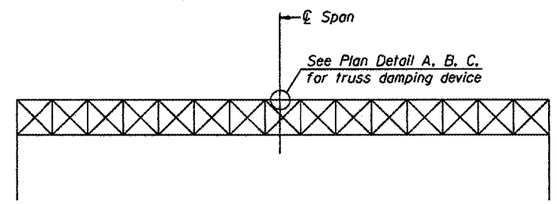
* Center of horizontal to center of splice dimension may vary. Verify before drilling holes in mounting tube.



PLAN DETAIL "A"
℄ Span between Panel Points

PLAN DETAIL "B"
℄ Span at Panel Point

PLAN DETAIL "C"
℄ Span at ℄ Chord Splice

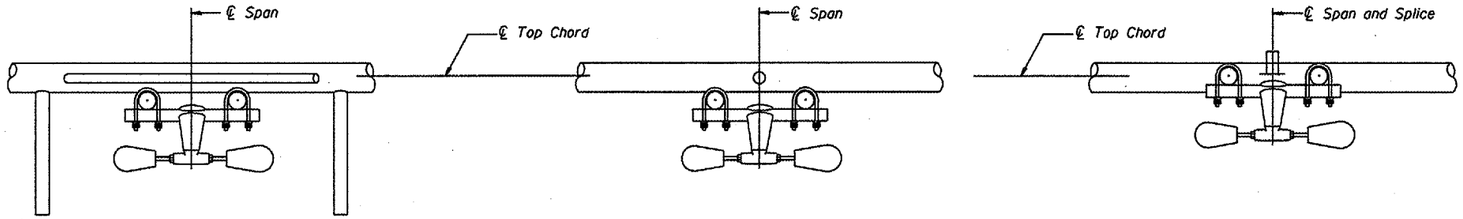


ELEVATION
Aluminum Overhead Sign Truss

NOTES

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

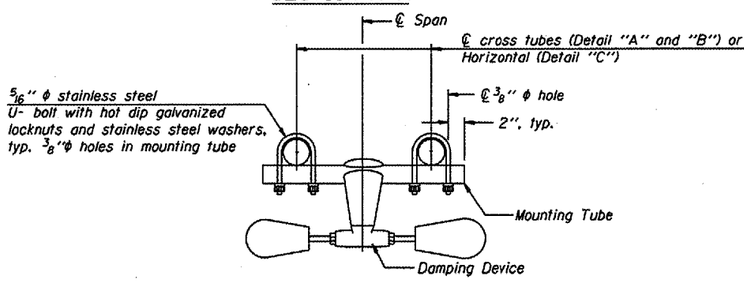
Materials: Aluminum tubes shall be ASTM B221 alloy 6061 temper T6. Cost included in Overhead Sign Structure...



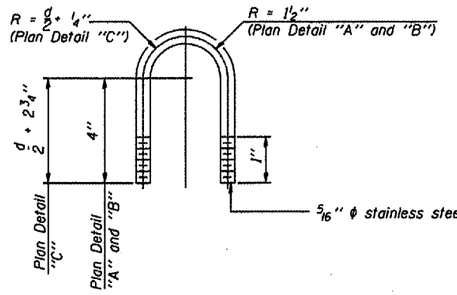
SECTION A-A

SECTION B-B

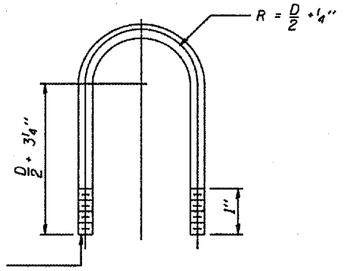
SECTION C-C



TRUSS DAMPING DEVICE CONNECTION DETAIL
(Typical)



DAMPING DEVICE MOUNTING TUBE U-BOLT DETAIL
(Typical)



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

DESIGNED	-
CHECKED	-
DRAWN	-
CHECKED	-

\- 20

EXAMINED
ENGINEER OF BRIDGE DESIGN

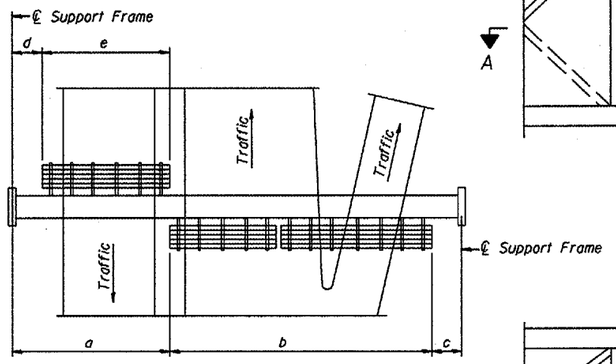
PASSED
ENGINEER OF BRIDGES AND STRUCTURES

OS-A-D 1-7-05

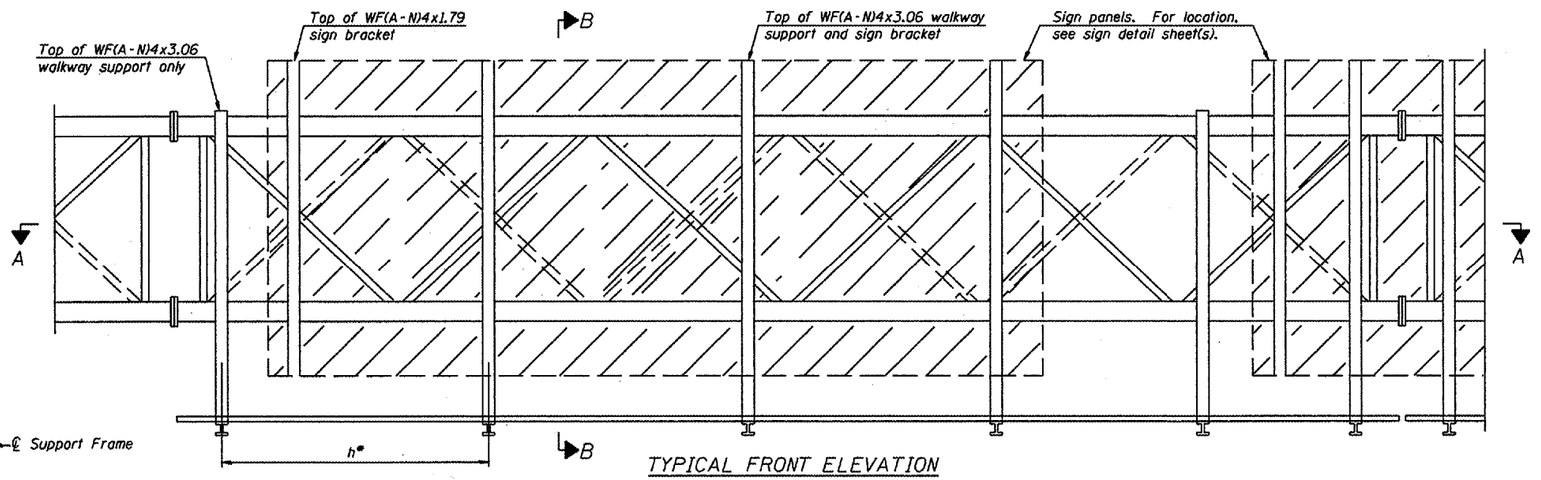
OVERHEAD SIGN STRUCTURE
DAMPING DEVICE

District 6
Overhead Sign
Structure Replacement

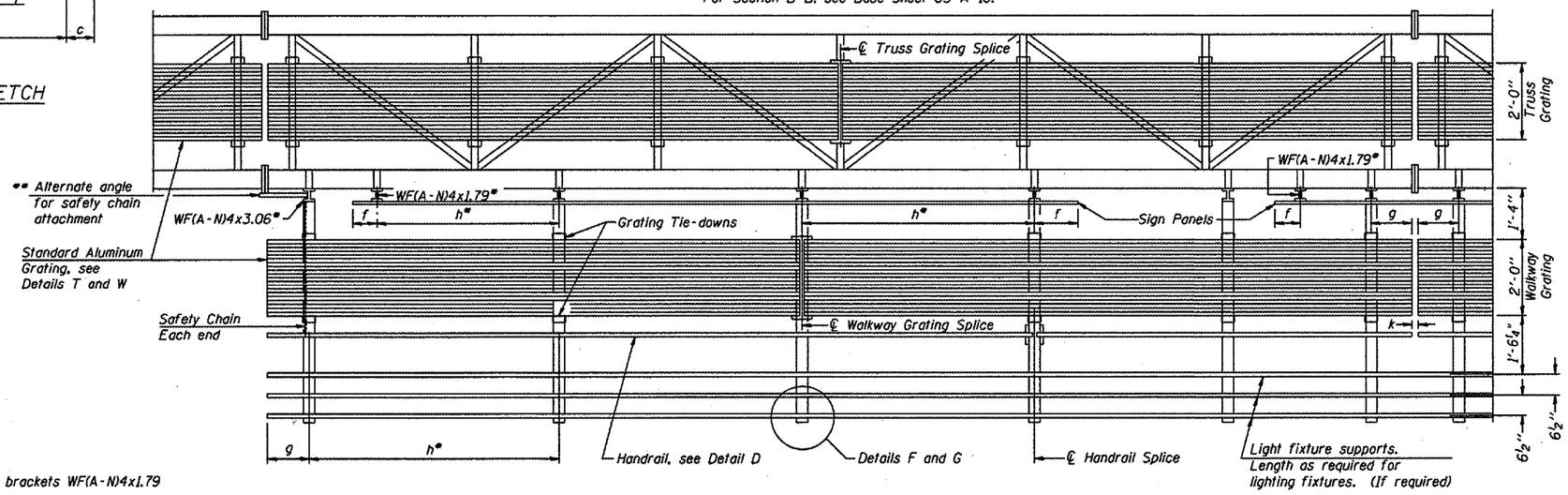
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



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



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



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

BRACKET TABLE

WF(A-N)4x1.79 or WF(A-N)4x3.06 ASTM B308, Alloy 6061-T6		
Sign Width		Number Brackets Required
Greater Than	Less Than or Equal To	
	8'-0"	2
8'-0"	14'-0"	3
14'-0"	20'-0"	4
20'-0"	26'-0"	5
26'-0"	32'-0"	6

Notes:

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

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

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

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

SECTION A-A

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

Structure Number	Station	a	b	c	d	e	Walkway Grating and Handrail Lengths
6S075I072L004.9	1060 + 00	N/A	N/A	N/A	N/A	N/A	105' - 5"*

* 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".

OVERHEAD SIGN STRUCTURES
ALUMINUM WALKWAY DETAILS

District 6
Overhead Sign
Structure Replacement

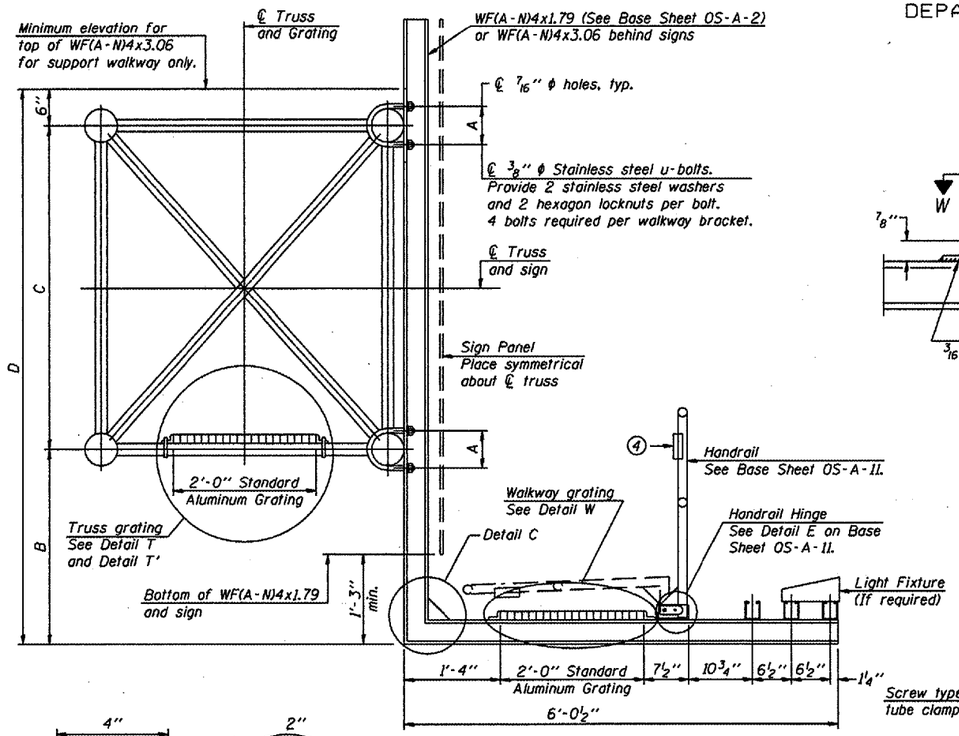
DESIGNED	-
CHECKED	-
DRAWN	-
CHECKED	-

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

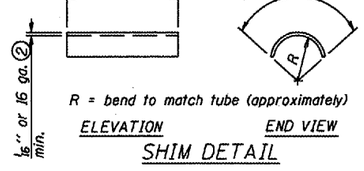
NUMBER	REVISION	DATE

OS-A-9 1-7-05

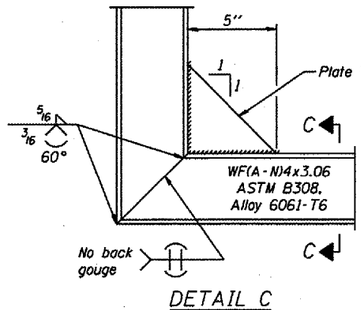
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



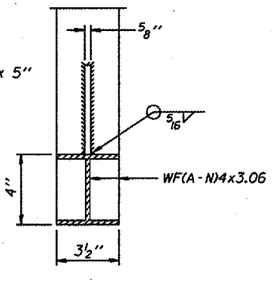
SECTION B-B



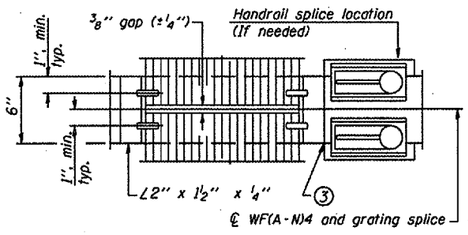
SHIM DETAIL



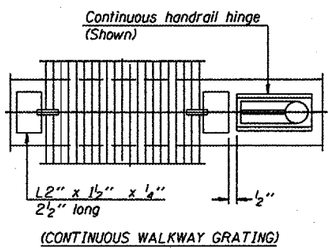
DETAIL C
(See Detail P, Base Sheet OS-A-11.)



SECTION C-C

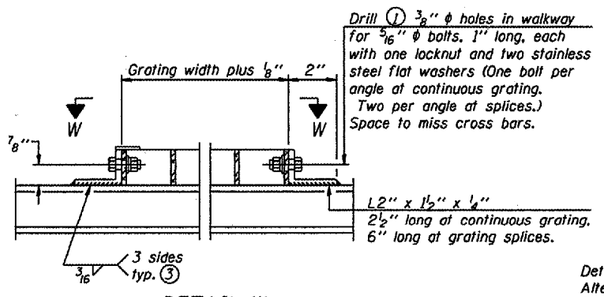


(AT WALKWAY GRATING SPLICE)

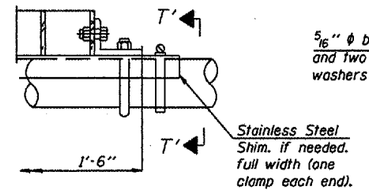


(CONTINUOUS WALKWAY GRATING)

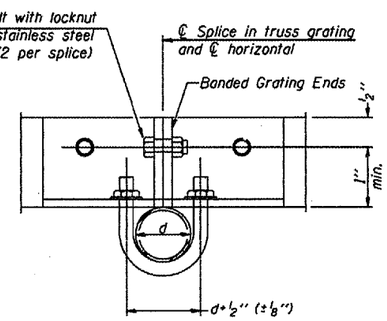
SECTION W-W



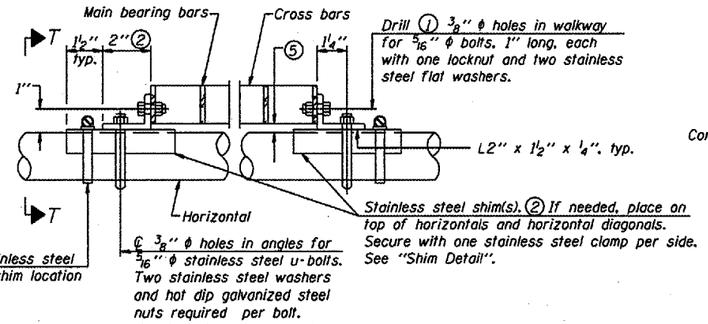
DETAIL W
(Walkway grating)



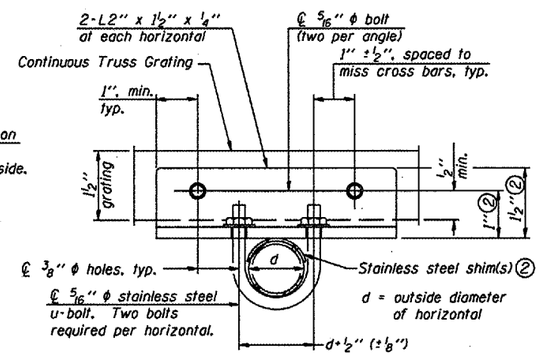
DETAIL T'
(Truss grating splice)
Details not shown some as Detail T. Alternate materials may be used subject to the Engineer's review and approval.



SECTION T'-T'



DETAIL T
(Continuous Truss grating)



SECTION T-T

SPECIFICATIONS FOR STANDARD ALUMINUM GRATING

Main Bearing Bars shall be 3/16" x 1½" on 1 3/16" centers and conform to ASTM B221 Alloy 6061-T6.

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

OR

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

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

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

1. Drilling holes in grating may be done in shop or field, based on Contractor's preference and subject to accurate alignment.
2. Stainless steel shims shall be placed as shown in Detail T if needed to compensate for alignment variations between horizontal and diagonal pipes beyond adjustment provided by angles. Thicker shims may be used subject to shims performing properly.
3. If Handrail Joint present, weld angle to WF(A-N)4 and ¼" extension bars. (See Base Sheet OS-A-11.)
4. ℄ ⅛" x ½" x 2" welded to handrail posts to protect locations that contact grating.
5. Tube to grating gap may vary from 0 to ½", max. to align walkway, allow for camber, etc.

Structure Number	Station	A	B	C	D

NUMBER	REVISION	DATE

DESIGNED -
CHECKED -
DRAWN -
CHECKED -

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

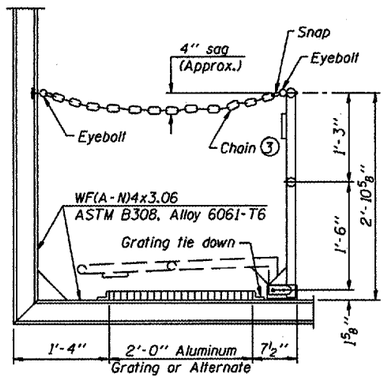
OVERHEAD SIGN STRUCTURES
ALUMINUM WALKWAY DETAILS

District 6
Overhead Sign
Structure Replacement

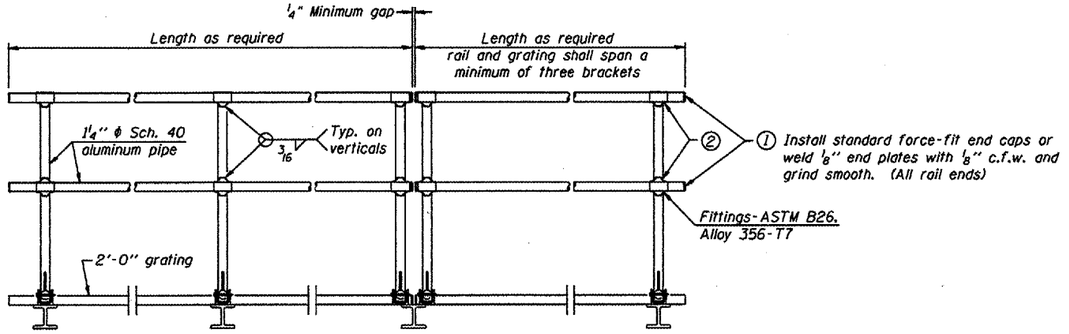
OS-A-10 1-7-05

Existing Walkway and Walkway Support Brackets to be Reused.

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



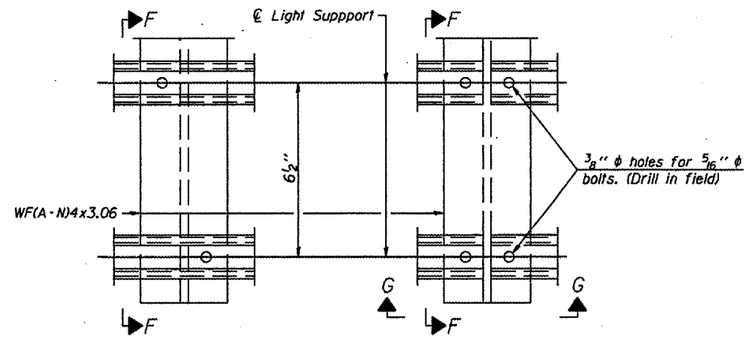
SIDE ELEVATION
(Showing safety chain w/o sign)



FRONT ELEVATION

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

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

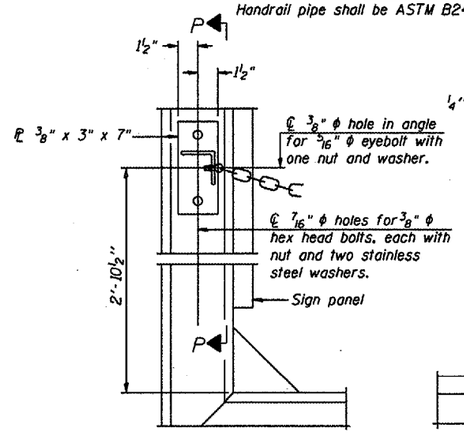


DETAIL F

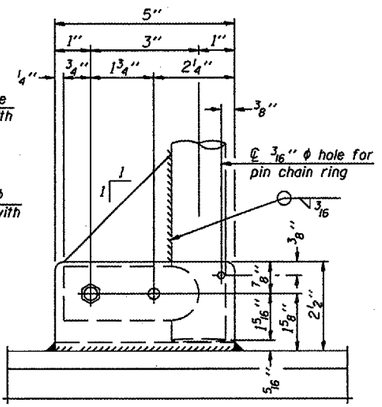
DETAIL G

HANDRAIL DETAILS

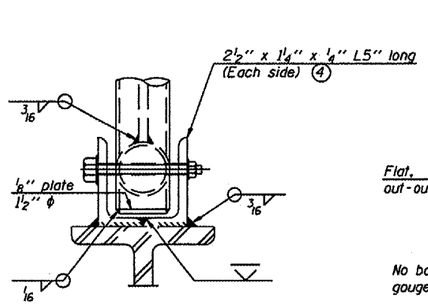
Handrail pipe shall be ASTM B241, Alloy 6063-T6 or Alloy 6061-T6.



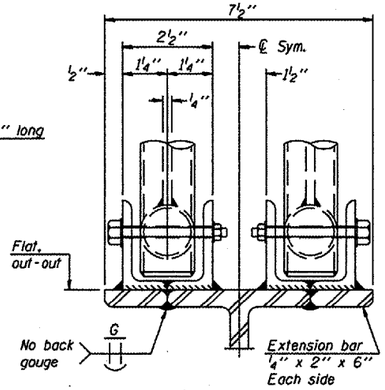
ALTERNATE SAFETY CHAIN ATTACHMENT
(With Sign Present)
Items not shown same as "Side Elevation" of "Handrail Details"



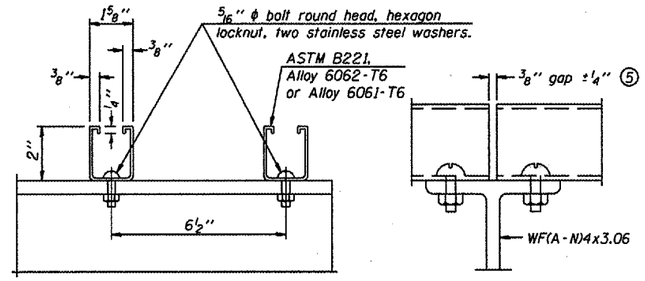
SIDE ELEVATION



FRONT ELEVATION
See "Elevation" at right for dimensions.



ELEVATION AT HANDRAIL JOINT (4)

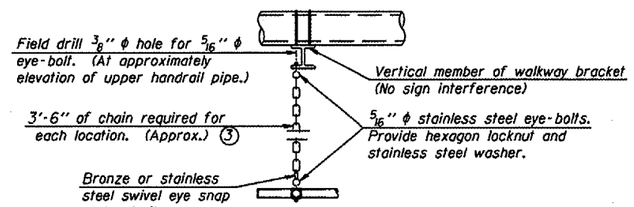


SECTION F-F

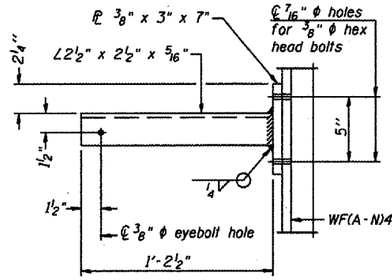
SECTION G-G

LIGHTING FIXTURE MOUNTS (IF REQUIRED)

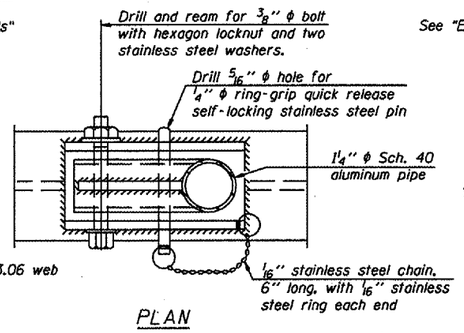
(5) Field cut ends of light support channels shall be free of burrs or hazardous projections and coated with zinc-rich primer or equivalent.



SAFETY CHAIN
One required for each end of each walkway.

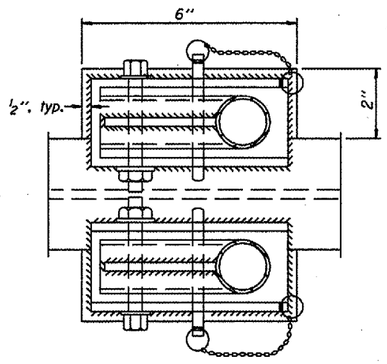


SECTION P-P

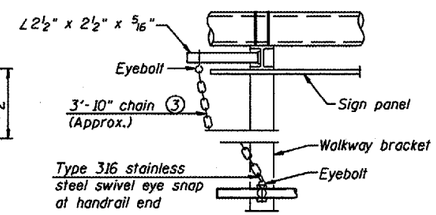


PLAN

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 or 316L 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

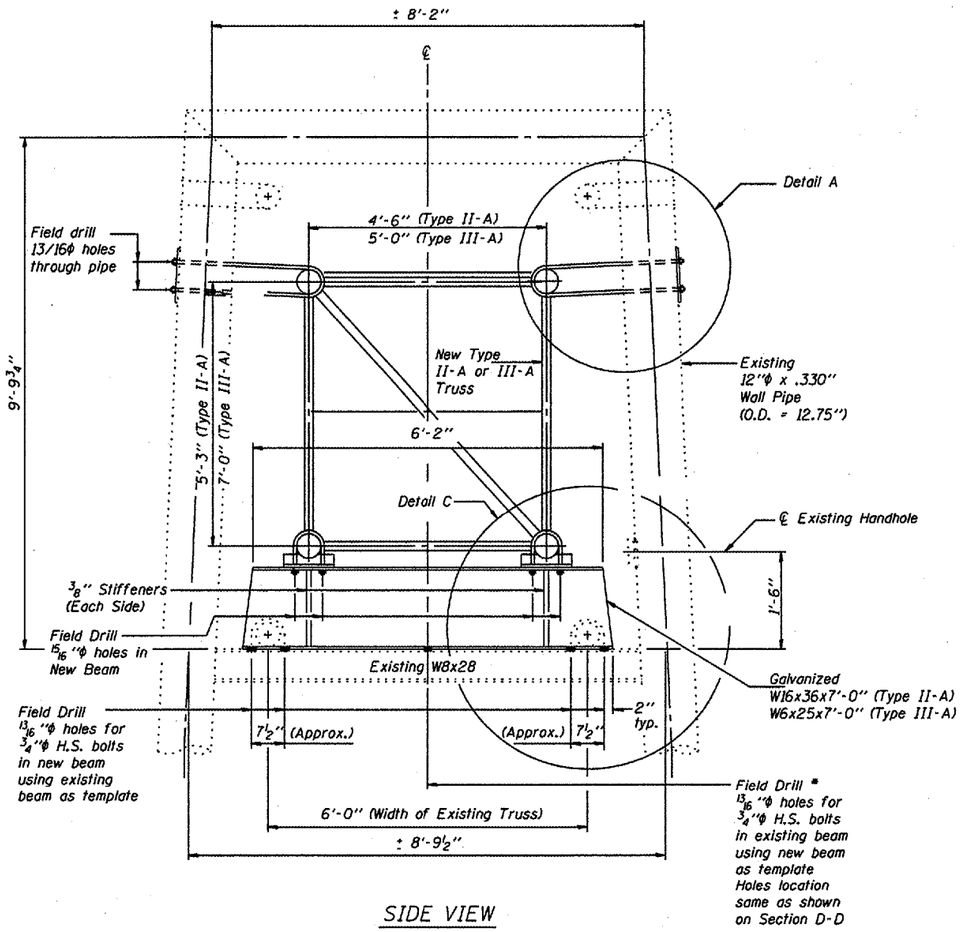
NUMBER	REVISION	DATE

OS-A-11 1-7-05

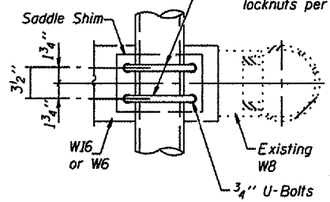
OVERHEAD SIGN STRUCTURES
ALUMINUM HANDRAIL DETAILS

District 6
Overhead Sign
Structure Replacement

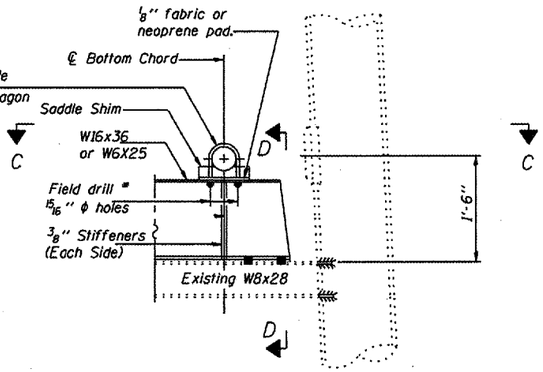
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



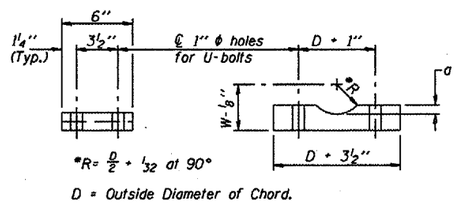
SIDE VIEW



SECTION C-C



DETAIL C



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

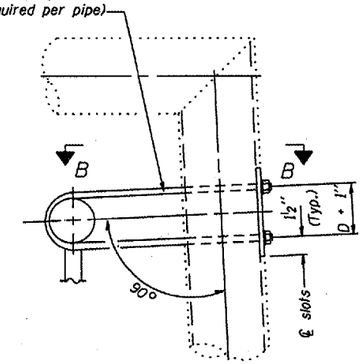
D = Outside Diameter of Chord.

SADDLE SHIM DETAIL

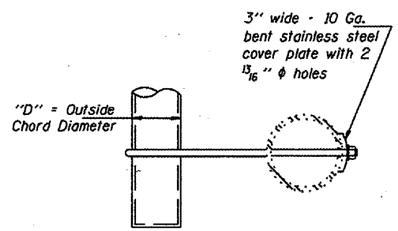
ASTM B26 Alloy 356-F
or
ASTM B209 Alloy 6061-T651
(4 required per sign truss)

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"

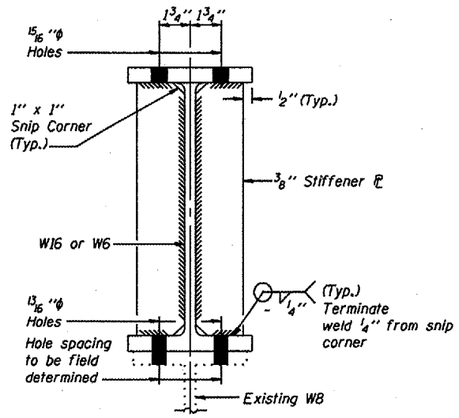
¾" ϕ stainless steel U-bolt. Provide two washers and two hexagon locknuts. Field drill 13/16" ϕ holes through pipe. (4 holes required per pipe)



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 6
Overhead Sign
Structure Replacement

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

District 7
Schedule of Locations for Truss Repair & Replacement

Location No.:	7-01	State I.D. No.:	7S051U050L014.8				
County:	Lawrence	Route:	U. S. 50	M.P.:	14.8	Direction:	WB

Description of Work	Unit	Quantity
OVERHEAD SIGN SUPPORT GROUT REPAIR	EACH	4.00
REPAIR HANDRAIL LOCKING PIN CONNECTION	EACH	12.00
FURNISH & INSTALL SAFETY CHAIN	EACH	2.00
FURNISH & INSTALL INTERNAL TRUSS DAMPER	EACH	1.00

Location No.:	7-02	State I.D. No.:	7C025I057R166.1				
County:	Effingham	Route:	I-57	M.P.:	166.1	Direction:	NB

Description of Work	Unit	Quantity
REMOVE OVERHEAD SIGN STRUCTURE-CANTILEVER	EACH	1.00
REMOVE CONCRETE FOUNDATION-OVERHEAD	EACH	1.00
OVERHEAD SIGN STRUCTURE CANTILEVER 2CA3-0X5-6	FOOT	30.00
DRILLED SHAFT CONCRETE FOUNDATION	CU YD	7.20
REMOVE & REINSTALL SIGN PANEL	SQ FT	74.75
REMOVE & REINSTALL WALKWAY	FOOT	17.00
FURNISH & INSTALL SAFETY CHAIN	EACH	2.00
RELOCATE ELECTRIC SERVICE	EACH	1.00
DISCONNECT/RECONNECT ELECTRIC SERVICE	EACH	1.00
UNIT DUCT, 2#10 XLP, 1#10 XLP GROUND 3/4' POLYETHYLENE	FOOT	150.00
This overhead sign structure is being completely replaced.		

Location No.:	7-03	State I.D. No.:	7C026U051L011.0				
County:	Fayette	Route:	U.S. 51	M.P.:	11	Direction:	SB

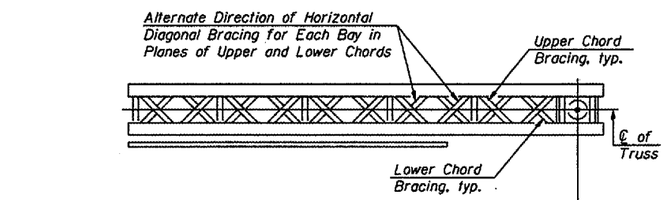
Description of Work	Unit	Quantity
REMOVE OVERHEAD SIGN STRUCTURE-CANTILEVER	EACH	1.00
REMOVE CONCRETE FOUNDATION-OVERHEAD	EACH	1.00
STEEL MAST ARM ASSEMBLE & POLE, 28 FOOT	EACH	1.00
CONCRETE FOUNDATION, TYPE E 30-INCH DIAMETER	FOOT	10.00
REMOVE & REINSTALL SIGN PANEL	SQ FT	93.00
MEDIAM SURFACE REMOVAL	SQ FT	128.00
CONCRETE MEDIAN SURFACE, 4 INCH	SQ FT	128.00
REMOVE ELECTRIC SERVICE	EACH	1.00
This overhead sign structure is being replaced with a steel		
mast arm and pole assembly.		

Location No.:	7-04	State I.D. No.:	7C026U051R010.9				
County:	Fayette	Route:	U.S. 51	M.P.:	10.9	Direction:	NB

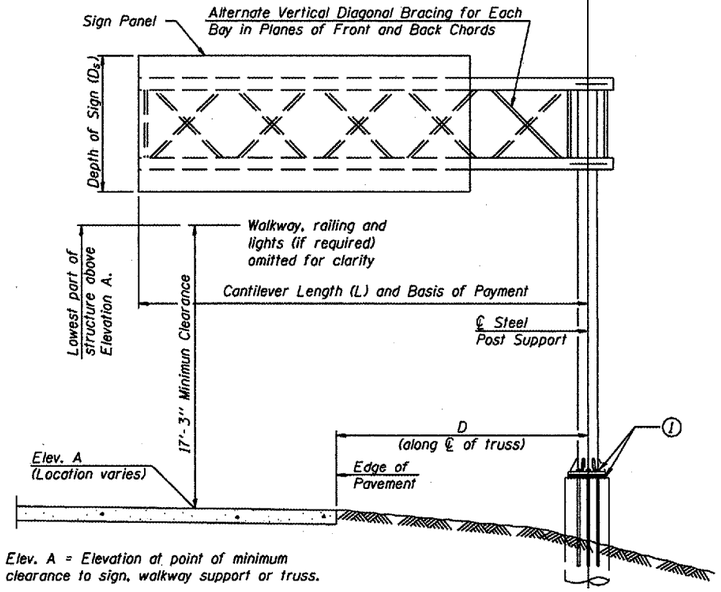
Description of Work	Unit	Quantity
REMOVE OVERHEAD SIGN STRUCTURE-CANTILEVER	EACH	1.00
REMOVE CONCRETE FOUNDATION-OVERHEAD	EACH	1.00
REMOVE ELECTRIC SERVICE	EACH	2.00
REMOVAL OF EXISTING LIGHTIMG UNIT, SALVAGE	EACH	1.00
REMOVE EXISTING SIGN	SQ FT	82.00
This overhead sign structure is being completely removed.		

Location No.:	7-05	State I.D. No.:	7C026U051R011.0				
County:	Fayette	Route:	U.S. 51	M.P.:	11	Direction:	NB

Description of Work	Unit	Quantity
REMOVEOVERHEAD SIGN STRUCTURE-CANTILEVER	EACH	1.00
REMOVE CONCRETE FOUNDATION-OVERHEAD	EACH	1.00
STEEL COMBINATION MAST ARM ASSEMBLY AND POLE 30 FT.	EACH	1.00
CONCRETE FOUNDATION, TYPE E 30-INCH DIAMETER	FOOT	13.50
UNIT DUCT, 2#10 XLP, 1#10 XLP GROUND 3/4" POLYETHYLENE	FOOT	400.00
ELECTRIC CABLE IN CONDUIT, SIGNAL NO. 14 5C	FOOT	686.00
ELECTRIC CABLE IN CONDUIT, SIGNAL NO. 14 7C	FOOT	186.00
TRAFFIC SIGNAL BACKPLATE, LOUVERED	EACH	4.00
REMOVE ELECTRIC CABLE FROM CONDUIT	FOOT	647.00
REMOVE EXISTING TRAFFIC SIGNAL EQUIPMENT	EACH	1.00
SIGNAL HEAD, POLYCARBONANTE, LED, 1-FACE,		
3-SECTION, BRACKET MOUNTED	EACH	1.00
SIGNAL HEAD, POLYCARBONATE, LED, 1-FACE,		
3-SECTION, MAST ARM MOUNTED	EACH	2.00
SIGNAL HEAD, POLYCARBONATE, LED, 1-FACE,		
5-SECTION, BRACKET MOUNTED	EACH	1.00
REMOVE & REINSTALL SIGN PANEL	SQ FT	135.00
CONDUIT IN TRENCH, 2 1/2 INCH DIAMETER PVC	FOOT	25.00
LUMINAIRE, SODIUM VAPOR, HORIZONTAL MOUNT,		
PHOTOCELL CONTROL, 250 WATT	EACH	1.00



TYPICAL PLAN
(Walkway not shown)



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

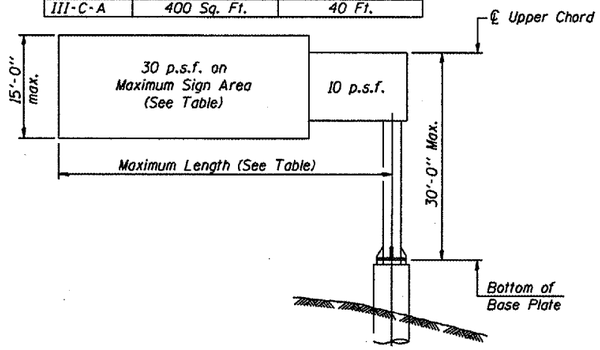
TYPICAL ELEVATION
Looking in Direction of Traffic

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
7C0251057R166.1 *	5502 + 38	II	30' - 0"	N/A	23' - 6"	6' - 6"	74.75

* Existing Sign Structure details are not available.

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



DESIGN WIND LOADING DIAGRAM

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

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

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

GENERAL NOTES

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

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

LOADING: 90 M.P.H. WIND VELOCITY

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

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

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

MATERIALS: Aluminum Alloys as shown throughout plans. All Structural Steel Pipe shall be ASTM A53 Grade B with a minimum yield of 35,000 p.s.i., or A500 Grade B or C with a minimum yield of 46,000 p.s.i. If A500 pipe is substituted for A53, then the outside diameter shall be as detailed and wall thickness greater than or equal to A53.
All Structural Steel Plates and Shapes shall conform to AASHTO M270 Gr. 36, Gr. 50 or Gr. 50W*. Stainless steel for shims, sleeves and handhole covers shall be ASTM A240, Type 302 or 304, or another alloy suitable for exterior exposure and acceptable to the Engineer.
The steel pipe and stiffening ribs at the base plate for the column shall have a minimum longitudinal Charpy V-Notch (CVN) energy of 15 lb.-ft. at 40° F. (Zone 2) before galvanizing.

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

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

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

ANCHOR RODS: Shall conform to AASHTO M314 Gr. 55 with a minimum Charpy V-Notch (CVN) energy of 15 lb.-ft. at 10° F.

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

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

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

TOTAL BILL OF MATERIAL

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

DESIGNED	-
CHECKED	-
DRAWN	-
CHECKED	-

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

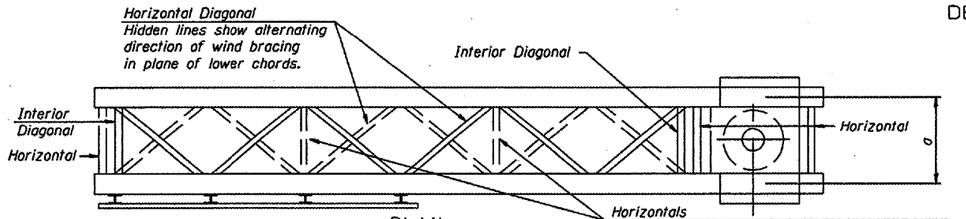
OSC-A-1 1-7-05

NUMBER	REVISION	DATE

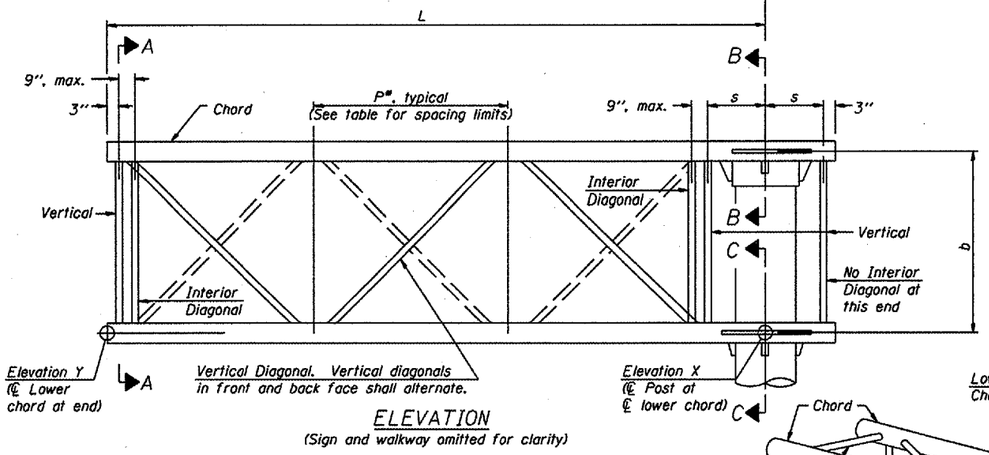
CANTILEVER SIGN STRUCTURES
GENERAL PLAN & ELEVATION
ALUMINUM TRUSS & STEEL POST

District 7
Overhead Sign Structure
Repair and Replacement

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



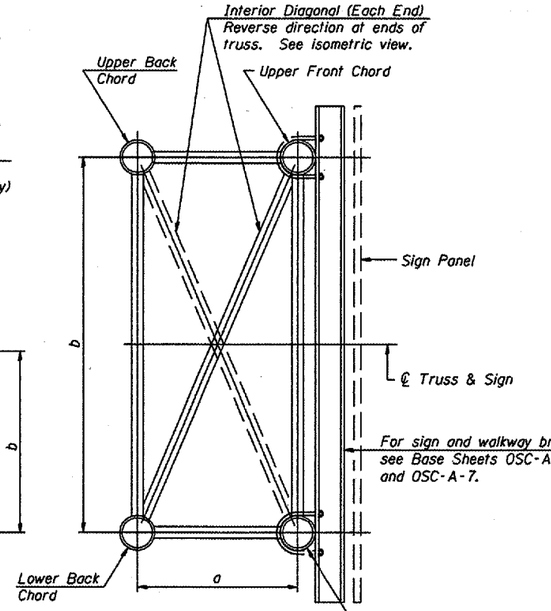
PLAN
(Walkway not shown)



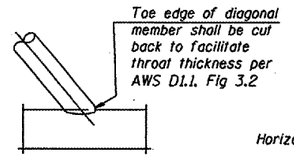
ELEVATION
(Sign and walkway omitted for clarity)

TYPICAL TRUSS UNIT

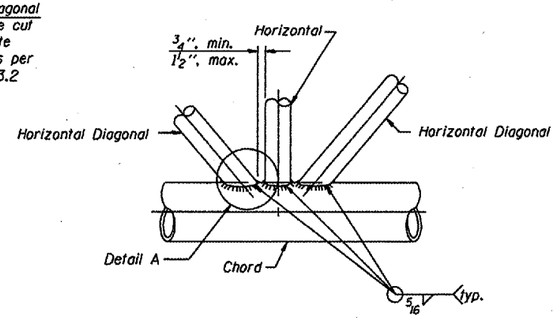
For Section B-B and Section C-C, see Base Sheet OSC-A-3.



SECTION A-A



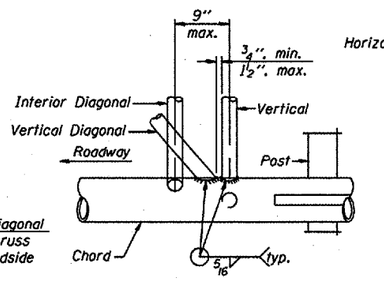
DETAIL A



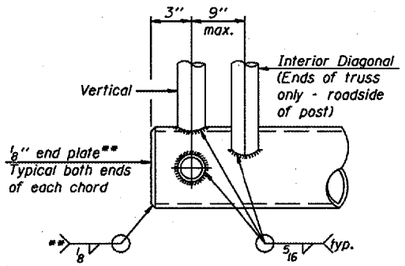
TRUSS INTERIOR JOINT DETAIL

Structure Number	Station	Truss Type	Design Length (L)	Number of Panels Per Unit	Panel Length (P)*
7C0251057R166.1	5502 + 38	II	30' - 0"	7	4' - 0"

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



POST END JOINT DETAIL



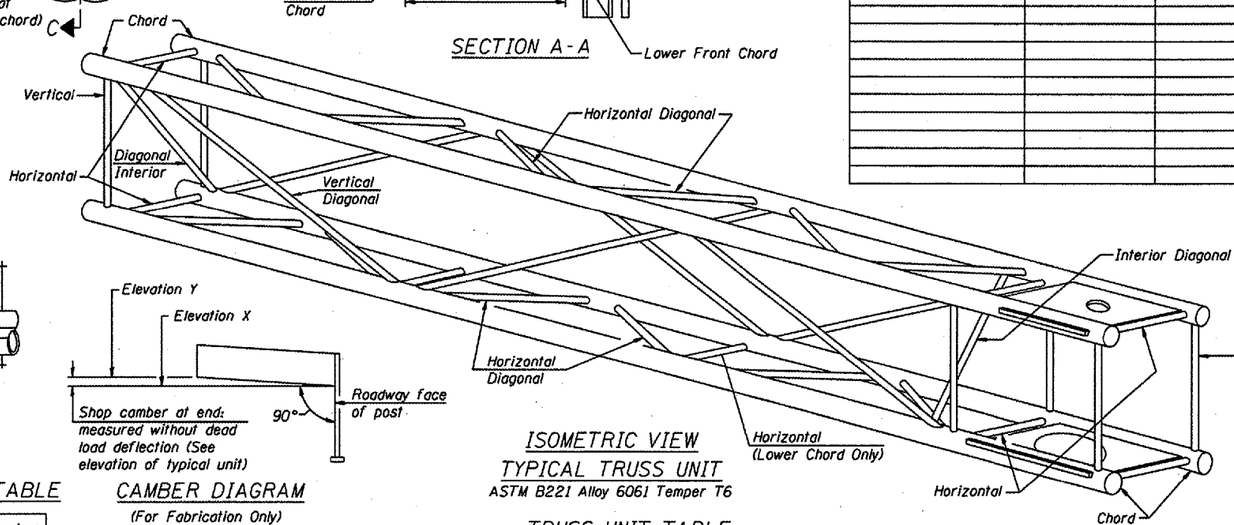
CANTILEVER END JOINT DETAIL

** Contractor may alternatively use standard aluminum drive-fit cap to close ends.

SHOP CAMBER TABLE

Unit Length (L)	Shop Camber at End
15'	1½"
16'-17'	1¾"
18'-20'	2"
21'-22'	2¼"
23'-25'	2½"
26'-27'	2¾"
28'-30'	3"
31'-32'	3¼"
33'-35'	3½"
36'-37'	4"
38'-40'	4½"

CAMBER DIAGRAM
(For Fabrication Only)



ISOMETRIC VIEW
TYPICAL TRUSS UNIT
ASTM B221 Alloy 6061 Temper T6

TRUSS UNIT TABLE

Truss Type	Dimension "a"	Dimension "b"	Dimension "s"	Limits for Panel Spacing (P)*	Up. & Low. Chord O.D.	Up. & Low. Chord Wall	Verticals; Horizontals; Vertical, Horizontal, and Interior Diagonals O.D.	Verticals; Horizontals; Vertical, Horizontal, and Interior Diagonals Wall
I-C-A	24"	54"	16"	36" min. to 48" max.	5"	5/16"	2½"	5/16"
II-C-A	36"	66"	21"	42" min. to 54" max.	6½"	5/16"	3¼"	5/16"
III-C-A (35' Max.)	36"	84"	21"	48" min. to 66" max.	7"	⅜"	3½"	⅜"
III-C-A (>35' to 40')	36"	84"	21"	48" min. to 66" max.	8"	⅜"	3½"	⅜"

*P = (L - s - 3") / # Panels

NUMBER	REVISION	DATE

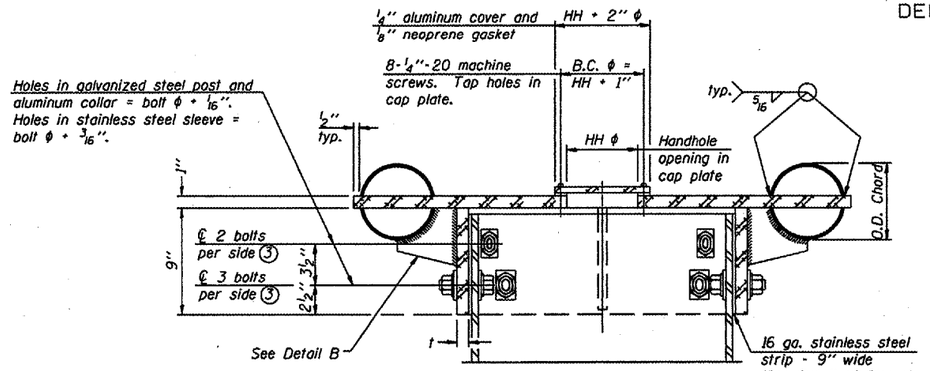
CANTILEVER SIGN STRUCTURES
TRUSS DETAILS
ALUMINUM TRUSS & STEEL POST

District 7
Overhead Sign Structure
Repair and Replacement

DESIGNED	-
CHECKED	-
DRAWN	-
CHECKED	-

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

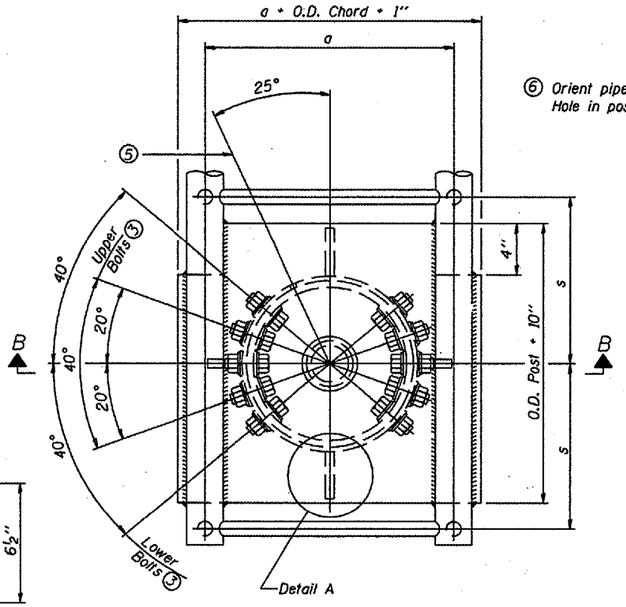
OSC-A-2 1-7-05



SECTION B-B

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

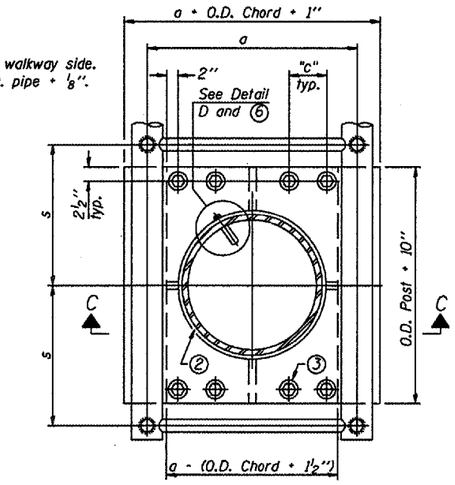
④ Collar I.D. shall be manufactured to correspond to O.D. of actual galvanized post and stainless steel sleeve plus 1/8" (±1/16"). Maximum gap between post and collar at any location equals 1/8" before tightening bolts.



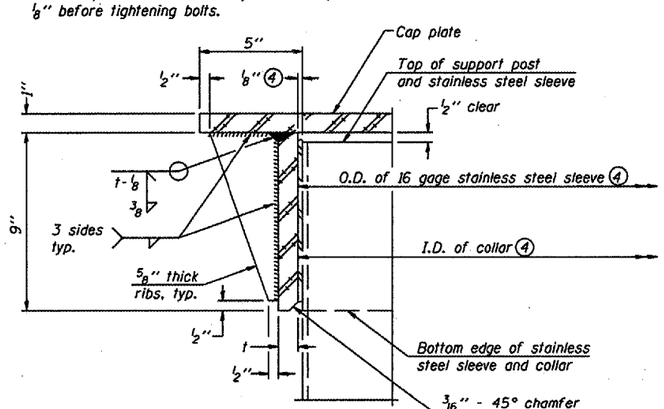
PLAN VIEW - TOP OF COLUMN

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

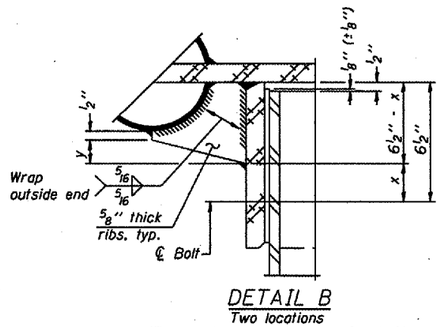
⑥ Orient pipe toward walkway side. Hole in post = O.D. pipe + 1/8".



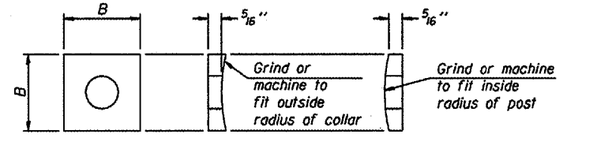
SECTION THRU POST ABOVE LOWER CHORDS



DETAIL A
(Two locations)

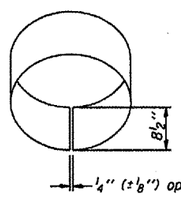


DETAIL B
Two locations
(For details not shown, see Detail C)



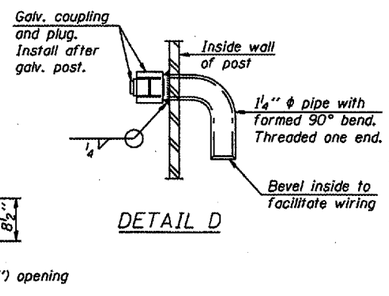
CONTOURED WASHERS

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"

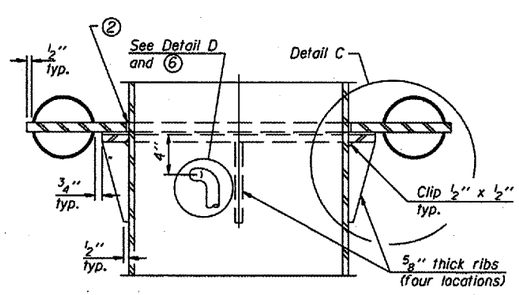


DETAIL OF STAINLESS STEEL SLEEVE

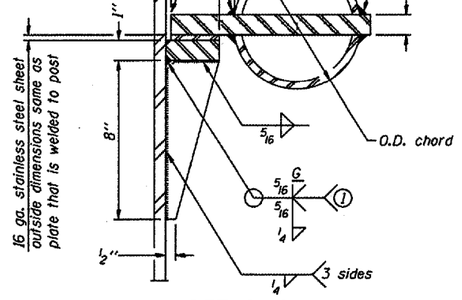
Weld to post after galvanizing. (Prepare post surface to insure tight, uniform fit and allow welding.) Welds to be 1/2" long at 6" cts. along top edge and at 1/4" opening.



DETAIL D



SECTION C-C



DETAIL C

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

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

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

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

CANTILEVER SIGN STRUCTURES
JUNCTURE DETAILS
ALUMINUM TRUSS & STEEL POST

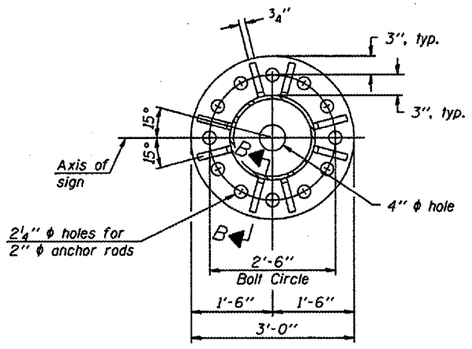
District 7
Overhead Sign Structure
Repair and Replacement

DESIGNED	-
CHECKED	-
DRAWN	-
CHECKED	-

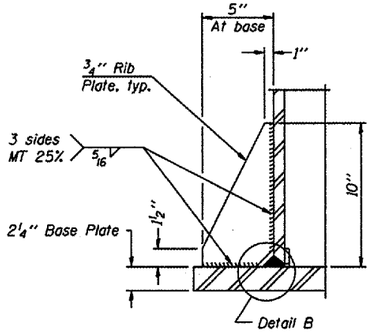
- 20
EXAMINED
ENGINEER OF BRIDGE DESIGN
PASSED
ENGINEER OF BRIDGES AND STRUCTURES

NUMBER	REVISION	DATE

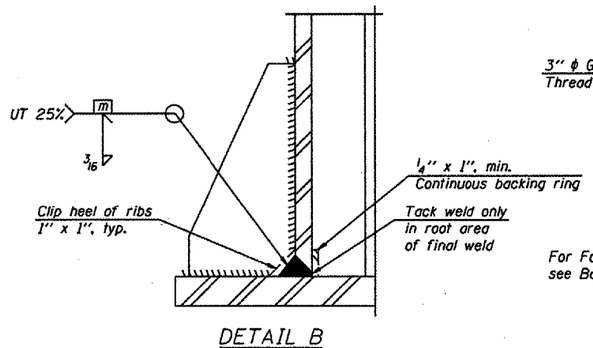
OSC-A-3 1-7-05



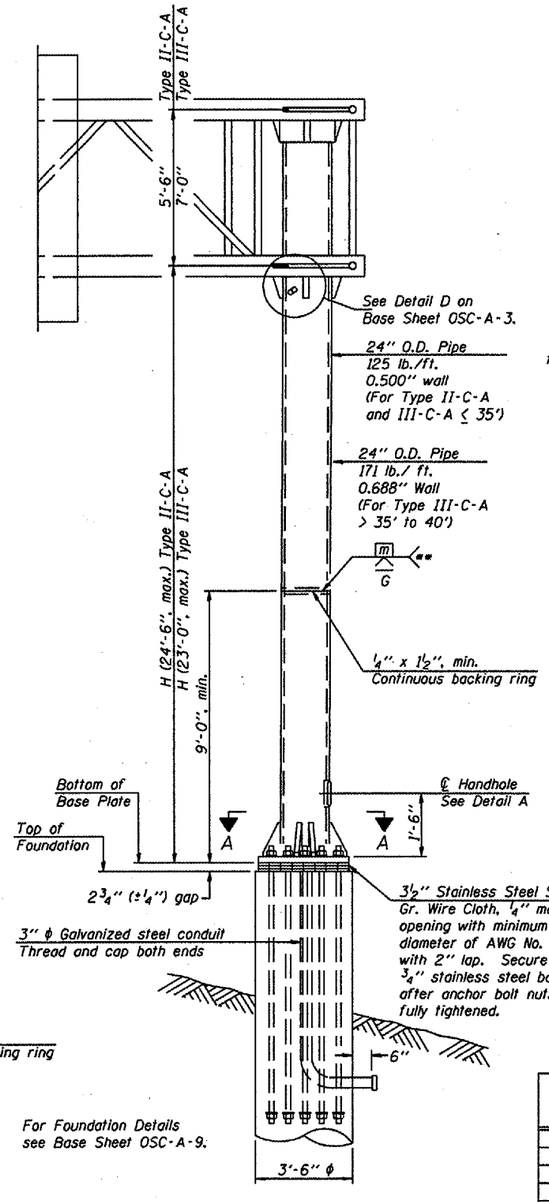
SECTION A-A



SECTION B-B

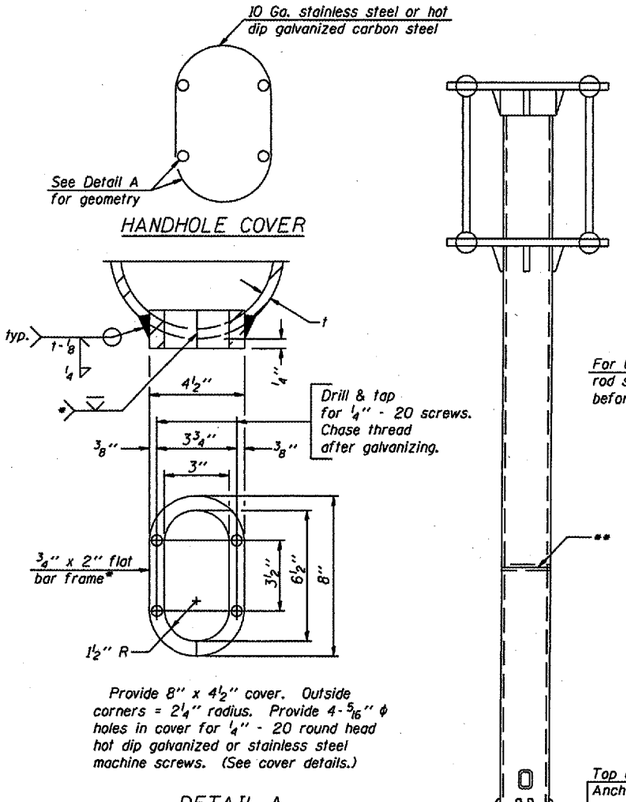


DETAIL B
(Typical rib)



FRONT ELEVATION

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



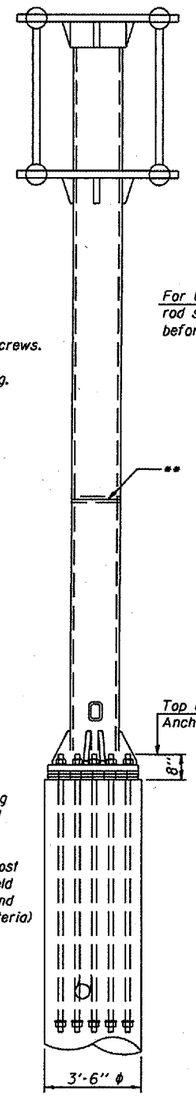
HANDHOLE COVER

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

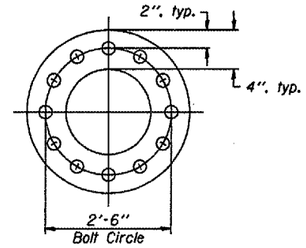
DETAIL A

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

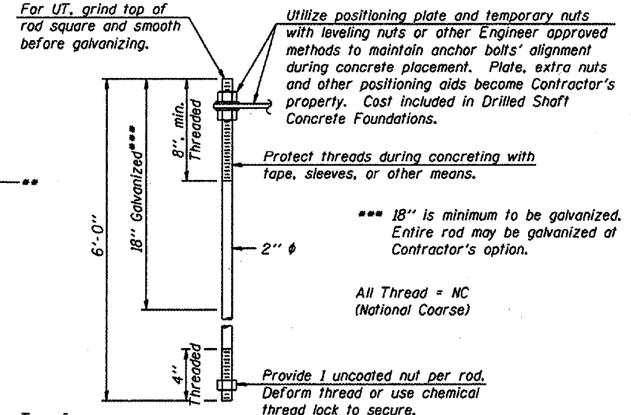
** Butt welded joint in post is only allowed for post heights (H) over 20 ft. in length. If used, weld procedure must be preapproved by Engineer and joint shall receive 100% RT or UT (tension criteria) at Contractor's expense.



SIDE ELEVATION



SUGGESTED POSITIONING PLATE



ANCHOR ROD DETAIL

Anchor rods shall conform to AASHTO M314 Grade 55 and meet Charpy V-Notch (CVN) energy of 15 lb.-ft. at 10° F. before galvanizing. Galvanize the upper 18" (minimum***) and associated M291, Grade A. C or DH heavy hex nuts and hardened washers per AASHTO M232. No welding shall be permitted on rods. Provide an unfinished nut at bottom, a hexagon locknut and washer above base plate and a leveling nut and washer below base plate. Nuts shall each be tightened with 200 lb.-ft. minimum torque against base plate. Before or after threading, but before galvanizing, each anchor rod shall be ultrasonically tested (UT) by a Level II or III inspector, qualified in accord with ANSI guidelines, using a straight beam, 1/2" ϕ 3.5 mhz. transducer, to insure no rejectable flaws exist in the upper 18" (tension criteria). Cost of testing included in Drilled Shaft Concrete Foundations.

Structure Number	Station	H
7C0251057R166.1	5502 + 38	24' - 4"

The Contractor shall field verify the height of the support.

NUMBER	REVISION	DATE

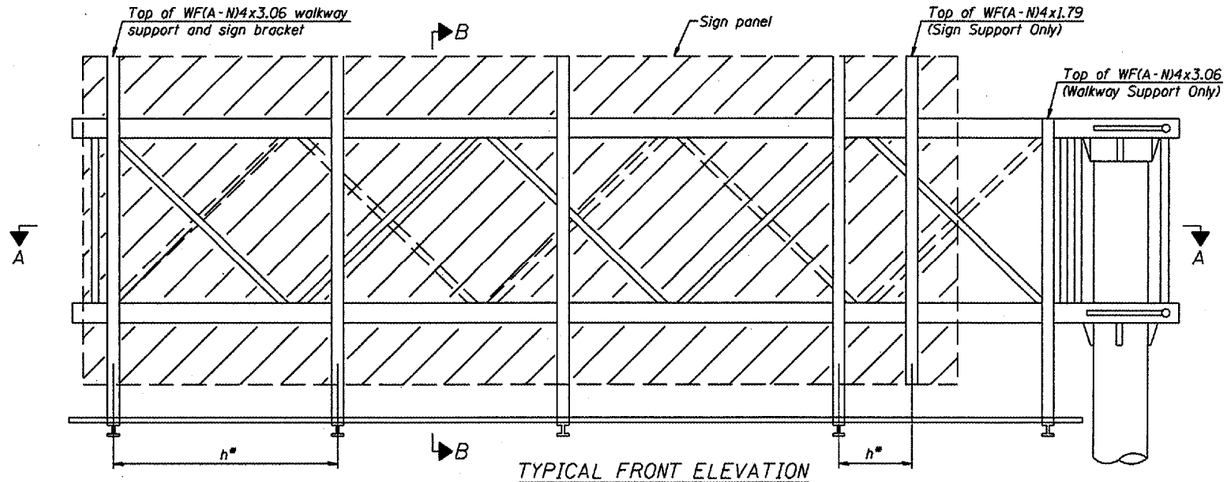
DESIGNED	-
CHECKED	-
DRAWN	-
CHECKED	-

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

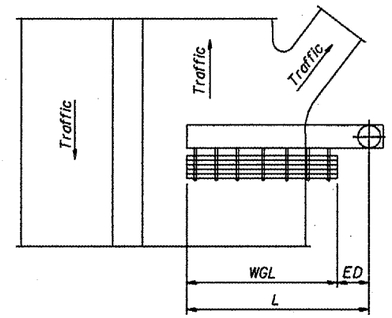
OSC-A-5 1-7-05

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

District 7
Overhead Sign Structure
Repair and Replacement

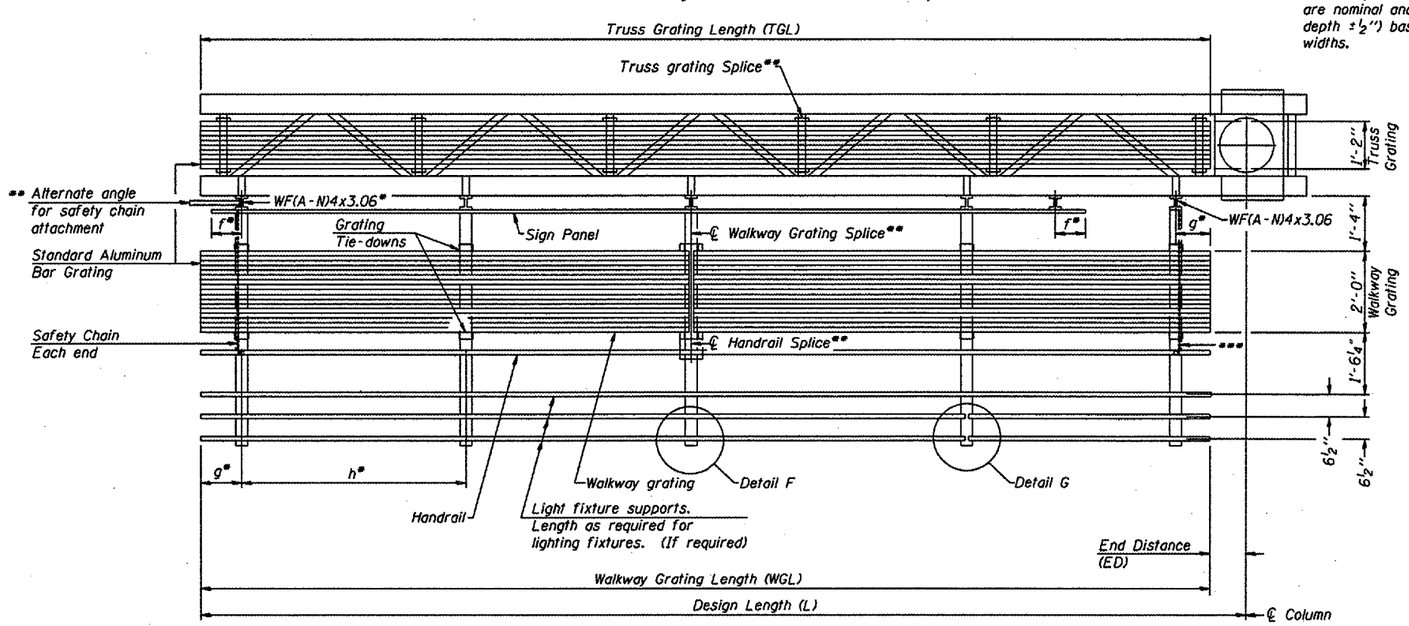


TYPICAL FRONT ELEVATION
With lights and handrail omitted for clarity.



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
7C025I057R166.1	5502 + 38	✳		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.

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

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

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

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

BRACKET TABLE

WF(A-N)4x1.79 or WF(A-N)4x3.06 ASTM B308, Alloy 6061-T6		
Sign Width		Number Brackets Required
Greater Than	Less Than or Equal To	
	8'-0"	2
8'-0"	14'-0"	3
14'-0"	20'-0"	4
20'-0"	26'-0"	5
26'-0"	32'-0"	6

NUMBER	REVISION	DATE

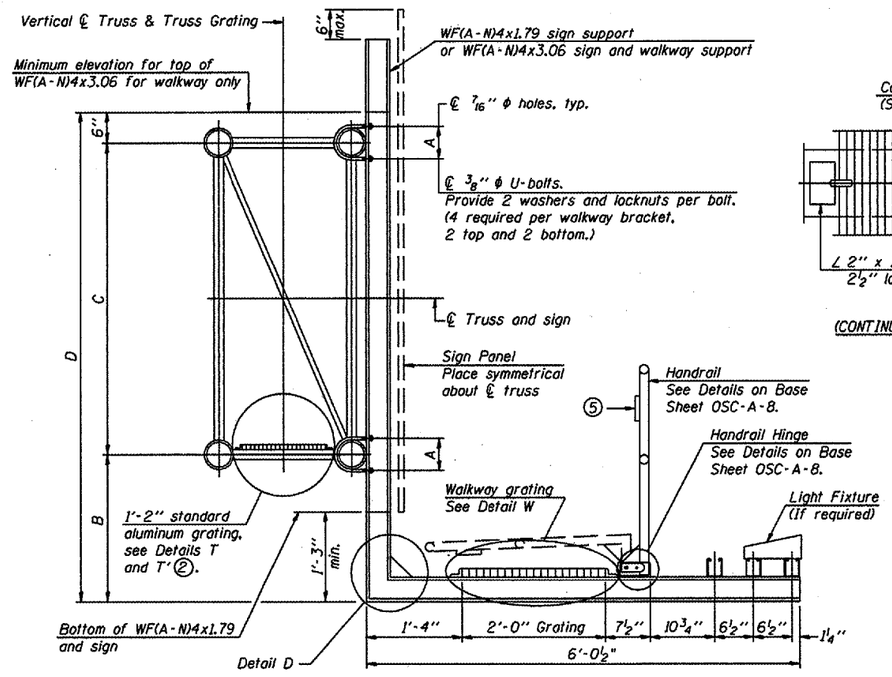
DESIGNED	-
CHECKED	-
DRAWN	-
CHECKED	-

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

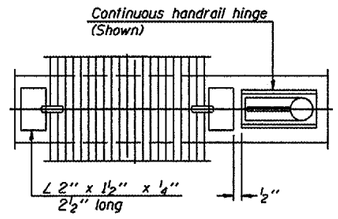
OSC-A-6 1-7-05

CANTILEVER SIGN STRUCTURES
ALUMINUM WALKWAY DETAILS
ALUMINUM TRUSS & STEEL POST

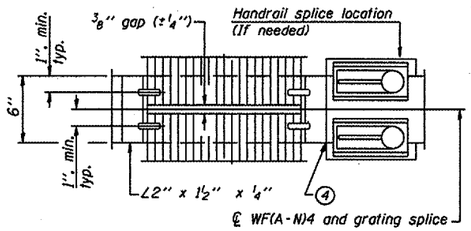
District 7
Overhead Sign Structure
Repair and Replacement



SECTION B-B



(CONTINUOUS WALKWAY GRATING)



(AT WALKWAY GRATING SPLICE)

SECTION W-W

SPECIFICATIONS FOR STANDARD ALUMINUM GRATING

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

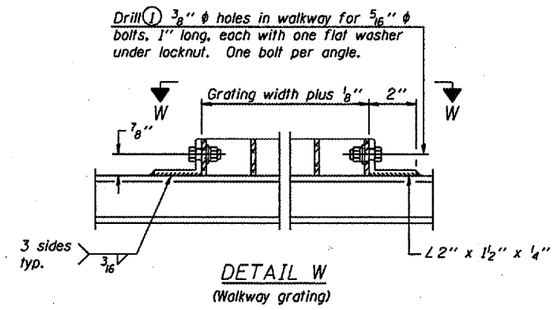
Cross bars (CB) shall be 3/16" x 1½" on 4" centers and conform to ASTM B221 Alloy 6063-T5 or 6061-T6.

OR

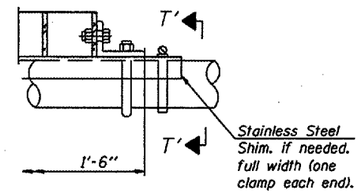
Aluminum Grating with modified "I" sections for main bearing bars shall meet the following requirements:

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

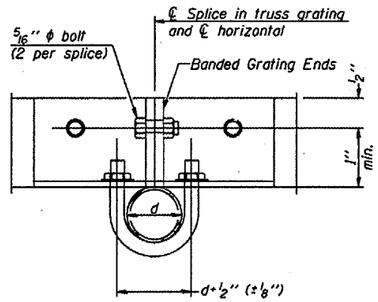
Cross bars shall conform to ASTM B221 Alloy 6063-T5 or T-42 and spaced on 4" centers.



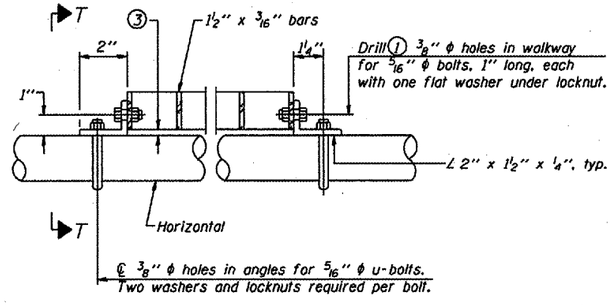
DETAIL W
(Walkway grating)



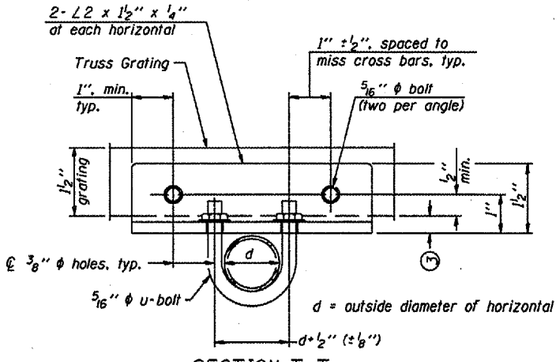
DETAIL T'
(Truss grating splice)
Details not shown same as Detail T.
Alternate materials may be used subject to the Engineer's review and approval.



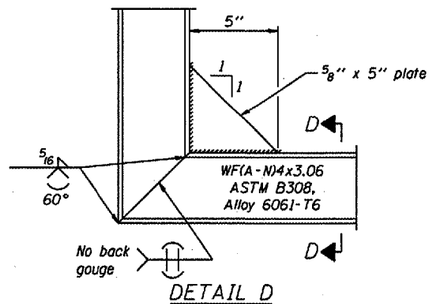
SECTION T'-T'



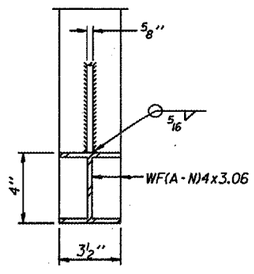
DETAIL T
(Truss grating at horizontal)



SECTION T-T



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



SECTION D-D

NUMBER	REVISION	DATE

DESIGNED	-
CHECKED	-
DRAWN	-
CHECKED	-

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

OSC-A-7 1-7-05

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

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

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

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

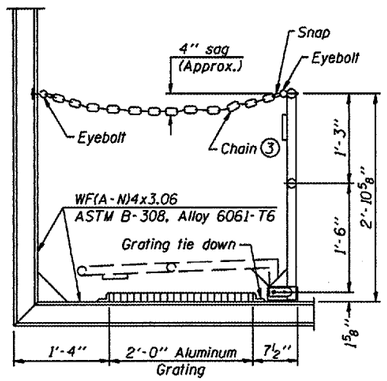
⑤ ℄ ⅛" x ½" x 2" welded to handrail posts to protect locations that contact grating.

Reuse Existing Walkway Support Brackets

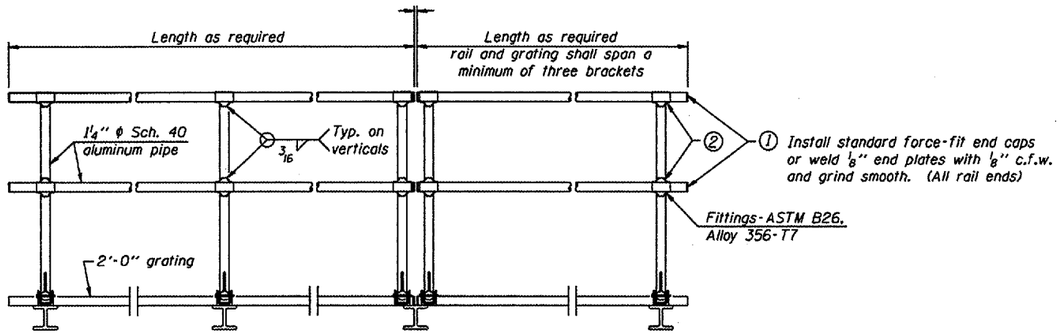
Structure Number	Station	A	B	C	D

CANTILEVER SIGN STRUCTURES
WALKWAY DETAILS
ALUMINUM TRUSS & STEEL POST

District 7
Overhead Sign Structure
Repair and Replacement



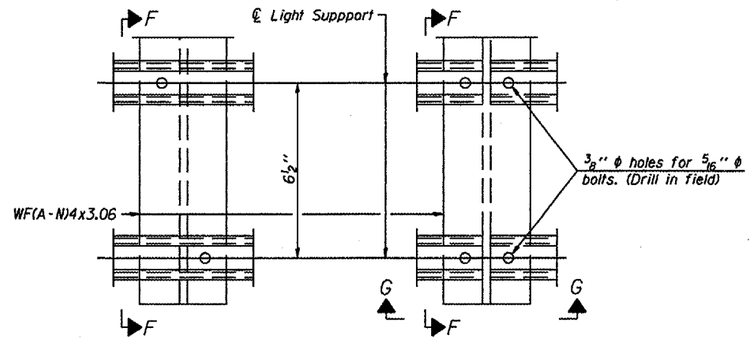
SIDE ELEVATION
(Showing Safety Chain W/O Sign)



FRONT ELEVATION

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

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

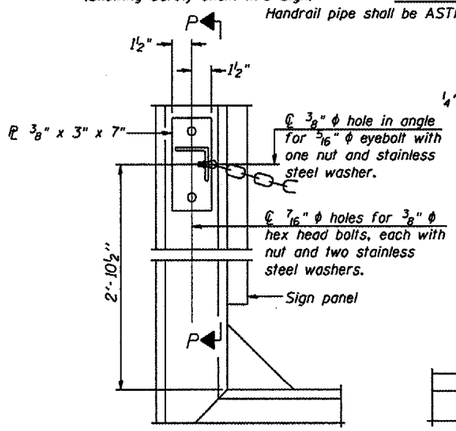


DETAIL F

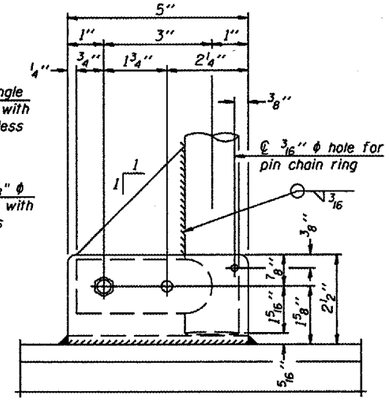
DETAIL G

HANDRAIL DETAILS

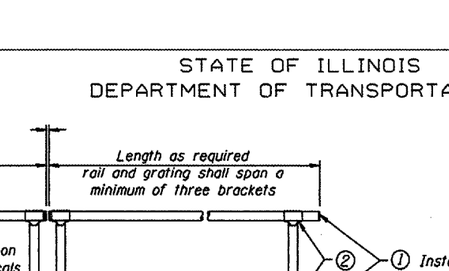
Handrail pipe shall be ASTM B241, Alloy 6063-T6 or Alloy 6061-T6.



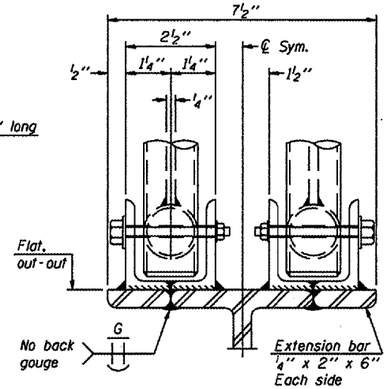
ALTERNATE SAFETY CHAIN ATTACHMENT
(With Sign Present)
Items not shown same as "Side Elevation" of "Handrail Details"



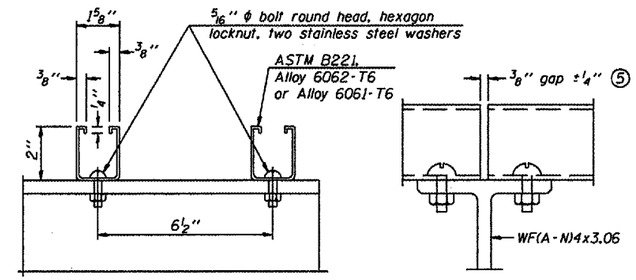
SIDE ELEVATION



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



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

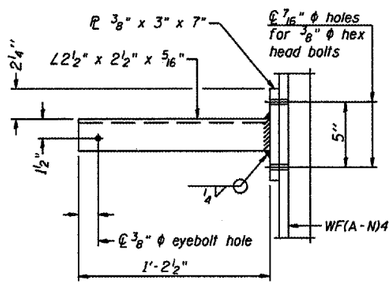


SECTION F-F

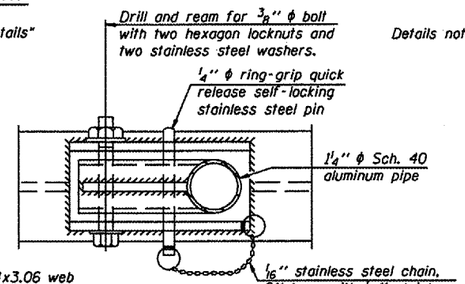
SECTION G-G

LIGHTING FIXTURE MOUNTS (IF REQUIRED)

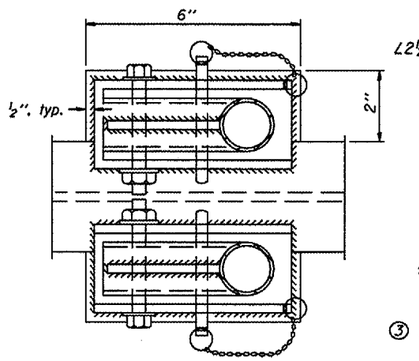
(5) Field cut ends of light support channels shall be free of burrs or hazardous projections and coated with zinc-rich primer or equivalent.



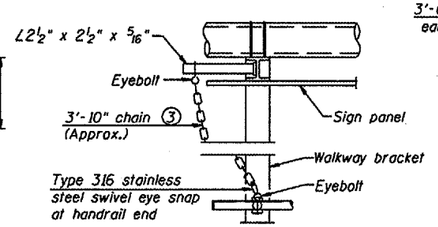
SECTION P-P



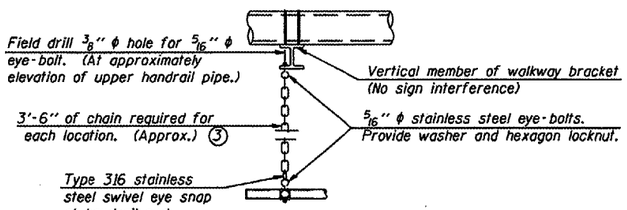
PLAN
DETAIL E HANDRAIL HINGE



PLAN AT HANDRAIL JOINT
Details not shown same as "PLAN"



ALTERNATE SAFETY CHAIN ATTACHMENT
Details not shown similar to "Safety Chain" Details
(Walkway omitted for clarity)



SAFETY CHAIN
One required for each end of each walkway.

(3) 3/16 " Type 304L or 316L Stainless Steel, 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

OSC-A-8 1-7-05

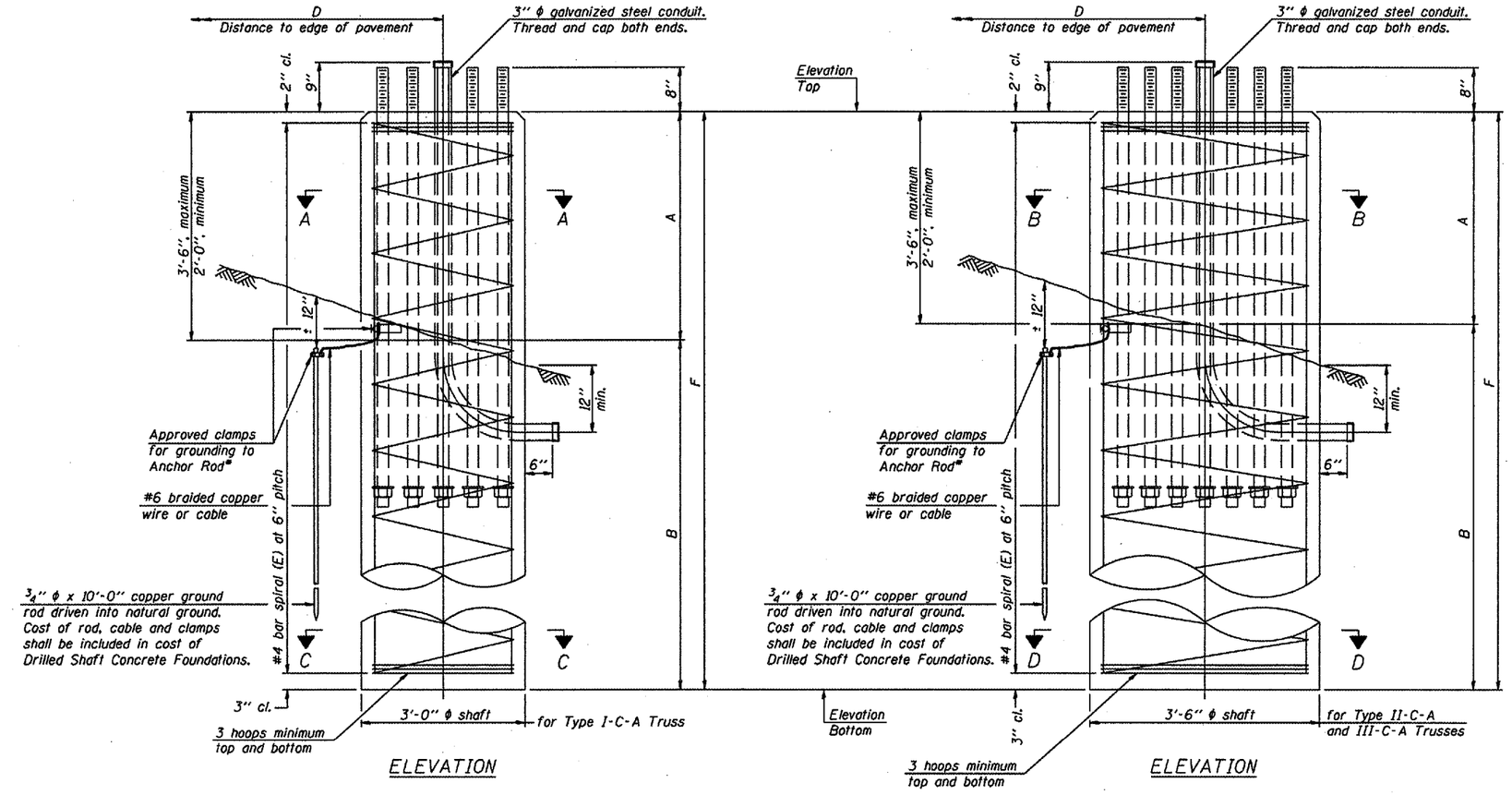
NUMBER	REVISION	DATE

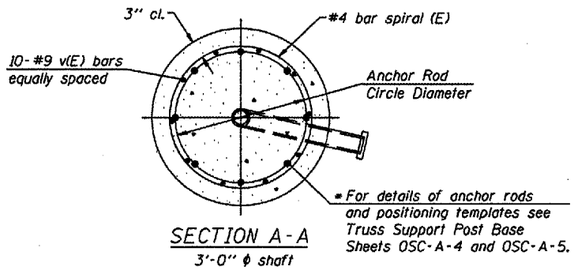
CANTILEVER SIGN STRUCTURES
HANDRAIL DETAILS
ALUMINUM TRUSS & STEEL POST

District 7
Overhead Sign Structure
Repair and Replacement

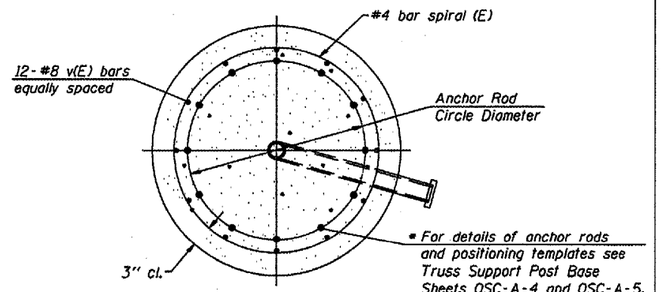
* Grind anchor rod to bright finish at ground clamp location before installing clamp.

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

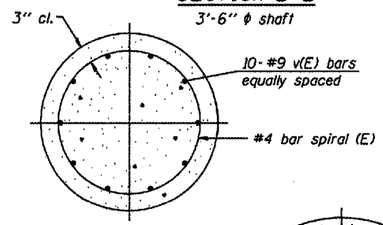




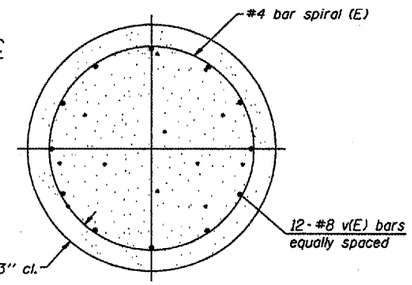
SECTION A-A
3'-0" ϕ shaft



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
7C025I057R166.1	5502 + 38	II	3' - 6"	N/A	N/A		3' - 0"	17' - 0"	20' - 0"	7.2

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

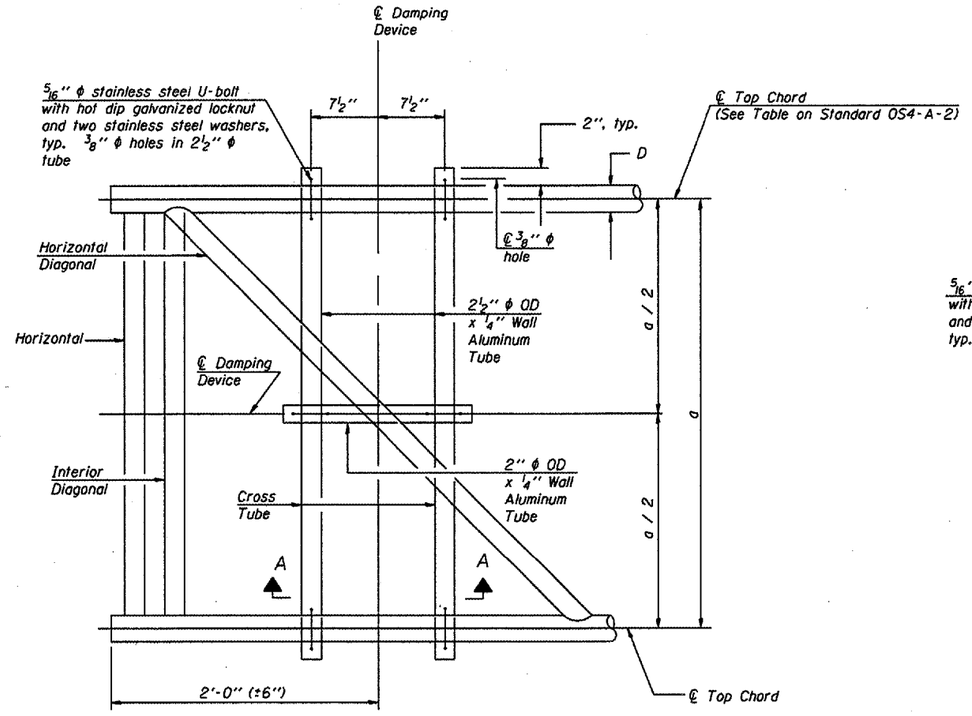
PASSED
ENGINEER OF BRIDGES AND STRUCTURES

NUMBER	REVISION	DATE

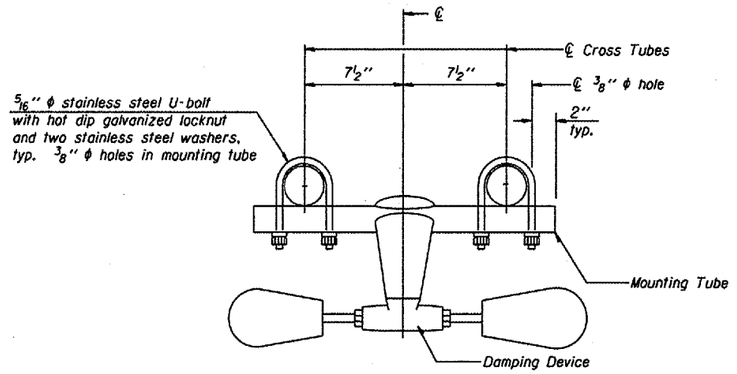
OSC-A-9 1-7-05

CANTILEVER SIGN STRUCTURES
DRILLED SHAFT
ALUMINUM TRUSS & STEEL POST

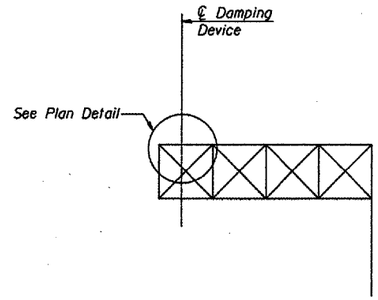
District 7
Overhead Sign Structure
Repair and Replacement



PLAN DETAIL



TRUSS DAMPING
DEVICE CONNECTION DETAIL

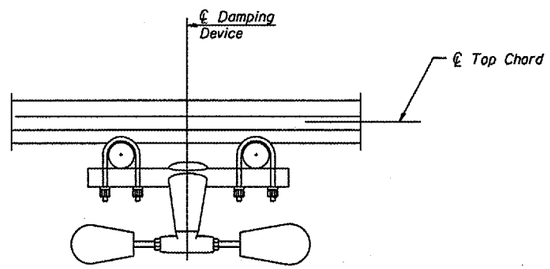


ELEVATION
Aluminum Cantilever
Sign Structure

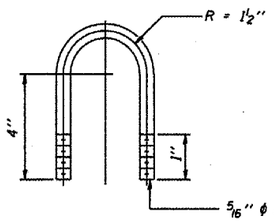
GENERAL NOTES

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

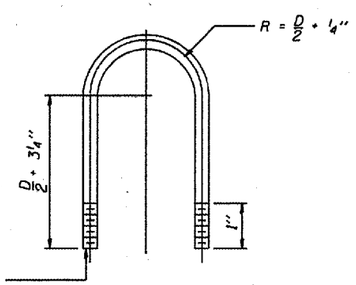
Materials: Aluminum tubes shall be ASTM B221 alloy 6061 temper T6



SECTION A-A



DAMPING DEVICE MOUNTING
TUBE U-BOLT DETAIL
(Typical)



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

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

OSC-A-D 1-7-05

CANTILEVER SIGN STRUCTURE
DAMPING DEVICE

District 7
Overhead Sign Structure
Repair and Replacement

Illinois Department of Transportation
Division of Highways
Ill. Dept. of Trans. D-7

LOCATION NO.: 7-02

SOIL BORING LOG

Page 1 of 1

Date 5/17/05

ROUTE FAI 57 DESCRIPTION Cantilevered Sign Truss Foundation LOGGED BY E. Sandschafer

SECTION N/A LOCATION SW 1/4, SEC. 26, TWP. 9 N, RNG. 6 E, 3 PM

COUNTY Effingham DRILLING METHOD Hollow stem auger & split spoon HAMMER TYPE Auto 140#

STRUCT. NO. N/A
Station

BORING NO. 1
Station 5502+64
Offset 47.00ft E of CL of NB I-57
Ground Surface Elev. 197.85 ft

Surface Water Elev. N/A ft
Stream Bed Elev. N/A ft

Groundwater Elev.:
First Encounter 180.9 ft
Upon Completion 182.1 ft
After 24 Hrs. 194.9 ft

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
Topsoil. 197.65			
Medium to stiff, damp, red marbled gray, CLAY.			
	5		
	8	1.6	20
	11	B	
-5	3		
Trace fine gravel.	5	1.0	19
	6	B	
190.85			
Soft, very damp, brown/red/gray, SILTY LOAM.	2		
	6	0.3	-19
189.65	10	B	
Hard, very moist, brown, SANDY CLAY TILL.			
-10	19		
	30	7.0	9
	37	S	
	13		
	16	5.6	8
	19	S	
183.35			
Hard, very moist, gray, CLAY TILL. -15	7		
	11	4.1	9
	15	B	
	25		
180.15			
Gray, very moist, fine grained, SAND w/ trace gravel. *19% passing #200 sieve.* 179.65	39	+4.5	7
	40	PP	
Hard, very moist, gray, SANDY CLAY TILL. -20	18		

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
Hard, very moist, gray, SANDY CLAY TILL. *(continued)*	32	+9.7	8
	44	DNF	
	24		
	31	4.8	9
	41	S	
-25	25		
	39	5.3	9
	50	S	
	16		
	28	4.8	10
169.65	43	BS	
Gray, wet, fine grained, SAND. 169.35 *26% passing #200 sieve.*			
Extent of exploration.			
-30			
-35			
-40			

Benchmark: TBM Chiseled "X" on top of bolt on SW corner of existing overhead sign truss foundation (East Sta 5502+54) = assumed 200.00'
(NB Centerline station 5502+50 = 200.57' relative.)

Relative new boring location = 10' North and 6' West of existing foundation noted above.

Latitude N 39 deg 11.22 min, Longitude W 88 deg 30.26 min, Map Datum WGS 84

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
Ill. Dept. of Trans. D-7

LOCATION NO.: 7-03

SOIL BORING LOG

Page 1 of 1

Date 5/18/05

ROUTE US 51 DESCRIPTION Mast Arm Foundation LOGGED BY E. Sandschafer

SECTION N/A LOCATION , SEC. 9, TWP. 6 N, RNG. 1 E, 3 PM

COUNTY Fayette DRILLING METHOD Hollow stem auger & split spoon HAMMER TYPE Auto 140#

STRUCT. NO. N/A
Station

BORING NO. 1
Station 56+62
Offset 36.50ft Lt
Ground Surface Elev. 195.75 ft

Surface Water Elev. N/A ft
Stream Bed Elev. N/A ft

Groundwater Elev.:
First Encounter 170.5 ft
Upon Completion 174.8 ft
After 24 Hrs. 176.8 ft

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
Crushed stone. 194.95			
Gray, LOAM.			
	7		
192.75	15	2.1	20
Very stiff, damp, gray mottled red, CLAY w/ trace sand.	10	B	
191.25			
Stiff, damp, gray, SILTY CLAY. -5	5		
190.25	6	1.3	18
Gray, SANDY LOAM.	10	B	
188.65			
Stiff to very stiff, damp, gray, CLAY.	3		
	5	2.1	24
	7	B	
-10	3		
	5	1.9	18
	8	B	
	5		
	6	1.7	20
	8	B	
-15	3		
	6	2.6	22
	7	B	
	4		
	7	3.4	20
	8	B	
-20	4		

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
Stiff to very stiff, damp, gray, CLAY. *(continued)*	6	3.0	21
	8	B	
173.75			
Stiff to soft, very damp, gray to brown, SILTY LOAM w/ sand and organics. *Estimated natural ground.*	7		
	6	1.2	19
	6	S	
-25	0		
	1	0.3	21
	2	B	
168.75			
Very stiff, damp, gray mottled brown, CLAY w/ trace sand.	2		
	4	2.5	16
167.45	6	B	
Soft, wet, gray, SANDY LOAM. 167.25			
Extent of exploration.			
-30			
-35			
-40			

Benchmark: TBM top of bolt on NE corner existing overhead sign structure #7C026U051L011.0, Sta 55+67 on centerline US 51 = assumed 200.00'

(Alternate TBM top of bolt on NW corner existing overhead sign structure #7C026U051R011.0, 45' Lt Sta 56+72, US 51 = assumed 198.58')

Latitude N 38 deg 58.57 min, Longitude W 89 deg 05.71 min, Map Datum WGS 84

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
Ill. Dept. of Trans. D-7

LOCATION NO.: 7-05

SOIL BORING LOG

Page 1 of 1

Date 5/18/05

ROUTE US 51 DESCRIPTION Mast Arm Foundation LOGGED BY E. Sandschafer

SECTION N/A LOCATION SEC. 9, TWP. 6 N, RNG. 1 E, 3 PM

COUNTY Fayette DRILLING METHOD Hollow stem auger & split spoon HAMMER TYPE Auto 140#

STRUCT. NO. N/A
Station

BORING NO. 2
Station 55+48
Offset 0.00ft
Ground Surface Elev. 196.07 ft

Surface Water Elev. N/A ft
Stream Bed Elev. N/A ft

Groundwater Elev.:
First Encounter 171.5 ft
Upon Completion 171.5 ft
After 24 Hrs. 175.1 ft

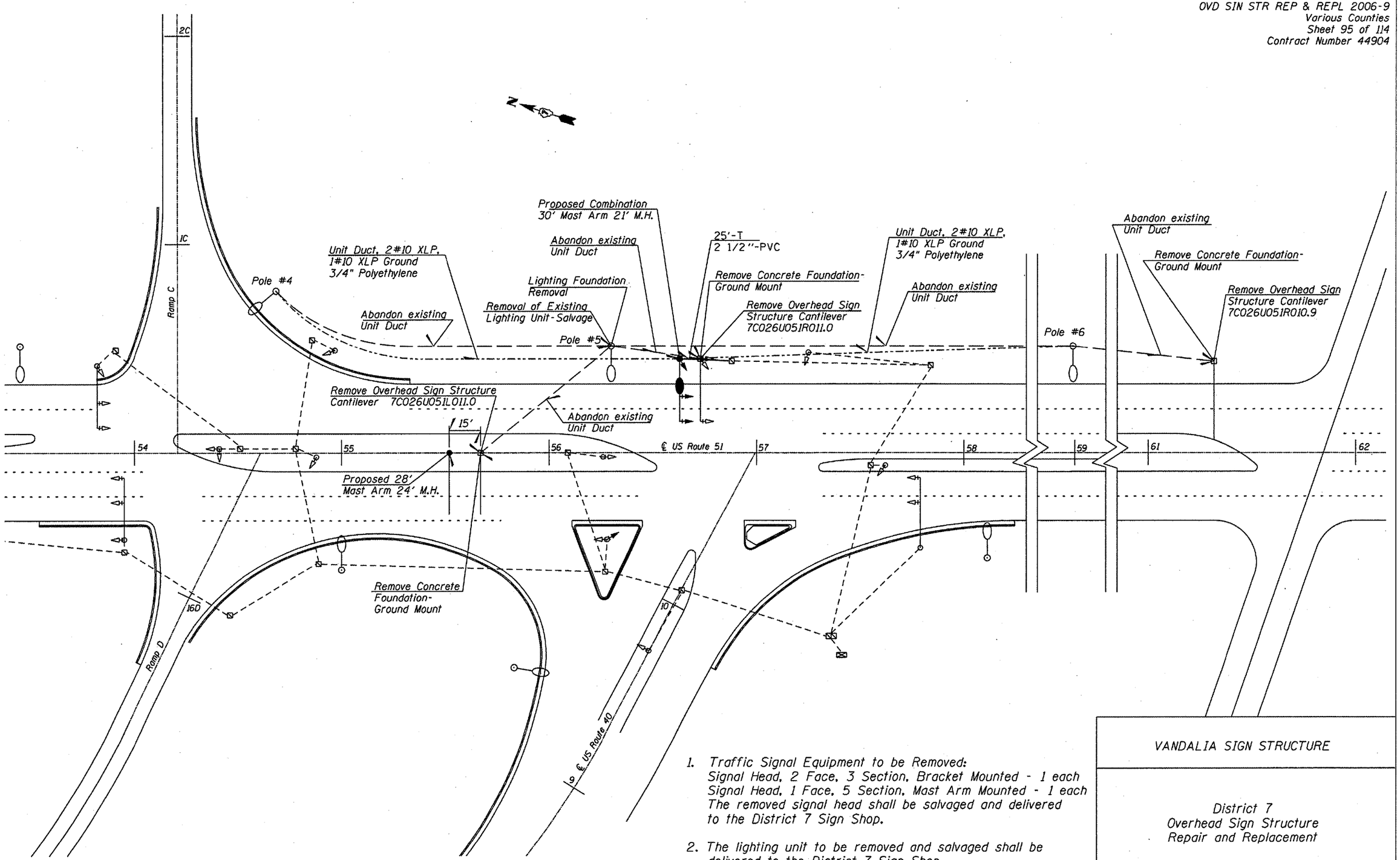
DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)	Material Description
195.67				Concrete median surface.
				Sand median fill.
194.67				
	3			Stiff to very stiff, damp, gray, CLAY w/ trace silt.
	3	1.2	18	
	5	B		
-5	2			
	5	2.3	24	
	7	B		
	4			
	7	1.4	21+	
	7	B		
-10	3			
	3	1.3	21	
	4	B		
	0			
	2	0.8	15	Red, w/ trace fine gravel.
	3	S		
181.57				
-15	2			Medium to very soft, damp, red, SANDY LOAM.
	4	0.5	17	
	5	S		
	3			
	4	0.1	12	
	3	S		
-20	4			Many fine gravel.

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)	Material Description
	7	0.4	13	
	8	S		
173.57	0			
	0	0.1	21	Red, SILTY LOAM.
172.57	1	S		
				Hard, moist, brown, SANDY LOAM TILL.
171.57				
-25	0			Very soft, wet, red, SILTY LOAM w/ trace fine gravel.
170.57	14	0.1	24	
	20	B		Very dense, moist, brown to red, SANDY LOAM TILL.
	50			
	50/3"		6	
	50/2"			
166.07	42			
-30	50/4"		8	Brown, wet, SANDY LOAM.
165.27	50/2"			
				Very dense, moist, brown/gray, SANDY LOAM TILL.
	37			
162.87	50/5"		6	
	50/3"			Extent of exploration.
-35				Benchmark: TBM top of bolt on NE corner existing overhead sign structure #7C026U051L011.0, Sta 55+67 on centerline US 51 = assumed 200.00'
				(Alternate TBM top of bolt on NW corner existing overhead sign structure #7C026U051R011.0, 45' Lt Sta 56+72, US 51 = assumed 198.58')
-40				

Latitude N 38 deg 58.58 min, Longitude W 89 deg 05.73 min, Map Datum WGS 84

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)

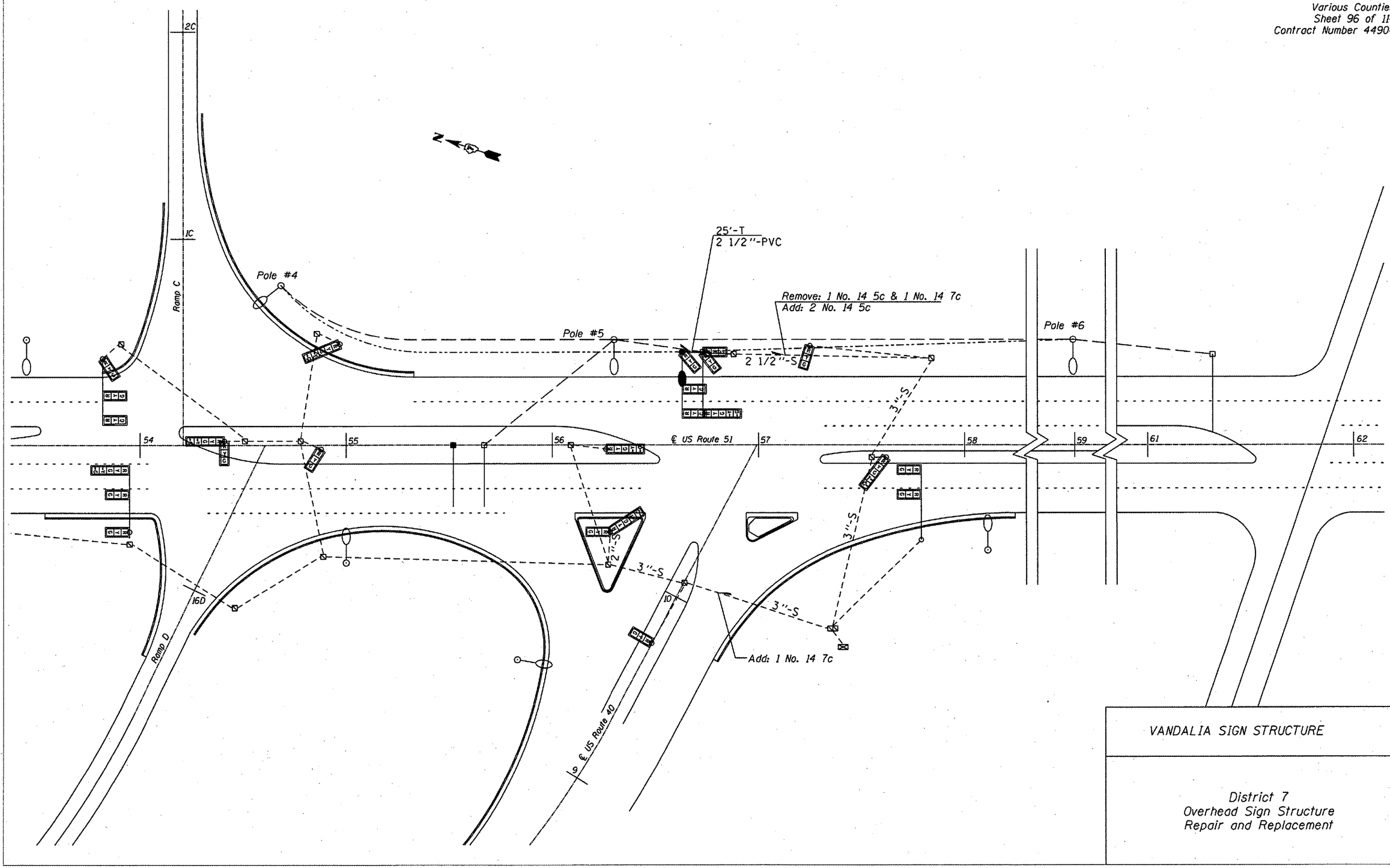


1. Traffic Signal Equipment to be Removed:
   Signal Head, 2 Face, 3 Section, Bracket Mounted - 1 each
   Signal Head, 1 Face, 5 Section, Mast Arm Mounted - 1 each
   The removed signal head shall be salvaged and delivered to the District 7 Sign Shop.

2. The lighting unit to be removed and salvaged shall be delivered to the District 7 Sign Shop.

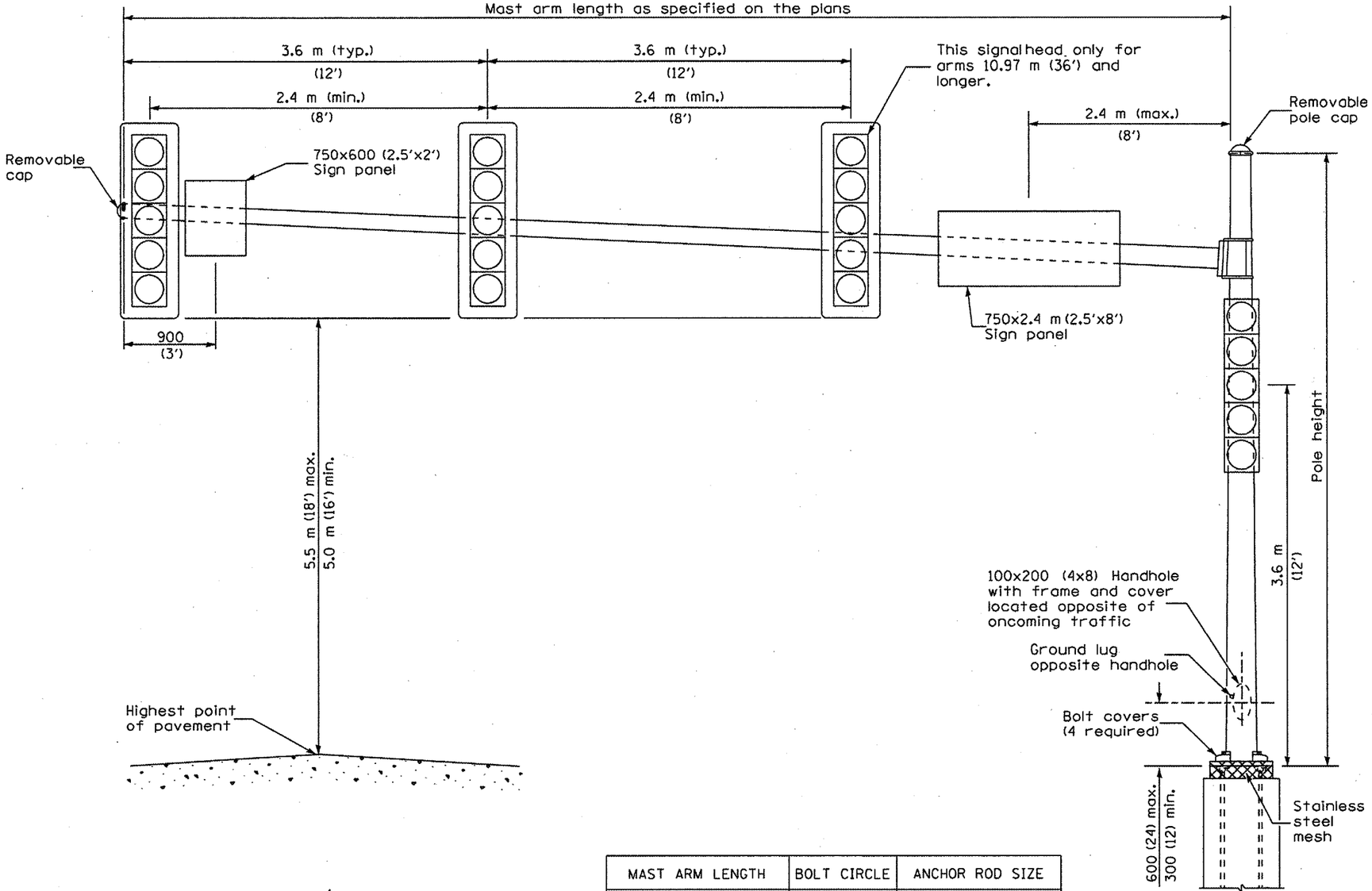
VANDALIA SIGN STRUCTURE

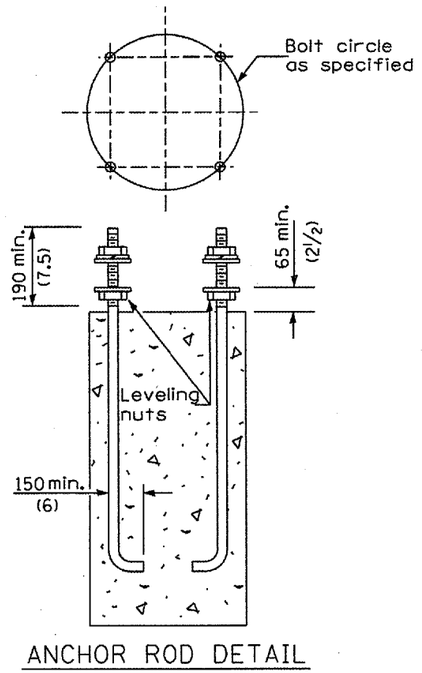
District 7
Overhead Sign Structure
Repair and Replacement



VANDALIA SIGN STRUCTURE

District 7
Overhead Sign Structure
Repair and Replacement





ANCHOR ROD DETAIL

MAST ARM LENGTH	BOLT CIRCLE	ANCHOR ROD SIZE
4.87 m thru 6.10 m (16' thru 20')	380 (15)	38 x 1.5 m (1.5 x 60)
6.71 m thru 9.14 m (22' thru 30')	450 (18)	38 x 1.5 m (1.5 x 60)
9.75 m thru 12.20 m (32' thru 40')	450 (18)	44 x 2.10 m (1.75 x 84)
12.80 m thru 16.80 m (42' thru 55')	535 (21)	44 x 2.10 m (1.75 x 84)

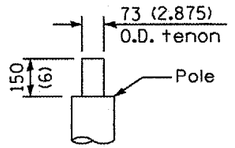
GENERAL NOTES

Signal heads, sign panels, and other attachments are shown for minimum design loading purposes only. Each signal head shall weigh 36 kg (80 lb) and have a projected area of 1.37 sq m (14.7 sq ft).

All dimensions are in millimeters (inches) unless otherwise shown.

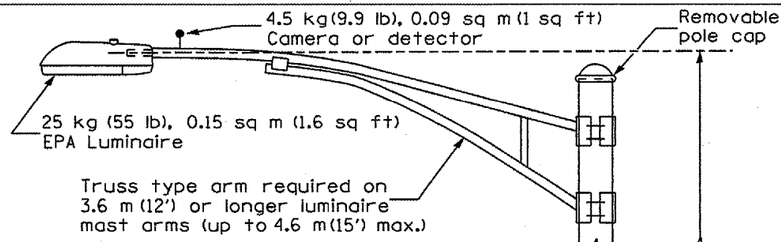
STEEL MAST ARM ASSEMBLY AND POLE

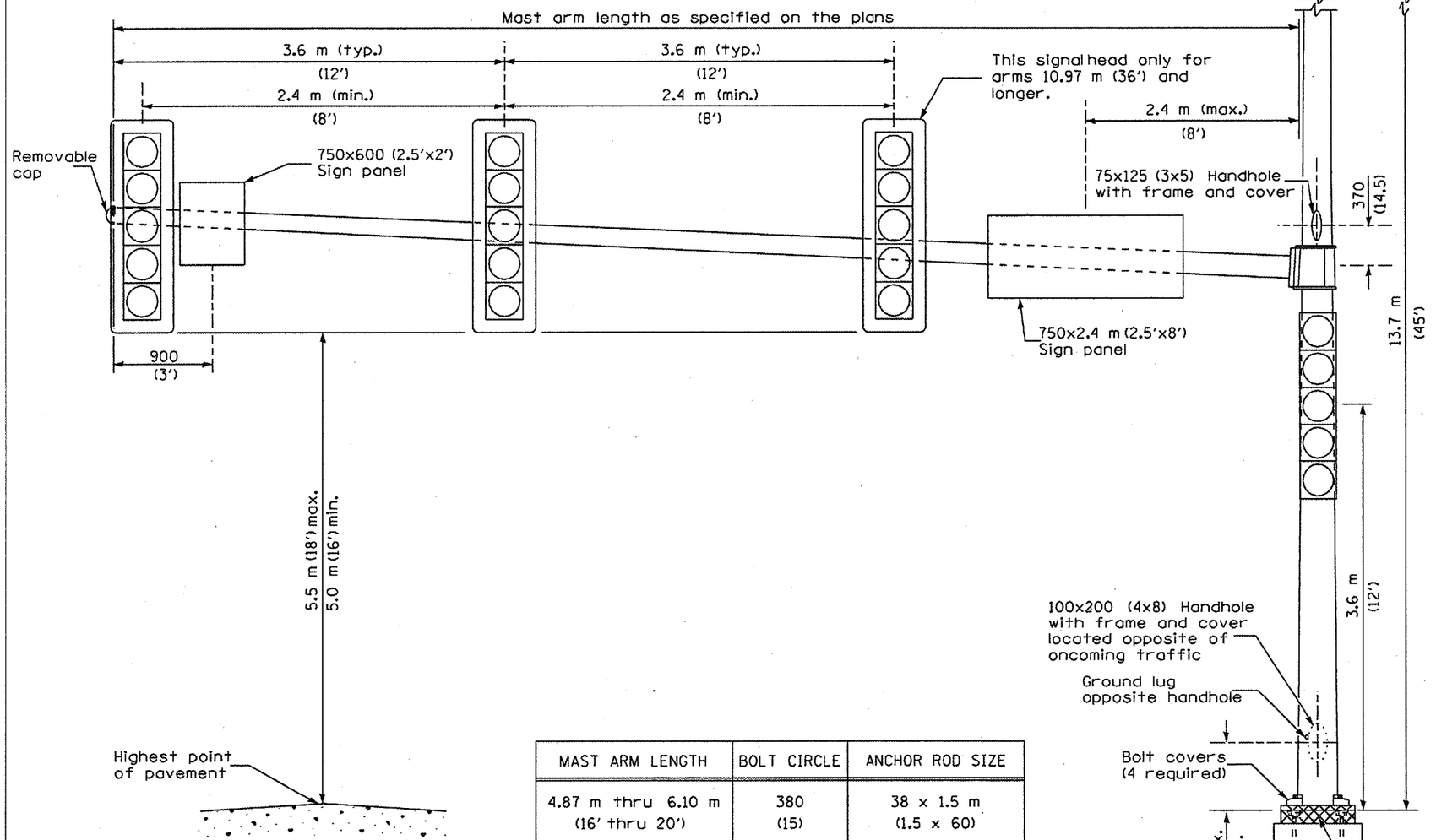
STANDARD 877001-02



TENON TOP FOR VERTICAL MOUNTED LUMINAIRES

Note:
The tenon top shall support a bullhorn fitting with two (twin) vertically mounted luminaires (clamp-mounted bullhorn assembly with removable pole cap acceptable). Each luminaire shall weigh 45 kg (100 lb) and have an effective projected (EPA) area of 0.36 sq m (3.85 sq ft) .





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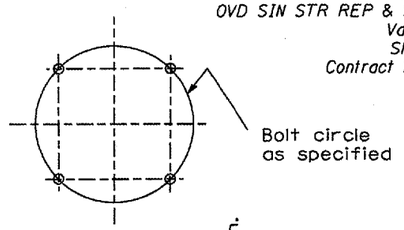
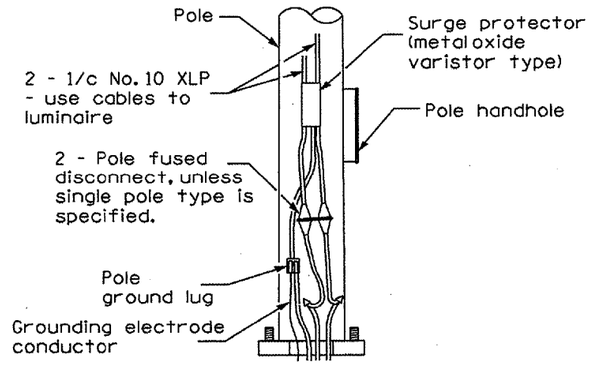


ANCHOR ROD DETAIL



POLE BASE DETAIL

GENERAL NOTES

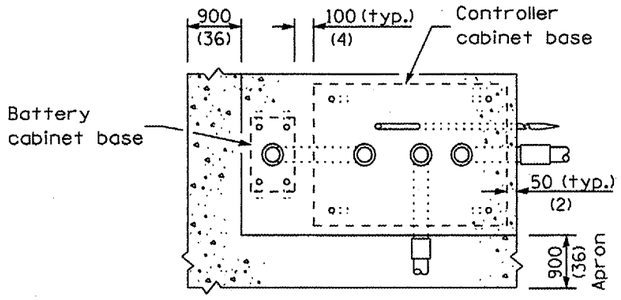
Signal heads, sign panels, and other attachments are shown for minimum design loading purposes only. Each signal head shall weigh 36 kg (80 lb) and have a projected area of 1.37 sq m (14.7 sq ft).

All dimensions are in millimeters (inches) unless otherwise shown.

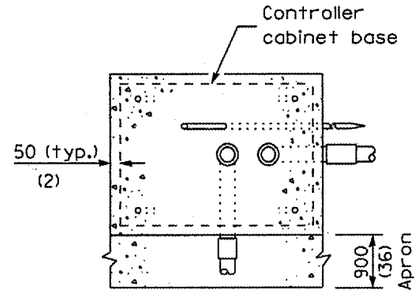
STEEL COMBINATION MAST ARM ASSEMBLY AND POLE

STANDARD 877011-02

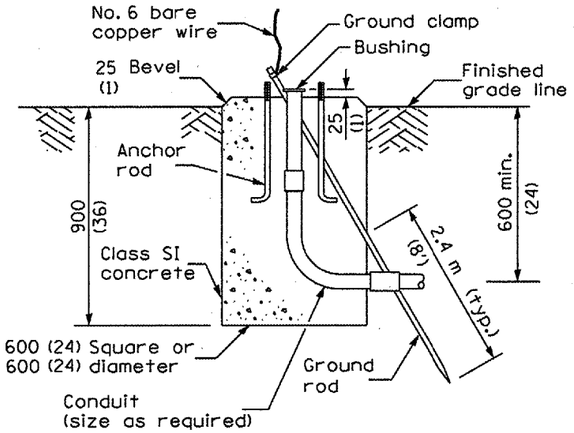
All dimensions are in millimeters (inches) unless otherwise shown.



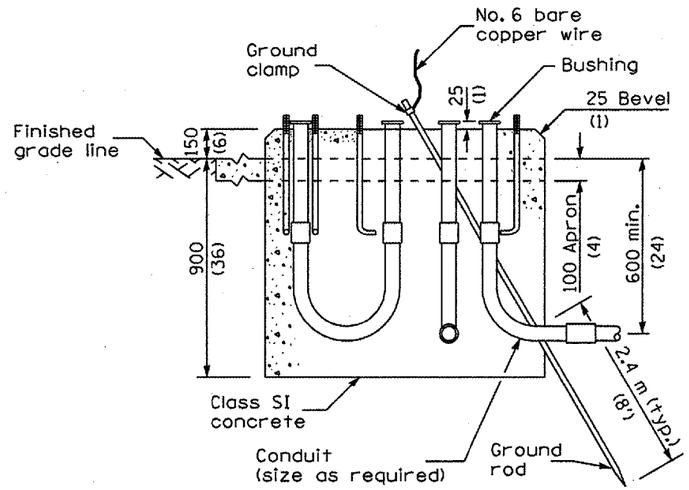
TOP VIEW



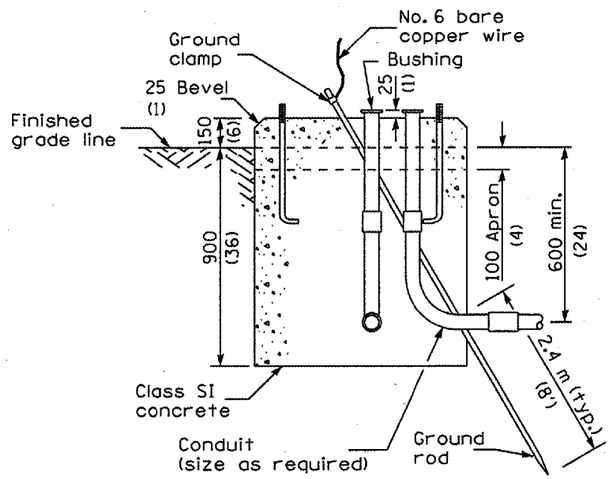
TOP VIEW



TYPE A



TYPE C
FOR GROUND MOUNTED
CONTROLLER CABINET
AND UPS BATTERY CABINET



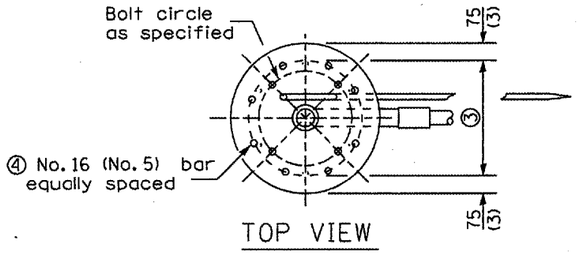
TYPE D
FOR GROUND MOUNTED
CONTROLLER CABINET

DATE	REVISIONS
4-1-06	Added Type C
	foundation detail.
1-1-05	Revised Type E
	foundation detail.

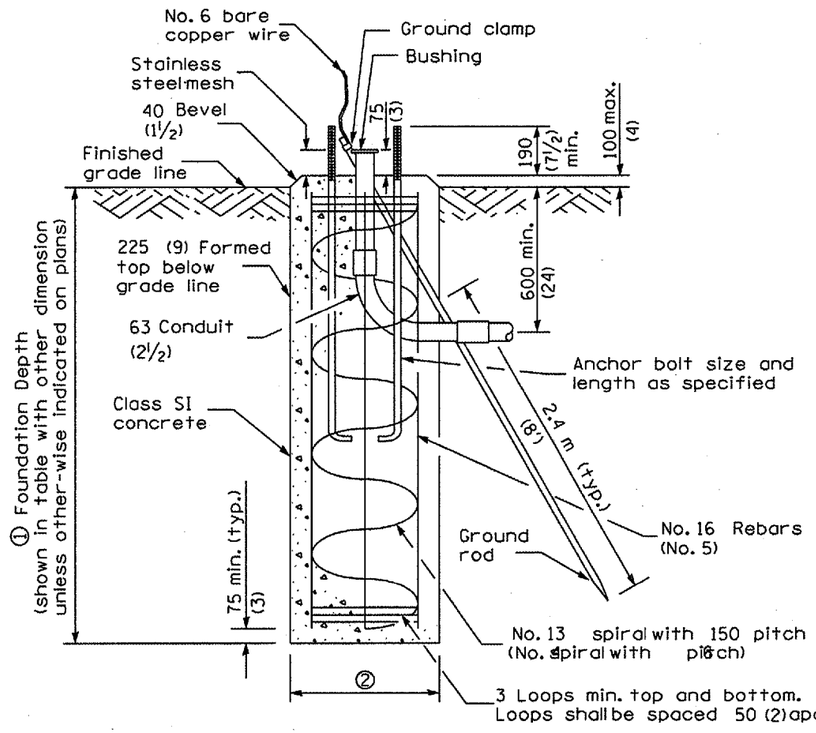
CONCRETE FOUNDATION DETAILS

(Sheet 1 of 2)

STANDARD 878001-04



TOP VIEW

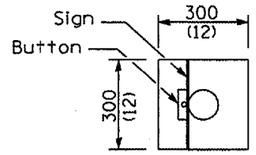


Mast Arm Length	① Foundation Depth*	② Foundation Diameter	③ Spiral Diameter	④ Quantity of No. 16 (No. 5) Bars
Less than 9.1 m (30')	3.0 m (10'-0")	750 (30)	600 (24)	8
Greater than or equal to 9.1 m (30') and less than 12.2 m (40')	4.1 m (13'-6")	750 (30)	600 (24)	8
	3.4 m (11'-0")	900 (36)	750 (30)	12
Greater than or equal to 12.2 m (40') and less than 15.2 m (50')	4.0 m (13'-0")	900 (36)	750 (30)	12
Greater than or equal to 15.2 m (50') and up to 16.8 m (55')	4.6 m (15'-0")	900 (36)	750 (30)	12

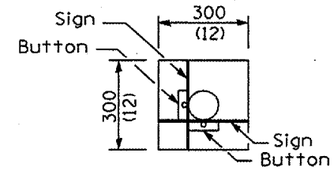
TYPE E

For standard and combination mast arm assemblies. Mast arm assembles with dual arms require a special foundation design.

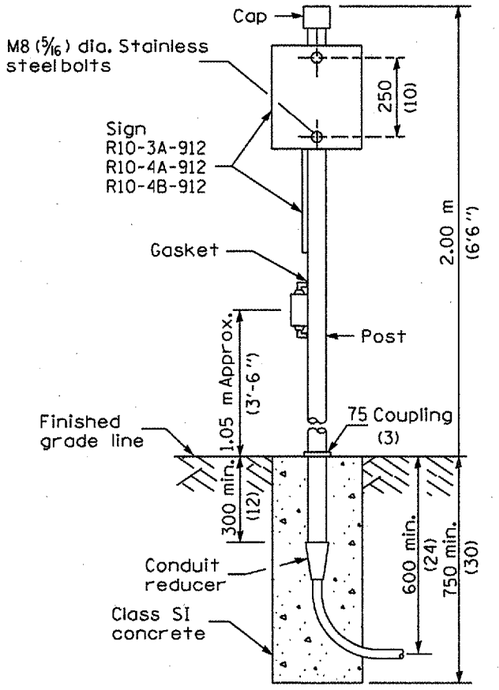
* These foundation depths are for sites which have cohesive soils (clayey silt, sandy clay, etc.) along the length of the shaft, with an average Unconfined Compressive Strength (Qu) > 100 kPa (1.0 tsf) This strength shall be verified by boring data prior to construction or with testing by the Engineer during foundation drilling. The Bureau of Bridges & Structures should be contacted for a revised design if other conditions are encountered.



TOP VIEW
TYPICAL ONE BUTTON INSTALLATION



TOP VIEW
TYPICAL TWO BUTTON INSTALLATION



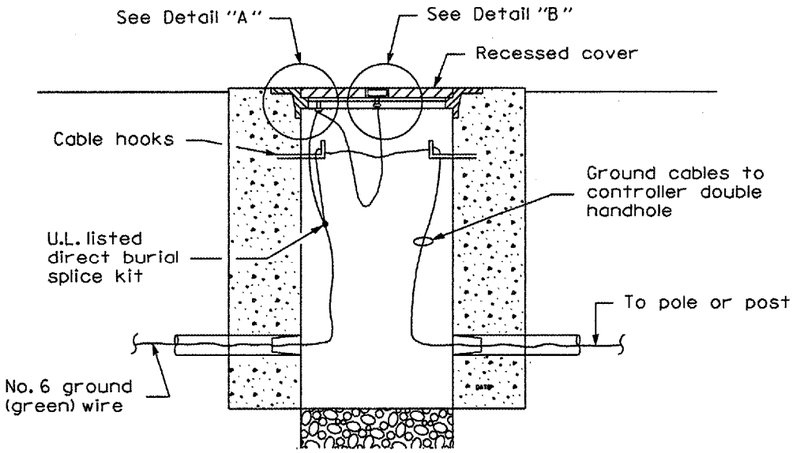
PEDESTRIAN PUSH BUTTON
POST INSTALLATION

All dimensions are in millimeters (inches) unless otherwise shown.

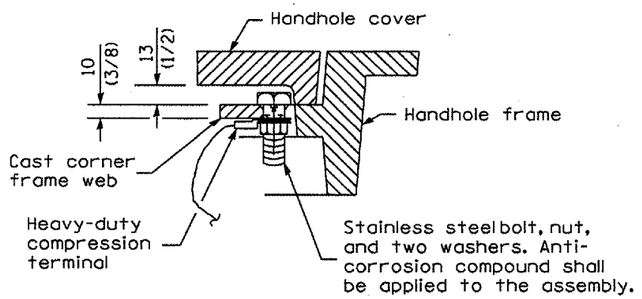
CONCRETE FOUNDATION DETAILS

(Sheet 2 of 2)

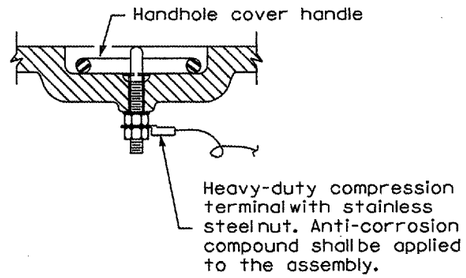
STANDARD 878001-04



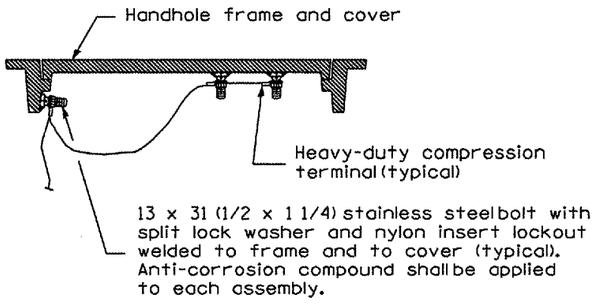
GROUNDING A HANDHOLE COVER & FRAME



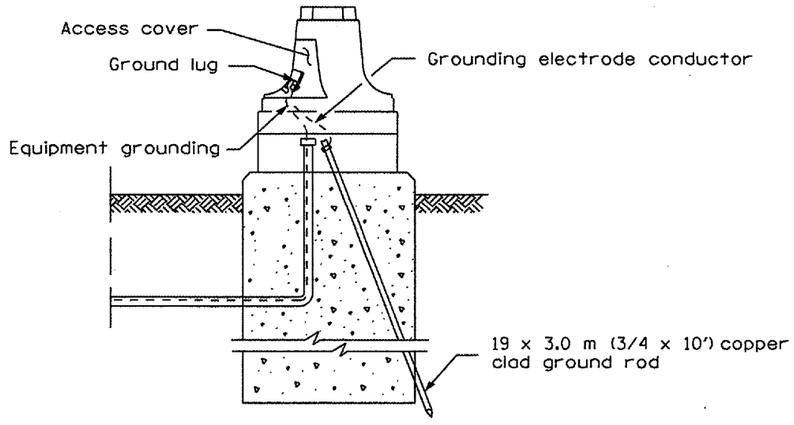
DETAIL "A"



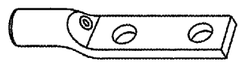
DETAIL "B"



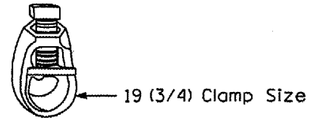
GROUNDING AN EXISTING HANDHOLE COVER & FRAME



GROUNDING A MAST ARM POLE/POST



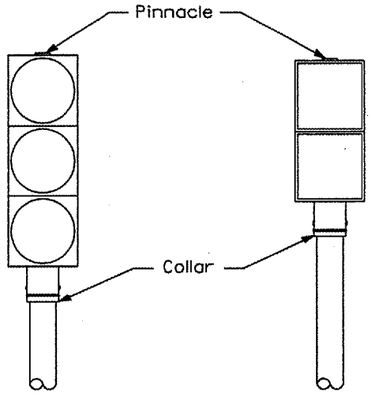
HEAVY-DUTY COMPRESSION TERMINAL



HEAVY-DUTY GROUND ROD CLAMP

	REVISIONS
4-1-06	New standard.

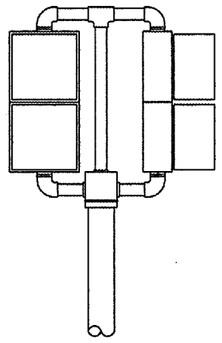
TRAFFIC SIGNAL GROUNDING



POST MOUNTED
TRAFFIC SIGNAL HEAD

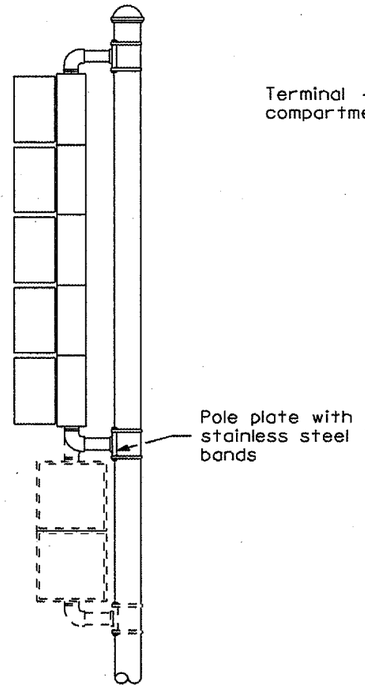
POST MOUNTED
PEDESTRIAN SIGNAL HEAD

ONE WAY



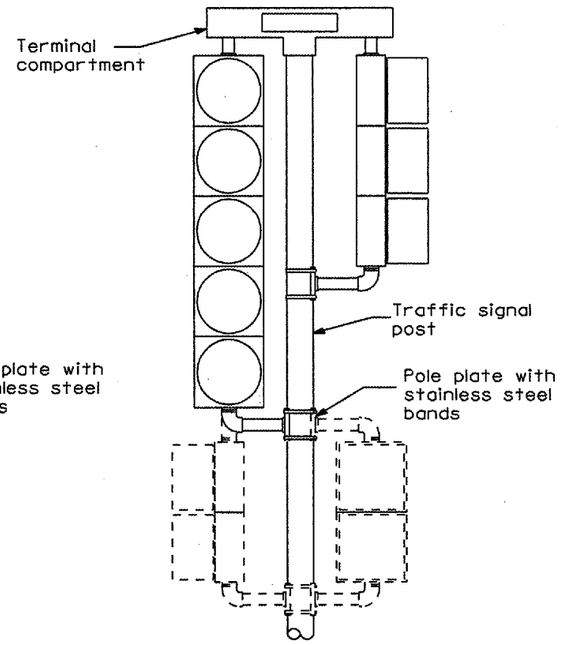
POST MOUNTED
PEDESTRIAN SIGNAL HEAD

TWO WAY



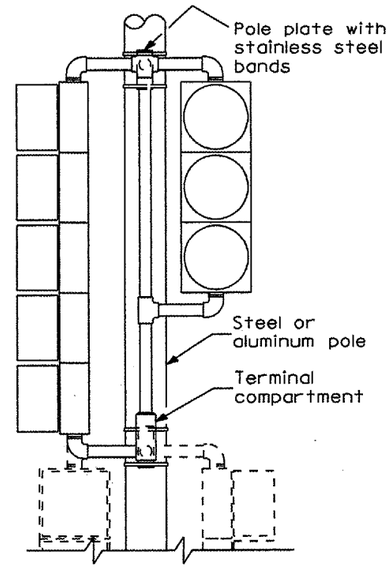
BRACKET MOUNTED
TRAFFIC SIGNAL HEAD

ONE WAY

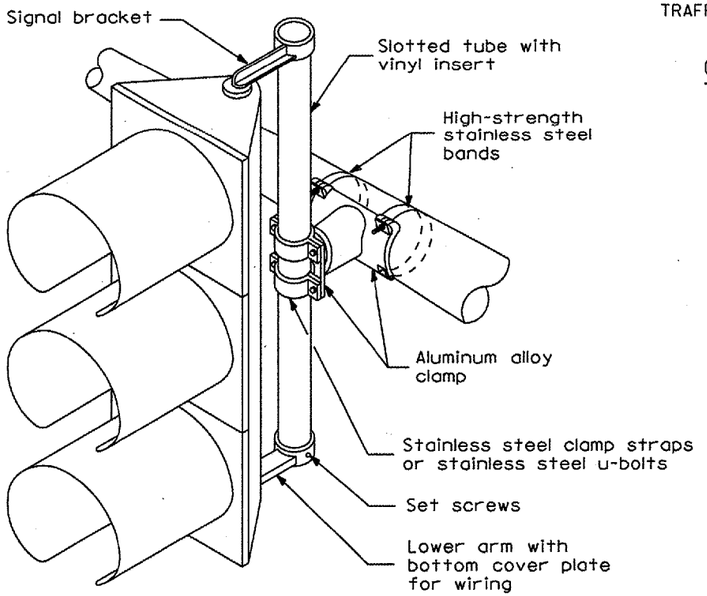


BRACKET MOUNTED
TRAFFIC SIGNAL HEAD

TWO WAY



BRACKET MOUNTED
TRAFFIC SIGNAL HEAD

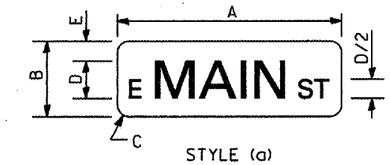


STEEL MAST ARM MOUNTING

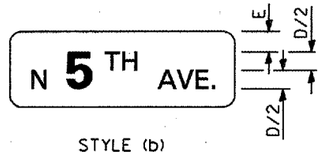
All dimensions are in millimeters (inches) unless otherwise shown.

TRAFFIC SIGNAL MOUNTING DETAILS

STANDARD 880006

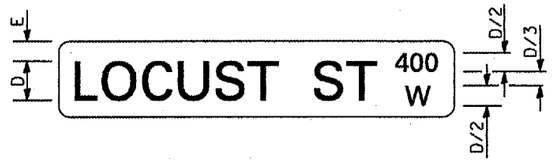


STYLE (a)

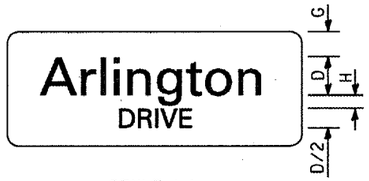


STYLE (b)

STYLE (c)



STYLE (d)



STYLE (e)

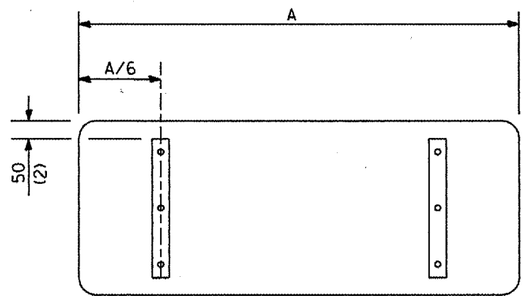
When road classification only is on the second line, it should not be abbreviated.

STYLE (f)

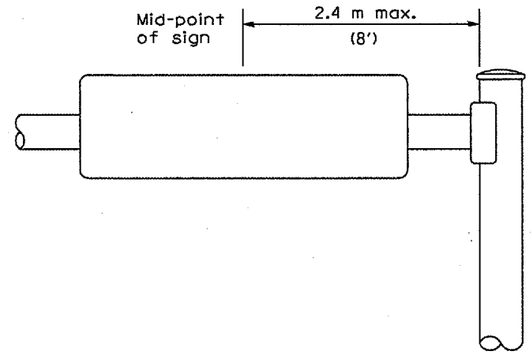
TYPICAL SIGN STYLES

SIGN STYLE	DIMENSIONS								LETTER SIZE: UPPER CASE PRIMARY			LETTER SIZE: UC / LC PRIMARY			BORDER
	A	B	C	D	E	F	G	H	1	2	*	1	2	*	
a,b,d	Var.	450 (18)	40 (1.50)	150 (6)	150 (6)	- -	- -	- -	150D (6D)	- -	- -	150/115 (6/4.5)	- -	- -	15 (0.6)
c,e	Var.	600 (24)	40 (1.50)	150 (6)	- -	- -	175 (7)	100 (4)	150D (6D)	- -	75D (3D)	150/115 (6/4.5)	- -	75D (3D)	15 (0.6)
a,b,d	Var.	600 (24)	40 (1.50)	200 (8)	200 (8)	- -	- -	- -	200D (8D)	- -	- -	200/150 (8/6)	- -	- -	15 (0.6)
f	Var.	750 (30)	60 (2.25)	150 (6)	165 (6.5)	125 (5)	- -	- -	150D (6D)	150D (6D)	- -	150/115 (6/4.5)	150/115 (6/4.5)	- -	20 (0.8)
c,e	Var.	750 (30)	60 (2.25)	200 (8)	- -	- -	230 (9)	115 (4.5)	200D (8D)	- -	100D (4D)	200/150 (8/6)	- -	100D (4D)	20 (0.8)
a,b,d	Var.	750 (30)	60 (2.25)	250 (10)	250 (10)	250 (10)	- -	- -	250D (10D)	- -	- -	250/190 (10/7.5)	- -	- -	20 (0.8)
c,e	Var.	900 (36)	60 (2.25)	250 (10)	- -	- -	280 (11)	125 (5)	250D (10D)	- -	125D (5D)	250/190 (10/7.5)	- -	125D (5D)	20 (0.8)
f	Var.	1000 (40)	75 (3.00)	200 (8)	215 (8.5)	120 (7)	- -	- -	200D (8D)	200D (8D)	- -	200/150 (8/6)	200/150 (8/6)	- -	20 (0.8)
f	Var.	1200 (48)	75 (3.00)	250 (10)	250 (10)	200 (8)	- -	- -	250D (10D)	250D (10D)	- -	250/190 (10/7.5)	250/190 (10/7.5)	- -	20 (0.8)

* Supplemental Messages



SUPPORTING CHANNELS



MOUNTING LOCATION

GENERAL NOTES

All signs shall have a white reflectorized legend and border on a green reflectorized background.

The sign panels shall be mounted as shown on Standard 720001 or as specified in the plans.

All dimensions are in millimeters (inches) unless otherwise shown.

MAST ARM MOUNTED STREET NAME SIGNS

STANDARD 720016-01

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

District 8
Schedule of Locations for Truss Repair & Replacement

Location No.:	8-01	State I.D. No.:	8S060I055L017.2				
County:	Madison	Route:	I - 55	M.P.:	17.2	Direction:	WB

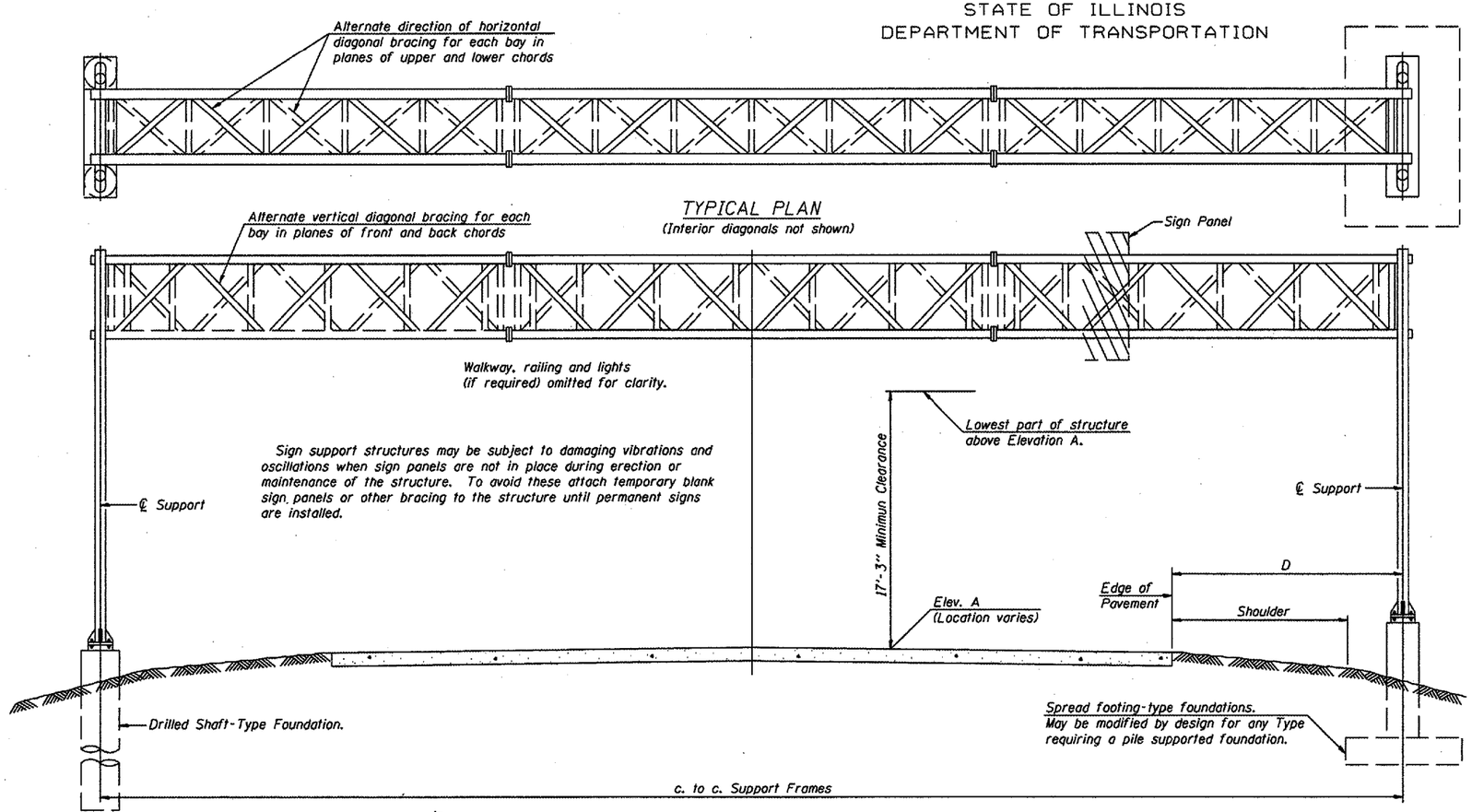
Description of Work	Unit	Quantity
REMOVE OVERHEAD SIGN STRUCTURE-SPAN	EACH	1.00
OVERHEAD SIGN STRUCTURE - SPAN, TYPE II A	FOOT	80.00
FURNISH & INSTALL METAL SCREEN	EACH	4.00
DISCONNECT / RECONNECT ELECTRIC SERVICE	EACH	1.00
REMOVE & REINSTALL SIGN PANEL	SQ FT	472.50
REMOVE & REINSTALL WALKWAY	FOOT	39.00
This truss is being downsized from a Type IV truss to a		
Type II truss. The existing end supports will be used.		
All work must be completed during District 8 non-peak hours.		

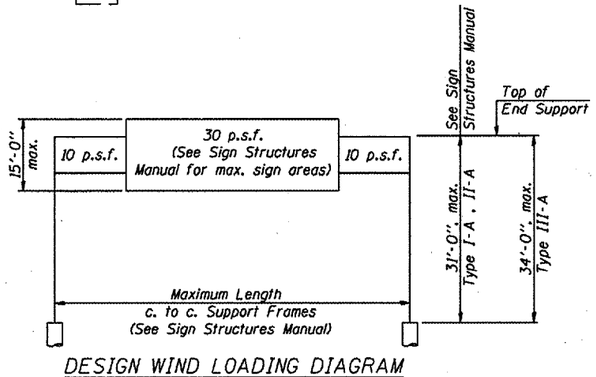
Location No.:	8-02	State I.D. No.:	8S082S003L004.4				
County:	St. Clair	Route:	IL - 3	M.P.:	4.4	Direction:	SB

Description of Work	Unit	Quantity
REMOVE OVERHEAD SIGN STRUCTURE - SPAN	EACH	1.00
OVERHEAD SIGN STRUCTURE - SPAN TYPE IIA	FOOT	84.00
OVERHEAD SIGN SUPPORT GROUT REPAIR	EACH	4.00
FURNISH & INSTALL SAFETY CHAIN	EACH	2.00
DISCONNECT / RECONNECT ELECTRIC SERVICE	EACH	1.00
REMOVE & REINSTALL SIGN PANEL	SQ FT	377.00
REMOVE & REINSTALL WALKWAY	FOOT	44.50
This truss is being downsized from a Type IV truss to a		
Type II truss. The existing end supports will be used.		
All work must be completed during District 8 non-peak hours.		

Location No.:	8-03	State I.D. No.:	8S060I055L018.3				
County:	Madison	Route:	I - 55	M.P.:	18.3	Direction:	WB

Description of Work	Unit	Quantity
REMOVE OVERHEAD SIGN STRUCTURE - SPAN	EACH	1.00
OVERHEAD SIGN STRUCTURE - SPAN, TYPE II A	FOOT	70.00
FURNISH & INSTALL METAL SCREEN	EACH	4.00
DISCONNECT / RECONNECT ELECTRIC SERVICE	EACH	1.00
REMOVE & REINSTALL SIGN PANEL	SQ FT	336.00
REMOVE & REINSTALL WALKWAY	FOOT	42.00
This truss is being downsized from a Type IV truss to a		
Type II truss. The existing end supports will be used.		
All work must be completed during District 8 non-peak hours.		





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
8S060I055L017.2	840 + 00	II-A	80' - 0"	572.00	33' - 0"	13' - 60"	472.50
8S082S003L004.4	321 + 34	II-A	84' - 0"	416.70	32' - 0"	13' - 0"	377.00
8S060I055L018.3	1341 + 00	II-A	70' - 0"	96.55	15' - 0"	14' - 0"	336.00

**Looking upstation for structures with signs both sides.

GENERAL NOTES

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

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

LOADING: 90 M.P.H. WIND VELOCITY

WIND LOADING: 30 p.s.f. normal to Sign Panel Area and truss elements not behind sign Loading Diagram.

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

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

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

MATERIALS: Aluminum Alloys as shown throughout plans. All Structural Steel Pipe shall be ASTM A53 Grade B with a minimum yield of 35,000 p.s.i., or A500 Grade B or C with a minimum yield of 46,000 p.s.i. If A500 pipe is substituted for A53, then the outside diameter shall be as detailed and wall thickness greater than or equal to A53.
All Structural Steel Plates and Shapes shall conform to AASHTO M270 Gr. 36, Gr. 50 or Gr. 50W*. Stainless steel for shims, sleeves and handhole covers shall be ASTM A240, Type 302 or 304, or another alloy suitable for exterior exposure and acceptable to the Engineer.
The steel pipe and stiffening ribs at the base plate for the column shall have a minimum longitudinal Charpy V-Notch (CVN) energy of 15 lb.-ft. at 40° F. (Zone 2) before galvanizing.

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

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

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

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

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

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

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

TOTAL BILL OF MATERIAL

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

NUMBER	REVISION	DATE

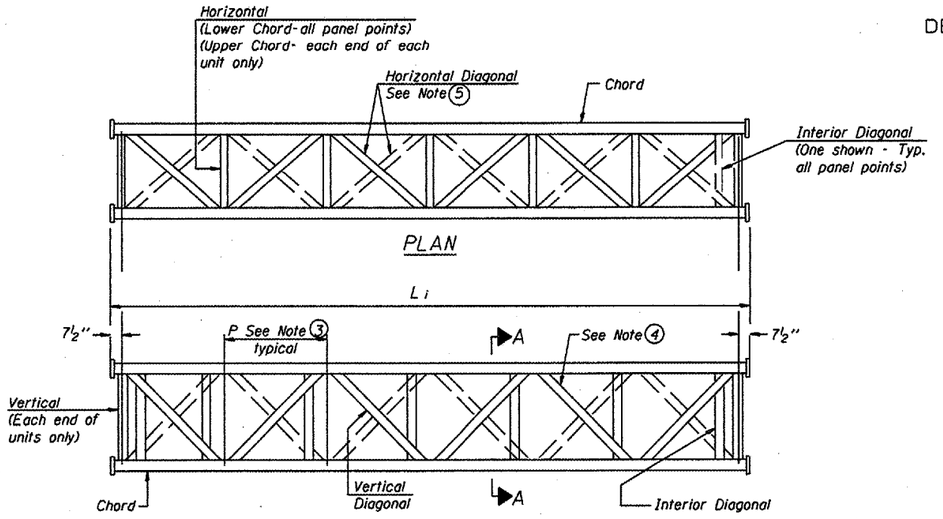
DESIGNED	-
CHECKED	-
DRAWN	-
CHECKED	-

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

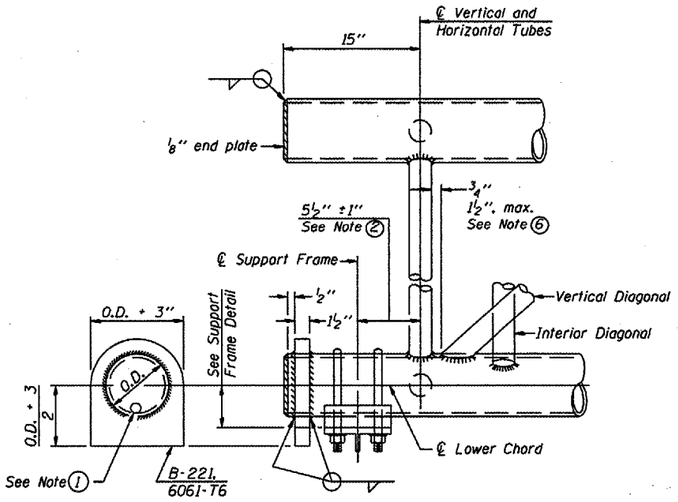
OS-A-1 1-7-05

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

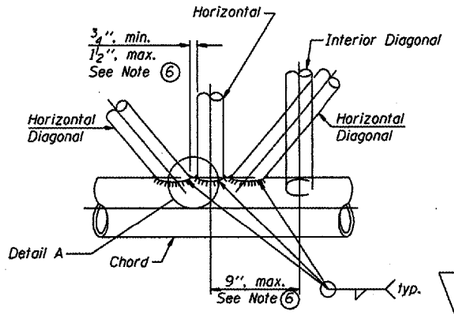
District 8
Overhead Sign Structure
Repair and Replacement

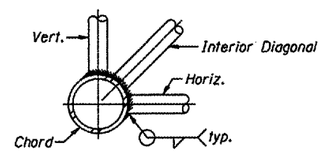


ELEVATION
TYPICAL INTERIOR UNIT
Even number of panels/interior unit required.

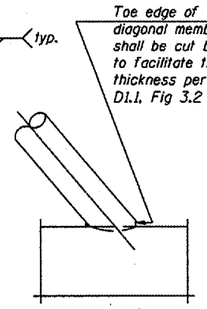


SUPPORT END DETAIL FOR EXTERIOR UNIT

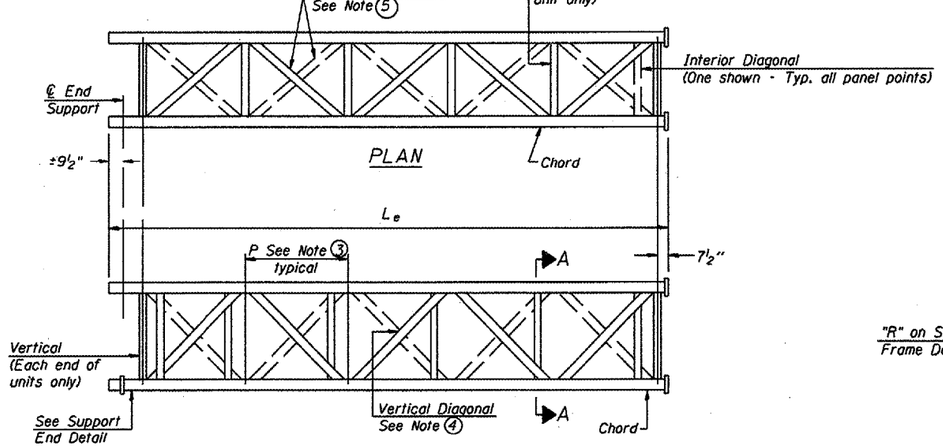




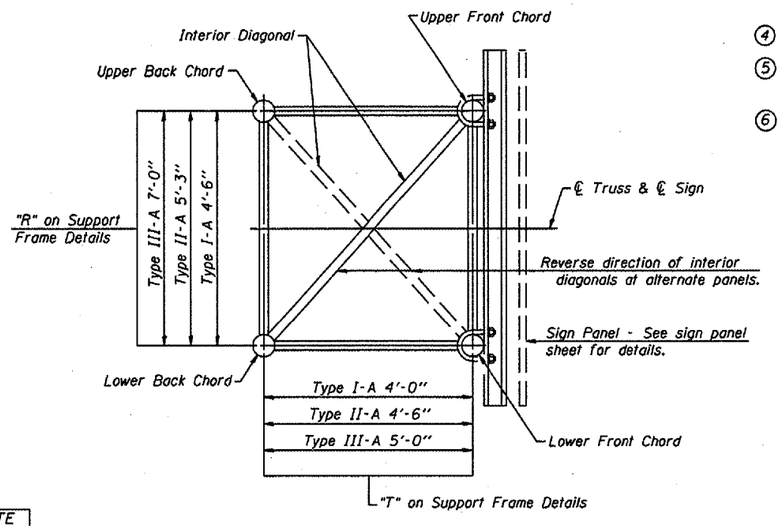
TYPICAL JOINT DETAILS



DETAIL A



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



SECTION A-A

NOTES

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

DESIGNED	-
CHECKED	-
DRAWN	-
CHECKED	-

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

NUMBER	REVISION	DATE

OS-A-2 1-7-05

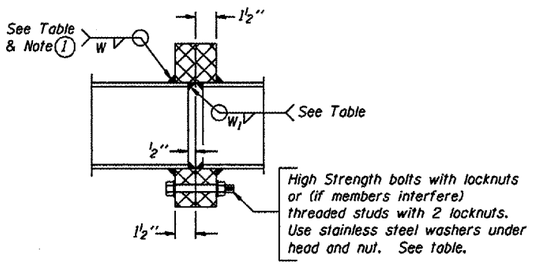
OVERHEAD SIGN STRUCTURES
ALUMINUM TRUSS DETAILS
FOR TRUSS TYPES I-A, II-A and III-A

District 8
Overhead Sign Structure
Repair and Replacement

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

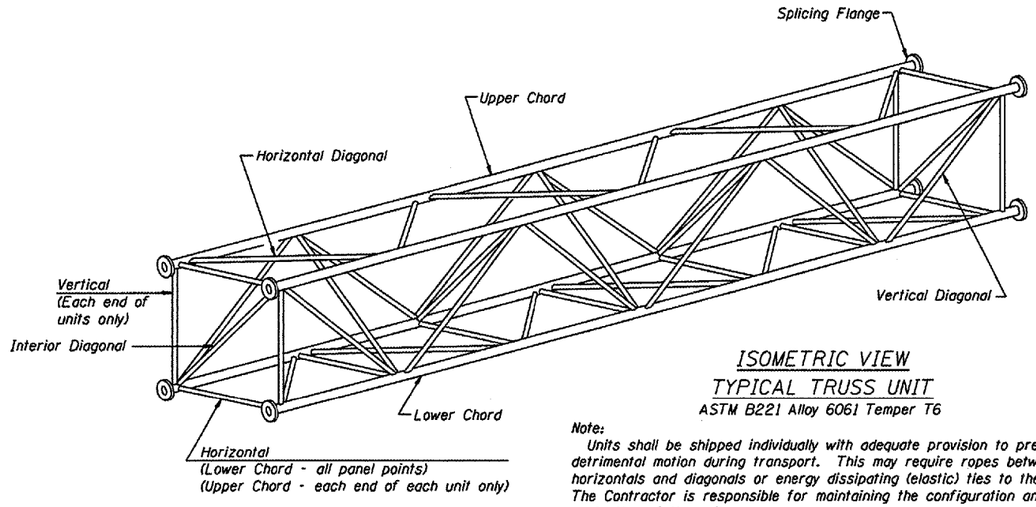
TRUSS UNIT TABLE

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		
8S0601055L017.2	840 + 00	II-A	5	29'-2"	5'-5 1/2"	1	4	23'-10"	5'-5 1/2"	5 1/2"	5/16"	3"	5/16"	2"	6	7/8"	3/8"	1/4"	9 1/4"	12 1/4"
8S082S003L004.4	321 + 34	II-A	5	27'-1"	5'-0 1/2"	1	6	31'-6"	5'-0 1/2"	5 1/2"	5/16"	3"	5/16"	2 1/4"	6	7/8"	3/8"	1/4"	9 1/4"	12 1/4"
8S0601055L018.3	1341 + 00	II-A	7	35'-8 1/2"	4'-10"					5 1/2"	5/16"	3"	5/16"	1 1/2"	6	7/8"	3/8"	1/4"	9 1/4"	12 1/4"



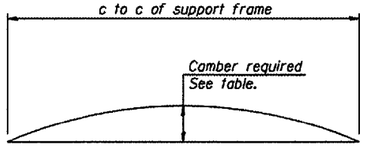
SECTION B-B

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



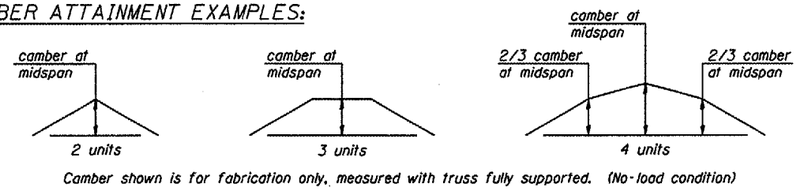
ISOMETRIC VIEW
TYPICAL TRUSS UNIT
ASTM B221 Alloy 6061 Temper T6

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

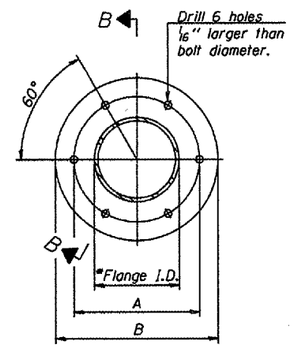


CAMBER DIAGRAM
Camber curve shown is theoretical. Actual camber attained by slope changes at splices between units.

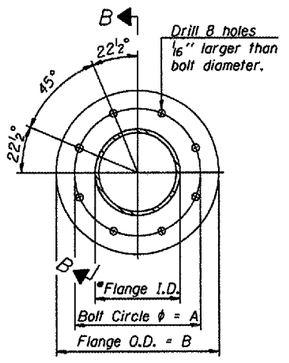
CAMBER ATTAINMENT EXAMPLES:



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



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



TRUSS TYPES II-A & III-A

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

NUMBER	REVISION	DATE

DESIGNED	-
CHECKED	-
DRAWN	-
CHECKED	-

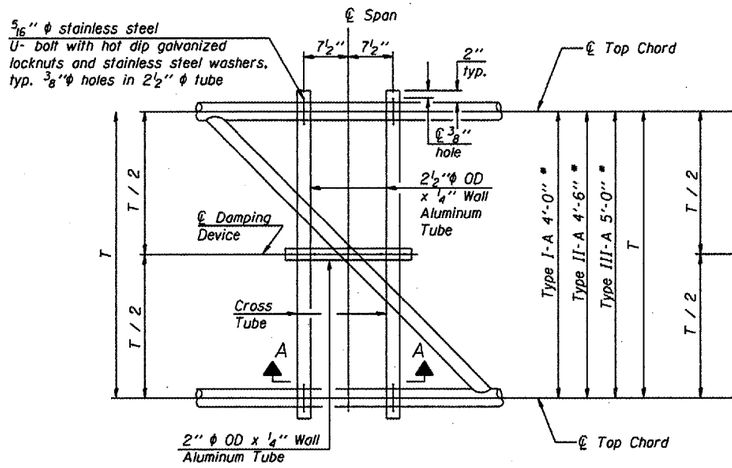
- 20
EXAMINED
ENGINEER OF BRIDGE DESIGN
PASSED
ENGINEER OF BRIDGES AND STRUCTURES

OS4-A-2 1-7-05

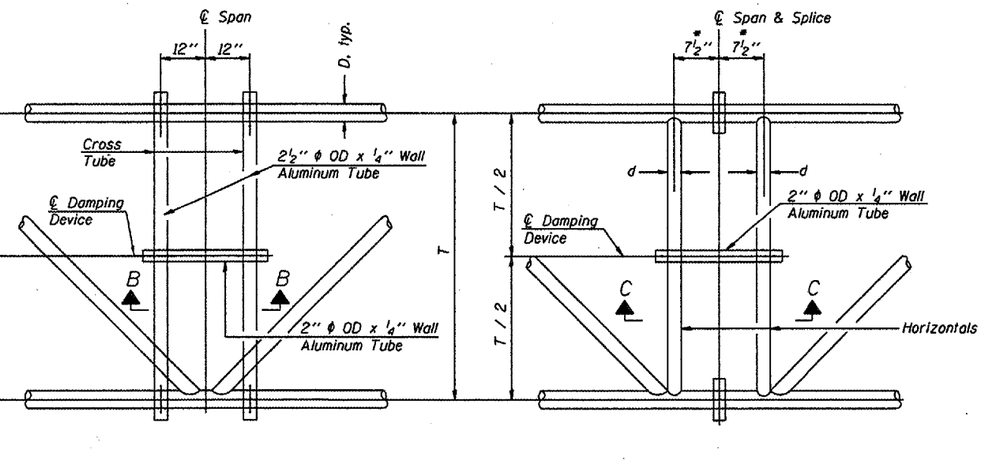
OVERHEAD SIGN STRUCTURES
ALUMINUM TRUSS DETAILS
FOR TRUSS TYPES I-A, II-A and III-A

District 8
Overhead Sign Structure
Repair and Replacement

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

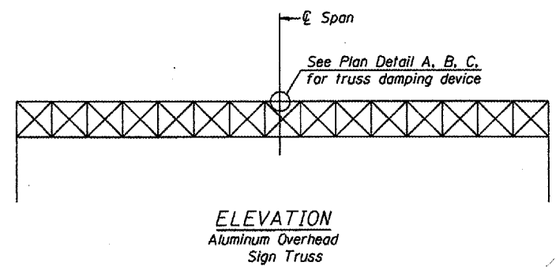


PLAN DETAIL "A"
℄ Span between Panel Points



PLAN DETAIL "B"
℄ Span at Panel Point

PLAN DETAIL "C"
℄ Span at ℄ Chord Splice

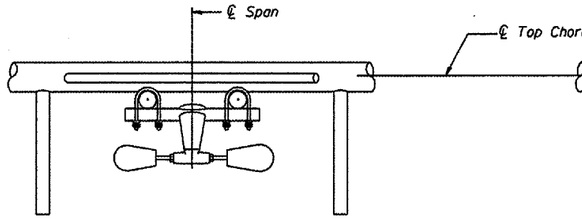


ELEVATION
Aluminum Overhead Sign Truss

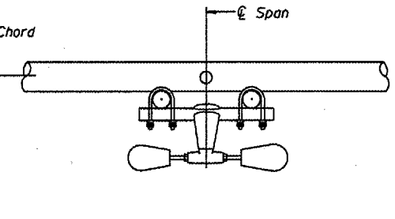
NOTES

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

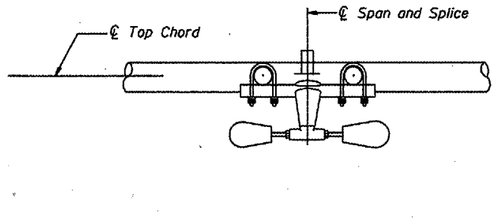
Materials: Aluminum tubes shall be ASTM B221 alloy 6061 temper T6. Cost included in Overhead Sign Structure...



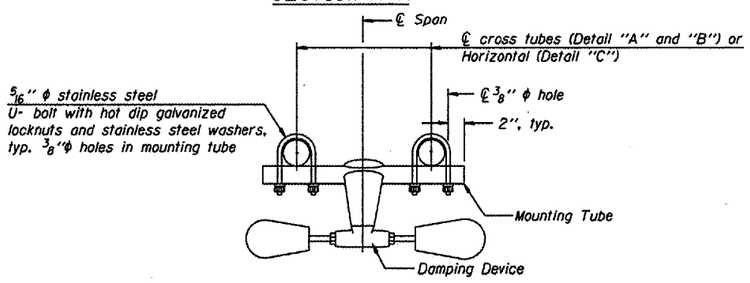
SECTION A-A



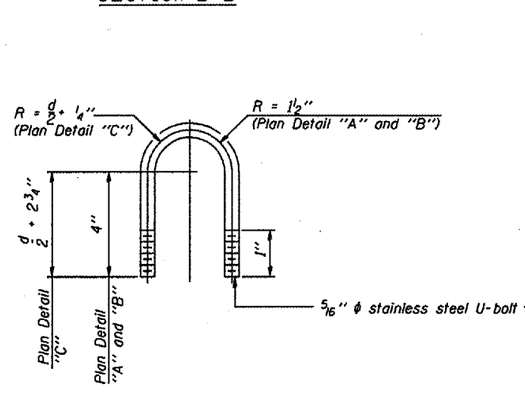
SECTION B-B



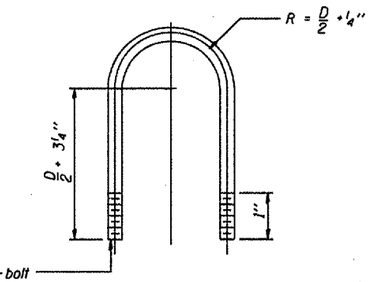
SECTION C-C



TRUSS DAMPING DEVICE CONNECTION DETAIL
(Typical)



DAMPING DEVICE MOUNTING TUBE U-BOLT DETAIL
(Typical)



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

DESIGNED	-
CHECKED	-
DRAWN	-
CHECKED	-

\- 20

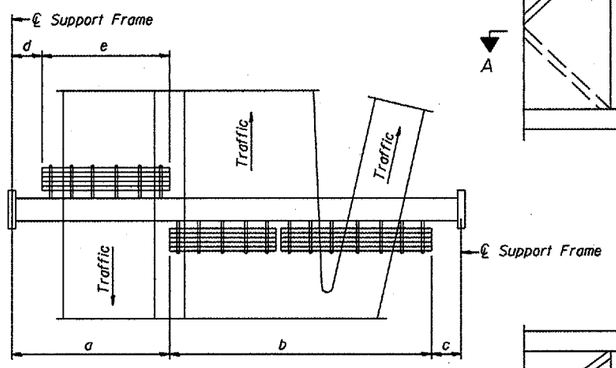
EXAMINED
ENGINEER OF BRIDGE DESIGN

PASSED
ENGINEER OF BRIDGES AND STRUCTURES

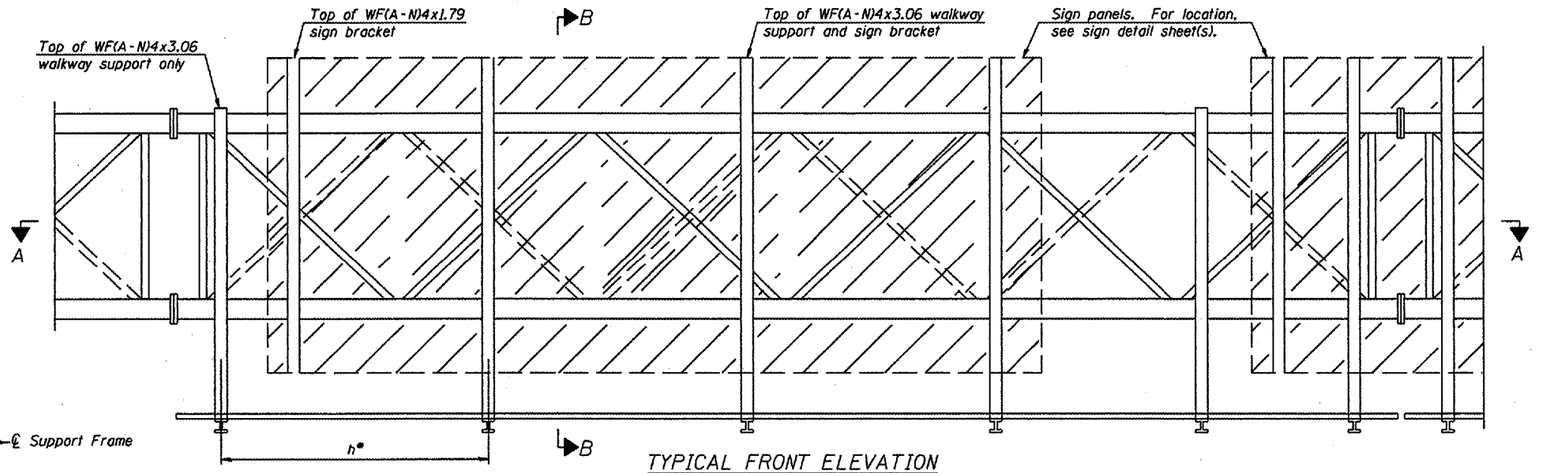
OS-A-D 1-7-05

OVERHEAD SIGN STRUCTURE
DAMPING DEVICE

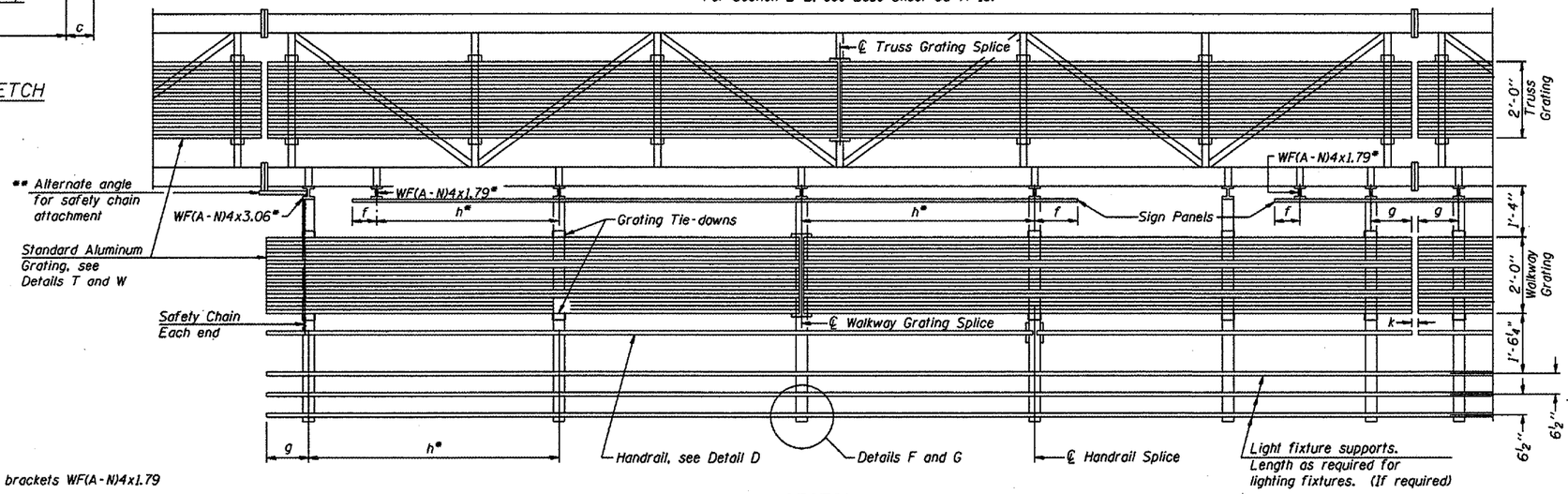
District 8
Overhead Sign Structure
Repair and Replacement



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



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



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

BRACKET TABLE

WF(A-N)4x1.79 or WF(A-N)4x3.06 ASTM B308, Alloy 6061-T6		
Sign Width		Number Brackets Required
Greater Than	Less Than or Equal To	
	8'-0"	2
8'-0"	14'-0"	3
14'-0"	20'-0"	4
20'-0"	26'-0"	5
26'-0"	32'-0"	6

Notes:

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

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

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

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

SECTION A-A

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

Structure Number	Station	a	b	c	d	e	Walkway Grating and Handrail Lengths
8S0601055L017.2	840 + 00	N/A	N/A	N/A	N/A	N/A	81' - 6" *
8S082S003L004.4	321 + 34	N/A	N/A	N/A	N/A	N/A	86' - 0" *
8S0601055L018.3	1341 + 00	N/A	N/A	N/A	N/A	N/A	71' - 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
ENGINEER OF BRIDGE DESIGN
PASSED
ENGINEER OF BRIDGES AND STRUCTURES

NUMBER	REVISION	DATE

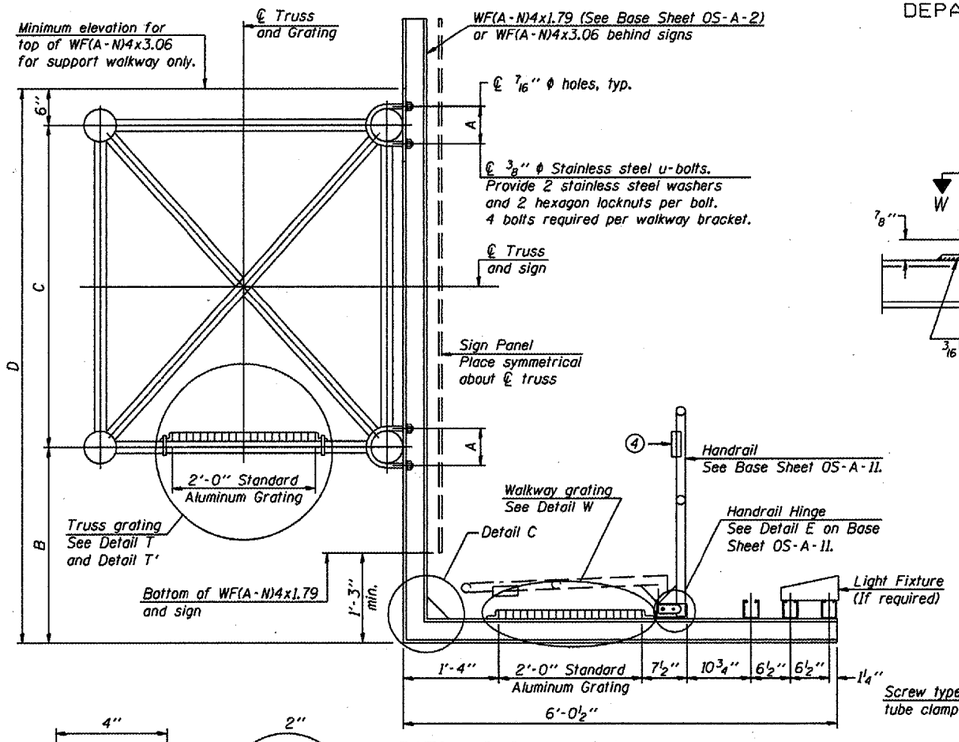
OS-A-9 1-7-05

OVERHEAD SIGN STRUCTURES
ALUMINUM WALKWAY DETAILS

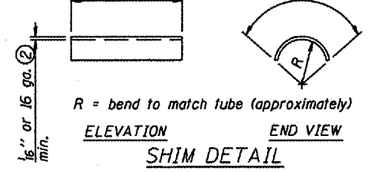
District 8
Overhead Sign Structure
Repair and Replacement

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

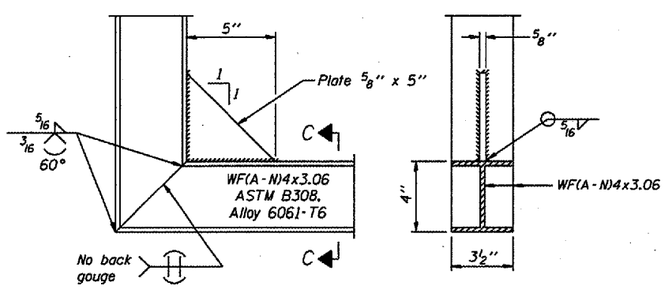
Various Routes
OVD SIN STR REP & REPL 2006-9
Various Counties
Sheet 110 of 114
Contract Number 44904



SECTION B-B

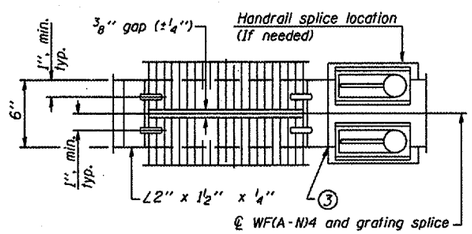


SHIM DETAIL

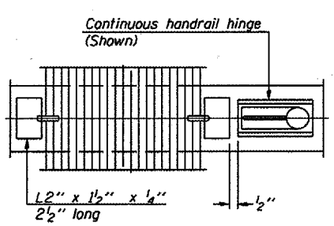


DETAIL C
(See Detail P, Base Sheet OS-A-11.)

SECTION C-C

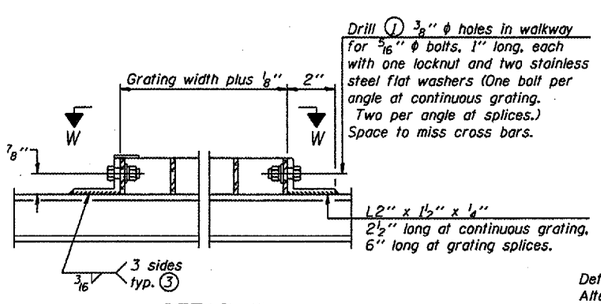


(AT WALKWAY GRATING SPLICE)

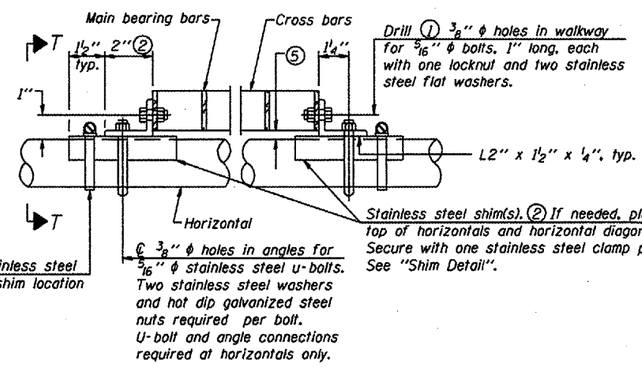


(CONTINUOUS WALKWAY GRATING)

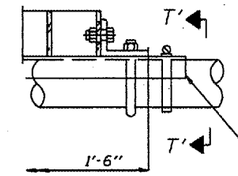
SECTION W-W



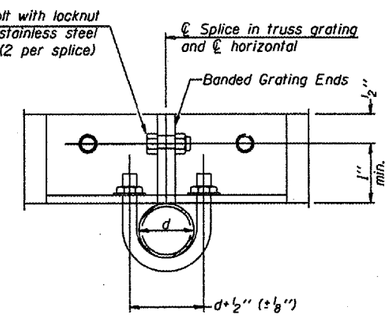
DETAIL W
(Walkway grating)



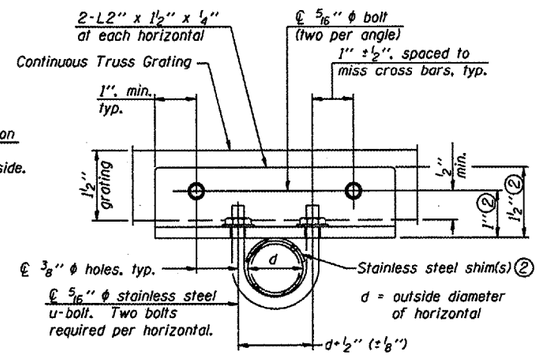
DETAIL T
(Continuous Truss grating)



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



SECTION T'-T'



SECTION T-T

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 and Replacement

DESIGNED	-
CHECKED	-
DRAWN	-
CHECKED	-

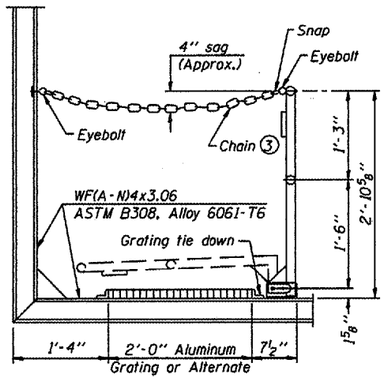
- 20
EXAMINED
ENGINEER OF BRIDGE DESIGN
PASSED
ENGINEER OF BRIDGES AND STRUCTURES

NUMBER	REVISION	DATE

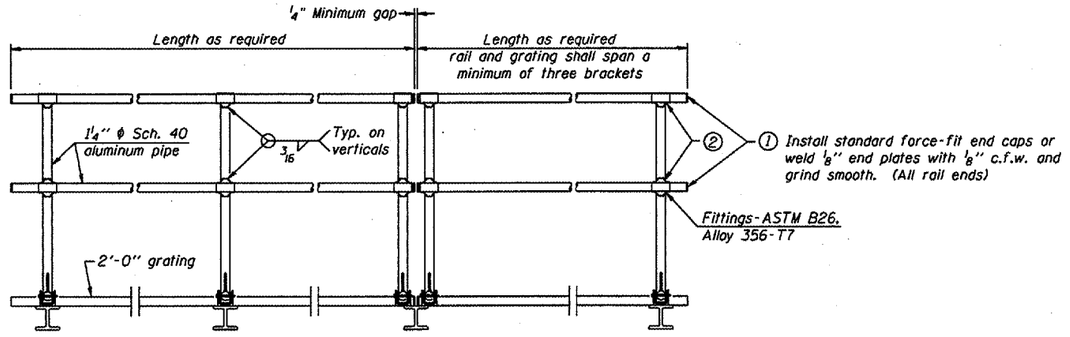
OS-A-10 1-7-05

Existing Walkway and Walkway Support Brackets to be Reused.

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



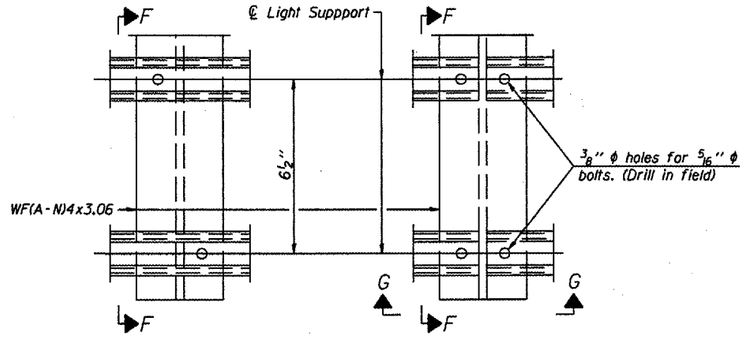
SIDE ELEVATION
(Showing safety chain w/o sign)



FRONT ELEVATION

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

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

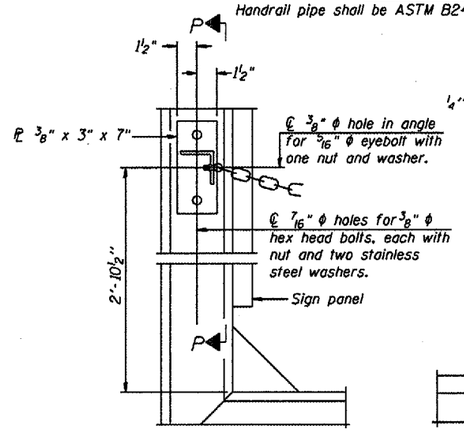


DETAIL F

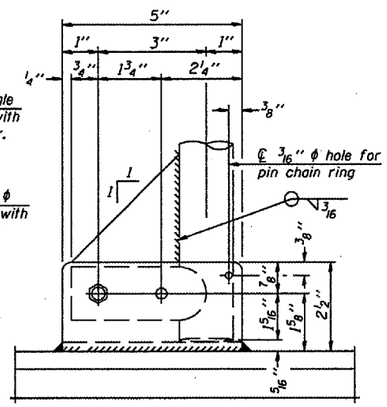
DETAIL G

HANDRAIL DETAILS

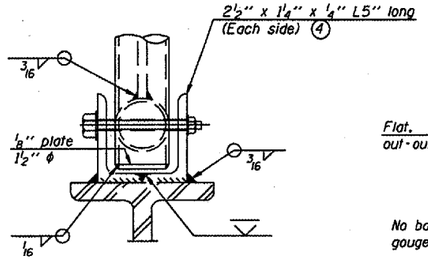
Handrail pipe shall be ASTM B241, Alloy 6063-T6 or Alloy 6061-T6.



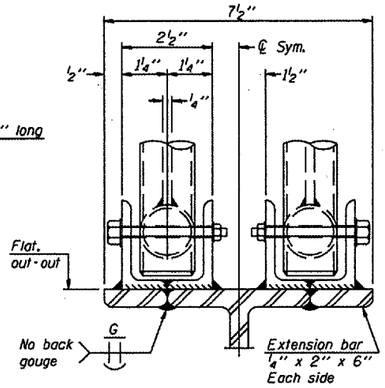
ALTERNATE SAFETY CHAIN ATTACHMENT
(With Sign Present)
Items not shown same as "Side Elevation" of "Handrail Details"



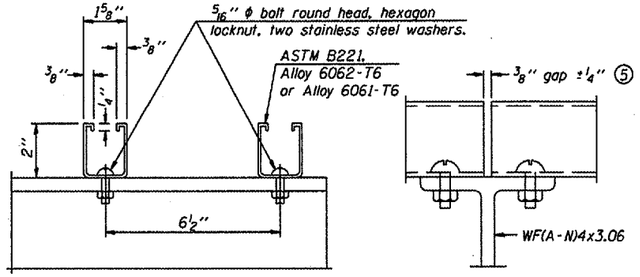
SIDE ELEVATION



FRONT ELEVATION
See "Elevation" at right for dimensions.



ELEVATION AT HANDRAIL JOINT (4)

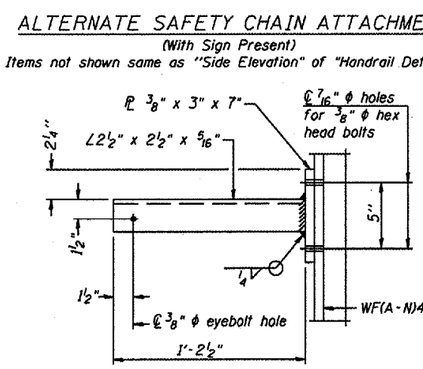


SECTION F-F

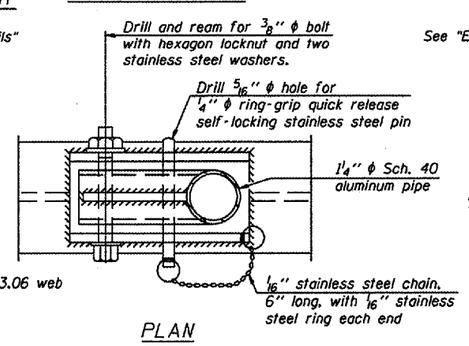
SECTION G-G

LIGHTING FIXTURE MOUNTS (IF REQUIRED)

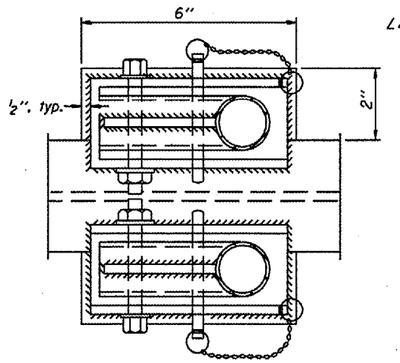
(5) Field cut ends of light support channels shall be free of burrs or hazardous projections and coated with zinc-rich primer or equivalent.



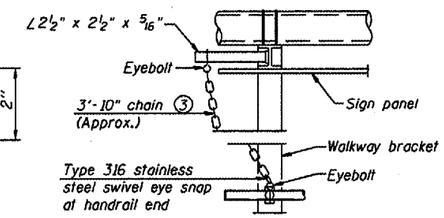
SECTION P-P



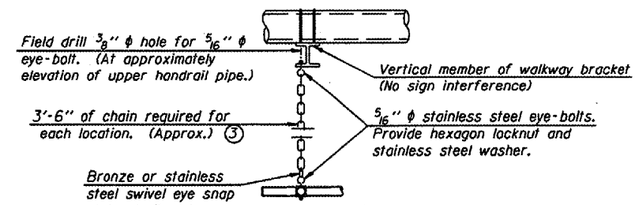
PLAN
DETAIL E HANDRAIL HINGE



PLAN AT HANDRAIL JOINT
Details not shown same as "PLAN"



ALTERNATE SAFETY CHAIN ATTACHMENT
Details not shown similar to "Safety Chain" Details
(Walkway omitted for clarity)



SAFETY CHAIN
One required for each end of each walkway.

(3) 3/16 " Type 304L or 316L 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	-

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

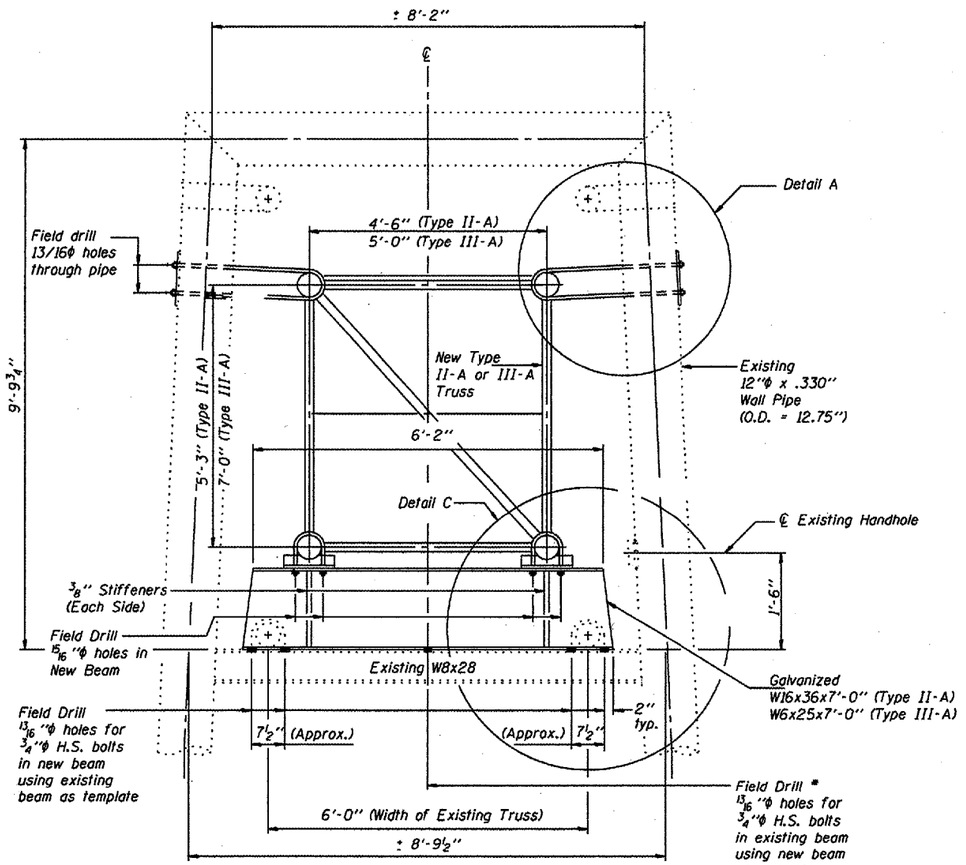
NUMBER	REVISION	DATE

OS-A-11 1-7-05

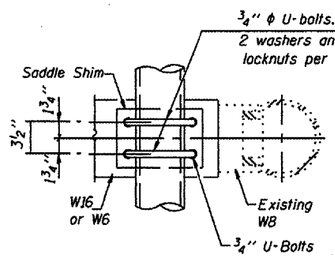
OVERHEAD SIGN STRUCTURES
ALUMINUM HANDRAIL DETAILS

District 8
Overhead Sign Structure
Repair and Replacement

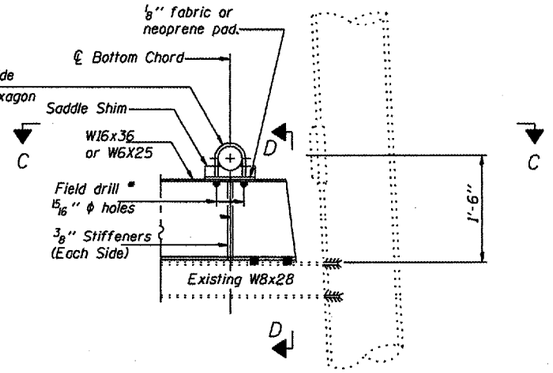
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



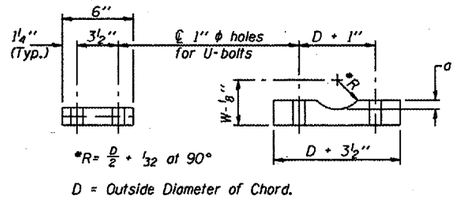
SIDE VIEW



SECTION C-C



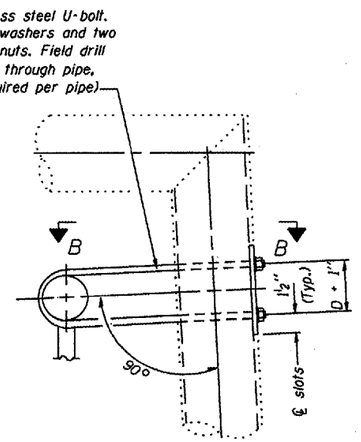
DETAIL C



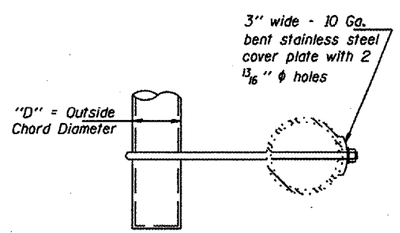
SADDLE SHIM DETAIL

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

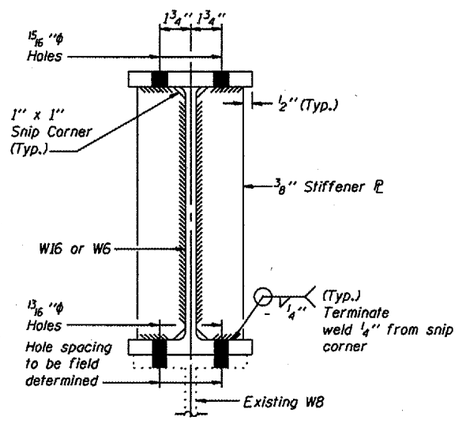
Truss Chord Nominal Dia.	a	W
5½"	13/16"	4¾"
6"	⅞"	4¾"
6½"	15/16"	4¾"
7"	1"	4¾"
8½"	1¼"	5½"
9"	1⅜"	5¾"



DETAIL A



SECTION B-B



SECTION D- D

DESIGNED	
CHECKED	
DRAWN	
CHECKED	

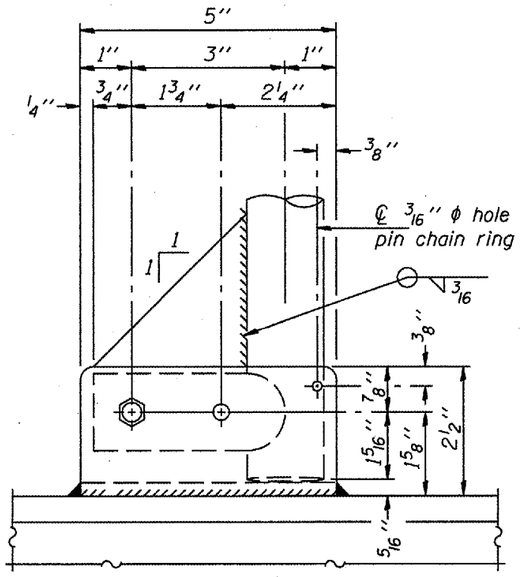
20
EXAMINED
ENGINEER OF STRUCTURAL SERVICES
PASSED
ENGINEER OF BRIDGES AND STRUCTURES

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

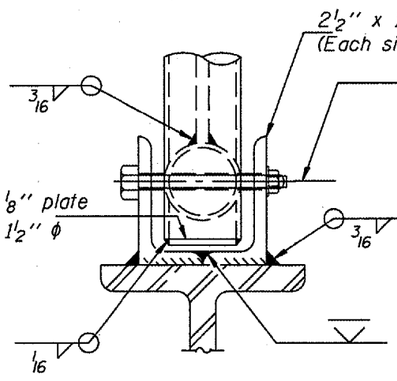
OVERHEAD SIGN STRUCTURES
EXISTING SUPPORT FRAME
RETROFIT for ALUMINUM TRUSS

District 8
Overhead Sign
Structure Repair
and Replacement

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



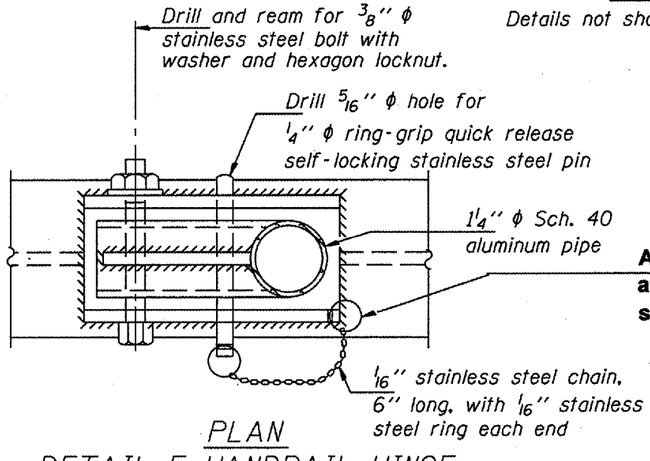
SIDE ELEVATION



FRONT ELEVATION

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

Details not shown same as "ELEVATION" at right.



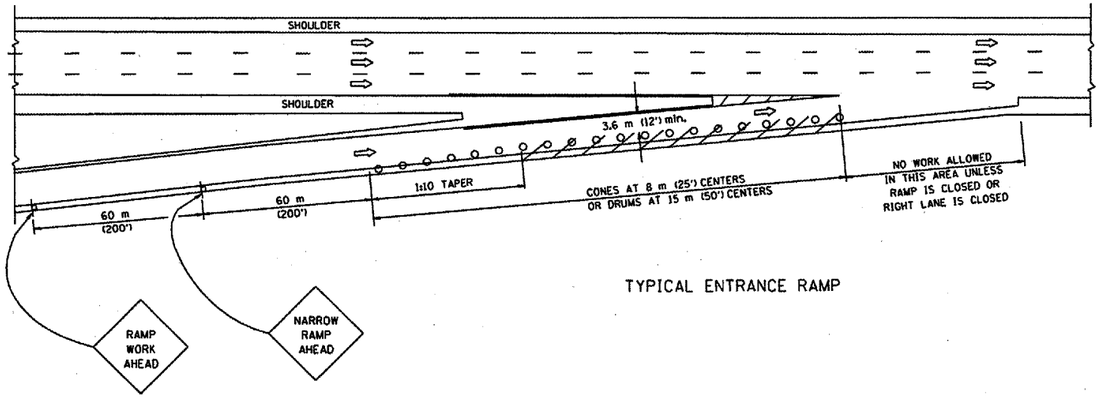
PLAN

DETAIL E HANDRAIL HINGE

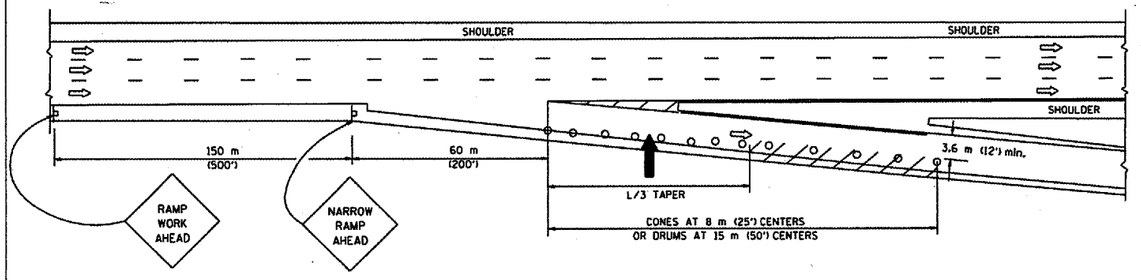
A new stainless steel chain shall be attached to the angle with a 1/16" stainless steel ring.

OVERHEAD SIGN STRUCTURES
HANDRAIL HINGE REPAIR DETAIL

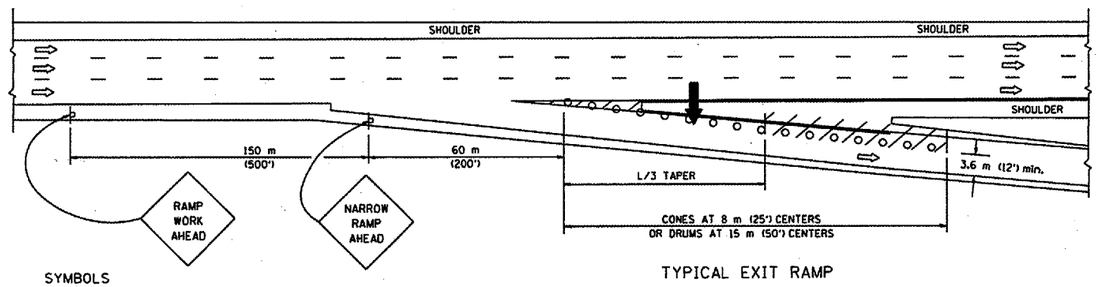
PARTIAL RAMP CLOSURE DETAILS



TYPICAL ENTRANCE RAMP



TYPICAL EXIT RAMP

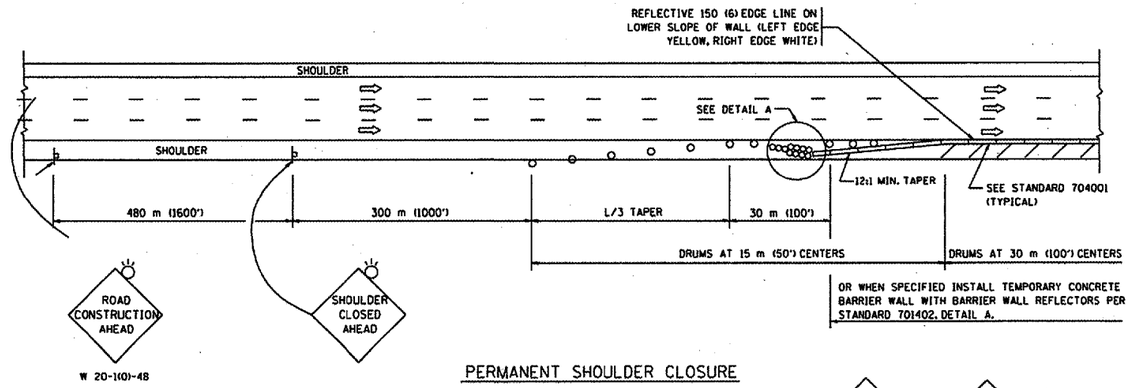


TYPICAL EXIT RAMP

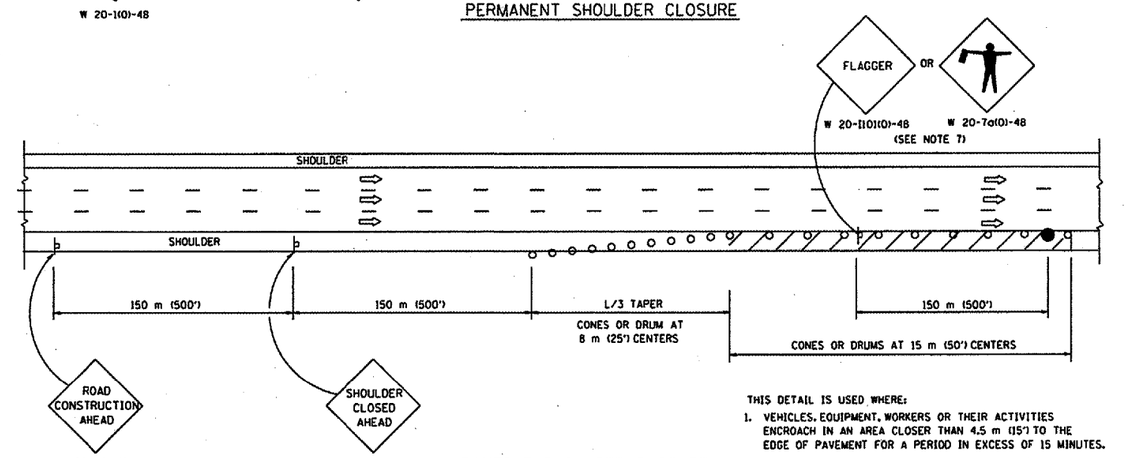
SYMBOLS

- 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

SHOULDER CLOSURE DETAILS



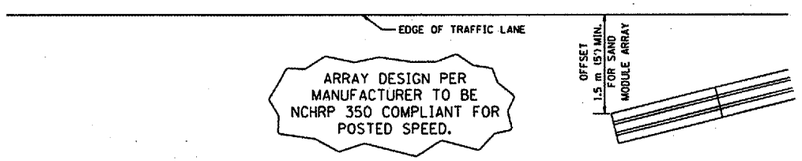
PERMANENT SHOULDER CLOSURE



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)

GENERAL NOTES

1. THE "L" DISTANCE EQUALS:

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

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.

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

ILLINOIS DEPARTMENT OF TRANSPORTATION

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

TRAFFIC CONTROL DETAILS
FOR FREEWAY
SHOULDER CLOSURES
PARTIAL RAMP CLOSURES

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