

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

FAI Routes 57 & 70
D 5 - 7 OVD SIN STR REPL 2009-5
Various Counties
Sheet 1 of 35
Contract Number 46006

PLANS FOR PROPOSED
FEDERAL AID HIGHWAY

FAI ROUTES 57 & 70
D 5-7 OVD SIN STR REPL 2009-5
VARIOUS COUNTIES
C-60-009-09

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701901
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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

SUBMITTED 10-6 2008
PASSED

Joe Hill
ENGINEER OF OPERATIONS

December 5, 20 08
Eric E. Harnup
Interim ENGINEER OF DESIGN AND ENVIRONMENT

APPROVED December 5, 20 08
Christine M. Reed
DIRECTOR DIVISION OF HIGHWAYS

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

CONTRACT NO. 46006

Rev.

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

FAI Routes 57 & 70
D5-7 OVD SIN STR REPL 2009-5
Various Counties
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Contract Number 46006

Summary of Quantities

CODE NUMBER	PAY ITEM	UNIT	Y002 - 1C 100% STATE TOTAL QUANTITY	RURAL
T9990710	REMOVE ^{AND} REINSTALL WALKWAY	FOOT	130.00	130.00
73305000	OVERHEAD SIGN STRUCTURE WALKWAY	FOOT	458.00	458.00
T9992530	REPLACE ^{AND} TIGHTEN SIGN MOUNTING CLIPS PER EACH SIGN	EACH	5.00	5.00
T9992700	REMOVE ^{AND} REINSTALL SIGN PANEL	SQ FT	1,132.50	1,132.50
T9995210	TIGHTEN U-BOLT	EACH	2.00	2.00
T9995400	FURNISH ^{AND} INSTALL SADDLE SHIM BLOCK	EACH	20.00	20.00
T9997255	FURNISH ^{AND} INSTALL INTERNAL TRUSS DAMPER	EACH	5.00	5.00
T9997700	FURNISH ^{AND} INSTALL SAFETY CHAIN	EACH	14.00	14.00
T9998815	REPAIR HANDRAIL LOCKING PIN CONNECTION	EACH	64.00	64.00
T9998995	DISCONNECT ^{AND} RECONNECT ELECTRIC SERVICE	EACH	8.00	8.00
X0324397	RELOCATE ELECTRIC SERVICE	EACH	3.00	3.00
X7015005	CHANGEABLE MESSAGE SIGN	CAL DA	70.00	70.00
Z0002005	ATTENUATOR BASE	SQ YD	102.00	102.00
Z0029999	IMPACT ATTENUATOR REMOVAL	EACH	2.00	2.00
Z0030150	IMPACT ATTENUATORS (NON-REDIRECTIVE), TEST LEVEL 3	EACH	2.00	2.00
44004100	PAVED DITCH REMOVAL ^{AND} REPLACEMENT	FOOT	40.00	40.00
63400105	GUARD POSTS	EACH	35.00	35.00
63400205	GUARD POSTS REMOVAL	EACH	23.00	23.00
67100100	MOBILIZATION	L SUM	1.00	1.00

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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

Schedule of Quantities

FAI Routes 57 & 70
D5-7 OVD SIN STR REPL 2009-5
Various Counties
Sheet 4 of 35
Contract Number 46006

PAY ITEM	UNIT	Y002 - 1C 100% STATE TOTAL QUANTITY	DISTRICT 5	DISTRICT 7	PAY ITEM	UNIT	Y002 - 1C 100% STATE TOTAL QUANTITY	DISTRICT 5	DISTRICT 7
REMOVE & REINSTALL WALKWAY	FOOT	130.00	79.00	51.00	MOBILIZATION	L SUM	1.00	0.25	0.75
OVERHEAD SIGN STRUCTURE WALKWAY	FOOT	458.00		458.00	TRAFFIC CONTROL & PROTECTION	L SUM	1.00	0.25	0.75
REPLACE/TIGHTEN CLIP PER SIGN	EACH	5.00		5.00	OVERHEAD SIGN STRUCTURE - SPAN, TYPE I-A (4' - 0"X4' - 6")	FOOT	184.00	88.00	96.00
REMOVE & REINSTALL SIGN PANEL	SQ FT	1,132.50	862.00	270.50	OVERHEAD SIGN STRUCTURE - SPAN, TYPE II-A (4' - 6"X 5' - 3")	FOOT	81.00	81.00	
TIGHTEN U-BOLT	EACH	2.00		2.00	DRILLED SHAFT CONCRETE FOUNDATIONS	CU YD	<i>08.30</i>	<i>47.80</i>	20.50
FURNISH & INSTALL SADDLE SHIM BLOCK	EACH	20.00		20.00	REMOVE OVERHEAD SIGN STRUCTURE - SPAN	EACH	3.00	2.00	1.00
FURNISH & INSTALL INTERNAL TRUSS DAMPER	EACH	5.00		5.00	REMOVE CONCRETE FOUNDATION - OVERHEAD	EACH	6.00	4.00	2.00
FURNISH & INSTALL SAFETY CHAIN	EACH	14.00	4.00	10.00	STRUCTURAL STEEL SUPPORT FOR OVERHEAD SIGN STRUCTURE - SPAN	EACH	16.00	4.00	12.00
REPAIR HANDRAIL LOCKING PIN CONNECTION	EACH	<i>64.00</i>	9.00	<i>55.00</i>	REMOVE & RE-ERECT OVERHEAD SIGN STRUCTURE - SPAN	EACH	5.00		5.00
DISCONNECT/RECONNECT ELECTRIC SERVICE	EACH	8.00	2.00	6.00					
RELOCATE ELECTRIC SERVICE	EACH	3.00	2.00	1.00					
CHANGEABLE MESSAGE SIGN	CAL DAY	70.00	70.00						
ATTENUATOR BASE	SQ YD	102.00	102.00						
IMPACT ATTENUATOR REMOVAL	EACH	2.00	2.00						
IMPACT ATTENUATOR (NON-REDIRECTIVE), TEST LEVEL 3	EACH	2.00	2.00						
PAVED DITCH REMOVAL & REPLACEMENT	FOOT	40.00	40.00						
GUARD POSTS	EACH	35.00	35.00						
GUARD POST REMOVAL	EACH	23.00	23.00						

Rev.

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

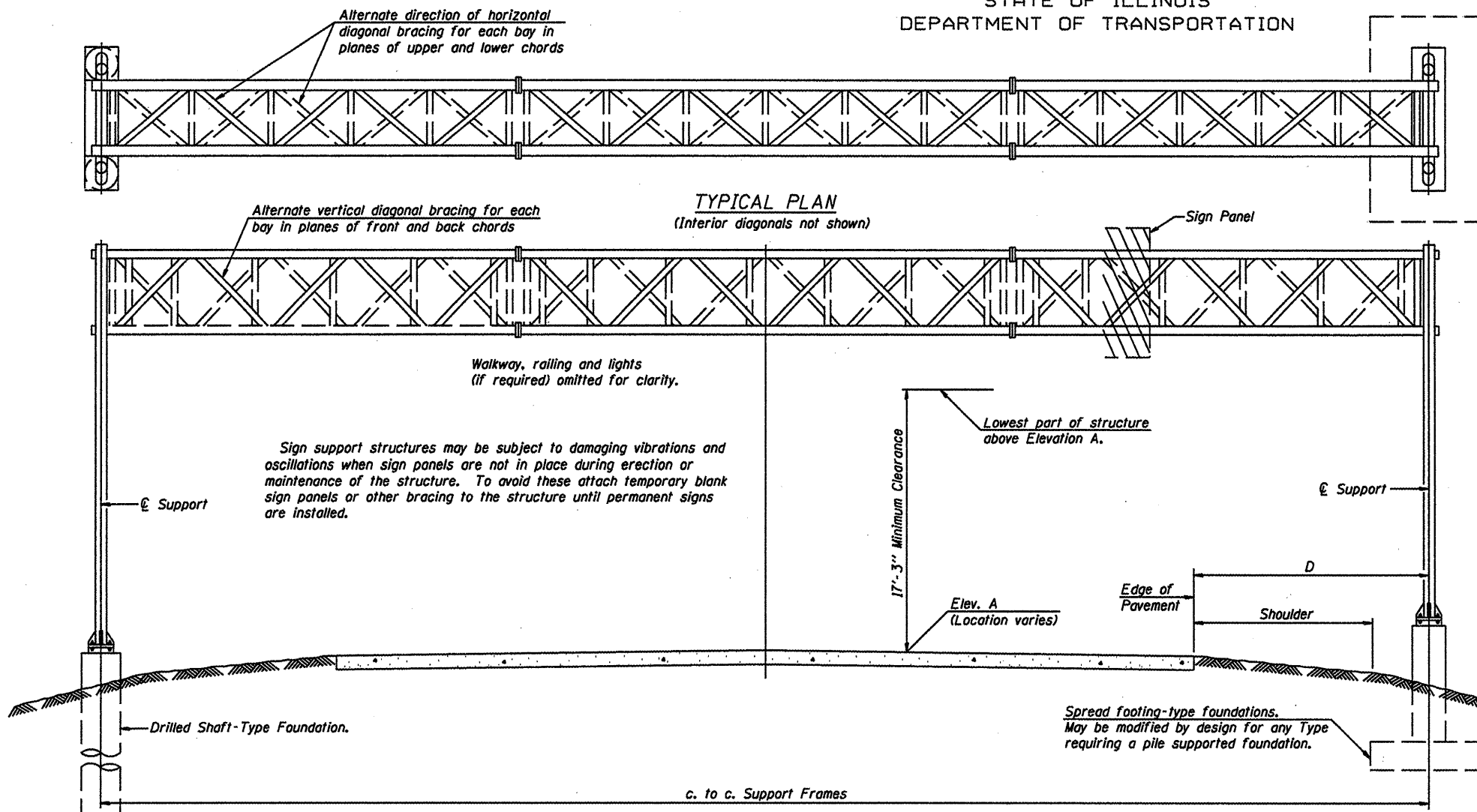
FAI Routes 57 & 70
D5-7 OVD SIN STR REPL 2009-5
Various Counties
Sheet 5 of 35
Contract Number 46006

Schedule of Overhead Sign Structure Replacement

Location No.:	5-01	State I.D. No.:	5S010I057R235.3		
County:	Champaign	Route:	I - 57	M.P.:	235.3
				Direction:	NB
Description of Work		Unit	Quantity		
REMOVE OVERHEAD SIGN STRUCTURE - SPAN		EACH	1.00		
OVERHEAD SIGN STRUCTURE-SPAN TYPE II-A		FOOT	81.00		
STRUCTURAL STEEL SUPPORT OVERHEAD SIGN STRUCTURE		EACH	2.00		
DRILLED SHAFT CONCRETE FOUNDATION		CU YD	21.50		
REMOVE CONCRETE FOUNDATION OVERHEAD		EACH	2.00		
DISCONNECT/RECONNECT ELECTRIC SERVICE		EACH	1.00		
RELOCATE ELECTRIC SERVICE		EACH	1.00		
REMOVE & REINSTALL SIGN PANEL		SQ FT	645.00		
REMOVE & REINSTALL WALKWAY		FOOT	48.00		
REPAIR HANDRAIL LOCKING PIN CONNECTION		EACH	5.00		
FURNISH & INSTALL SAFETY CHAIN		EACH	2.00		
PAVED DITCH REMOVAL & REPLACEMENT		FOOT	40.00		
CHANGEABLE MESSAGE SIGN		CAL DAY	35.00		
This overhead sign structure is being completely replaced.					

Location No.:	5-02	State I.D. No.:	5S010I057L236.0		
County:	Champaign	Route:	I - 57	M.P.:	236.0
				Direction:	SB
Description of Work		Unit	Quantity		
REMOVE OVERHEAD SIGN STRUCTURE - SPAN		EACH	1.00		
OVERHEAD SIGN STRUCTURE-SPAN TYPE I-A		FOOT	88.00		
STRUCTURAL STEEL SUPPORT OVERHEAD SIGN STRUCTURE		EACH	2.00		
DRILLED SHAFT CONCRETE FOUNDATION		CU YD	26.30		
REMOVE CONCRETE FOUNDATION OVERHEAD		EACH	2.00		
DISCONNECT/RECONNECT ELECTRIC SERVICE		EACH	1.00		
RELOCATE ELECTRIC SERVICE		EACH	1.00		
REMOVE & REINSTALL SIGN PANEL		SQ FT	217.00		
REMOVE & REINSTALL WALKWAY		FOOT	31.00		
REPAIR HANDRAIL LOCKING PIN CONNECTION		EACH	4.00		
FURNISH & INSTALL SAFETY CHAIN		EACH	2.00		
CHANGEABLE MESSAGE SIGN		CAL DAY	35.00		
IMPACT ATTENUATORS (NON-REDIRECTIVE) TL3		EACH	2.00		
ATTENUATOR BASE		SQ YD	102.00		
IMPACT ATTENUATOR REMOVAL		EACH	2.00		
GUARD POST		EACH	35.00		
GUARD POST REMOVAL		EACH	23.00		
This overhead sign structure is being completely replaced.					

Rev.



GENERAL NOTES

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

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

LOADING: 90 M.P.H. WIND VELOCITY

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

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

DESIGN STRESSES:

Field Units
f_c = 3,500 p.s.i.
f_y = 60,000 p.s.i. (reinforcement)

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

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

All Structural Steel Plates and Shapes shall conform to AASHTO M270 Gr. 36, Gr. 50 or Gr. 50W*. Stainless steel for shims, sleeves and handhole covers shall be ASTM A240, Type 302 or 304, or another alloy suitable for exterior exposure and acceptable to the Engineer. The steel pipe and stiffening ribs at the base plate for the column shall have a minimum longitudinal Charpy V-Notch (CVN) energy of 15 lb.-ft. at 40° F. (Zone 2) before galvanizing.

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

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

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

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

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

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

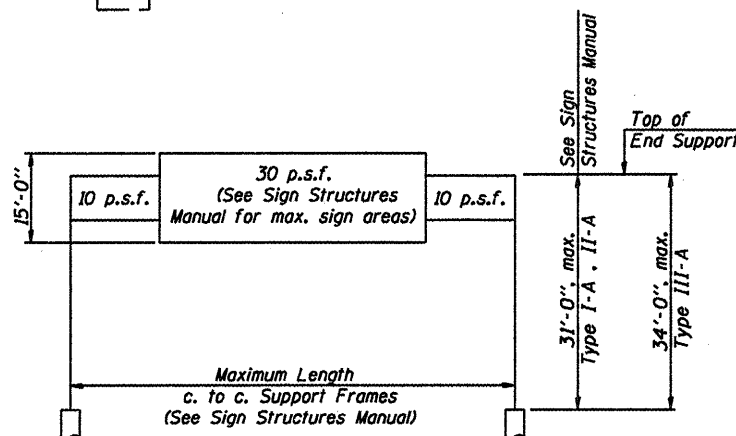
* If M270 Gr. 50W (M222) steel is proposed, chemistry for plate to be used shall first be approved by the Engineer as suitable for galvanizing and welding.

TYPICAL ELEVATION
(Looking at Face of Signs)**

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

Structure Number	Station	Design Truss Type	c. to c. Supports	Elev. A	Dim. D	Height of Tallest Sign	Total Sign Area
550101057R235.3	466 + 00	II-A	81'-0"	750.50	20'-0"	14'-0"	645.00
550101057L236.0	547 + 00	I-A	88'-0"	772.10	32'-0"	15'-0"	217.50

**Looking upstation for structures with signs both sides.



DESIGN WIND LOADING DIAGRAM

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

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

OS-A-1 5/16/08

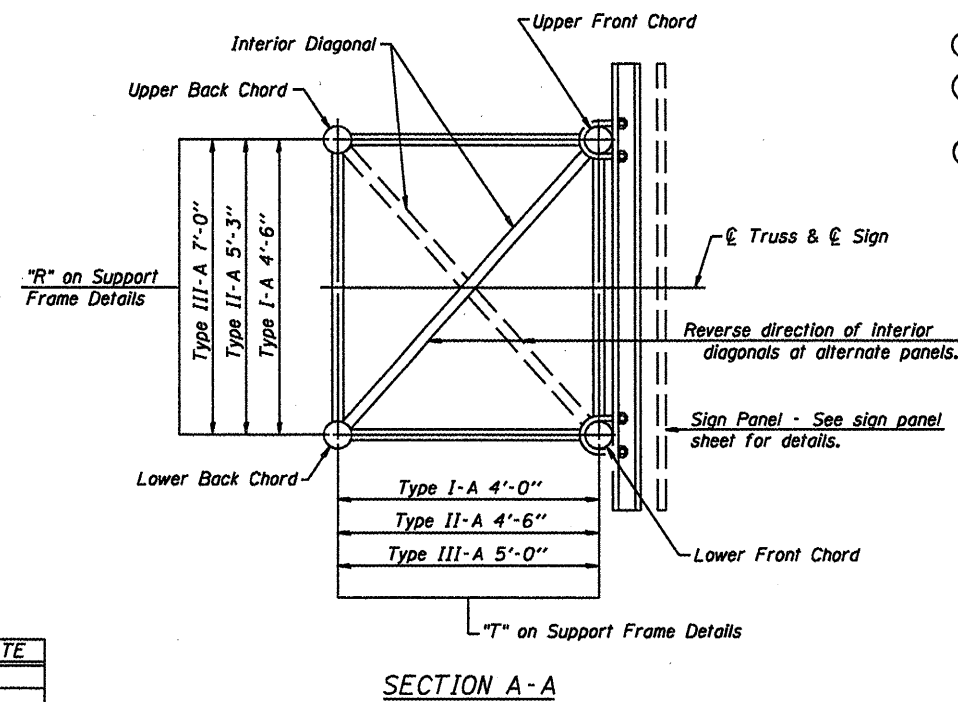
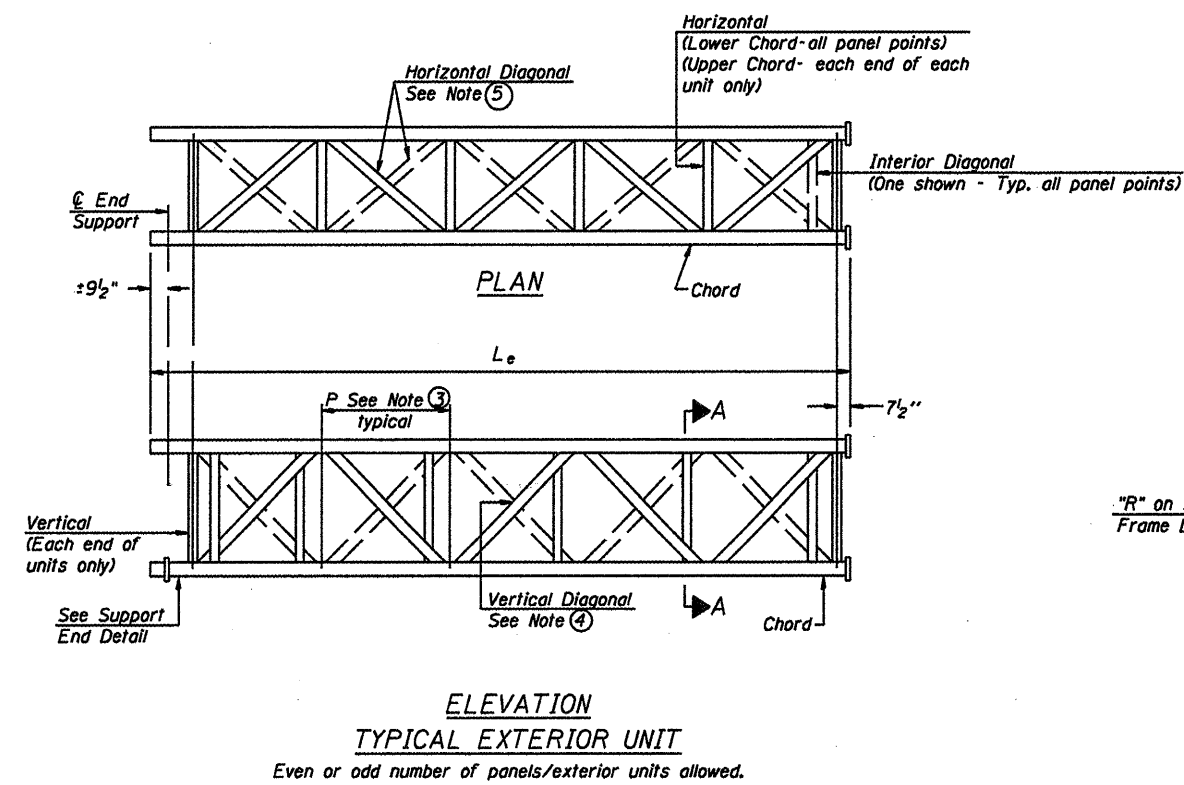
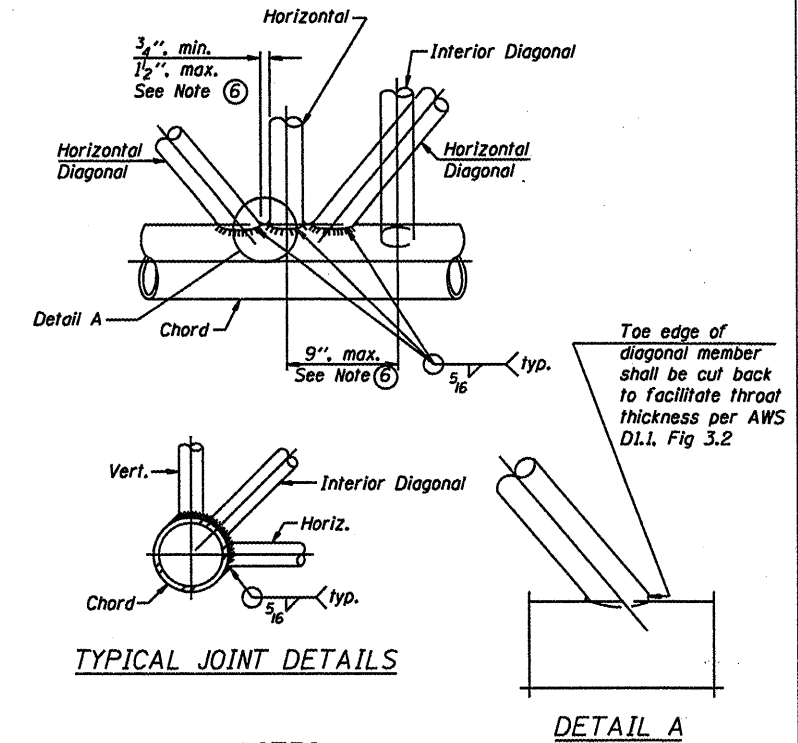
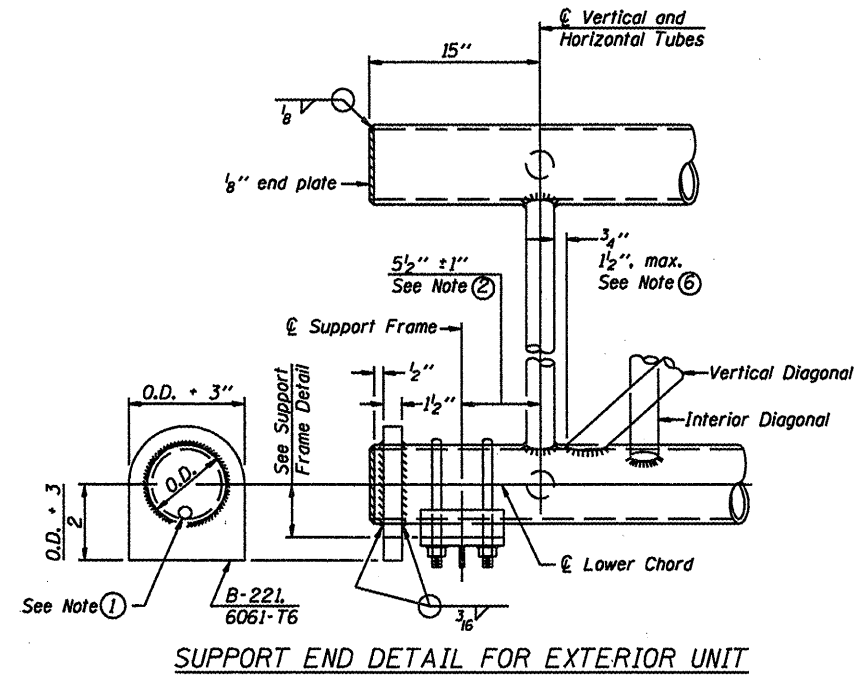
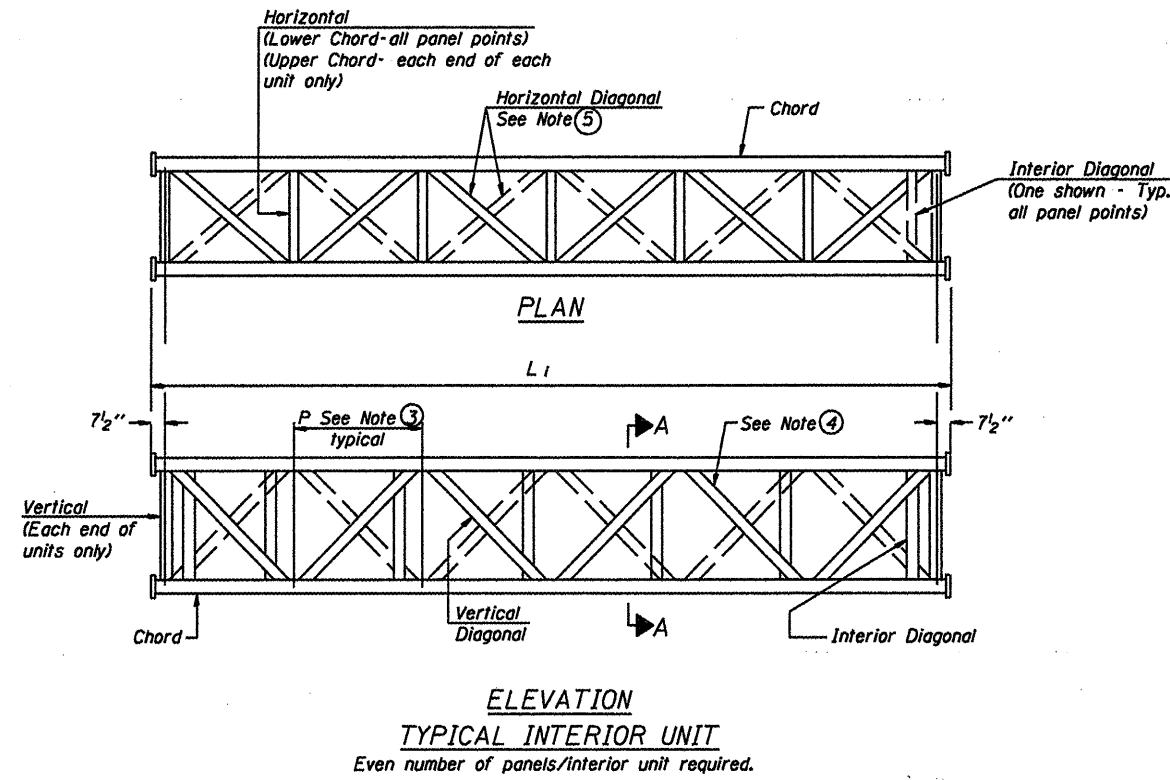
TOTAL BILL OF MATERIAL

NUMBER	REVISION	DATE

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

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

District 5
Overhead Sign Structure
Replacement



- NOTES**
- Contractor may alternatively use standard aluminum drive-fit cap to close end. $\frac{1}{2}''$ ϕ drain hole in end plate/drive-fit cap. (Typ. at ends of all chords)
 - $5\frac{1}{2}''$ end dimension may vary by $\pm 1''$ to provide uniform panel spacing (P).
 - 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.
 - Vertical Diagonals in front and back face shall alternate.
 - Hidden lines show wind bracing alternates direction between planes of top and bottom chords.
 - All diagonals shall be detailed for minimum offset from the panel point based on the following: Offset shall be such as to provide a $\frac{3}{4}''$ minimum to $1\frac{1}{2}''$ maximum clearance between any diagonal and any horizontal or vertical member, and to provide clearance for U-bolt connections of signs or walkway brackets.

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

District 5
Overhead Sign Structure
Replacement

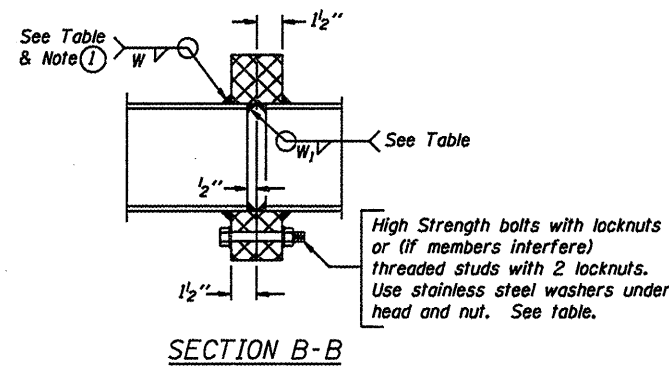
DESIGNED -	20
CHECKED -	EXAMINED
DRAWN -	PASSED
CHECKED -	ENGINEER OF BRIDGE DESIGN
	ENGINEER OF BRIDGES AND STRUCTURES

NUMBER	REVISION	DATE

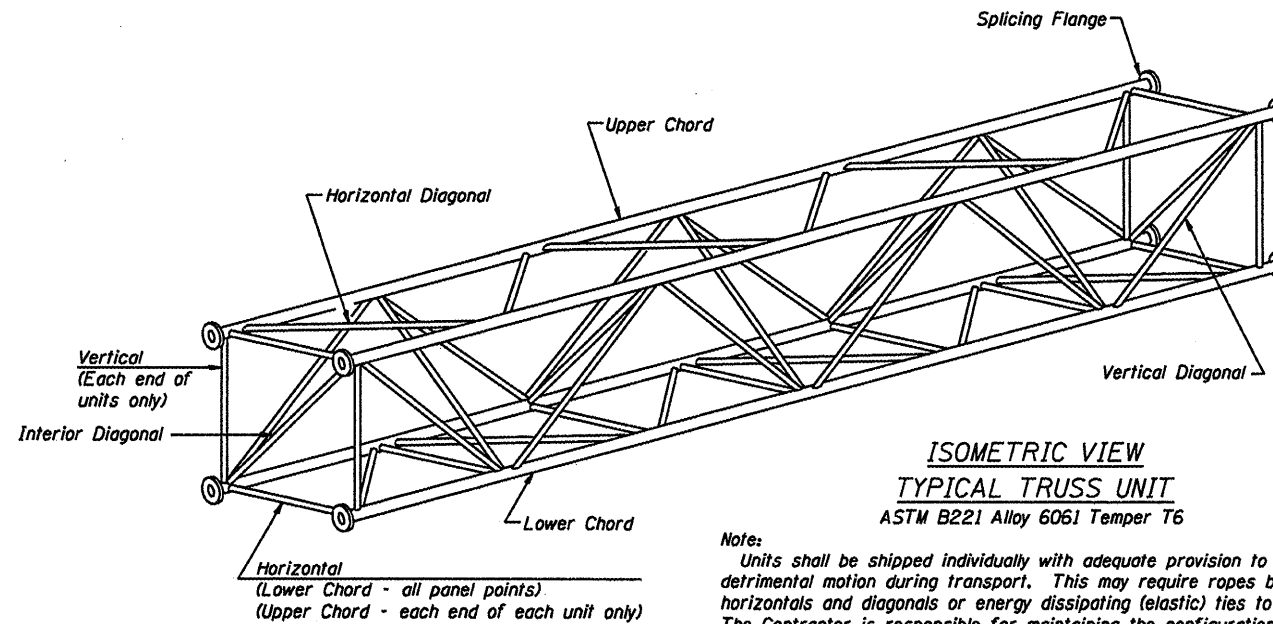
OS-A-2 5/16/08

TRUSS UNIT TABLE

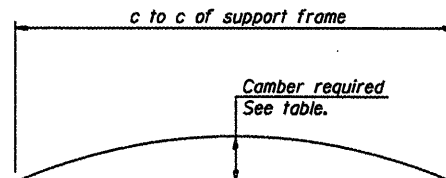
Structure Number	Station	Design Truss Type	Exterior Units (2)			Interior Unit			Upper & Lower Chord		Verticals; Horizontals; Vertical, Horizontal, and Interior Diagonals		Camber at Midspan	Splicing Flange								
			No. Panels per Unit	Unit Lgth.(L _E)	Panel Lgth.(P)	No. Req'd.	No. Panels per Unit	Unit Lgth.(L _I)	Panel Lgth.(P)	O.D.	Wall	O.D.		Wall	Bolts		Weld Sizes		A	B		
															No./Splice	Dia.	W	W ₁				
550101057R235.3	466 + 00	II-A	5	26'-1 3/4"	4'-10 1/4"	1	6	30'-4 1/2"	4'-10 1/4"	5 1/2"	5/16"	3"	5/16"	2"	6	7/8"	3/8"	1/4"	9 1/4"	12 1/4"		
550101057R236.0	547 + 00	I-A	6	30'-1 1/2"	4'-8 1/2"	1	6	29'-6"	4'-8 1/2"	5"	5/16"	2 1/2"	5/16"	2 3/4"	6	7/8"	5/16"	1/4"	8 3/4"	11 3/4"		



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

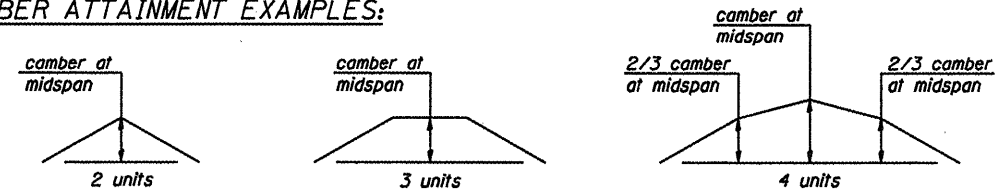


Note: Units shall be shipped individually with adequate provision to prevent detrimental motion during transport. This may require ropes between horizontals and diagonals or energy dissipating (elastic) ties to the vehicle. The Contractor is responsible for maintaining the configuration and protection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

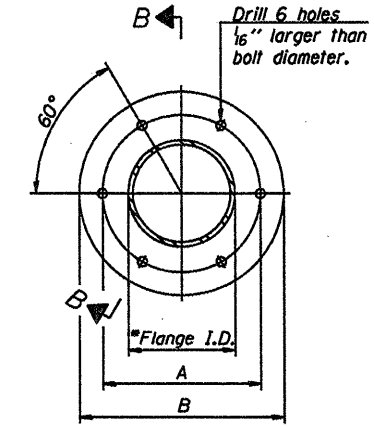


Camber curve shown is theoretical. Actual camber attained by slope changes at splices between units.

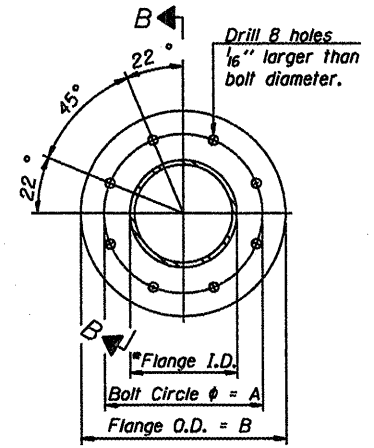
CAMBER ATTAINMENT EXAMPLES:



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



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



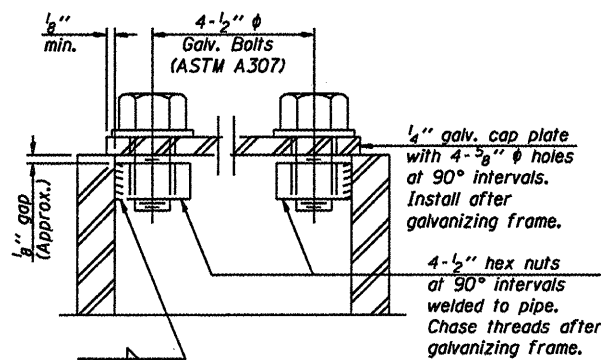
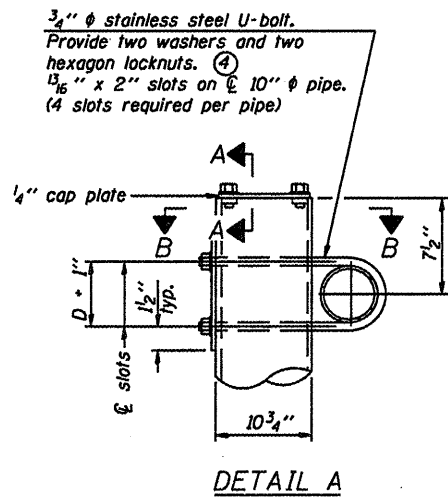
TRUSS TYPES II-A & III-A
SPlicing FLANGES
ASTM B221, Alloy 6061-T6
or ASTM B209, Alloy 6061-T651
*To fit O.D. of Chord with maximum gap of 1/16".

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

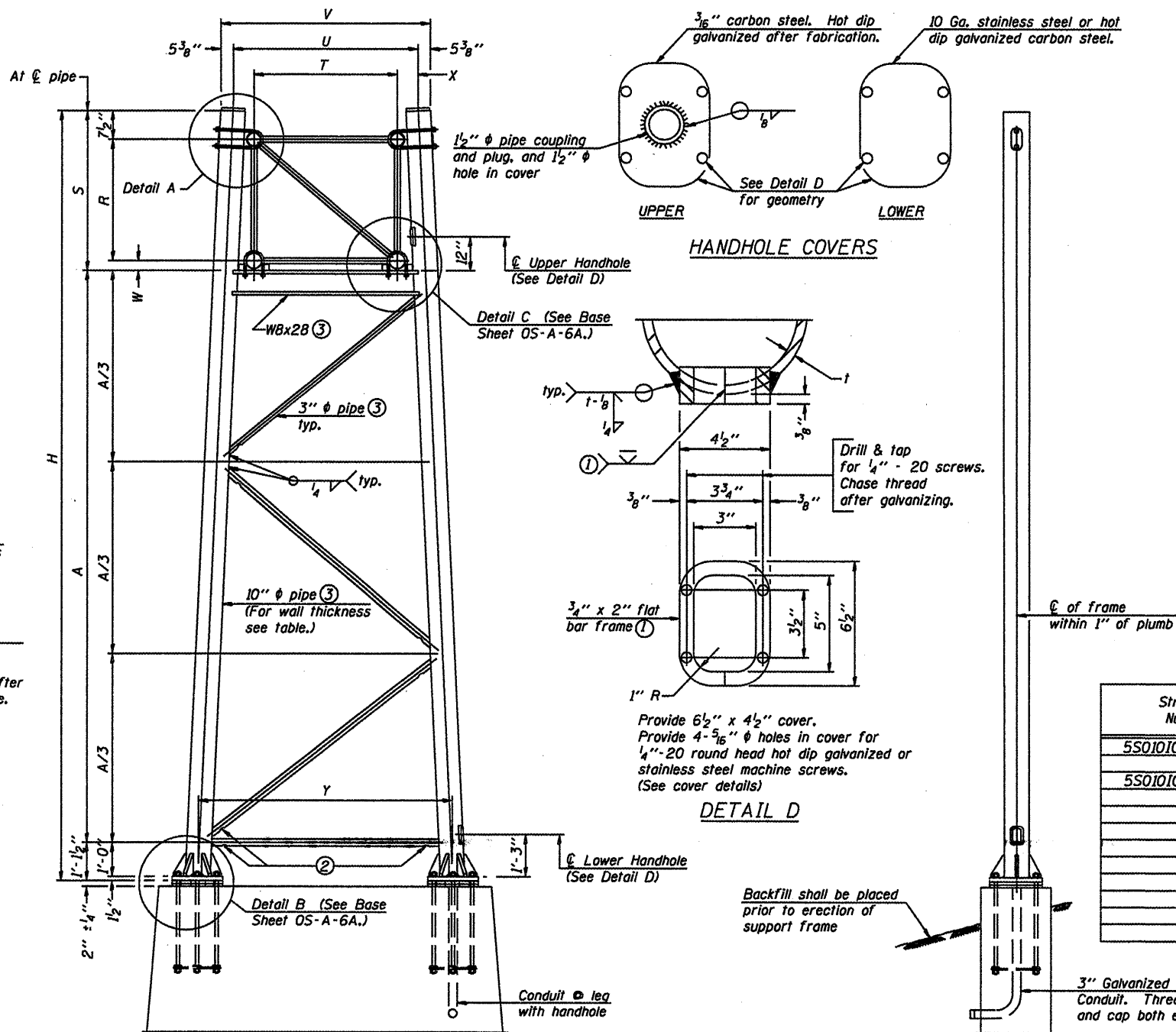
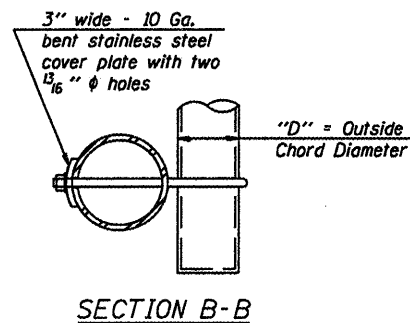
District 5
Overhead Sign Structure
Replacement

NUMBER	REVISION	DATE

DESIGNED -	20
CHECKED -	EXAMINED
DRAWN -	PASSED
CHECKED -	



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



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

SIDE ELEVATION

END ELEVATION

10" ϕ PIPE TRUSS SUPPORT FRAME

NUMBER	REVISION	DATE

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

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

- 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 μ in or less.
- 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.
- 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.
- See General Notes for fasteners.
- Dimensions shown are based on selection criteria in the Sign Structures Manual. Nonstandard applications must have dimensions verified or amended as appropriate.
- "H" based on 15'-0" or actual sign height, whichever is greater.

The Contractor and the Engineer shall field verify the height of the new foundations. If the height of the new foundations is lower than the existing foundations, the height of the end supports may need to be increased to maintain the proper height of the sign structure above the roadway.

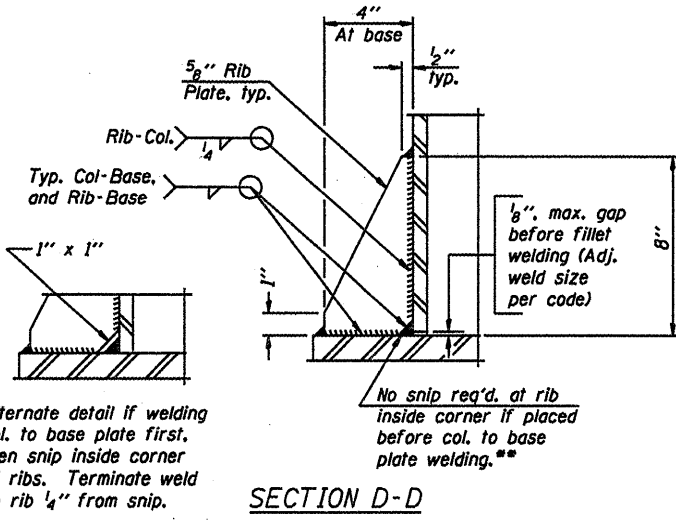
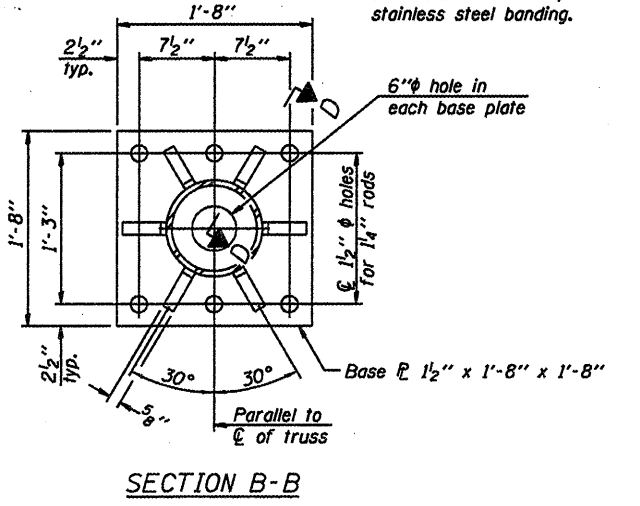
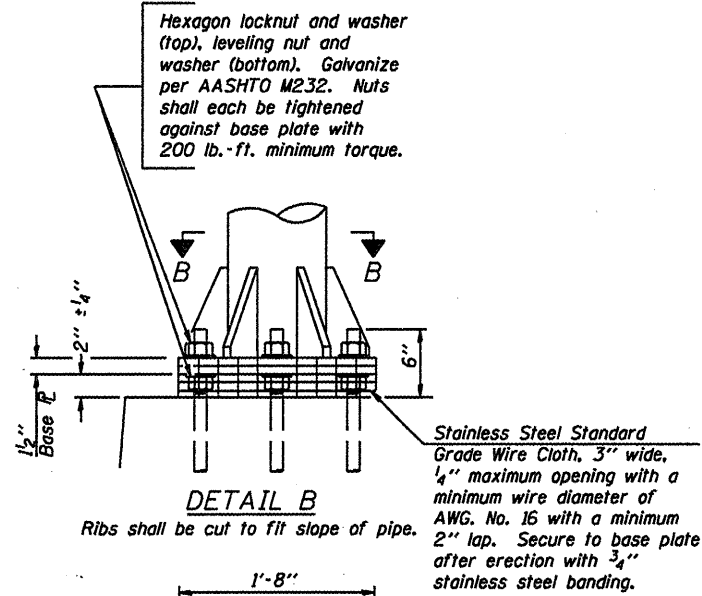
Structure Number	Station	Support		Truss Type	Pipe Wall Thickness	H (6)	A
		Left	Right				
550101057R235.3	466 + 00	X	X	II-A	0.365(Std)	29'-1"	22'-9 3/4"
550101057L236.0	547 + 00	X	X	I-A	0.279	25'-9 1/4"	20'-3 3/4"

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

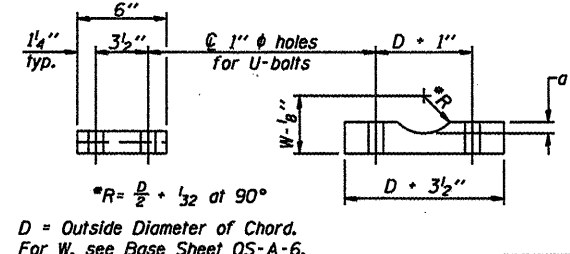
OS-A-6 5/16/08

OVERHEAD SIGN STRUCTURES
SUPPORT FRAME for ALUMINUM TRUSS

District 5
Overhead Sign Structure
Replacement

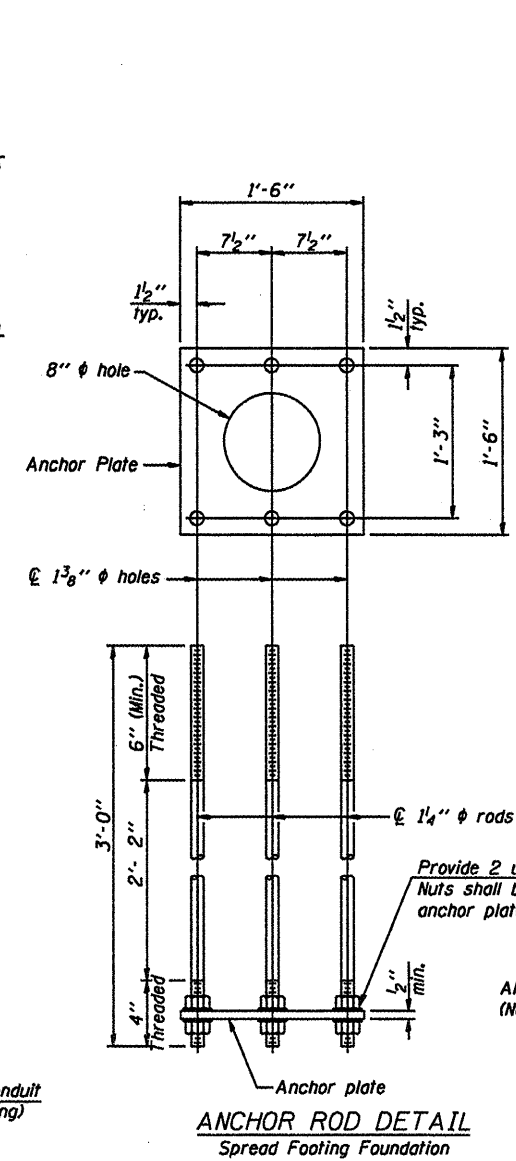


Alternate detail if welding col. to base plate first, then snip inside corner of ribs. Terminate weld on rib 1/4" from snip.

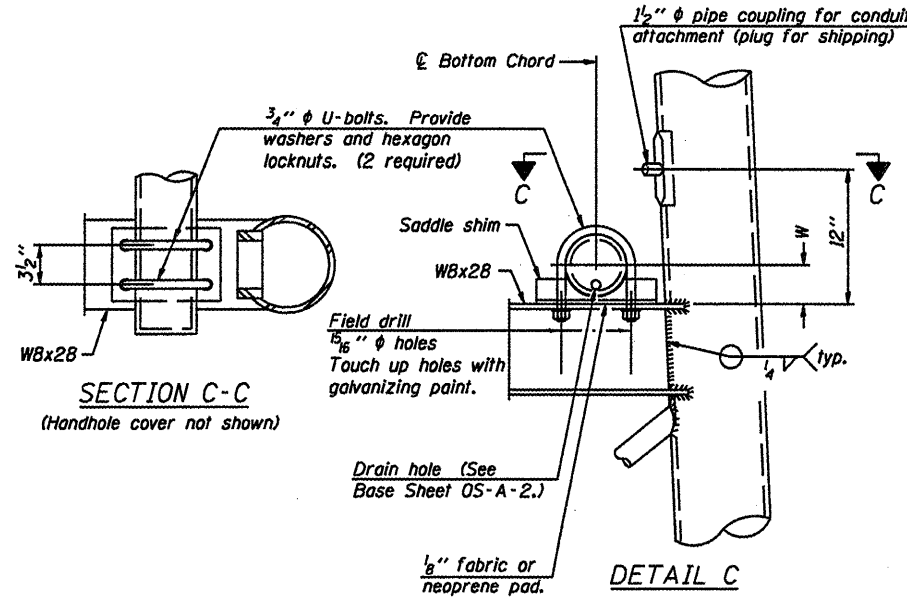
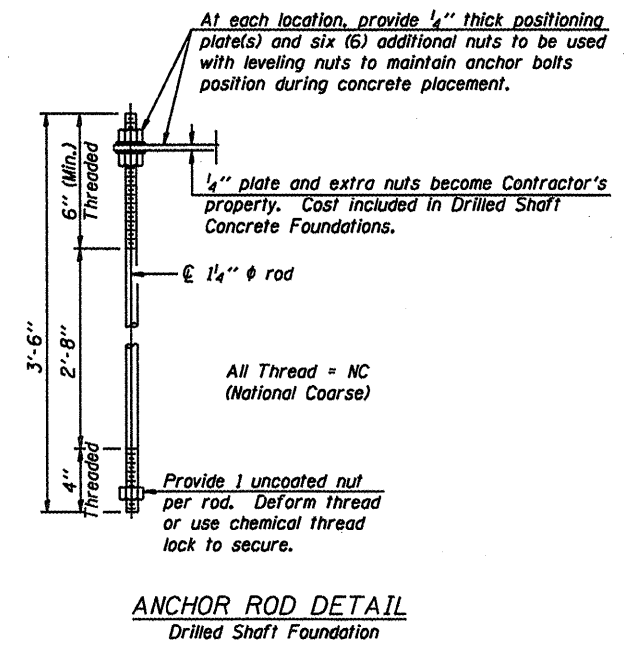
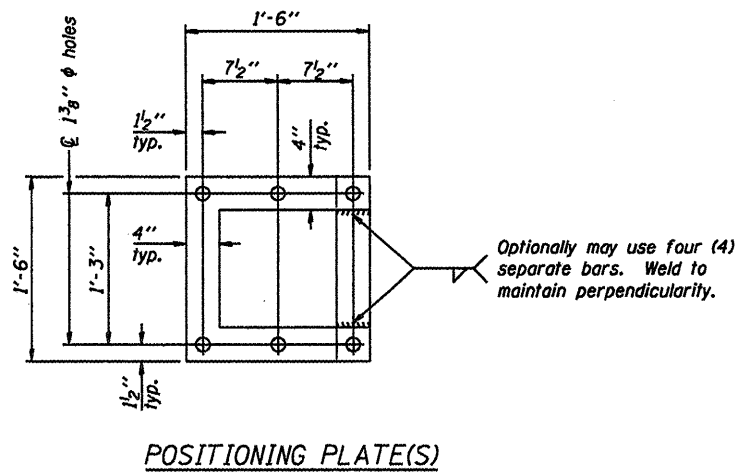


SADDLE SHIM DETAIL
ASTM B26 Alloy 356-F
or
ASTM B209 Alloy 6061-T651
(4 required per sign truss)

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



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



10" PIPE SUPPORT FRAME DETAILS

OVERHEAD SIGN STRUCTURES
SUPPORT FRAME DETAILS ALUMINUM TRUSS

District 5
Overhead Sign Structure
Replacement

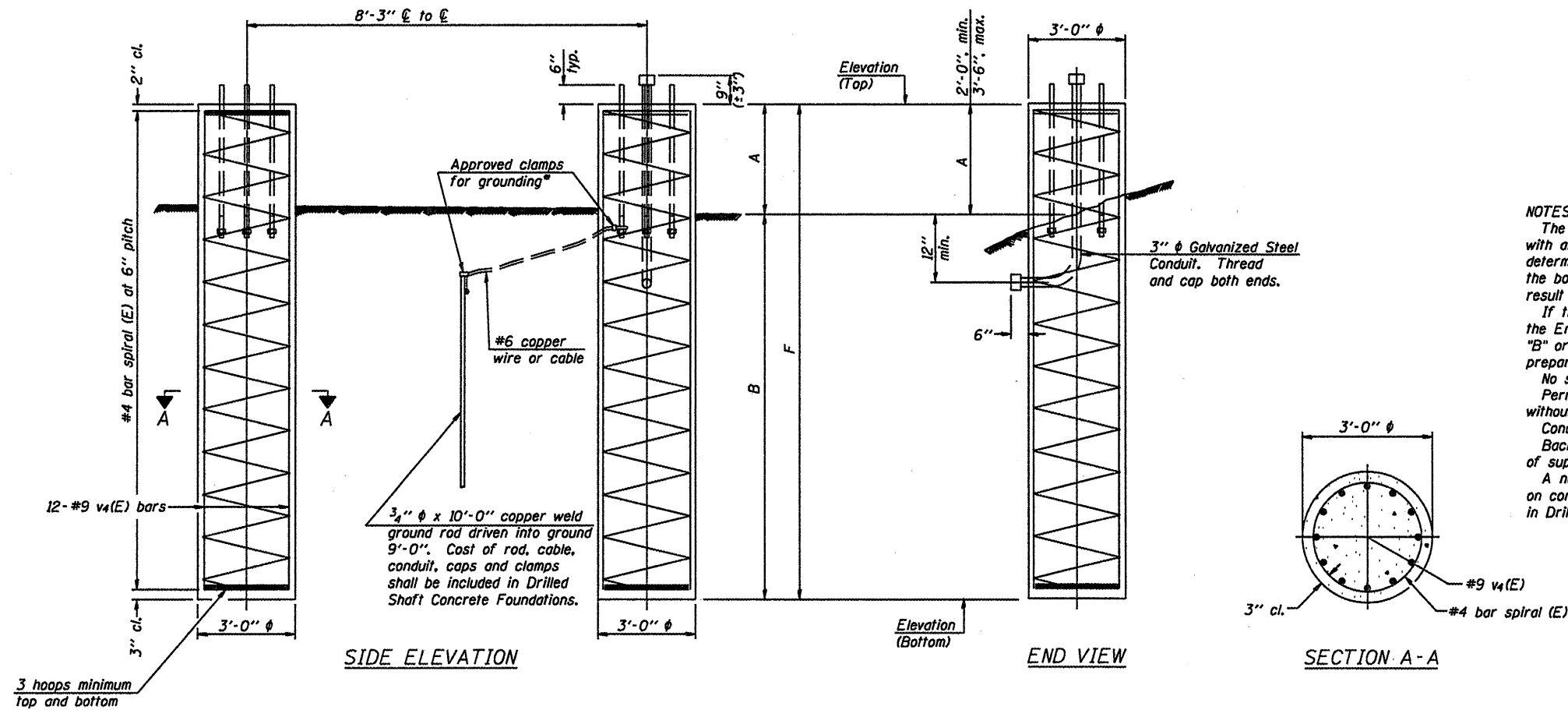
NUMBER	REVISION	DATE

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

OS-A-6A 5/16/08

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

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



BAR LIST - EACH FOUNDATION

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

NOTES:

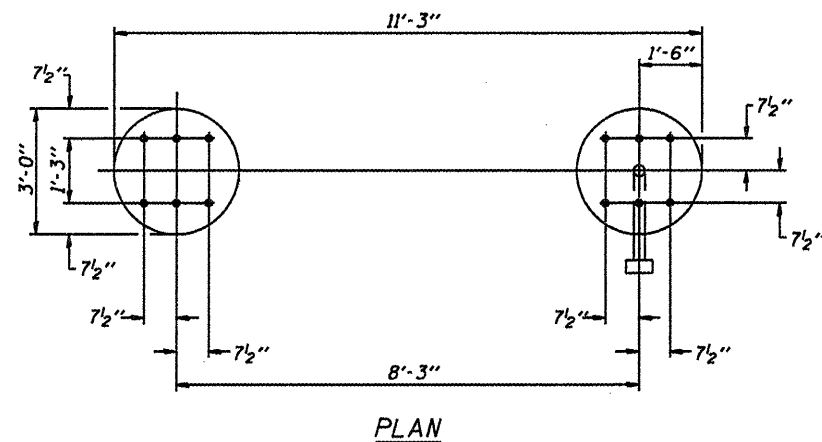
The foundation dimensions shown are based on the presence of mostly cohesive soils with an average Unconfined Compressive Strength (Q_u) of at least 1.25 tsf, which must be determined by previous soil investigations at the jobsite. When other conditions are indicated, the boring data will be included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

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

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

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

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



Structure Number	Station	Left Foundation			Right Foundation			Class DS Concrete (Cu. Yds.)				
		Elevation Top	Elevation Bottom	A	B	F	Elevation Top		Elevation Bottom	A	B	F
550101057R235.3	466 + 00	749.50		3'-0"	17'-6"	20'-6"	749.50		3'-0"	17'-6"	20'-6"	21.50
550101057L236.0	547 + 00	773.60 *					773.60		3'-0"	17'-6"	20'-6"	10.70

Elevations were taken from existing sign structure details.
* Structure No. 550101057L236.0: Left Foundation Details see Standard OS4-F"Median Support Foundation Details.

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

NUMBER	REVISION	DATE

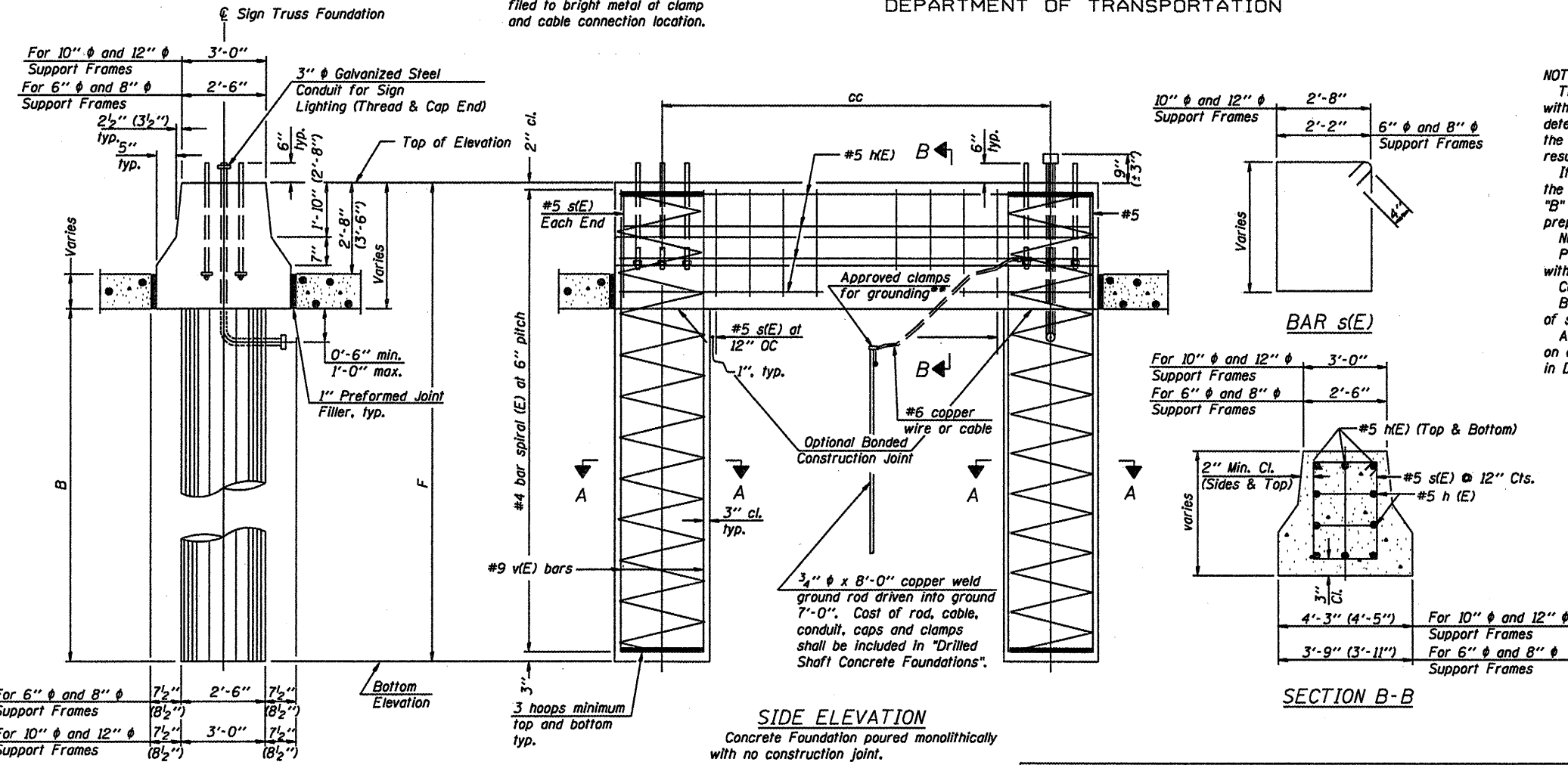
DETAILS FOR 10" Ø SUPPORT FRAME
TYPE I-A or II-A TRUSS

Rev.

OVERHEAD SIGN STRUCTURES
DRILLED SHAFT DETAILS

District 5
Overhead Sign Structure
Replacement

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



NOTES:
The foundation dimensions shown are based on the presence of mostly cohesive soils with an average Unconfined Compressive Strength (Q_u) of at least 1.25 tsf, which must be determined by previous soil investigations at the jobsite. When other conditions are indicated, the boring data will be included in the plans and the foundation dimensions shown will be the result of site specific designs.
If the conditions encountered are different than those indicated, the Contractor shall notify the Engineer to determine if the foundation dimensions need to be modified. If dimensions "B" or "F" are revised by more than 12" by the Contractor, "as-built" plans shall be prepared and submitted to the District Bureau of Operations for future reference.
No sonotubes or decomposable forms shall be used below the lower conduit entrance. Permanent metal forms or other shielding may not be left in place below that elevation without the Engineer's written permission.
Concrete shall be placed monolithically, without construction joints.
Backfill shall be placed per Article 502 of Standard Specification and prior to erection of support column.
A normal surface finish followed by a Bridge Seat Sealer application will be required on concrete surfaces above the lowest elevation 6" below finished ground line. Cost included in Drilled Shaft Concrete Foundation.

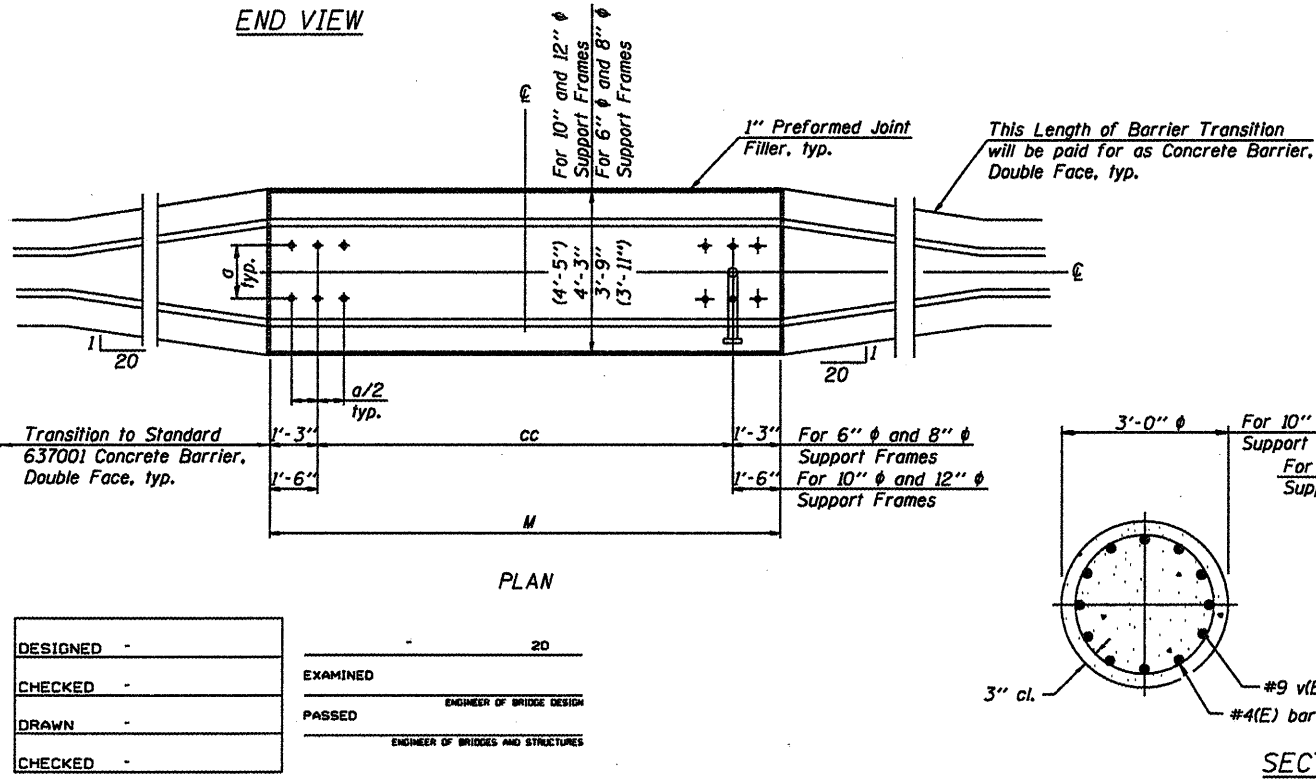
BAR LIST - EACH FOUNDATION

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

All dimensions in parenthesis are for 42" high barrier.

Structure Number	Station	Left Foundation				Right Foundation				Class DS Concrete (Cu. Yds.)
		Elevation Top	Elevation Bottom	B	F	Elevation Top	Elevation Bottom	B	F	
550101057L236.0	547 + 00	773.60 *		17'-6"	20'-6"					15.60

Elevations were taken from existing sign structure details.
* For the Right Foundation Details see Standard OS4-F3 "Drilled Shaft Details".



Pipe Support Frames	cc	M	a	a/2
6"	7'-0"	9'-6"	0'-11"	5 1/2"
8"	7'-6"	10'-0"	1'-1 1/2"	6 3/4"
10"	8'-3"	11'-3"	1'-3"	7 1/2"
12"	9'-0"	12'-0"	1'-6"	9"

OVERHEAD SIGN STRUCTURES
MEDIAN SUPPORT FOUNDATION DETAILS

District 5
Overhead Sign Structure Replacement

DESIGNED -
CHECKED -
DRAWN -
CHECKED -

20

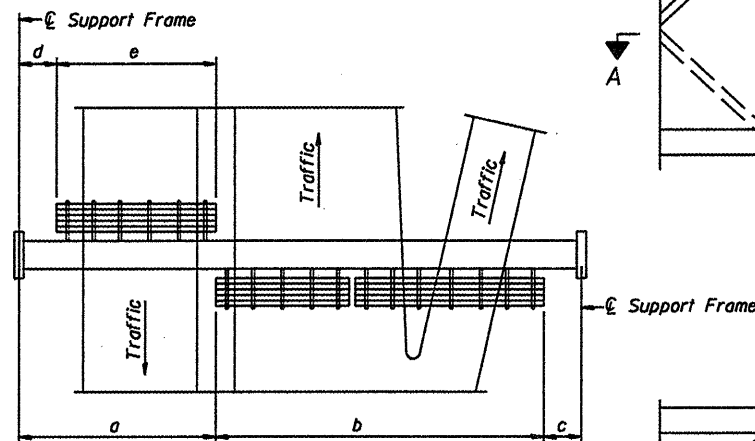
EXAMINED
PASSED

ENGINEER OF BRIDGE DESIGN
ENGINEER OF BRIDGES AND STRUCTURES

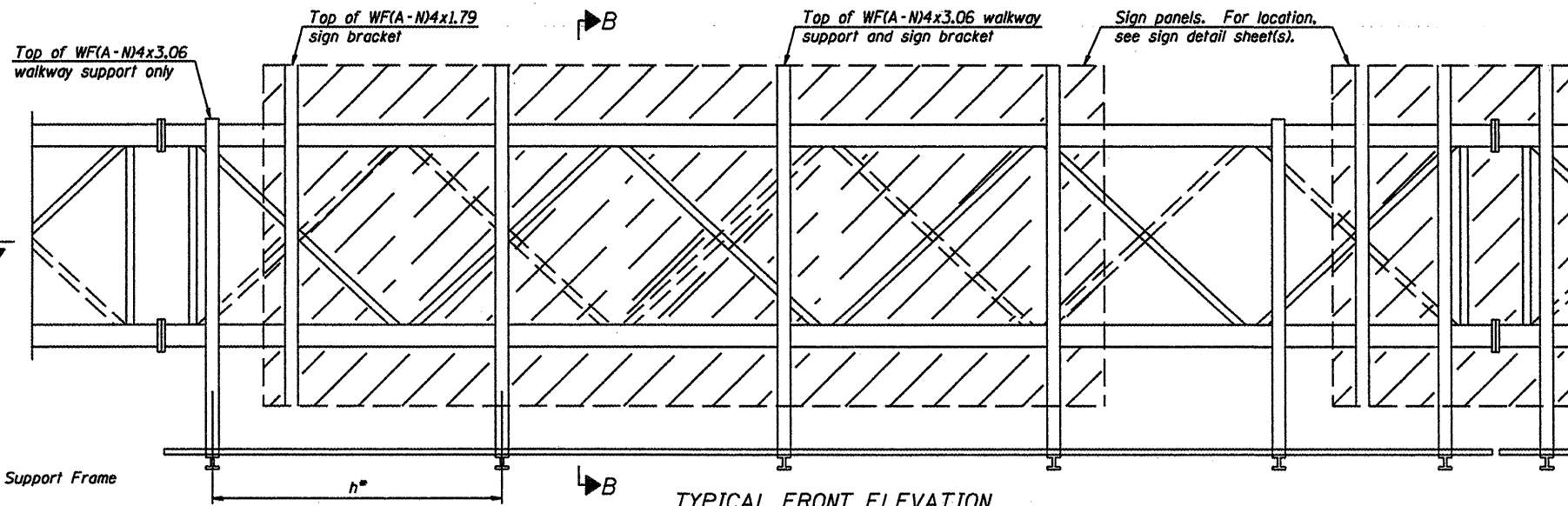
OS4-MED 5/16/08

Rev.

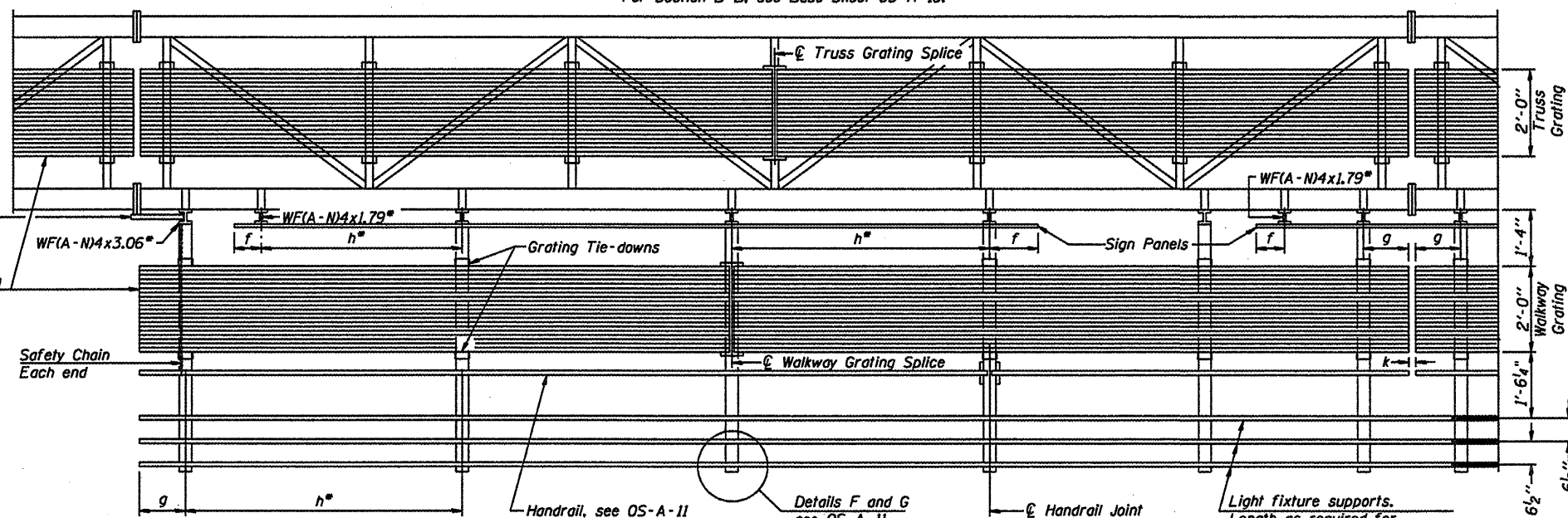
NUMBER	REVISION	DATE



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



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



SECTION A-A

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

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".

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

BRACKET TABLE

Sign Width		Number Brackets Required
Greater Than	Less Than or Equal To	
8'-0"	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 WFA-N4x3.06 and sign brackets WFA-N4x1.79 for efficiency and within limits shown:

- f = 12" maximum, 4" minimum (End of sign to center of nearest bracket)
- g = 12" maximum, 4" minimum (End of walkway grating to center of nearest support bracket)
- h = 6'-0" maximum (center to center of sign and/or walkway support brackets, WFA-N4x1.79 or WFA-N4x3.06)
- k = 2" maximum gap between adjacent walkway grating sections and handrail ends

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

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

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

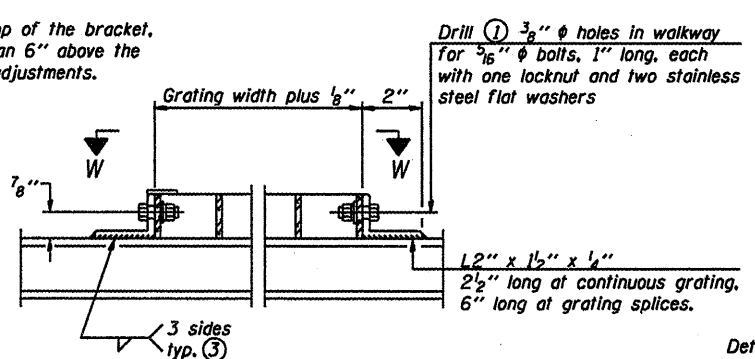
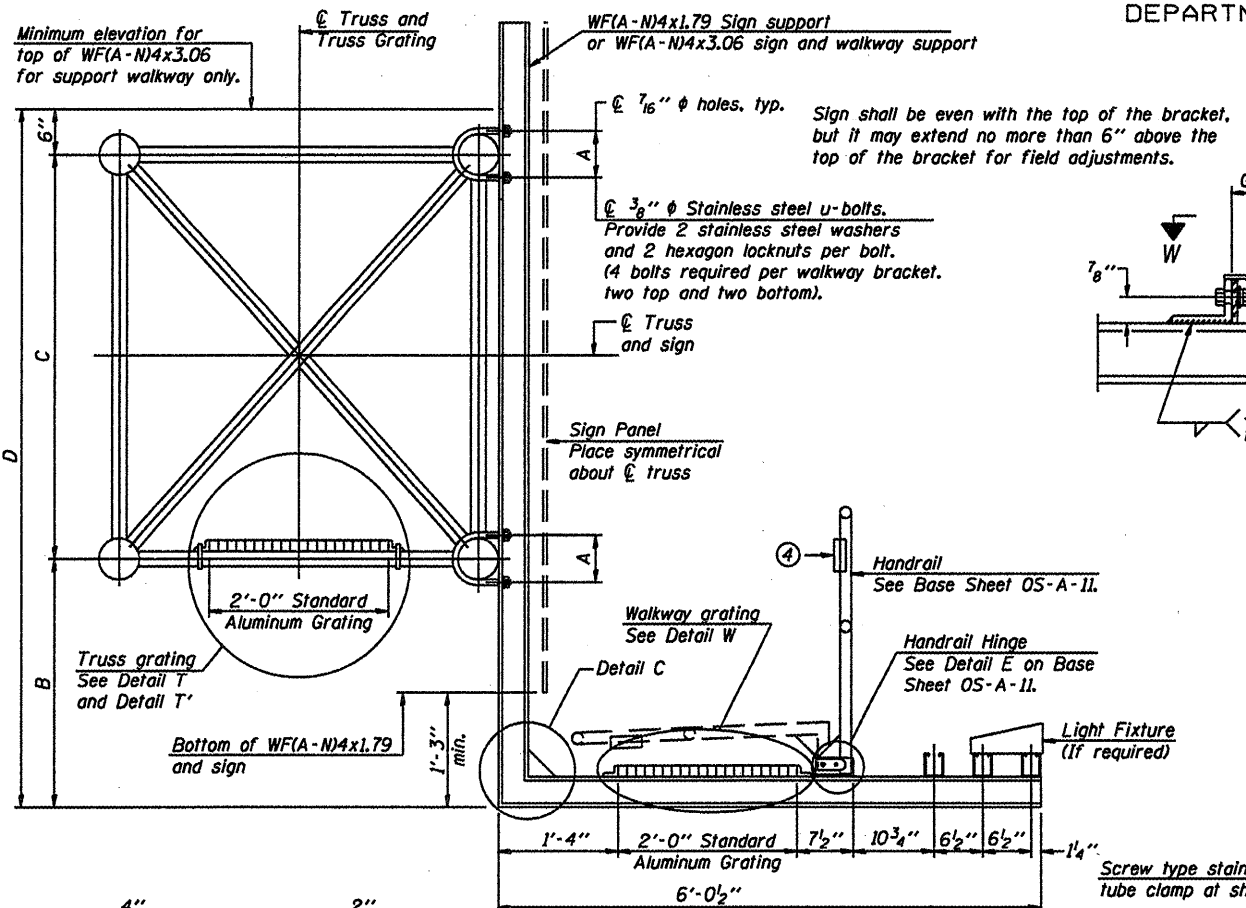
OS-A-9 5/16/08

Structure Number	Station	a	b	c	d	e	Walkway Grating and Handrail Lengths
5S0101057R235.3	466 + 00	N/A	N/A	N/A	N/A	N/A	82'-8" *
5S0101057L236.0	547 + 00	N/A	N/A	N/A	N/A	N/A	89'-9" *

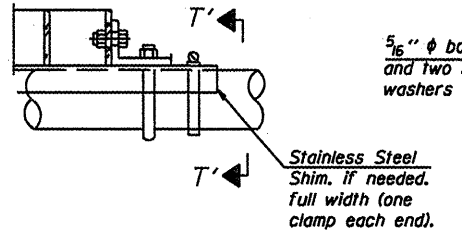
* Length shown is for internal truss grating to be installed.

OVERHEAD SIGN STRUCTURES
ALUMINUM WALKWAY DETAILS

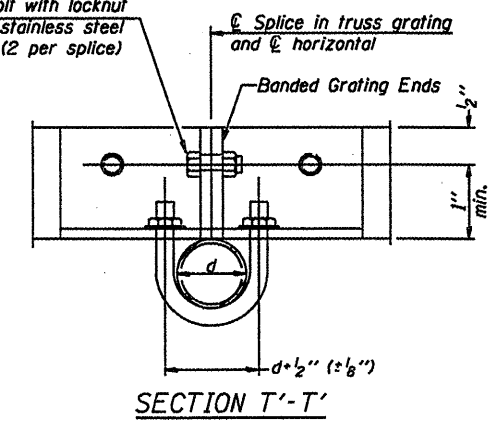
District 5
Overhead Sign Structure
Replacement



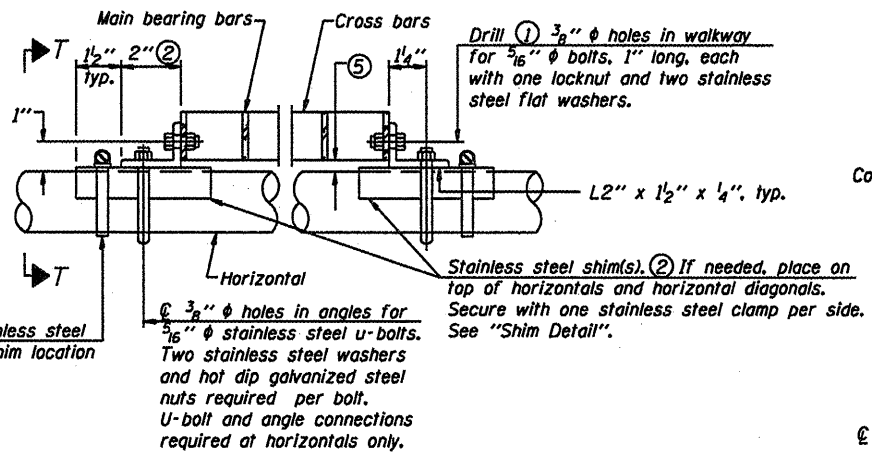
DETAIL W
(Walkway grating)



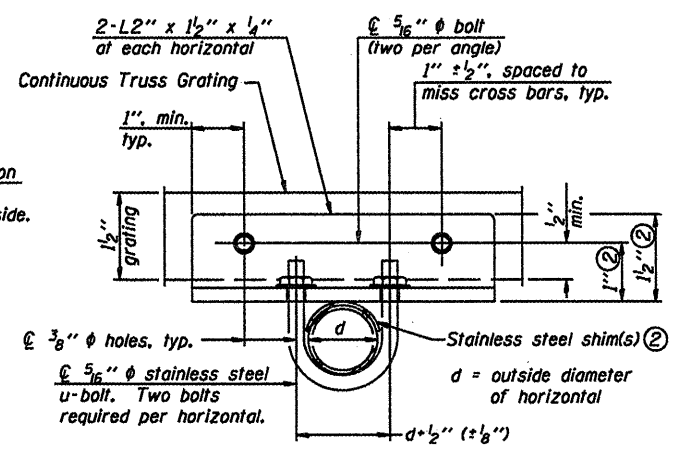
DETAIL T'
(Truss grating splice)
Details not shown same as Detail T.
Alternate materials may be used subject to the Engineer's review and approval.



SECTION T'-T'

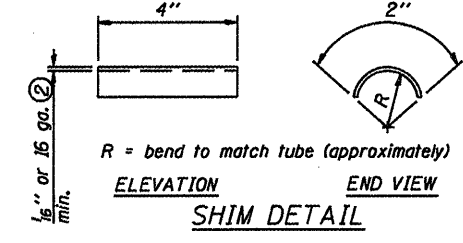


DETAIL T
(Continuous Truss grating)

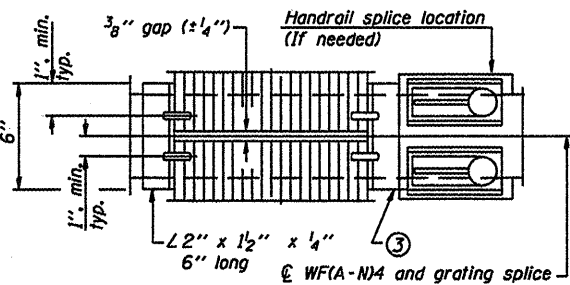


SECTION T-T

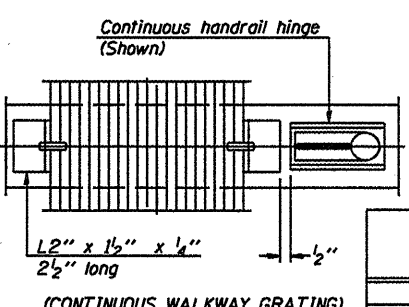
SECTION B-B



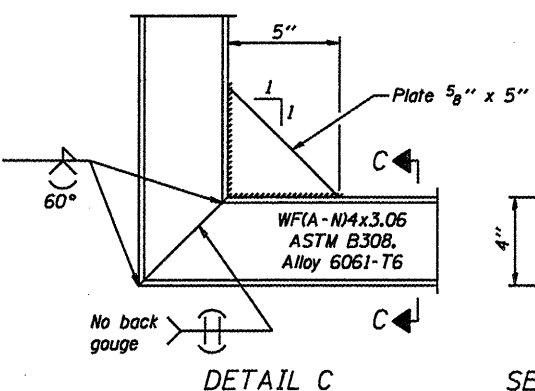
SHIM DETAIL



SECTION C-C



SECTION W-W
(CONTINUOUS WALKWAY GRATING)



DETAIL C

SPECIFICATIONS FOR STANDARD ALUMINUM GRATING

Main Bearing Bars shall be 3/8" x 1 1/2" on 1 3/8" 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 "I" sections for main bearing bars shall meet the following requirements:
Main bars shall conform to ASTM B221 Alloy 6061-T6 and have a minimum section modulus equal to 0.0705 in.³ per bar, a depth of 1 1/2", spaced on 1 3/8" 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

Existing walkway and walkway support brackets to be reused.

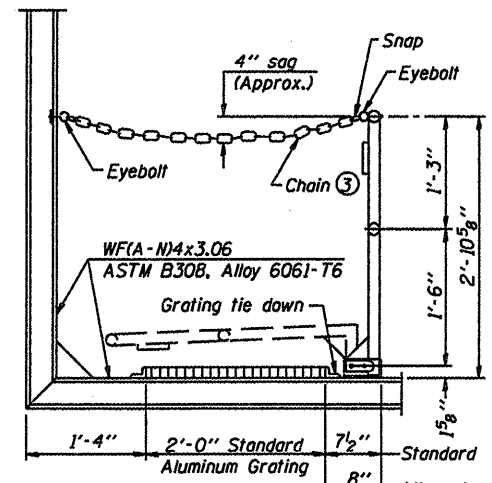
- Drilling holes in grating may be done in shop or field, based on Contractor's preference and subject to accurate alignment.
- Stainless steel shims shall be placed as shown in Detail T if needed to compensate for alignment variations between horizontal and diagonal pipes beyond adjustment provided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

OVERHEAD SIGN STRUCTURES
ALUMINUM WALKWAY DETAILS

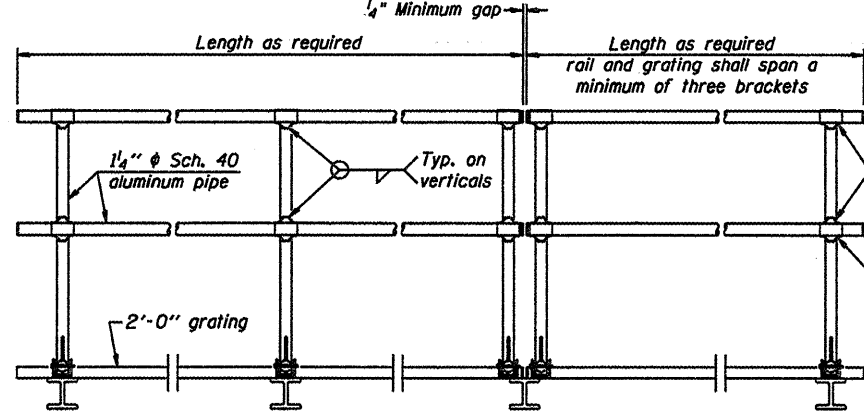
District 5
Overhead Sign Structure
Replacement

DESIGNED -	20
CHECKED -	EXAMINED
DRAWN -	PASSED
CHECKED -	

NUMBER	REVISION	DATE



SIDE ELEVATION
(Showing safety chain w/o sign)

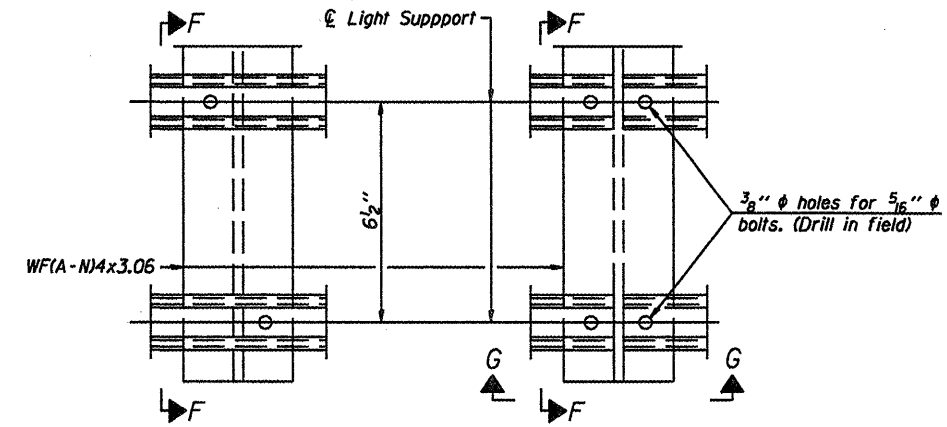


FRONT ELEVATION

HANDRAIL DETAILS

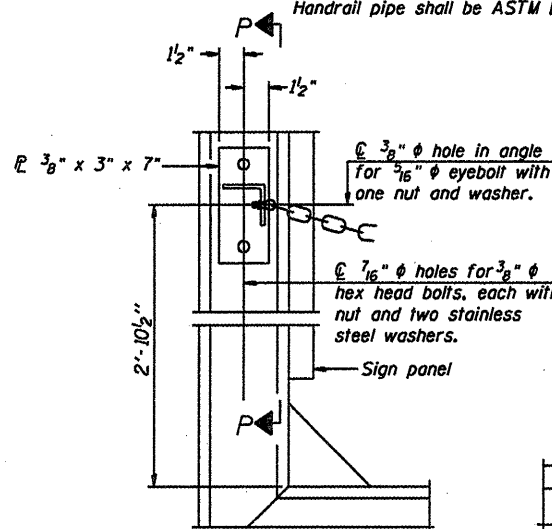
Handrail pipe shall be ASTM B241 or B429, Alloy 6063-T6 or Alloy 6061-T6.

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

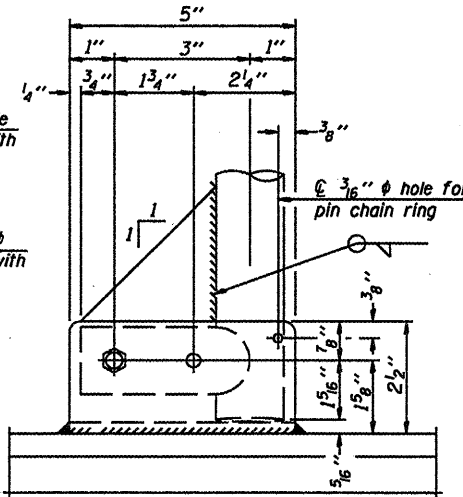


DETAIL F

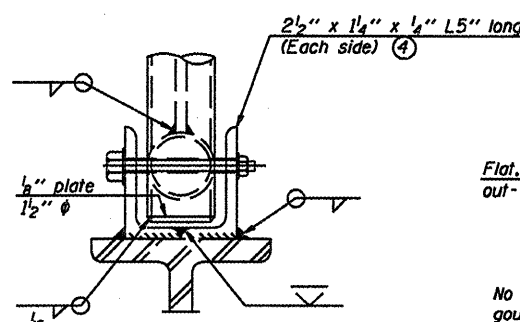
DETAIL G



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

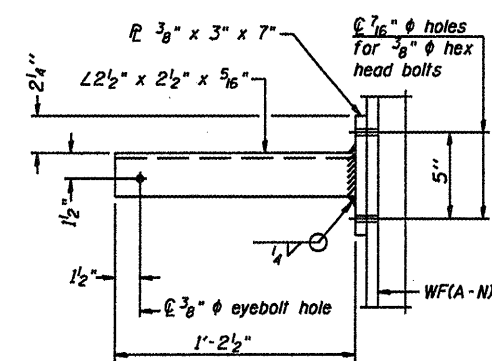


SIDE ELEVATION

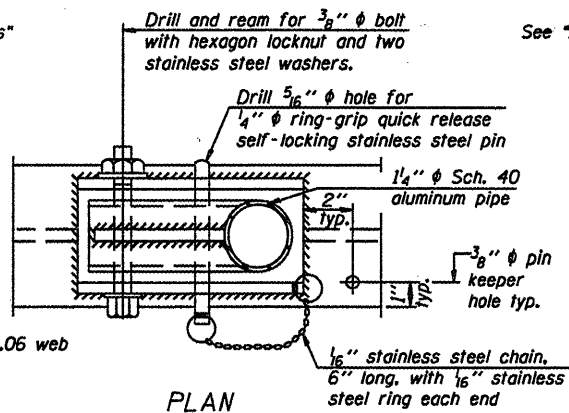


FRONT ELEVATION

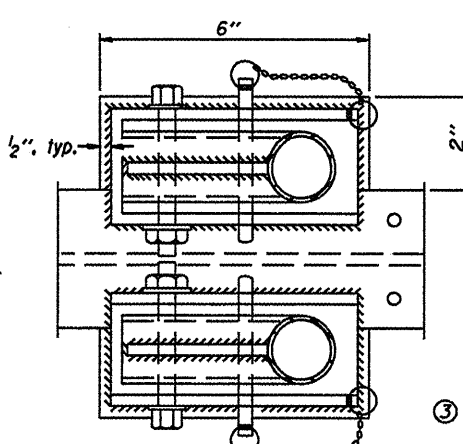
See "Elevation" at right for dimensions.



SECTION P-P

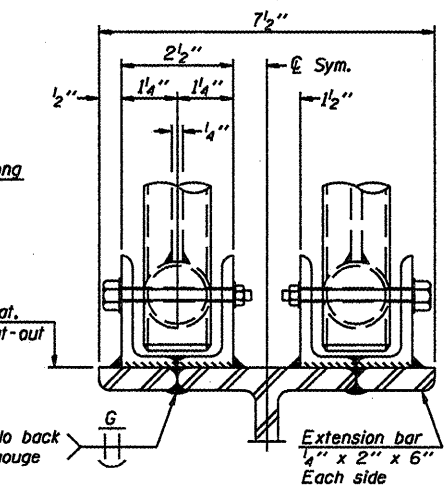


PLAN
DETAIL E HANDRAIL HINGE

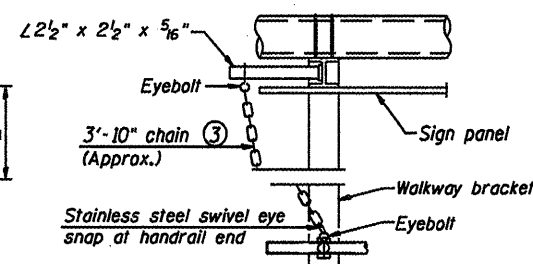


PLAN AT HANDRAIL JOINT

Details not shown same as "PLAN"



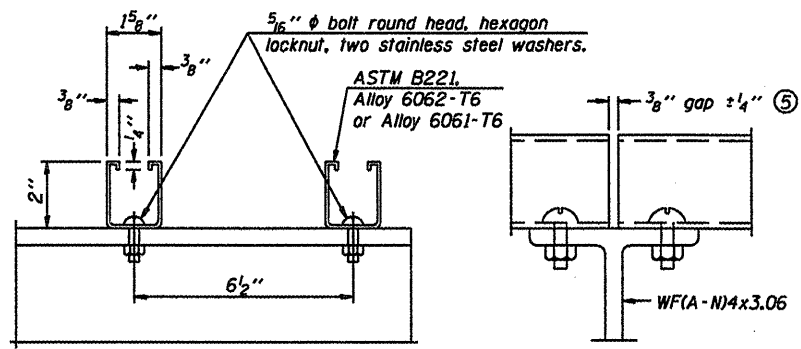
ELEVATION AT HANDRAIL JOINT



ALTERNATE SAFETY CHAIN ATTACHMENT

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

- 3/16" Type 304L stainless steel chain, approximately 12 links per foot.
- Extrusions may be used in lieu of the details shown, with approval of the Engineer.

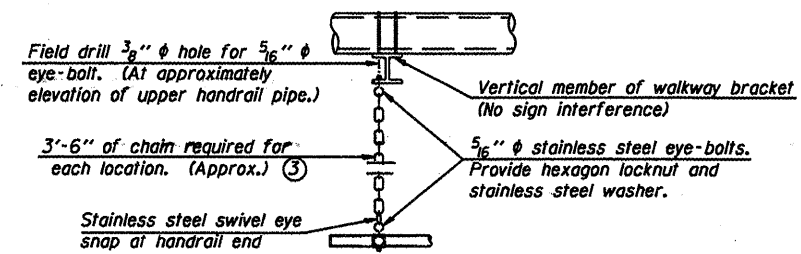


SECTION F-F

SECTION G-G

LIGHTING FIXTURE MOUNTS (IF REQUIRED)

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



SAFETY CHAIN

One required for each end of each walkway.

This Sheet For Information Only

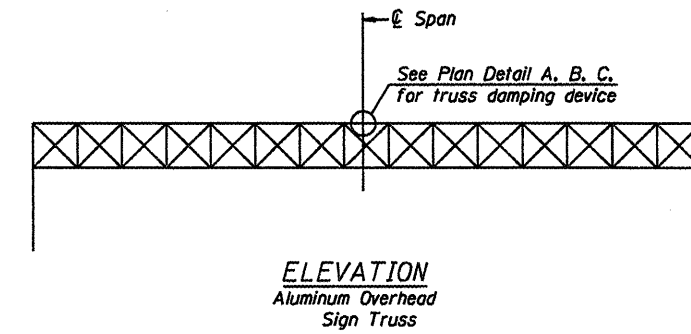
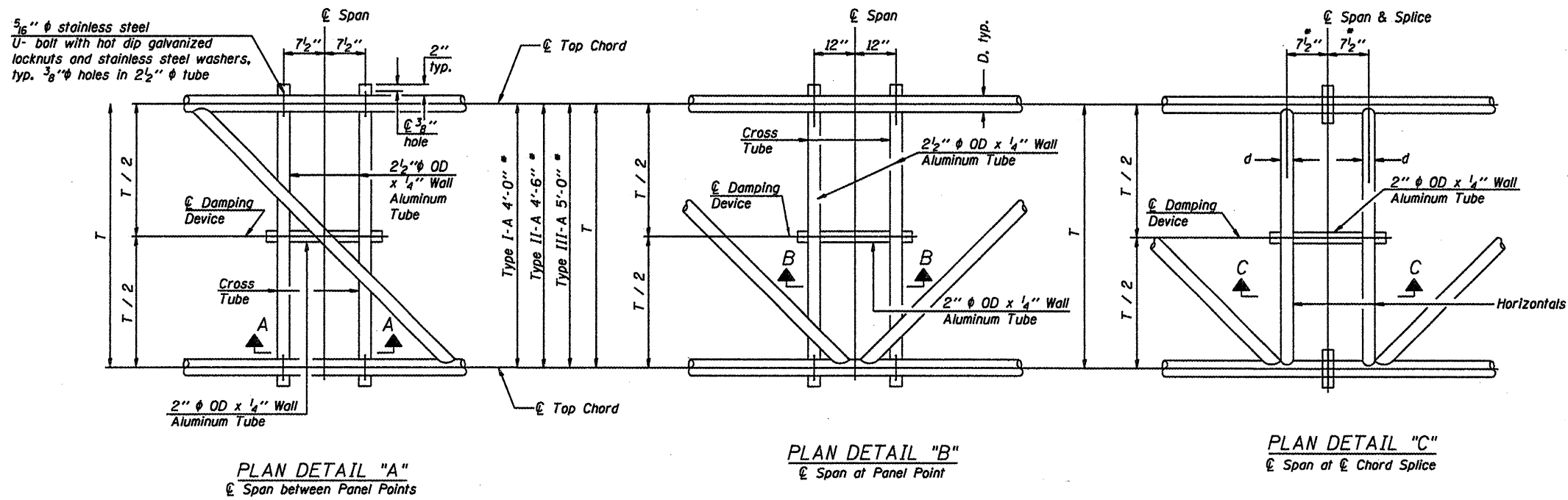
**OVERHEAD SIGN STRUCTURES
ALUMINUM HANDRAIL DETAILS**

District 5
Overhead Sign Structure
Replacement

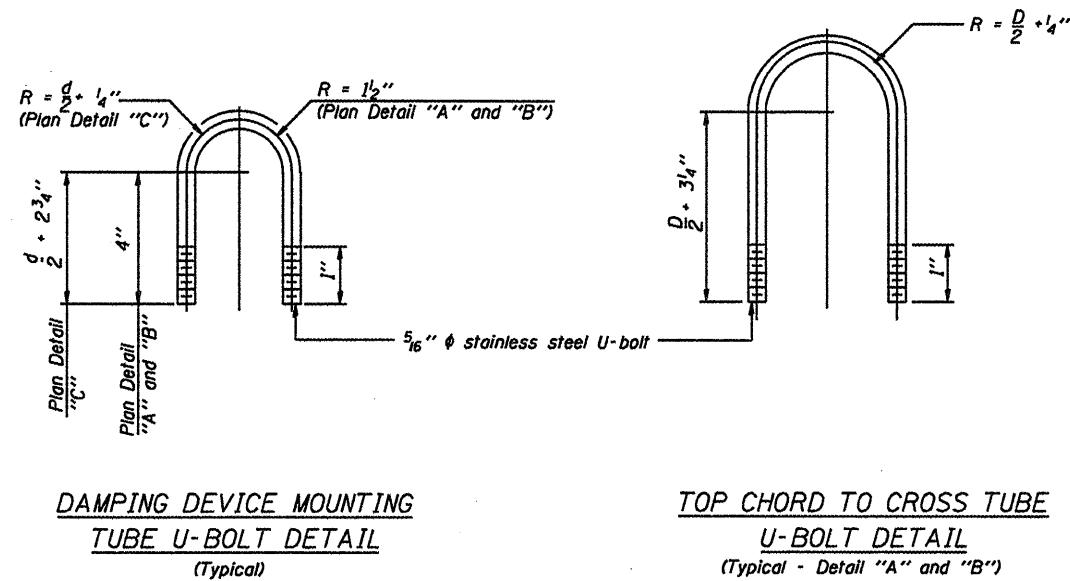
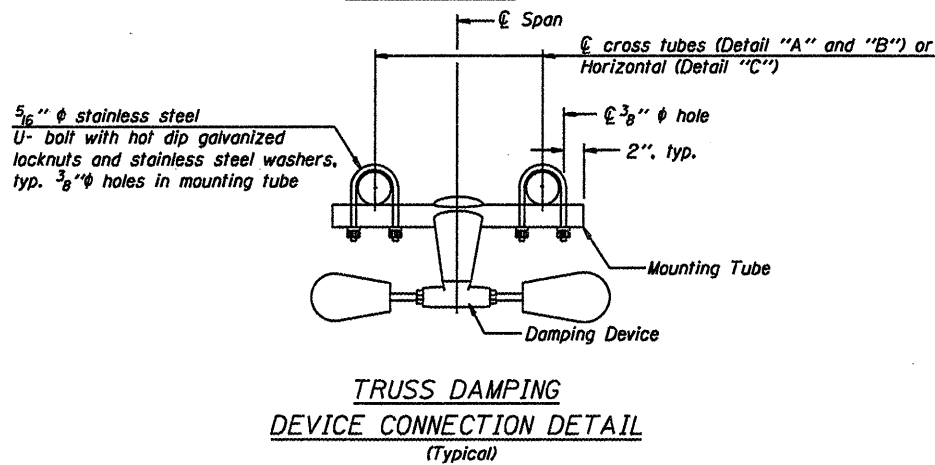
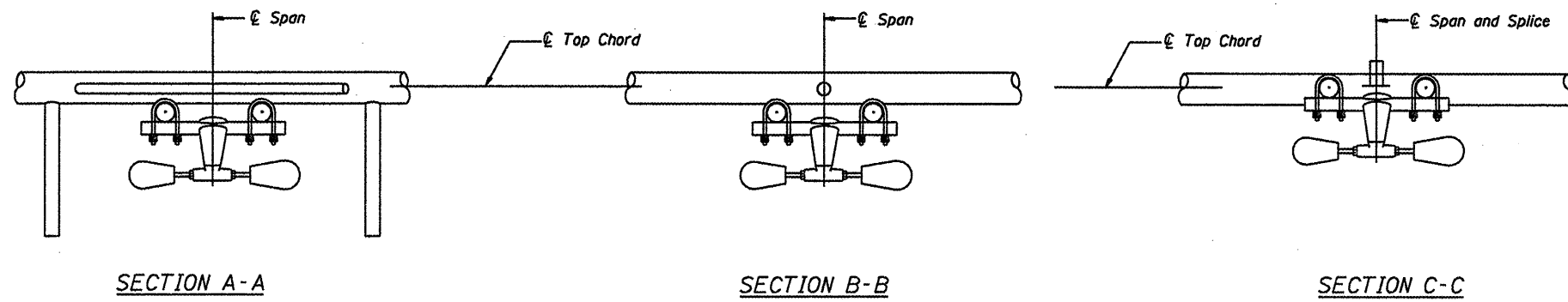
DESIGNED -	20
CHECKED -	EXAMINED
DRAWN -	PASSED
CHECKED -	ENGINEER OF BRIDGE DESIGN
	ENGINEER OF BRIDGES AND STRUCTURES

NUMBER	REVISION	DATE

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



NOTES
Damper: One damper per truss.
(31 lbs. Stackbridge-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...

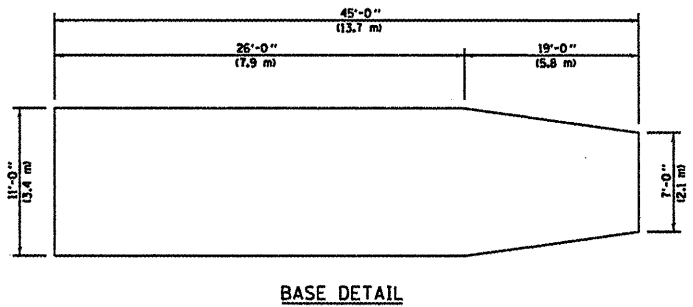
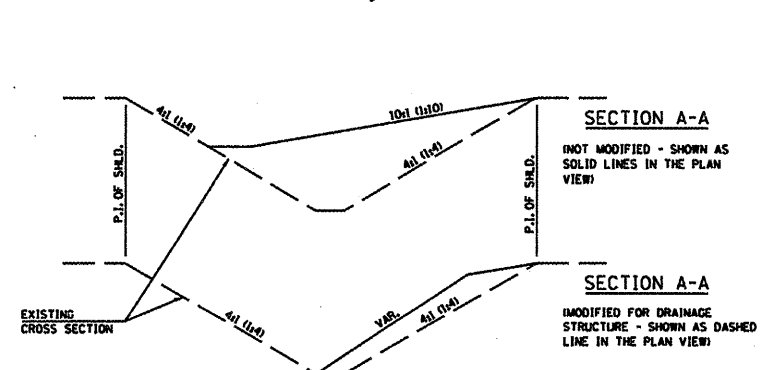
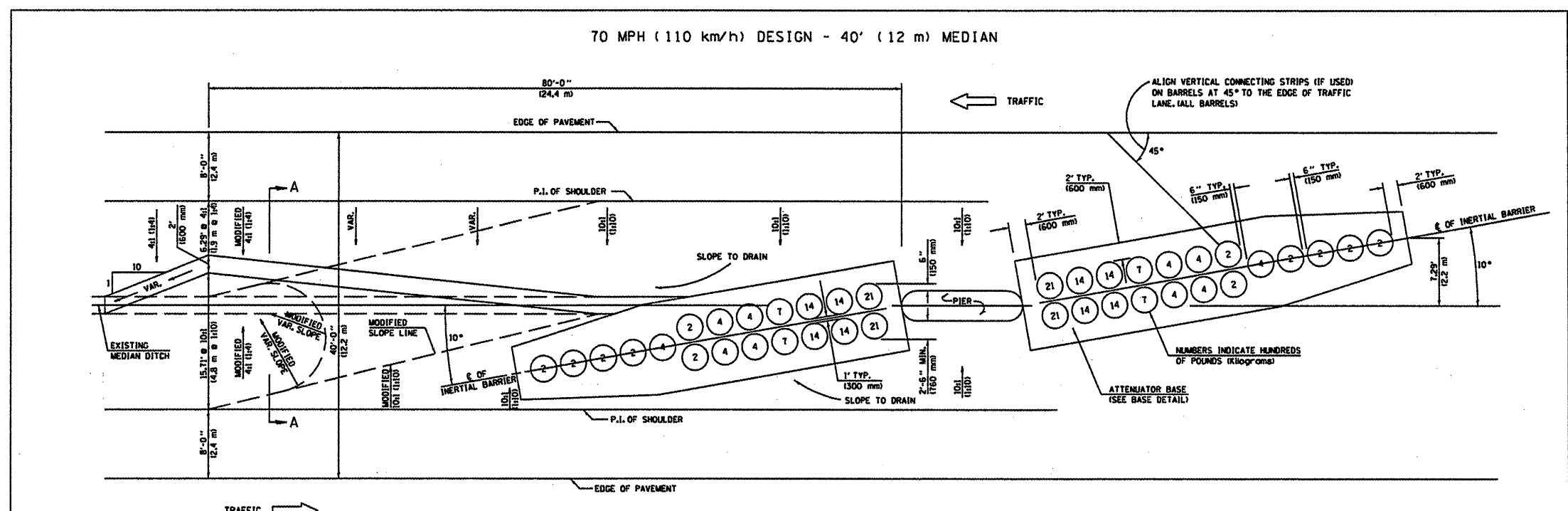


OVERHEAD SIGN STRUCTURE DAMPING DEVICE

District 5
Overhead Sign Structure Replacement

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

OS-A-D 5/16/08



GENERAL NOTES

1. ALL 10:1 (1:10) SLOPES SHOWN ON THIS DETAIL SHALL BE CONSTRUCTED 10:1 (1:10) OR FLATTER.
2. ANY EXISTING DRAINAGE STRUCTURES LOCATED WITHIN THE 80' (24.4 m) WORKING AREA SHALL BE MODIFIED OR LEFT IN PLACE AS SHOWN ON THE PLANS. WHERE THE EXISTING DRAINAGE STRUCTURES ARE TO REMAIN IN PLACE, THE SLOPES ARE TO BE CONSTRUCTED AS SHOWN AS MODIFIED SLOPES ON THIS DETAIL AND AS DIRECTED BY THE ENGINEER.
3. THE SLOPES AS SHOWN ON THIS DETAIL SHALL APPLY TO BOTH ENDS OF THE BRIDGE PIERS.
4. THE LENGTH X WIDTH OF MODULE LAYOUT IS 41.0' x 7.0' = 19 MODULES - 14,400 LBS. (12.5 m x 2.1 m = 19 MODULES - 6532 kg).
5. IN AREAS OF 10:1 (1:10) SLOPES PRECEDING THE ATTENUATOR IN THE MEDIAN INSTALLATION, FOUR WOOD POSTS SHALL BE PLACED AT 5' (1.5 m) INTERVALS IN THE MEDIAN C. SEE SPECIAL PROVISIONS.

Note: All dimensions are in INCHES (millimeters) unless otherwise shown.

DISTRICT 5 DETAIL NO. 20030150B

FILE NAME	USER NAME	DESIGNED	REVISION
DATE	DATE	DATE	DATE

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

IMPACT ATTENUATORS (NON-REDIRECTIVE) TEST LEVEL 3

F.A. RTE.	SECTION	COUNTY	TOTAL SHEET NO.
CONTRACT NO.			

SCALE: SHEET NO. OF SHEETS STA. TO STA.

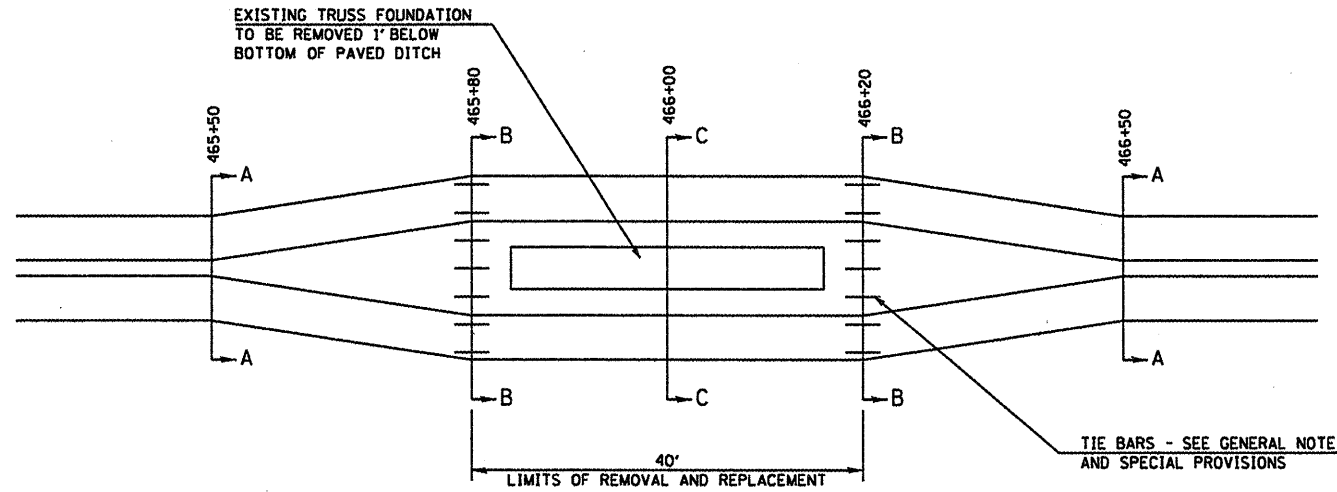
FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT

DESIGNED	-
CHECKED	-
DRAWN	-
CHECKED	-

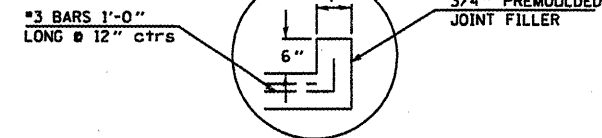
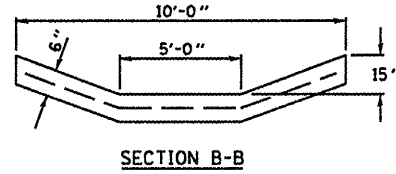
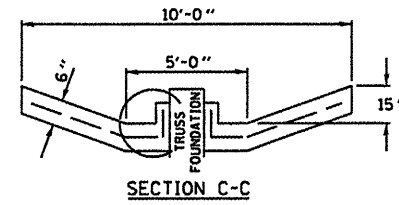
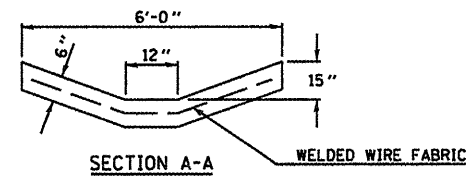
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	ENGINEER OF BRIDGE DESIGN
	PASSED
	ENGINEER OF BRIDGES AND STRUCTURES

PAVED DITCH REMOVAL & REPLACEMENT

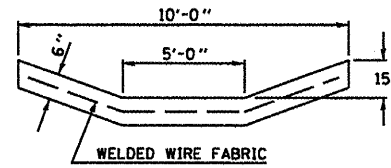
SIGN TRUSS LOCATION 5 S 010 1057 R235.32



PLAN VIEW



DETAIL AT TRUSS FOUNDATION



SECTION B-B

OR MATCH EXISTING CROSS SECTION AT REMOVAL LINES

PROPOSED PAVED DITCH

EXISTING PAVED DITCH - REMOVAL INFORMATION

General Notes

1. See also Special Provision for Paved Ditch Removal and Replacement
2. Removal of existing paved ditch shall be in accordance with Section 440.
3. Broken concrete shall be disposed of according to Art. 202.03
4. New paved ditch shall be built in accordance with Section 606.
5. Fourteen (14) 18" #4 epoxy coated tie bars are required. Seven (7) at each construction joint on 18" centers. Holes are to be drilled 9" deep and cleaned out with compressed air. Epoxy shall conform to Section 1027.
6. Welded wire fabric shall be 6"x6" mesh, #4 gage, 58lbs/100sqft.
7. Backfilling, final grading, seeding, fertilizer, and mulch are included in the unit cost for Paved Ditch Removal and Replacement with no additional compensation allowed.
8. The above referenced work will be paid at the contract unit price per lineal foot for Paved Ditch Removal and Replacement.

FILE NAME	USER NAME	DESIGNED	REVISED	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS
WFLEL*		DRAWN	REVISED		-----	-----	-----	NO.
PLAT SCALE	INCHES	CHECKED	REVISED		SCALE: -----	SHEET NO. OF ----- SHEETS	STA. ----- TO STA. -----	CONTRACT NO. -----
PLAT DATE	MONTH	DATE	REVISED		FED. ROAD DIST. NO. -----	ILLINOIS FED. AID PROJECT		

DESIGNED	-
CHECKED	-
DRAWN	-
CHECKED	-

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



Illinois Department
of Transportation
Division of Highways
DOT - Report 3200-5

SOIL BORING LOG

Page 1 of 1

Date 8/2008

ROUTE FAH 57 DESCRIPTION West Arm on I-57SB between L74 & L72 LOGGED BY BRW

SECTION _____ LOCATION NW, SEC. 9, TWP. 12N, RNS. SE, 3rd PM

COUNTY Champaign DRILLING METHOD Hand Oper. Auger HAMMER TYPE Automatic

STRUCT. NO. <u>58010057 L228-04</u> Station <u>547+50</u>	D E P T H ft	B L O C K S	U C S Gs	M O I S T (%)	Surface Water Elev. _____ ft Stream Bed Elev. _____ ft
BORING NO. <u>1 Mast Arm</u> Station <u>548+45</u> Offset <u>35.0 R.N. OF SB CL</u> Ground Surface Elev. <u>778.1</u> ft	(ft)	(ft)	(%)	(%)	
Black Silty Clay Loam					
777.1					
Brown Sandy Clay Loam					
775.1					
Clay Silty Clay with Loose Gray Sand Seams					
774.1					
773.1					
Clay Silty Clay Loam Till					
770.1					
(2" of Sand Blow In - Washed Sand out of Auger)					
768.1					
766.1					
764.1					
762.1					
760.1					
758.1					
756.1					
754.1					
752.1					
750.1					

End of Boring
An assumed centerline elevation of 100.00 and station of 10+00 is used when this information is not available.
The Unclassified 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 (ASTM D 1586)

BDS, form 137 (Rev. 9-99)



Illinois Department
of Transportation
Division of Highways
DOT - Report 3200-5

SOIL BORING LOG

Page 1 of 1

Date 8/2008

ROUTE FAH 57 DESCRIPTION West Arm on I-57 at I-172 SB LOGGED BY BRW

SECTION _____ LOCATION SE, SEC. 9, TWP. 12N, RNS. SE, 3rd PM

COUNTY Champaign DRILLING METHOD Hand Oper. Auger HAMMER TYPE Automatic

STRUCT. NO. <u>58010057 R228-32</u> Station <u>488+50</u>	D E P T H ft	B L O C K S	U C S Gs	M O I S T (%)	Surface Water Elev. _____ ft Stream Bed Elev. _____ ft
BORING NO. <u>2 Mast Arm</u> Station <u>489+71</u> Offset <u>35.0 R.N. OF SB CL</u> Ground Surface Elev. <u>740.0</u> ft	(ft)	(ft)	(%)	(%)	
Brown Gray Sandy Clay Loam (Embankment)					
735.0					
734.0					
733.0					
732.0					
731.0					
730.0					
729.0					
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703.0					
702.0					
701.0					
700.0					

End of Boring
An assumed centerline elevation of 100.00 and station of 10+00 is used when this information is not available.
The Unclassified 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 (ASTM D 1586)

BDS, form 137 (Rev. 9-99)

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

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

FAI Routes 57 & 70
D5-7 OVD SIN STR REPL 2009-5
Various Counties
Sheet 20 of 35
Contract Number 46006

Schedule of Overhead Sign Structure Replacement

Location No.:	7-01	State I.D. No.:	7S015I057L189.9		
County:	Coles	Route:	I - 57	M.P.:	189.9
				Direction:	SB
Description of Work	Unit	Quantity			
REMOVE OVERHEAD SIGN STRUCTURE - SPAN	EACH	1.00			
OVERHEAD SIGN STRUCTURE - SPAN, TYPE I A	FOOT	96.00			
DRILLED SHAFT CONCRETE FOUNDATION	CU YD	20.50			
REMOVE CONCRETE FOUNDATION OVERHEAD	EACH	2.00			
STRUCTURAL STEEL SUPPORT OVERHEAD SIGN STRUCTURE	EACH	2.00			
REMOVE & REINSTALL SIGN PANEL	SQ FT	270.50			
REMOVE & REINSTALL WALKWAY	FOOT	51.00			
FURNISH & INSTALL SAFETY CHAIN	EACH	2.00			
REPAIR HANDRAIL LOCKING PIN CONNECTION	EACH	12.00			
DISCONNECT / RECONNECT ELECTRIC SERVICE	EACH	1.00			
RELOCATE ELECTRIC SERVICE	EACH	1.00			
This structure is being completely replaced.					

Location No.:	7-02	State I.D. No.:	7S025I057R161.3		
County:	Effingham	Route:	I - 57	M.P.:	161.3
				Direction:	NB
Description of Work	Unit	Quantity			
REMOVE & RE-ERECT OVERHEAD SIGN STRUCTURE - SPAN	EACH	1.00			
STRUCTURAL STEEL SUPPORT OVERHEAD SIGN STRUCTURE	EACH	2.00			
FURNISH & INSTALL SADDLE SHIM BLOCK	EACH	4.00			
FURNISH & INSTALL INTERNAL TRUSS DAMPER	EACH	1.00			
OVERHEAD SIGN STRUCTURE WALKWAY	FOOT	89.00			
REPLACE / TIGHTEN CLIP PER SIGN	EACH	2.00			
REPAIR HANDRAIL LOCKING PIN CONNECTION	EACH	12.00			
FURNISH & INSTALL SAFETY CHAIN	EACH	2.00			
DISCONNECT / RECONNECT ELECTRIC SERVICE	EACH	1.00			
<i>Work to be completed between 11:00 pm and 7:00 am</i>					
Replace Existing End Supports.					
Existing plans show end supports as 10-inch columns.					

Location No.:	7-03	State I.D. No.:	7S025I057R162.9		
County:	Effingham	Route:	I - 57	M.P.:	162.9
				Direction:	NB
Description of Work	Unit	Quantity			
REMOVE & RE-ERECT OVERHEAD SIGN STRUCTURE - SPAN	EACH	1.00			
STRUCTURAL STEEL SUPPORT OVERHEAD SIGN STRUCTURE	EACH	2.00			
FURNISH & INSTALL SADDLE SHIM BLOCK	EACH	4.00			
FURNISH & INSTALL INTERNAL TRUSS DAMPER	EACH	1.00			
OVERHEAD SIGN STRUCTURE WALKWAY	FOOT	88.00			
REPLACE / TIGHTEN CLIP PER SIGN	EACH	1.00			
REPAIR HANDRAIL LOCKING PIN CONNECTION	EACH	8.00			
FURNISH & INSTALL SAFETY CHAIN	EACH	2.00			
DISCONNECT / RECONNECT ELECTRIC SERVICE	EACH	1.00			
<i>Work to be completed between 11:00 pm and 7:00 am</i>					
Replace Existing End Supports.					
Existing plans show end supports as 10-inch columns.					

Location No.:	7-04	State I.D. No.:	7S025I070L099.0		
County:	Effingham	Route:	I - 70	M.P.:	99
				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			
OVERHEAD SIGN STRUCTURE WALKWAY	FOOT	89.00			
REPLACE / TIGHTEN CLIP PER SIGN	EACH	2.00			
REPAIR HANDRAIL LOCKING PIN CONNECTION	EACH	3.00			
DISCONNECT / RECONNECT ELECTRIC SERVICE	EACH	1.00			
FURNISH & INSTALL SAFETY CHAIN	EACH	2.00			
Replace Existing End Supports.					
Existing plans show end supports as 10-inch columns.					

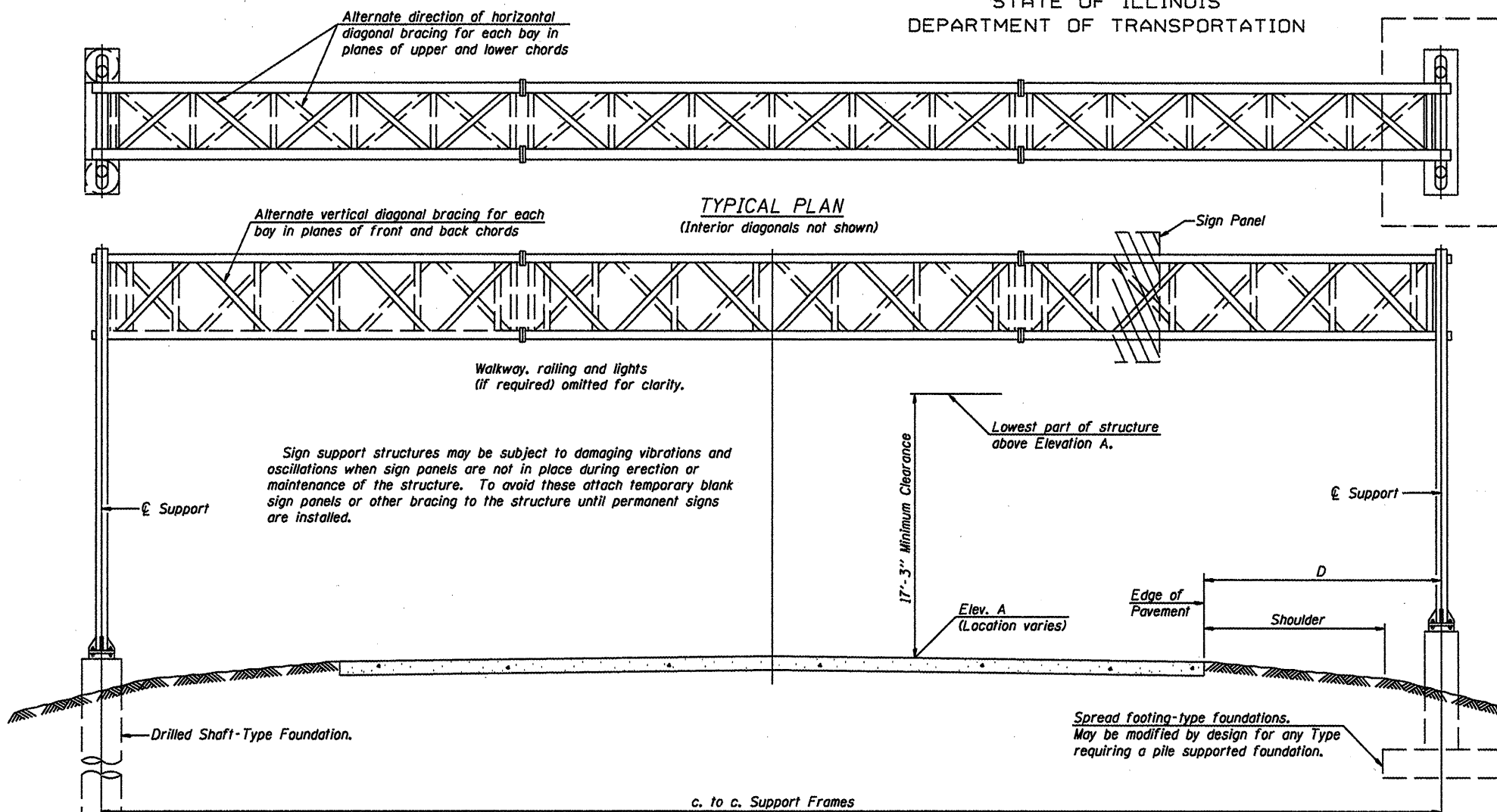
Location No.:	7-05	State I.D. No.:	7S025I057L164.3		
County:	Effingham	Route:	I - 57	M.P.:	164.3
				Direction:	SB
Description of Work	Unit	Quantity			
REMOVE & RE-ERECT OVERHEAD SIGN STRUCTURE - SPAN	EACH	1.00			
STRUCTURAL STEEL SUPPORT OVERHEAD SIGN STRUCTURE	EACH	2.00			
FURNISH & INSTALL SADDLE SHIM BLOCK	EACH	4.00			
FURNISH & INSTALL INTERNAL TRUSS DAMPER	EACH	1.00			
OVERHEAD SIGN STRUCTURE WALKWAY	FOOT	89.00			
TIGHTEN U-BOLT	EACH	2.00			
REPAIR HANDRAIL LOCKING PIN CONNECTION	EACH	8.00			
FURNISH & INSTALL SAFETY CHAIN	EACH	2.00			
DISCONNECT / RECONNECT ELECTRIC SERVICE	EACH	1.00			
Replace Existing End Supports.					
Existing plans show end supports as 10-inch columns.					

Location No.:	7-06	State I.D. No.:	7S025I057L163.8		
County:	Effingham	Route:	I - 57	M.P.:	163.8
				Direction:	SB
Description of Work	Unit	Quantity			
REMOVE & RE-ERECT OVERHEAD SIGN STRUCTURE - SPAN	EACH	1.00			
STRUCTURAL STEEL SUPPORT OVERHEAD SIGN STRUCTURE	EACH	2.00			
FURNISH & INSTALL SADDLE SHIM BLOCK	EACH	4.00			
FURNISH & INSTALL INTERNAL TRUSS DAMPER	EACH	1.00			
OVERHEAD SIGN STRUCTURE WALKWAY	FOOT	103.00			
REPAIR HANDRAIL LOCKING PIN CONNECTION	EACH	12.00			
DISCONNECT / RECONNECT ELECTRIC SERVICE	EACH	1.00			
Replace Existing End Supports.					
Existing plans show end supports as 10-inch columns.					

Rev.

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

FAI Routes 57 & 70
D5-7 OVD SIN STR REPL 2009-5
Various Counties
Sheet 21 of 35
Contract Number 46006



GENERAL NOTES

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

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

LOADING: 90 M.P.H. WIND VELOCITY

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

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

DESIGN STRESSES:

Field Units
f_c = 3,500 p.s.i.
f_y = 60,000 p.s.i. (reinforcement)

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

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

All Structural Steel Plates and Shapes shall conform to AASHTO M270 Gr. 36, Gr. 50 or Gr. 50W*. Stainless steel for shims, sleeves and handhole covers shall be ASTM A240, Type 302 or 304, or another alloy suitable for exterior exposure and acceptable to the Engineer. The steel pipe and stiffening ribs at the base plate for the column shall have a minimum longitudinal Charpy V-Notch (CVN) energy of 15 lb.-ft. at 40° F. (Zone 2) before galvanizing.

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

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

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

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

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

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

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

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

District 7
Overhead Sign Structure
Replacement

TYPICAL ELEVATION
(Looking at Face of Signs)**

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

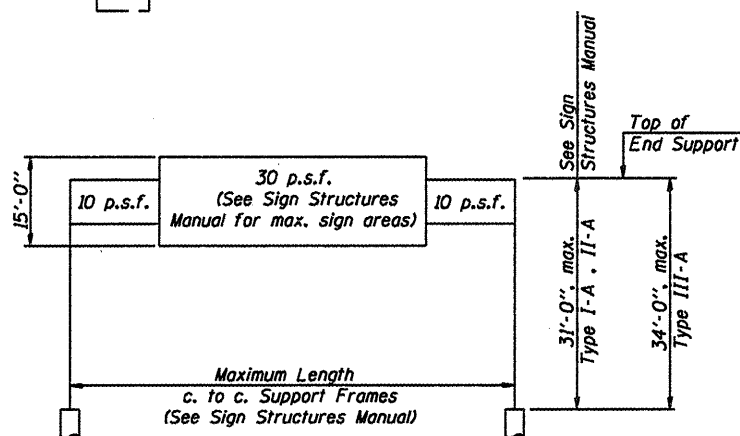
Structure Number	Station	Design Truss Type	c. to c. Supports	Elev. A	Dim. D	Height of Tallest Sign	Total Sign Area
7S0151057L189,9	802 + 00	I-A	96'-0"	743.92	19'-0"	10'-6"	270.50

**Looking upstation for structures with signs both sides.

TOTAL BILL OF MATERIAL

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

NUMBER	REVISION	DATE

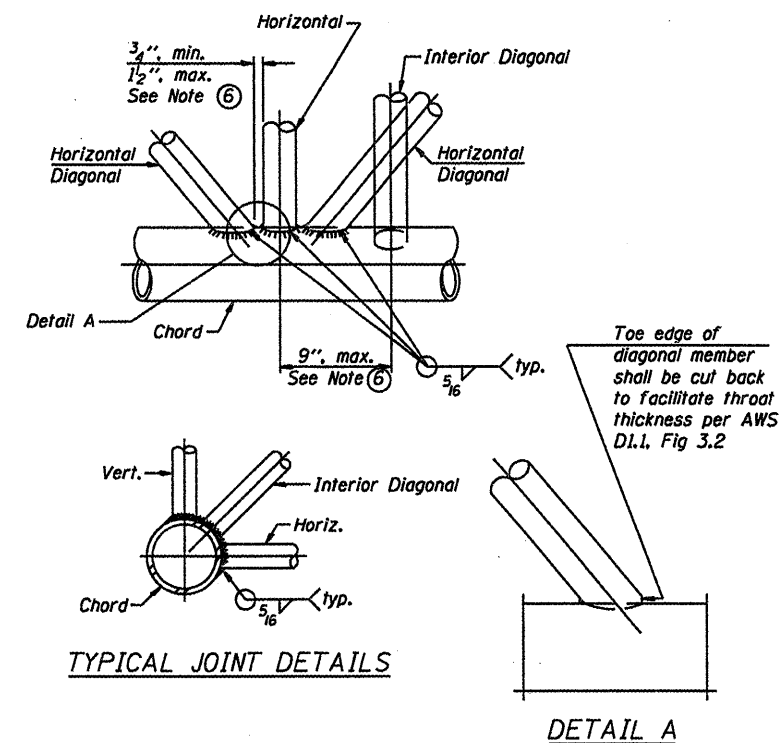
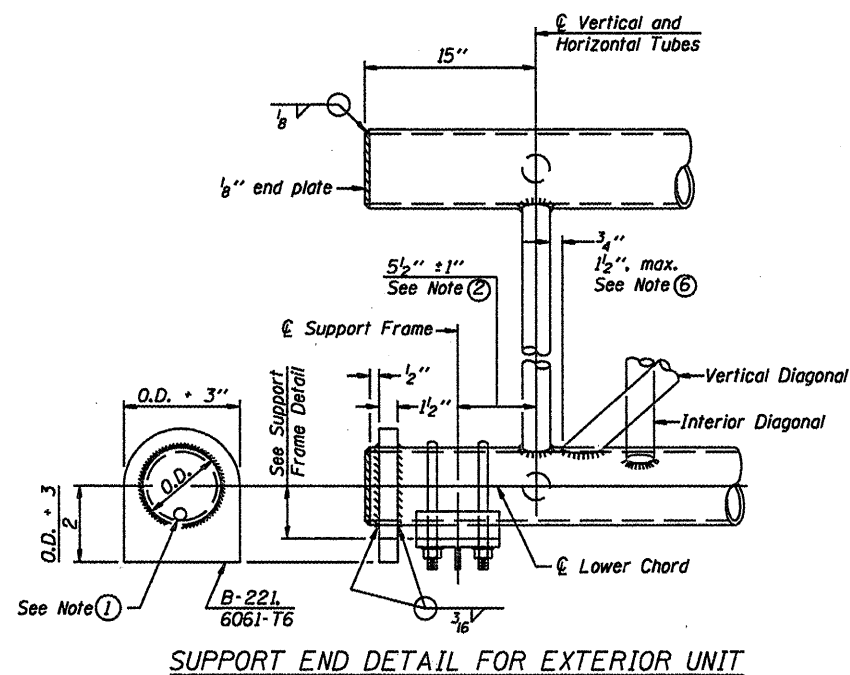
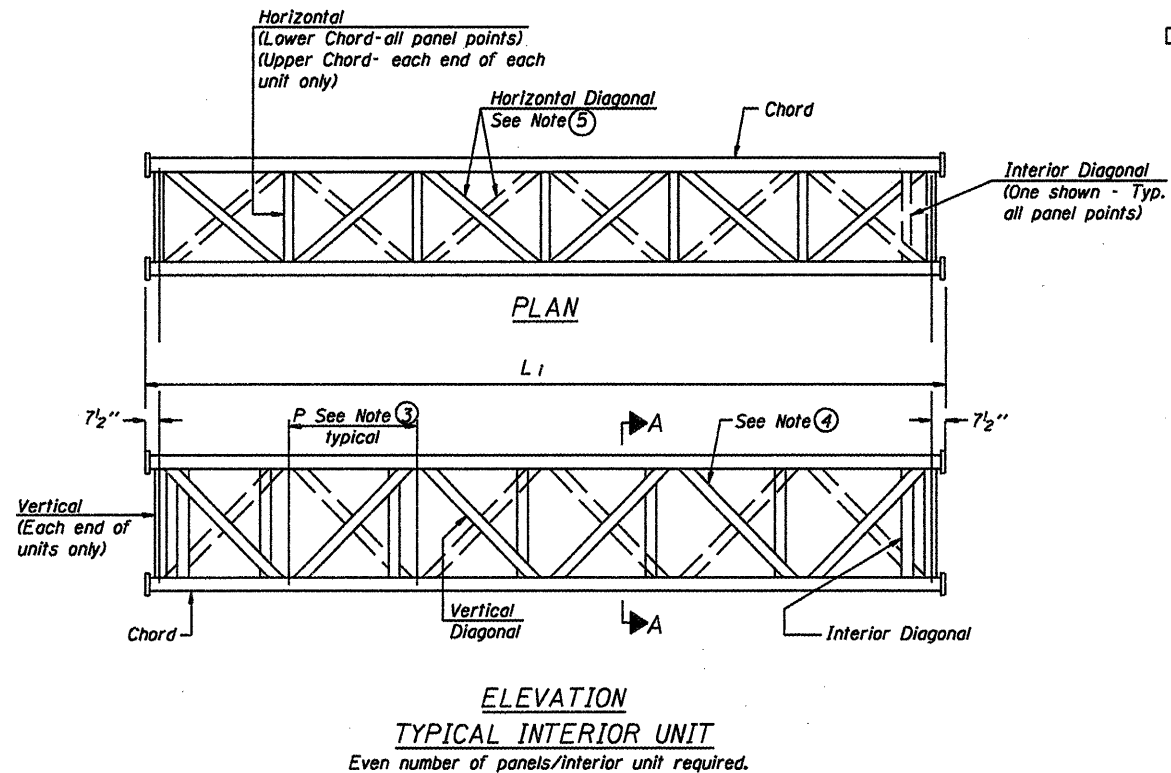


DESIGN WIND LOADING DIAGRAM

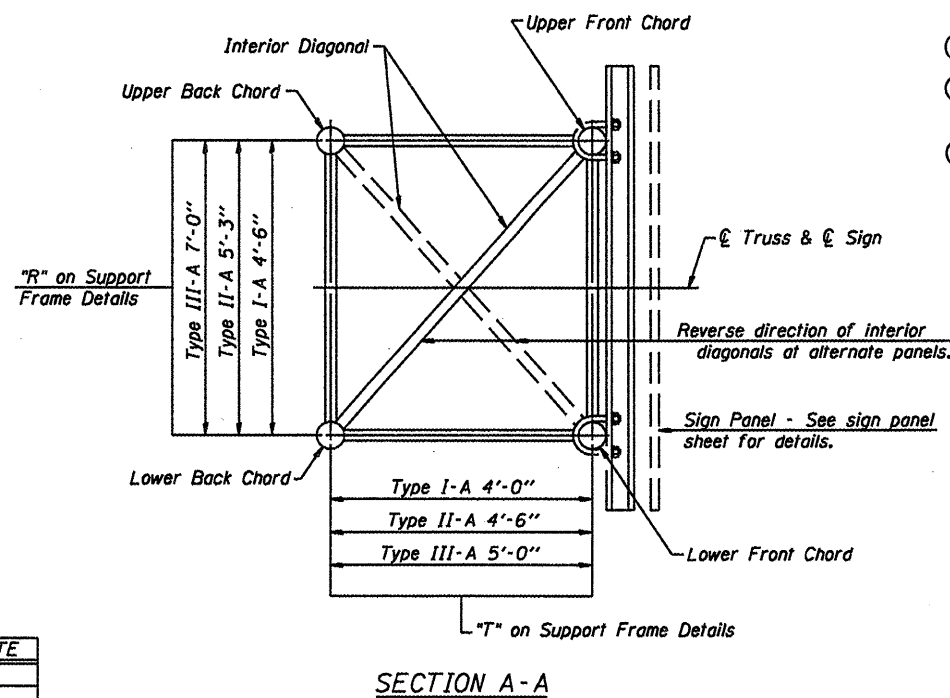
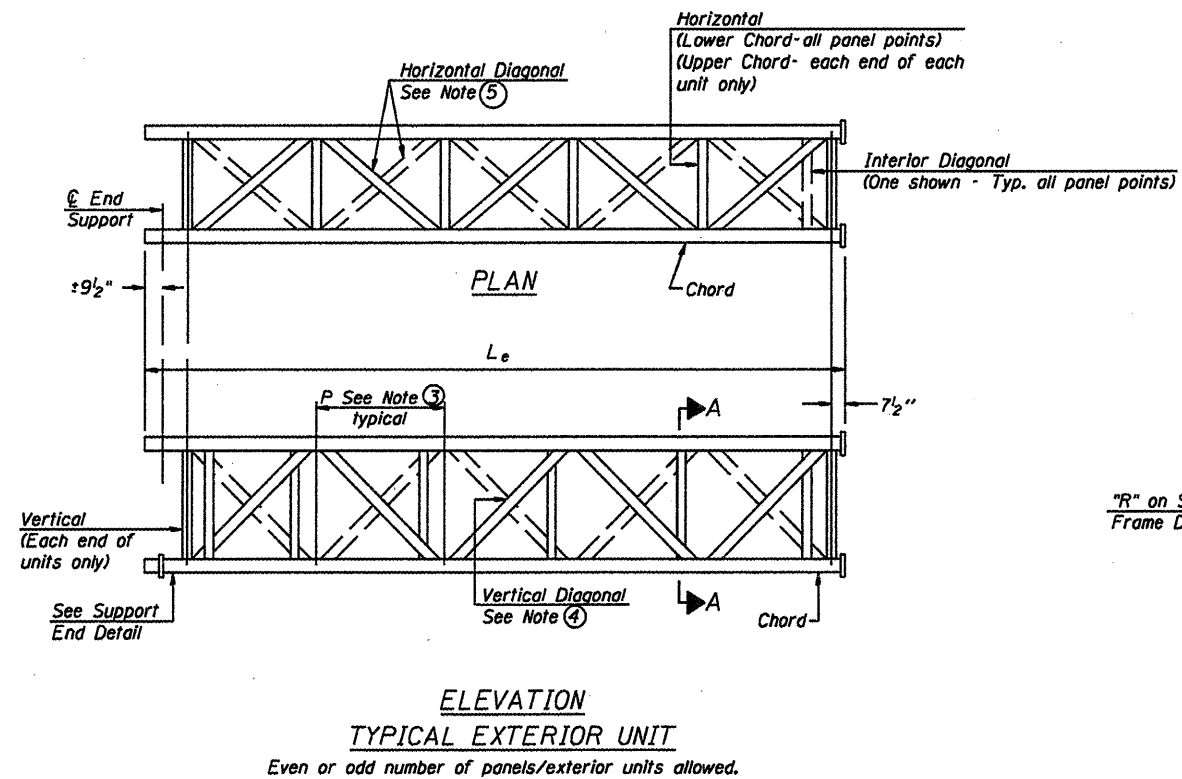
Parameters shown are basis for I.D.O.T. Standards and Sign Manual Tables. Installations not within dimensional limits shown require special analysis for all components.

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

OS-A-1 5/16/08



- NOTES**
- Contractor may alternatively use standard aluminum drive-fit cap to close end. 1/2" ϕ drain hole in end plate/drive-fit cap. (Typ. at ends of all chords)
 - 5 1/2" end dimension may vary by $\pm 1"$ to provide uniform panel spacing (P).
 - 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.
 - Vertical Diagonals in front and back face shall alternate.
 - Hidden lines show wind bracing alternates direction between planes of top and bottom chords.
 - All diagonals shall be detailed for minimum offset from the panel point based on the following: Offset shall be such as to provide a 3/8" minimum to 1/2" maximum clearance between any diagonal and any horizontal or vertical member, and to provide clearance for U-bolt connections of signs or walkway brackets.



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

District 7
Overhead Sign Structure
Replacement

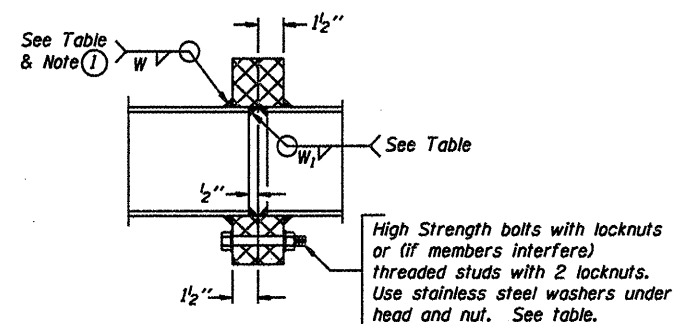
DESIGNED -	
CHECKED -	
DRAWN -	
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EXAMINED	20
PASSED	ENGINEER OF BRIDGE DESIGN
	ENGINEER OF BRIDGES AND STRUCTURES

NUMBER	REVISION	DATE

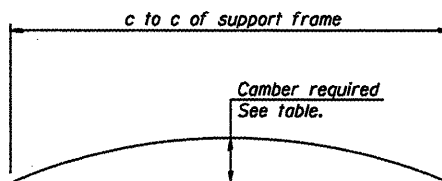
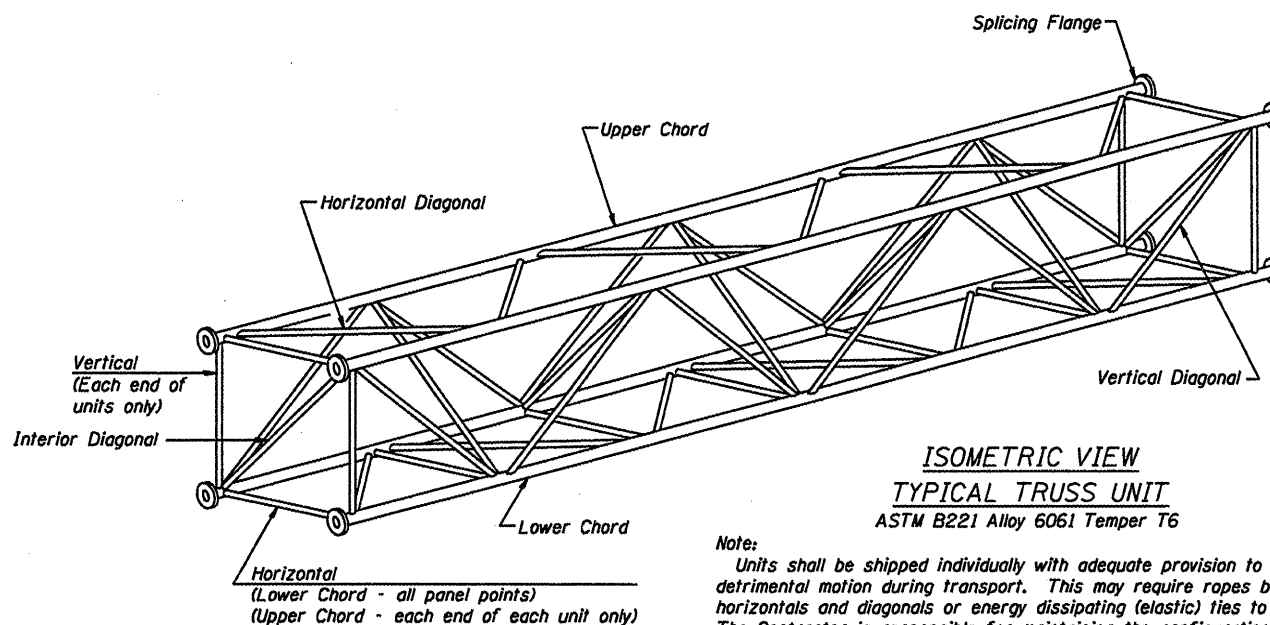
TRUSS UNIT TABLE

Structure Number	Station	Design Truss Type	Exterior Units (2)			Interior Unit				Upper & Lower Chord		Verticals; Horizontals; Vertical, Horizontal, and Interior Diagonals		Camber at Midspan	Splicing Flange							
			No. Panels per Unit	Unit Lgth.(L _u)	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					
															No./Splice	Dia.	W	W ₁	A	B		
7S0151057L189.9	802 + 00	I-A	7	34'-3"	4'-7 1/2"	1	6	29'-0"	4'-7 1/2"	5 1/2"	5/16"	2 1/2"	5/16"	3"	6	7/8"	3/8"	1/4"	9 1/4"	12 1/4"		



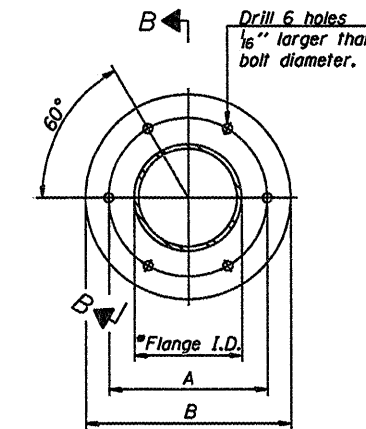
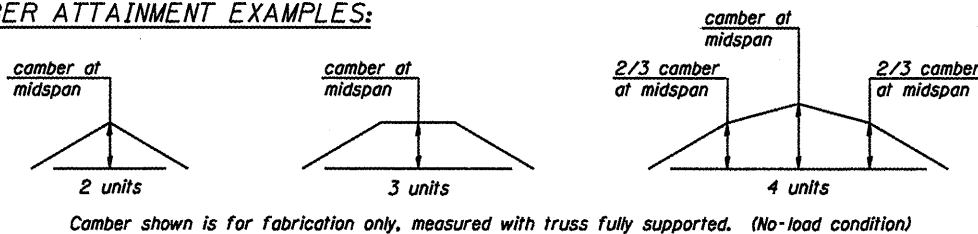
SECTION B-B

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.

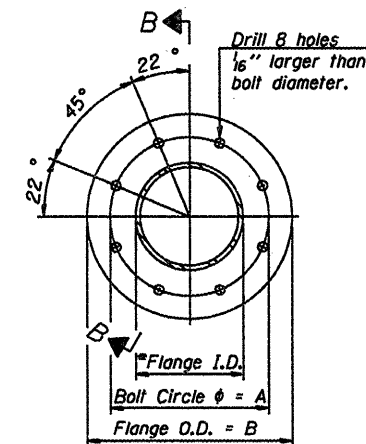


CAMBER DIAGRAM
Camber curve shown is theoretical. Actual camber attained by slope changes at splices between units.

CAMBER ATTAINMENT EXAMPLES:



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



TRUSS TYPES II-A & III-A
SPlicing FLANGES
ASTM B221, Alloy 6061-T6
or ASTM B209, Alloy 6061-T651
*To fit O.D. of Chord with maximum gap of 1/16".

NUMBER	REVISION	DATE

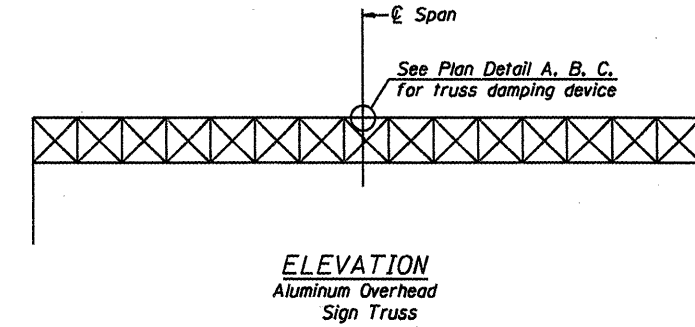
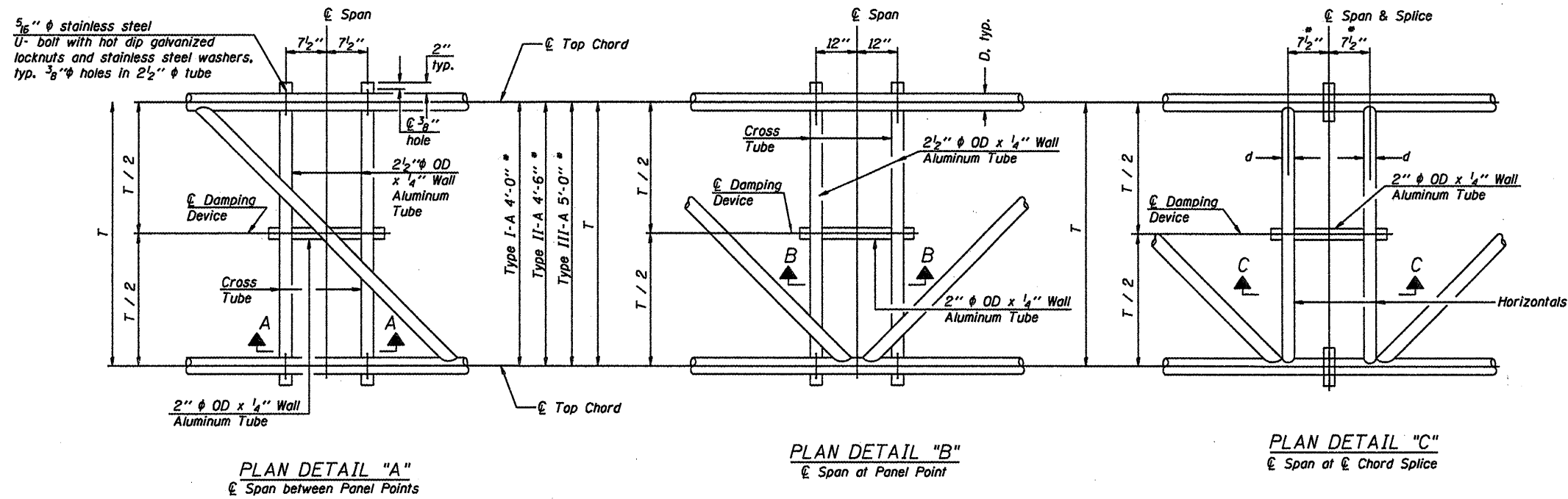
DESIGNED -	20
CHECKED -	EXAMINED
DRAWN -	PASSED
CHECKED -	ENGINEER OF BRIDGES AND STRUCTURES

OS4-A-2 5/16/08

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

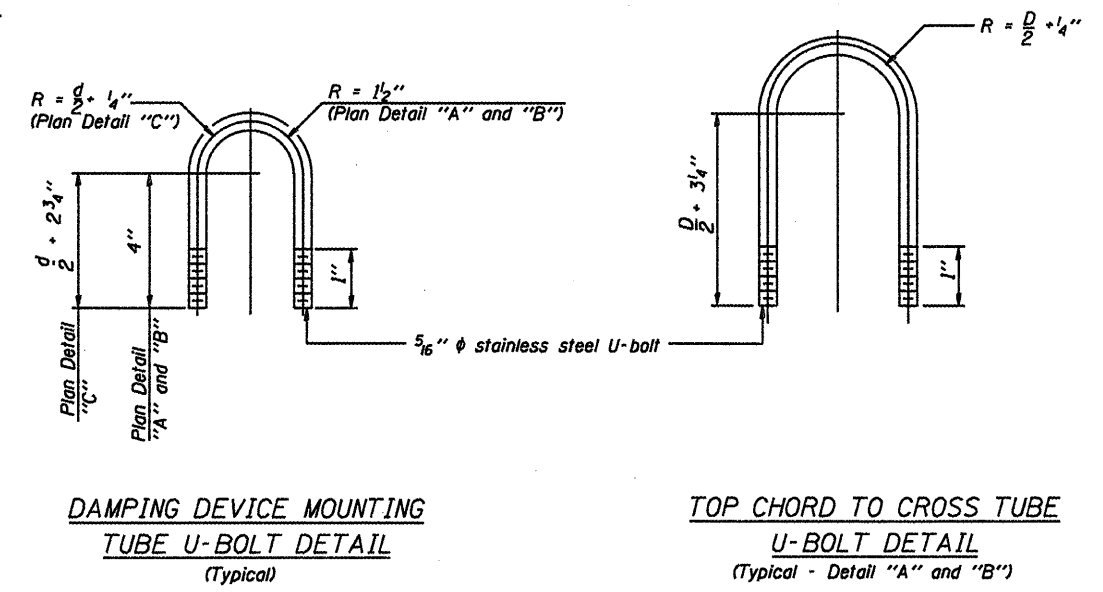
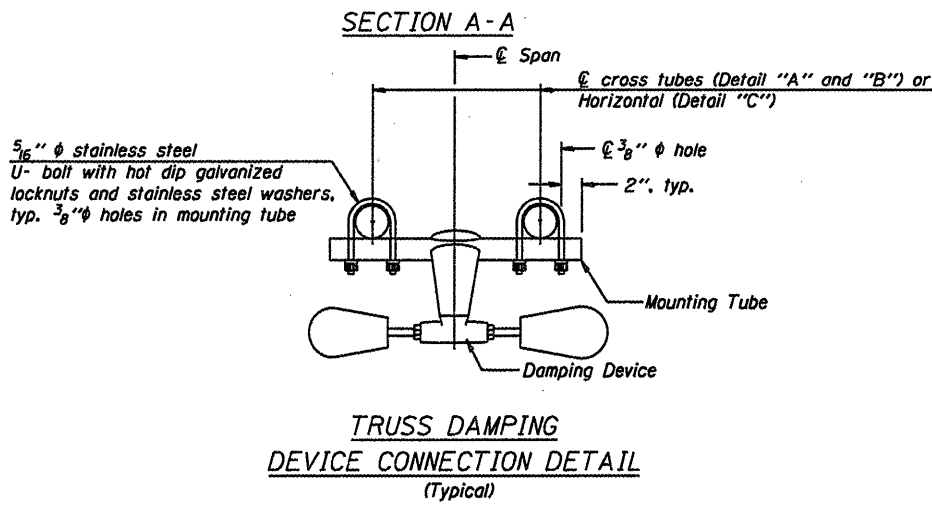
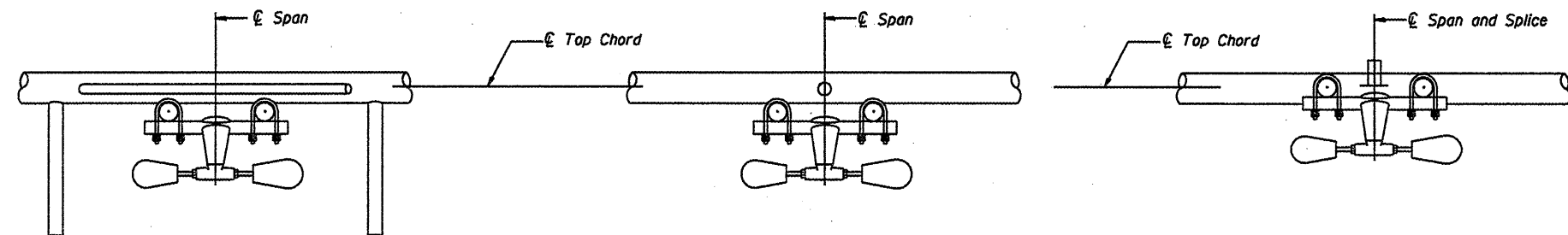
District 7
Overhead Sign Structure
Replacement

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



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...

This detail applies to the following overhead sign structure: 7S0151057L189.9

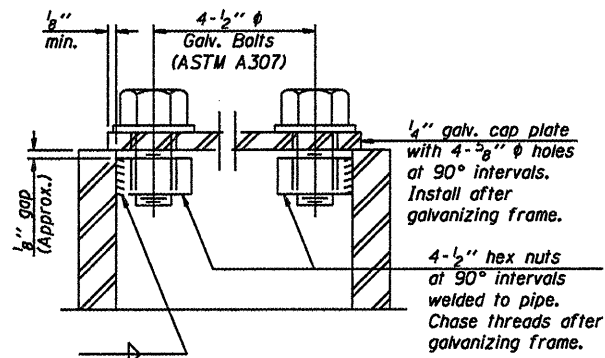
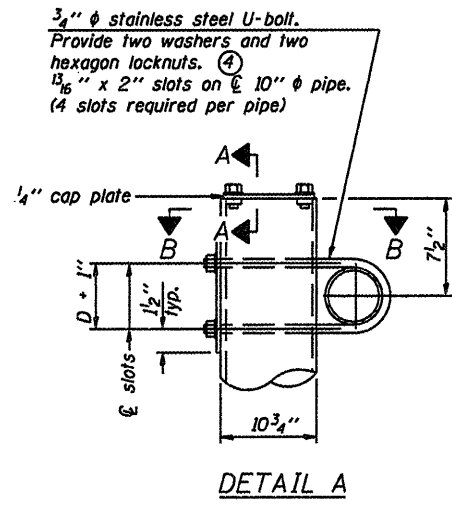


OVERHEAD SIGN STRUCTURE DAMPING DEVICE

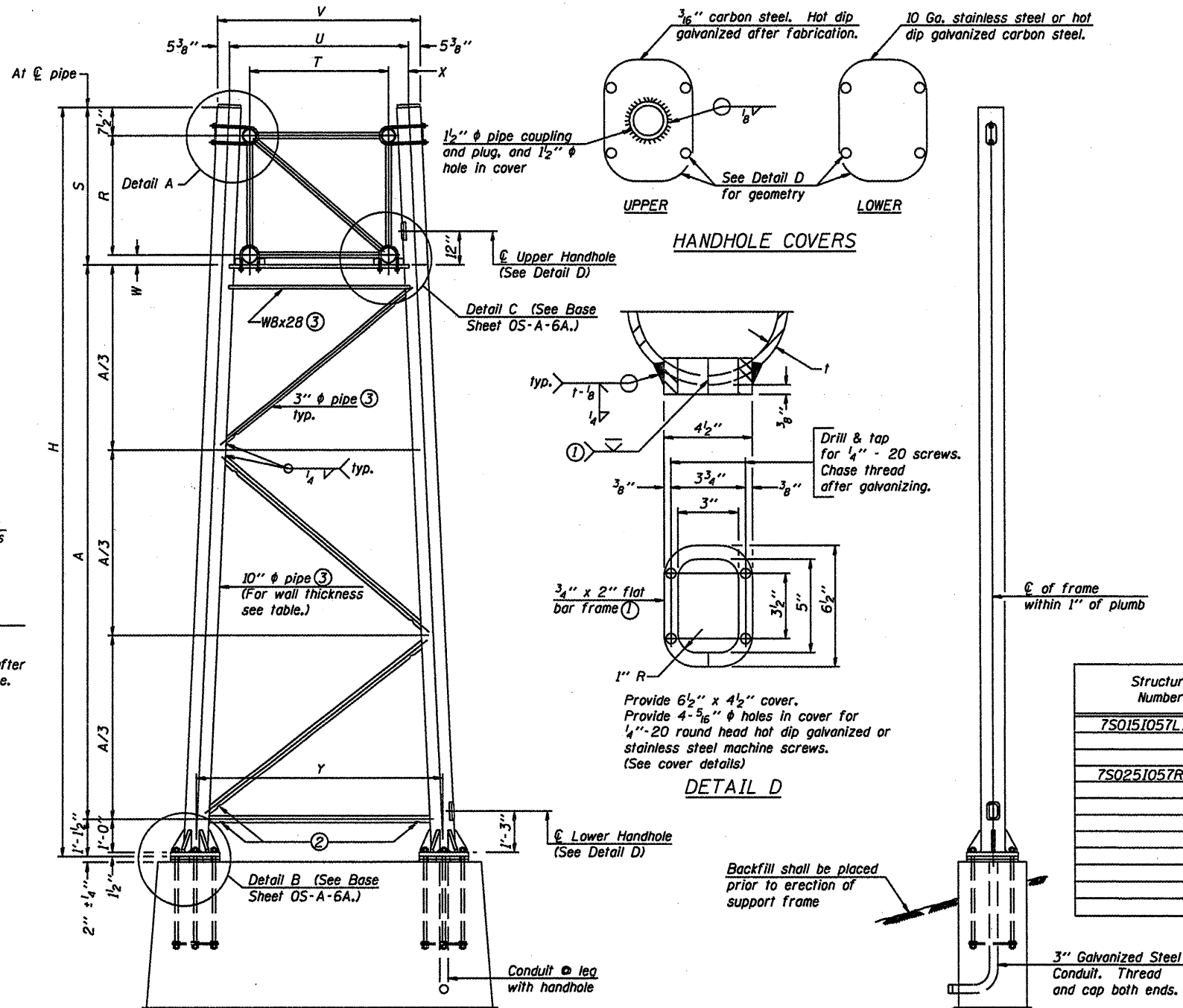
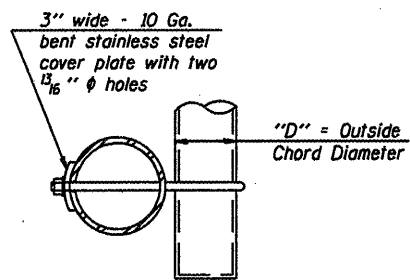
District 7
Overhead Sign Structure Replacement

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

OS-A-D 5/16/08



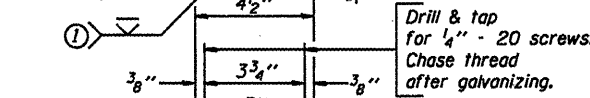
As an alternate to bolts, may use galvanized drive-fit caps installed after galvanizing frame.



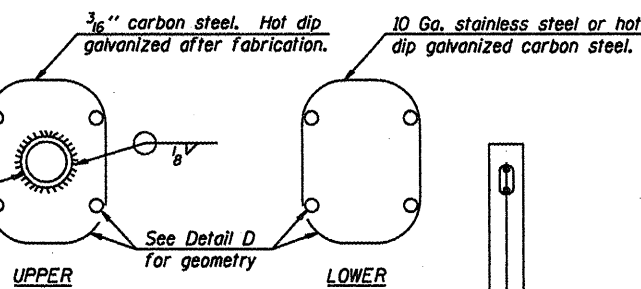
For Foundation Details, see base sheet OS-F3 (Spread Footing) or OS4-F3 (Drilled Shaft).

DETAIL D

Provide 6 1/2 inch x 4 1/2 inch cover. Provide 4-3/16 inch diameter holes in cover for 1/4 inch - 20 round head hot dip galvanized or stainless steel machine screws. (See cover details)



HANDHOLE COVERS



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 inch plate (rolling direction vertical). All cut faces to be ground to ANSI Roughness of 500 microns or less.
- ② Galvanizing vent holes of adequate size shall be provided on underside at each end of bracing pipes. Alternately, holes may be provided in wall of pipe column. All vent holes shall be drilled and de-burred, typ.
- ③ Steel pipe, plate, carbon steel handhole covers and rolled sections shall be hot dip galvanized after fabrication. Painting is not permitted. See Base Sheet OS-A-1.
- ④ See General Notes for fasteners.
- ⑤ Dimensions shown are based on selection criteria in the Sign Structures Manual. Nonstandard applications must have dimensions verified or amended as appropriate.
- ⑥ "H" based on 15'-0" or actual sign height, whichever is greater.

The Contractor and the Engineer shall field verify the height of the new foundations. If the height of the new foundations is lower than the existing foundations, the height of the end supports may need to be increased to maintain the proper height of the sign structure above the roadway.

Structure Number	Station	Support		Truss Type	Pipe Wall Thickness	H ⑥	A
		Left	Right				
7S0151057L189.9	802 + 00	X		I-A	0.279	25'-6 3/4"	18'-11 3/4"
			X				
7S0251057R162.9	2333 + 50	X		II-A	0.365(Std)	28'-10 1/2"	21'-4 1/4"
			X				

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

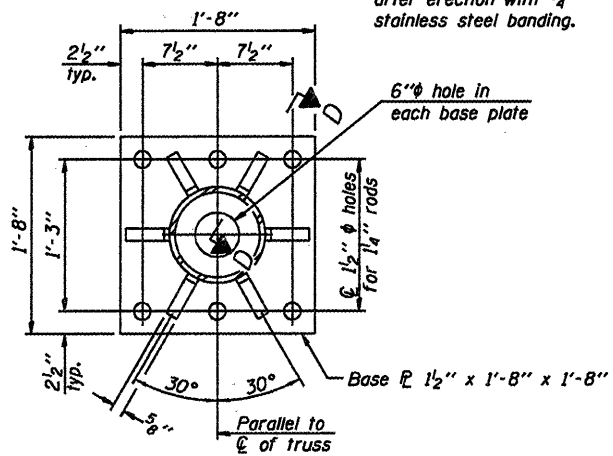
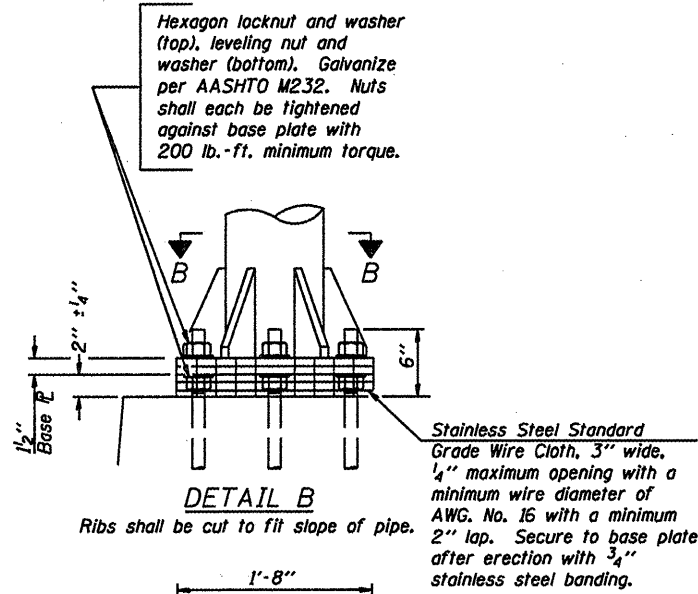
OS-A-6 5/16/08

NUMBER	REVISION	DATE

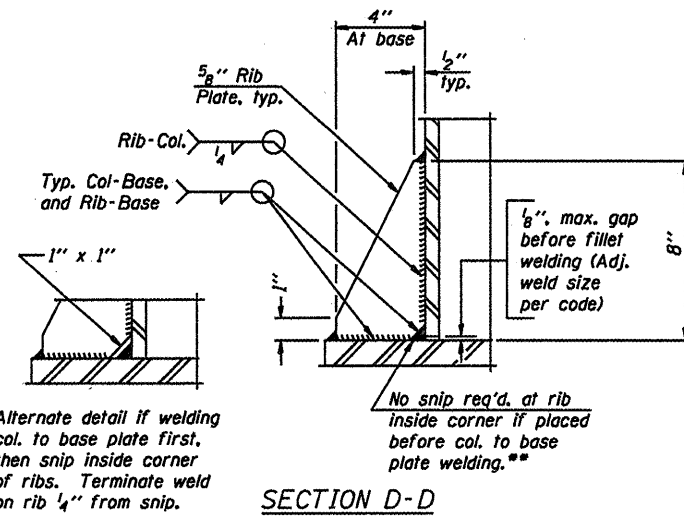
Truss Type	Dimensions							
	R	S	T	U	V	W	X	Y
I-A	4'-6"	5'-5 1/2"	4'-0"	5'-6"	6'-4 3/4"	4"	9"	8'-3"
II-A ⑤	5'-3"	6'-3 1/4"	4'-6"	6'-1"	6'-11 3/4"	4 3/4"	9 1/2"	8'-3"

OVERHEAD SIGN STRUCTURES
SUPPORT FRAME for ALUMINUM TRUSS

District 7
Overhead Sign Structure
Replacement

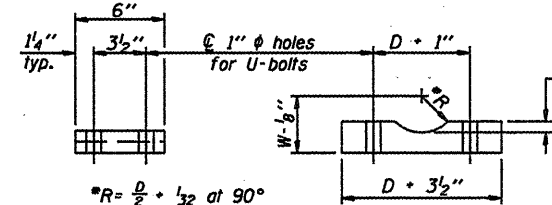


SECTION B-B



SECTION D-D

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



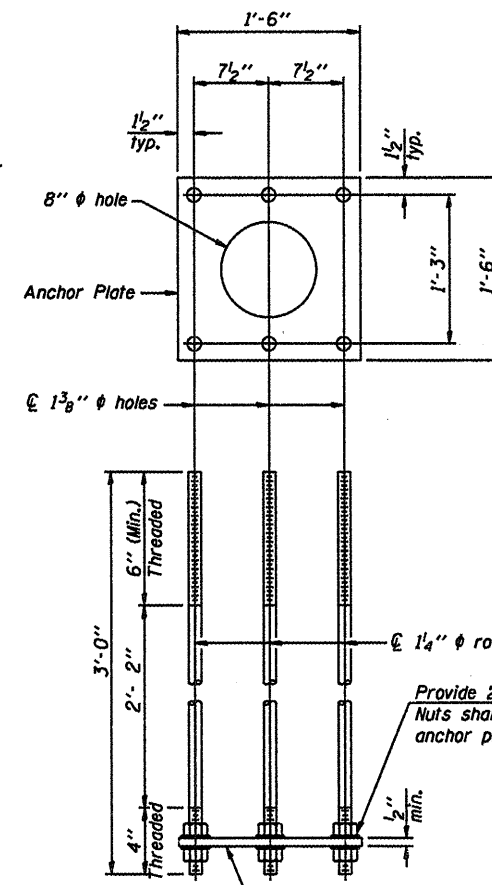
$R = \frac{D}{2} + \frac{1}{32}$ at 90°

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

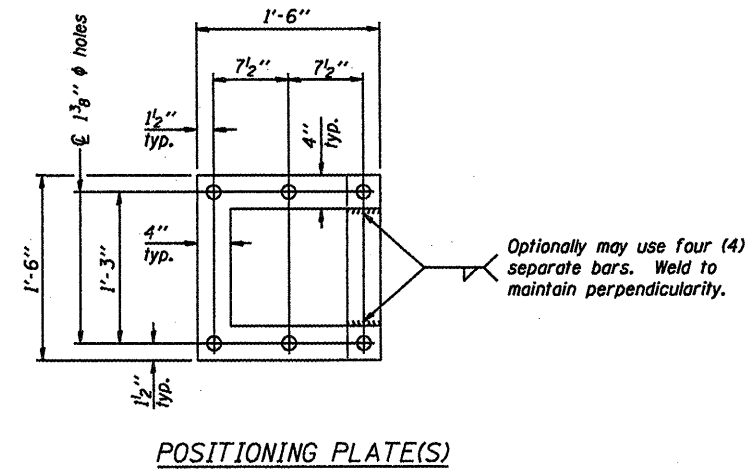
SADDLE SHIM DETAIL

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

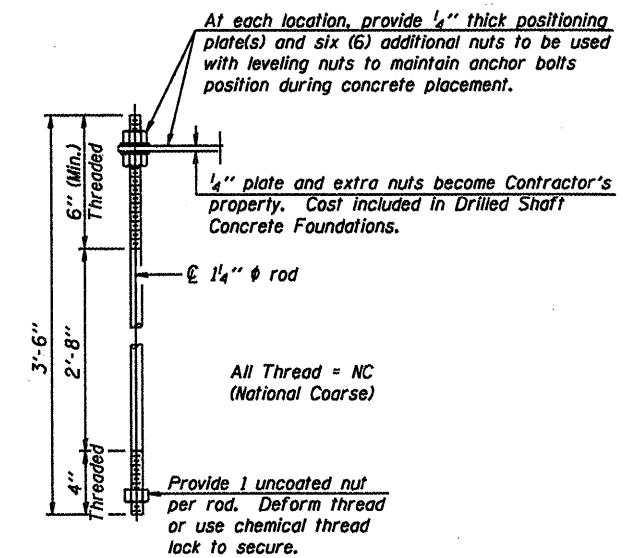
Truss Chord Nominal Dia.	a
5"	3/4"
5 1/2"	13/16"
6"	7/8"
6 1/2"	15/16"
7"	1"



ANCHOR ROD DETAIL
Spread Footing Foundation



POSITIONING PLATE(S)



ANCHOR ROD DETAIL
Drilled Shaft Foundation

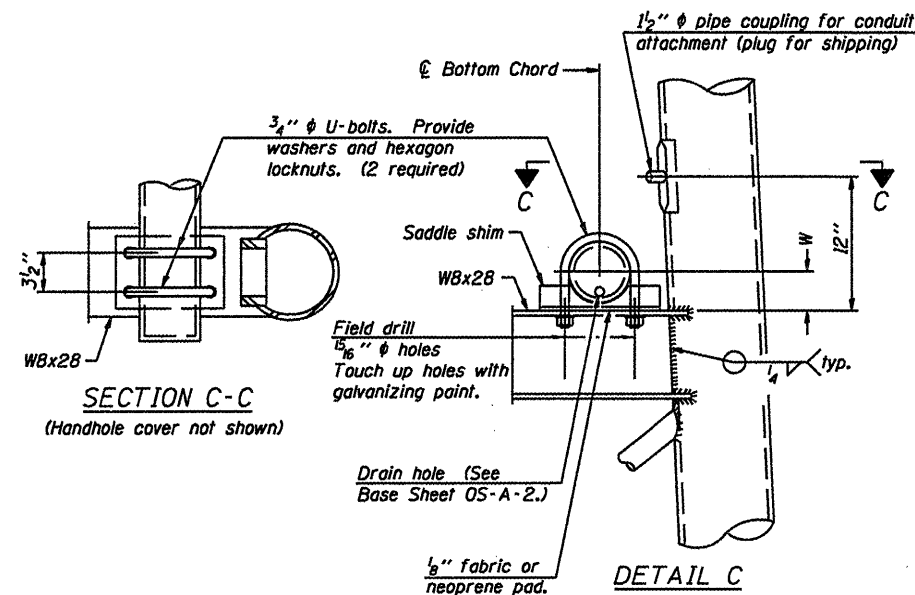
Anchor rods shall conform to AASHTO M314 Grade 36 or 50 and meet Charpy V-Notch (CVN) energy of 15 lb.-ft. at 40° F. Galvanize upper 12" per AASHTO M232. No welding shall be permitted on rods.

Anchor Bolt Detail Applies to Structure No. 750151057R189.9 Only

10" ϕ PIPE SUPPORT FRAME DETAILS

OVERHEAD SIGN STRUCTURES
SUPPORT FRAME DETAILS ALUMINUM TRUSS

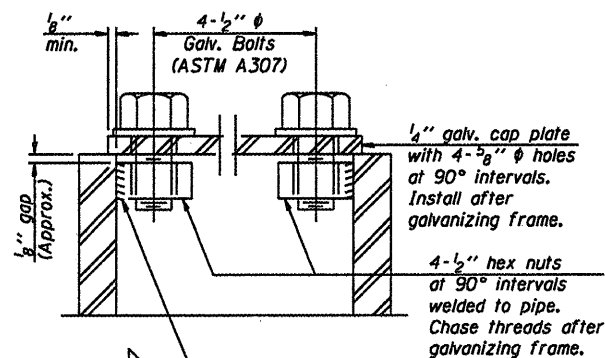
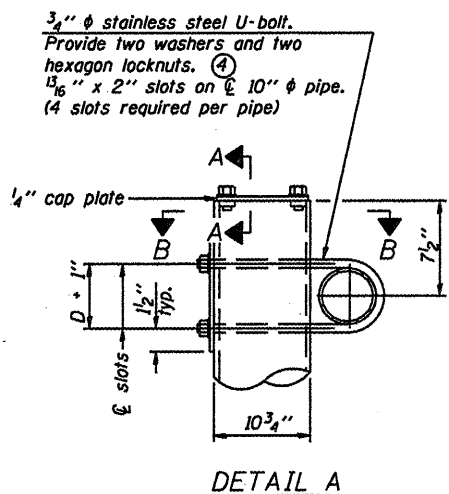
District 7
Overhead Sign Structure
Replacement



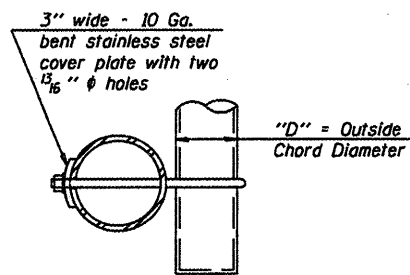
SECTION C-C
(Handhole cover not shown)

NUMBER	REVISION	DATE

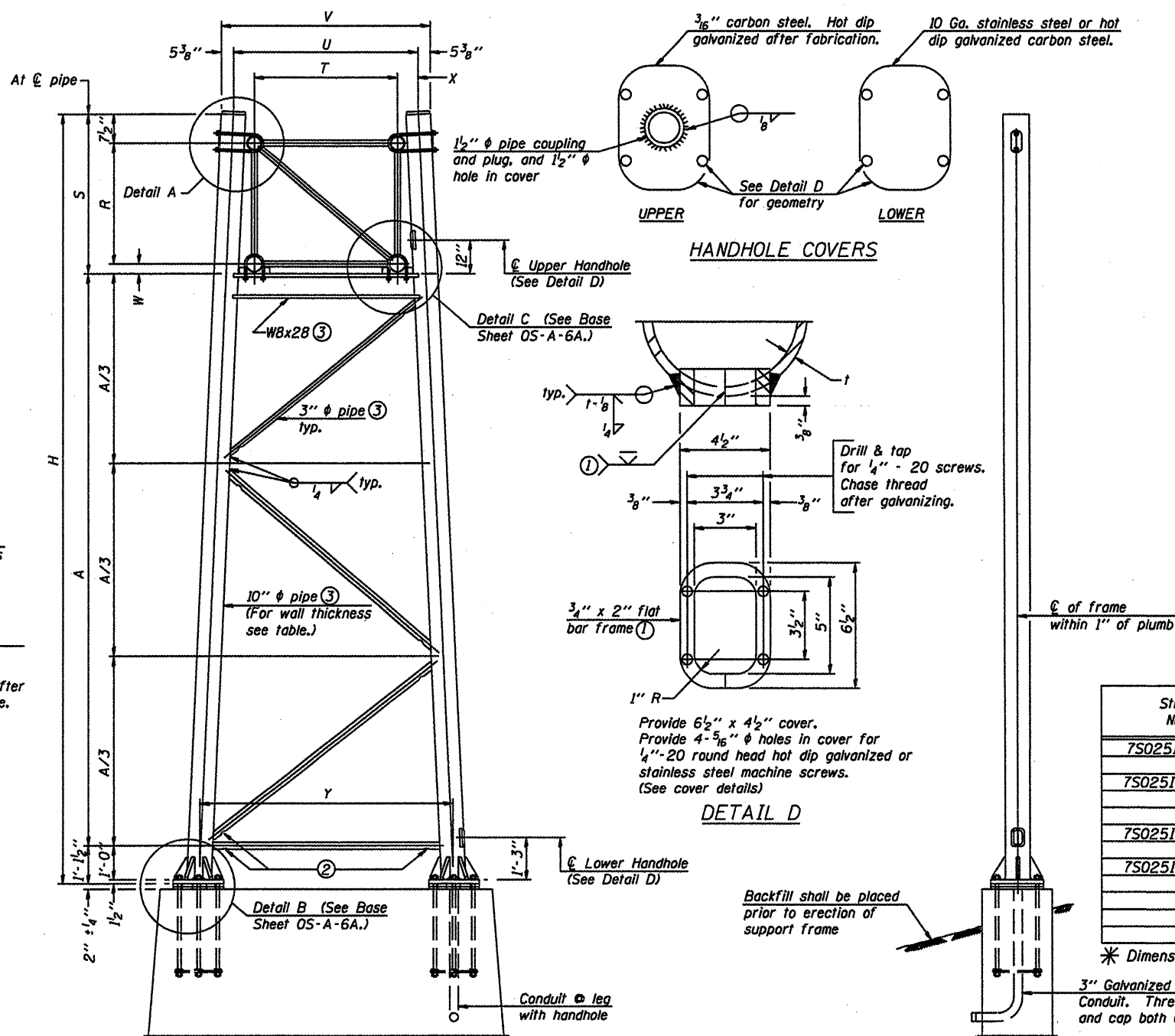
DESIGNED	20
CHECKED	EXAMINED
DRAWN	PASSED
CHECKED	ENGINEER OF BRIDGE DESIGN
	ENGINEER OF BRIDGES AND STRUCTURES



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



SECTION B-B

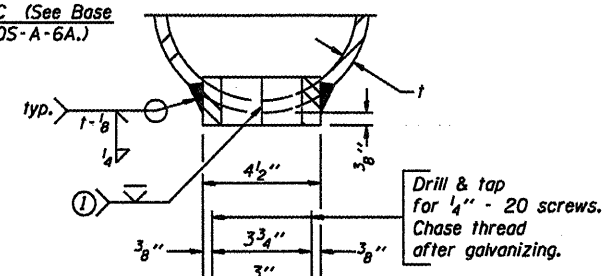
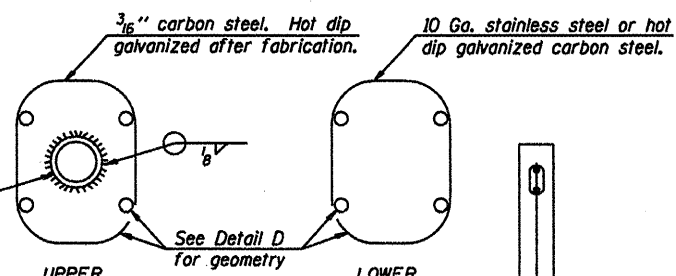


For Foundation Details, see base sheet OS-F3 (Spread Footing) or OS4-F3 (Drilled Shaft).

SIDE ELEVATION

10" Ø PIPE TRUSS SUPPORT FRAME SPECIAL

Truss Type	Dimensions							
	R	S	T	U	V	W	X	Y
III-A	7'-0"	8'- 1/4"	5'-0"	5'-9 1/2"	6'-8 1/4"	4 3/4"	1'- 1/2"	8'-3"



DETAIL D

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

- ① In lieu of fabricated handhole frame as shown, may cut from 2" plate (rolling direction vertical). All cut faces to be ground to ANSI Roughness of 500 µin or less.
- ② Galvanizing vent holes of adequate size shall be provided on underside at each end of bracing pipes. Alternately, holes may be provided in wall of pipe column. All vent holes shall be drilled and de-burred, typ.
- ③ Steel pipe, plate, carbon steel handhole covers and rolled sections shall be hot dip galvanized after fabrication. Painting is not permitted. See Base Sheet OS-A-1.
- ④ See General Notes for fasteners.
- ⑤ Dimensions shown are based on selection criteria in the Sign Structures Manual. Nonstandard applications must have dimensions verified or amended as appropriate.
- ⑥ "H" based on 15'-0" or actual sign height, whichever is greater.

Structure Number	Station	Support		Truss Type	Pipe Wall Thickness	H ⑥	A
		Left	Right				
7S025J-57R16L3	2249 + 00	X	X	III-A	0.365(Std)	29'-10 1/2"	20'-5 1/2"
7S025I070L099.0	2408 + 00	X		III-A	0.365(Std)	28'-10 1/2"	18'-5 1/2"
			X			27'-10 1/2"	18'-5 1/2"
7S025I057L164.3	5408 + 00	X	X	III-A	0.365(Std)	30'-10 1/2"	21'-5 1/2"
7S025I057L163.8	5381 + 50	X	X	III-A	0.365(Std)	32'-10 1/2"	23'-5 1/2"

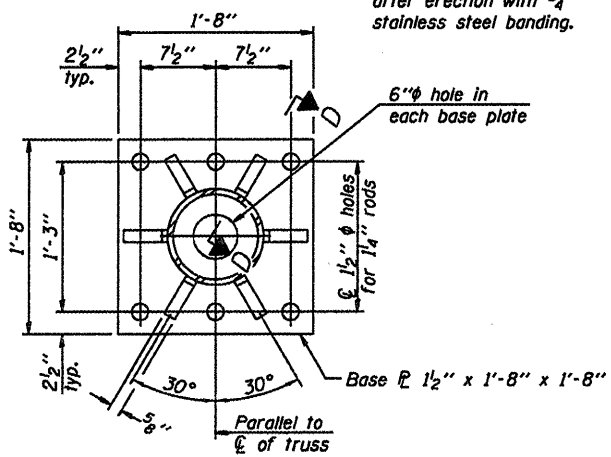
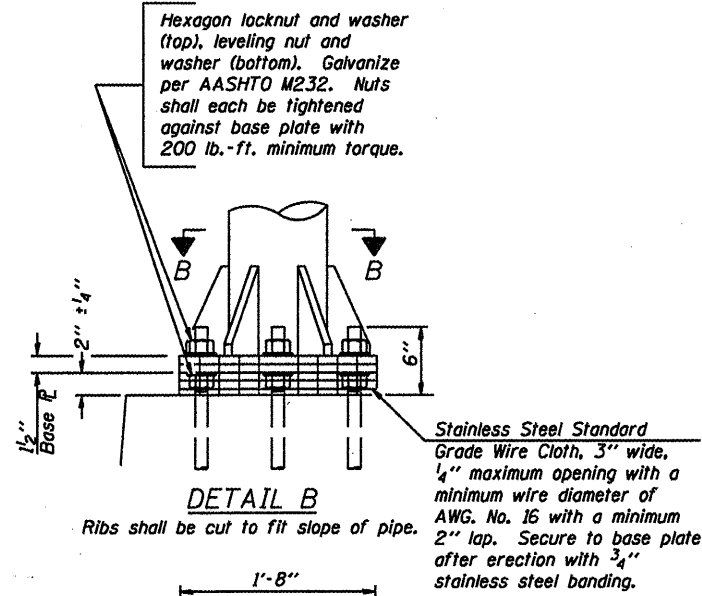
* Dimensions shown were taken from existing sign structure details.

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

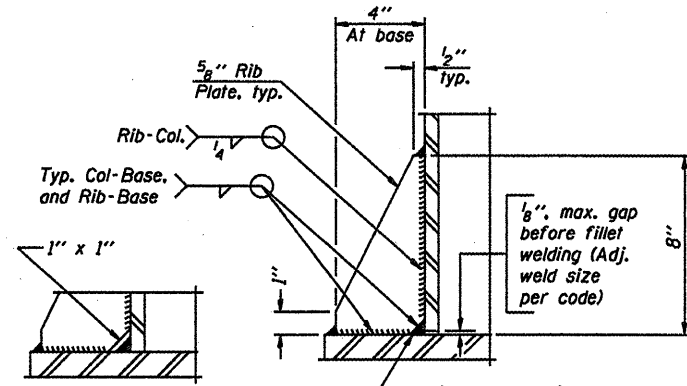
OS-A-6 SPECIAL 9/19/2008

OVERHEAD SIGN STRUCTURES
SUPPORT FRAME for ALUMINUM TRUSS

District 7
Overhead Sign Structure
Replacement

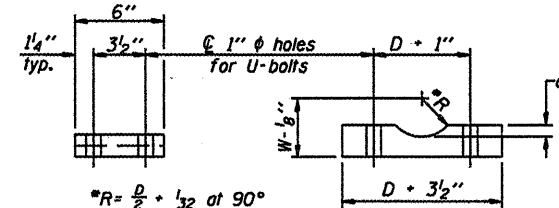


SECTION B-B



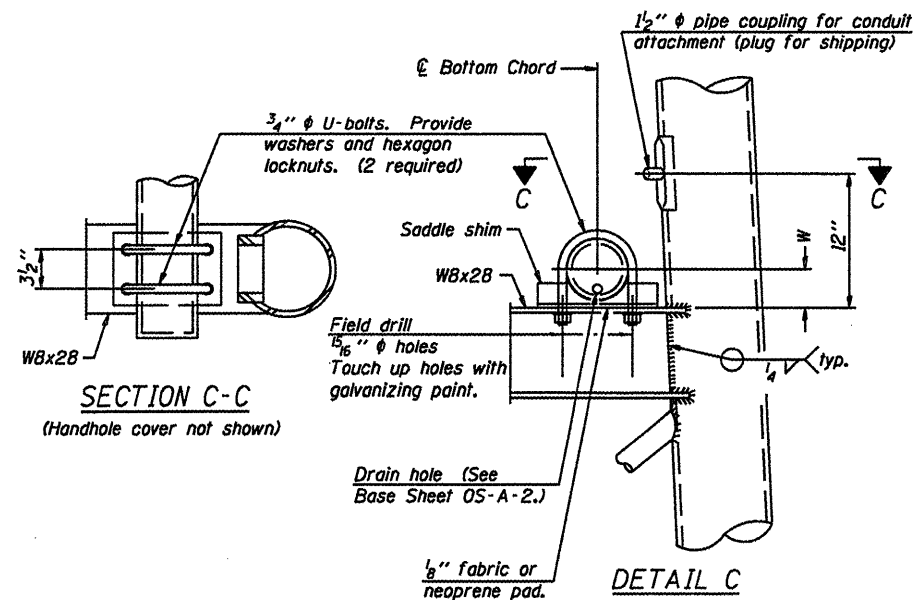
SECTION D-D

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



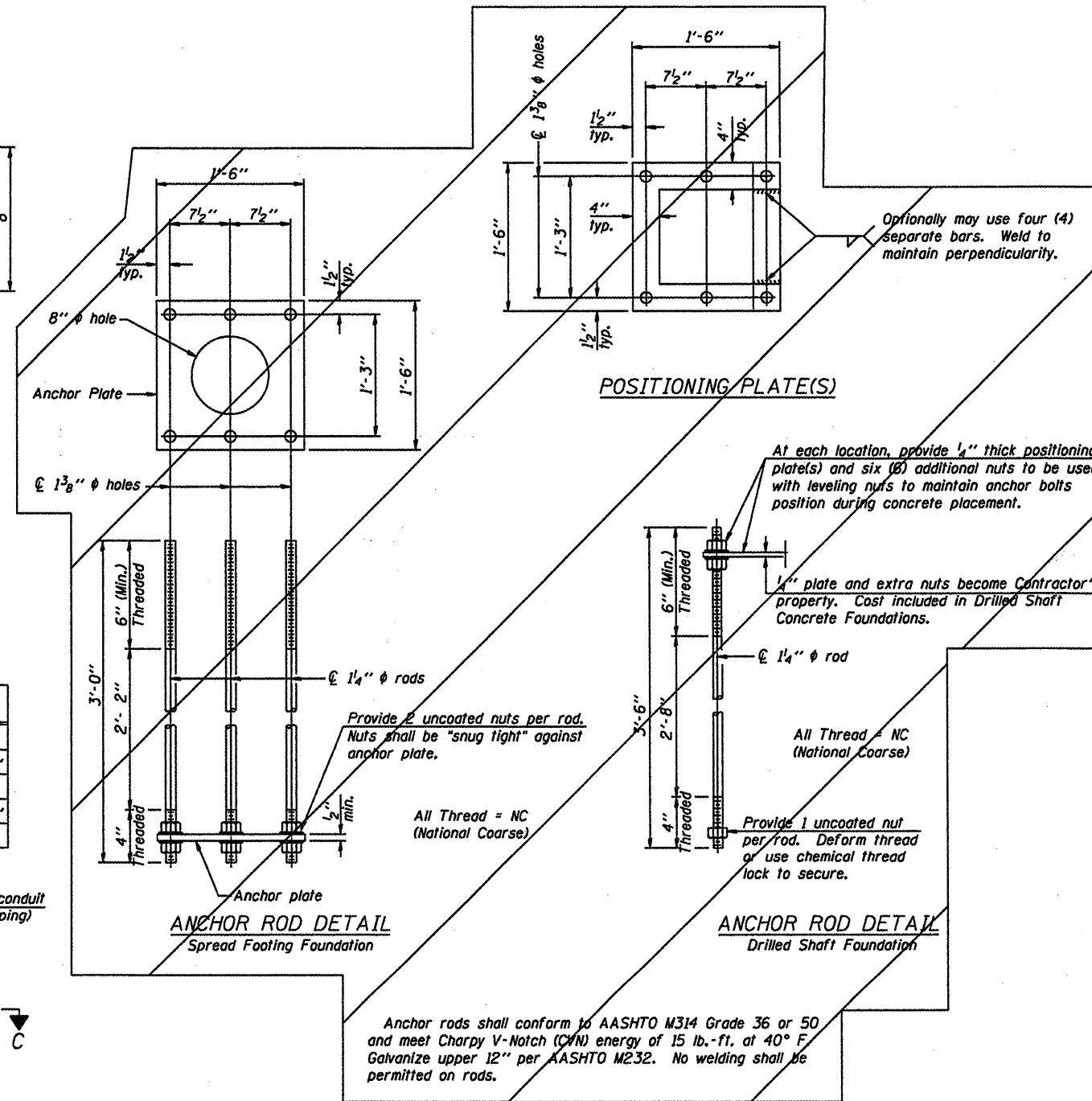
SADDLE SHIM DETAIL
ASTM B26 Alloy 356-F
or
ASTM B209 Alloy 6061-T651
(4 required per sign truss)

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



SECTION C-C
(Handhole cover not shown)

DETAIL C



10" ϕ PIPE SUPPORT FRAME DETAILS

OVERHEAD SIGN STRUCTURES
SUPPORT FRAME DETAILS ALUMINUM TRUSS

District 7
Overhead Sign Structure
Replacement

NUMBER	REVISION	DATE

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

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

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

BAR LIST - EACH FOUNDATION

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

NOTES:

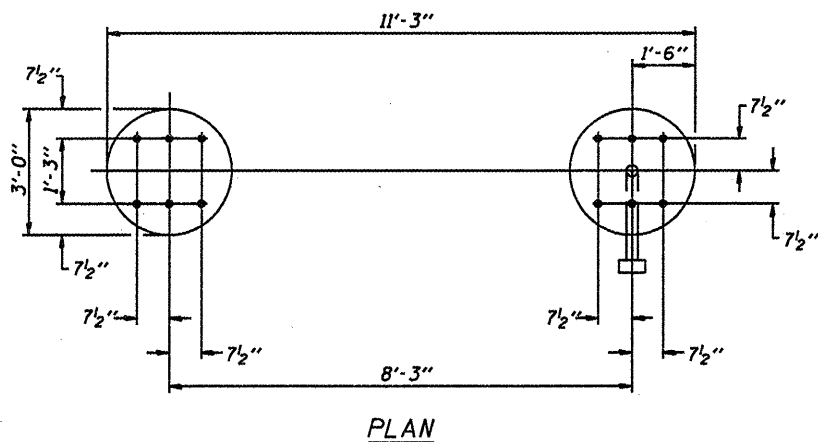
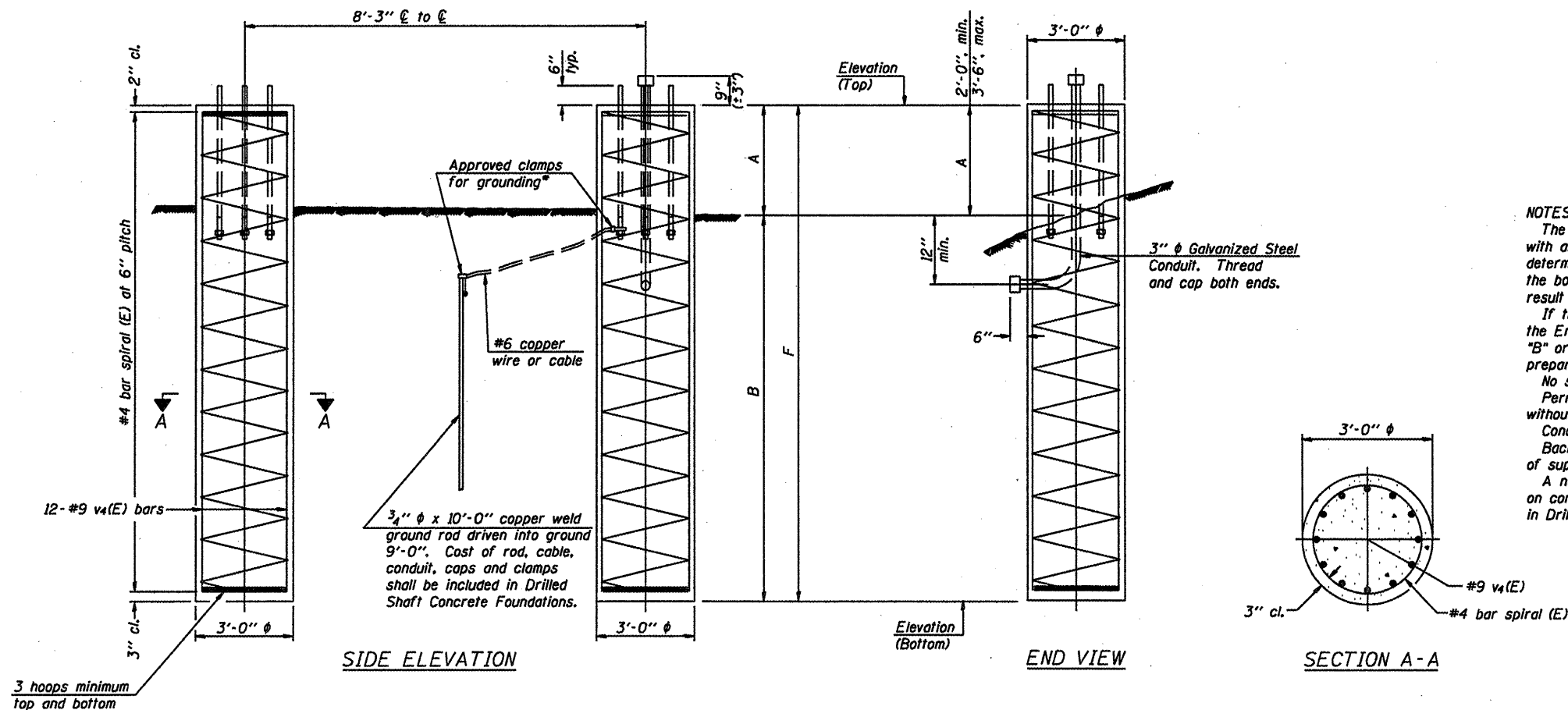
The foundation dimensions shown are based on the presence of mostly cohesive soils with an average Unconfined Compressive Strength (Q_u) of at least 1.25 tsf, which must be determined by previous soil investigations at the jobsite. When other conditions are indicated, the boring data will be included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

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

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

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

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



Structure Number	Station	Left Foundation			Right Foundation			Class DS Concrete (Cu. Yds.)				
		Elevation Top	Elevation Bottom	A	B	F	Elevation Top		Elevation Bottom	A	B	F
750151057L189.9	802 + 00	743.96	N/A	3'-0"	16'-6"	19'-6"	731.21	N/A	3'-0"	16'-6"	19'-6"	20.50

* Elevations were taken from existing sign structure details.

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

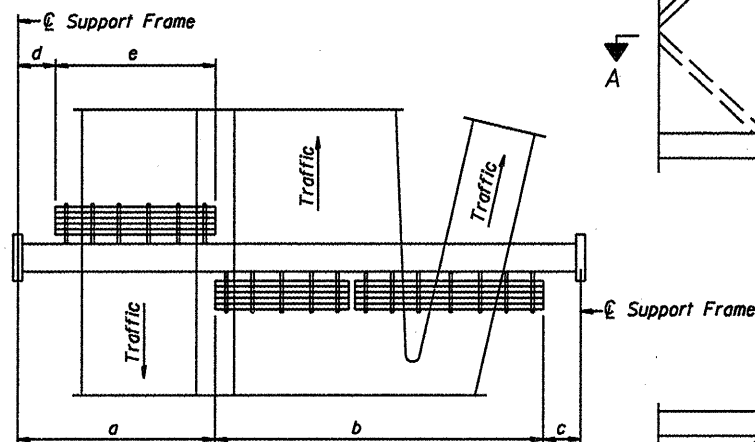
NUMBER	REVISION	DATE

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

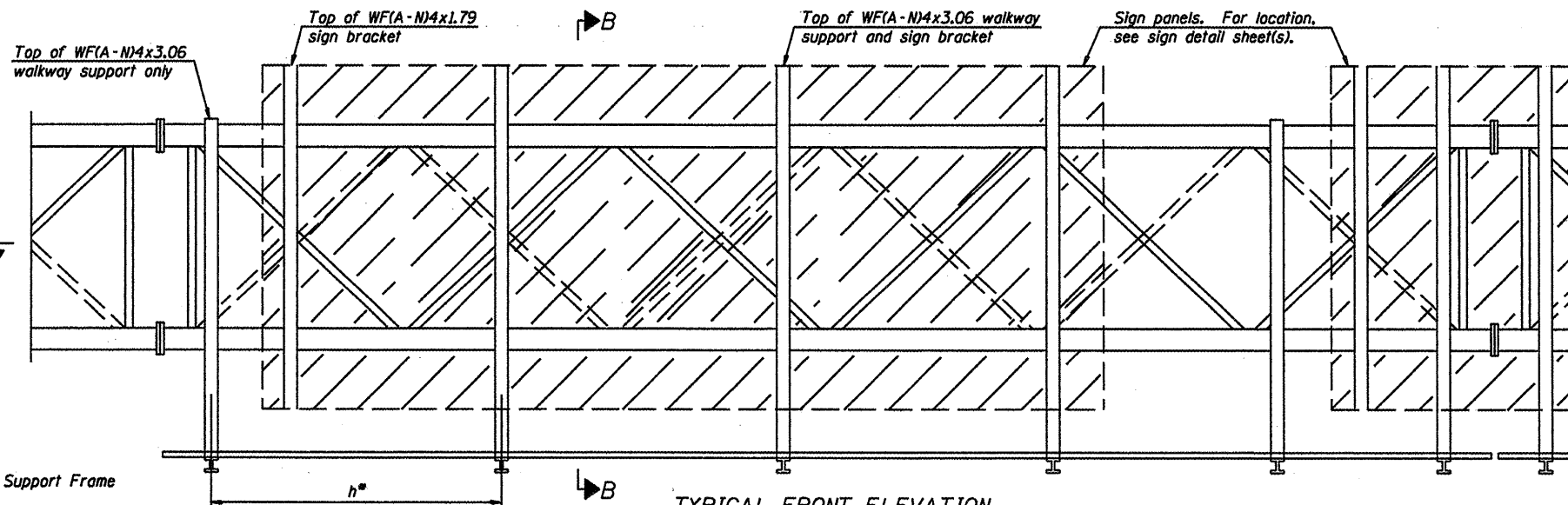
OVERHEAD SIGN STRUCTURES
DRILLED SHAFT DETAILS

District 7
Overhead Sign Structure
Replacement

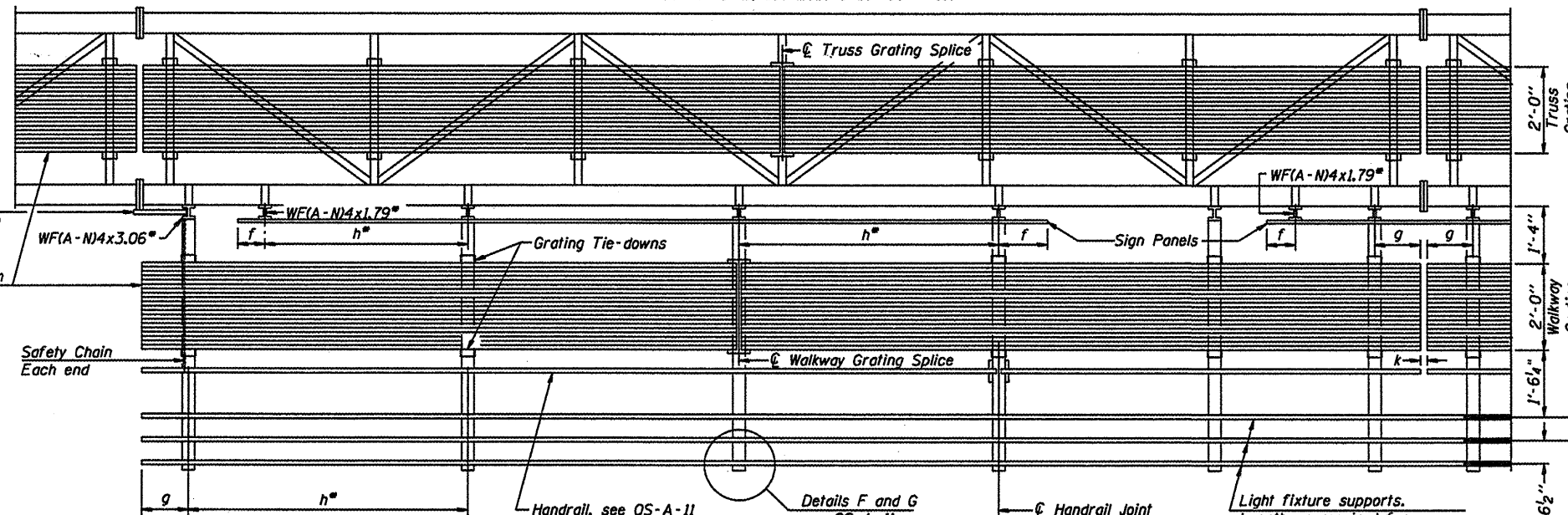
NUMBER	REVISION	DATE



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



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



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

BRACKET TABLE

WFA-N4x1.79 or WFA-N4x3.06 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

** Alternate angle for safety chain attachment
Standard Aluminum Grating, see Details T and W
Safety Chain Each end

Notes:
* Space walkway brackets WFA-N4x3.06 and sign brackets WFA-N4x1.79 for efficiency and within limits shown:

- f = 12" maximum, 4" minimum (End of sign to center of nearest bracket)
- g = 12" maximum, 4" minimum (End of walkway grating to center of nearest support bracket)
- h = 6'-0" maximum (center to center sign and/or walkway support brackets, WFA-N4x1.79 or WFA-N4x3.06)
- k = 2" maximum gap between adjacent walkway grating sections and handrail ends

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

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

SECTION A-A

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

Light fixture supports.
Length as required for lighting fixtures. (If required)

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	20
CHECKED	EXAMINED
DRAWN	PASSED
CHECKED	ENGINEER OF BRIDGES AND STRUCTURES

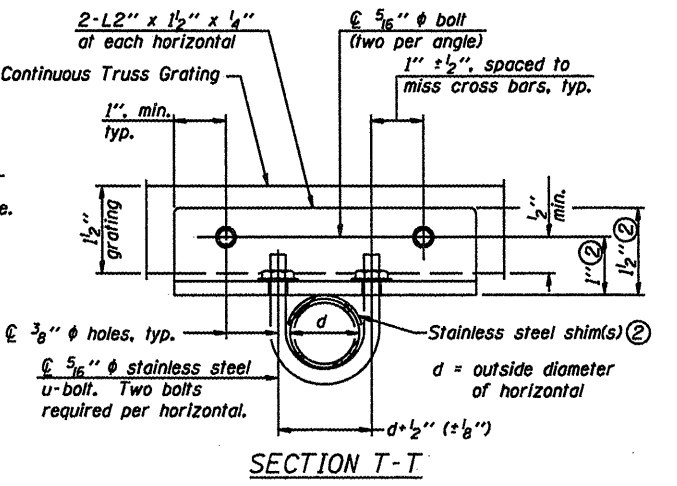
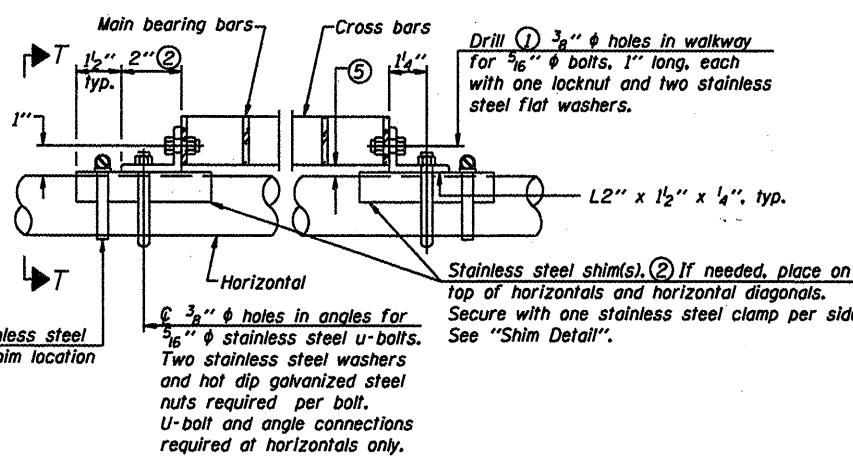
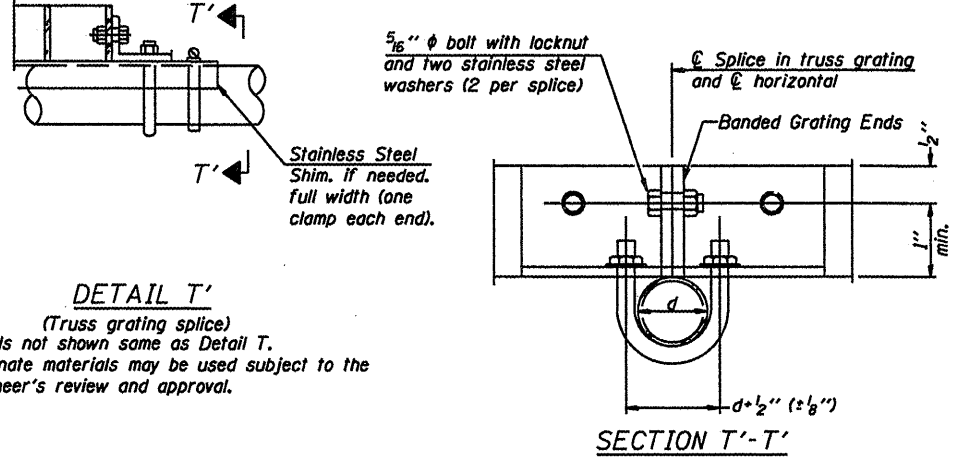
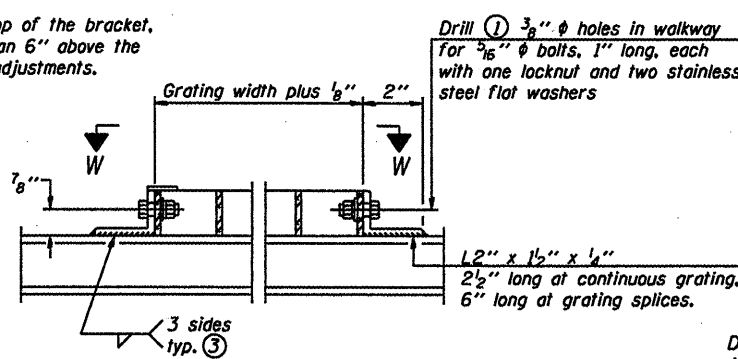
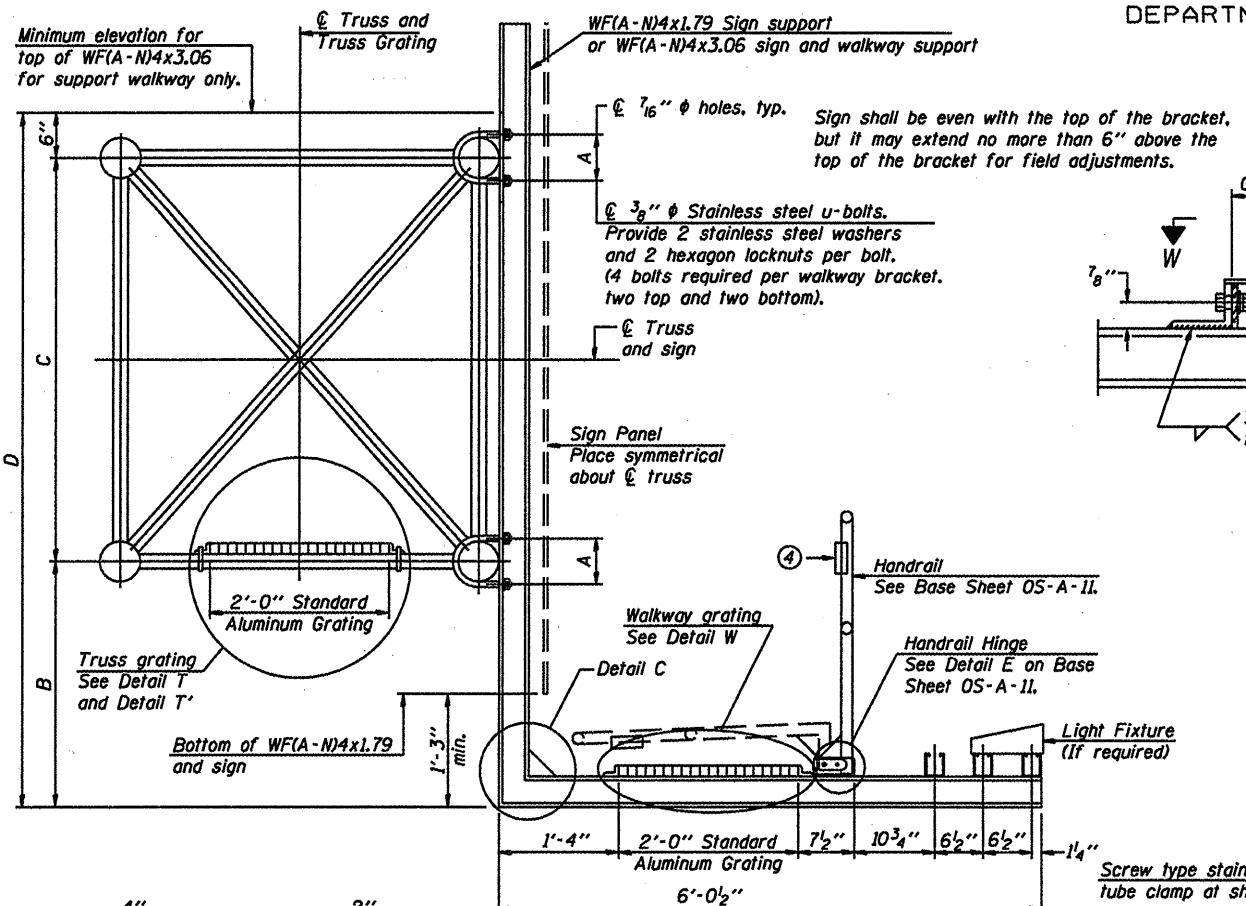
OS-A-9 5/16/08

Structure Number	Station	a	b	c	d	e	Walkway Grating and Handrail Lengths
7S0151057L189.9	802 + 00	N/A	N/A	N/A	N/A	N/A	97'-6" *
7S0251057R161.3	2249 + 00	N/A	N/A	N/A	N/A	N/A	90'-8" *
7S0251057R162.9	2333 + 50	N/A	N/A	N/A	N/A	N/A	89'-8" *
7S0251070L099.0	2408 + 00	N/A	N/A	N/A	N/A	N/A	90'-8" *
7S0251057L164.3	5408 + 00	N/A	N/A	N/A	N/A	N/A	90'-8" *
7S0251057L163.8	5381 + 50	N/A	N/A	N/A	N/A	N/A	104'-7" *

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

OVERHEAD SIGN STRUCTURES
ALUMINUM WALKWAY DETAILS

District 7
Overhead Sign Structure
Replacement



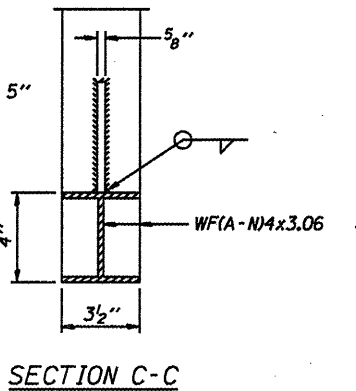
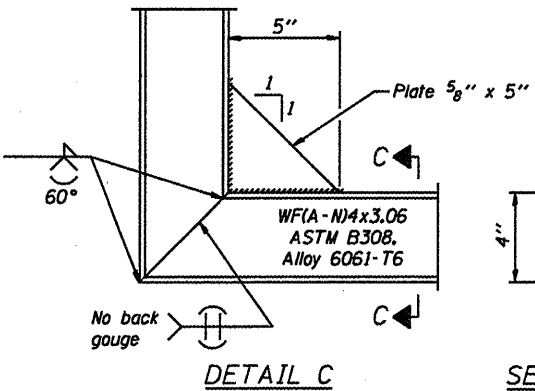
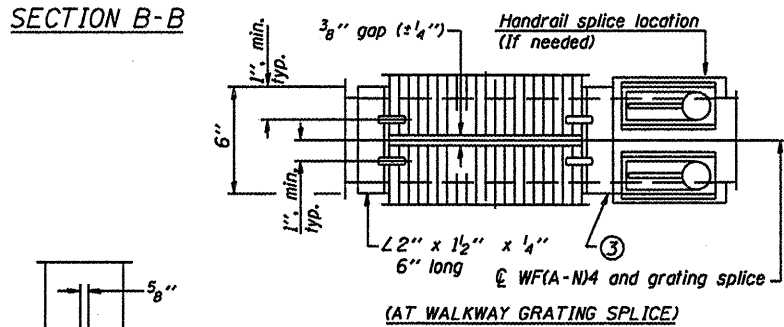
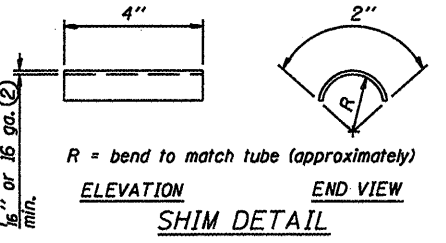
SPECIFICATIONS FOR STANDARD ALUMINUM GRATING

Main Bearing Bars shall be 3/16" x 1 1/2" on 1 3/8" 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 "I" sections for main bearing bars shall meet the following requirements:
Main bars shall conform to ASTM B221 Alloy 6061-T6 and have a minimum section modulus equal to 0.0705 in.³ per bar, a depth of 1 1/2", spaced on 1 3/8" centers.
Cross bars shall conform to ASTM B221 Alloy 6063-T5 or T-42 and spaced on 4" centers.

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



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

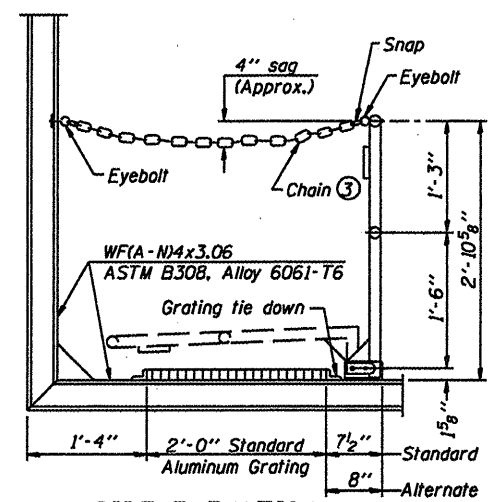
NUMBER	REVISION	DATE

Structure Number	Station	A	B	C	D

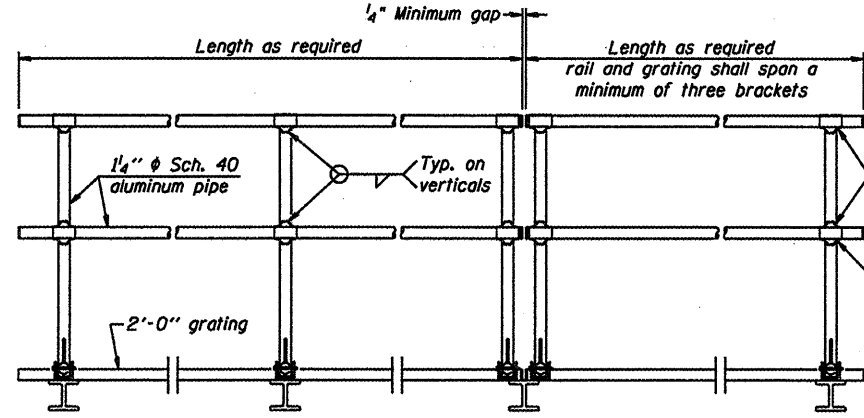
Existing walkway and walkway support brackets to be reused.

**OVERHEAD SIGN STRUCTURES
ALUMINUM WALKWAY DETAILS**

District 7
Overhead Sign Structure
Replacement



SIDE ELEVATION
(Showing safety chain w/o sign)

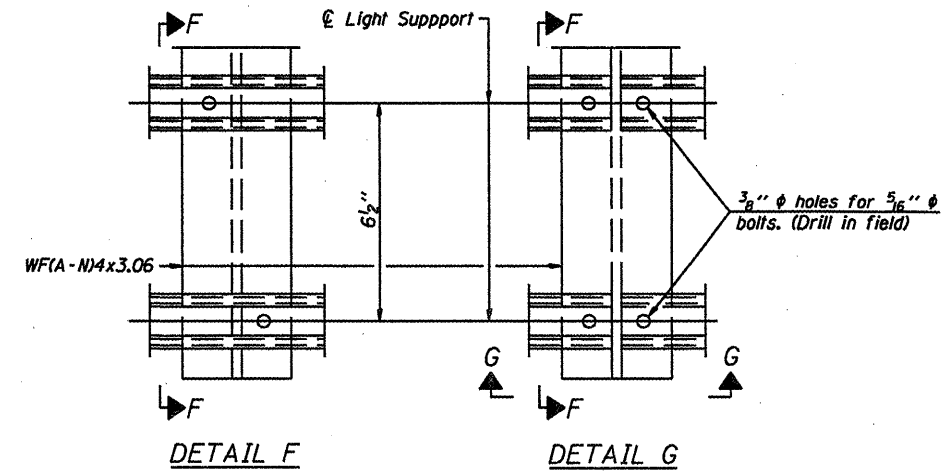


FRONT ELEVATION

HANDRAIL DETAILS

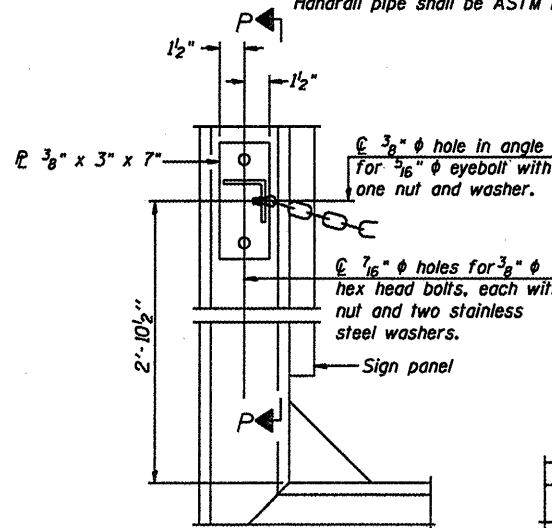
Handrail pipe shall be ASTM B241 or B429, Alloy 6063-T6 or Alloy 6061-T6.

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



DETAIL F

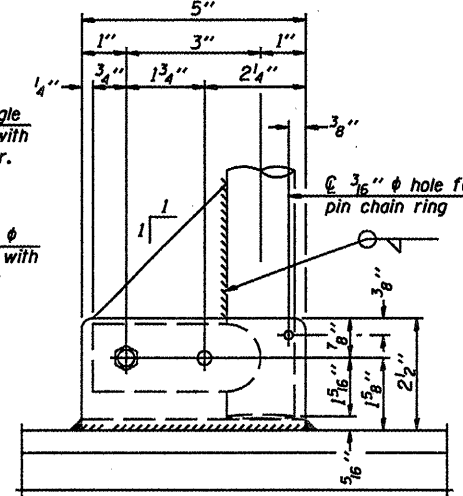
DETAIL G



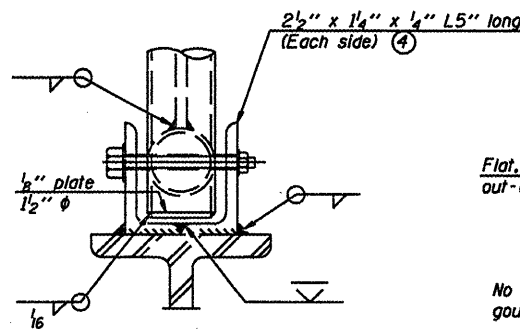
ALTERNATE SAFETY CHAIN ATTACHMENT

(With Sign Present)

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

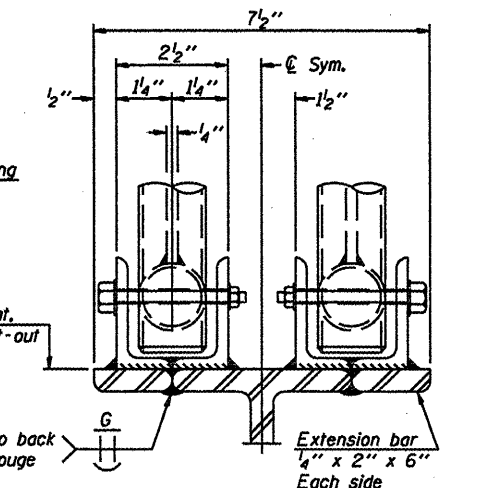


SIDE ELEVATION

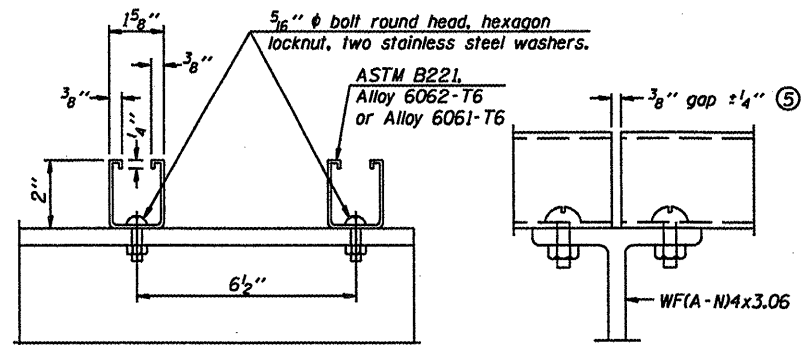


FRONT ELEVATION

See "Elevation" at right for dimensions.



ELEVATION AT HANDRAIL JOINT

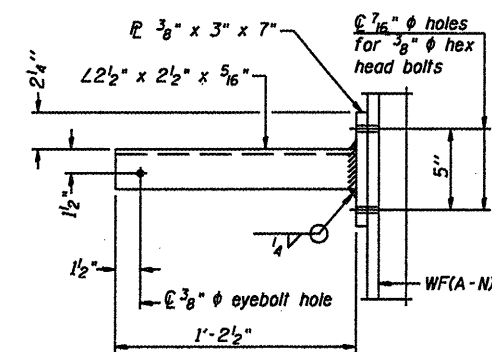


SECTION F-F

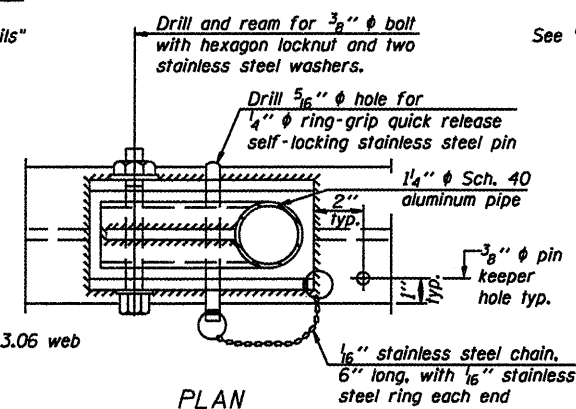
SECTION G-G

LIGHTING FIXTURE MOUNTS (IF REQUIRED)

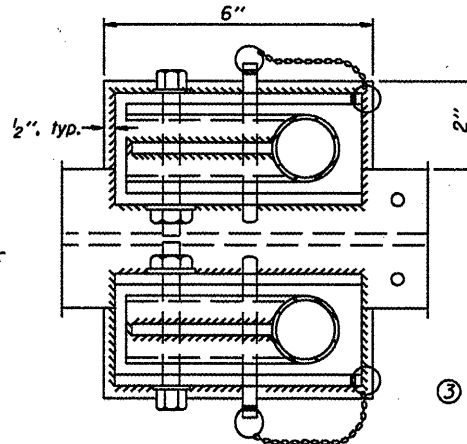
- Field cut ends of light support channels shall be free of burrs or hazardous projections and coated with zinc-rich primer or equivalent.



SECTION P-P

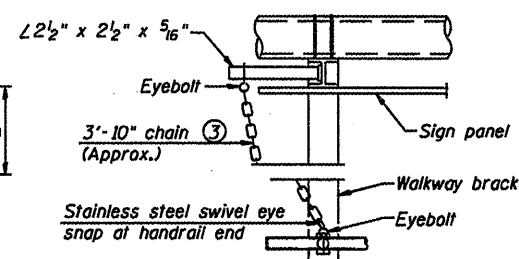


DETAIL E HANDRAIL HINGE



PLAN AT HANDRAIL JOINT

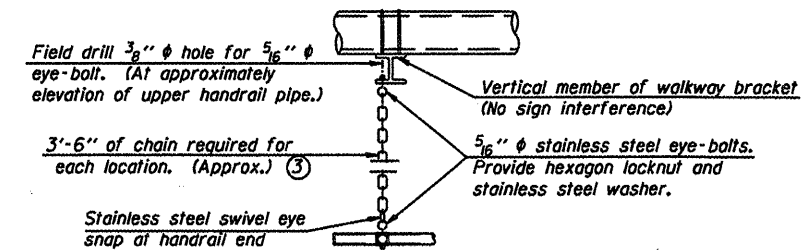
Details not shown same as "PLAN"



ALTERNATE SAFETY CHAIN ATTACHMENT

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

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

This Sheet For Information Only

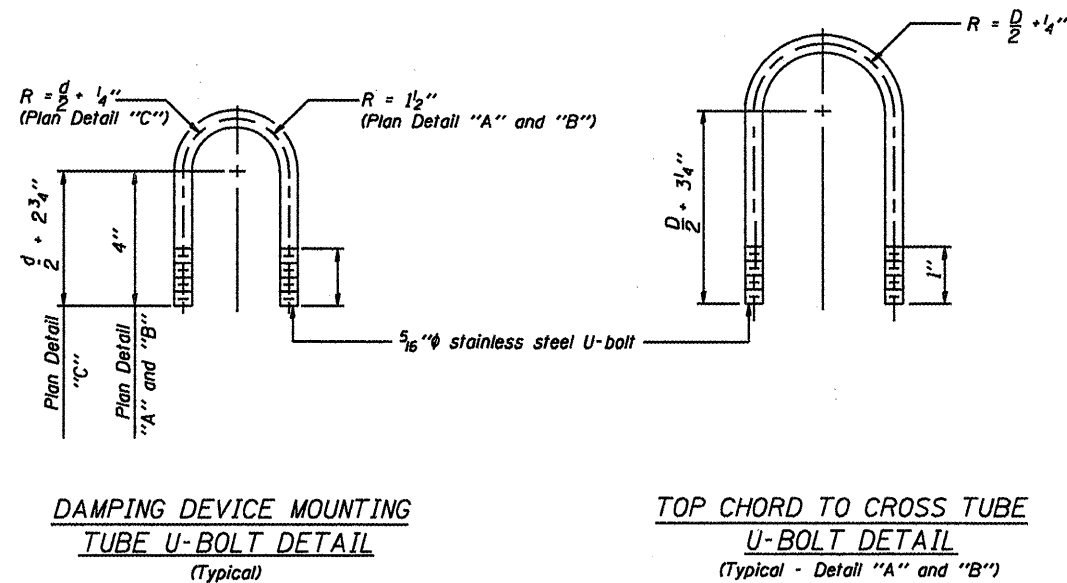
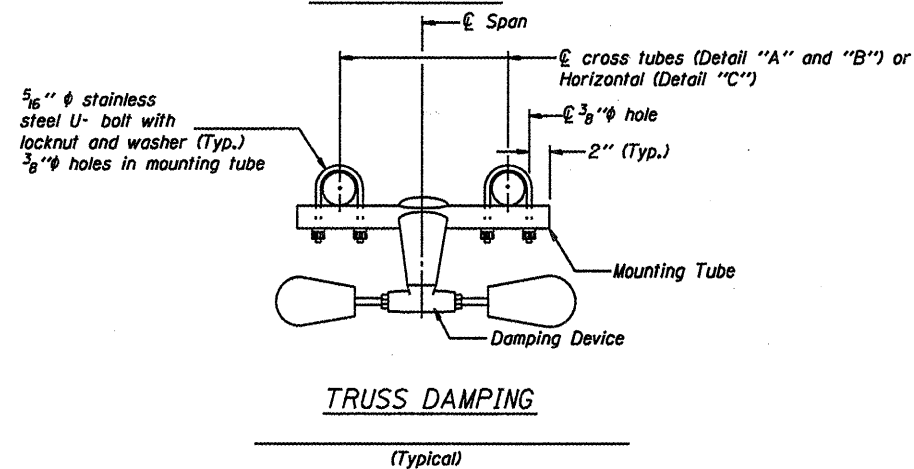
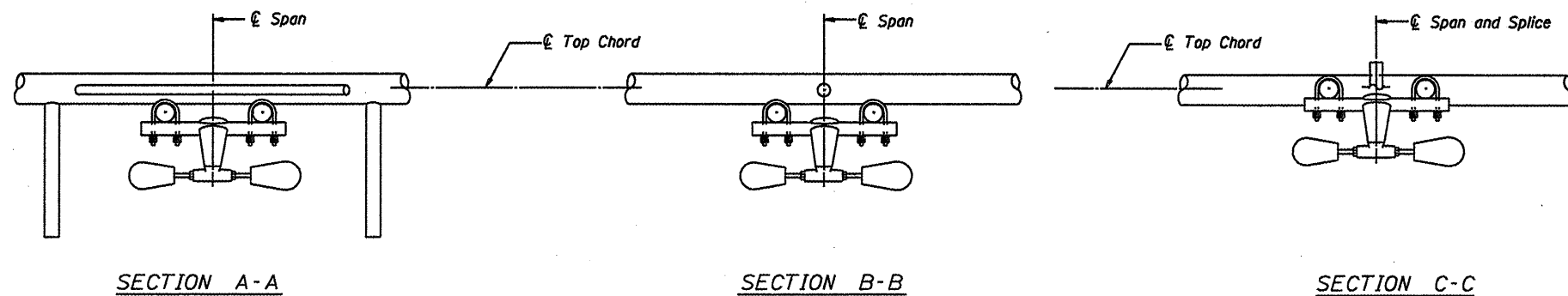
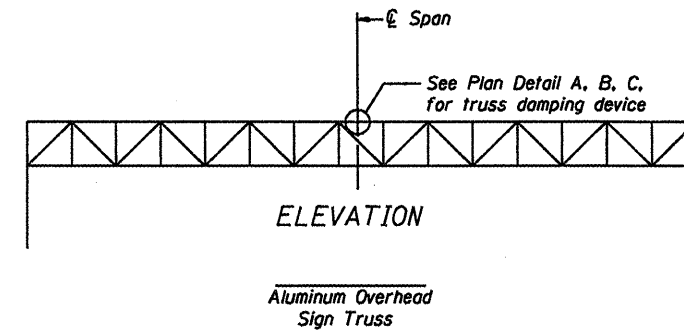
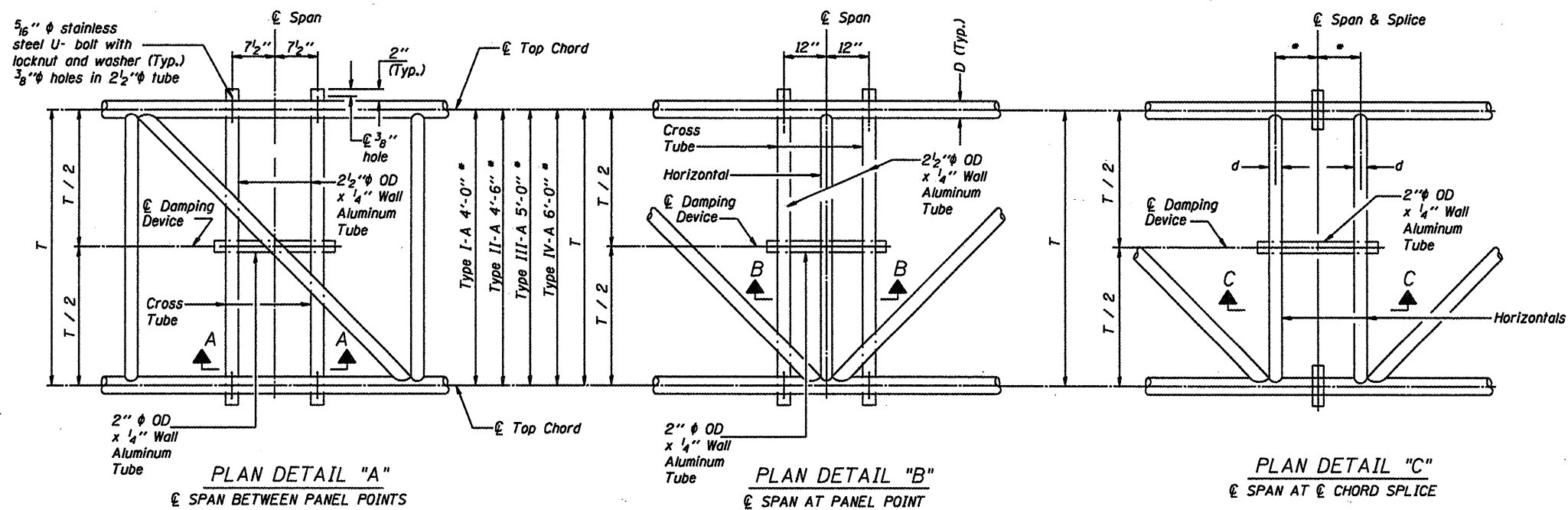
OVERHEAD SIGN STRUCTURES
ALUMINUM HANDRAIL DETAILS

District 7
Overhead Sign Structure
Replacement

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

NUMBER	REVISION	DATE

Verify before drilling holes in mounting tube and cross tubes.



- This detail applies to the following overhead sign structure:
- 7S0251057R161.3
 - 7S0251057R162.9
 - 7S0251070L099.0
 - 7S0251057L164.3
 - 7S0251057L163.8

GENERAL NOTES

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

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

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

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

TRUSS DAMPER RETROFIT 07-01-2001

OVERHEAD SIGN STRUCTURE
DAMPING DEVICE

District 7
Overhead Sign Structure
Replacement



Illinois Department of Transportation
Division of Highways
Illinois Department of Transportation

SOIL BORING LOG

Page 1 of 1

Date 5/9/06

ROUTE South Bound I-57 DESCRIPTION Sign Truss, North of IL 16 Interchange, MP 189.9 LOGGED BY E. Sandschafer

SECTION _____ LOCATION NE 1/4, SEC. 17, TWP. 12 N, RNG. 8 E, 3 PM

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

STRUCT. NO. gINT file DEPT B U M
Station 015-5502 T W S O I S

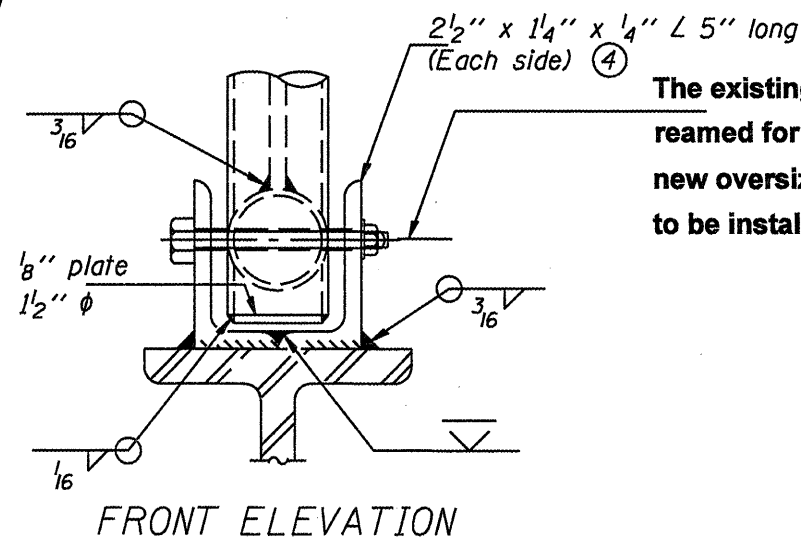
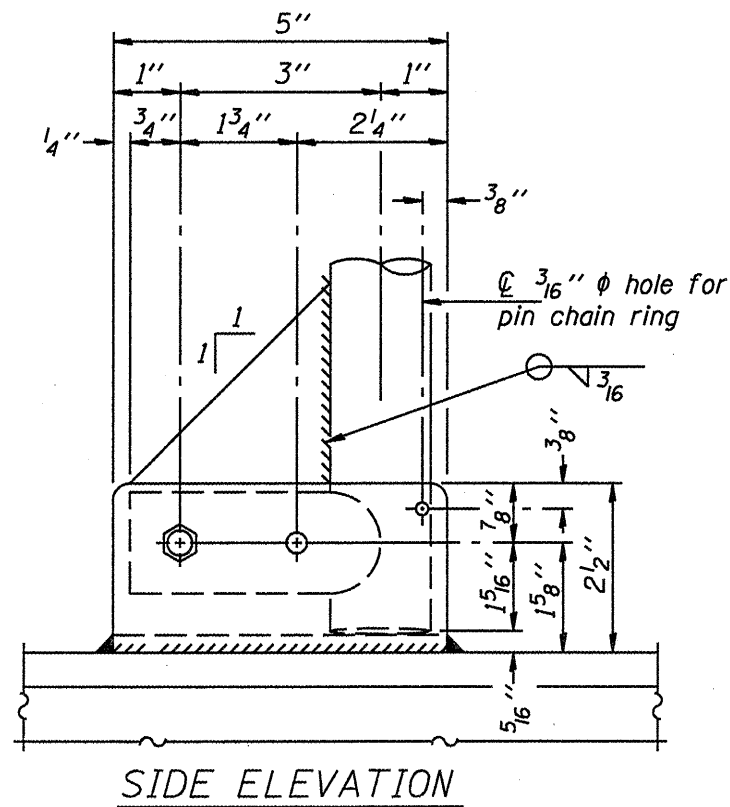
BORING NO. 1 H S Qu T
Station 802+17
Offset 81.00ft West of I-57 CL
Ground Surface Elev. 102.74 ft (ft) (ft) (ft) (%)

Description	DEPTH (ft)	BLOW COUNT (S)	UNIFIED SOIL CLASSIFICATION (USC)	MOISTURE CONTENT (%)	Soil Description	DEPTH (ft)	BLOW COUNT (S)	UNIFIED SOIL CLASSIFICATION (USC)	MOISTURE CONTENT (%)
17" asphalt shoulder.					Hard to stiff, damp, gray, CLAY LOAM TILL to SANDY CLAY LOAM TILL, embankment.	7	1.9	B	12
Very soft, damp, gray, CLAY LOAM TILL, embankment.	101.24	8			Very soft, damp, gray, SILTY LOAM TILL, estimated natural ground.	11	3.9	B	12
	106	6				6			
	108	6	2.4	12		7	3.9	B	9
	114	4			Very stiff, damp, gray, CLAY LOAM TILL.	15	3.9	B	9
	117	5	2.2	9					
	121	7	6						
Very soft, damp, gray, SANDY CLAY LOAM TILL, embankment.	93.24	3			Soft, damp, gray, SILTY LOAM TILL.	4			
	100	4	2.3	11		6	1.5	B	13
	106	6				10			
	110	4			Extent of exploration.				
	114	4	2.6	9	Benchmark: Top of concrete of existing sign truss "03-608" "L189.9" West foundation - assumed 100.00' elevation.				
	116	6			"03-608" "L189.9" sign truss for South Bound I-57 exit 190A and 190B.				
Hard to stiff, damp, gray, CLAY LOAM TILL to SANDY CLAY LOAM TILL, embankment.	89.24	4							
	100	6	4.9	10					
	106	4							
	110	6	4.8	10					
	116	10							
	122	5							

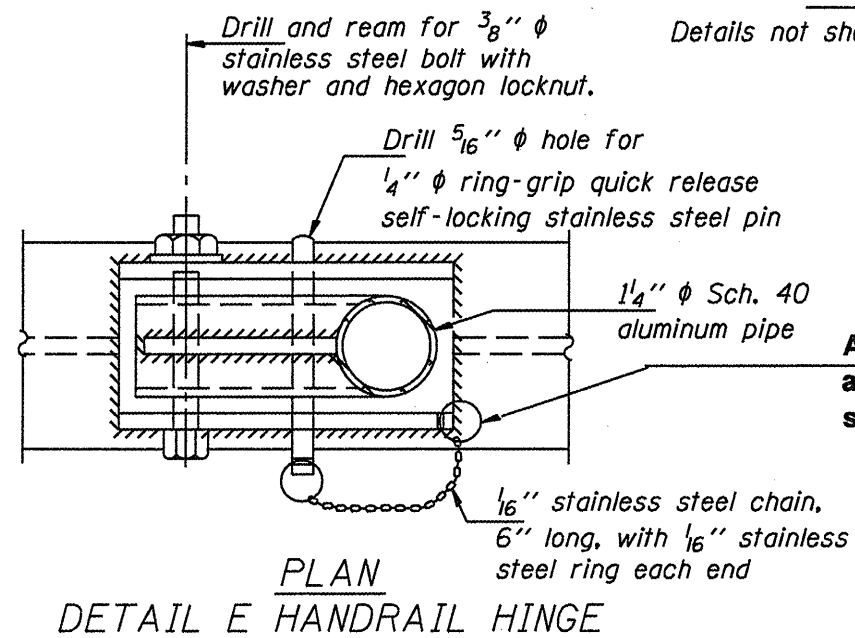
The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)
The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)
EBS, from 137 (Rev. 8-88)

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

STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION



Details not shown same as "ELEVATION" at right.



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

OVERHEAD SIGN STRUCTURES
 HANDRAIL HINGE REPAIR DETAIL