

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

Various Routes
OVD SIN STR REP & REPL 2007-9
Various Counties
Sheet 1 of 50
Contract Number 44933

PLANS FOR PROPOSED FEDERAL AID HIGHWAY

VARIOUS ROUTES
OVD SIN STR REP & REPL 2007-9
VARIOUS COUNTIES
C-60-011-07

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STANDARDS

702001-06
701006-02
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720021-01
701400-02

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

SUBMITTED Nov. 8 2006
PASSED [Signature]
ENGINEER OF OPERATIONS

Dec. 8 2006
Eric E. Harms
INTERIM ENGINEER OF DESIGN AND ENVIRONMENT

APPROVED December 8 2006
Milton R. Sus P.E.
DIRECTOR DIVISION OF HIGHWAYS

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

CONTRACT NO. 44933

Rev.

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

*Various Routes
OVD SIN STR REP & REPL 2007-9
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Summary of Quantities

CODE NUMBER	PAY ITEM	UNIT	Y002 - 1C 100% STATE TOTAL QUANTITY	URBAN	RURAL
T9990710	REMOVE & REINSTALL WALKWAY	FOOT	200.00	125.50	74.50
T9992300	OVERHEAD SIGN STRUCTURE WALKWAY	FOOT	220.50		220.50
T9992530	REPLACE/TIGHTEN CLIPS PER SIGN	EACH	1.00		1.00
T9992700	REMOVE & REINSTALL SIGN PANEL	SQ FT	1,746.50	1,185.50	561.00
T9995400	FURNISH & INSTALL SADDLE SHIM BLOCK	EACH	12.00		12.00
T9996205	REBUILD CONCRETE FOUNDATION FOR OVERHEAD SIGN STRUCTURE	EACH	1.00		1.00
T9996300	OVERHEAD SIGN SUPPORT GROUT REPAIR	EACH	18.00	18.00	
T9997255	FURNISH & INSTALL INTERNAL TRUSS DAMPER	EACH	3.00		3.00
T9997700	FURNISH & INSTALL SAFETY CHAIN	EACH	8.00	2.00	6.00
T9998815	REPAIR HANDRAIL LOCKING PIN CONNECTION	EACH	16.00		16.00
T9998820	FURNISH & INSTALL HANDRAIL	FOOT	518.00	518.00	
T9998910	FURNISH & INSTALL METAL SCREEN	EACH	12.00	4.00	8.00
T9998995	DISCONNECT/RECONNECT ELECTRIC SERVICE	EACH	8.00	3.00	5.00
X0324397	RELOCATE ELECTRIC SERVICE	EACH	3.00		3.00
67100100	MOBILIZATION	L SUM	1.00	0.50	0.50
70101700	TRAFFIC CONTROL & PROTECTION	L SUM	1.00	0.70	0.30
73300200	OVERHEAD SIGN STRUCTURE-SPAN, TYPE II-A	FOOT	338.00	234.00	104.00
73302170	OVERHEAD SIGN STRUCTURE-CANTILEVER, TYPE II-C-A (3' - 0" X 5' - 6")	FOOT	30.00		30.00
73400200	DRILLED SHAFT CONCRETE FOUNDATION	CU YD	61.20		61.20

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

Schedule of Quantities

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PAY ITEM	UNIT	Y002 - 1C 100% STATE TOTAL QUANTITY	DISTRICT 1	DISTRICT 2	DISTRICT 6	DISTRICT 8
REMOVE & REINSTALL WALKWAY	FOOT	200.00		15.50	59.00	125.50
OVERHEAD SIGN STRUCTURE WALKWAY	FOOT	220.50		220.50		
REPLACE/TIGHTEN CLIP PER SIGN	EACH	1.00			1.00	
REMOVE & REINSTALL SIGN PANEL	SQ FT	1,746.50		93.00	468.00	1,185.50
FURNISH & INSTALL SADDLE SHIM BLOCK	EACH	12.00		12.00		
REBUILD CONCRETE FOUNDATION FOR OVERHEAD SIGN STRUCTURE	EACH	1.00		1.00		
OVERHEAD SIGN SUPPORT GROUT REPAIR	EACH	18.00	14.00			4.00
FURNISH & INSTALL INTERNAL TRUSS DAMPER	EACH	3.00		3.00		
FURNISH & INSTALL SAFETY CHAIN	EACH	8.00		4.00	2.00	2.00
REPAIR HANDRAIL LOCKING PIN CONNECTION	EACH	16.00		10.00	6.00	
FURNISH & INSTALL HANDRAIL	FOOT	518.00	518.00			
FURNISH & INSTALL METAL SCREEN	EACH	12.00			4.00	8.00
DISCONNECT/RECONNECT ELECTRIC SERVICE	EACH	8.00		4.00	1.00	3.00
RELOCATE ELECTRIC SERVICE	EACH	3.00		3.00		
MOBILIZATION	L SUM	1.00	0.25	0.25	0.25	0.25
TRAFFIC CONTROL & PROTECTION	L SUM	1.00	0.50	0.20	0.10	0.20
OVERHEAD SIGN STRUCTURE-SPAN TYPE II-A	FOOT	338.00			104.00	234.00

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District 1
Schedule of Locations for Truss Repair & Replacement

Location No.:	1-01	State I.D. No.:	1C016I290R018.8 (CLE-1)P2		
County:	Cook	Route:	I-290	M.P.:	18.8
		Direction:	EB		
Description of Work	Unit	Quantity			
OVERHEAD SIGN SUPPORT GROUT REPAIR	Each	1.00			
FURNISH & INSTALL HANDRAIL	Foot	19.00			
This work shall be completed during District 1 night-time hours.					

Location No.:	1-02	State I.D. No.:	1S016I290R020.0 (TRE-3)O4		
County:	Cook	Route:	I-290	M.P.:	20
		Direction:	EB		
Description of Work	Unit	Quantity			
OVERHEAD SIGN SUPPORT GROUT REPAIR	Each	2.00			
FURNISH & INSTALL HANDRAIL	Foot	47.00			
This work shall be completed during District 1 night-time hours.					

Location No.:	1-03	State I.D. No.:	1C016I290R021.0 (CLE-2)N2		
County:	Cook	Route:	I-290	M.P.:	21
		Direction:	EB		
Description of Work	Unit	Quantity			
OVERHEAD SIGN SUPPORT GROUT REPAIR	Each	1.00			
FURNISH & INSTALL HANDRAIL	Foot	21.50			
This work shall be completed during District 1 night-time hours.					

Location No.:	1-04	State I.D. No.:	1C016I290R023.4 (C-8)L4		
County:	Cook	Route:	I-290	M.P.:	23.4
		Direction:	EB		
Description of Work	Unit	Quantity			
FURNISH & INSTALL HANDRAIL	Foot	24.00			
This work shall be completed during District 1 night-time hours.					

Location No.:	1-05	State I.D. No.:	1C016I290R027.3-0 (CLE-2)H2		
County:	Cook	Route:	I-290	M.P.:	27.3
		Direction:	EB		
Description of Work	Unit	Quantity			
FURNISH & INSTALL HANDRAIL	Foot	24.00			
This work shall be completed during District 1 night-time hours.					

Location No.:	1-06	State I.D. No.:	1C016I290R028.4 (CLE-1)H8		
County:	Cook	Route:	I-290	M.P.:	28.4
		Direction:	EB		
Description of Work	Unit	Quantity			
FURNISH & INSTALL HANDRAIL	Foot	35.50			
This work shall be completed during District 1 night-time hours.					

Location No.:	1-07	State I.D. No.:	1S016I290L014.2 (TW-4)X1		
County:	Cook	Route:	I-290	M.P.:	14.2
		Direction:	WB		
Description of Work	Unit	Quantity			
OVERHEAD SIGN SUPPORT GROUT REPAIR	Each	2.00			
FURNISH & INSTALL HANDRAIL	Foot	63.00			
This work shall be completed during District 1 night-time hours.					

Location No.:	1-08	State I.D. No.:	1S016I290L018.0 (TRW-2)R1		
County:	Cook	Route:	I-290	M.P.:	18.0
		Direction:	WB		
Description of Work	Unit	Quantity			
OVERHEAD SIGN SUPPORT GROUT REPAIR	Each	2.00			
FURNISH & INSTALL HANDRAIL	Foot	78.00			
This work shall be completed during District 1 night-time hours.					

Location No.:	1-09	State I.D. No.:	1C016I290L019.4 (CLW-5)P3		
County:	Cook	Route:	I-290	M.P.:	19.4
		Direction:	WB		
Description of Work	Unit	Quantity			
OVERHEAD SIGN SUPPORT GROUT REPAIR	Each	1.00			
FURNISH & INSTALL HANDRAIL	Foot	19.00			
This work shall be completed during District 1 night-time hours.					

Location No.:	1-10	State I.D. No.:	1C016I290L019.8 (CLW-4)O1		
County:	Cook	Route:	I-290	M.P.:	19.8
		Direction:	WB		
Description of Work	Unit	Quantity			
OVERHEAD SIGN SUPPORT GROUT REPAIR	Each	1.00			
FURNISH & INSTALL HANDRAIL	Foot	17.50			
This work shall be completed during District 1 night-time hours.					

Location No.:	1-11	State I.D. No.:	1S016I290L020.7 (TRW-1)N3		
County:	Cook	Route:	I-290	M.P.:	20.7
		Direction:	WB		
Description of Work	Unit	Quantity			
OVERHEAD SIGN SUPPORT GROUT REPAIR	Each	2.00			
FURNISH & INSTALL HANDRAIL	Foot	43.00			
This work shall be completed during District 1 night-time hours.					

Location No.:	1-12	State I.D. No.:	1S016I290L023.0 (TRW-9)L1		
County:	Cook	Route:	I-290	M.P.:	23
		Direction:	WB		
Description of Work	Unit	Quantity			
FURNISH & INSTALL HANDRAIL	Foot	56.50			
This work shall be completed during District 1 night-time hours.					

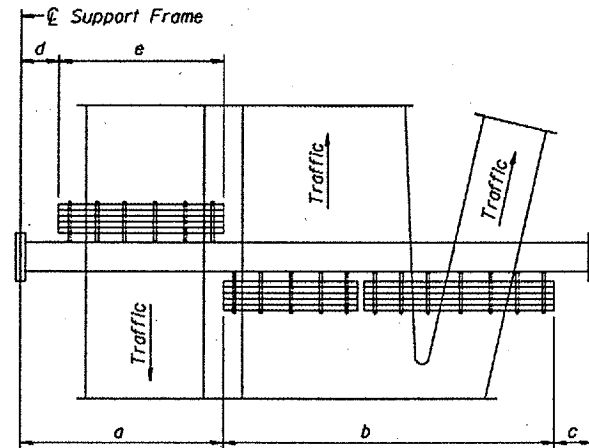
Location No.:	1-13	State I.D. No.:	1C016I290L023.0 (CLW-3)K7		
County:	Cook	Route:	I-290	M.P.:	23
		Direction:	WB		
Description of Work	Unit	Quantity			
FURNISH & INSTALL HANDRAIL	Foot	24.00			
This work shall be completed during District 1 night-time hours.					

Location No.:	1-14	State I.D. No.:	1C016I290L027.6 (CLW-2)H7		
County:	Cook	Route:	I-290	M.P.:	27.6
		Direction:	WB		
Description of Work	Unit	Quantity			
OVERHEAD SIGN SUPPORT GROUT REPAIR	Each	1.00			
FURNISH & INSTALL HANDRAIL	Foot	23.00			
This work shall be completed during District 1 night-time hours.					

Location No.:	1-15	State I.D. No.:	1C016I290L028.7 (CLW-1)H1		
County:	Cook	Route:	I-290	M.P.:	28.7
		Direction:	WB		
Description of Work	Unit	Quantity			
OVERHEAD SIGN SUPPORT GROUT REPAIR	Each	1.00			
FURNISH & INSTALL HANDRAIL	Foot	23.00			
This work shall be completed during District 1 night-time hours.					

Location No.:	1-16	State I.D. No.:	1S016I090L079.6 (TW-7)		
County:	Cook	Route:	I-90	M.P.:	79.6
		Direction:	WB		
Description of Work	Unit	Quantity			
FURNISH & INSTALL SIGN BRACKET	Each	8.00			
This work shall be completed during District 1 night-time hours.					

Location No.:	1-17	State I.D. No.:	1S016I090L079.7 (TW-8)E5		
County:	Cook	Route:	I-90	M.P.:	79.7
		Direction:	WB		
Description of Work	Unit	Quantity			
FURNISH & INSTALL SIGN BRACKET	Each	8.00			
This work shall be completed during District 1 night-time hours.					



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

BRACKET TABLE

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

Notes:

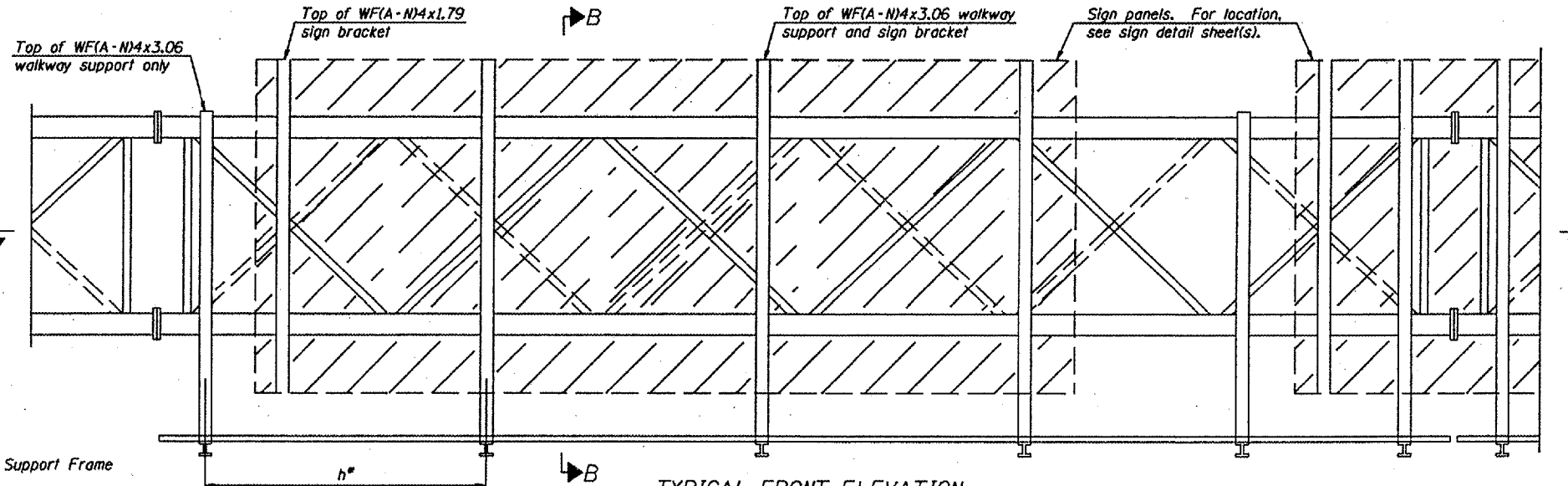
- Space walkway brackets WF(A-N)4x3.06 and sign brackets WF(A-N)4x1.79 for efficiency and within limits shown:
- f = 12" maximum, 4" minimum (End of sign to center of nearest bracket)
- g = 12" maximum, 4" minimum (End of walkway grating to center of nearest support bracket)
- h = 6'-0" maximum (center to center of sign and/or walkway support brackets, WF(A-N)4x1.79 or WF(A-N)4x3.06)
- k = 2" maximum gap between adjacent walkway grating sections and handrail ends
- If walkway bracket at safety chain location is behind sign, add angle to bracket, see Alternate Safety Chain Attachment on Base Sheet OS-A-11.

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

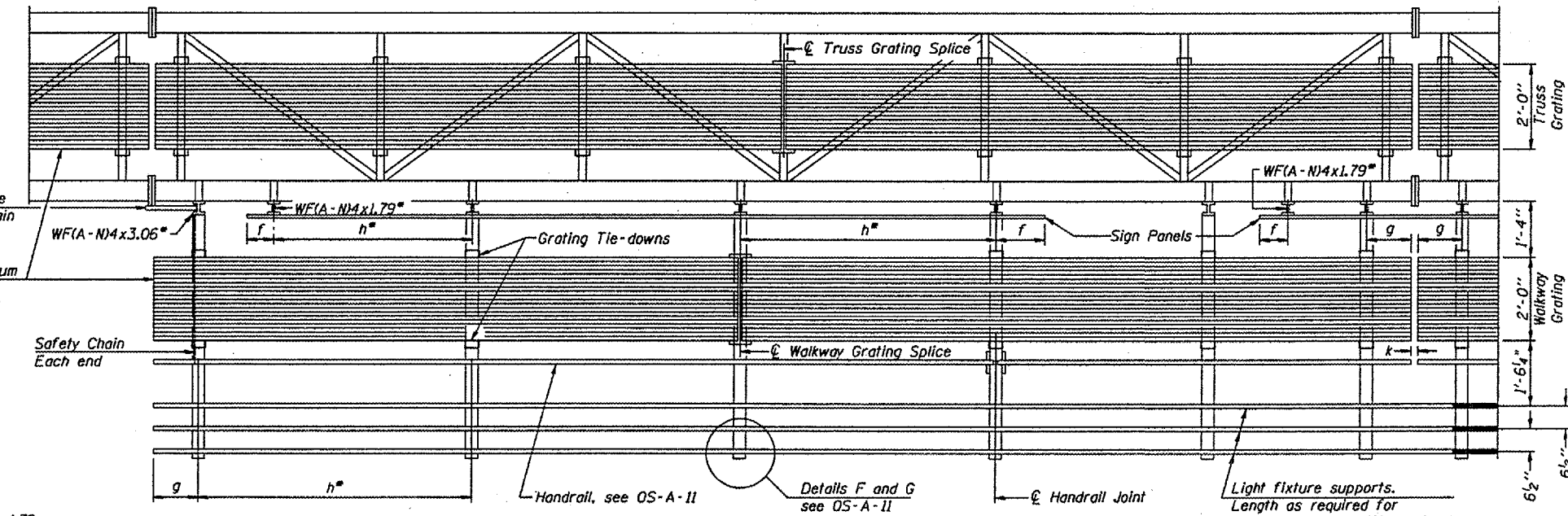
DESIGNED	-
CHECKED	-
DRAWN	-
CHECKED	-

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

NUMBER	REVISION	DATE



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".

Structure Number	Station	a	b	c	d	e	Walkway Grating and Handrail Lengths
ISO161290R020.0	16 + 14.25 EB	N/A	N/A	N/A	N/A	N/A	47' - 0"*
ISO161290L014.2	907 + 35 WB	N/A	N/A	N/A	N/A	N/A	63' - 0"*
ISO161290L018.0	169 + 68.75 WB	N/A	N/A	N/A	N/A	N/A	78' - 0"*
ISO161290L020.7	35 + 23.25 WB	N/A	N/A	N/A	N/A	N/A	43' - 0"*
ISO161290L023.0	43 + 00 NB	N/A	N/A	N/A	N/A	N/A	56' - 6"*

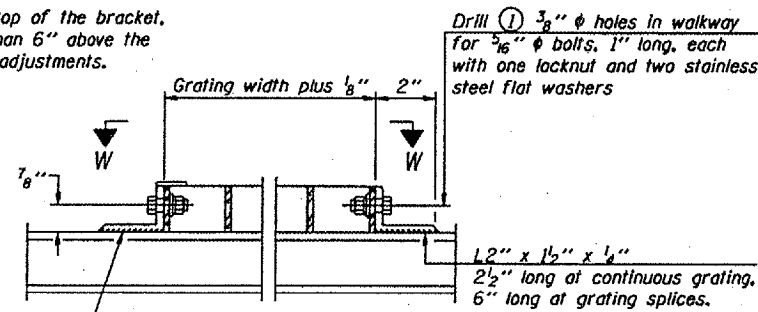
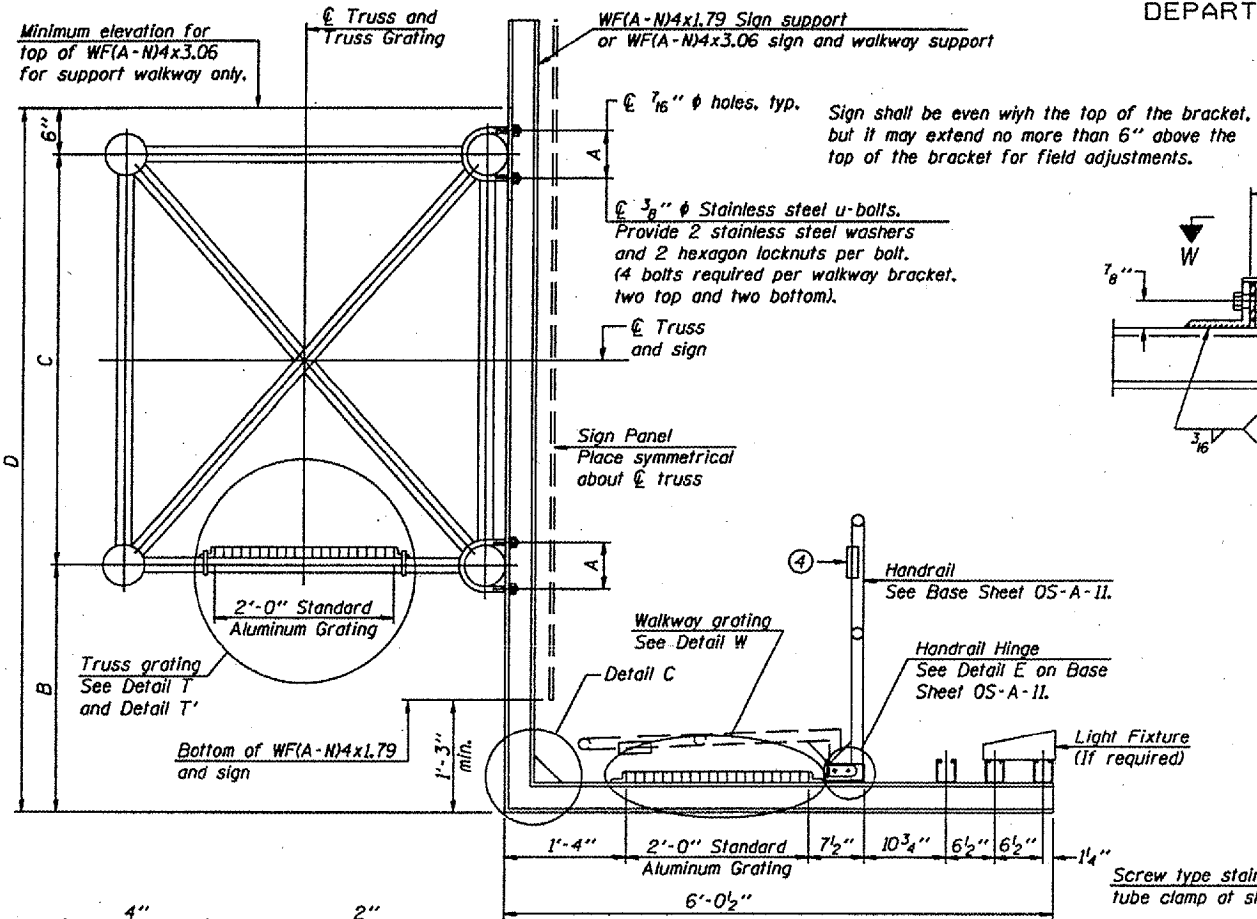
*Lengths shown are for the replacement of existing handrails only. Stainless steel pins, bolts, washers and nuts shall be used.

**OVERHEAD SIGN STRUCTURES
ALUMINUM WALKWAY DETAILS**

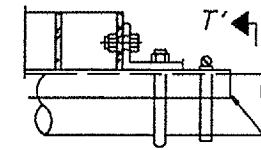
District 1
Handrail Replacement for
Vierendeel Sign
Structure-Span

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

Various Routes
OVD SIN STR REP & REPL 2007-9
Various Counties
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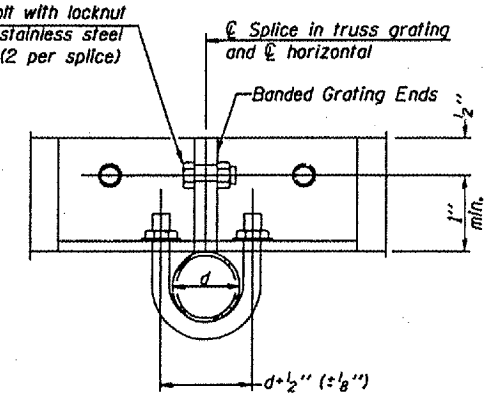


DETAIL W
(Walkway grating)

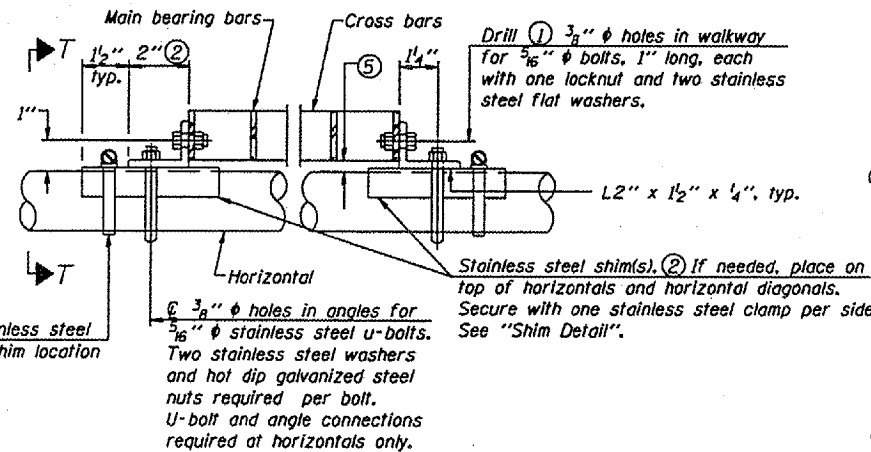


DETAIL T'

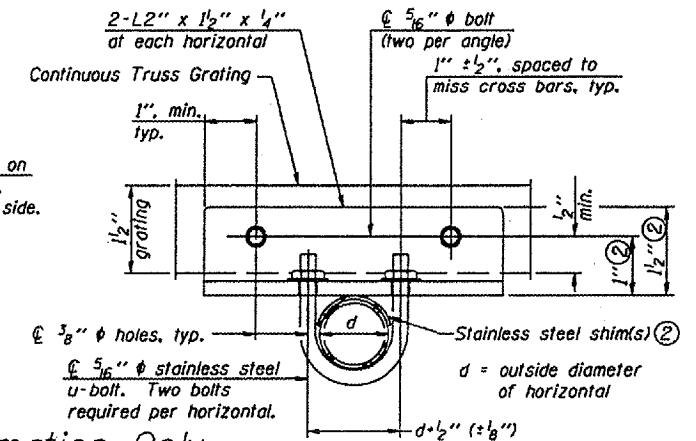
(Truss grating splice)
Details not shown same as Detail T.
Alternate materials may be used subject to the Engineer's review and approval.



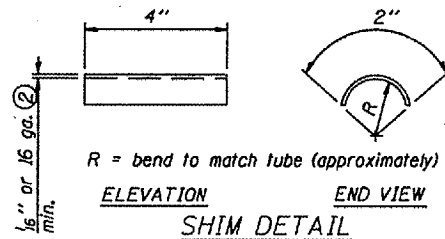
SECTION T'-T'



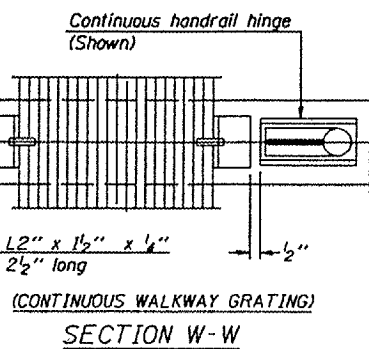
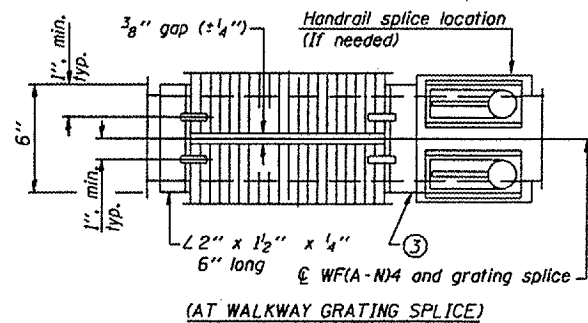
DETAIL T
(Continuous Truss grating)



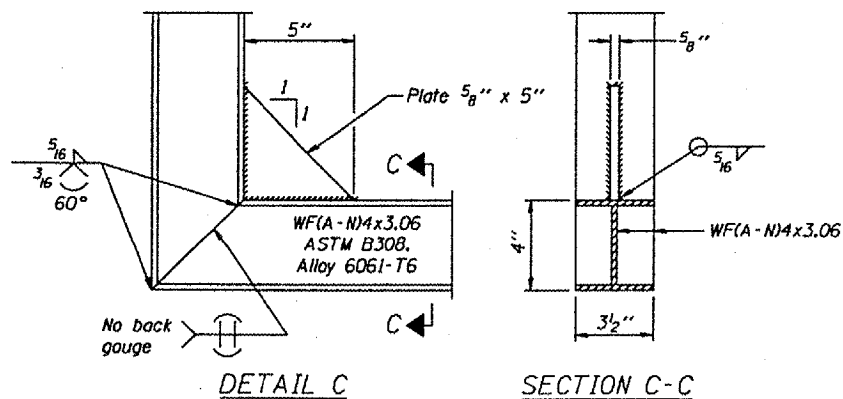
SECTION T-T



SECTION B-B



SECTION C-C



This Sheet For Information Only
SPECIFICATIONS FOR STANDARD ALUMINUM GRATING

Main Bearing Bars shall be 3/16" x 1/2" on 1 3/16" centers and conform to ASTM B221 Alloy 6061-T6.
Cross bars shall be 3/16" x 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 3/16" centers.
Cross bars shall conform to ASTM B221 Alloy 6063-T5 or T-42 and spaced on 4" centers.

Structure Number	Station	A	B	C	D

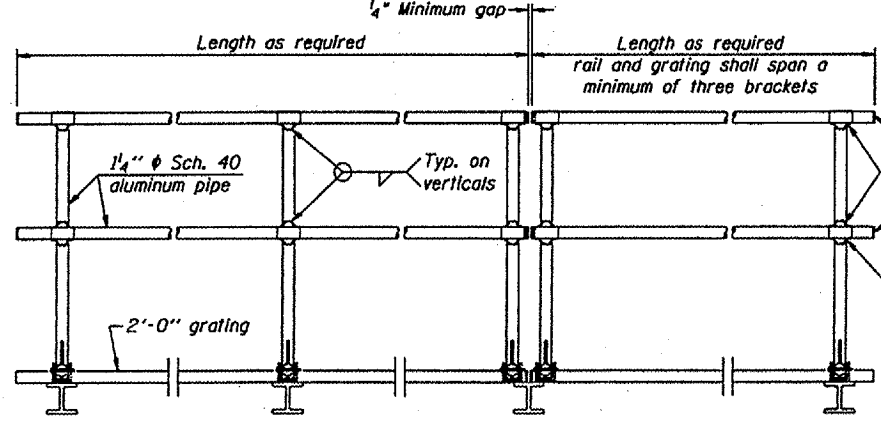
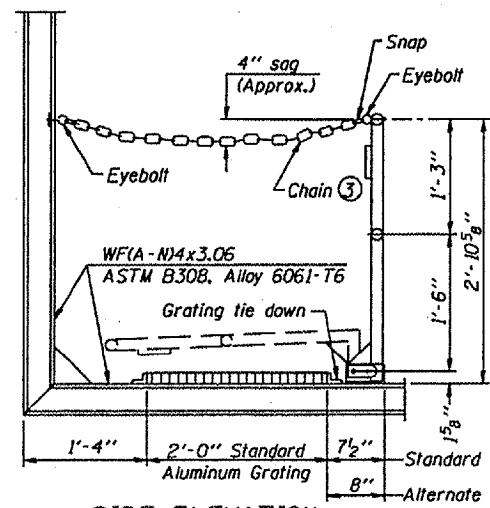
- Drilling holes in grating may be done in shop or field, based on Contractor's preference and subject to accurate alignment.
- Stainless steel shims shall be placed as shown in Detail T if needed to compensate for alignment variations between horizontal and diagonal pipes beyond adjustment provided 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 1
Handrail Replacement for
Vierendeel Sign
Structures

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

NUMBER	REVISION	DATE



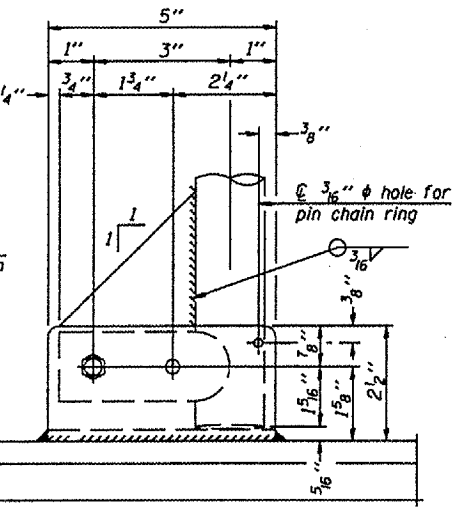
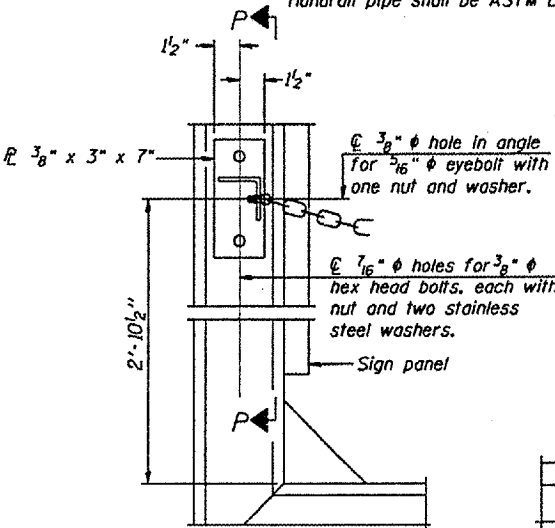
① Install standard force-fit end caps or weld 3/8" end plates with 1/8" c.f.w. and grind smooth. (All rail ends)

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

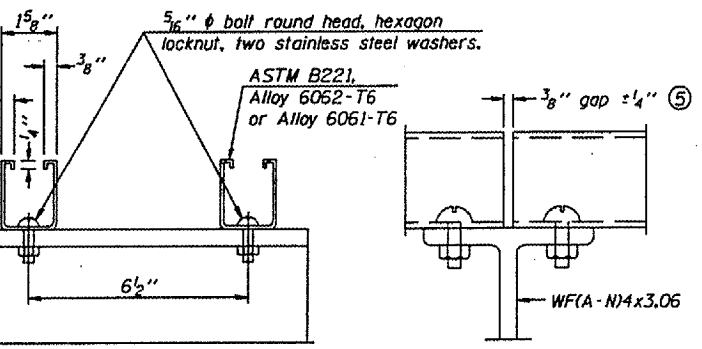
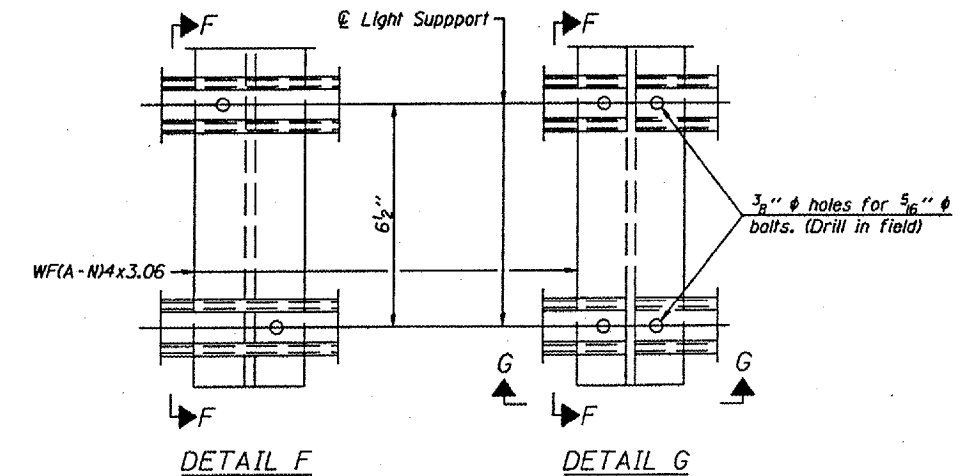
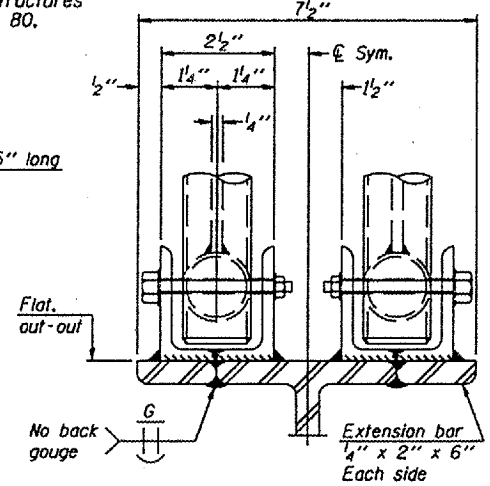
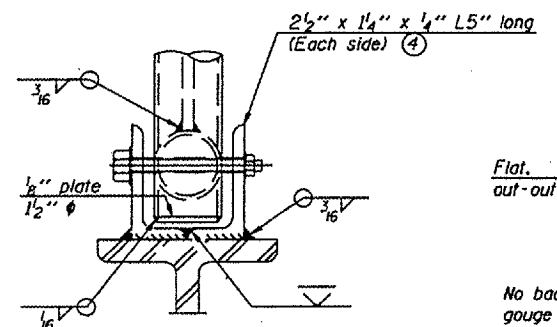
② Horizontal handrail member shall be continuous thru fitting. Provide 1/16" φ hole in fitting for 3/8" φ bolt. Field drill 1/16" φ hole in horizontal rail member. Provide locknut and two stainless steel washers for bolt. (Use 5/16" eyebolts in 1/16" φ holes on top rail at ends only.)

HANDRAIL DETAILS

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



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

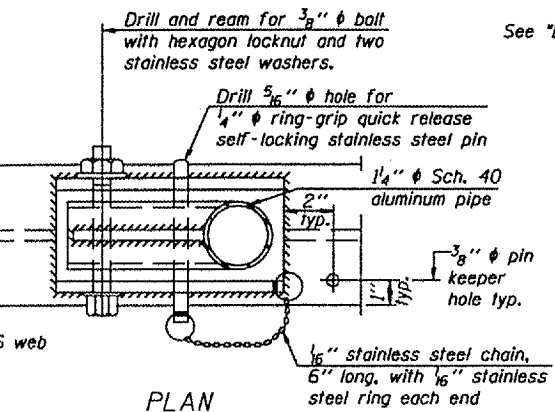
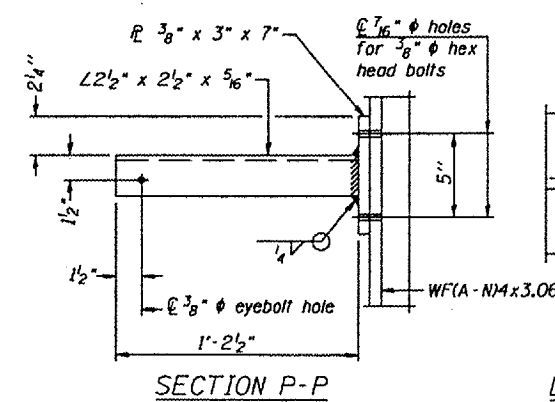


LIGHTING FIXTURE MOUNTS (IF REQUIRED)

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

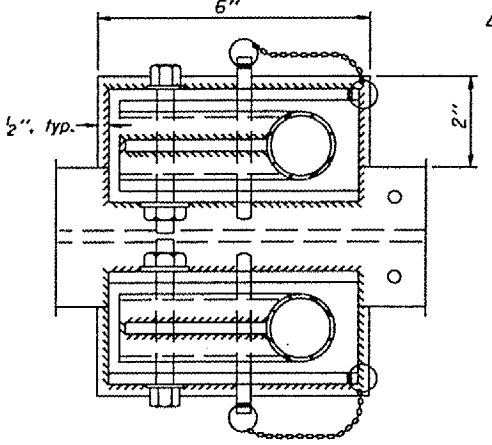
ALTERNATE SAFETY CHAIN ATTACHMENT

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



FRONT ELEVATION

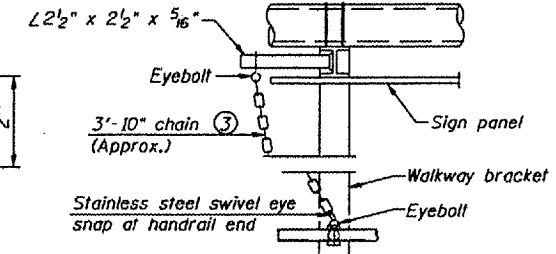
See "Elevation" at right for dimensions.



PLAN AT HANDRAIL JOINT

Details not shown same as "PLAN"

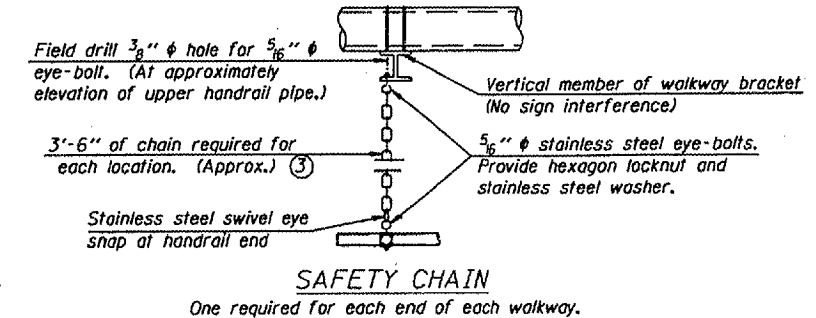
ELEVATION AT HANDRAIL JOINT



ALTERNATE SAFETY CHAIN ATTACHMENT

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

- ③ 3/16" Type 304L stainless steel chain, approximately 12 links per foot.
- ④ Extrusions may be used in lieu of the details shown, with approval of the Engineer.



SAFETY CHAIN

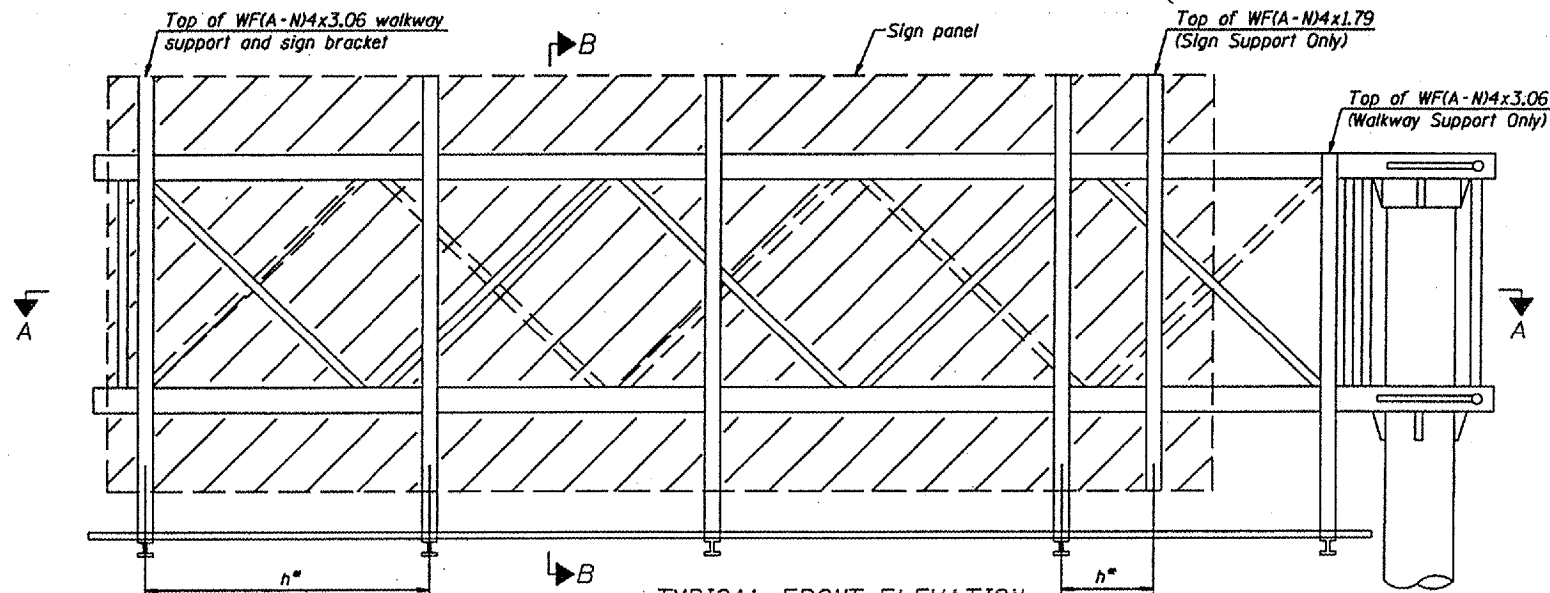
One required for each end of each walkway.

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

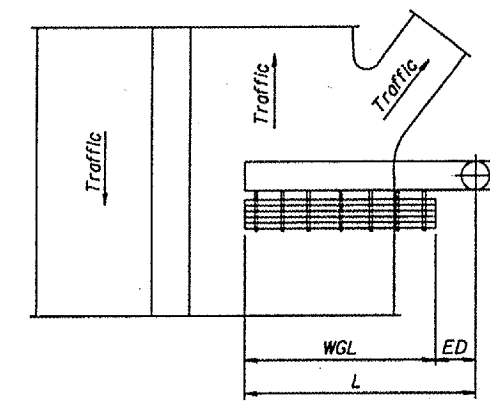
NUMBER	REVISION	DATE

OVERHEAD SIGN STRUCTURES
ALUMINUM HANDRAIL DETAILS

District 1
Handrail Replacement for
Vierendeel Sign
Structures

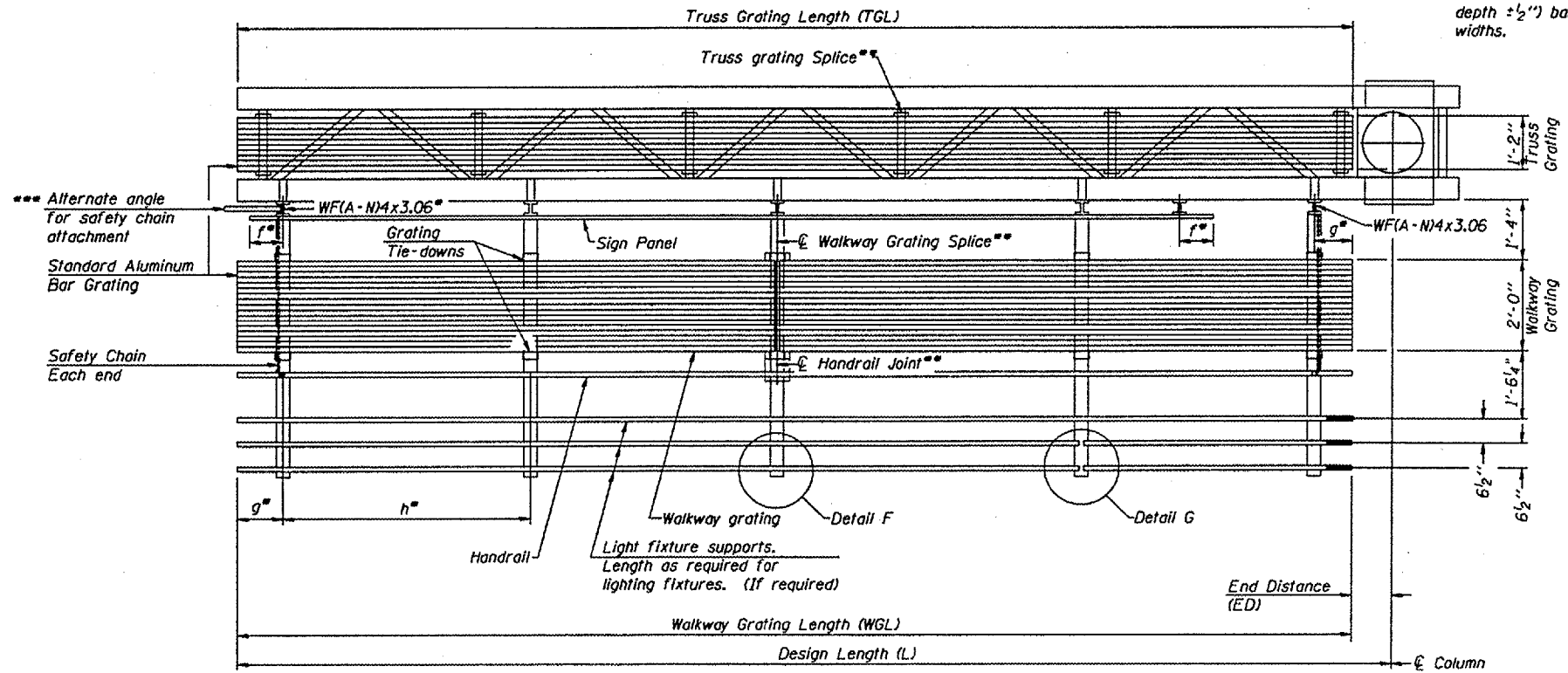


TYPICAL FRONT ELEVATION
With lights and handrail omitted for clarity.



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

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



SECTION A-A

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

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

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

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

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

- Notes:
- Space walkway brackets 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 to center of nearest bracket)
 - h = 6'-0" maximum (center to center sign and/or walkway support brackets, WFA-N4x1.79 or WFA-N4x3.06)
 - *** If walkway bracket at safety chain location is behind sign, add angle to bracket. See alternate safety chain attachment on base sheet OSC-A-8.
- For details of sign placement, sign/walkway brackets, truss and walkway gratings, grating splices and Section B-B, see Base Sheet OSC-A-7.
For details of handrail, handrail joint, safety chain and Details F and G, see Base Sheet OSC-A-8.

BRACKET TABLE

WFA-N4x1.79 or WFA-N4x3.06 ASTM B308, Alloy 6061-T6		Number Brackets Required
Sign Width Greater Than	Sign Width Less Than or Equal To	
8'-0"	8'-0"	2
14'-0"	14'-0"	3
20'-0"	20'-0"	4
26'-0"	26'-0"	5
32'-0"	32'-0"	6

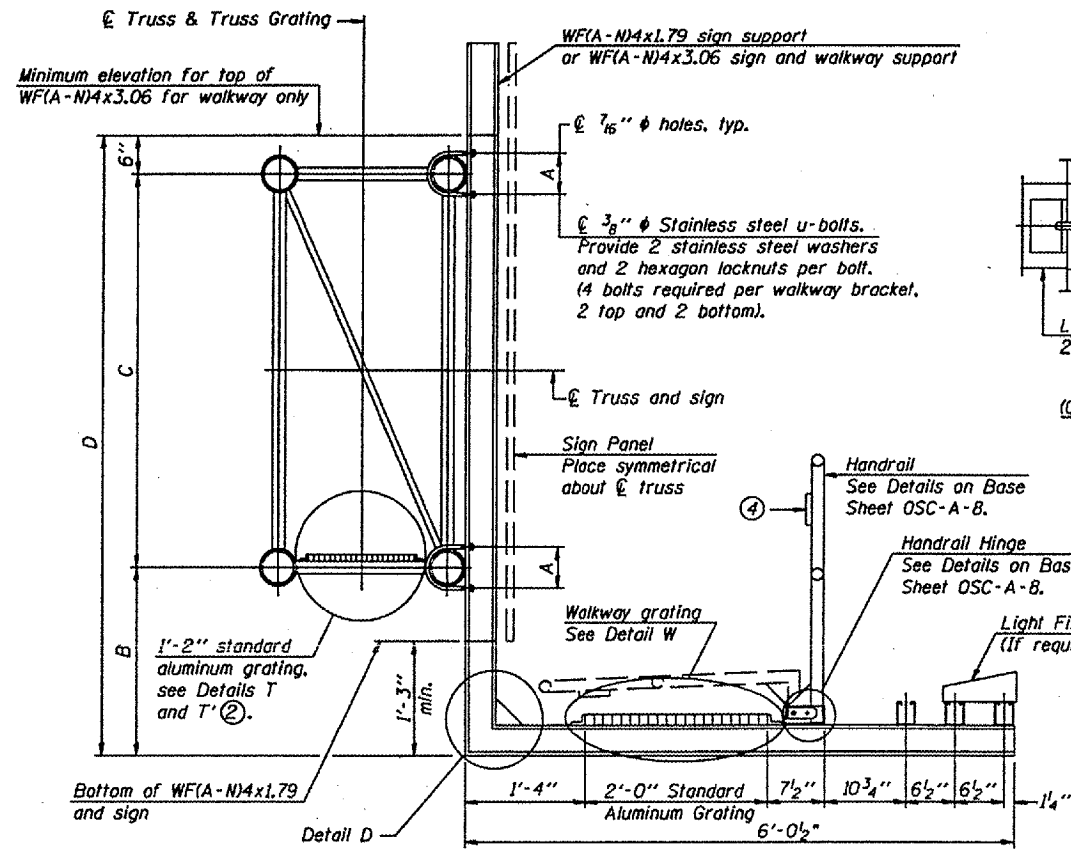
CANTILEVER SIGN STRUCTURES
ALUMINUM WALKWAY DETAILS
ALUMINUM TRUSS & STEEL POST

District 1
Handrail Replacement for
Vierendeel Sign
Structure-Cantilever

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

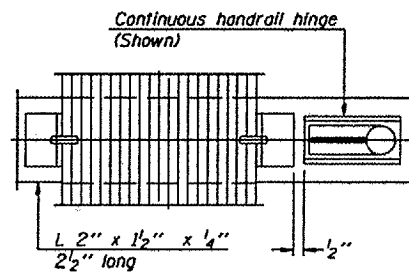
OSC-A-6 7/01/2006

NUMBER	REVISION	DATE

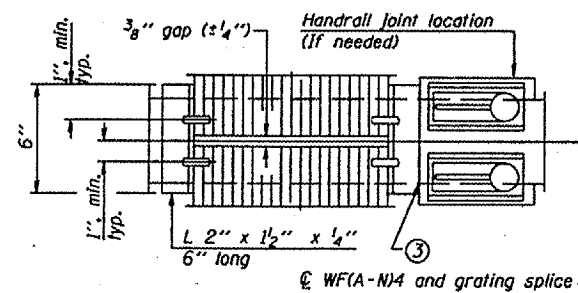


SECTION B-B

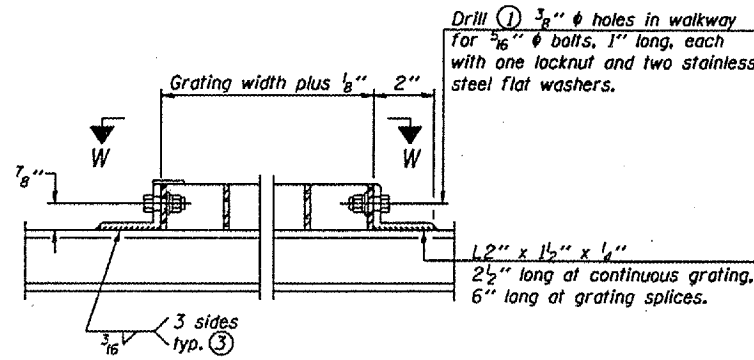
Sign shall be even with the top of the bracket, but it may extend no more than 6" above the top of the bracket for field adjustments.



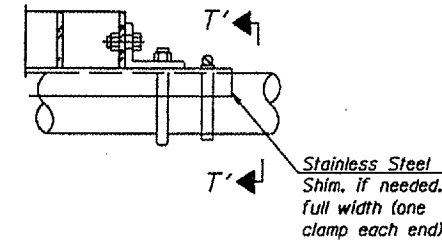
(CONTINUOUS WALKWAY GRATING)



SECTION W-W

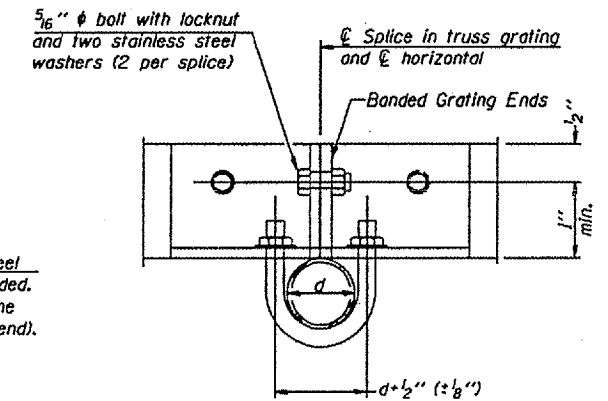


DETAIL W
(Walkway grating)

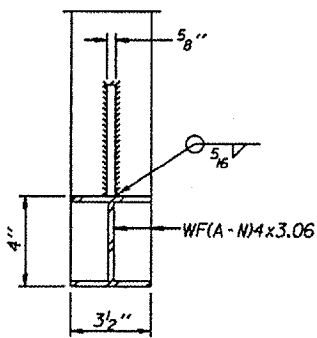


DETAIL T'

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

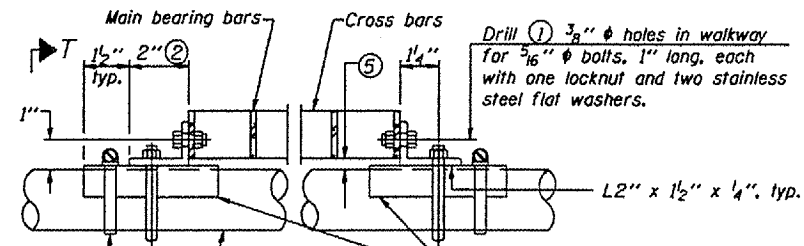


SECTION T'-T'

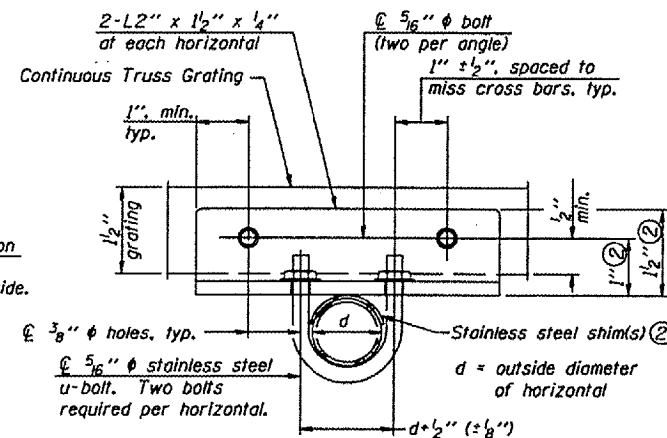


SECTION D-D

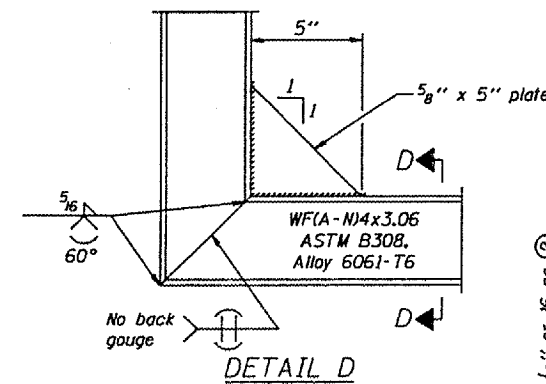
Screw type stainless steel tube clamp at shim location



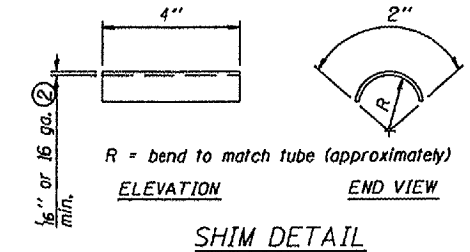
DETAIL T
(Continuous Truss grating)



SECTION T-T



DETAIL D



SHIM DETAIL

This Sheet For Information Only

NUMBER	REVISION	DATE

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

OSC-A-7

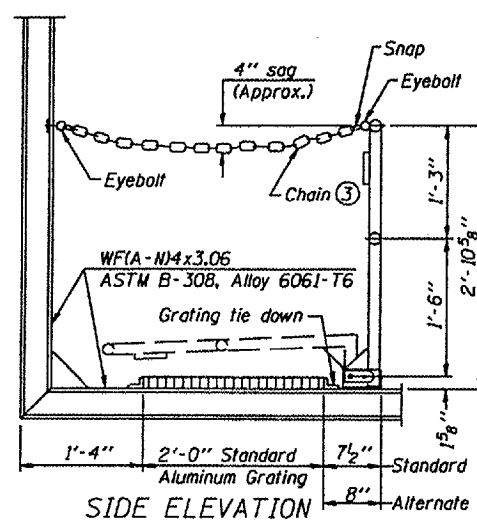
7/01/2006

- 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 WFA(N)4 and 1/4" extension bars. (See Base Sheet OSC-A-B.)
- 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.

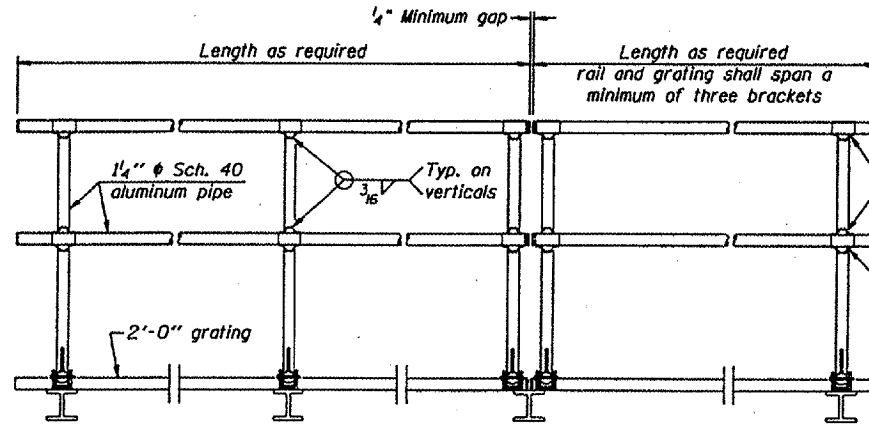
Structure Number	Station	A	B	C	D

CANTILEVER SIGN STRUCTURES
WALKWAY DETAILS
ALUMINUM TRUSS & STEEL POST

District 1
Handrail Replacement for
Vierendeel Sign
Structure-Cantilever

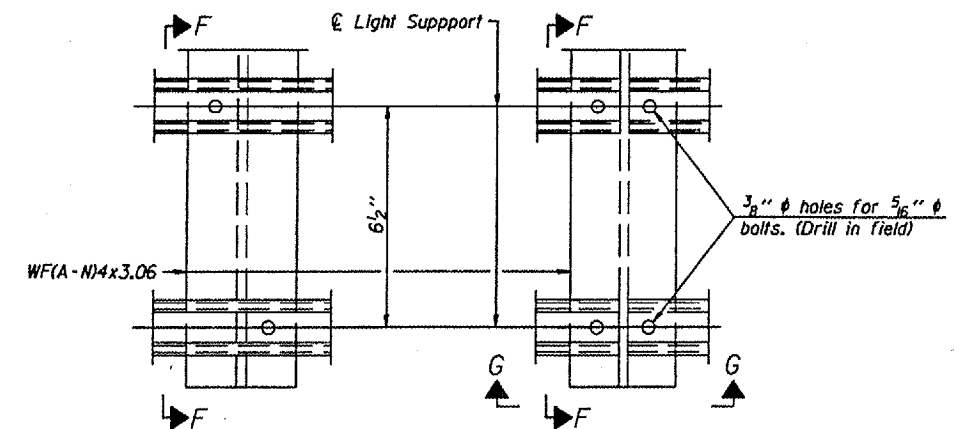


SIDE ELEVATION
(Showing Safety Chain W/O Sign)



FRONT ELEVATION

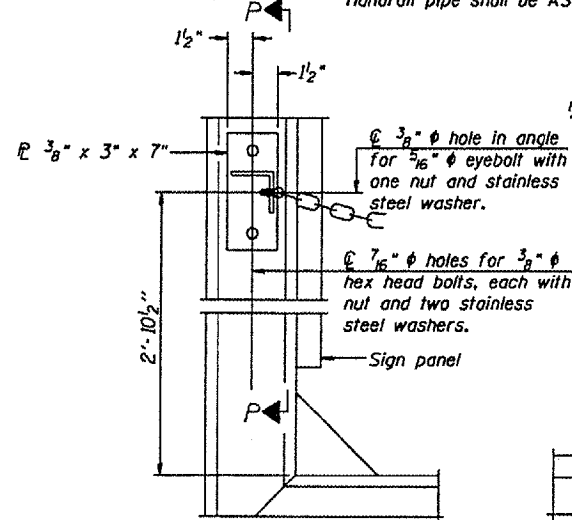
- ① Install standard force-fit end caps or weld 1/8" end plates with 1/8" c.f.w. and grind smooth. (All rail ends)
- ② Horizontal handrail member shall be continuous thru fitting. Provide 1/16" hole in fitting for 3/8" bolt. Field drill 1/16" hole in horizontal rail member. Provide locknut and two stainless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



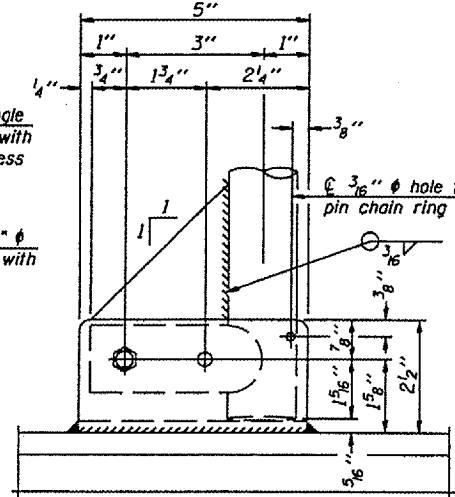
DETAIL F

DETAIL G

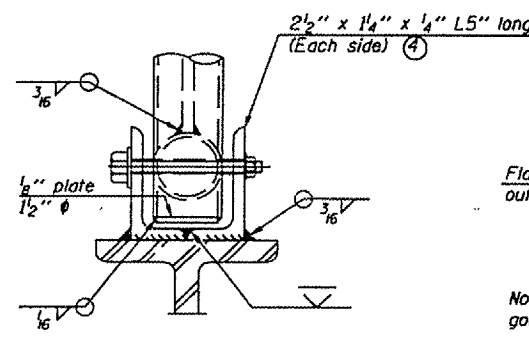
HANDRAIL DETAILS
Handrail pipe shall be ASTM B241 or B429, Alloy 6063-T6 or Alloy 6061-T6.



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



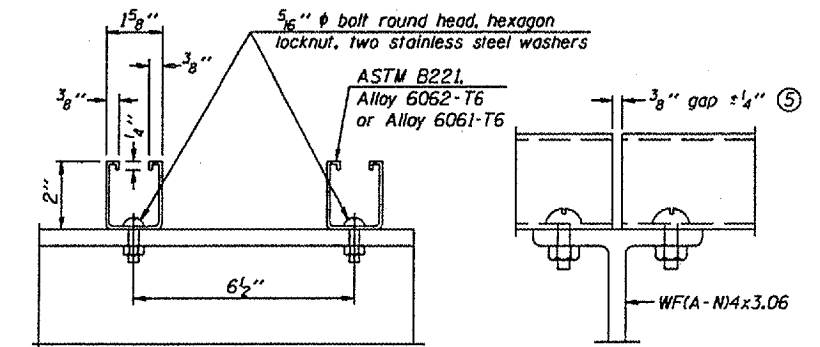
SIDE ELEVATION



FRONT ELEVATION

Details not shown same as "ELEVATION" at right.

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

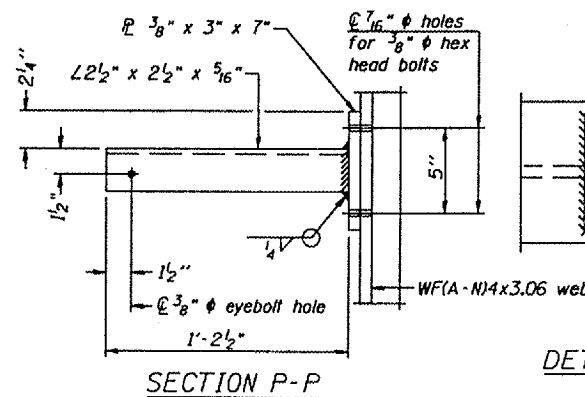


SECTION F-F

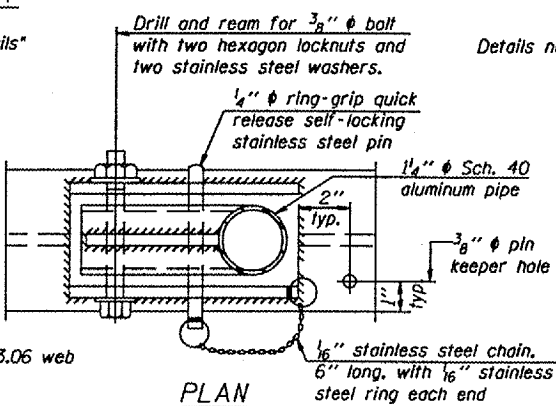
SECTION G-G

LIGHTING FIXTURE MOUNTS (IF REQUIRED)

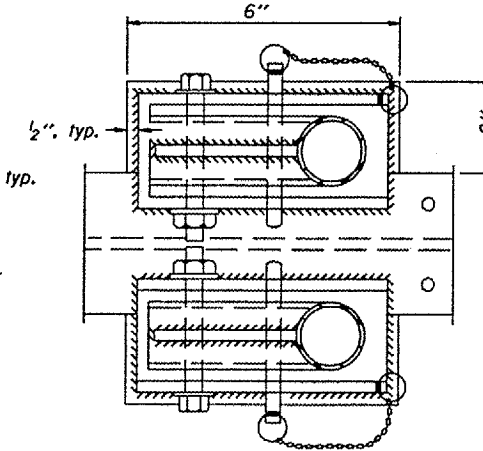
- ⑤ Field cut ends of light support channels shall be free of burrs or hazardous projections and coated with zinc-rich primer or equivalent.



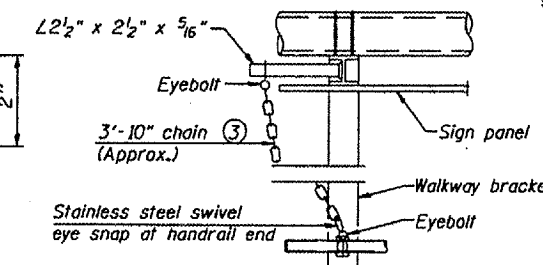
SECTION P-P



PLAN
DETAIL E HANDRAIL HINGE



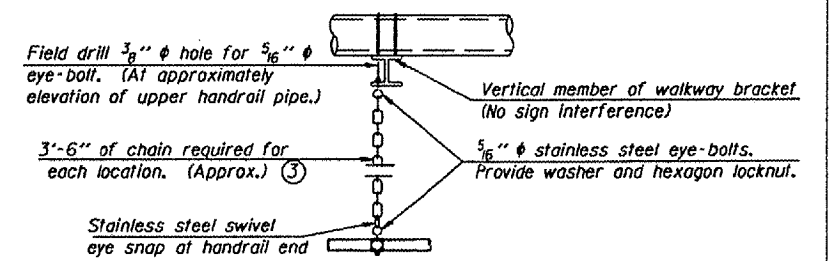
PLAN AT HANDRAIL JOINT
Details not shown same as "PLAN"



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

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

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



SAFETY CHAIN

One required for each end of each walkway.

DESIGNED -	20
CHECKED -	EXAMINED
DRAWN -	PASSED
CHECKED -	

NUMBER	REVISION	DATE

CANTILEVER SIGN STRUCTURES
HANDRAIL DETAILS
ALUMINUM TRUSS & STEEL POST

District 1
Handrail Replacement for
Vierendeel Sign
Structure-Cantilever

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

*Various Routes
OVD SIN STR REP & REPL 2007-9
Various Counties
Sheet 14 of 50
Contract Number 44933*

*District 2
Schedule of Locations for Overhead Sign Structure Replacement*

Location No.:	2-01	State I.D. No.:	2C101ABU0R000.0(174)				
County:	Winnebago	Route:	Auburn	M.P.:	0	Direction:	EB
Description of Work	Unit	Quantity					
REMOVE OVERHEAD SIGN STRUCTURE-CANTILEVER	EACH	1.00					
REMOVE & REINSTALL SIGN PANEL	SQ FT	93.00					
REMOVE & REINSTALL WALKWAY	FOOT	15.50					
FURNISH & INSTALL SAFETY CHAIN	EACH	2.00					
OVERHEAD SIGN STRUCTURE CANTILEVER TYPE II-C-A	FOOT	30.00					
REPAIR HANDRAIL LOCKING PIN CONNECTION	EACH	4.00					
DISCONNECT / RECONNECT ELECTRIC SERVICE	EACH	1.00					
REBUILD CONCRETE FOUNDATATION FOR OVERHEAD SIGN ST	EACH	1.00					
This sign structure is being completely replaced.							

Location No.:	2-04	State I.D. No.:	2S101U020L018.5				
County:	Winnebago	Route:	US 20	M.P.:	18.5	Direction:	EB
Description of Work	Unit	Quantity					
REMOVE & RE-ERECT OVERHEAD SIGN STRUCTURE-SPAN	EACH	1.00					
STRUCTURAL STEEL SUPPORT OVERHEAD SIGN STRUCTURE	EACH	2.00					
FURNISH & INSTALL SADDLE SHIM BLOCK	EACH	4.00					
FURNISH & INSTALL INTERNAL TRUSS DAMPER	EACH	1.00					
OVERHEAD SIGN STRUCTURE WALKWAY	FOOT	73.50					
DRILL SHAFT CONCRETE FOUNDATION	CU YD	20.40					
REMOVE CONCRETE FOUNDATION OVERHEAD	EACH	2.00					
REPAIR HANDRAIL LOCKING PIN CONNECTION	EACH	2.00					
DISCONNECT / RECONNECT ELECTRIC SERVICE	EACH	1.00					
RELOCATE ELECTRIC SERVICE	EACH	1.00					

Location No.:	2-02	State I.D. No.:	2S101S251R004.6				
County:	Winnebago	Route:	IL 251	M.P.:	4.6	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	73.50					
DRILL SHAFT CONCRETE FOUNDATION	CU YD	20.40					
REMOVE CONCRETE FOUNDATION OVERHEAD	EACH	2.00					
REPAIR HANDRAIL LOCKING PIN CONNECTION	EACH	2.00					
FURNISH & INSTALL SAFETY CHAIN	EACH	2.00					
DISCONNECT / RECONNECT ELECTRIC SERVICE	EACH	1.00					
RELOCATE ELECTRIC SERVICE	EACH	1.00					

Location No.:	2-03	State I.D. No.:	2S101U020L019.0				
County:	Winnebago	Route:	US 20	M.P.:	19	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	73.50					
DRILL SHAFT CONCRETE FOUNDATION	CU YD	20.40					
REMOVE CONCRETE FOUNDATION OVERHEAD	EACH	2.00					
REPAIR HANDRAIL LOCKING PIN CONNECTION	EACH	2.00					
DISCONNECT / RECONNECT ELECTRIC SERVICE	EACH	1.00					
RELOCATE ELECTRIC SERVICE	EACH	1.00					

GENERAL NOTES

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

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

LOADING: 90 M.P.H. WIND VELOCITY

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

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

DESIGN STRESSES:

Field Units
 $f'_c = 3,500$ p.s.i.
 $f_y = 60,000$ p.s.i. (reinforcement)

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

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

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

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

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

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

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

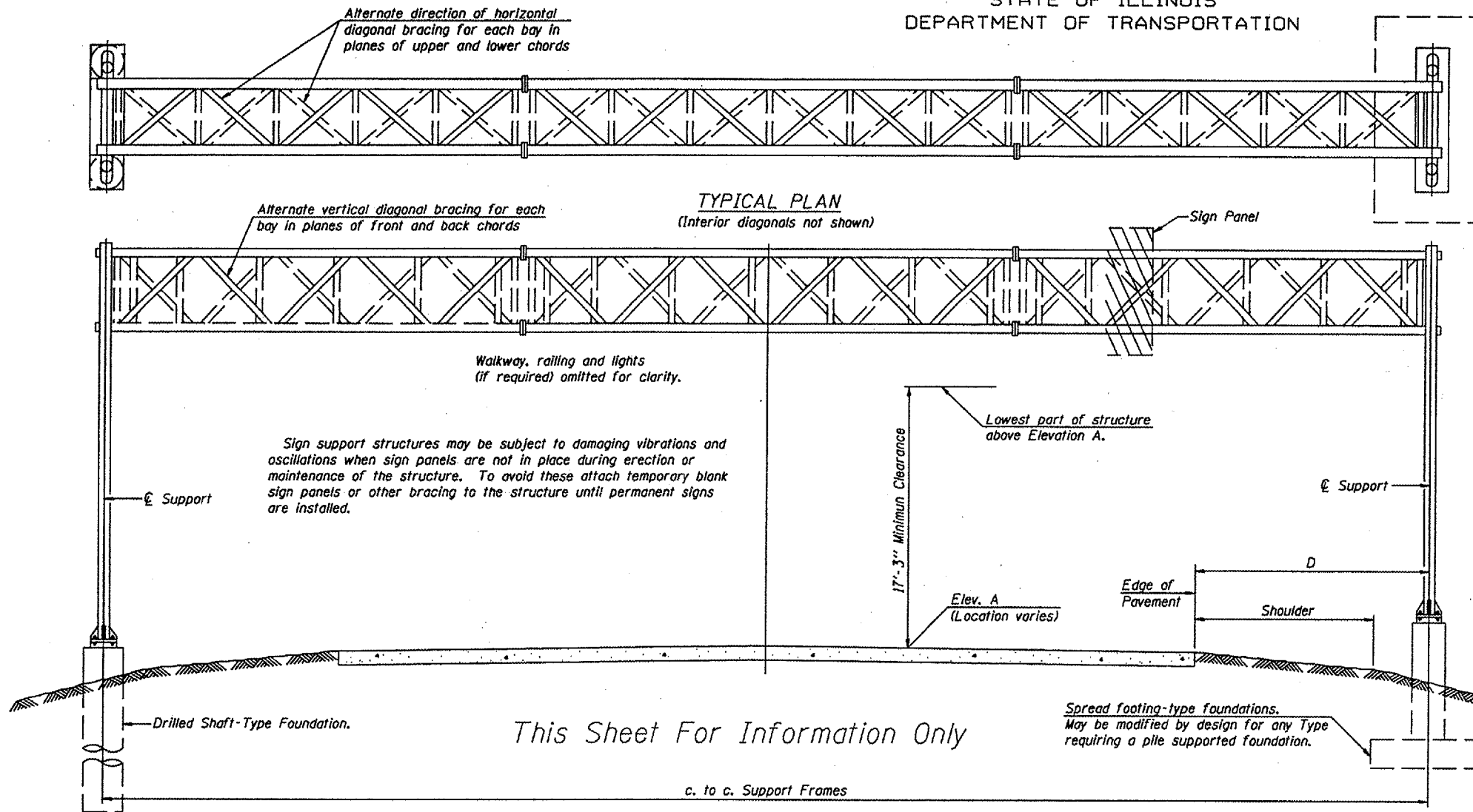
CONCRETE SURFACES: All concrete surfaces above an elevation 6" below the lowest final ground line at each foundation shall be cleaned and coated with Bridge Seal Sealer in accordance with the Standard Specifications.

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.

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

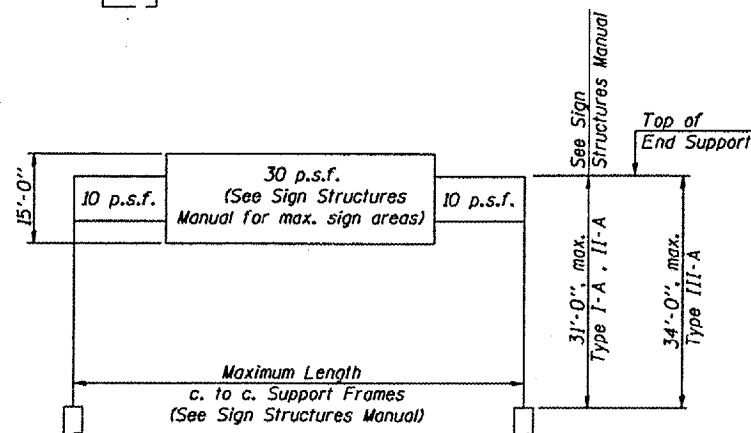
District 2
End Support Replacement



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
2S101S251R004.6	22 + 00	II-A	72' - 0"	737.24	13' - 6"	10' - 0"	357.00
2S101U020L019.0	566 + 00	II-A	72' - 0"	566.80	13' - 6"	10' - 0"	261.00
2S101U020L018.5	543 + 25	II-A	72' - 0"	734.14	13' - 6"	10' - 0"	261.00



DESIGN WIND LOADING DIAGRAM

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

**Looking upstation for structures with signs both sides.
FOUNDATIONS: The contract unit price for "Concrete Foundations" and "Drilled Shaft Concrete Foundations" shall include reinforcement bars complete in place.

TOTAL BILL OF MATERIAL

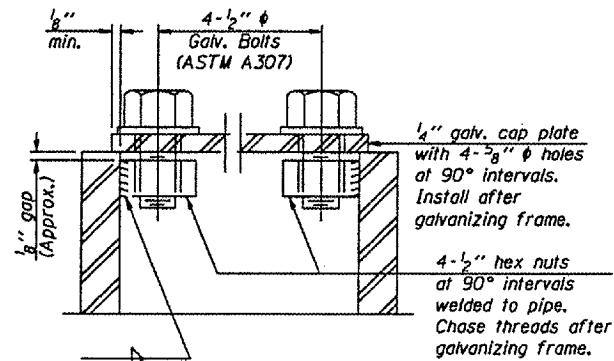
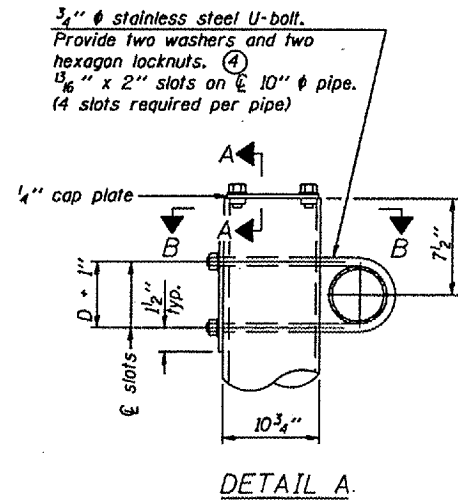
NUMBER	REVISION	DATE

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.	

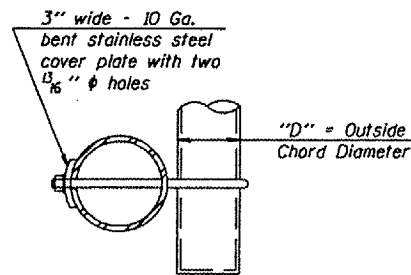
DESIGNED -	20
CHECKED -	EXAMINED
DRAWN -	PASSED
CHECKED -	ENGINEER OF BRIDGES AND STRUCTURES

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

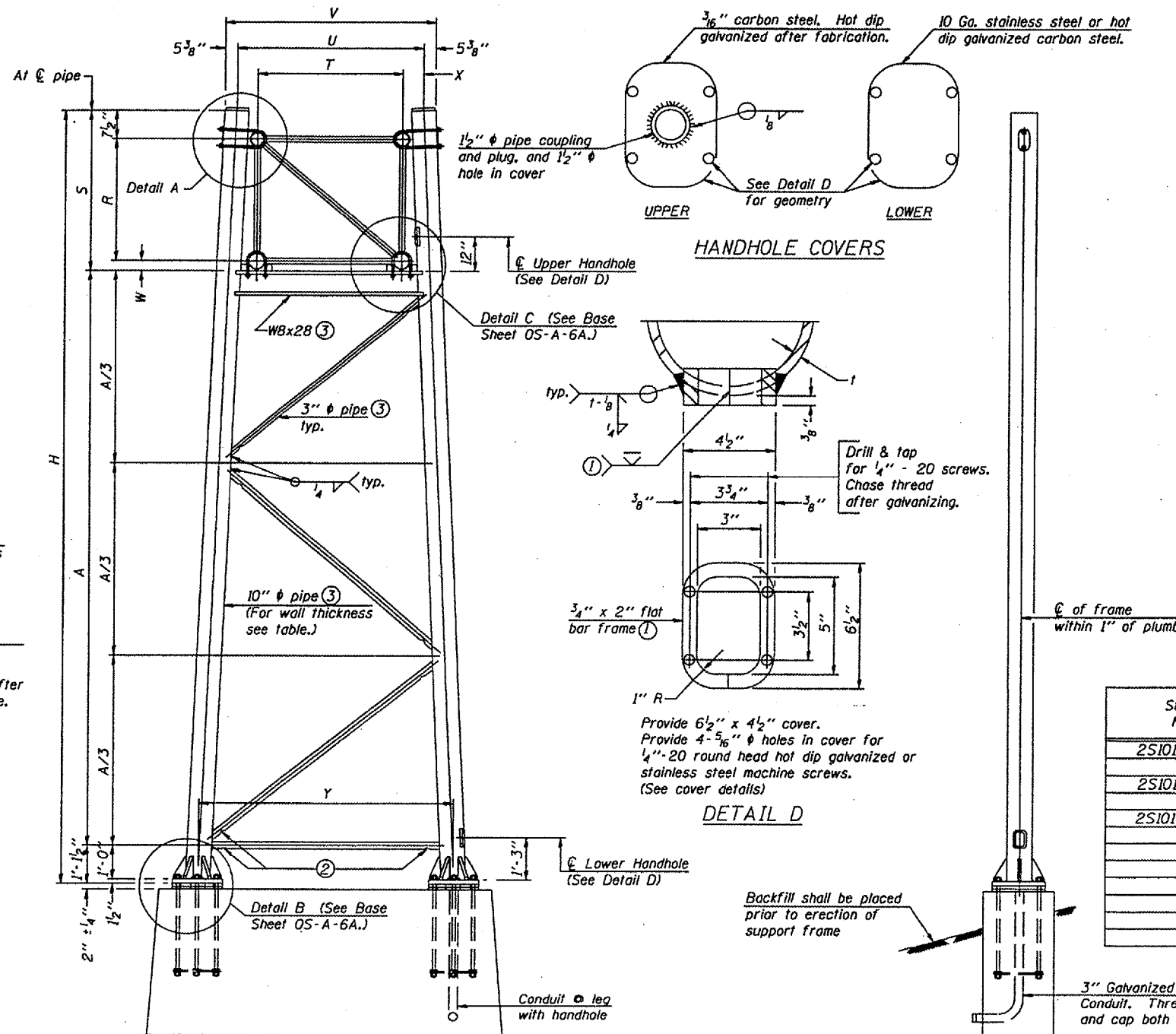
- ① In lieu of fabricated handhole frame as shown, may cut from 2" plate (rolling direction vertical). All cut faces to be ground to ANSI Roughness of 500 μ in or less.
- ② Galvanizing vent holes of adequate size shall be provided on underside at each end of bracing pipes. Alternately, holes may be provided 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.



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

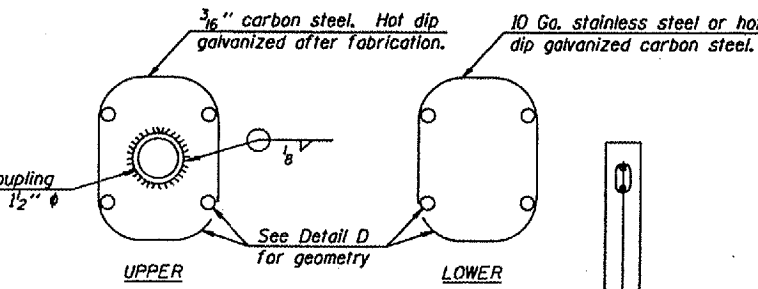


SECTION B-B

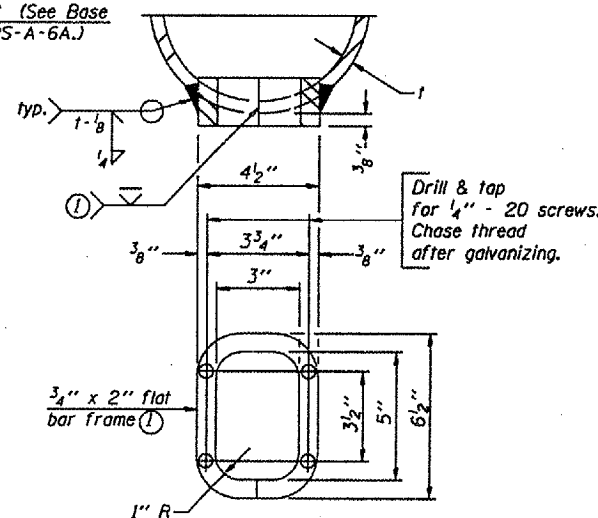


For Foundation Details, see base sheet OS-F3 (Spread Footing) or OS4-F3 (Drilled Shaft).

SIDE ELEVATION



HANDHOLE COVERS



DETAIL D

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

Backfill shall be placed prior to erection of support frame

END ELEVATION

Structure Number	Station	Support		Truss Type	Pipe Wall Thickness	H (6)	A
		Left	Right				
2S10IS25IR004.6	22 + 00	X	X	II-A	0.365(STD)	23'-4 3/4"	16'-0"
2S10IU020L019.0	566 + 00	X	X	II-A	0.365(STD)	23'-4 3/4"	16'-0"
2S10IU020L018.5	543 + 25	X	X	II-A	0.365(STD)	23'-4 3/4"	16'-0"

3" Galvanized Steel Conduit. Thread and cap both ends.

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

OS-A-6

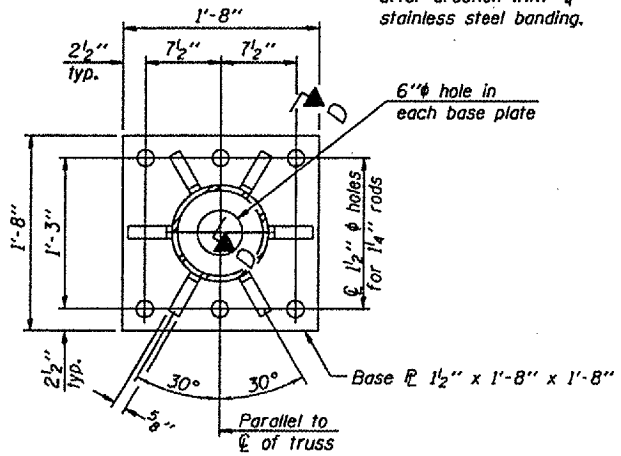
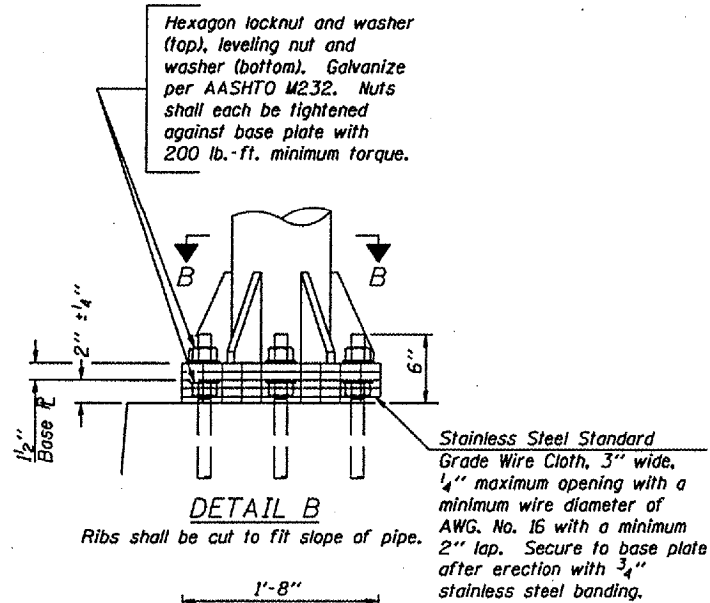
7/01/2006

NUMBER	REVISION	DATE

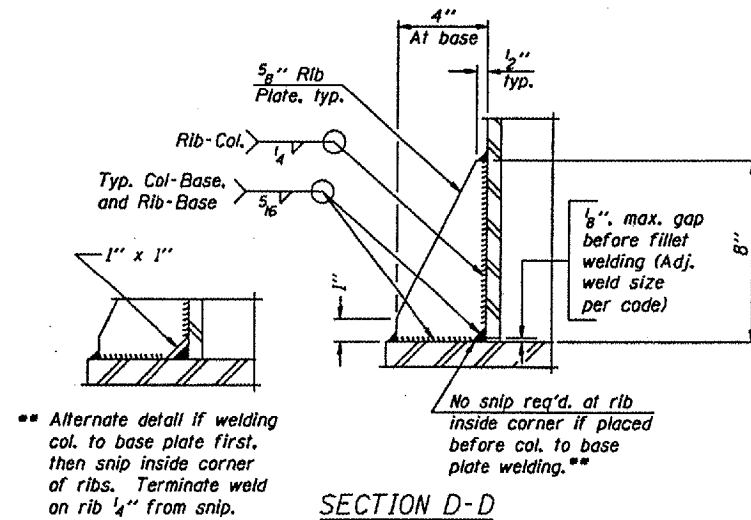
Truss Type	Dimensions							
	R	S	T	U	V	W	X	Y
I-A	4'-6"	5'-5 1/2"	4'-0"	5'-6"	6'-4 3/4"	4"	9"	8'-3"
II-A (5)	5'-3"	6'-3 1/4"	4'-6"	6'-1"	6'-11 3/4"	4 3/4"	9 1/2"	8'-3"

OVERHEAD SIGN STRUCTURES
SUPPORT FRAME FOR ALUMINUM TRUSS

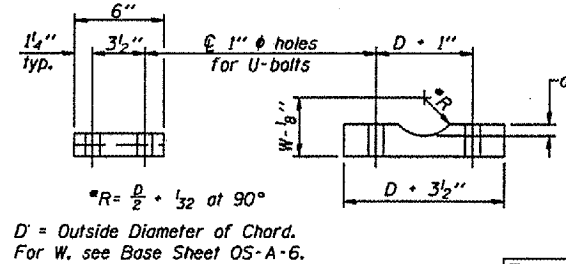
District 2
End Support Replacement



SECTION B-B

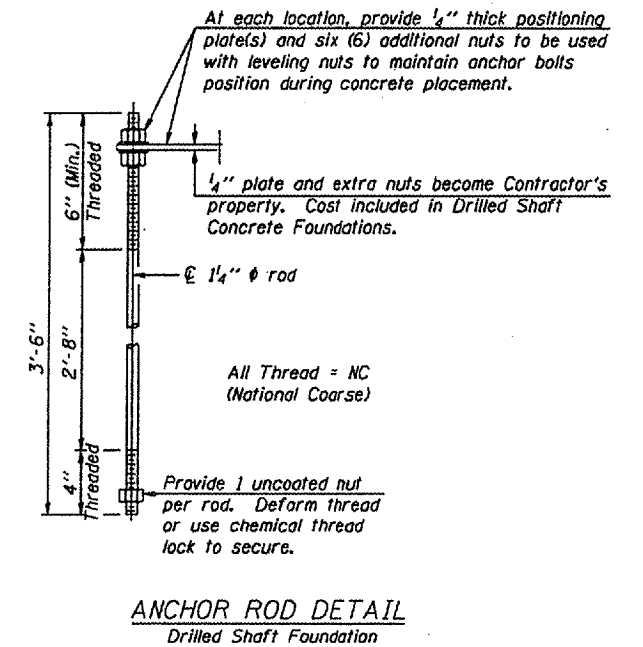
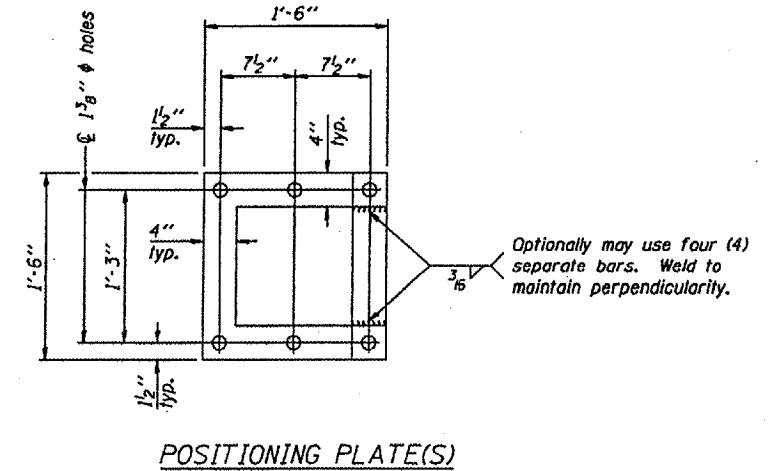
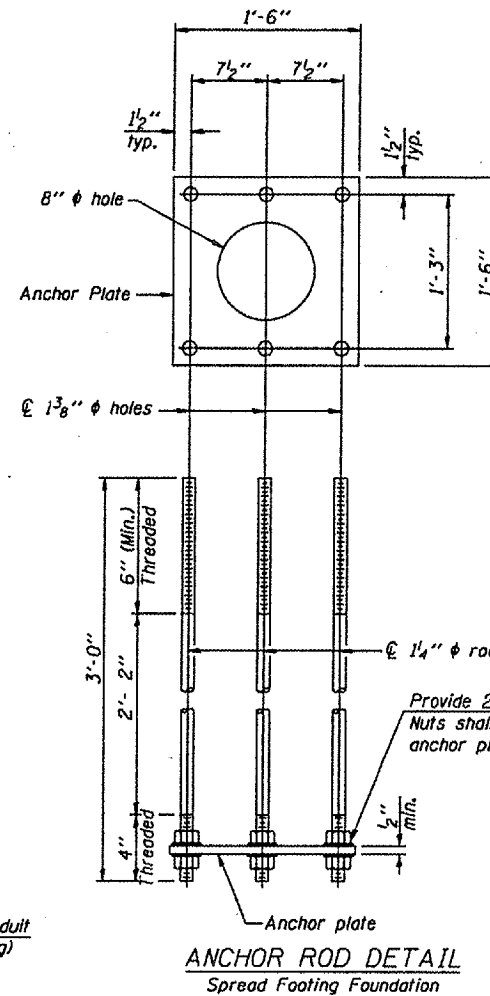


SECTION D-D



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

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

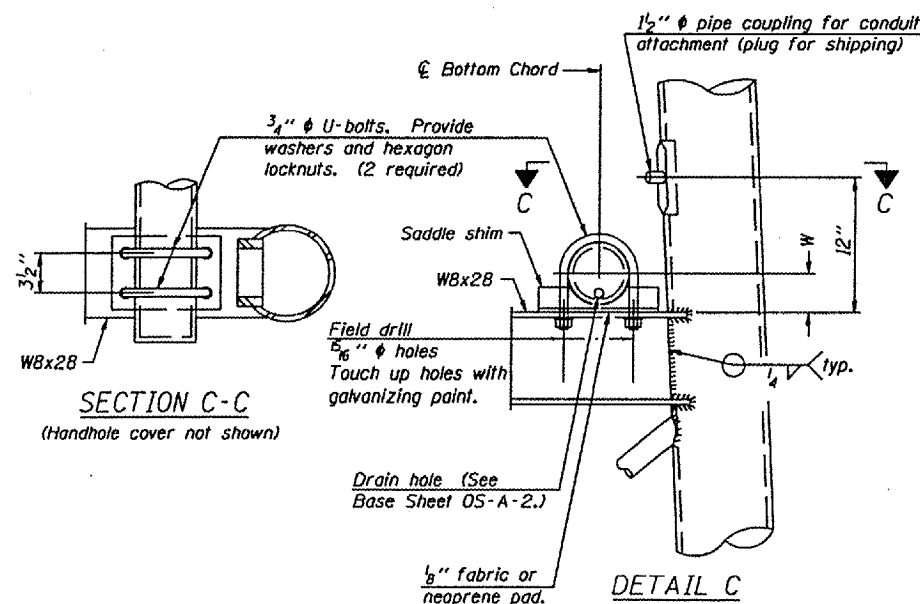
District 2
End Support Replacement

NUMBER	REVISION	DATE

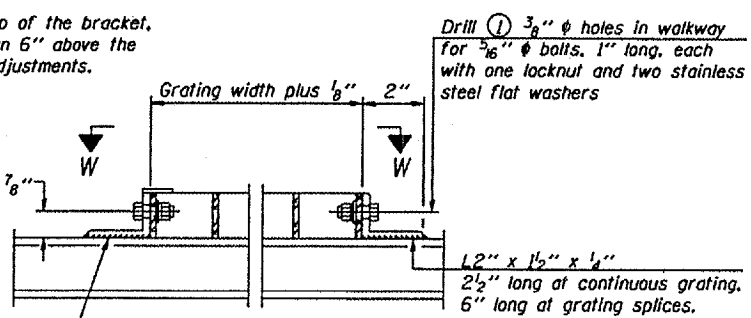
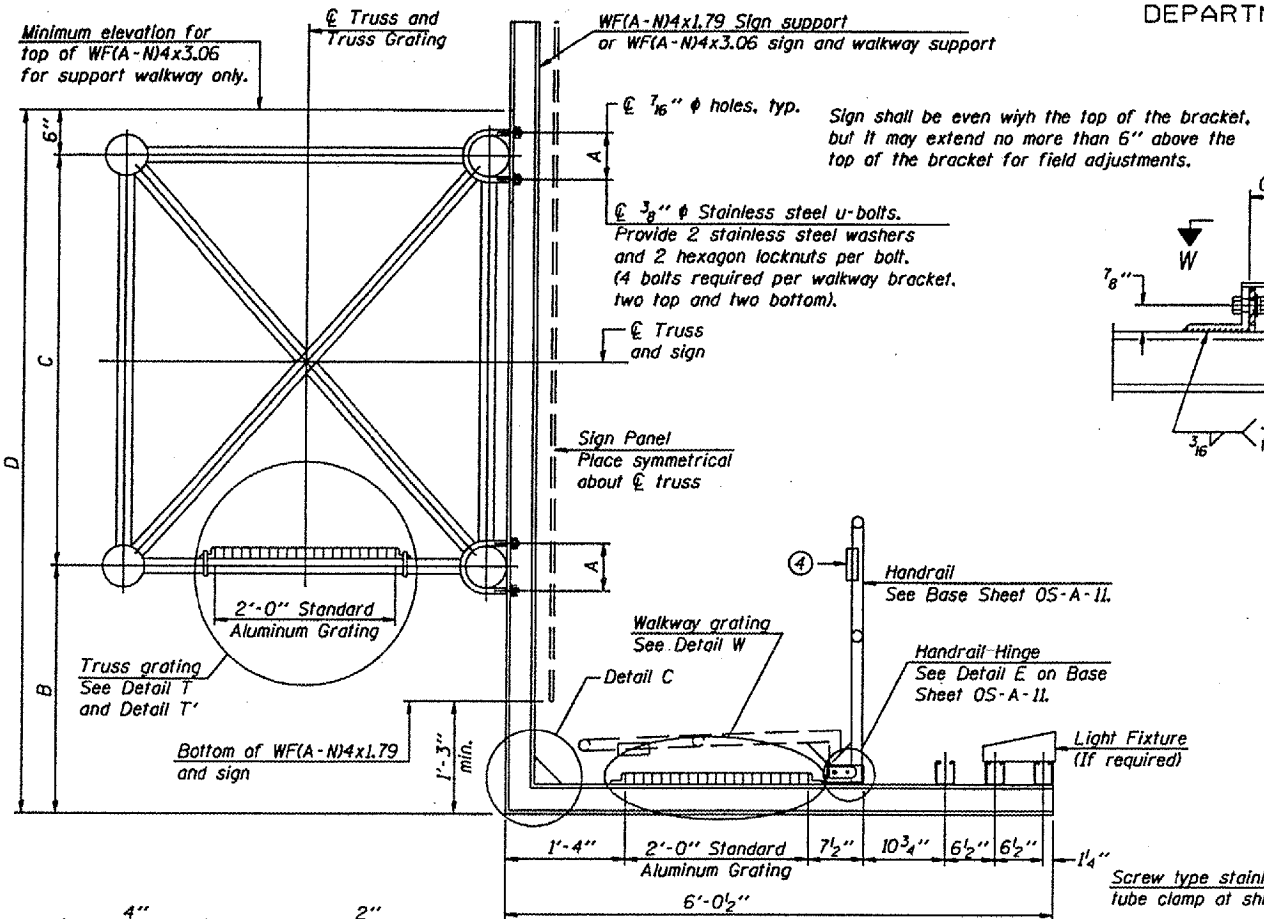
DESIGNED -	20
CHECKED -	EXAMINED
DRAWN -	PASSED
CHECKED -	ENGINEER OF BRIDGES AND STRUCTURES

OS-A-6A

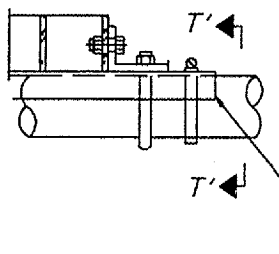
7/01/2006



SECTION C-C
(Handhole cover not shown)

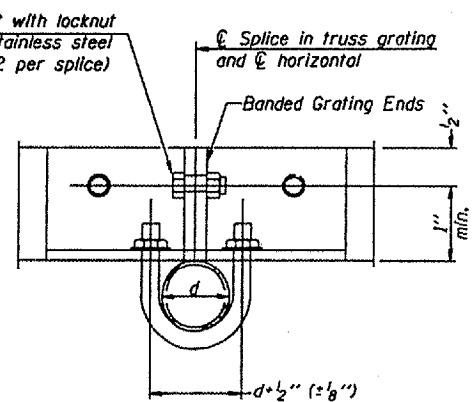


DETAIL W
(Walkway grating)

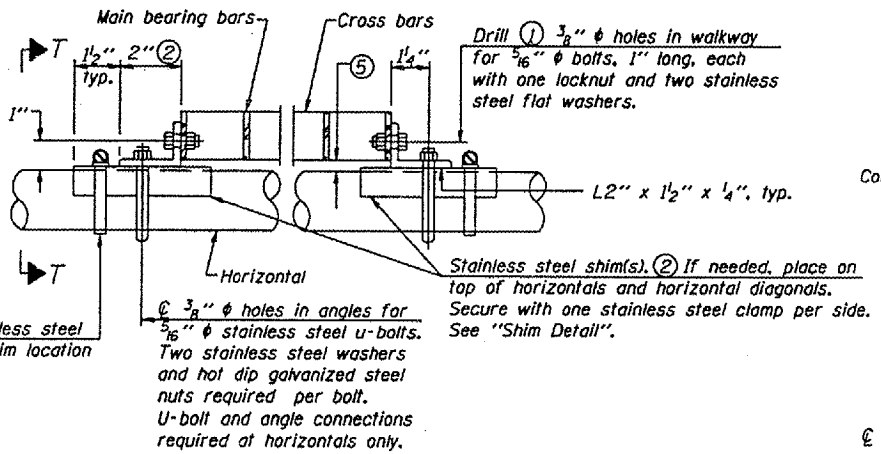


DETAIL T'
(Truss grating splice)

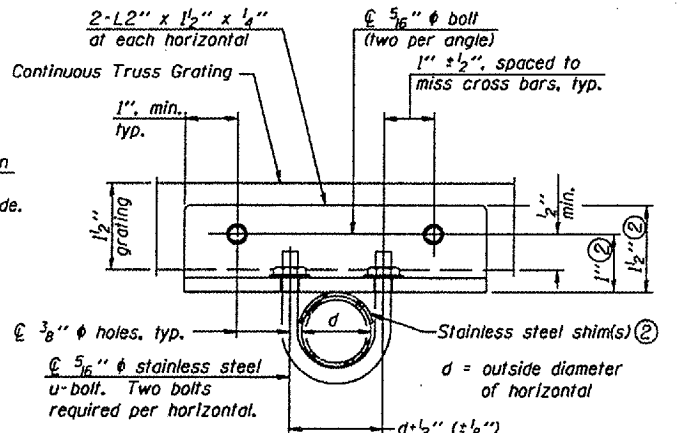
Details not shown same as Detail T. Alternate materials may be used subject to the Engineer's review and approval.



SECTION T'-T'



DETAIL T
(Continuous Truss grating)



SECTION T-T

SPECIFICATIONS FOR STANDARD ALUMINUM GRATING

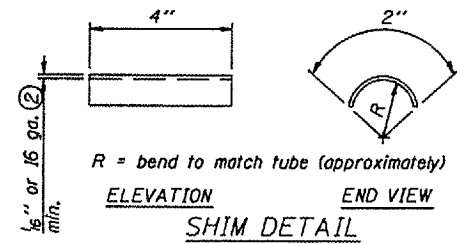
Main Bearing Bars shall be 3/16" x 1 1/2" on 1 3/16" centers and conform to ASTM B221 Alloy 6061-T6.
Cross bars shall be 3/16" x 1 1/2" on 4" centers and conform to ASTM B221 Alloy 6063-T5 or 6061-T6.

OR

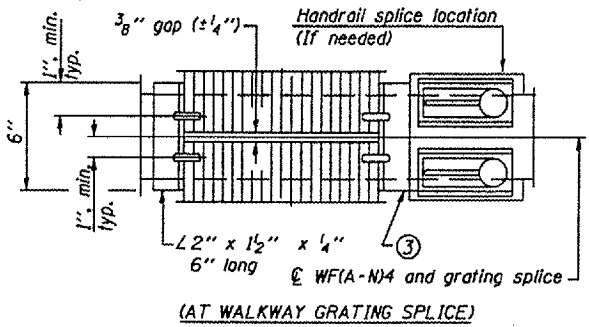
Aluminum Grating with modified "I" sections for main bearing bars shall meet the following requirements:
Main bars shall conform to ASTM B221 Alloy 6061-T6 and have a minimum section modulus equal to 0.0705 in.³ per bar, a depth of 1 1/2", spaced on 1 3/16" centers.
Cross bars shall conform to ASTM B221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

This Sheet For Information Only

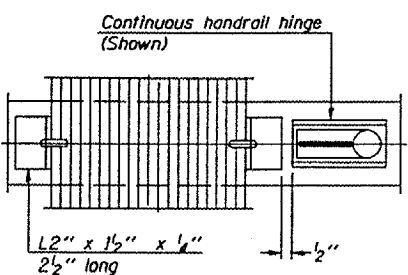
Structure Number	Station	A	B	C	D



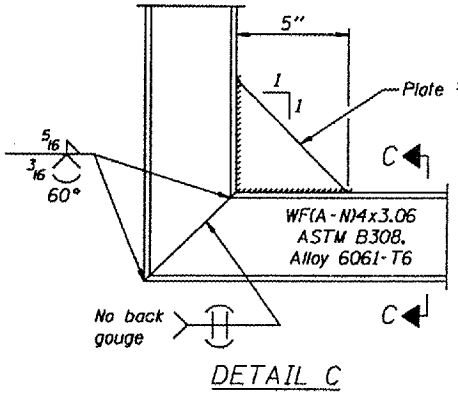
SECTION B-B



(AT WALKWAY GRATING SPLICE)



SECTION W-W
(CONTINUOUS WALKWAY GRATING)



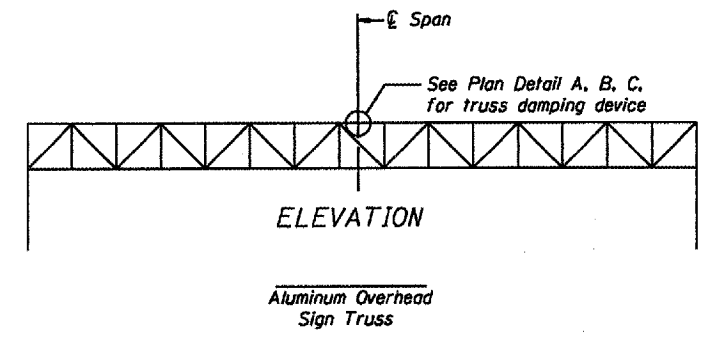
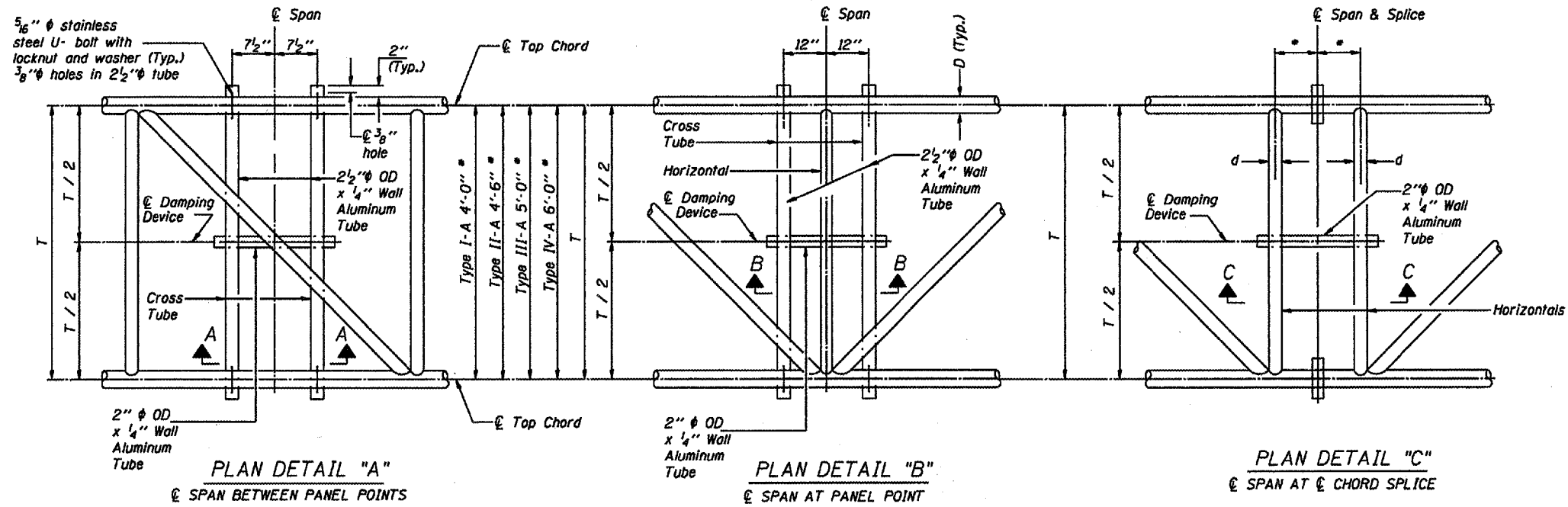
DETAIL C

SECTION C-C

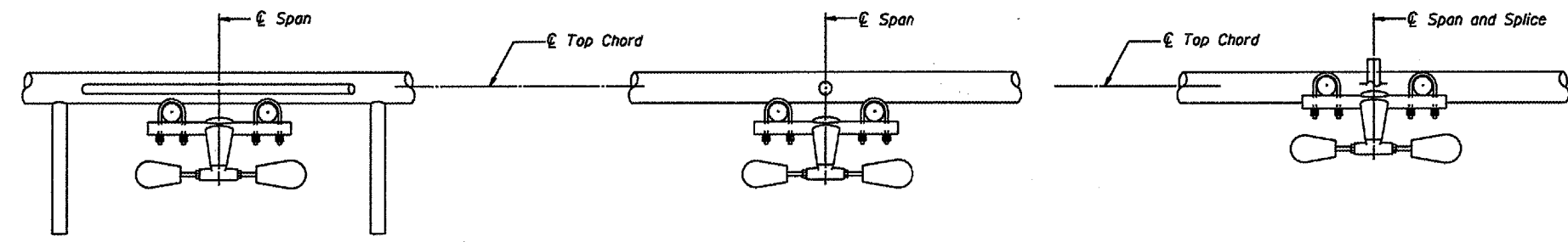
DESIGNED -	EXAMINED -	20
CHECKED -	PASSED -	ENGINEER OF BRIDGE DESIGN
DRAWN -		ENGINEER OF BRIDGES AND STRUCTURES
CHECKED -		

NUMBER	REVISION	DATE

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

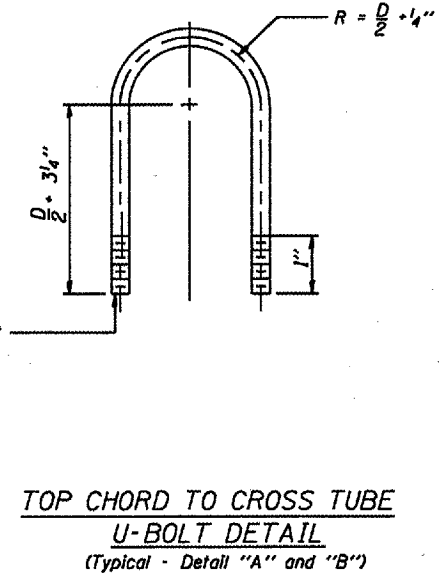
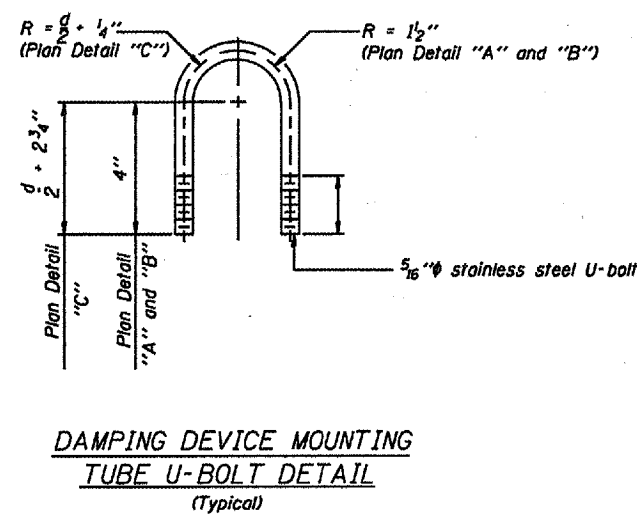
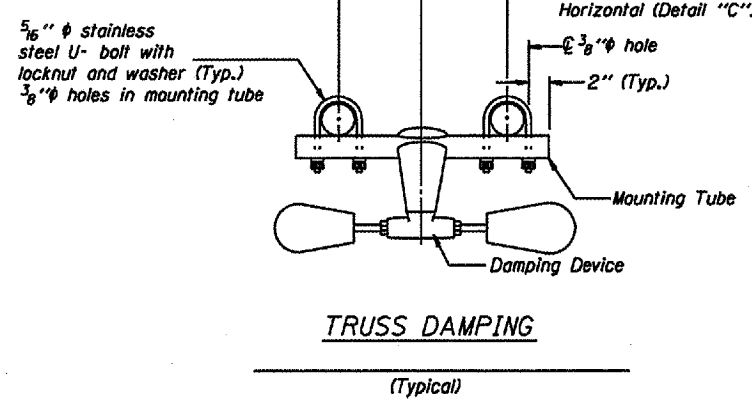


This detail applies to the following overhead sign structures:
2S101S251R004.6
2S101U020L019.0
2S101U020L018.5



GENERAL NOTES

- Damper:** One damper per truss. (31 lbs. Stockbridge-Type 29" between ends of weight)
- 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 (ASTI Type 304) or Grade BF (ASTI 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 BRIDGES AND STRUCTURES

OVERHEAD SIGN STRUCTURE DAMPING DEVICE

District 2
End Support Replacement

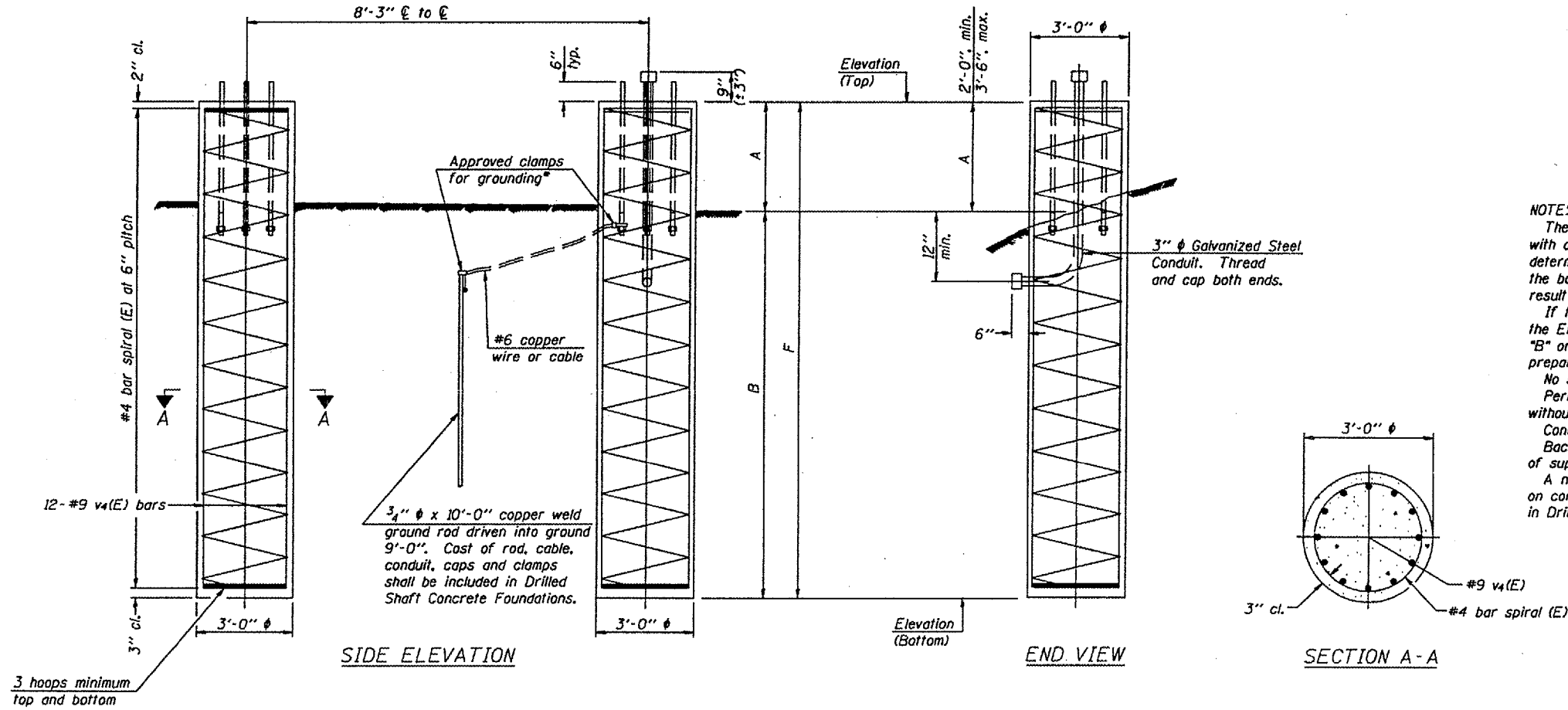
Rev.

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

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

BAR LIST - EACH FOUNDATION

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



NOTES:

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

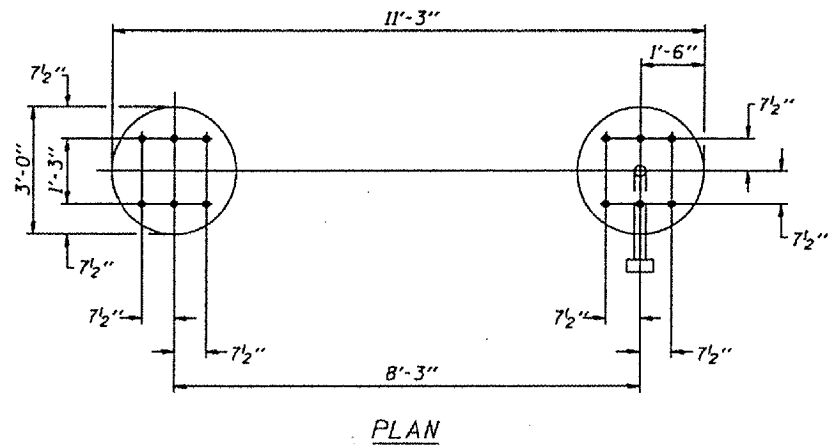
If the conditions encountered are different than those indicated, the Contractor shall notify the Engineer to determine if the foundation dimensions need to be modified. If dimensions "B" or "F" are revised by more than 12" by the Contractor, "as-built" plans shall be prepared and submitted to the District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

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

Concrete shall be placed monolithically, without construction joints.

Backfill shall be placed per Article 502 of Standard Specification and prior to erection of support column.

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



Structure Number	Station	Left Foundation			Right Foundation			Class SI Concrete (Cu. Yds.)			
		Elevation Top	Elevation Bottom		Elevation Top	Elevation Bottom					
2S10IS25IR004.6	22 + 00			3' - 0"	17' - 6"	20' - 6"					21.50
2S10IU020L019.0	566 + 00			3' - 0"	17' - 6"	20' - 6"					21.50
2S10IU020L018.5	543 + 25			3' - 0"	17' - 6"	20' - 6"					21.50

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

NUMBER	REVISION	DATE

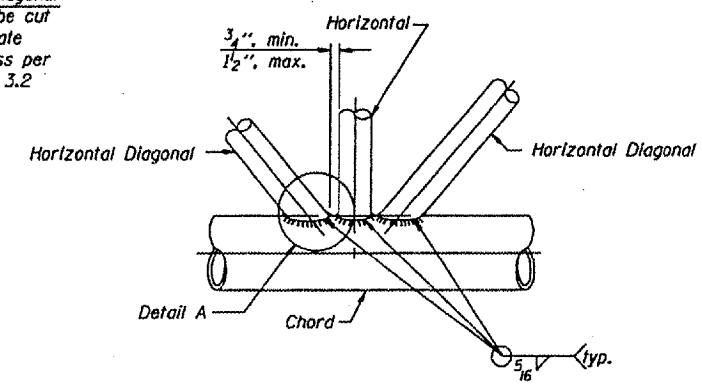
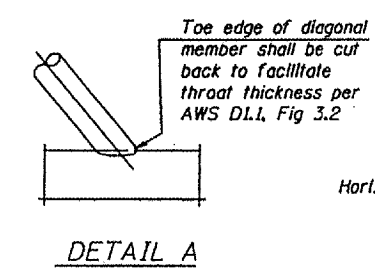
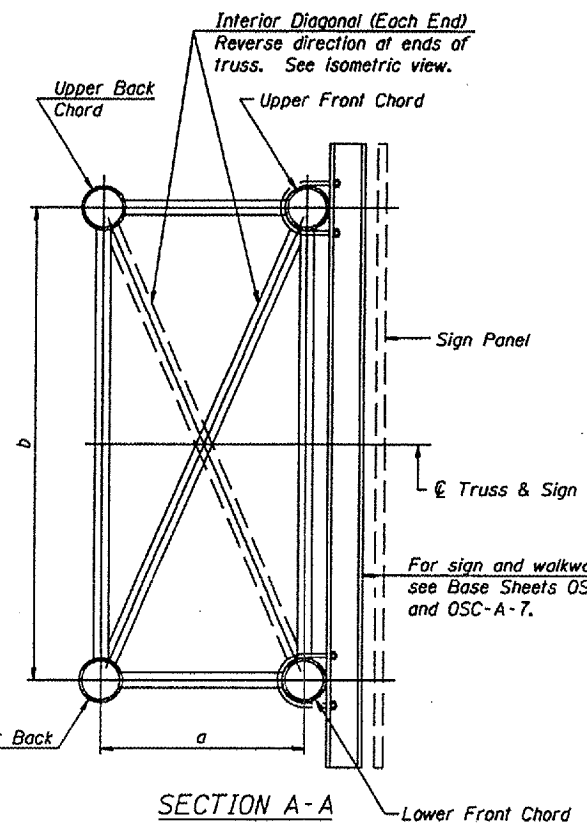
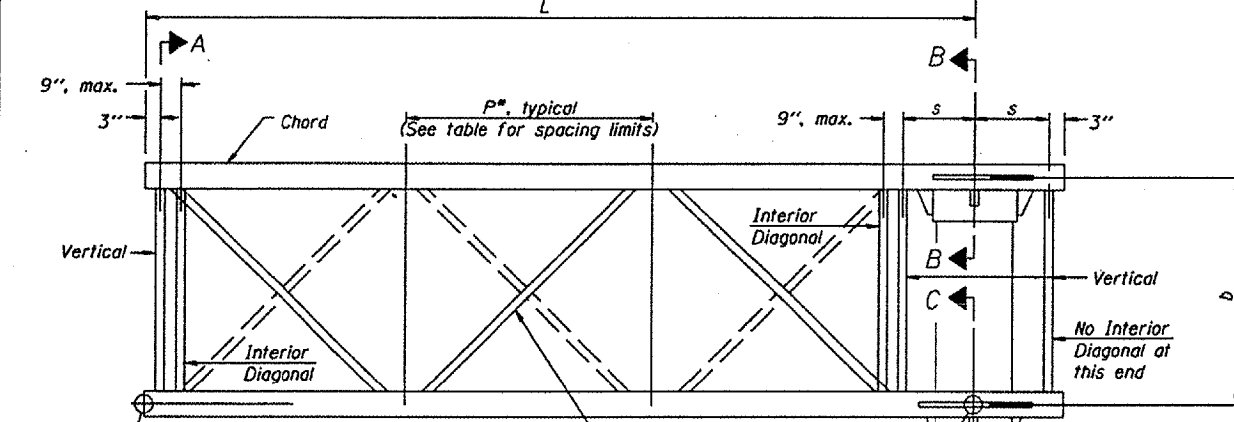
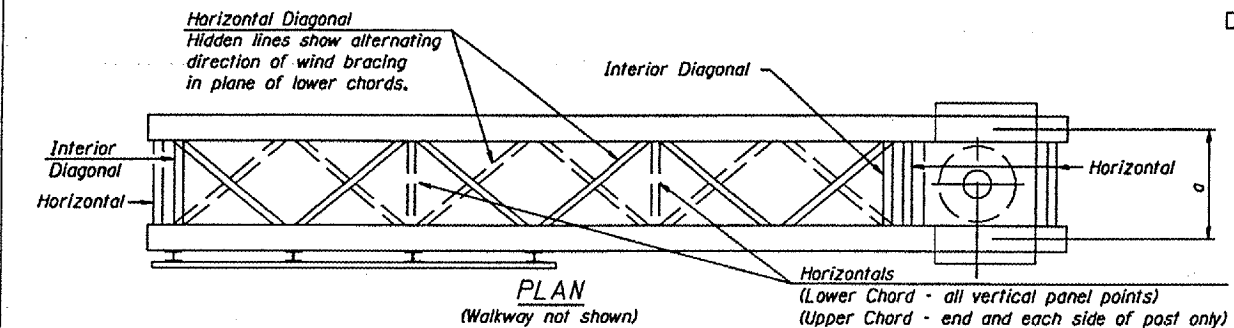
DETAILS FOR 10" Ø SUPPORT FRAME
TYPE I-A or II-A TRUSS

OVERHEAD SIGN STRUCTURES
DRILLED SHAFT DETAILS

District 2
End Support Replacement

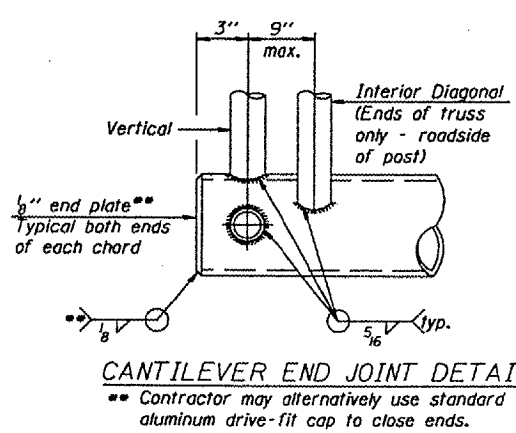
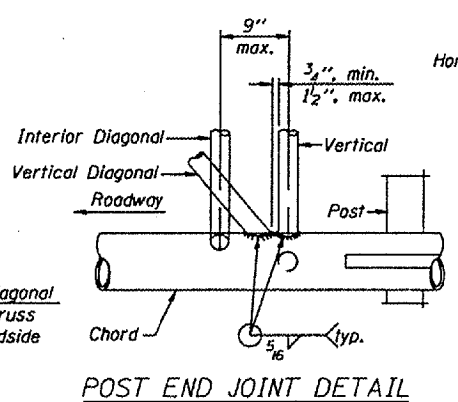
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

Various Routes
OVD SIN STR REP & REPL 2007-9
Various Counties
Sheet 24 of 50
Contract Number 44933



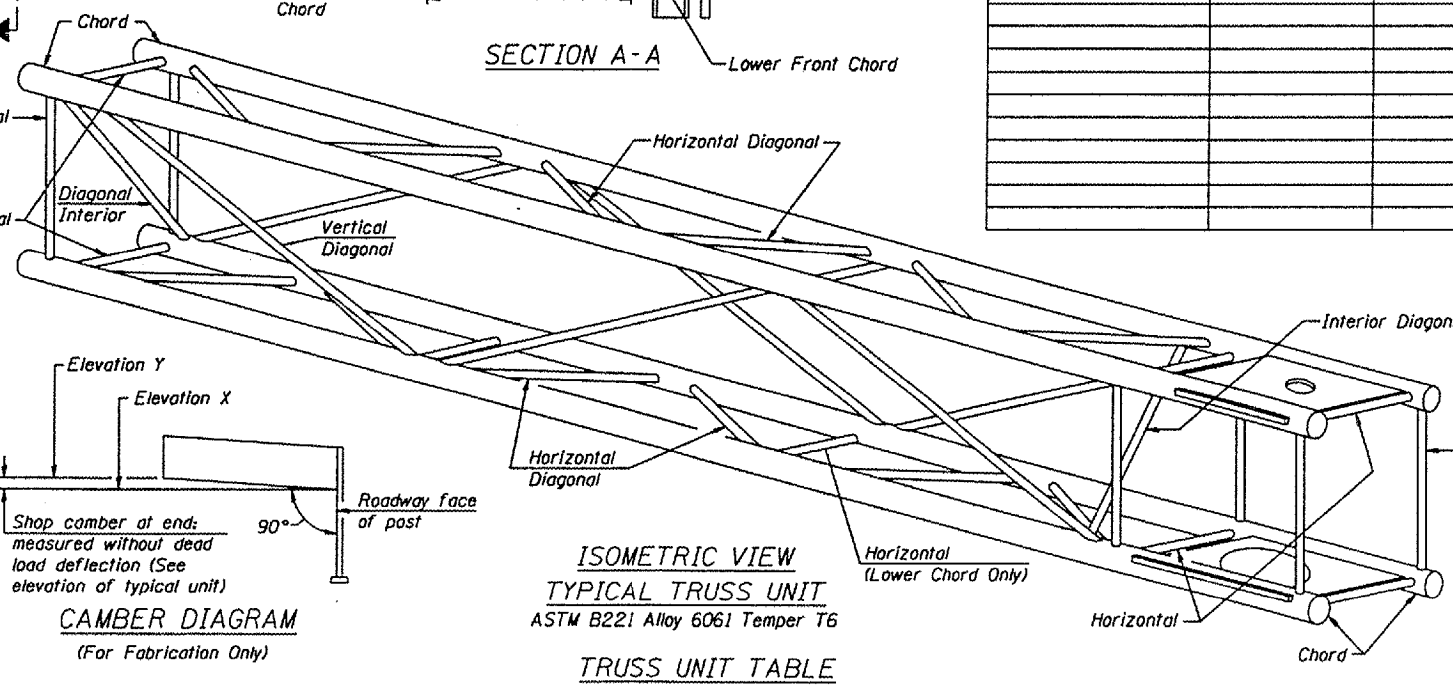
Structure Number	Station	Truss Type	Design Length (L)	Number of Panels Per Unit	Panel Length (P)*
2C101AUBOR000.0(174)	14 + 00	II	30' - 0"	8	3' - 6"

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



SHOP CAMBER TABLE

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



CAMBER DIAGRAM (For Fabrication Only)

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

* P = (L - s) / 3
Panels

NUMBER	REVISION	DATE

CANTILEVER SIGN STRUCTURES
TRUSS DETAILS
ALUMINUM TRUSS & STEEL POST

District 2
Truss Replacement

DESIGNED - _____

CHECKED - _____

DRAWN - _____

CHECKED - _____

OSC-A-2

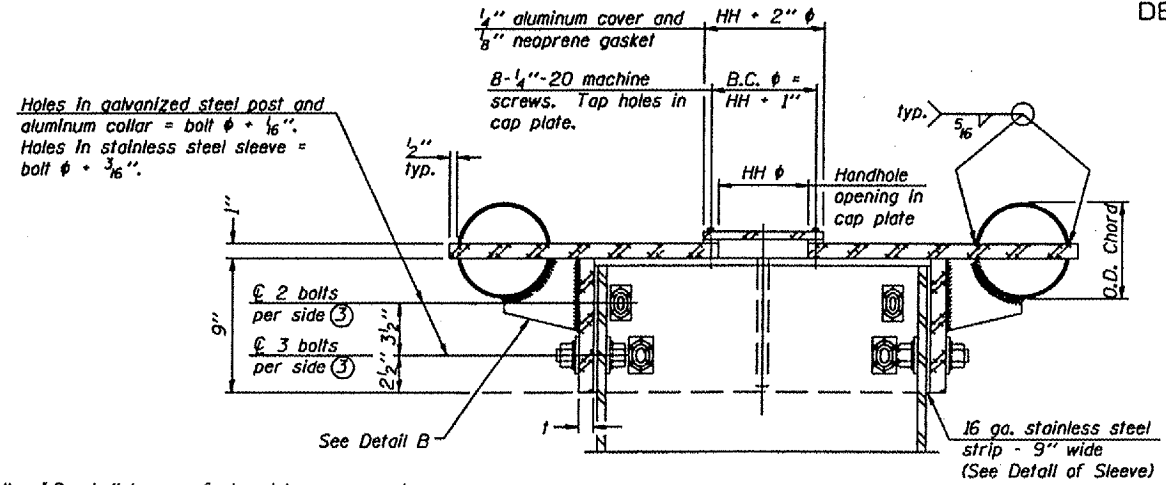
7/01/2006

EXAMINED _____ 20

PASSED _____

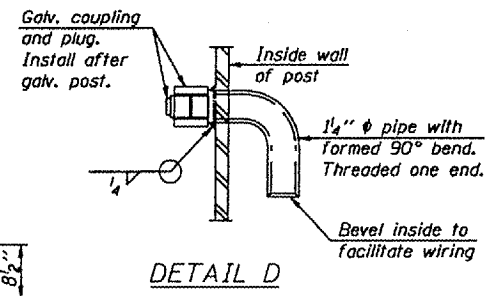
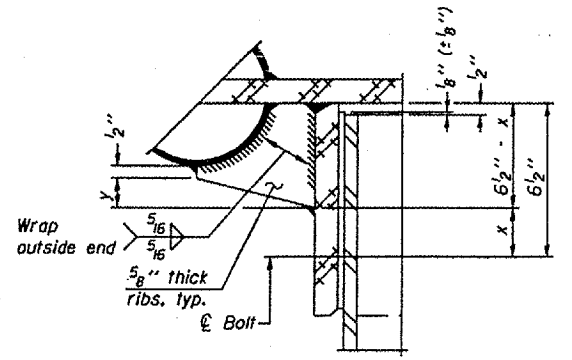
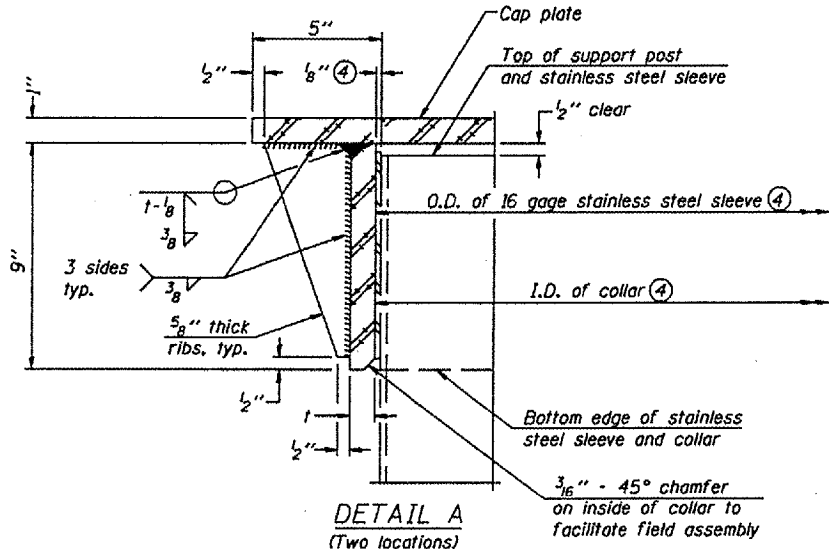
ENGINEER OF BRIDGE DESIGN

ENGINEER OF BRIDGES AND STRUCTURES



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

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



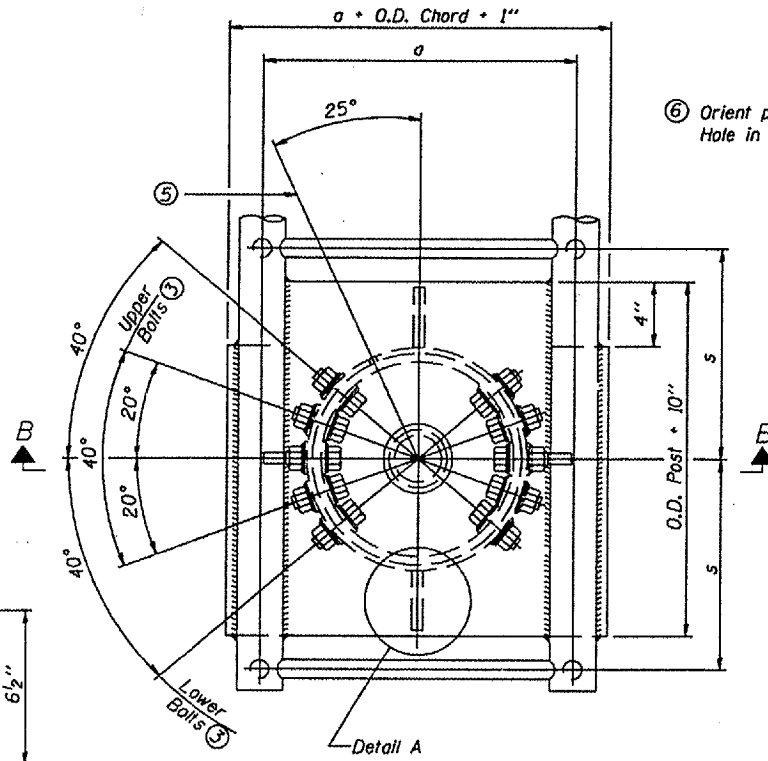
CONTOURED WASHERS

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

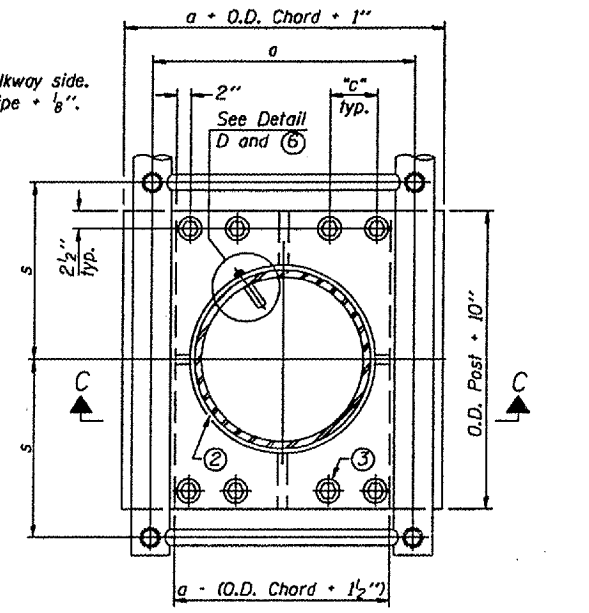
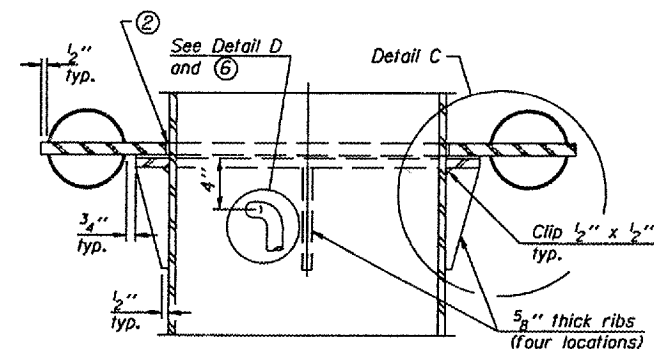
DETAIL OF STAINLESS STEEL SLEEVE

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

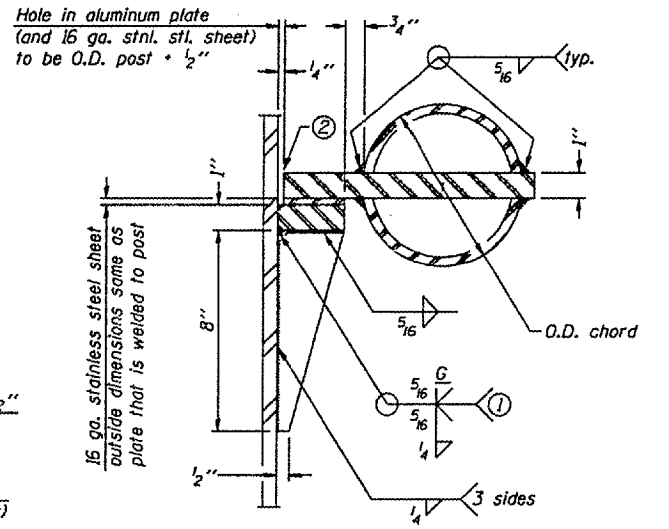
NUMBER	REVISION	DATE



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



SECTION THRU POST ABOVE LOWER CHORDS



- 1 Grind top if required to fully seat aluminum plate and stainless steel sheet.
- 2 After tightening lower connection bolts, fill gap with non-hardening, silicone caulk suitable for exterior exposure and acceptable to the Engineer. Cost is included in Overhead Sign Structure Cantilever.

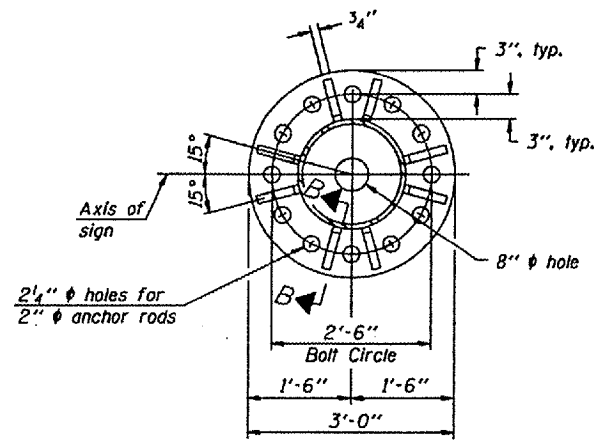
Truss Type	Post Size	Upper & Lower Connection Bolt Diameter (3)	Lower Juncture Bolt Spacing Dimension "c" (3)	Opening in Cap Plate "HH"	Collar Thickness (t)	Side Ribs	
						x	y
I-C-A	16" ϕ (83 #/')	7/8"	3 1/4"	8"	5/8"	1 3/4"	2 1/4"
II-C-A	24" ϕ (125 #/')	1"	3 1/2"	12"	7/8"	2"	1 1/4"
III-C-A (35' max.)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

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

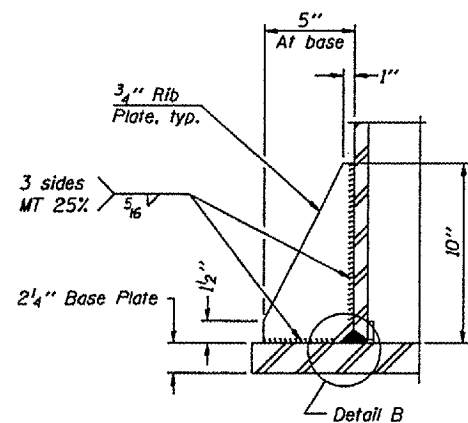
DESIGNED -	20
CHECKED -	EXAMINED
DRAWN -	PASSED
CHECKED -	ENGINEER OF BRIDGE DESIGN
	ENGINEER OF BRIDGES AND STRUCTURES

CANTILEVER SIGN STRUCTURES
JUNCTURE DETAILS
ALUMINUM TRUSS & STEEL POST

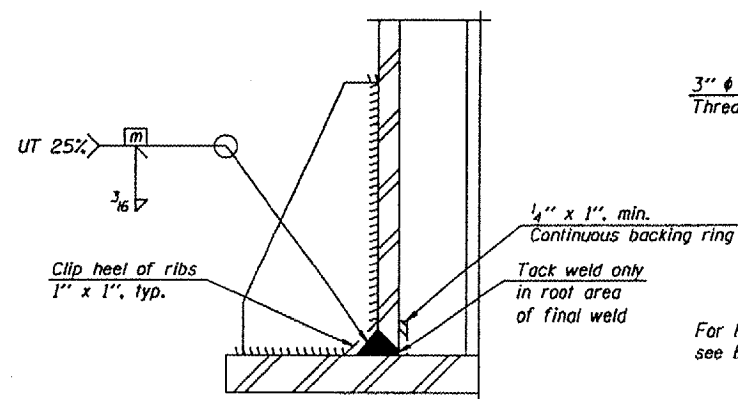
District 2
Truss Replacement



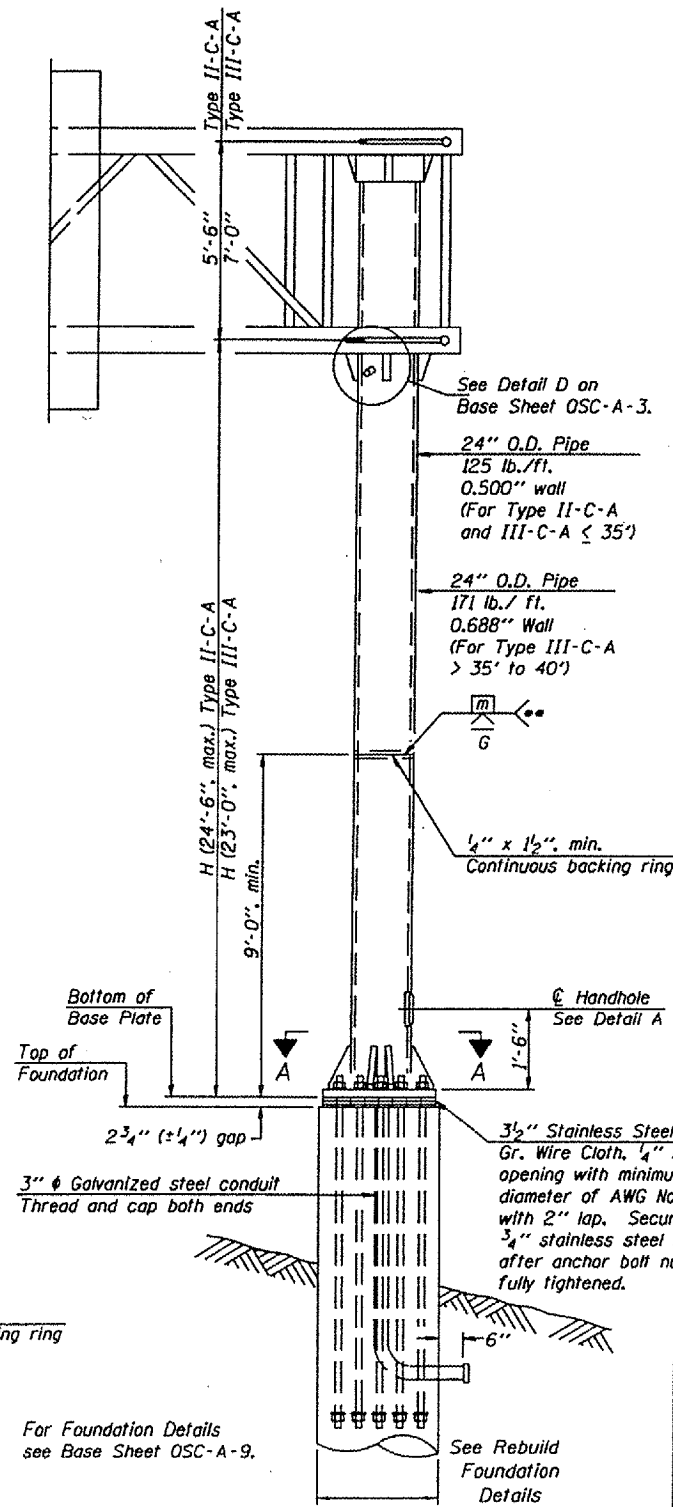
SECTION A-A



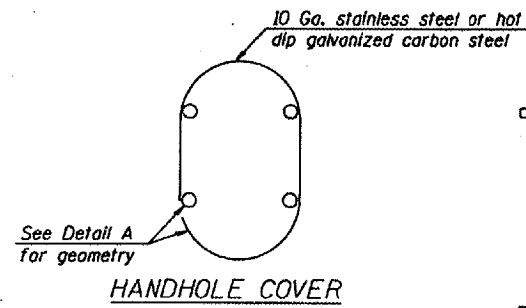
SECTION B-B



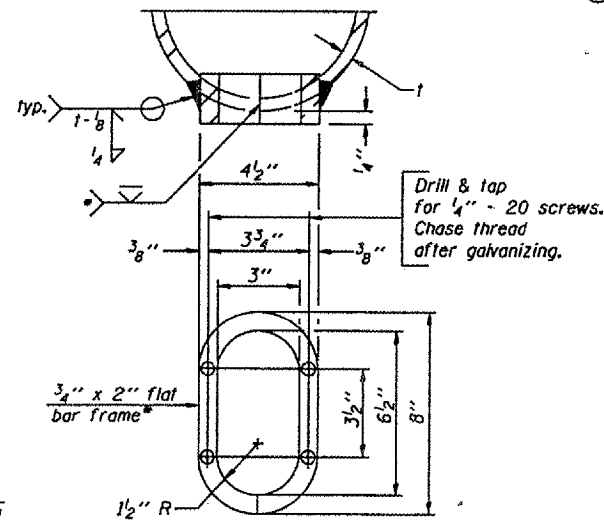
DETAIL B
(Typical rib)



FRONT ELEVATION



HANDHOLE COVER

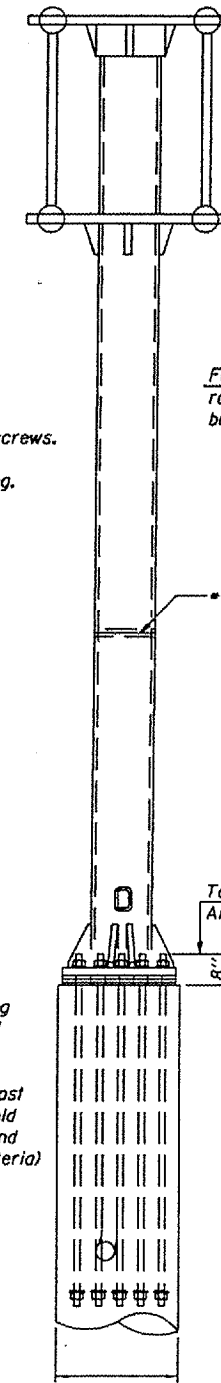


DETAIL A

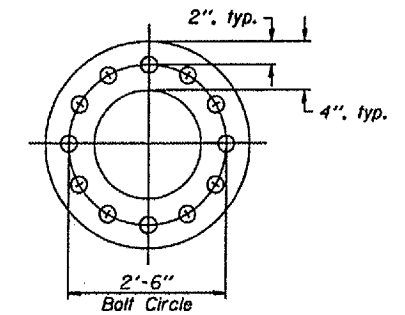
- Bent bars may be butt welded top and bottom or bottom only. In lieu of fabricated handhole frame as shown, may cut from 2" plate (rolling direction vertical). All cut faces to be ground to ANSI Roughness of 500 μ in or less.
- Butt welded joint in post is only allowed for post heights (H) over 20 ft. in length. If used, weld procedure must be preapproved by Engineer and joint shall receive 100% RT or UT (tension criteria) at Contractor's expense.

Structure Number	Station	H
2C101AUBOR000.0(174)	14 + 00	16' - 0"

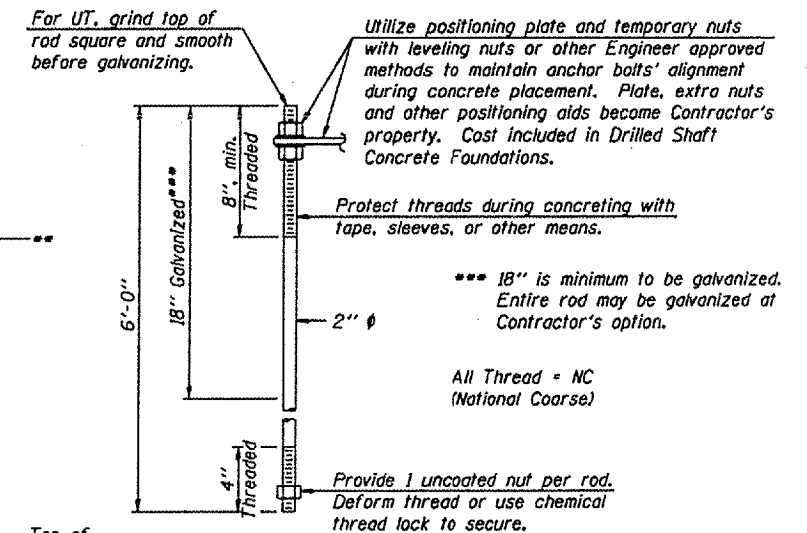
Note: "H" based on 15'-0" or actual sign height, whichever is greater.



SIDE ELEVATION



SUGGESTED POSITIONING PLATE



ANCHOR ROD DETAIL

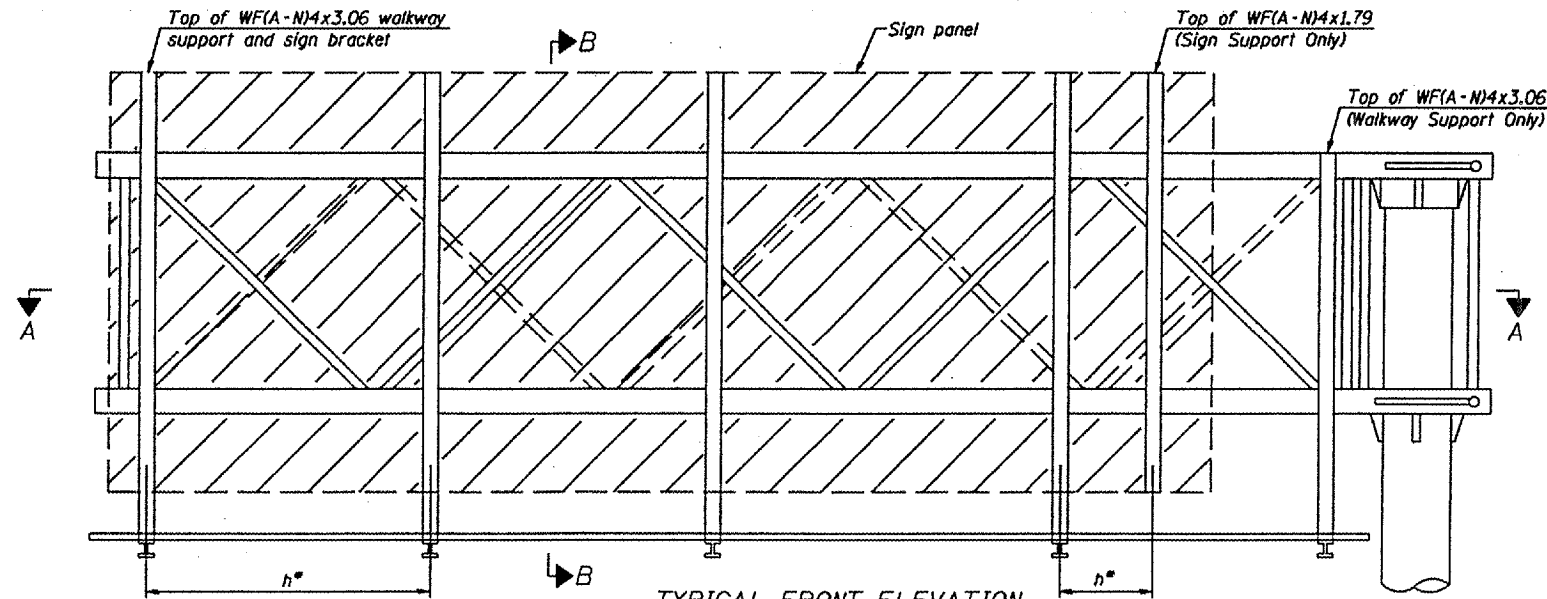
Anchor rods shall conform to AASHTO M314 Grade 55 and meet Charpy V-Notch (CVN) energy of 15 lb.-ft. at 10° F. before galvanizing. Galvanize the upper 18" (minimum) and associated M291, Grade A, C or DH heavy hex nuts and hardened washers per AASHTO M232. No welding shall be permitted on rods. Provide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

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

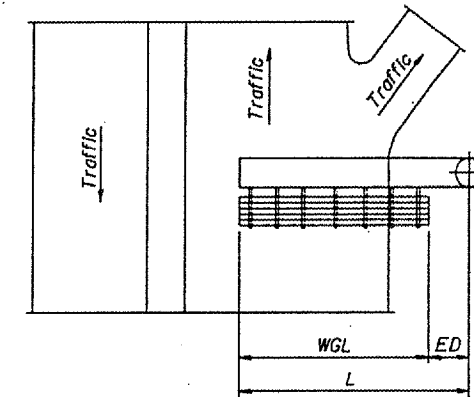
District 2
Truss Replacement

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

NUMBER	REVISION	DATE

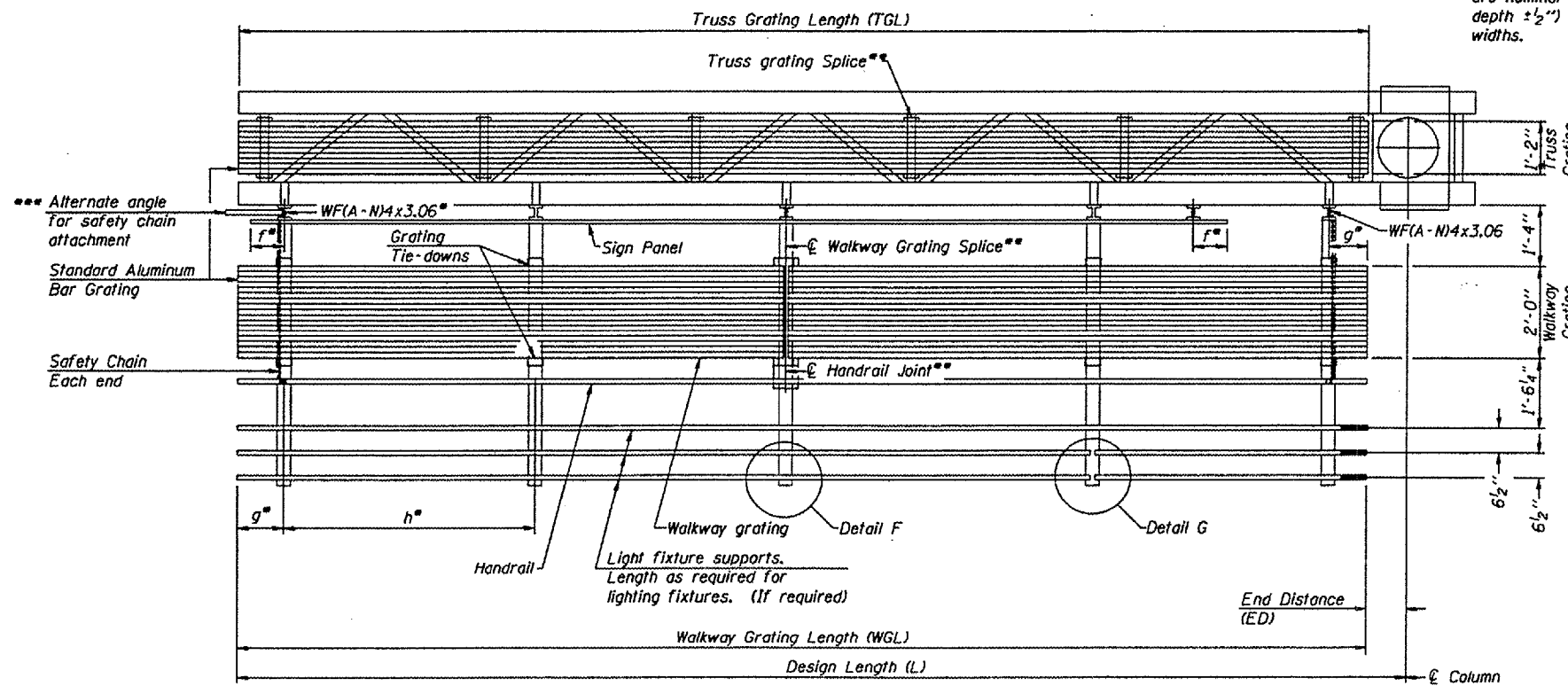


TYPICAL FRONT ELEVATION
With lights and handrail omitted for clarity.



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

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



SECTION A-A

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

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

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

Structure Number	Station	WGL	ED	TGL
2C101AUBOR000.0(174)	14 + 00	*		28' - 6"

*Reuse existing walkway and walkway support brackets.

Notes:

- Space walkway brackets WF(A-N)4x3.06 and sign brackets WF(A-N)4x1.79 for efficiency and within limits shown:
- f = 12" maximum, 4" minimum (End of sign to center of nearest bracket)
- g = 12" maximum, 4" minimum (End of walkway to center of nearest bracket)
- h = 6'-0" maximum (center to center sign and/or walkway support brackets, WF(A-N)4x1.79 or WF(A-N)4x3.06)
- *** If walkway bracket at safety chain location is behind sign, add angle to bracket. See alternate safety chain attachment on base sheet OSC-A-8
- For details of sign placement, sign/walkway brackets, truss and walkway gratings, grating splices and Section B-B, see Base Sheet OSC-A-7.
- For details of handrail, handrail joint, safety chain and Details F and G, see Base Sheet OSC-A-8.

BRACKET TABLE

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

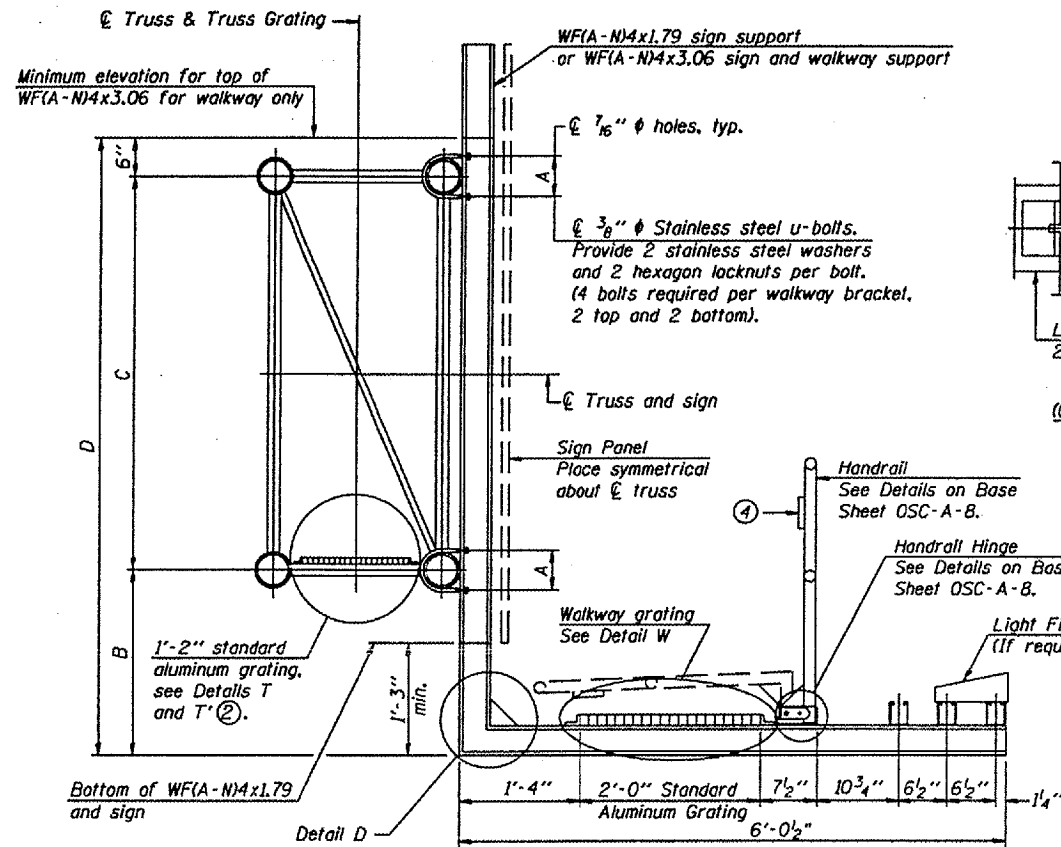
CANTILEVER SIGN STRUCTURES
ALUMINUM WALKWAY DETAILS
ALUMINUM TRUSS & STEEL POST

District 2
Truss Replacement

DESIGNED	-
CHECKED	-
DRAWN	-
CHECKED	-

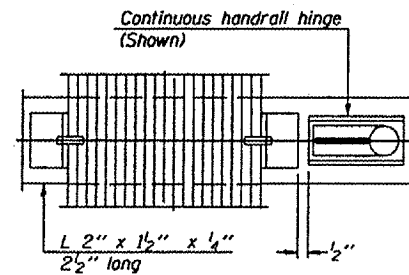
EXAMINED	20
PASSED	ENGINEER OF BRIDGE DESIGN
	ENGINEER OF BRIDGES AND STRUCTURES

NUMBER	REVISION	DATE

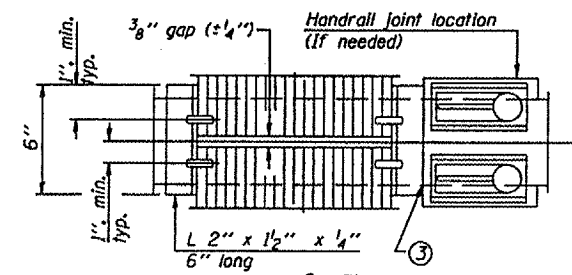


SECTION B-B

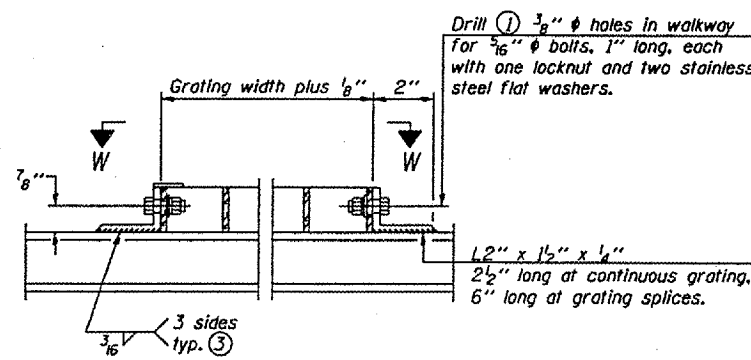
Sign shall be even with the top of the bracket, but it may extend no more than 6" above the top of the bracket for field adjustments.



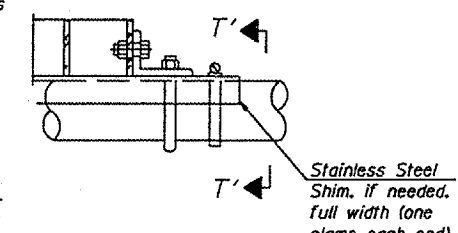
(CONTINUOUS WALKWAY GRATING)



SECTION W-W
(AT WALKWAY GRATING SPLICE)

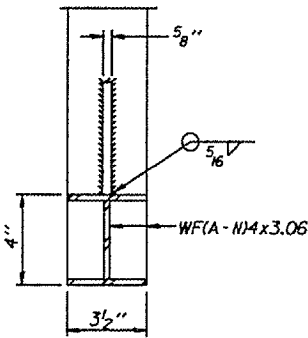


DETAIL W
(Walkway grating)



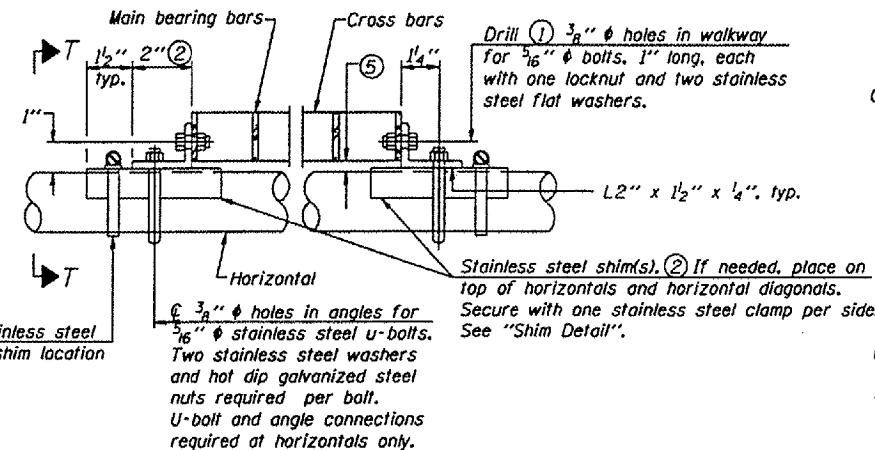
DETAIL T'
(Truss grating splice)

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



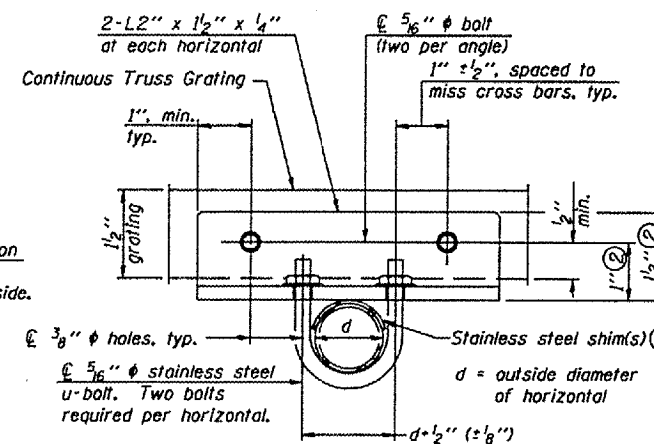
SECTION D-D

Screw type stainless steel tube clamp at shim location



DETAIL T
(Continuous Truss grating)

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



SECTION T-T

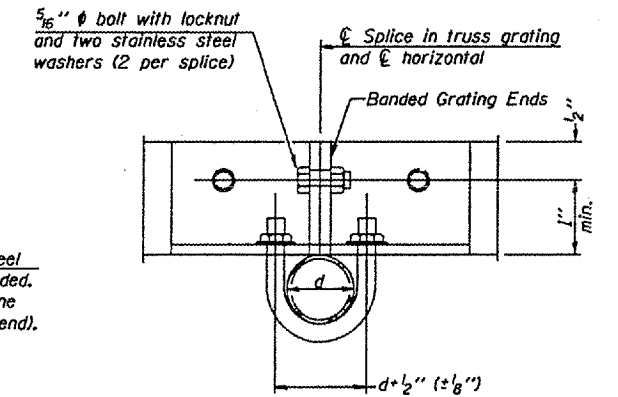
Reuse Existing Walkway Support Brackets

Structure Number	Station	A	B	C	D
2C101AUBOR000.0(174)	14 + 00	6 7/8"	1' - 6"	5' - 6"	7' - 6"

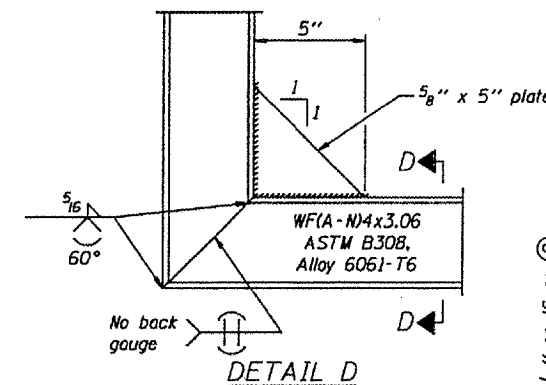
SPECIFICATIONS FOR STANDARD ALUMINUM GRATING
Main Bearing Bars (MBB) shall be 3/16" x 1 1/2" on 1 3/16" centers and conform to ASTM B221 Alloy 6061-T6.
Cross bars (CB) shall be 3/16" x 1 1/2" on 4" centers and conform to ASTM B221 Alloy 6063-T5 or 6061-T6.

OR

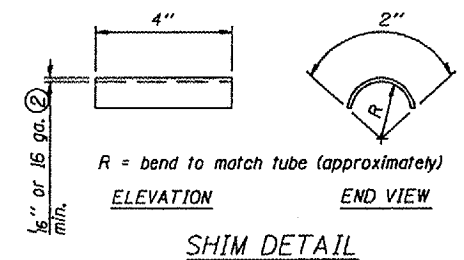
Aluminum Grating with modified "T" sections for main bearing bars shall meet the following requirements:
Main bars shall conform to ASTM B221 Alloy 6061-T6 and have a minimum section modulus equal to 0.0705 in.³ per bar, a depth of 1 1/2", spaced on 1 3/16" centers.
Cross bars shall conform to ASTM B221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



SECTION T'-T'



DETAIL D



SHIM DETAIL

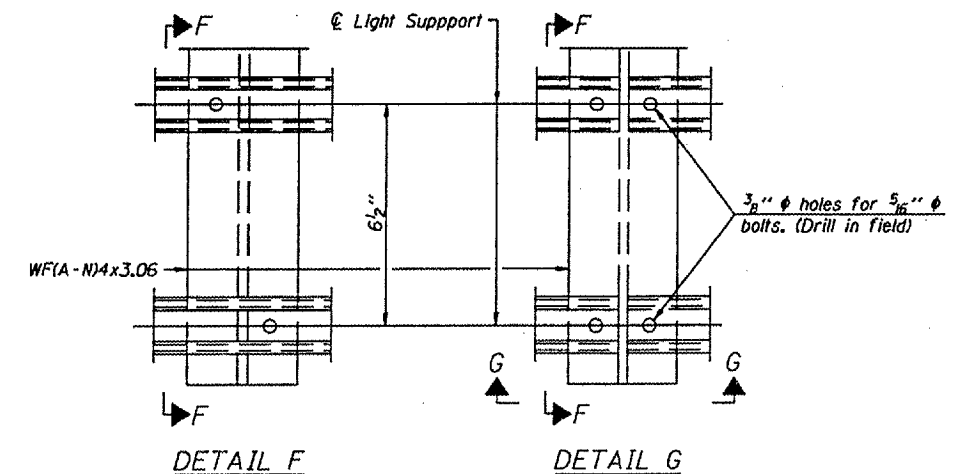
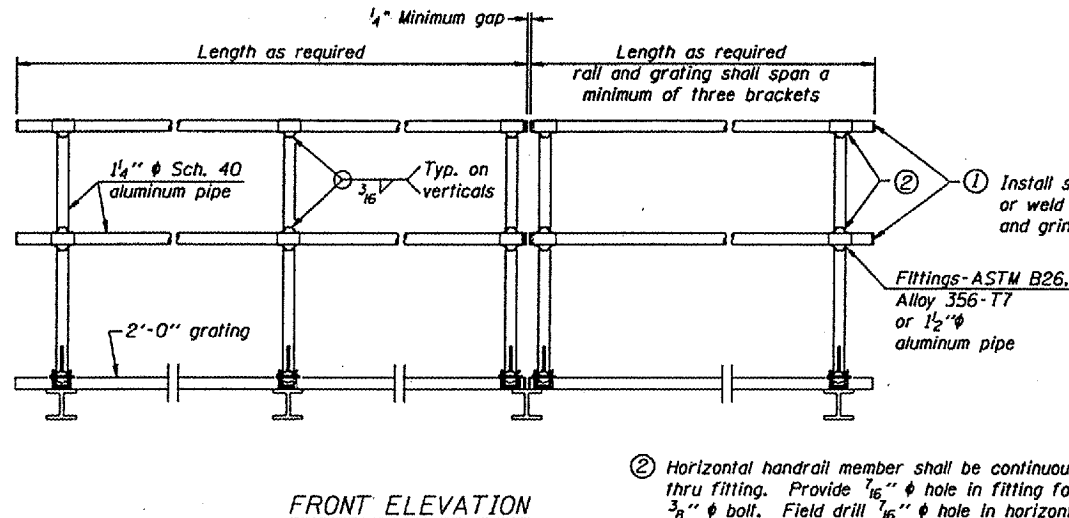
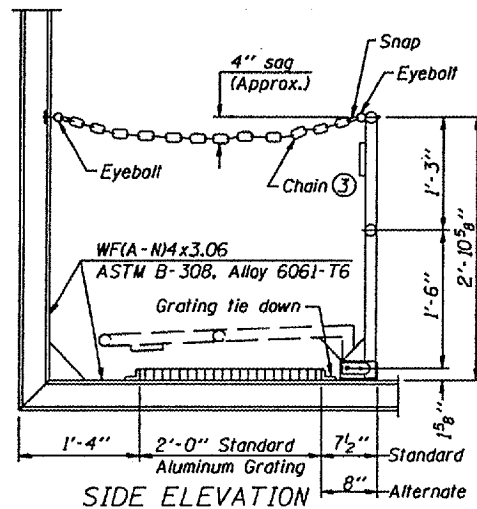
NUMBER	REVISION	DATE

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

OSC-A-7 7/01/2006

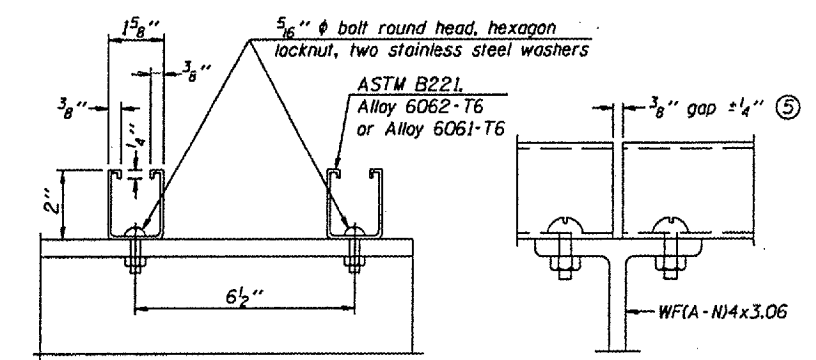
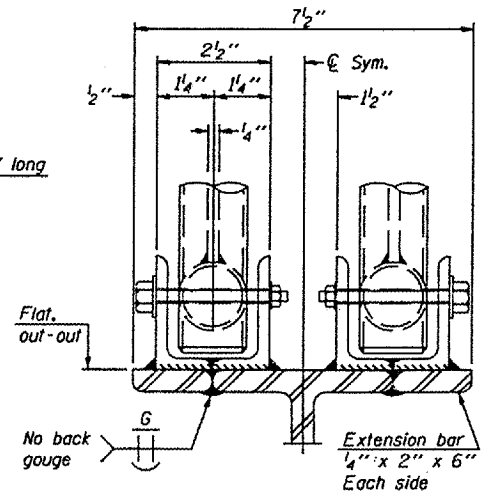
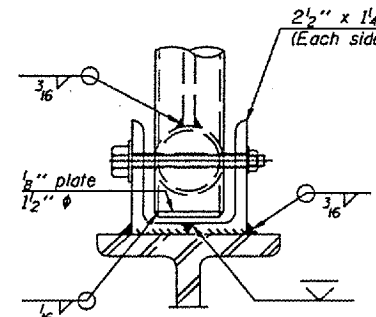
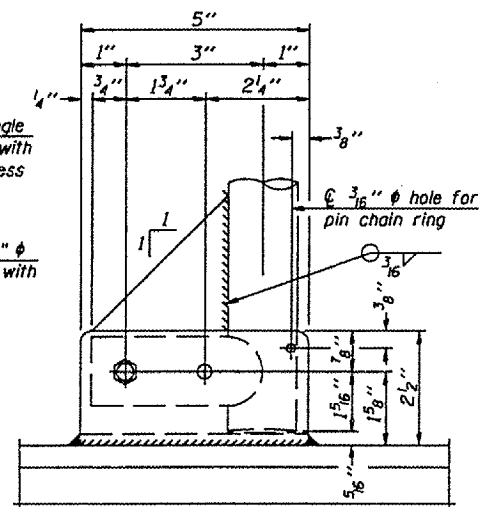
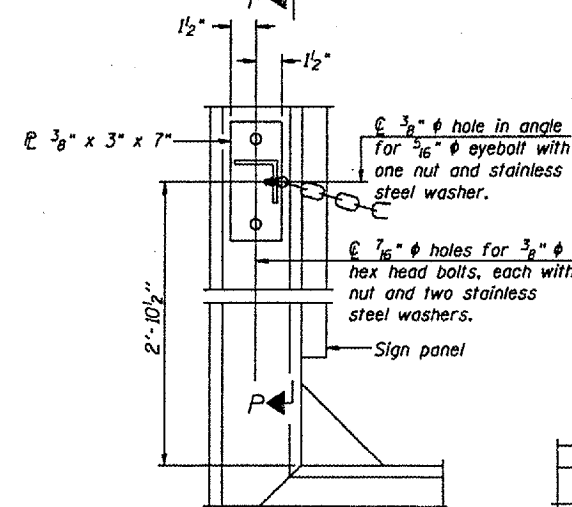
CANTILEVER SIGN STRUCTURES
WALKWAY DETAILS
ALUMINUM TRUSS & STEEL POST

District 2
Truss Replacement

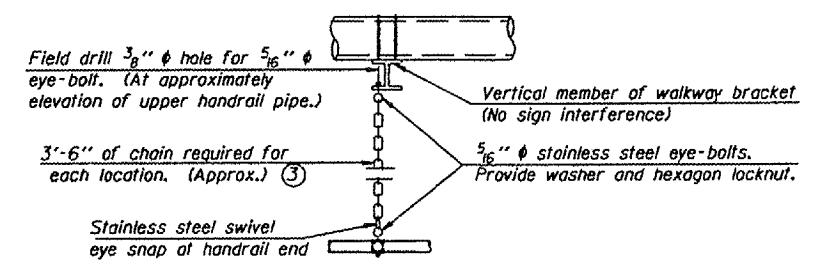
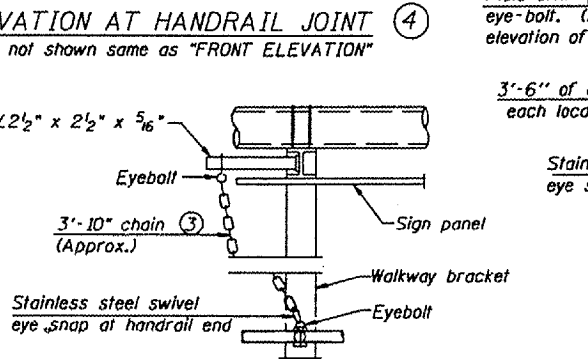
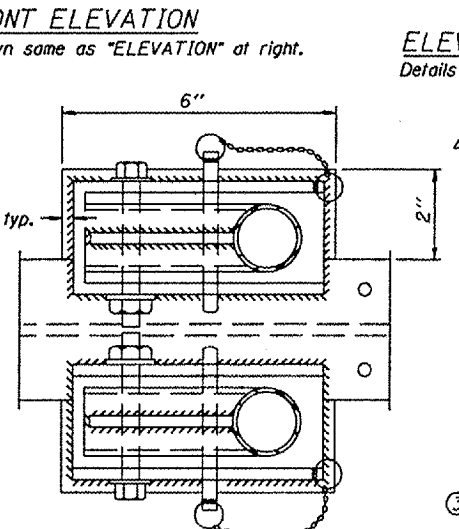
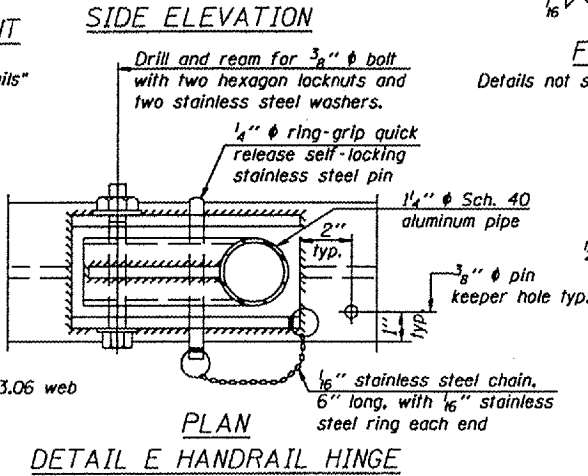
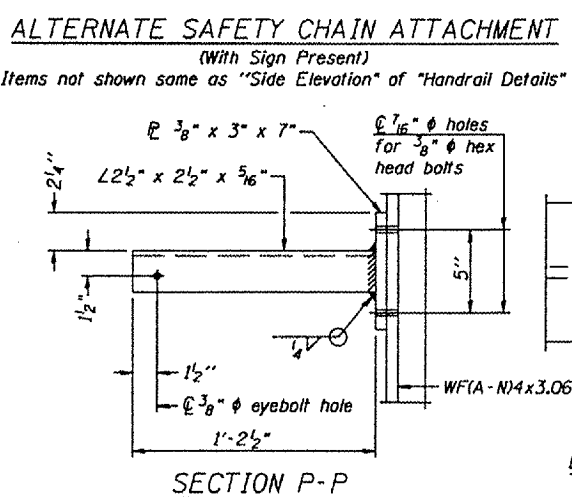


HANDRAIL DETAILS
Handrail pipe shall be ASTM B241 or B429, Alloy 6063-T6 or Alloy 6061-T6.

① Install standard force-fit end caps or weld 1/8 inch end plates with 1/8 inch c.f.w. and grind smooth. (All rail ends)
Fittings-ASTM B26, Alloy 356-T7 or 1 1/2 inch aluminum pipe
② Horizontal handrail member shall be continuous thru fitting. Provide 1/16 inch hole in fitting for 3/8 inch bolt. Field drill 1/16 inch hole in horizontal rail member. Provide locknut and two stainless steel washers for bolt. (Use 5/8 inch eyebolts in 1/16 inch holes on top rail at ends only.)



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



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

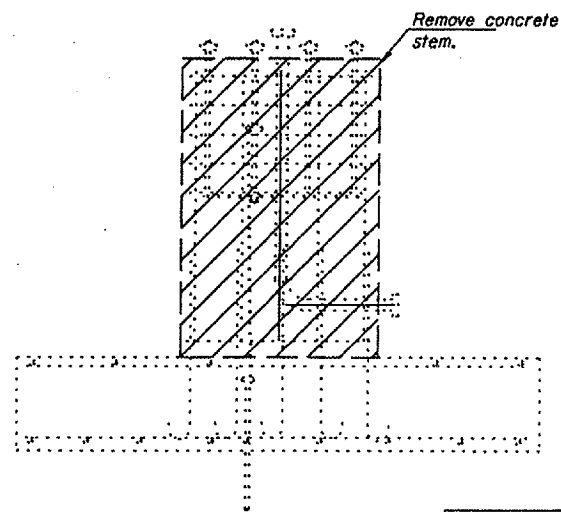
NUMBER	REVISION	DATE

CANTILEVER SIGN STRUCTURES
HANDRAIL DETAILS
ALUMINUM TRUSS & STEEL POST

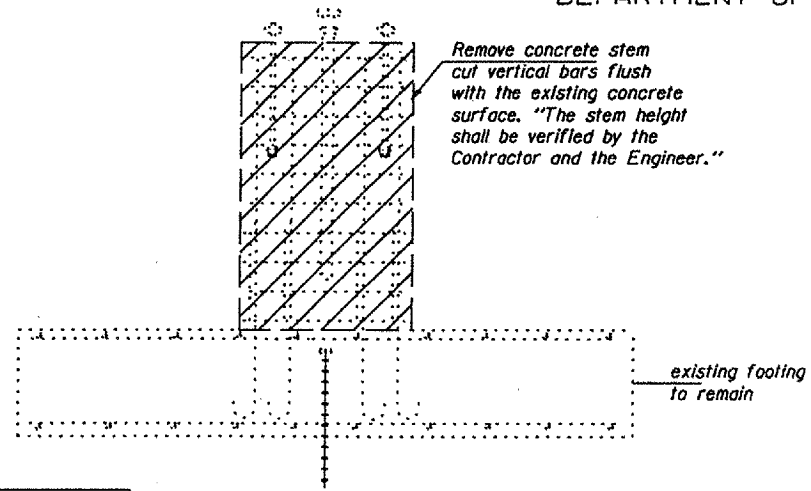
District 2
Truss Replacement

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

Various Routes
OVD SIN STR REP & REPL 2007-9
Various Counties
Sheet 30 of 50
Contract Number 44933

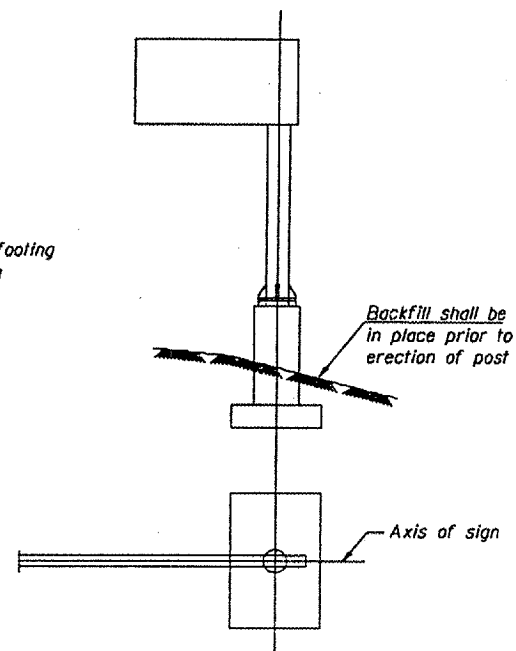


EXISTING END ELEVATION

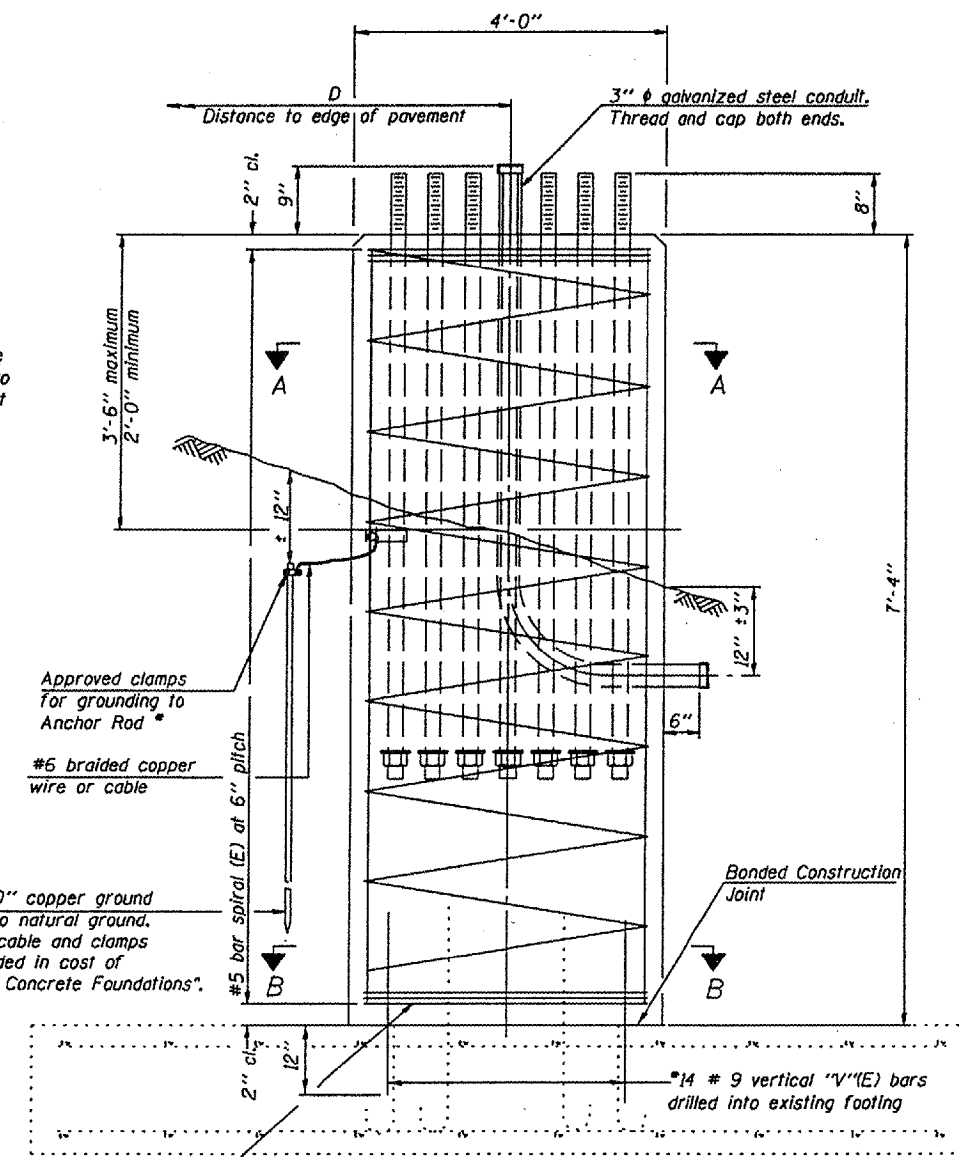


EXISTING END ELEVATION

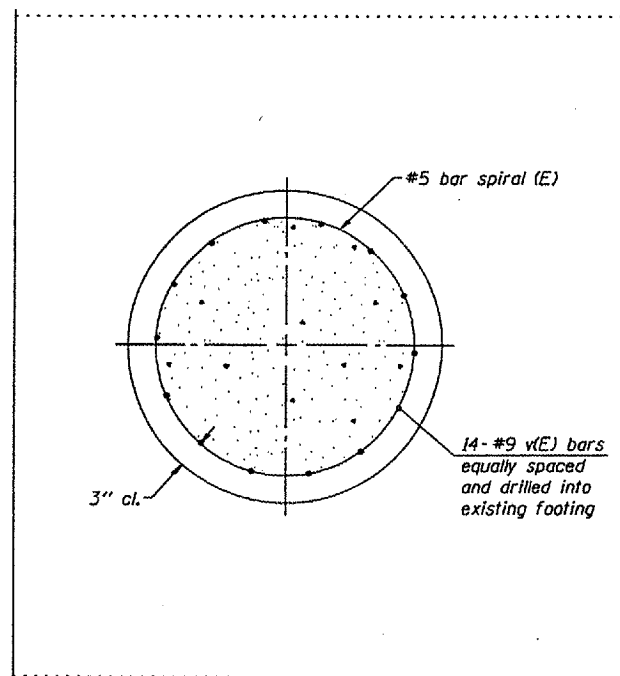
All bars beyond new stamp shall be cut off flush and sealed with epoxy.



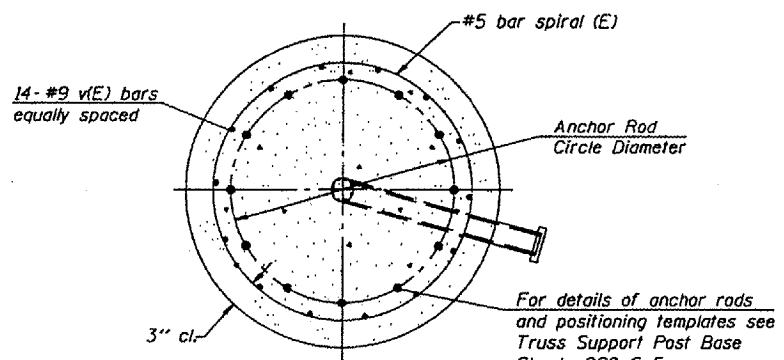
FOOTING PLAN



PROPOSED ELEVATION



SECTION B-B
4'-0" ϕ stem



SECTION A-A
4'-0" ϕ shaft

$\frac{3}{4}$ " ϕ x 10'-0" copper ground rod driven into natural ground. Cost of rod, cable and clamps shall be included in cost of "Drilled Shaft Concrete Foundations".

* #9 vertical bars shall be epoxy grouted in accordance with section 584 of the Std. Specifications. Minimum embedment into the concrete shall be 12".

DESIGNED -	200
CHECKED -	EXAMINED
DRAWN -	PASSED
CHECKED -	ENGINEER OF BRIDGES AND STRUCTURES

Concrete shall be placed monolithically, with a bonded construction joint as shown. 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 Seal Sealer application will be required on concrete surfaces above the lowest elevation 6" below finished ground line. Cost included in "Concrete Foundation".

Structure No. 2C101AUBOR000.0
OVERHEAD SIGN STRUCTURES
SPREAD FOOTING DETAILS
FOR TYPE II-C-A

District 2
Truss Replacement

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

Various Routes
OVD SIN STR REP & REPL 2007-9
Various Counties
Sheet 31 of 50
Contract Number 44933

District 6
Schedule of Locations for Truss Repair & Replacement

Location No.:	6-01	State I.D. No.:	6S075I072L004.9		
County:	Pike	Route:	I-72	M.P.:	4.9
		Direction:	WB		
Description of Work	Unit	Quantity			
REMOVE OVERHEAD SIGN STRUCTURE-SPAN	EACH	1.00			
OVERHEAD SIGN STRUCTURE-SPAN TYPE II-A	FOOT	104.00			
REMOVE & REINSTALL SIGN PANEL	SQ FT	468.00			
REMOVE & REINSTALL WALKWAY	FOOT	59.00			
REPAIR HANDRAIL LOCKING PIN CONNECTION	EACH	6.00			
FURNISH & INSTALL SAFETY CHAIN	EACH	2.00			
FURNISH & INSTALL METAL SCREEN	EACH	4.00			
DISCONNECT / RECONNECT ELECTRIC SERVICE	EACH	1.00			
REPLACE/TIGHTEN CLIP PER SIGN	EACH	1.00			
This structure is being downsized from a Type IV truss to a Type II truss.					

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 of 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) 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.

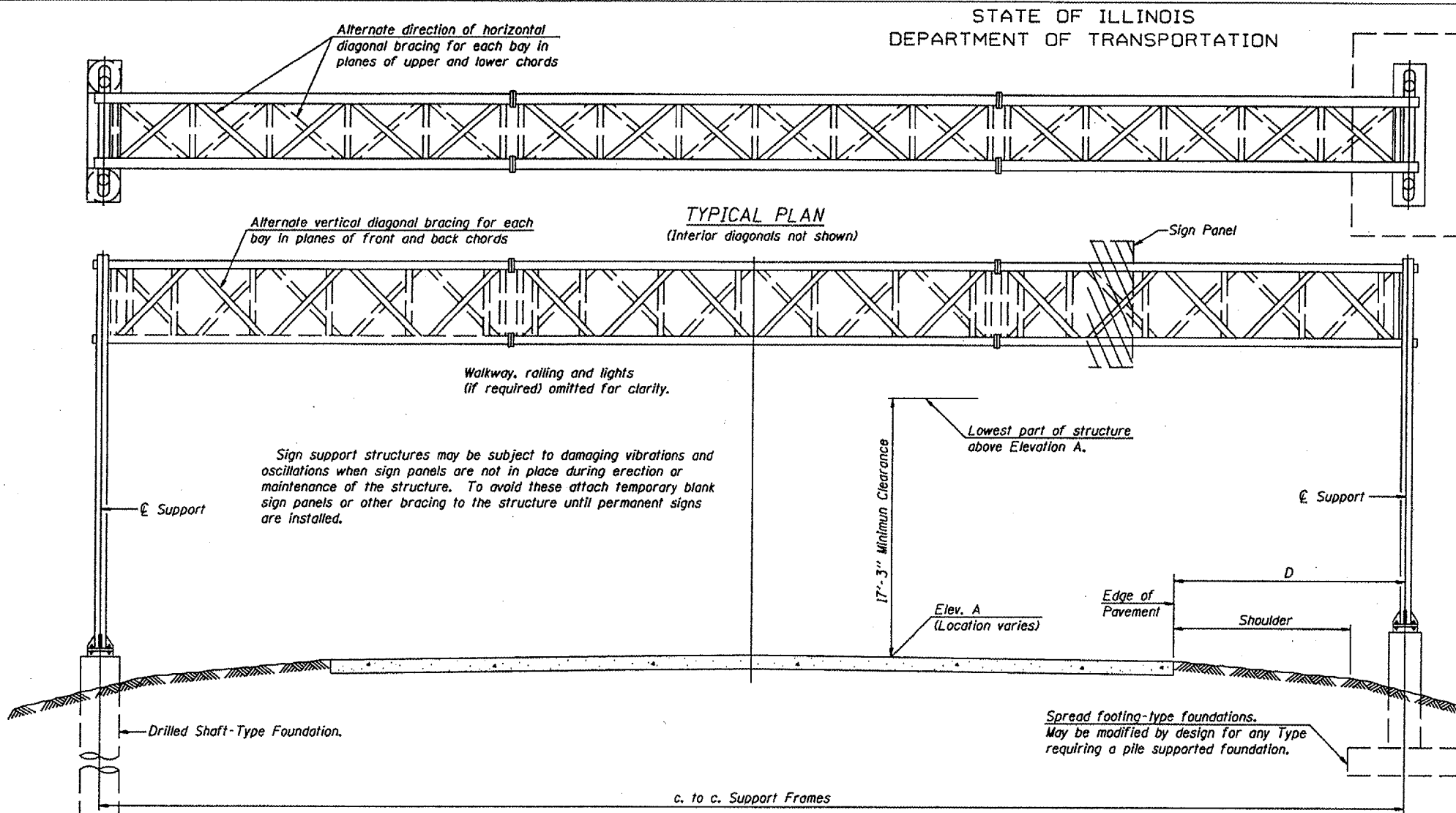
CONCRETE SURFACES: All concrete surfaces above an elevation 6" below the lowest final ground line at each foundation shall be cleaned and coated with Bridge Seat Sealer in accordance with the Standard Specifications.

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 6
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.

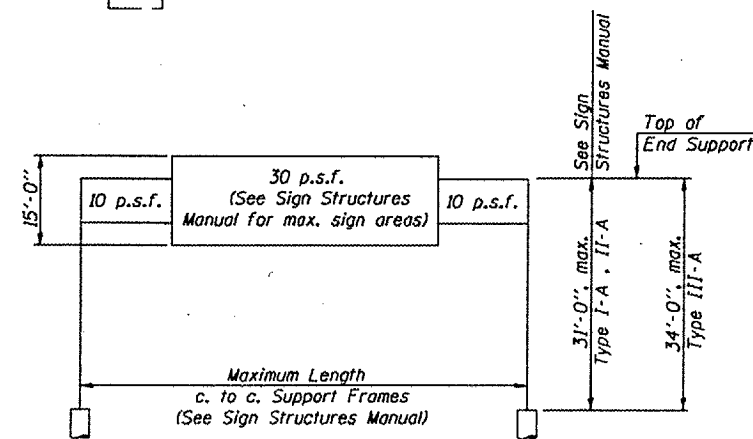
Structure Number	Station	Design Truss Type	c. to c. Supports	Elev. A	Dim. D	Height of Tallest Sign	Total Sign Area
6S0751072L004.9	1060 + 00	II-A	104 - 0"	465.19	41' - 6"	12' - 6"	468.00

**Looking upstation for structures with signs both sides.
FOUNDATIONS: The contract unit price for "Concrete Foundations" and "Drilled Shaft Concrete Foundations" shall include reinforcement bars complete in place.

TOTAL BILL OF MATERIAL

NUMBER	REVISION	DATE

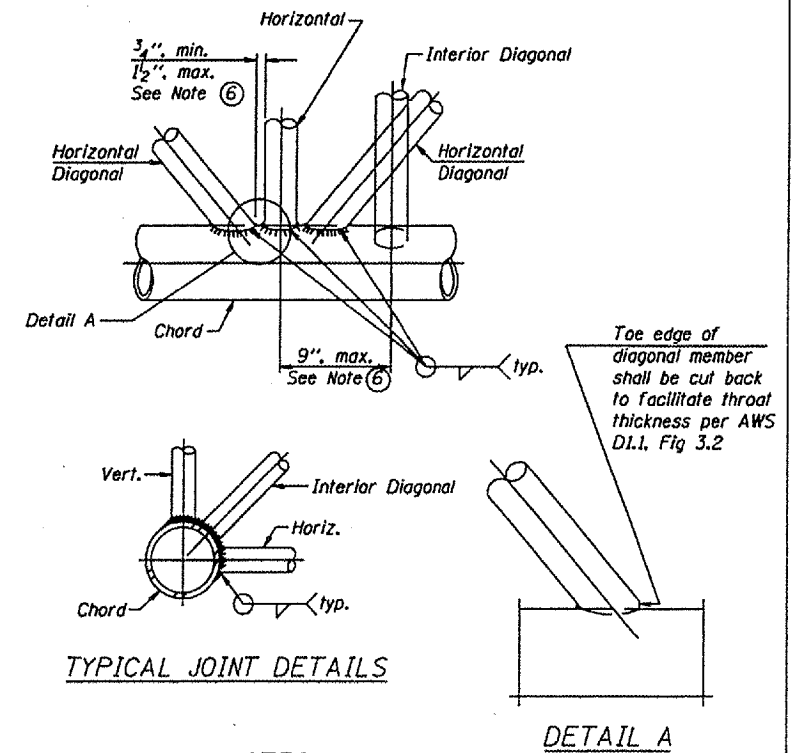
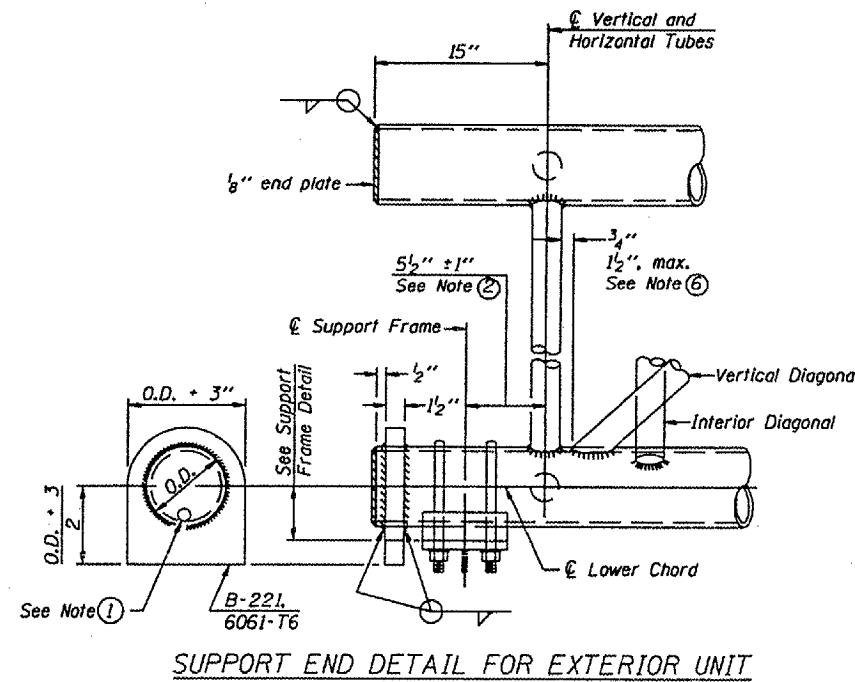
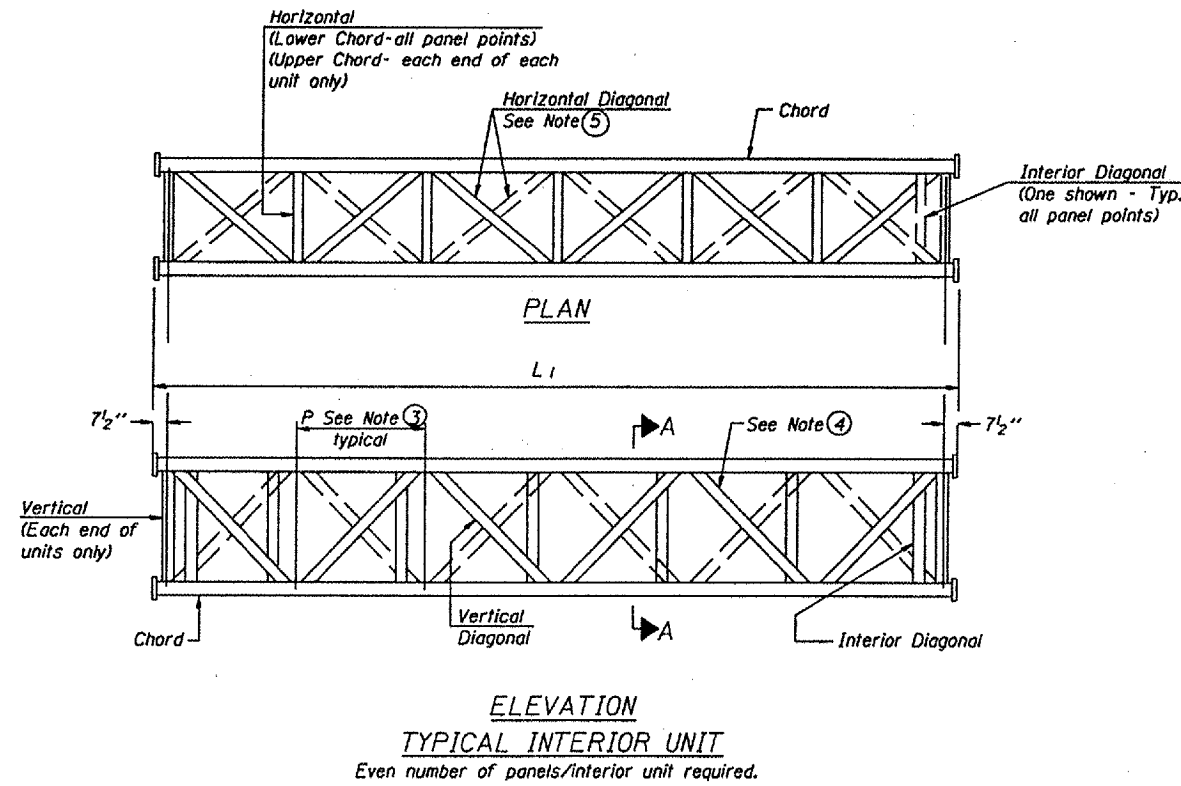
ITEM	UNIT	TOTAL
OVERHEAD SIGN STRUCTURE SPAN TYPE I-A	Foot	
OVERHEAD SIGN STRUCTURE SPAN TYPE II-A	Foot	
OVERHEAD SIGN STRUCTURE SPAN TYPE III-A	Foot	
OVERHEAD SIGN STRUCTURE WALKWAY TYPE A	Foot	
CONCRETE FOUNDATIONS	Cu. Yds.	
DRILLED SHAFT CONCRETE FOUNDATIONS	Cu. Yds.	



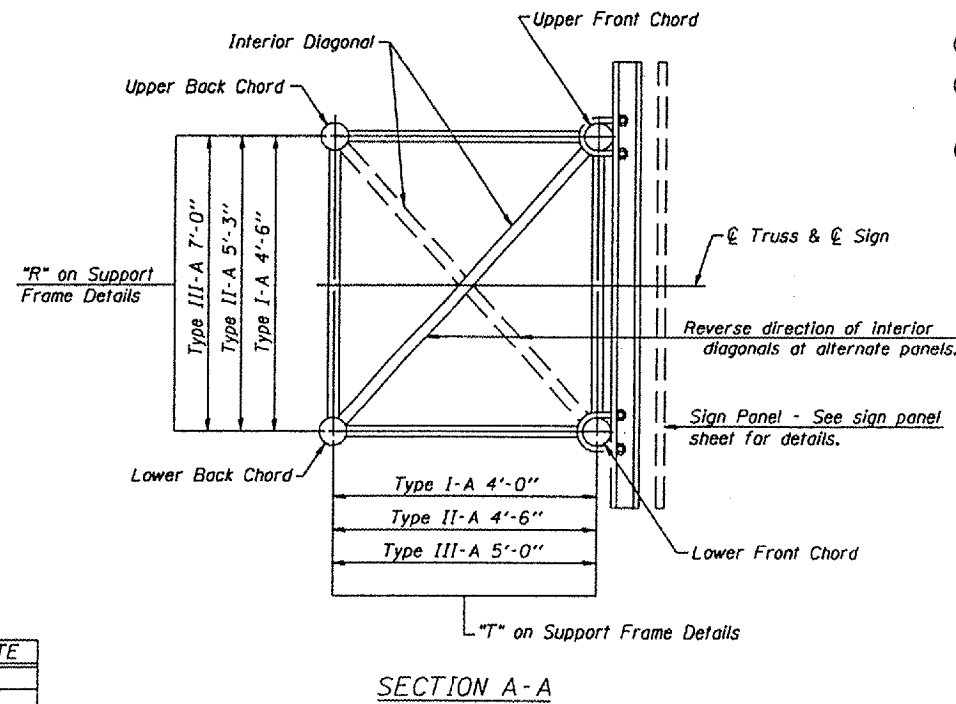
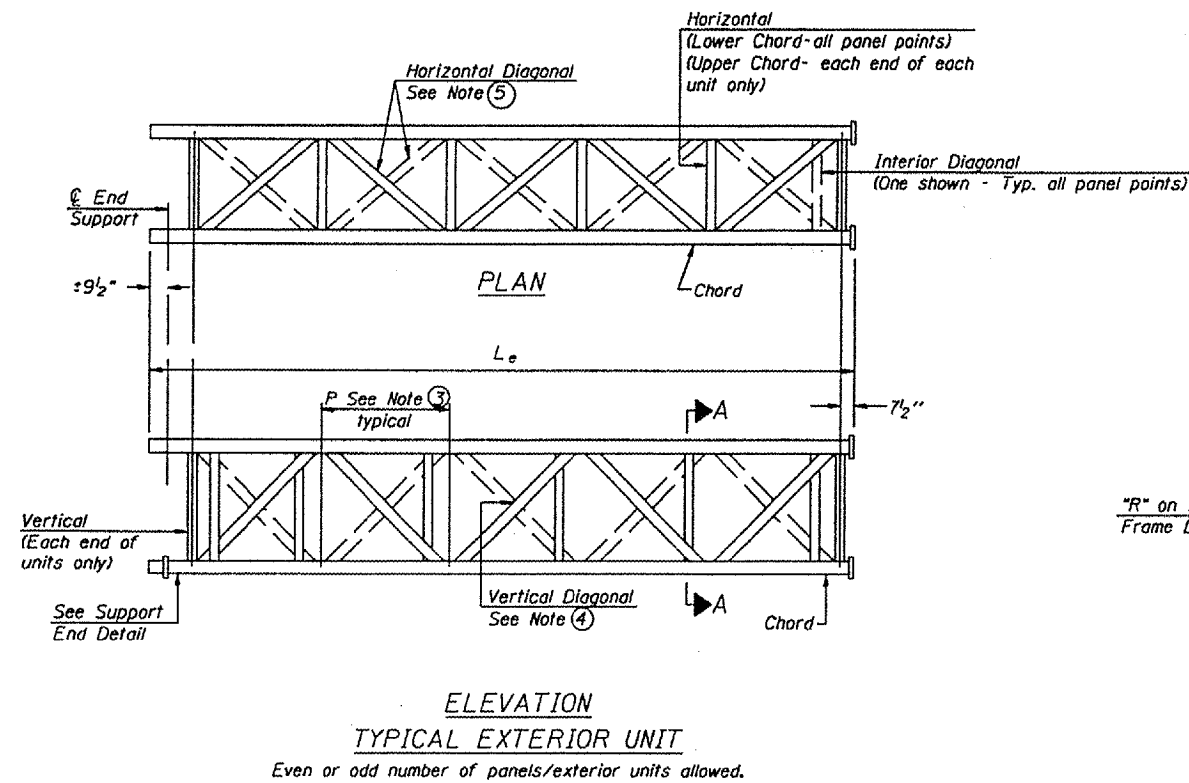
DESIGN WIND LOADING DIAGRAM

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



- 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 ± 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

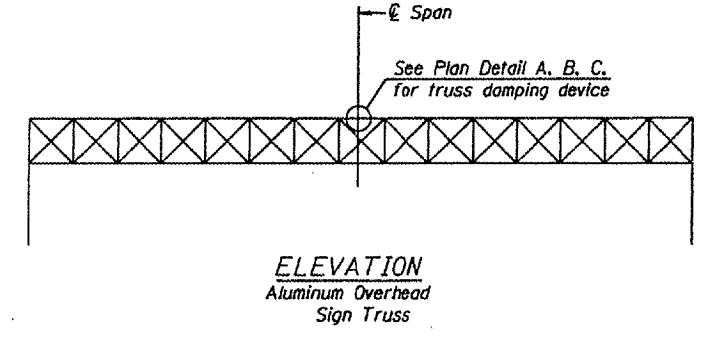
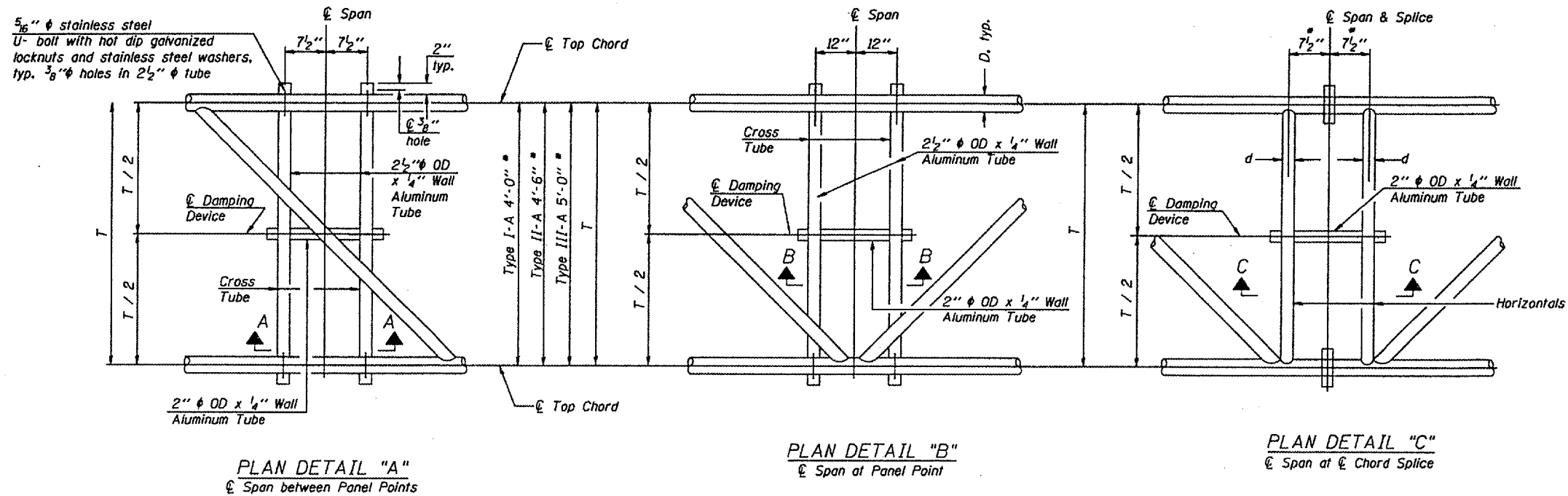
District 6
Overhead Sign
Structure Replacement

DESIGNED -	
CHECKED -	
DRAWN -	
CHECKED -	

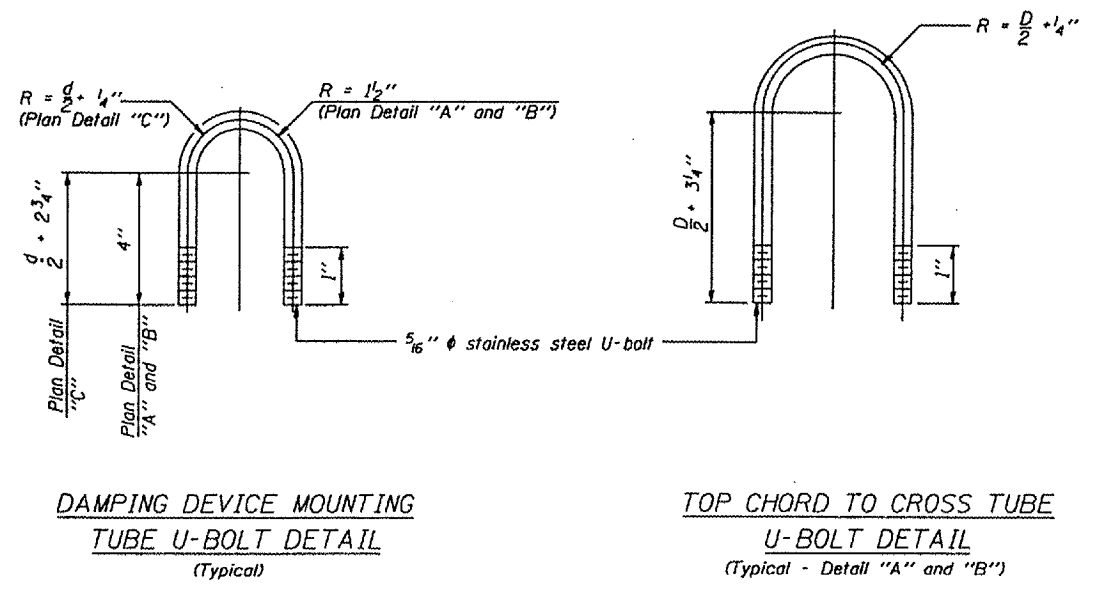
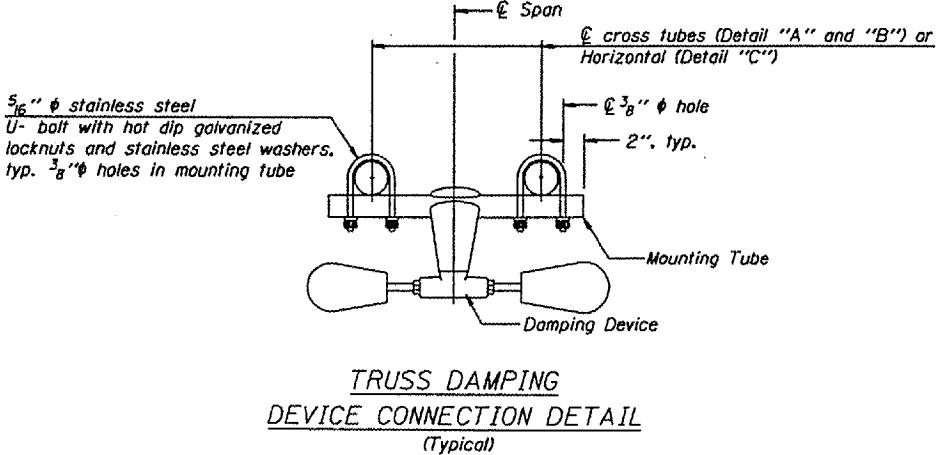
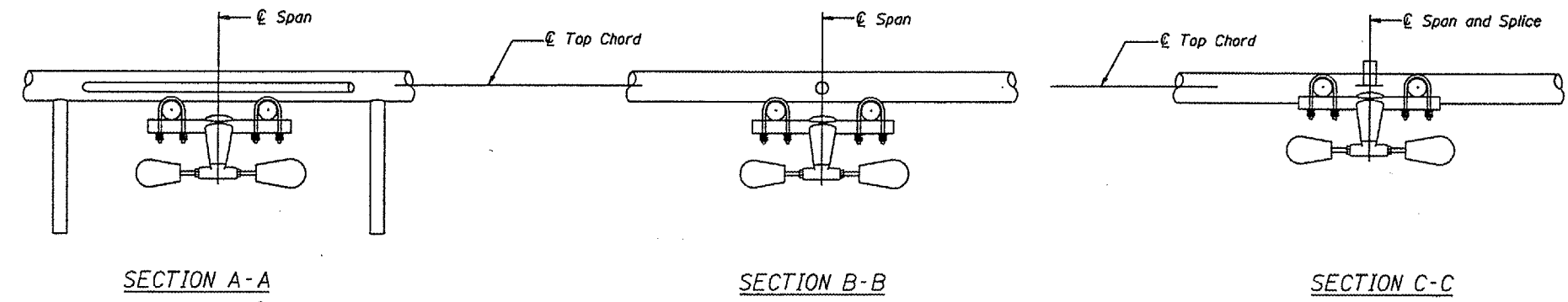
EXAMINED	20
PASSED	ENGINEER OF BRIDGE DESIGN
	ENGINEER OF BRIDGES AND STRUCTURES

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. 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...

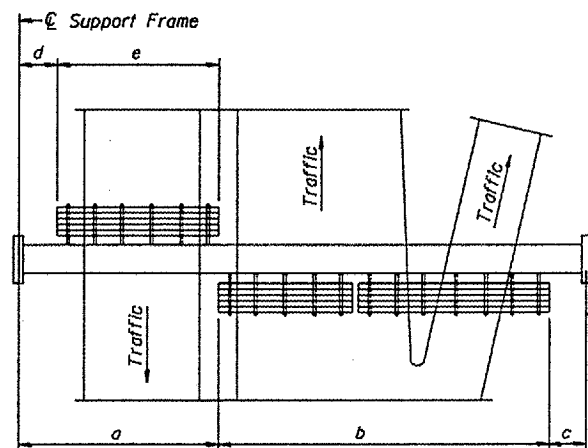


OVERHEAD SIGN STRUCTURE
DAMPING DEVICE

District 6
Overhead Sign
Structure Replacement

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

OS-A-D 7/01/2006



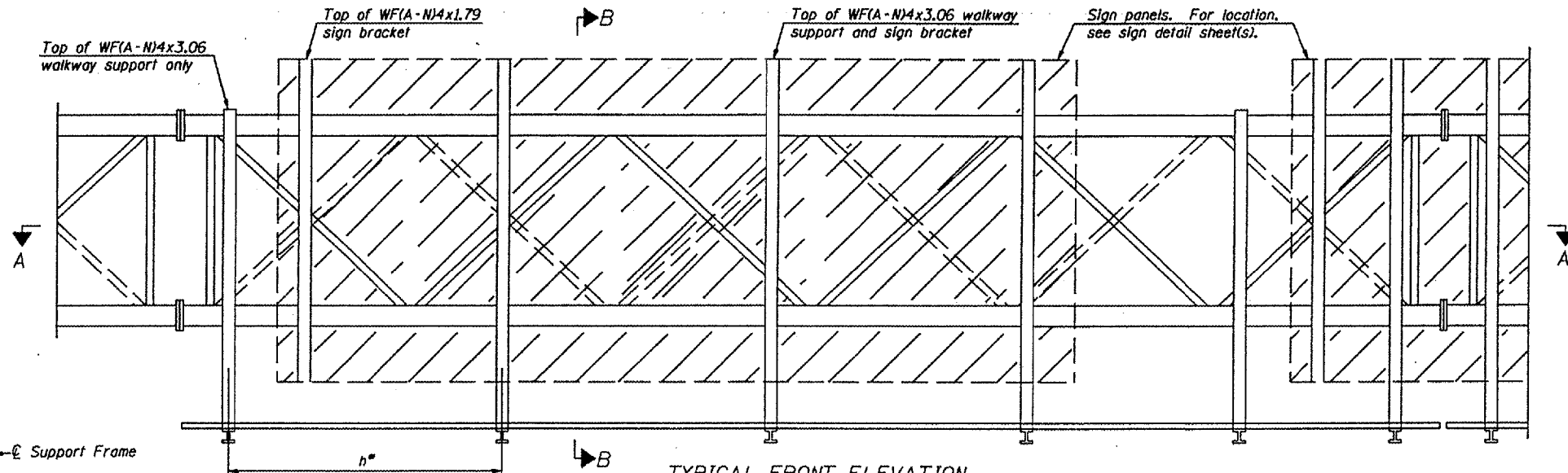
PLAN
WALKWAY AND HANDRAIL SKETCH
(Road plan beneath truss varies)

BRACKET TABLE

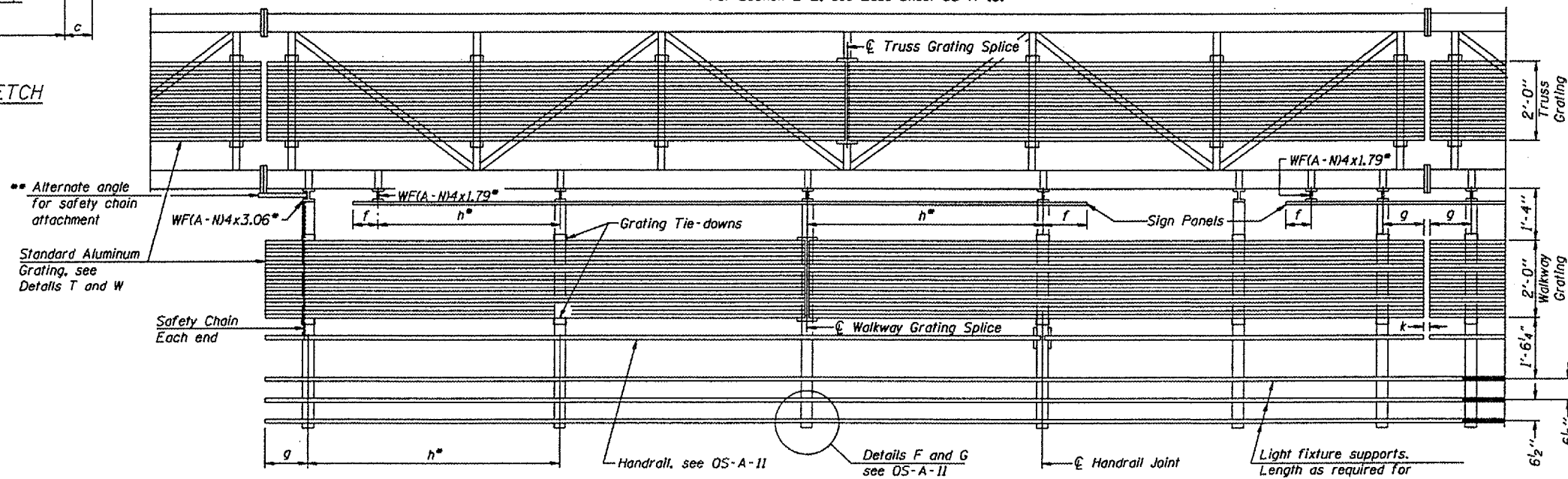
Sign Width		Number Brackets Required
Greater Than	Less Than or Equal To	
8'-0"	8'-0"	2
14'-0"	14'-0"	3
20'-0"	20'-0"	4
26'-0"	26'-0"	5
32'-0"	32'-0"	6

Notes:

- Space walkway brackets WF(A)-N4x3.06 and sign brackets WF(A)-N4x1.79 for efficiency and within limits shown:
 $f = 12''$ maximum, $4''$ minimum (End of sign to ϕ of nearest bracket)
 $g = 12''$ maximum, $4''$ minimum (End of walkway grating to ϕ of nearest support bracket)
 $h = 6'-0''$ maximum (ϕ to ϕ sign and/or walkway support brackets, WF(A)-N4x1.79 or WF(A)-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.



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) $\pm 12''$ on overhead trusses. Cost of truss grating is included in "Overhead Sign Structure".

Structure Number	Station	a	b	c	d	e	Walkway Grating and Handrail Lengths
6S0751072L004.9	1060 + 00	N/A	N/A	N/A	N/A	N/A	105' - 5"*

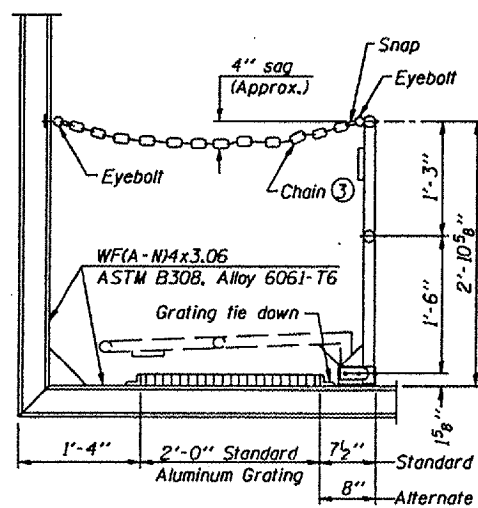
* Length shown is for internal truss grating to be installed.

OVERHEAD SIGN STRUCTURES
ALUMINUM WALKWAY DETAILS

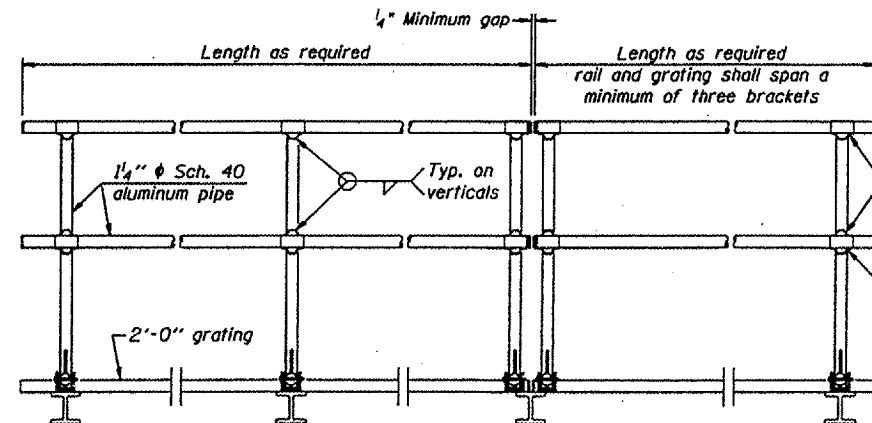
District 6
Overhead Sign
Structure Replacement

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

NUMBER	REVISION	DATE



SIDE ELEVATION
(Showing safety chain w/o sign)

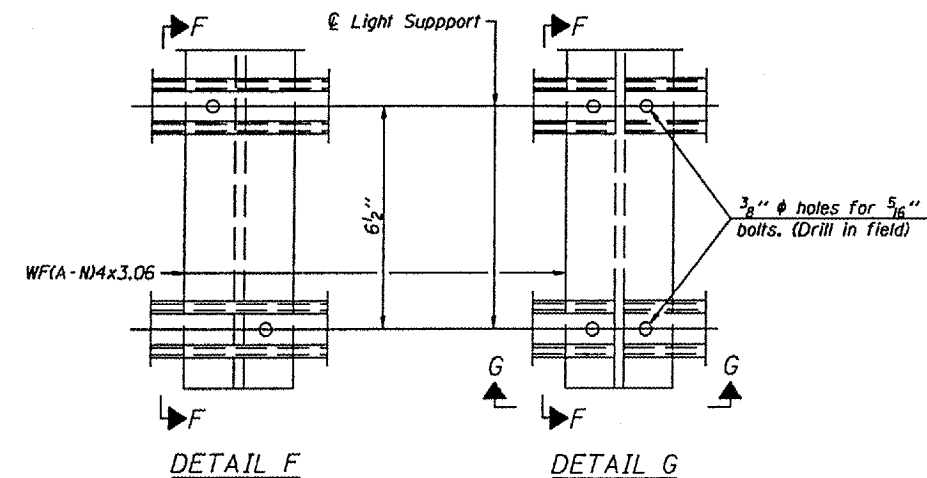


FRONT ELEVATION

HANDRAIL DETAILS

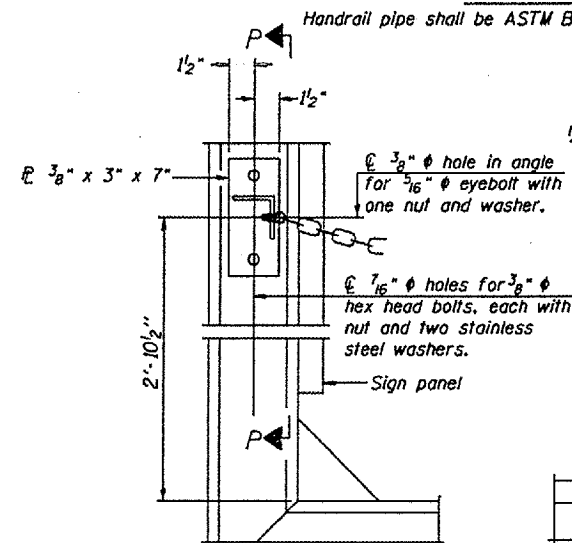
Handrail pipe shall be ASTM B241 or B429, Alloy 6063-T6 or Alloy 6061-T6.

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

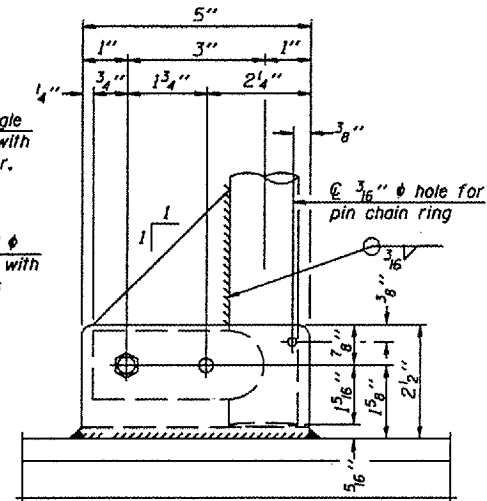


DETAIL F

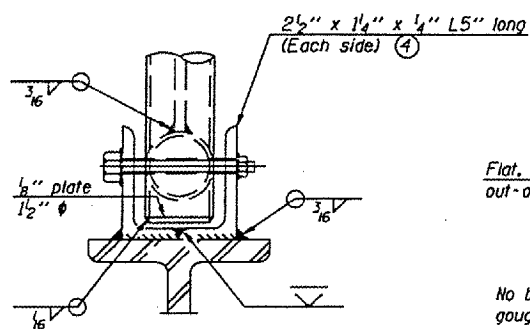
DETAIL G



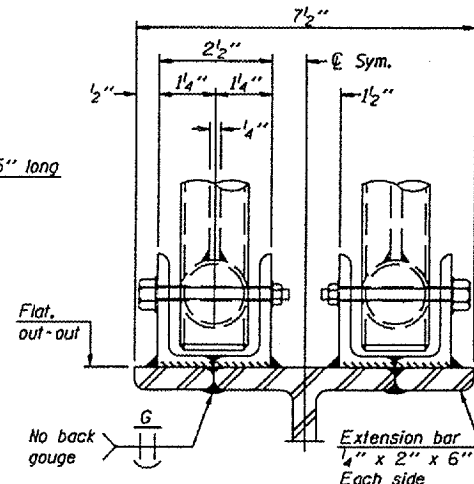
ALTERNATE SAFETY CHAIN ATTACHMENT
(With Sign Present)
Items not shown same as "Side Elevation" of "Handrail Details"



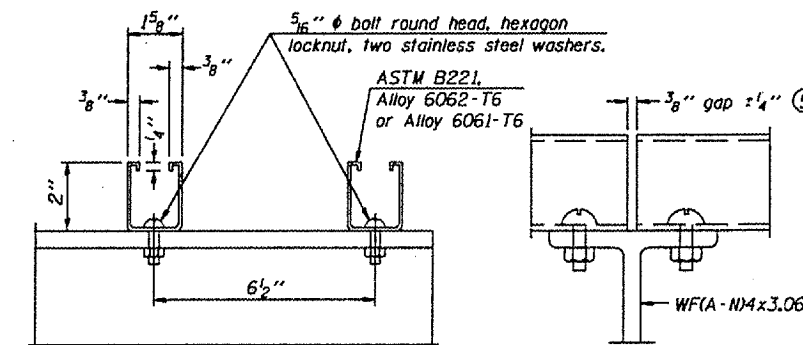
SIDE ELEVATION



FRONT ELEVATION
See "Elevation" at right for dimensions.



ELEVATION AT HANDRAIL JOINT

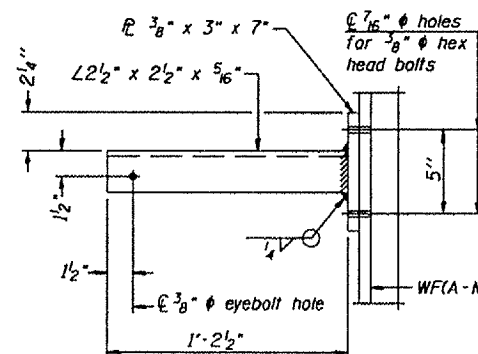


SECTION F-F

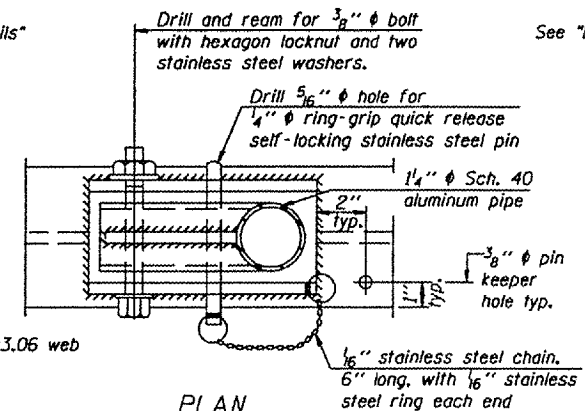
SECTION G-G

LIGHTING FIXTURE MOUNTS (IF REQUIRED)

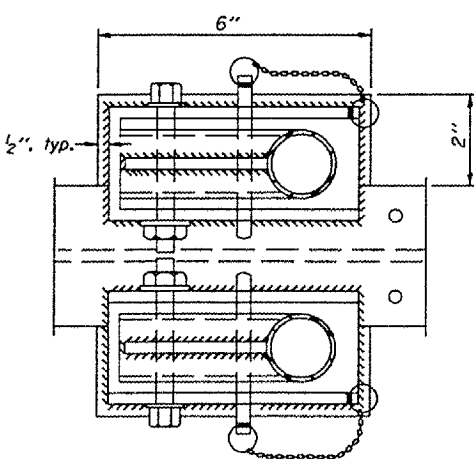
- 5 Field cut ends of light support channels shall be free of burrs or hazardous projections and coated with zinc-rich primer or equivalent.



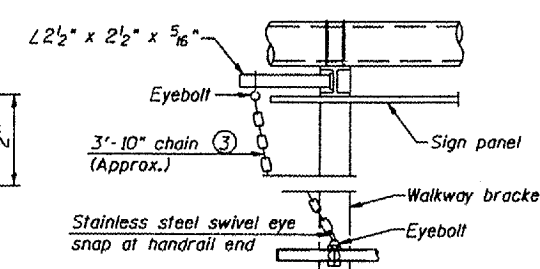
SECTION P-P



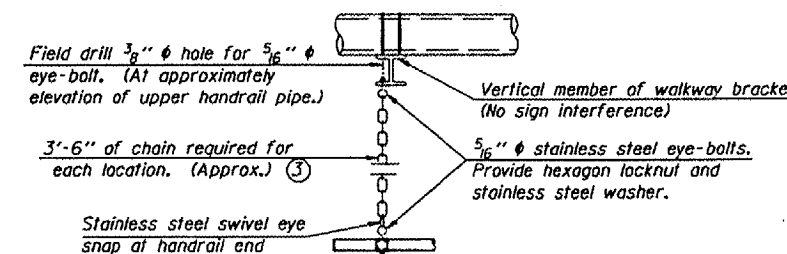
PLAN
DETAIL E HANDRAIL HINGE



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



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



SAFETY CHAIN

One required for each end of each walkway.

DESIGNED	-
CHECKED	-
DRAWN	-
CHECKED	-

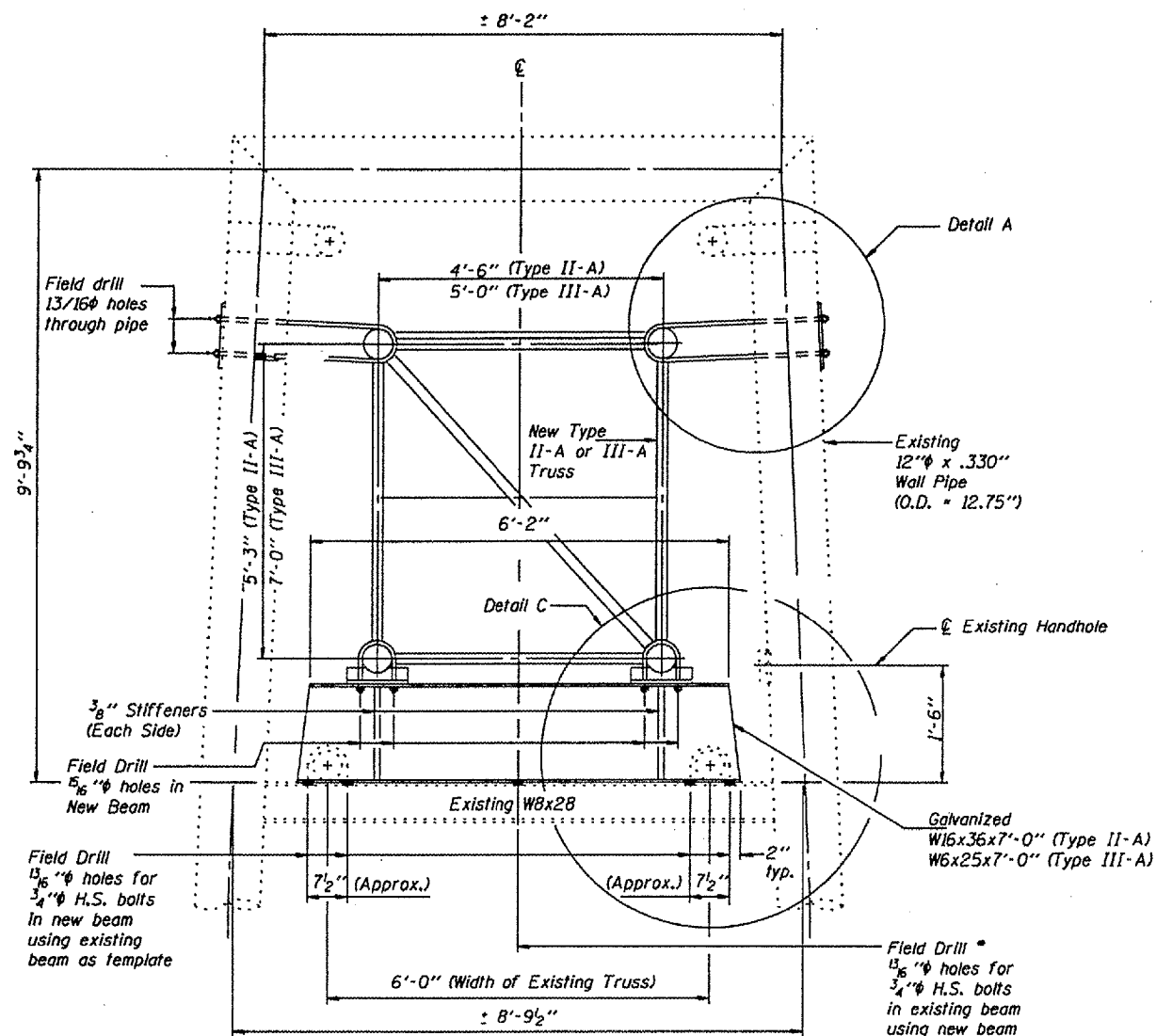
EXAMINED	20
PASSED	ENGINEER OF BRIDGE DESIGN
	ENGINEER OF BRIDGES AND STRUCTURES

NUMBER	REVISION	DATE

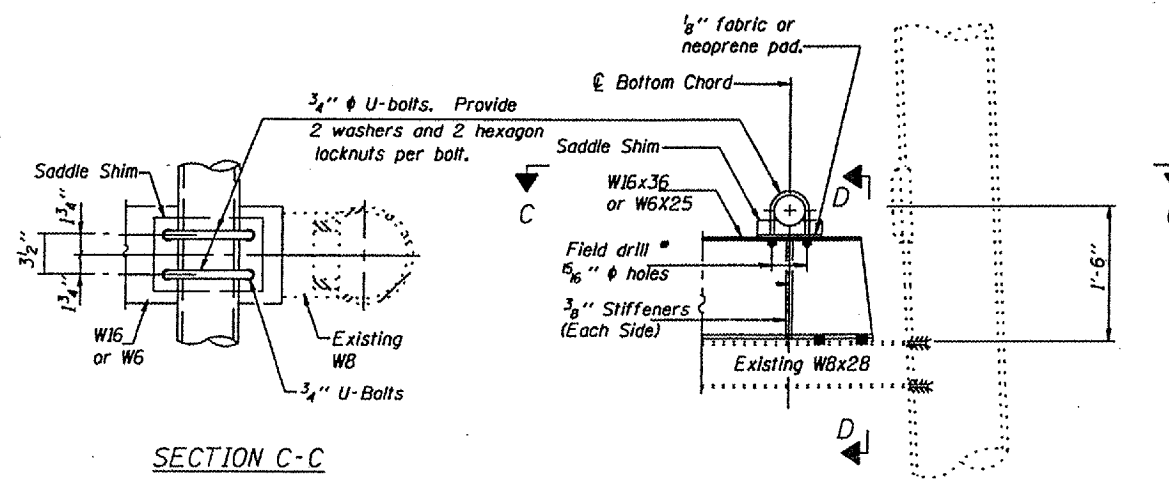
- 3 3/16" Type 304L stainless steel chain, approximately 12 links per foot.
- 4 Extrusions may be used in lieu of the details shown, with approval of the Engineer.

OVERHEAD SIGN STRUCTURES
ALUMINUM HANDRAIL DETAILS

District 6
Overhead Sign
Structure Replacement

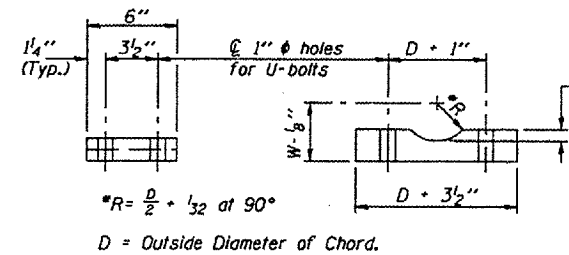


SIDE VIEW



SECTION C-C

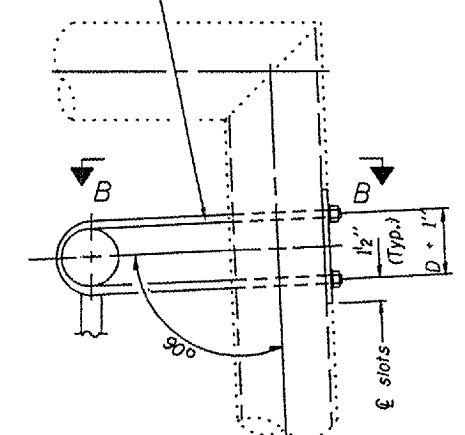
DETAIL C



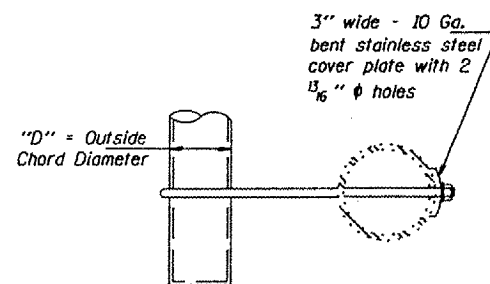
SADDLE SHIM DETAIL

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

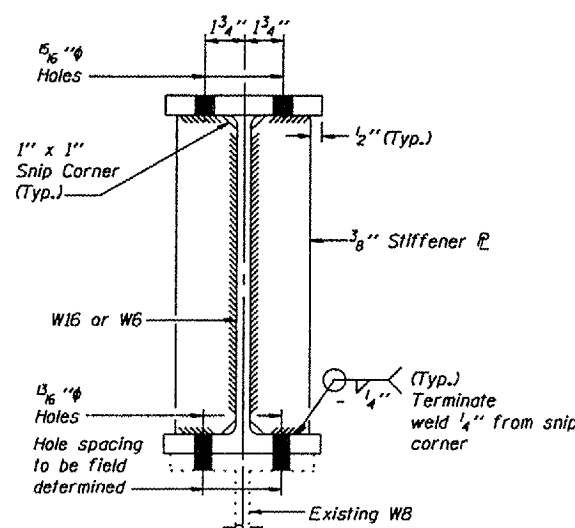
3/4" stainless steel U-bolt.
Provide two washers and two hexagon locknuts. Field drill 5/16" holes through pipe (4 holes required per pipe).



DETAIL A



SECTION B-B



SECTION D-D

OVERHEAD SIGN STRUCTURES
EXISTING SUPPORT FRAME
RETROFIT for ALUMINUM TRUSS

District 6
Overhead Sign
Structure Replacement

DESIGNED	28
CHECKED	EXAMINED
DRAWN	PASSED
CHECKED	ENGINEER OF BRIDGES AND STRUCTURES

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

Various Routes
OVD SIN STR REP & REPL 2007-9
Various Counties
Sheet 40 of 50
Contract Number 44933

District 8
Schedule of Locations for Truss Repair & Replacement

Location No.:	8-01	State I.D. No.:	8S060I055L017.2				
County:	Madison	Route:	I - 55	M.P.:	17.2	Direction:	WB
Description of Work		Unit	Quantity				
REMOVE OVERHEAD SIGN STRUCTURE-SPAN		EACH	1.00				
OVERHEAD SIGN STRUCTURE - SPAN, TYPE II A		FOOT	80.00				
FURNISH & INSTALL METAL SCREEN		EACH	4.00				
DISCONNECT / RECONNECT ELECTRIC SERVICE		EACH	1.00				
REMOVE & REINSTALL SIGN PANEL		SQ FT	472.50				
REMOVE & REINSTALL WALKWAY		FOOT	39.00				
This truss is being downsized from a Type IV truss to a Type II truss. The existing end supports will be used.							
All work must be completed during District 8 non-peak hours.							

Location No.:	8-03	State I.D. No.:	8S060I055L018.3				
County:	Madison	Route:	I - 55	M.P.:	18.3	Direction:	WB
Description of Work		Unit	Quantity				
REMOVE OVERHEAD SIGN STRUCTURE - SPAN		EACH	1.00				
OVERHEAD SIGN STRUCTURE - SPAN, TYPE II A		FOOT	70.00				
FURNISH & INSTALL METAL SCREEN		EACH	4.00				
DISCONNECT / RECONNECT ELECTRIC SERVICE		EACH	1.00				
REMOVE & REINSTALL SIGN PANEL		SQ FT	336.00				
REMOVE & REINSTALL WALKWAY		FOOT	42.00				
This truss is being downsized from a Type IV truss to a Type II truss. The existing end supports will be used.							
All work must be completed during District 8 non-peak hours.							

Location No.:	8-02	State I.D. No.:	8S082S003L004.4				
County:	St. Clair	Route:	IL - 3	M.P.:	4.4	Direction:	SB
Description of Work		Unit	Quantity				
REMOVE OVERHEAD SIGN STRUCTURE - SPAN		EACH	1.00				
OVERHEAD SIGN STRUCTURE - SPAN TYPE IIA		FOOT	84.00				
OVERHEAD SIGN SUPPORT GROUT REPAIR		EACH	4.00				
FURNISH & INSTALL SAFETY CHAIN		EACH	2.00				
DISCONNECT / RECONNECT ELECTRIC SERVICE		EACH	1.00				
REMOVE & REINSTALL SIGN PANEL		SQ FT	377.00				
REMOVE & REINSTALL WALKWAY		FOOT	44.50				
This truss is being downsized from a Type IV truss to a Type II truss. The existing end supports will be used.							
All work must be completed during District 8 non-peak hours.							

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) 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.

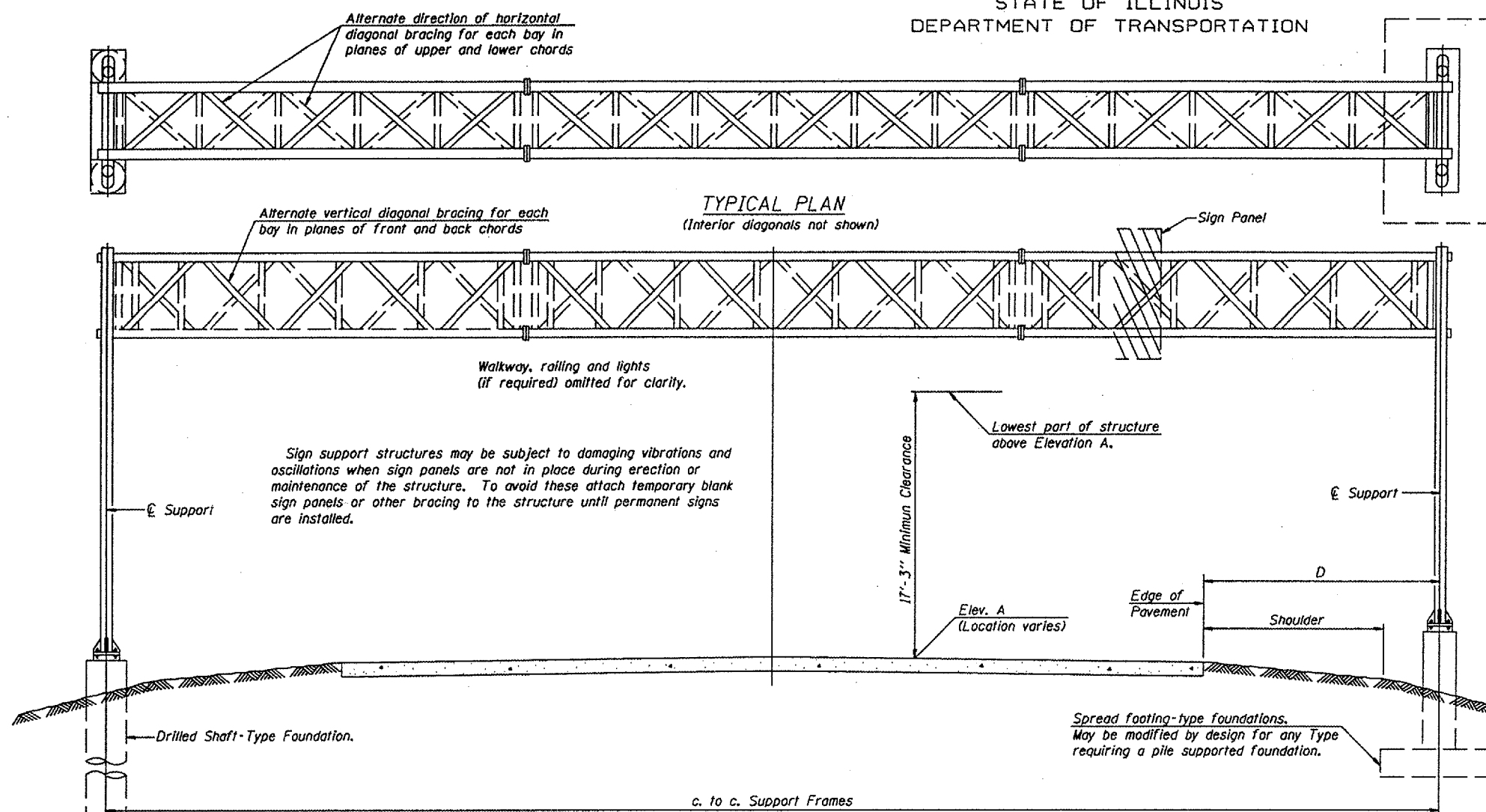
CONCRETE SURFACES: All concrete surfaces above an elevation 6" below the lowest final ground line of each foundation shall be cleaned and coated with Bridge Seal Sealer in accordance with the Standard Specifications.

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.

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

District 8
Overhead Sign Structure
Repair and Replacement



TYPICAL ELEVATION
(Looking at Face of Signs)**

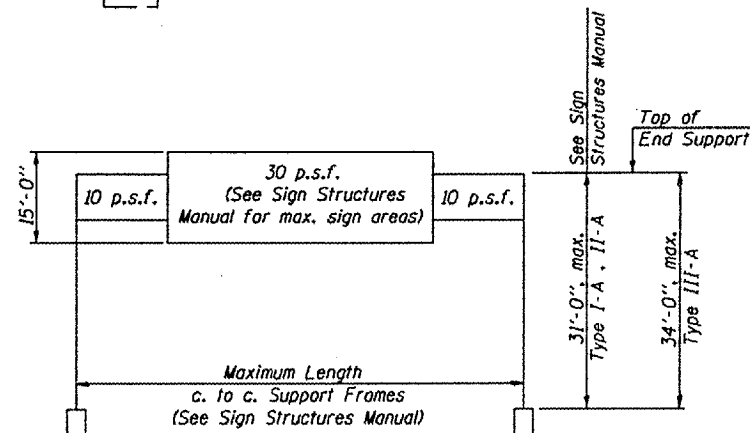
Elev. A = Elevation at point of minimum clearance to sign, walkway support or truss.

Structure Number	Station	Design Truss Type	c. to c. Supports	Elev. A	Dim. D	Height of Tallest Sign	Total Sign Area
BS0601055L017.2	840 + 00	II-A	80' - 0"	572.00	33' - 0"	13' - 60"	472.50
BS0825003L004.4	321 + 34	II-A	84' - 0"	416.70	32' - 0"	13' - 0"	377.00
BS0601055L018.3	1341 + 00	II-A	70' - 0"	96.55	15' - 0"	14' - 0"	336.00

**Looking upstation for structures with signs both sides.
FOUNDATIONS: The contract unit price for "Concrete Foundations" and "Drilled Shaft Concrete Foundations" shall include reinforcement bars complete in place.

TOTAL BILL OF MATERIAL

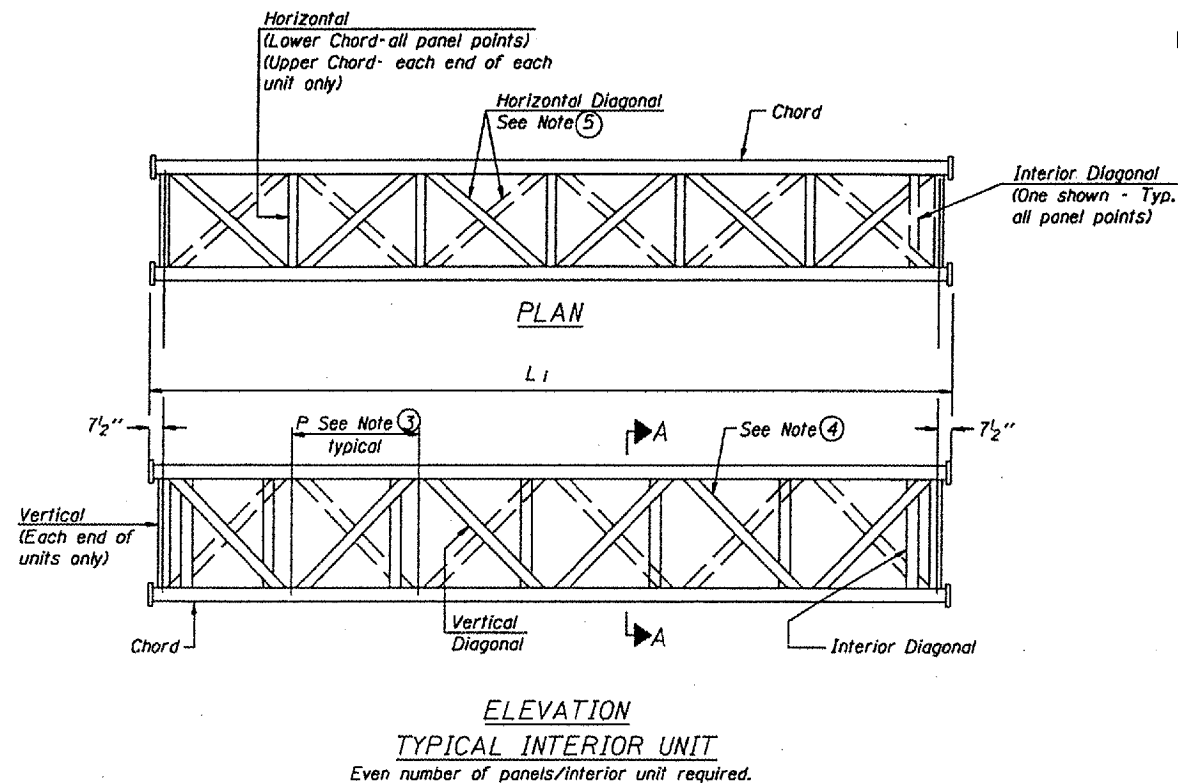
NUMBER	REVISION	DATE	ITEM	UNIT	TOTAL
			OVERHEAD SIGN STRUCTURE SPAN TYPE I-A	Foot	
			OVERHEAD SIGN STRUCTURE SPAN TYPE II-A	Foot	
			OVERHEAD SIGN STRUCTURE SPAN TYPE III-A	Foot	
			OVERHEAD SIGN STRUCTURE WALKWAY TYPE A	Foot	
			CONCRETE FOUNDATIONS	Cu. Yds.	
			DRILLED SHAFT CONCRETE FOUNDATIONS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



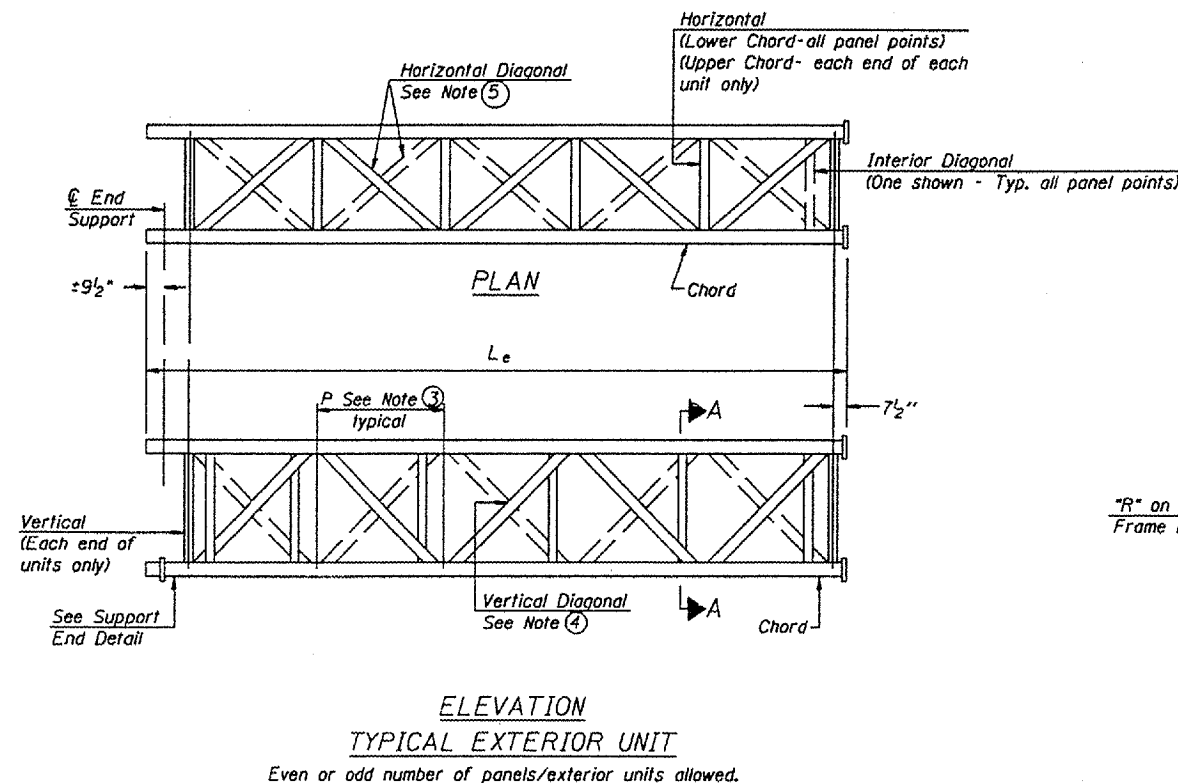
DESIGN WIND LOADING DIAGRAM

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.

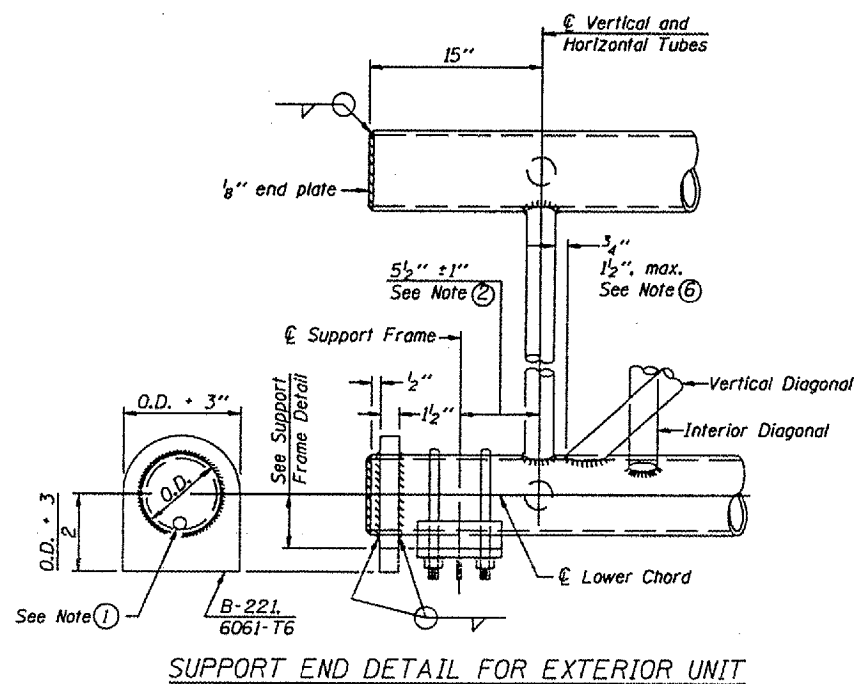
DESIGNED -	20
CHECKED -	EXAMINED
DRAWN -	PASSED
CHECKED -	ENGINEER OF BRIDGE DESIGN
	ENGINEER OF BRIDGES AND STRUCTURES



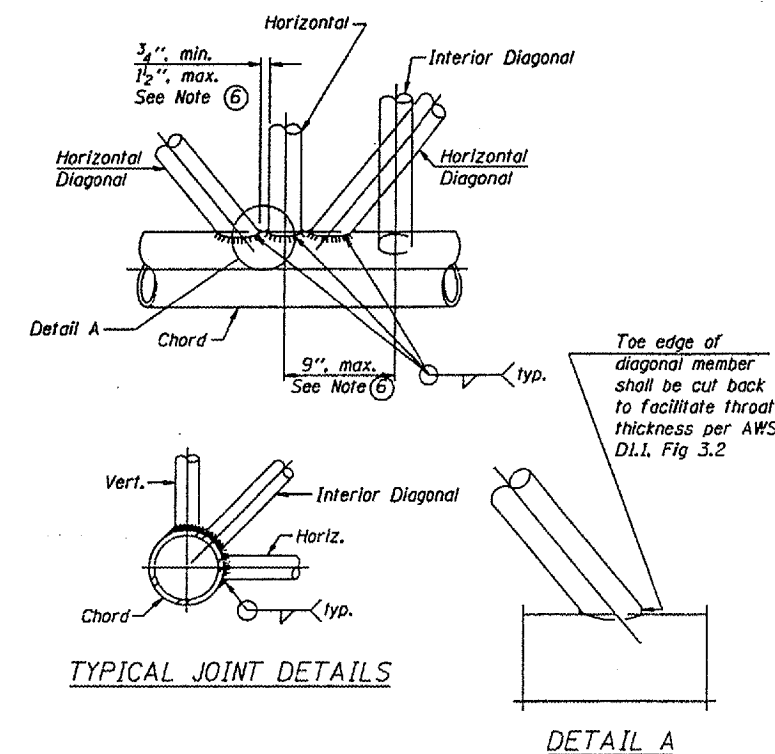
ELEVATION
TYPICAL INTERIOR UNIT
Even number of panels/interior unit required.



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



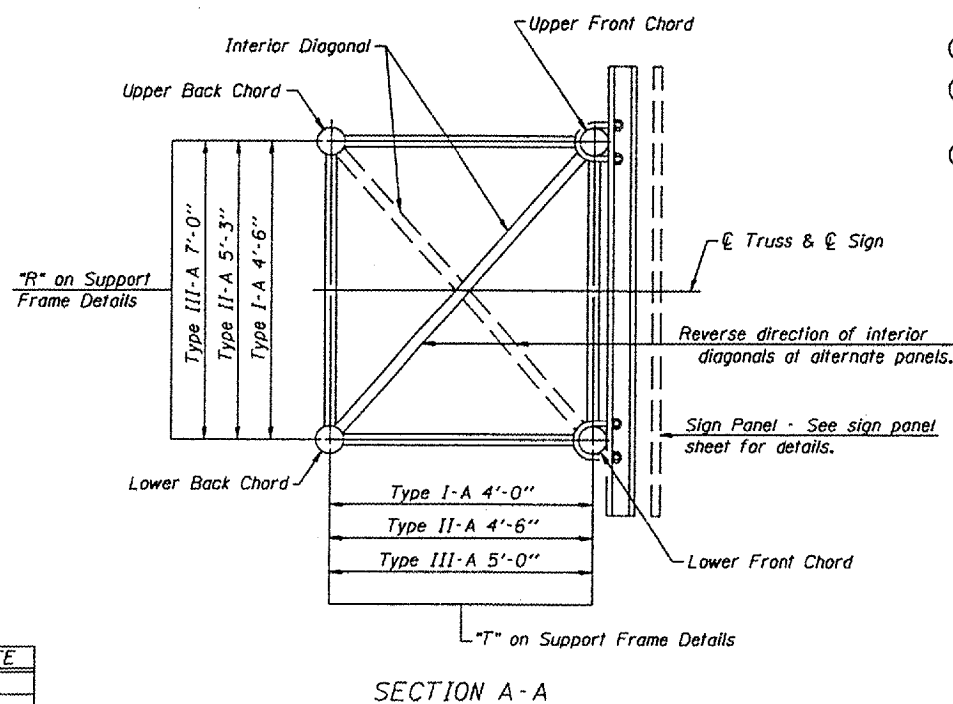
SUPPORT END DETAIL FOR EXTERIOR UNIT



TYPICAL JOINT DETAILS

DETAIL A

- NOTES
- 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 ± 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.



SECTION A-A

DESIGNED -	
CHECKED -	
DRAWN -	
CHECKED -	

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

NUMBER	REVISION	DATE

OS-A-2

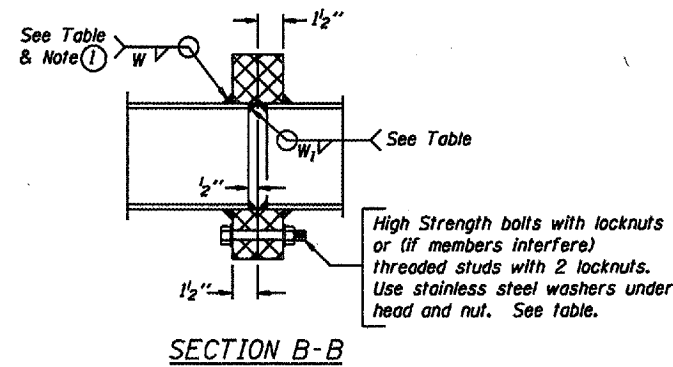
7/01/2006

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

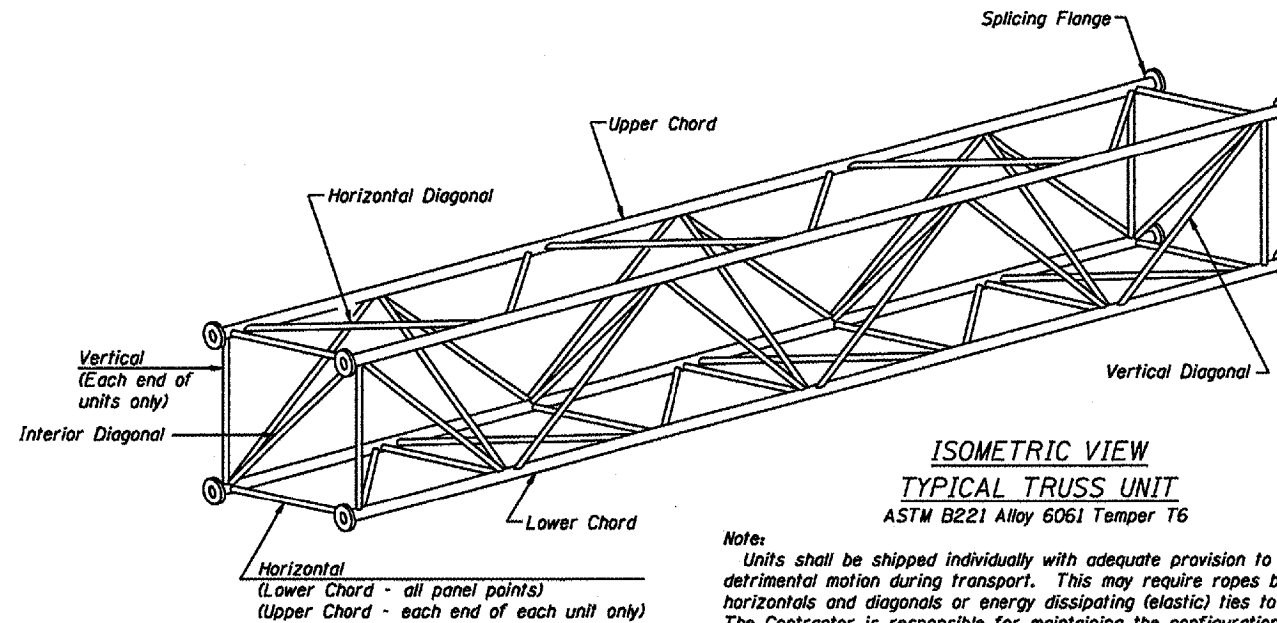
District 8
Overhead Sign Structure
Repair and Replacement

TRUSS UNIT TABLE

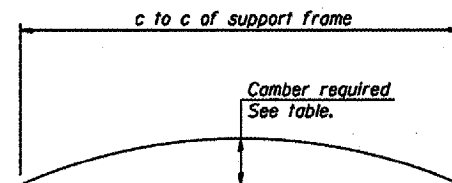
Structure Number	Station	Design Truss Type	Exterior Units (2)			Interior Unit				Upper & Lower Chord		Verticals, Horizontals, Vertical, Horizontal, and Interior Diagonals		Camber at Midspan	Splicing Flange					
			No. Panels per Unit	Unit Lgth.(L _e)	Panel Lgth.(P)	No. Req'd.	No. Panels per Unit	Unit Lgth.(L _i)	Panel Lgth.(P)	O.D.	Wall	O.D.	Wall		Bolts		Weld Sizes		A	B
															No./Splice	Dia.	W	W _i		
BS0601055L017.2	B40 + 00	II-A	5	29'-2"	5'-5 1/2"	1	4	23'-01"	5'-5 1/2"	5 1/2"	5/16"	3"	5/16"	2"	6	7/8"	3/8"	1/4"	9 1/4"	12 1/4"
BS0825003L004.4	321 + 34	II-A	5	27'-1"	5'-0 1/2"	1	6	31'-6"	5'-0 1/2"	5 1/2"	5/16"	3"	5/16"	2 1/4"	6	7/8"	3/8"	1/4"	9 1/4"	12 1/4"
BS0601055L018.3	1341 + 00	II-A	7	35'-8 1/2"	4'-10"					5 1/2"	5/16"	3"	5/16"	1 1/2"	6	7/8"	3/8"	1/4"	9 1/4"	12 1/4"



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



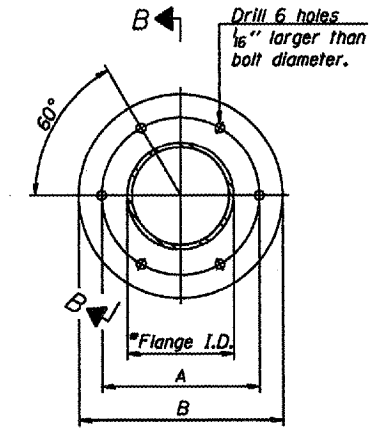
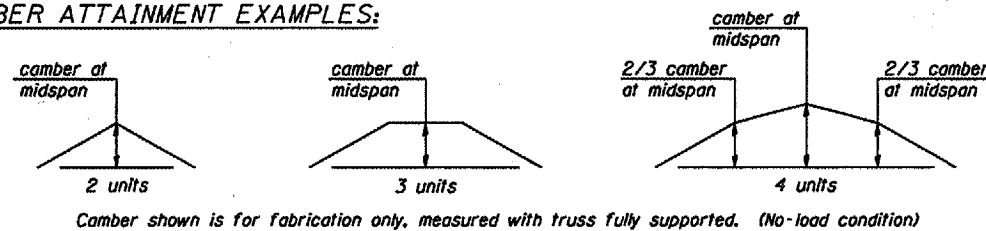
Note:
Units shall be shipped individually with adequate provision to prevent detrimental motion during transport. This may require ropes between horizontals and diagonals or energy dissipating (elastic) ties to the vehicle. The Contractor is responsible for maintaining the configuration and protection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



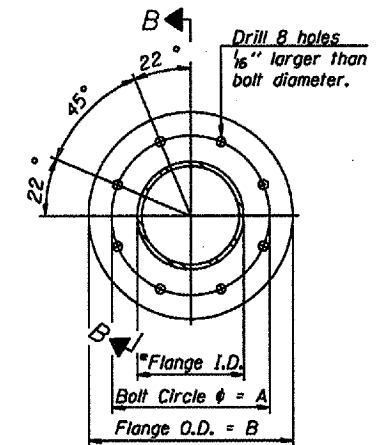
CAMBER DIAGRAM

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

CAMBER ATTAINMENT EXAMPLES:



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



TRUSS TYPES II-A & III-A

SPLICING FLANGES

ASTM B221, Alloy 6061-T6
or ASTM B209, Alloy 6061-T651

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

NUMBER	REVISION	DATE

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

OS4-A-2

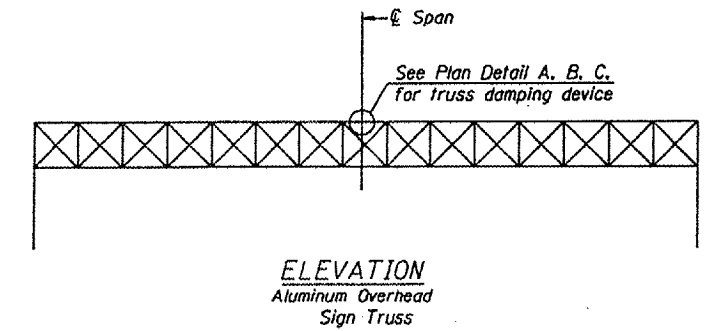
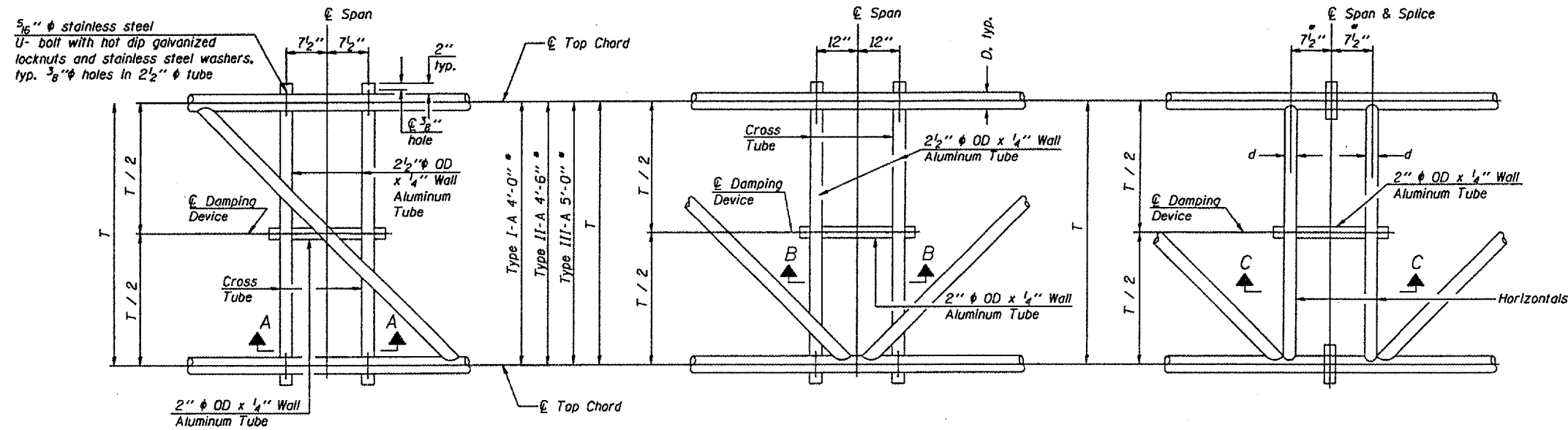
7/01/2006

Rev.

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

District 8
Overhead Sign Structure
Repair and Replacement

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



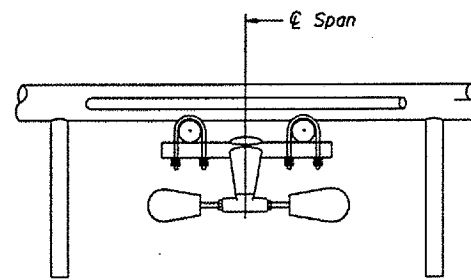
NOTES
Damper: One damper per truss.
(31 lbs. Stockbridge-Type Aluminum)
Cost included in Overhead Sign Structure...

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

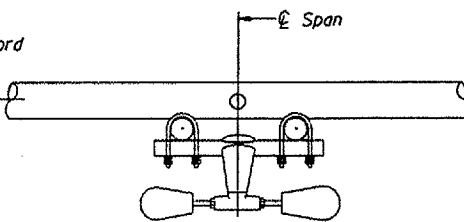
PLAN DETAIL "A"
Span between Panel Points

PLAN DETAIL "B"
Span at Panel Point

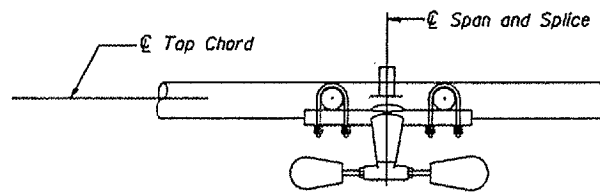
PLAN DETAIL "C"
Span at Chord Splice



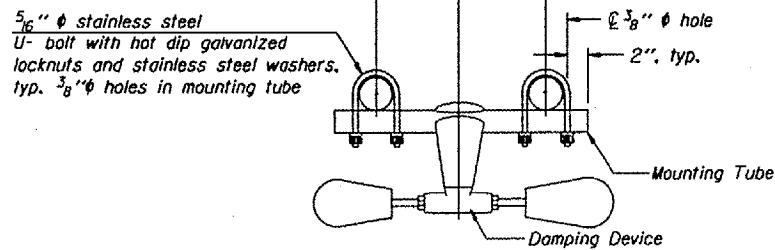
SECTION A-A



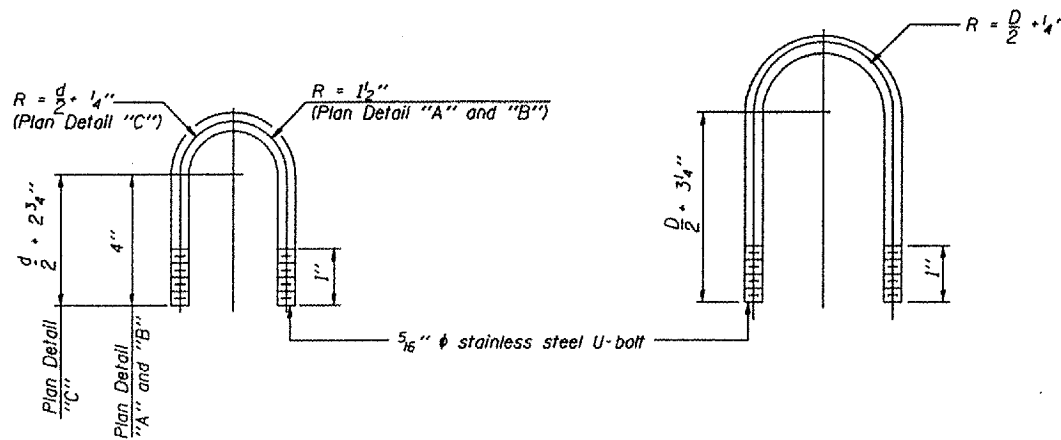
SECTION B-B



SECTION C-C



TRUSS DAMPING
DEVICE CONNECTION DETAIL
(Typical)



DAMPING DEVICE MOUNTING
TUBE U-BOLT DETAIL
(Typical)

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

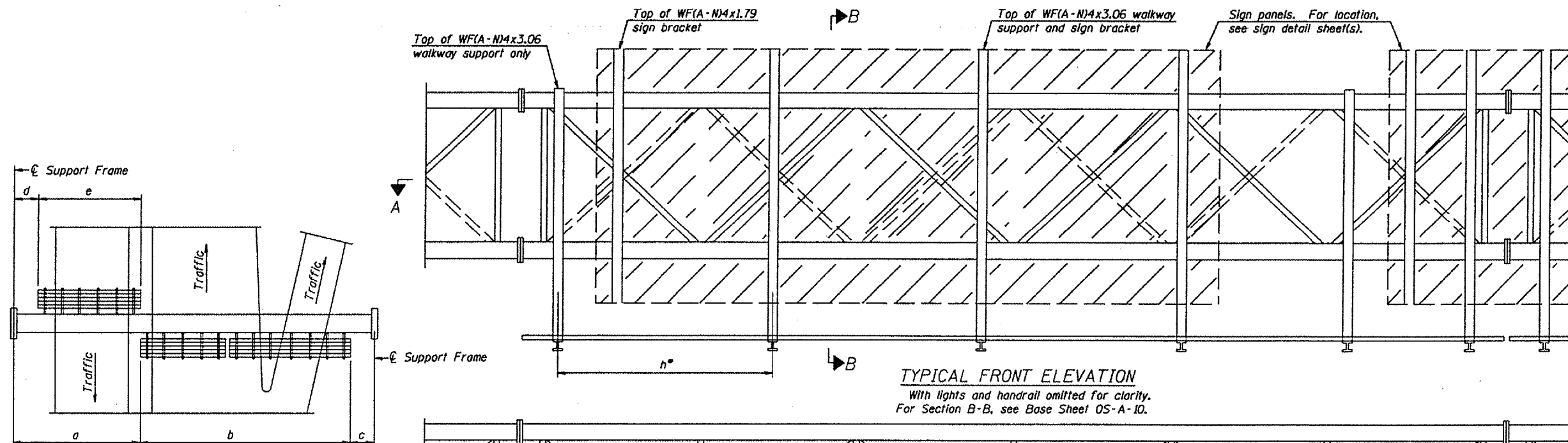
DESIGNED -	20
CHECKED -	EXAMINED
DRAWN -	PASSED
CHECKED -	ENGINEER OF BRIDGES AND STRUCTURES

OS-A-D

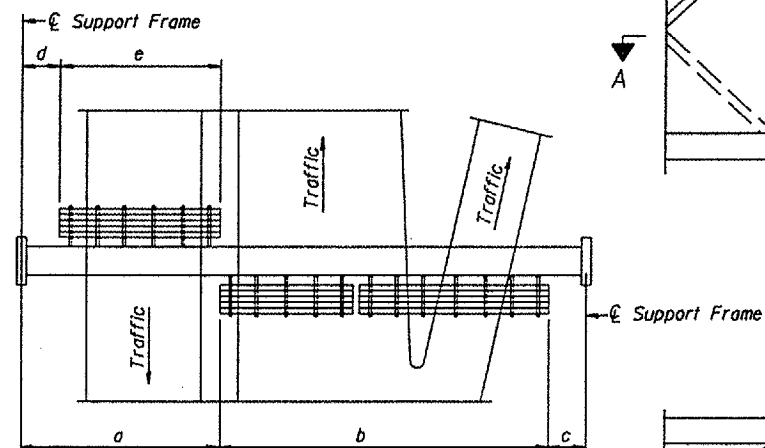
7/01/2006

OVERHEAD SIGN STRUCTURE
DAMPING DEVICE

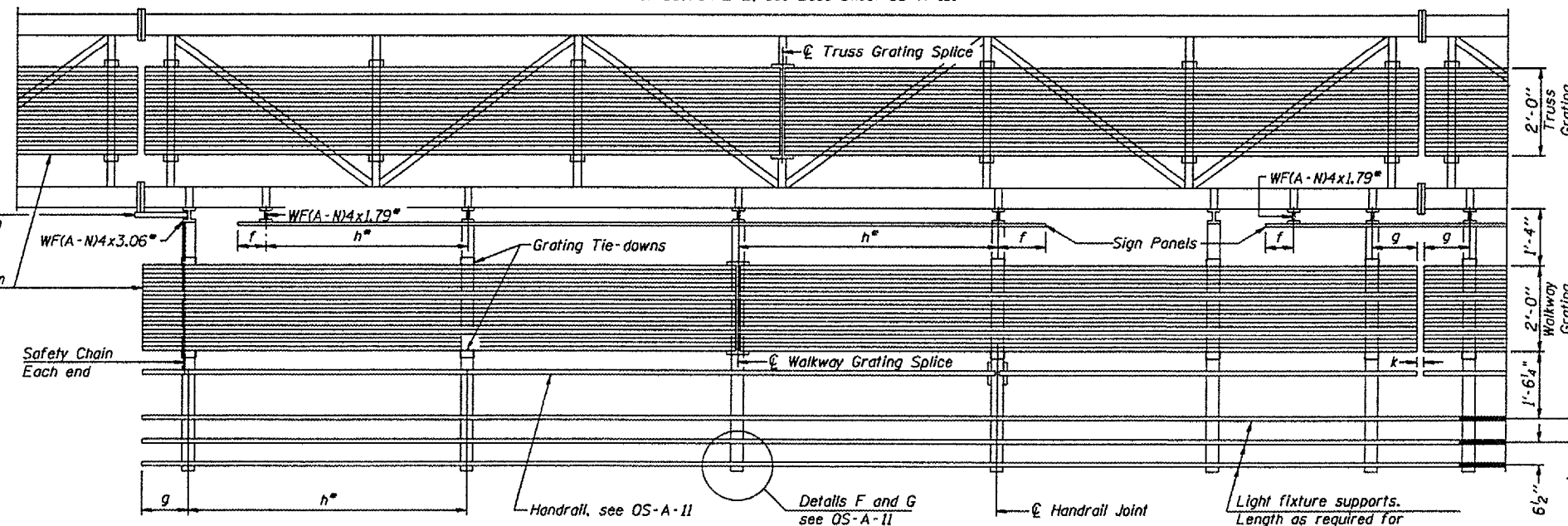
District 8
Overhead Sign Structure
Repair and Replacement



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



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



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"	2
8'-0"	14'-0"	3
14'-0"	20'-0"	4
20'-0"	26'-0"	5
26'-0"	32'-0"	6

Notes:

- Space walkway brackets WF(A-N)4x3.06 and sign brackets WF(A-N)4x1.79 for efficiency and within limits shown:
 $f = 12''$ maximum, $4''$ minimum (End of sign to \ominus of nearest bracket)
 $g = 12''$ maximum, $4''$ minimum (End of walkway grating to \ominus of nearest support bracket)
 $h = 6'-0''$ maximum \ominus to \ominus sign and/or walkway support brackets, WF(A-N)4x1.79 or WF(A-N)4x3.06
 $k = 2''$ maximum gap between adjacent walkway grating sections and handrail ends
- If walkway bracket at safety chain location is behind sign, add angle to bracket, see Alternate Safety Chain Attachment on Base Sheet OS-A-11.
 For Details T and W, Section B-B and Grating Splice Details see Base Sheet OS-A-10.
 For Handrail Details see Base Sheet OS-A-11.

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

Structure Number	Station	a	b	c	d	e	Walkway Grating and Handrail Lengths
BS0601055L017.2	840 + 00	N/A	N/A	N/A	N/A	N/A	81' - 6" *
BS082S003L004.4	321 + 34	N/A	N/A	N/A	N/A	N/A	86' - 0" *
BS0601055L018.3	1341 + 00	N/A	N/A	N/A	N/A	N/A	71' - 6" *

Length shown is for internal truss grating to be installed.

**OVERHEAD SIGN STRUCTURES
ALUMINUM WALKWAY DETAILS**

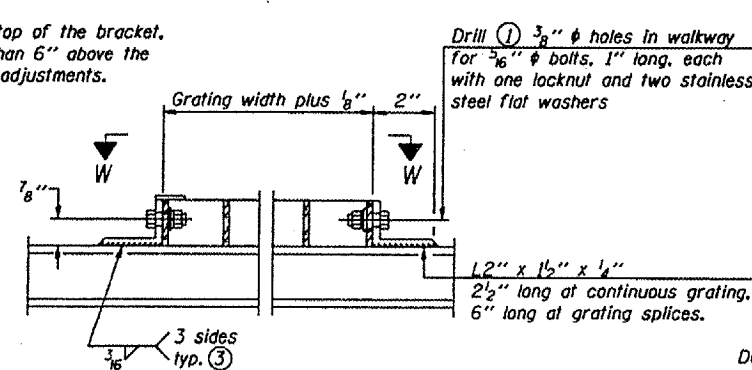
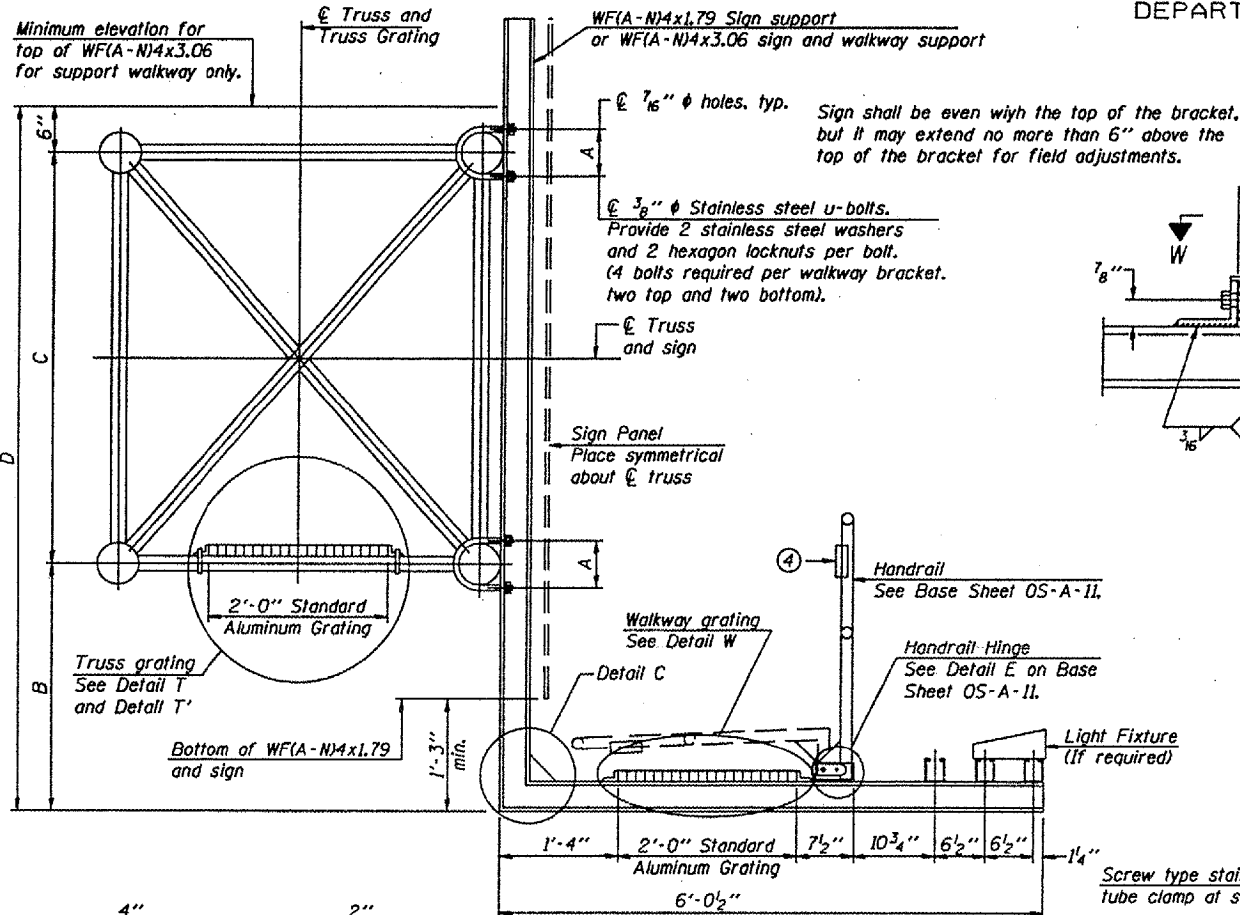
District 8
Overhead Sign Structure
Repair and Replacement

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

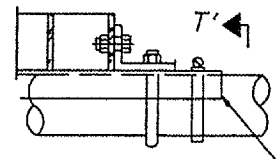
NUMBER	REVISION	DATE

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

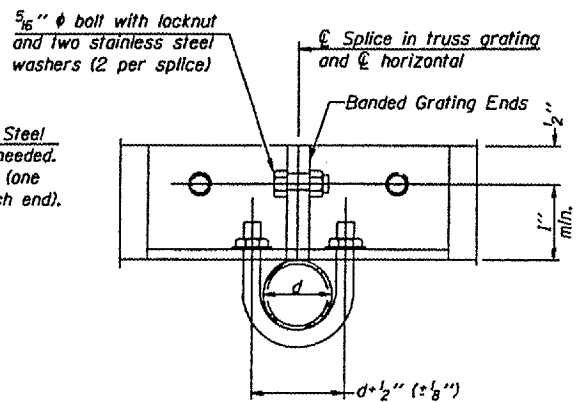
Various Routes
OVD SIN STR REP & REPL 2007-9
Various Counties
Sheet 46 of 50
Contract Number 44933



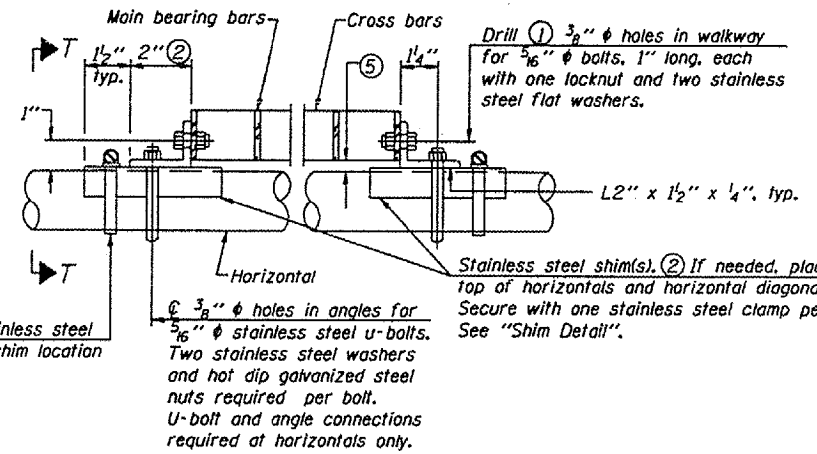
DETAIL W
(Walkway grating)



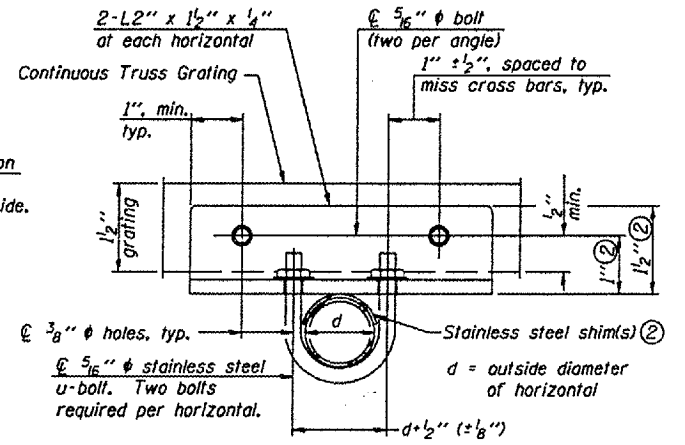
DETAIL T'
(Truss grating splice)
Details not shown same as Detail T.
Alternate materials may be used subject to the Engineer's review and approval.



SECTION T'-T'



DETAIL T
(Continuous Truss grating)



SECTION T-T

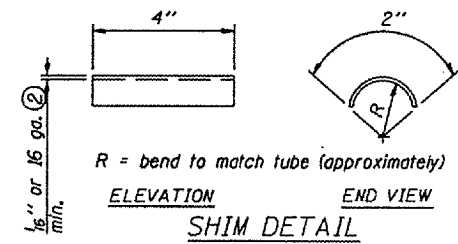
SPECIFICATIONS FOR STANDARD ALUMINUM GRATING

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

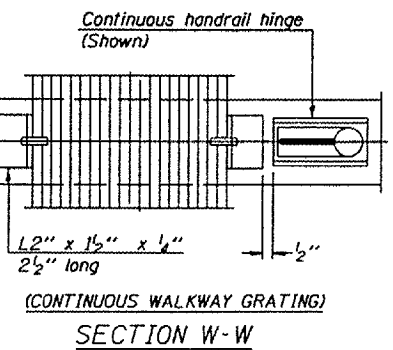
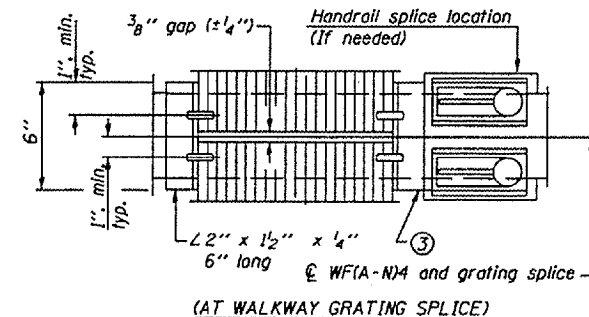
OR

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

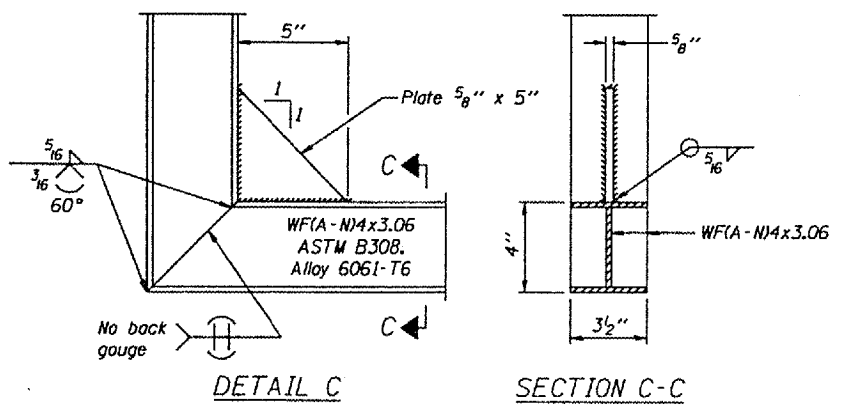
Structure Number	Station	A	B	C	D



SECTION B-B



SECTION C-C



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

OS-A-10

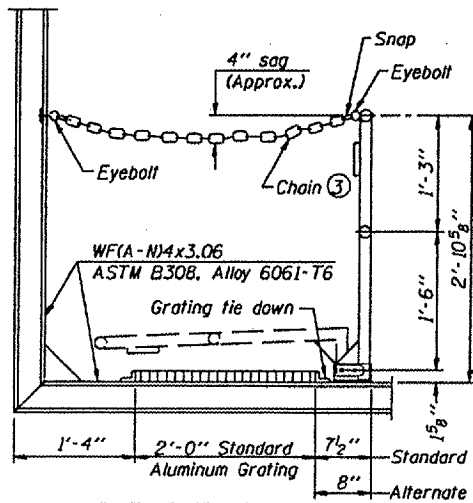
7/01/2006

NUMBER	REVISION	DATE

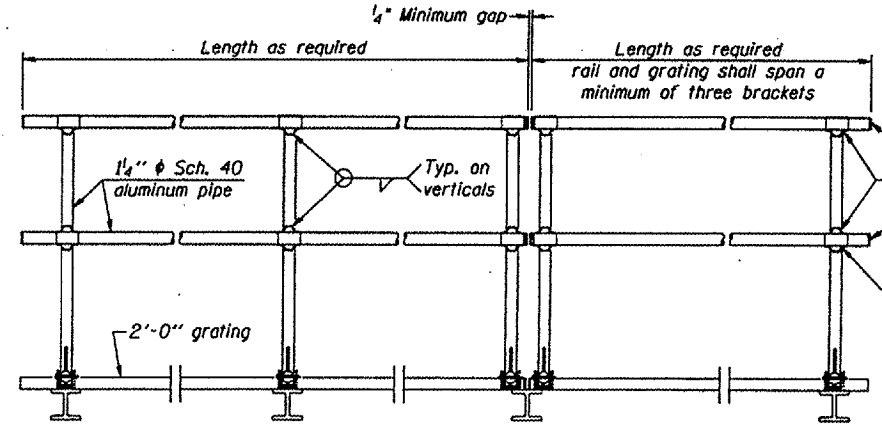
Existing Walkway and Walkway Support Brackets to be Reused.

OVERHEAD SIGN STRUCTURES
ALUMINUM WALKWAY DETAILS

District 8
Overhead Sign Structure
Repair and Replacement



SIDE ELEVATION
(Showing safety chain w/o sign)

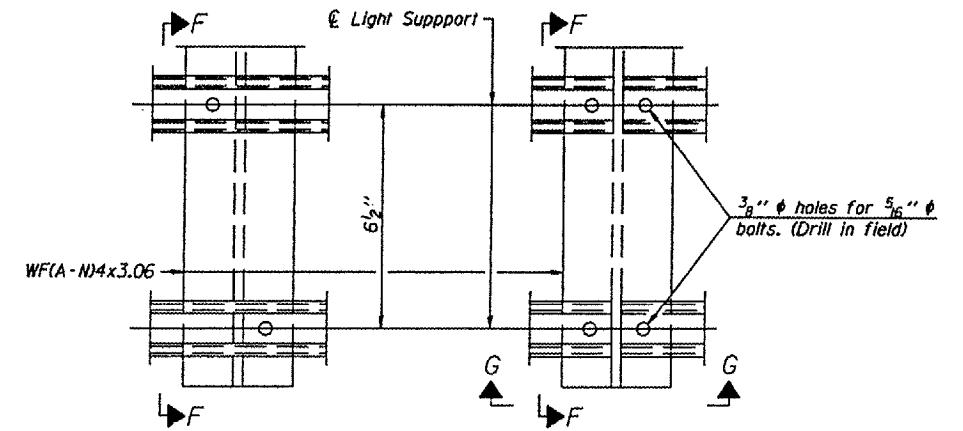


FRONT ELEVATION

HANDRAIL DETAILS

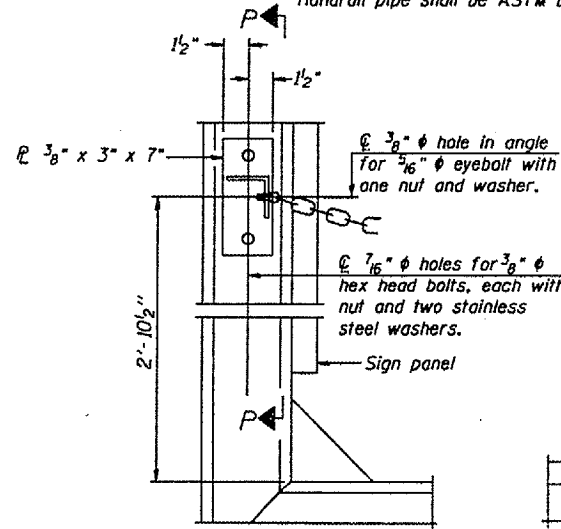
Handrail pipe shall be ASTM B241 or B429, Alloy 6063-T6 or Alloy 6061-T6.

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



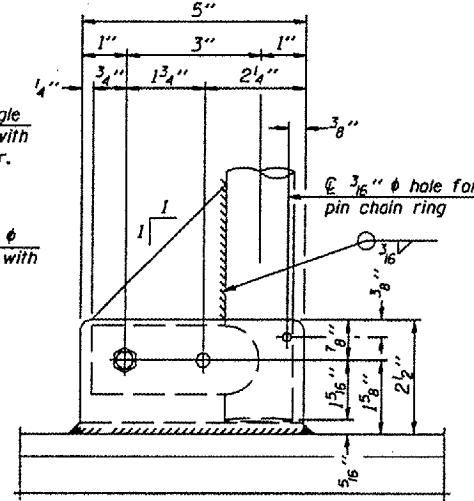
DETAIL F

DETAIL G

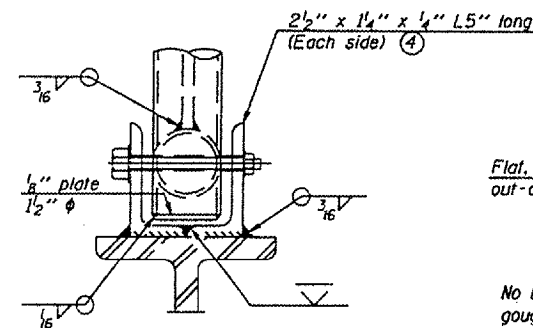


ALTERNATE SAFETY CHAIN ATTACHMENT
(With Sign Present)

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

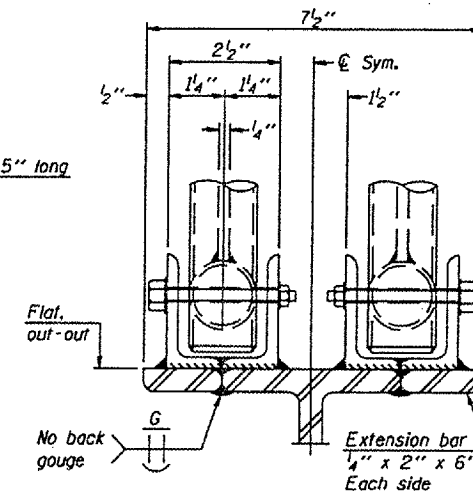


SIDE ELEVATION

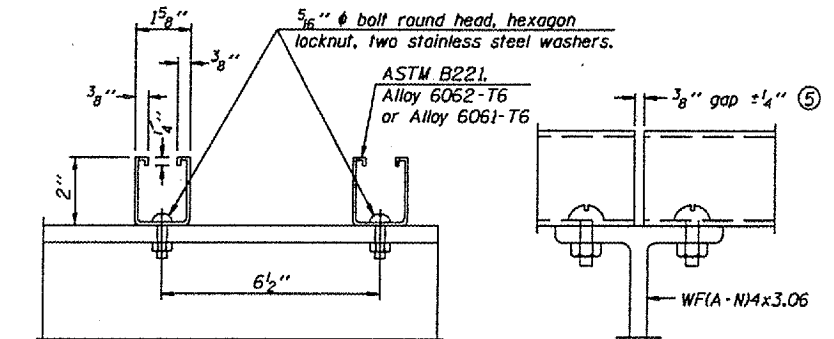


FRONT ELEVATION

See "Elevation" at right for dimensions.



ELEVATION AT HANDRAIL JOINT

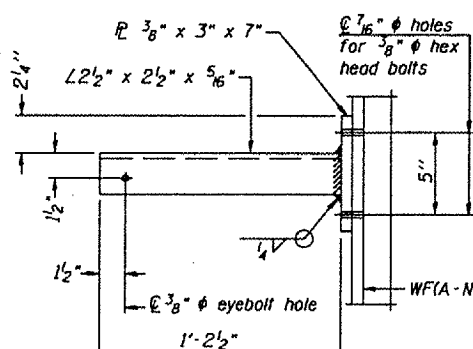


SECTION F-F

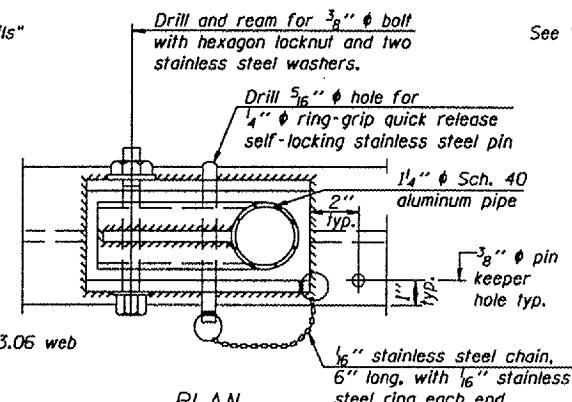
SECTION G-G

LIGHTING FIXTURE MOUNTS (IF REQUIRED)

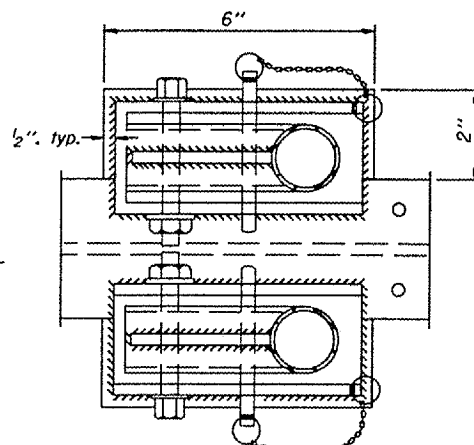
- Field cut ends of light support channels shall be free of burrs or hazardous projections and coated with zinc-rich primer or equivalent.



SECTION P-P

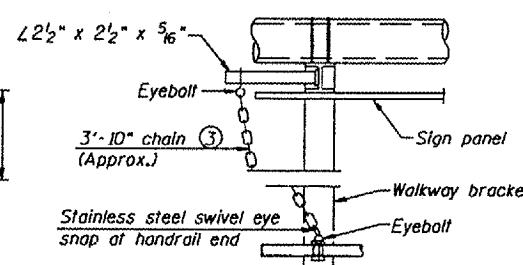


DETAIL E HANDRAIL HINGE



PLAN AT HANDRAIL JOINT

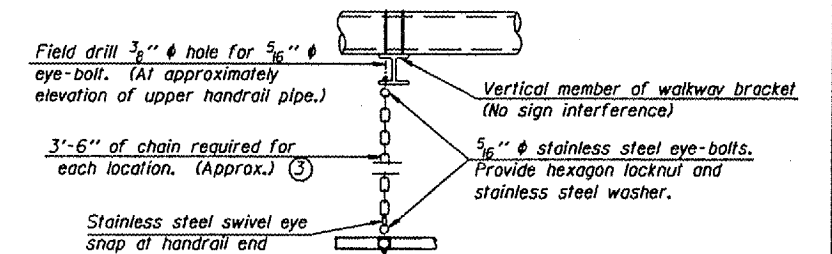
Details not shown same as "PLAN"



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.

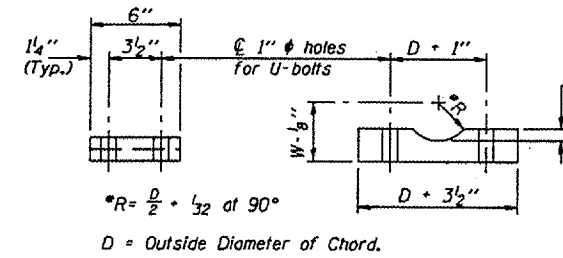
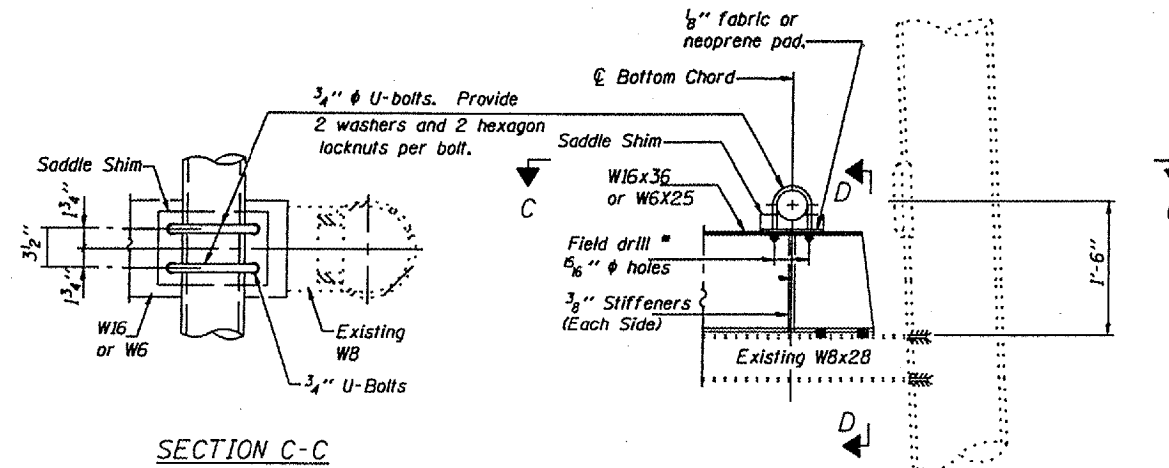
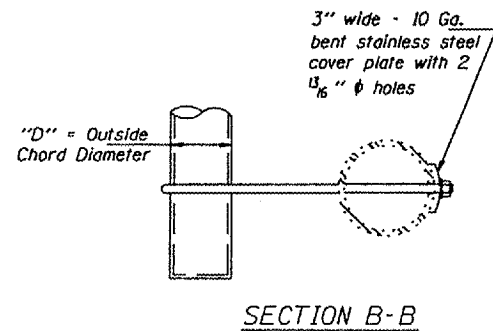
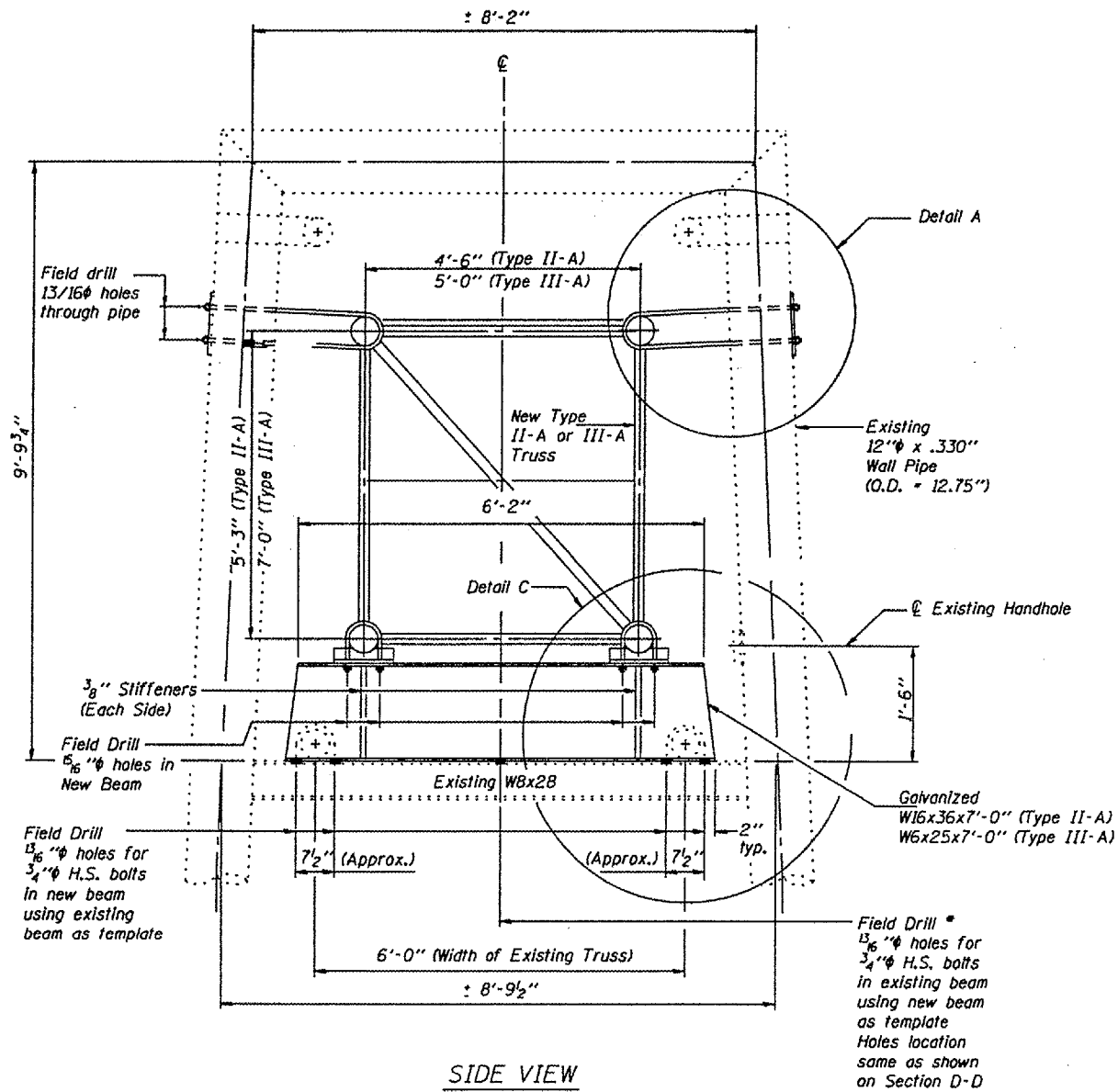


SAFETY CHAIN

One required for each end of each walkway.

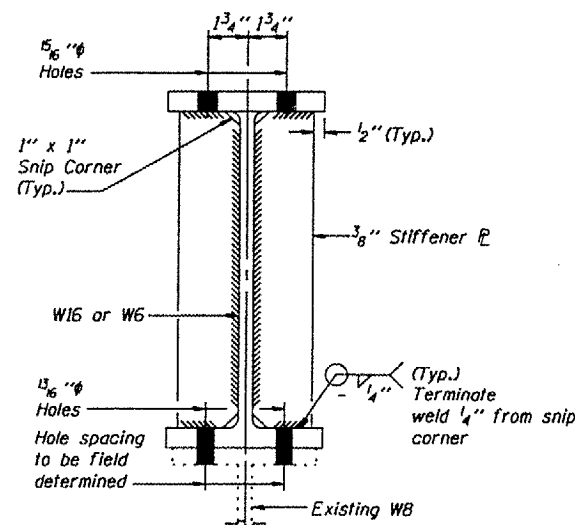
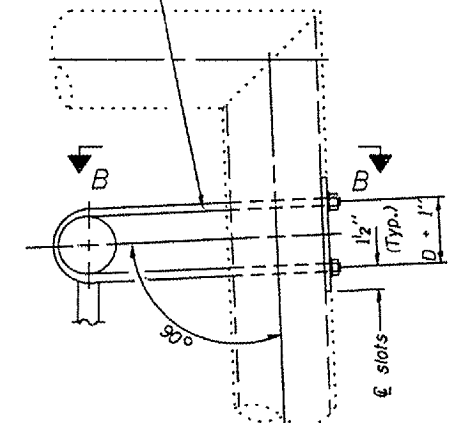
DESIGNED	20
CHECKED	ENGINEER OF BRIDGE DESIGN
DRAWN	PASSED
CHECKED	ENGINEER OF BRIDGES AND STRUCTURES

NUMBER	REVISION	DATE



Truss Chord Nominal Dia.	a	W
5 1/2"	13/16"	4 3/4"
6"	7/8"	4 3/4"
6 1/2"	5/8"	4 3/4"
7"	1"	4 3/4"
8 1/2"	1 1/4"	5 1/2"
9"	1 3/8"	5 3/4"

3/4" stainless steel U-bolt. Provide two washers and two hexagon locknuts. Field drill 1/2" holes through pipe, (4 holes required per pipe).

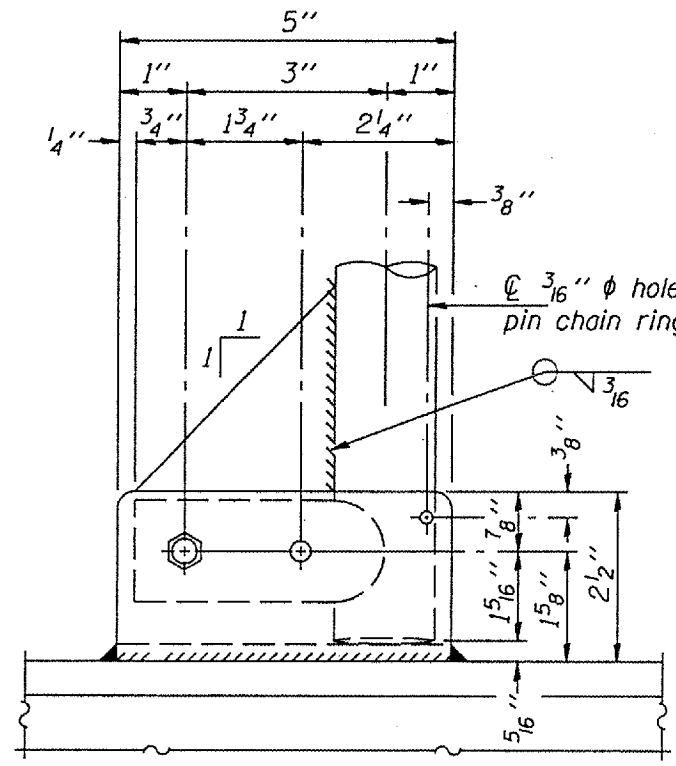


OVERHEAD SIGN STRUCTURES
EXISTING SUPPORT FRAME
RETROFIT for ALUMINUM TRUSS

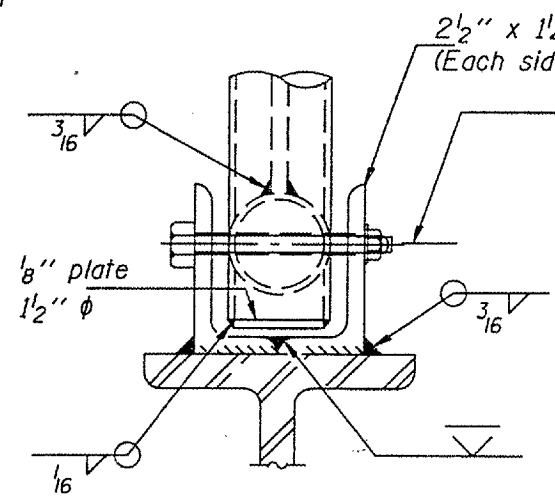
District 8
Overhead Sign
Structure Repair
and Replacement

DESIGNED	28
CHECKED	EXAMINED
DRAWN	PASSED
CHECKED	

STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION

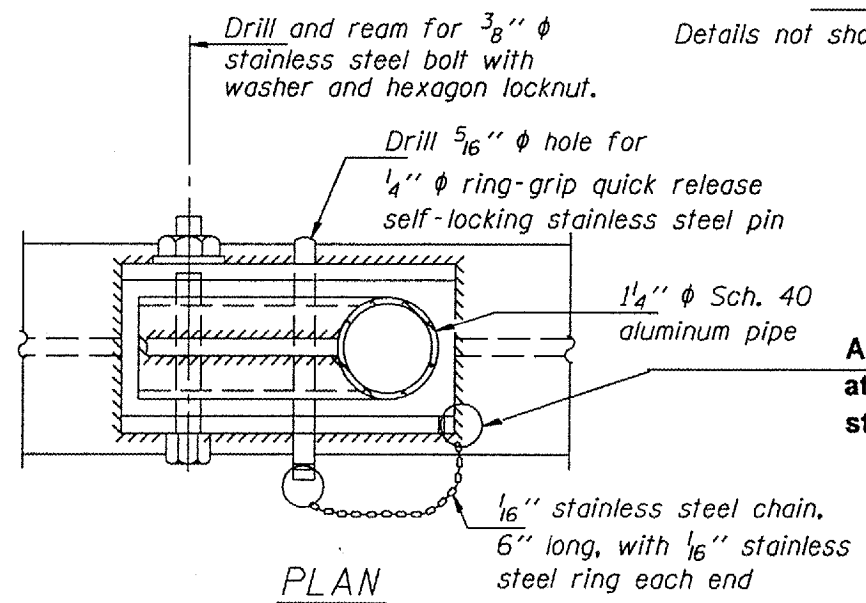


SIDE ELEVATION



FRONT ELEVATION

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



PLAN
DETAIL E HANDRAIL HINGE

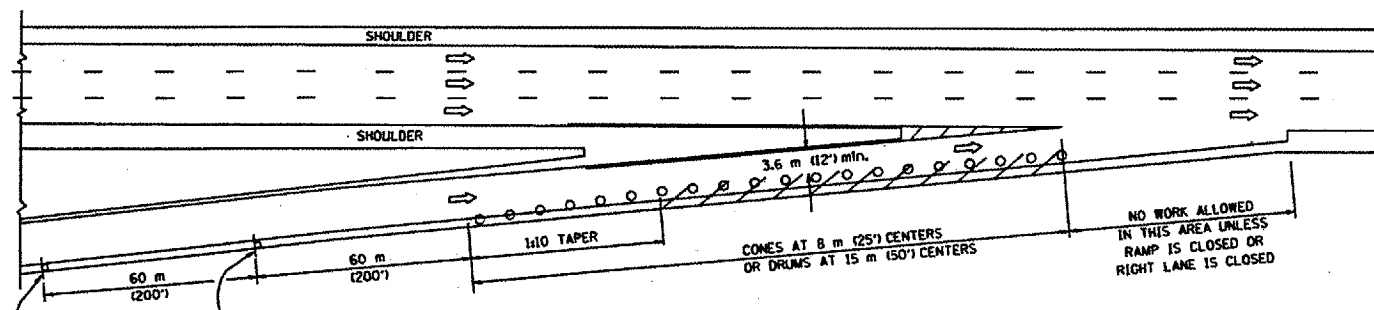
Details not shown same as "ELEVATION" at right.

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

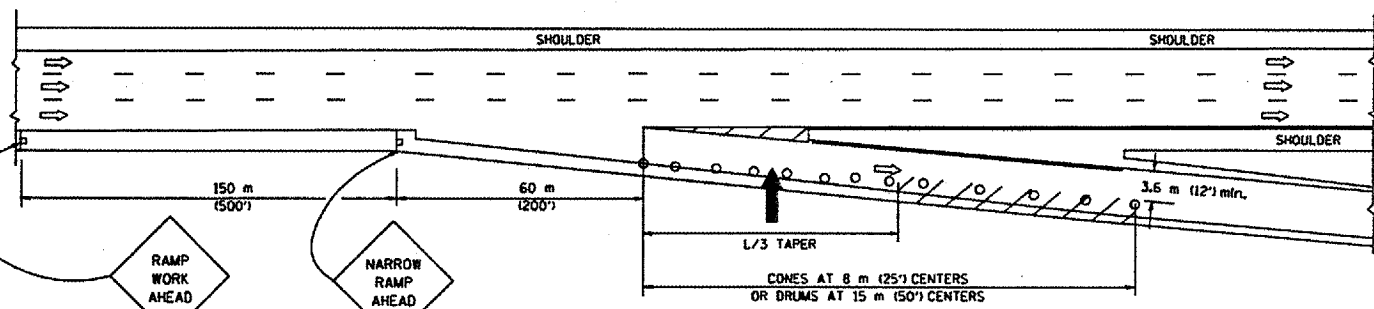
OVERHEAD SIGN STRUCTURES
 HANDRAIL HINGE REPAIR DETAIL

PARTIAL RAMP CLOSURE DETAILS

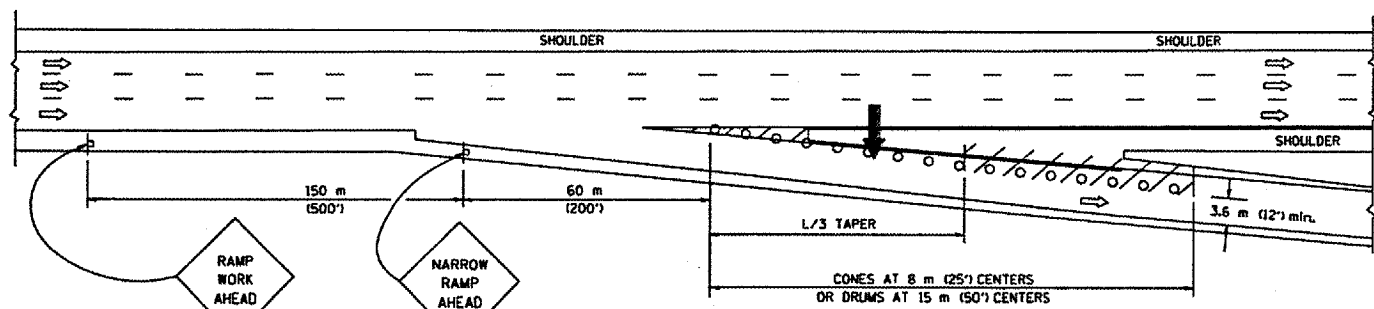
SHOULDER CLOSURE DETAILS



TYPICAL ENTRANCE RAMP



TYPICAL EXIT RAMP



TYPICAL EXIT RAMP

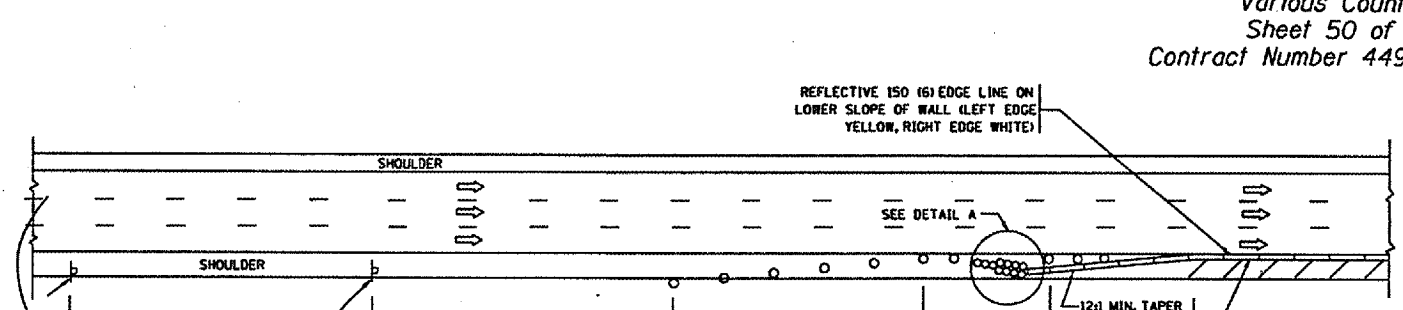
SYMBOLS

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

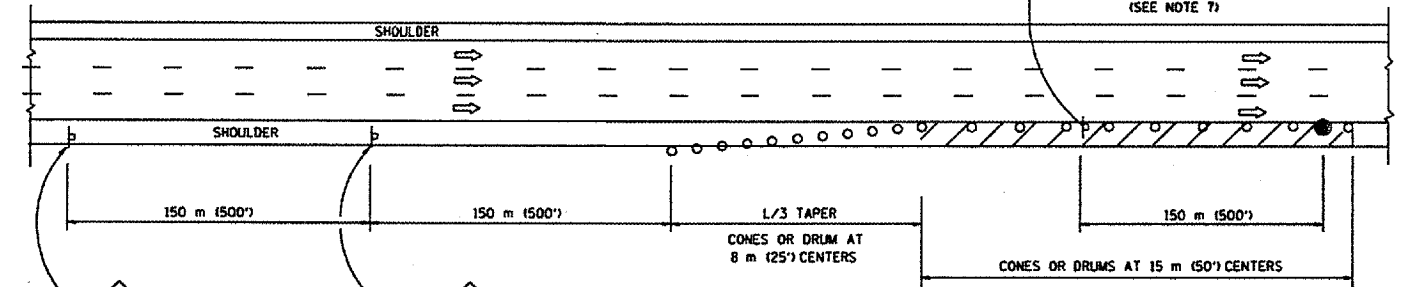
GENERAL NOTES

1. THE "L" DISTANCE EQUALS:

SPEED LIMIT	FORMULAS
80 km/h (45 mph) OR GREATER	METRIC $L=0.65(W/S)$ ENGLISH $L=(W/S)$
W = WIDTH OF OFFSET IN METERS (FEET)	S = NORMAL POSTED SPEED KM/H (MPH)
2. PLASTIC DRUMS WITH HIGH PERFORMANCE REFLECTIVE SHEETING AND STEADY BURNING LIGHTS ARE REQUIRED FOR ALL NIGHTTIME CLOSURES.
3. ALL SIGNS SHALL BE POST MOUNTED IF THE CLOSURE TIME EXCEEDS FOUR DAYS.
4. FLASHING LIGHTS SHALL BE USED DURING THE HOURS OF DARKNESS AND SHALL BE INSTALLED ABOVE THE FIRST TWO SETS OF SIGNS.

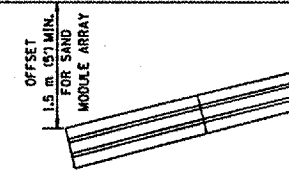


PERMANENT SHOULDER CLOSURE



DAYTIME SHOULDER CLOSURE

ARRAY DESIGN PER MANUFACTURER TO BE NCHRP 350 COMPLIANT FOR POSTED SPEED.



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

5. THE IMPACT ATTENUATOR, TEMPORARY IS NOT REQUIRED WHEN THE TEMPORARY CONCRETE BARRIER WALL IS OUTSIDE THE CLEAR ZONE OR IS TIED INTO THE EXISTING GUARDRAIL. IF OFFSET IS LESS THAN 5 FEET USE "TRAFFIC BARRIER TERMINAL, TYPE III, TEMPORARY" DEVICE TO MEET NCHRP350 FOR POSTED SPEED.
6. AUTHORIZATION FROM THE DISTRICT'S BUREAU OF TRAFFIC IS REQUIRED FOR ALL FREEWAY CLOSURES.
7. THE FLAGGER AND FLAGGER SIGN ARE REQUIRED AT THE ABOVE WORK SITES WHEN:
 - a. FOUR OR MORE WORK VEHICLES ENTER THE TRAFFIC LANES IN A ONE HOUR PERIOD.
 - b. THE WORK ACTIVITY REQUIRES FREQUENT ENCRDACHMENT INTO THE LANE OPEN TO TRAFFIC.
 THE FLAGGER SHALL BE STATIONED APPROXIMATELY 30 m (100') TO 60 m (200') IN ADVANCE OF THE WORKERS.

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

ILLINOIS DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL DETAILS
 FOR FREEWAY
 SHOULDER CLOSURES
 PARTIAL RAMP CLOSURES

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

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