

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ROUTE NO.	SECTION	DISTRICT	SHEETS	SHEET NO.
F.A.I. 55	D-6 ITS #1	SANGAMON	41	- SHEETS
DESIGN DIST. NO. 7	ILLINOIS	PROJECT NO.		

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.

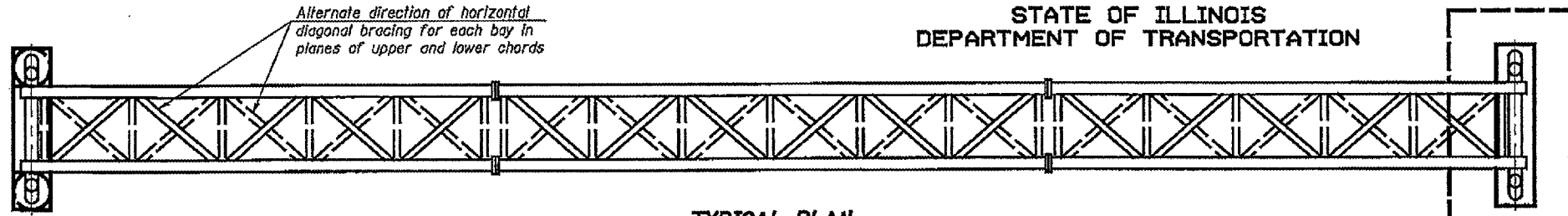
GALVANIZING: All Steel Grating, Plates, Shapes and Pipe shall be Hot Dip Galvanized after fabrication in accordance with AASHTO M111. Painting is not permitted.

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.

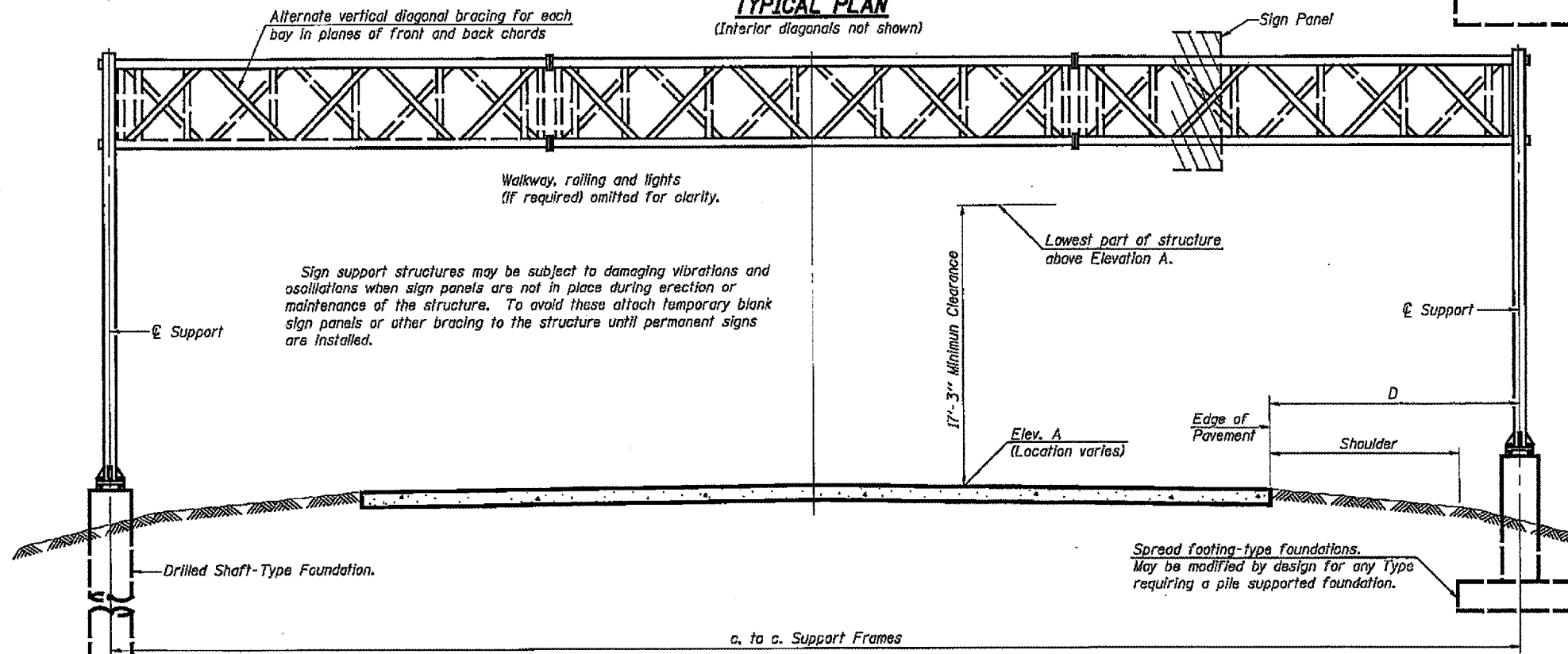
CONCRETE SURFACES: All concrete surfaces above an elevation 6" below the lowest final ground line at each foundation shall be cleaned and coated with Bridge Seal Sealer in accordance with the Standard Specifications.

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

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



TYPICAL PLAN
(Interior diagonals not shown)



TYPICAL ELEVATION
(Looking at Face of Signs)**

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

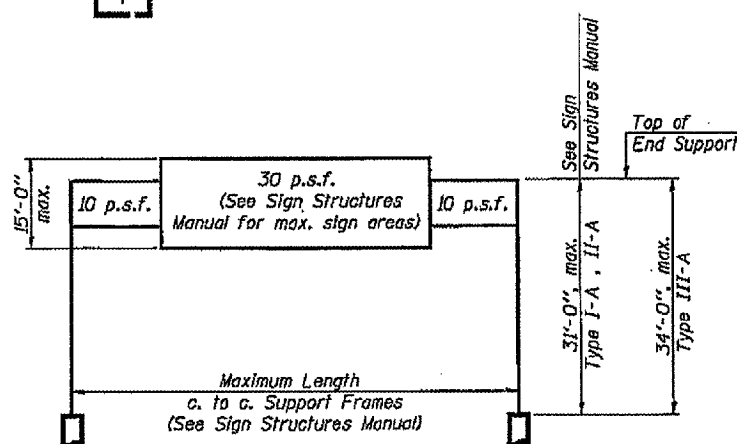
Structure Number	Station	Design Truss Type	c. to c. Supports	Elev. A	Dim. D	Height of Tallest Sign	Total Sign Area
6S0841055R86.9	234+00.00	III-A	110'	599.16	35'-0"		
6S0841055L107.0	202+54.00	III-A	110'	590.50	32'-0"		

**Looking upstation for structures with signs both sides.

TOTAL BILL OF MATERIAL

ITEM	UNIT	TOTAL
OVERHEAD SIGN STRUCTURE TYPE I-A (4'-0" x 4'-6")	Foot	
OVERHEAD SIGN STRUCTURE TYPE II-A (4'-6" x 5'-3")	Foot	
OVERHEAD SIGN STRUCTURE TYPE III-A (5'-0" x 7'-0")	Foot	220.0
OVERHEAD SIGN STRUCTURE WALKWAY TYPE A	Foot	103.6
CONCRETE FOUNDATIONS	Cu. Yds.	26.0
DRILLED SHAFT CONCRETE FOUNDATIONS	Cu. Yds.	21.2

NUMBER	REVISION	DATE



DESIGN WIND LOADING DIAGRAM

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

DESIGNED -	208
CHECKED -	EXAMINED
DRAWN -	ENGINEER OF BRIDGE DESIGN
CHECKED -	PASSED
	ENGINEER OF BRIDGES AND STRUCTURES

05-A-1

1-7-05

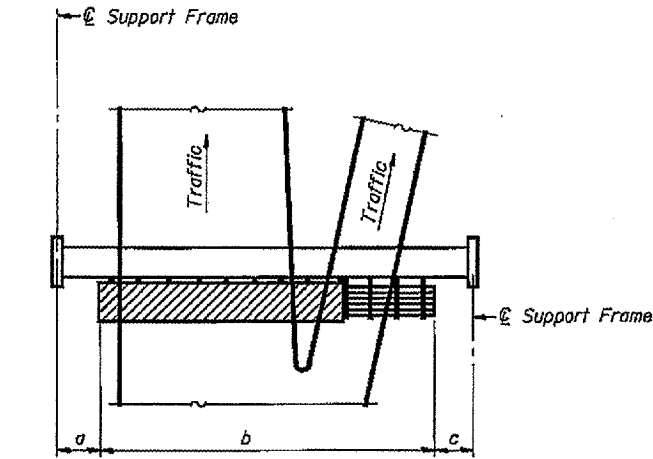
**OVERHEAD SIGN STRUCTURES
GENERAL PLAN & ELEVATION
ALUMINUM TRUSS & STEEL SUPPORTS**

F.A.I. 55 (I-55)
SECTION D-6 ITS #1
SANGAMON COUNTY

A Part Sheet 7 25 05

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ROUTE NO.	SECTION	COUNTY	SHEET	SHEET NO.
F.A.I. 55	D-6 ITS #1	SANGAMON	47	---
FED. ROAD DIST. NO. 7		ILLINOIS	FED. ROAD PROJECT	SHEETS

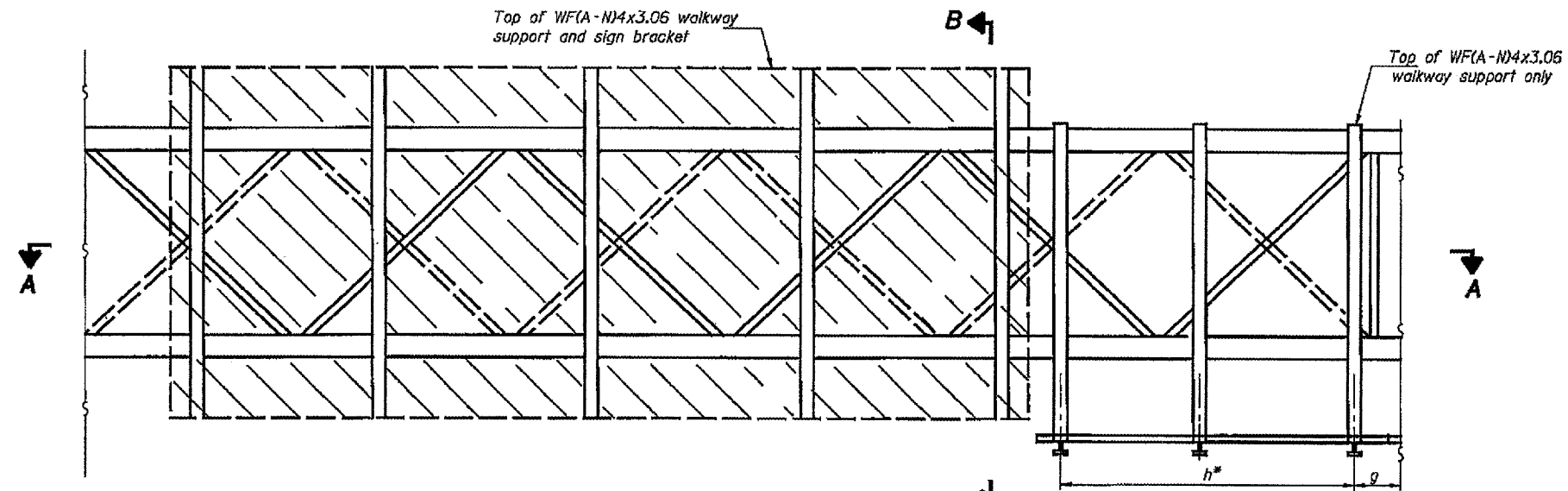


PLAN
WALKWAY AND HANDRAIL SKETCH
(Road plan beneath truss varies)

BRACKET TABLE

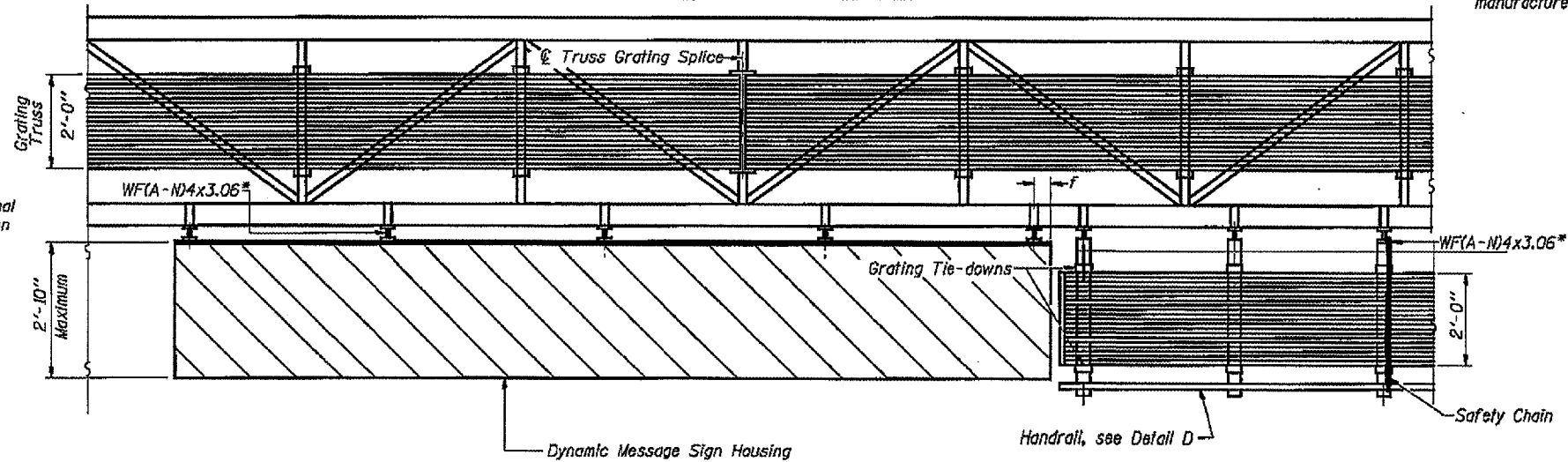
WF(A-N)4x3.06 ASTM B308, Alloy 6061-T6		
Sign Width		Number Brackets Required
Greater Than	Less Than or Equal To	
	10'-0"	2
10'-0"	16'-0"	3
16'-0"	22'-0"	4
22'-0"	28'-0"	5
28'-0"	34'-0"	6

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



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

Bracket and grating dimensions are nominal and will vary based on actual DMS cabinet dimensions plus manufacturer's mounting devices.



SECTION A-A

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

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

- f = 12" maximum, 4" minimum (End of sign to \odot of nearest bracket)
- g = 12" maximum, 4" minimum (End of walkway grating to \odot of nearest support bracket)
- h = 6'-0" maximum (\odot to \odot 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 OS-A-11.

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

Structure Number	Station	a	b	c	Walkway Grating and Handrail Lengths
6S0841055R86.9	234+00	68'-3"	10'-9"	1'-0"	40'-9"
6S0841055L107.0	202+54	71'-3"	10'-9"	1'-0"	37'-9"

**OVERHEAD SIGN STRUCTURES
ALUMINUM WALKWAY DETAILS**

F.A.I. 55 (I-55)
SECTION D-6 ITS #1
SANGAMON COUNTY

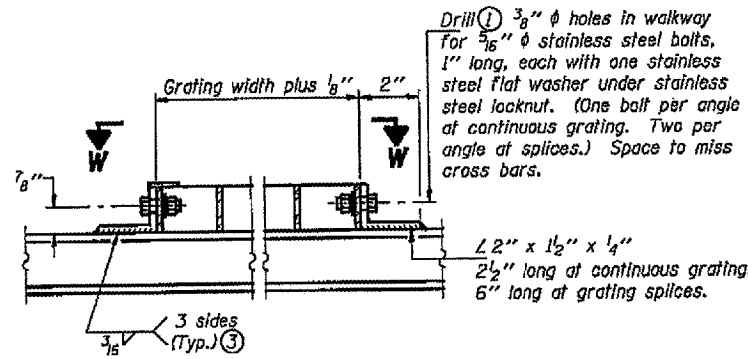
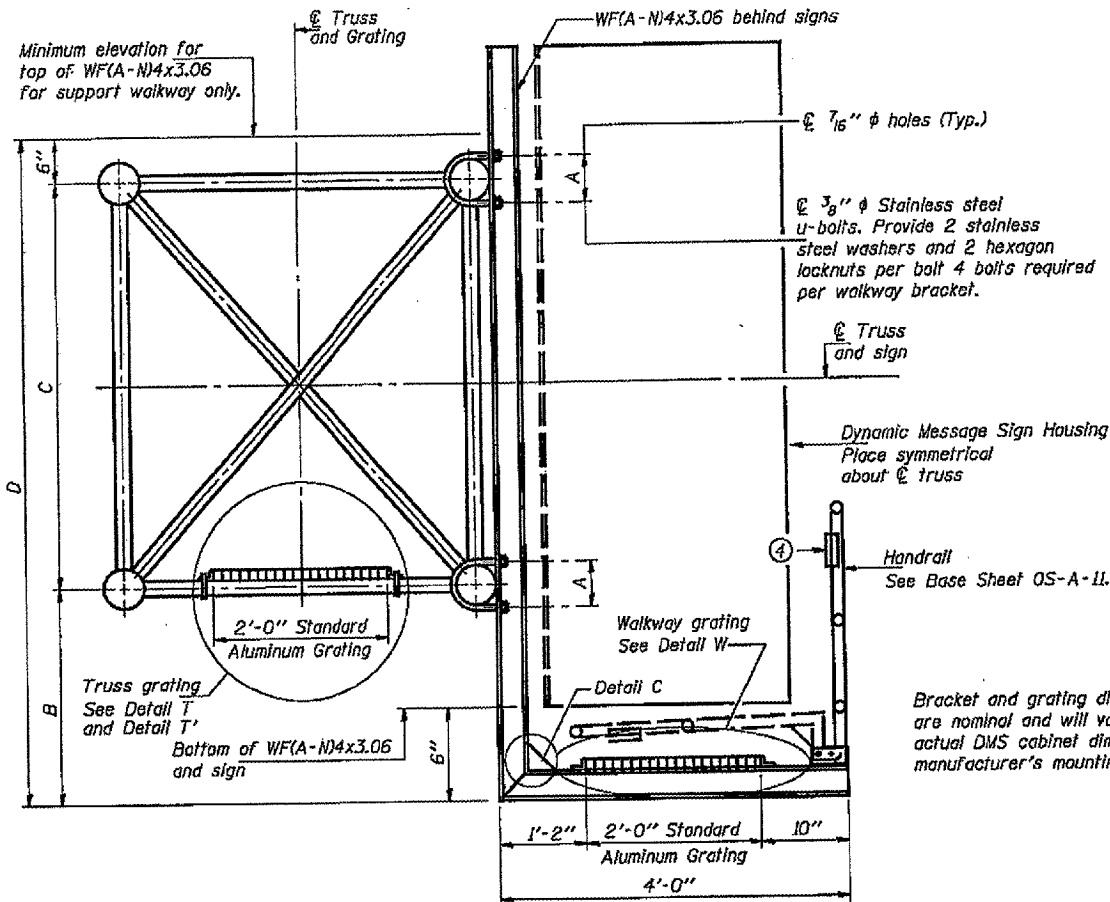
DESIGNED	
CHECKED	
DRAWN	
CHECKED	

		19

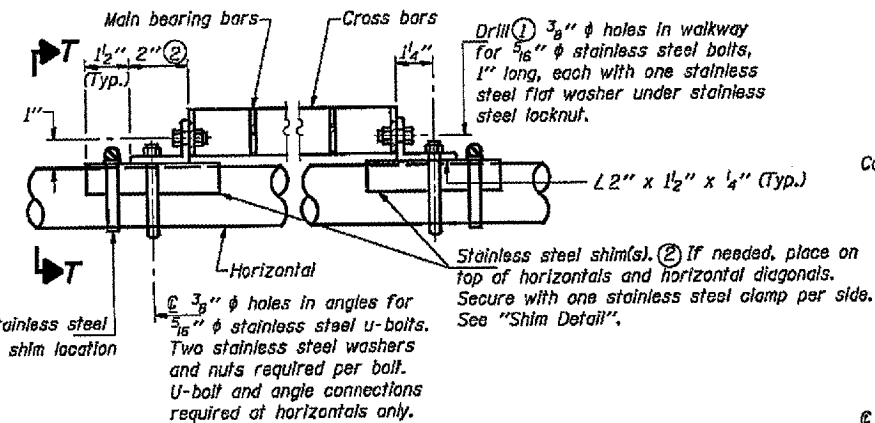
NUMBER	REVISION	DATE

STATE OF ILLINOIS
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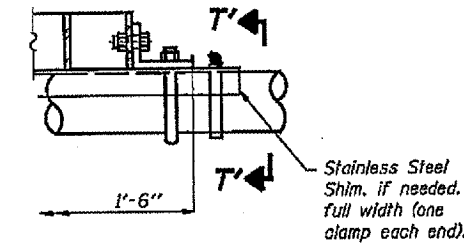
ROUTE NO.	SECTION	COUNTY	SHEET	TOTAL
F.A.I. 55	D-6 ITS #1	SANGAMON	48	48



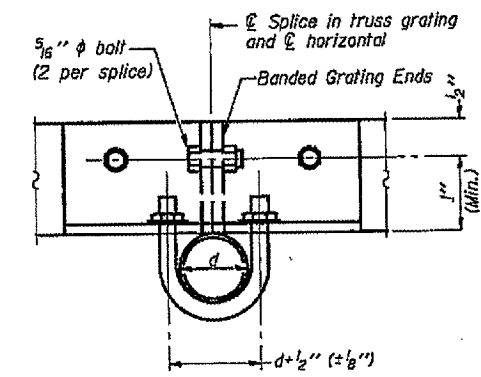
DETAIL W
(Walkway grating)



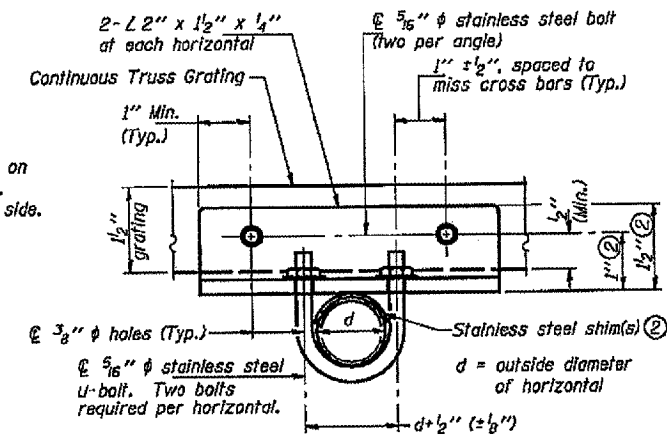
DETAIL T
(Continuous Truss grating)



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

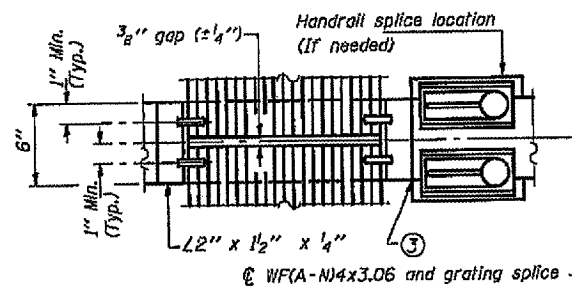
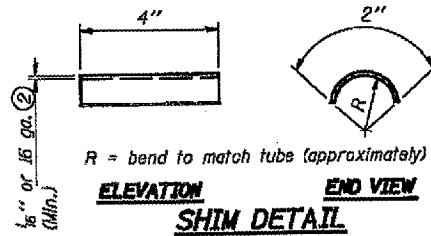


SECTION T'-T'



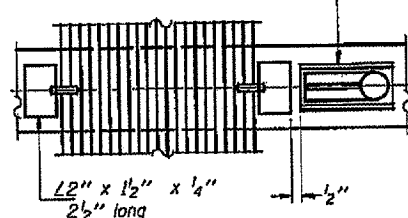
SECTION T-T

SECTION B-B



(AT WALKWAY GRATING SPLICE)

Continuous handrail hinge (Shown)



(CONTINUOUS WALKWAY GRATING)

SECTION W-W

SPECIFICATIONS FOR STANDARD ALUMINUM GRATING

Main Bearing Bars shall be 3/8" x 1 1/2" on 1 3/8" centers and conform to ASTM B211 Alloy 6061-T6.

Cross bars shall be 3/8" x 1 1/2" on 4" centers and conform to ASTM B221 Alloy 6063-T5 or 6061-T6.

OR

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

Main bars shall conform to ASTM B221 Alloy 6061-T6 and have a minimum section modulus equal to 0.0705 in.³ per bar, a depth of 1 1/2", spaced on 1 3/8" centers.

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

Structure Number	Station	A	B	C	D
650841055R86.9	234+00	7 1/8"	1'-3"	7'-0"	8'-9"
650841055L107.0	202+54	7 1/8"	1'-3"	7'-0"	8'-9"

- 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.

**OVERHEAD SIGN STRUCTURES
ALUMINUM WALKWAY DETAILS**

F.A.I. 55 (I-55)
SECTION D-6 ITS #1
SANGAMON COUNTY

DESIGNED	EXAMINED	19
CHECKED	ENGINEER OF STRUCTURAL SERVICES	
DRAWN	ENGINEER OF BRIDGES AND STRUCTURES	
CHECKED		

NUMBER	REVISION	DATE