

Design Assumptions for  
Nebraska Base Drawing NE100-30-001  
Diaphragm for Metal Pipe

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Revised: 10/19/11 Replaces: 5001-22

No design assumptions.

Instructions for  
NE Base Drawing NE100-30-001  
Diaphragm for Metal Pipe

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Fill in the following data fields to automatically fill in the necessary data fields on the drawing.

**Title block**

Title line(s)

Subtitle line

County, State

Sheet number                      of

**Who / When**

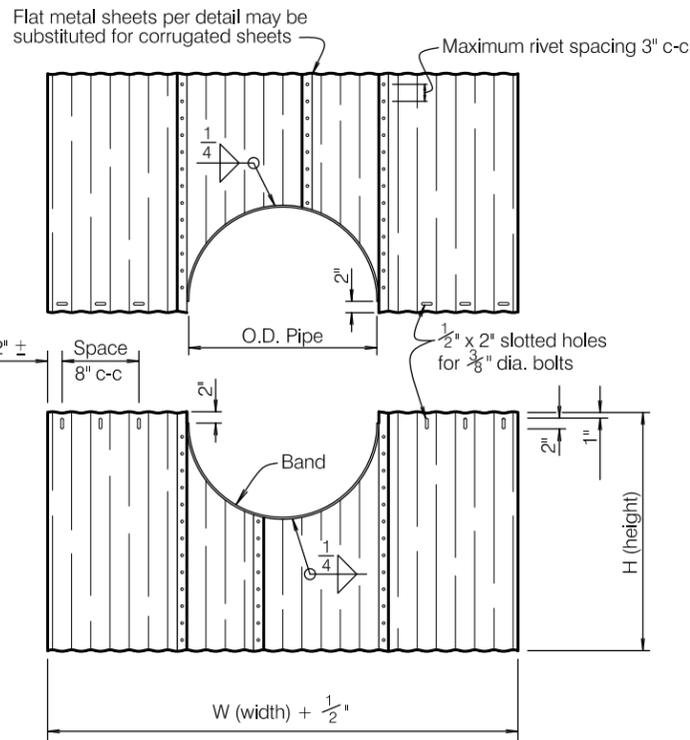
Designed

Drawn

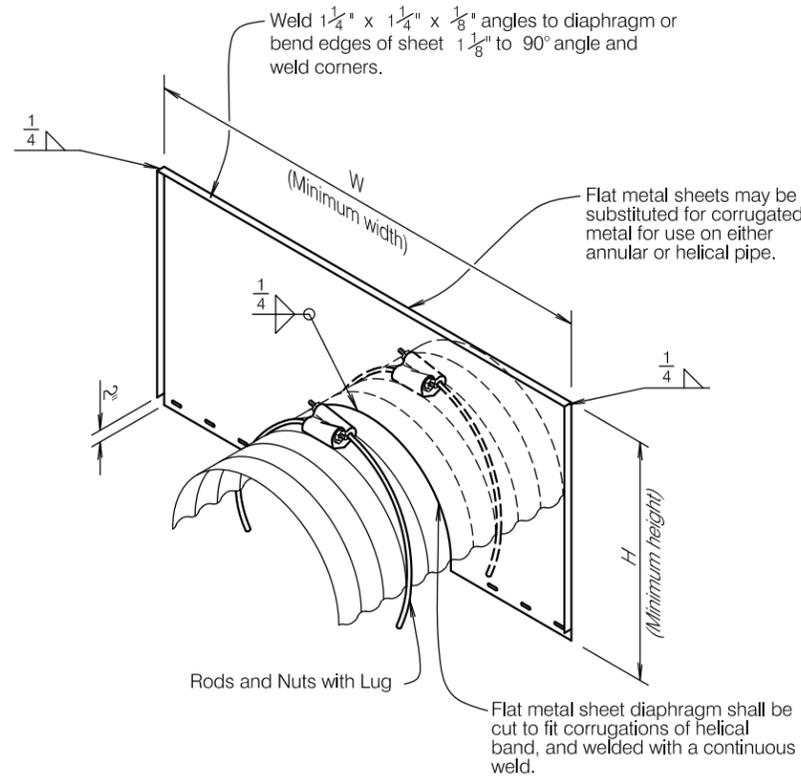
Checked

**Fill data for Requirement Table directly on drawing**

Left click on yellow boxes on drawing to mark with X as required.  
Left click blue data fields on drawing to enter required data.



**ELEVATION OF UNASSEMBLED DIAPHRAGM**



**NOTE:**

THE FOLLOWING DESIGNATIONS FOR PIPE CLASSIFICATIONS, CORRUGATIONS AND COATINGS WHEN REFERRED TO ON THE DRAWINGS ARE IN ACCORDANCE WITH CURRENT ASTM'S:

A760 STANDARD SPECIFICATION FOR CORRUGATED STEEL PIPE, METALLIC-COATED FOR SEWERS AND DRAINS.

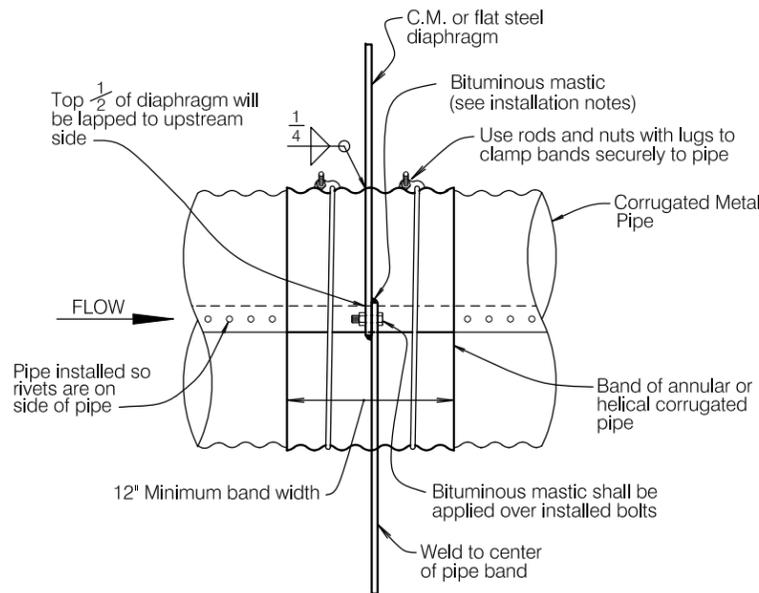
A761 STANDARD SPECIFICATION FOR STEEL STRUCTURAL PLATE, ZINC-COATED, FOR FIELD-BOLTED PIPE, PIPE-ARCHES, AND ARCHES.

A762 STANDARD SPECIFICATION FOR CORRUGATED STEEL PIPE, POLYMER PRECOATED FOR SEWERS AND DRAINS.

A849 STANDARD SPECIFICATION FOR POST-APPLIED COATINGS, PAVINGS, AND LININGS FOR CORRUGATED STEEL SEWER AND DRAINAGE PIPE.

**FABRICATION NOTES:**

- ALL WELDS AND ALL HEAT AFFECTED AREAS ON ZINC COATED METAL SHALL BE THOROUGHLY CLEANED AND TREATED IN ACCORDANCE WITH SPECIFICATIONS.
- UNASSEMBLED DIAPHRAGMS SHALL BE MARKED BY PAINTING OR TAGGING WHEN NECESSARY TO IDENTIFY MATCHING PAIRS TO SECURE A PROPER INSTALLATION.
- EACH DIAPHRAGM SHALL BE FURNISHED WITH TWO RODS AND NUTS AND TWO STANDARD TANK LUGS FOR SECURING DIAPHRAGMS TO PIPE.
- RODS FOR DIAPHRAGMS FOR 6" THRU 15" DIA. PIPE SHALL BE 3/8" DIA. AND FOR PIPE LARGER THAN 15" DIA. THE RODS SHALL BE 1/2" DIA.
- DIAPHRAGMS SHALL HAVE THE SAME COATING AS SPECIFIED FOR THE PIPE BEING USED. BANDS FOR DIAPHRAGMS SHALL BE THE SAME AS THE PRINCIPAL SPILLWAY CONDUIT.
- WHEN MORE THAN ONE COATING IS CHECKED IN THE COLUMN BOXES EACH TYPE IS ACCEPTABLE BUT ONLY ONE TYPE OF COATING SHALL BE USED IN EACH INSTALLATION.
- FOR FABRICATION OF DIAPHRAGMS ON HELICAL PIPE A FILLER STRIP MAY BE USED TO INSURE A WATERTIGHT CONNECTION BETWEEN THE HELICAL BAND AND THE FLAT METAL SHEET.



**DIAPHRAGM INSTALLATION DETAIL**

**FABRICATION TABLE FOR DIAPHRAGMS**

PIPE DIA. INCHES	GAGE	MINIMUM DIAPHRAGM SIZE INCHES	FABRICATION DIMENSIONS INCHES	
			W(WIDTH)	H(HEIGHT)
8	16	58 x 58	58 1/2	30 1/2
8	16	68 x 68	70	36 1/2
10	16	58 x 58	58 1/2	30 1/2
10	16	70 x 70	72	37 1/2
12	16	60 x 60	64	32 1/2
12	16	72 x 72	72	38 1/2
15	16	63 x 63	68	34
15	16	75 x 75	75	41
18	16	66 x 66	69 1/4	35 1/2
18	16	78 x 78	77 1/4	41 1/2
21	16	69 x 69	72	37
21	16	81 x 81	82	42 1/2
24	16	72 x 72	72	38 1/2
24	16	84 x 84	88	44 1/2
30	14	78 x 78	82 1/2	41 1/2
30	14	90 x 90	93 1/4	47 1/2
36	14	84 x 84	88	44 1/2
36	14	96 x 96	96	50 1/2
42	14	90 x 90	93 1/4	47 1/2
42	14	102 x 102	101 1/4	53 1/2
48	14	96 x 96	96	50 1/2
48	14	108 x 108	112	56 1/2
54	14	102 x 102	101 1/4	53 1/2
54	14	114 x 114	120	59 1/2

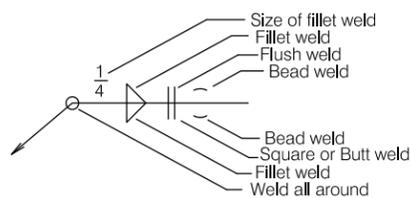
**REQUIREMENT TABLE**

X IN BOX INDICATES DIAPHRAGM REQUIREMENTS FOR STRUCTURE	
DIAPHRAGMS, ZINC COATED STEEL (CORRUGATED OR FLAT SHEET PER DETAIL)	<input type="checkbox"/>
_____ GAGE _____" x _____" DIAPHRAGMS FOR _____" DIA. PIPE	<input type="checkbox"/>
COATINGS - ZINC COATED STEEL	
FULLY BITUMINOUS COATED, TYPE A-1	<input type="checkbox"/>
ARAMID FIBER COMPOSITE, BITUMINOUS COATED	<input type="checkbox"/>
POLYMER PRECOATED, GRADE 10/10	<input type="checkbox"/>
NONE REQUIRED	<input type="checkbox"/>

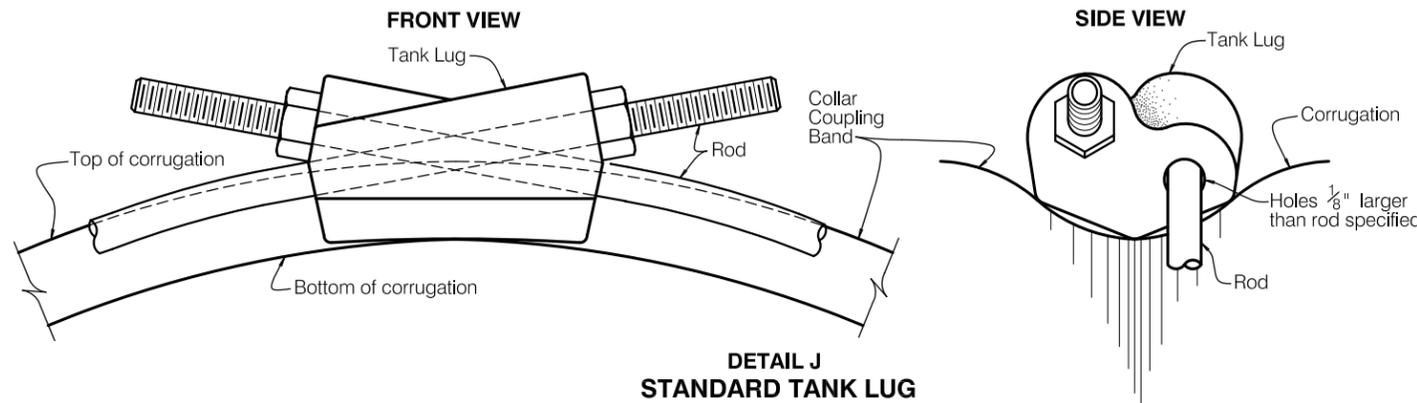
**INSTALLATION NOTES:**

- REMOVE EXCESS BITUMINOUS COATING FROM CORRUGATIONS WHERE DIAPHRAGM SHEETS WILL JOIN AND WHERE BANDS AND PIPE WILL JOIN.
- THE BAND OF THE DIAPHRAGMS WILL BE COATED WITH 1/4" OF ASPHALT-MASTIC MATERIAL MEETING THE REQUIREMENTS OF ASTM A849. THE ASPHALT-MASTIC COATED AREAS SHOULD BE KEPT FREE OF DIRT, GRAVEL, AND OTHER FOREIGN MATERIAL UNTIL BANDS ARE IN PLACE AND TIGHTENED. WHEN THE AIR TEMPERATURE IS 50° F. OR LOWER, HEAT WILL BE APPLIED TO SOFTEN, BUT NOT BURN OR MELT, THE BITUMINOUS MASTIC.
- WHEN A NEOPRENE GASKET IS USED IN LIEU OF BITUMINOUS MASTIC, THE GASKET SIZE SHALL BE 3/8" THICK WITH A MINIMUM WIDTH OF 7" CENTERED ON THE DIAPHRAGM LOCATION AND FASTENED AT ENDS TO FORM A FULL CIRCLE.
- THE DIAPHRAGM SECTIONS WILL BE CENTERED ON THE DIAPHRAGM LOCATION AND THE CORRUGATIONS ALIGNED FOR COMPLETE AND TIGHT NESTING OF CORRUGATIONS. THE NUTS ON THE RODS WILL BE TIGHTENED WITHOUT OVERSTRESS AND WILL BE RETIGHTENED AT LEAST TWICE AFTER INITIAL INSTALLATION AT INTERVALS OF APPROXIMATELY 1/2 HOUR. THE FINAL TENSION ON THE RODS SHALL BE AS DETERMINED BY THE ENGINEER. BACKFILLING AROUND THE PIPE, EXCEPT AT DIAPHRAGM BANDS, MAY PROCEED DURING THE INTERVAL REQUIRED FOR TIGHTENING BANDS.

**WELD SYMBOLS**



Note:  
Weld symbol above line indicates weld is on opposite side of joint to which arrow points.  
Weld symbol below line indicates weld is on side of joint to which arrow points.



**DIAPHRAGM FOR METAL PIPE**

Date	
Designed	
Drawn	
Checked	
Approved	

