

Design Assumptions for Nebraska Base Drawing NE100-30-002 Metal Pipe Requirements and Coupling Bands

Revised: 5/6/09 Replaces drawing number: 5001-21

Flange couplings are acceptable on class "A" hazard dams, where pipe elongation is not a consideration.

Detail A, B, and C on drawing – Bands are considered watertight if they are 2 ft. or longer for 18 inch dia. through 48 inch dia. pipe. Bands are considered watertight on detail B if the band covers a minimum of 7 full corrugations for 12 inch dia. and 15 inch dia. pipe. Use where the foundation has the potential to settle.

Detail D on drawing – Hugger type coupling band is considered watertight. Use where the foundation has little potential to settle.

Helical corrugated pipe without annular rolled ends with helical coupling bands is not considered a watertight connection.

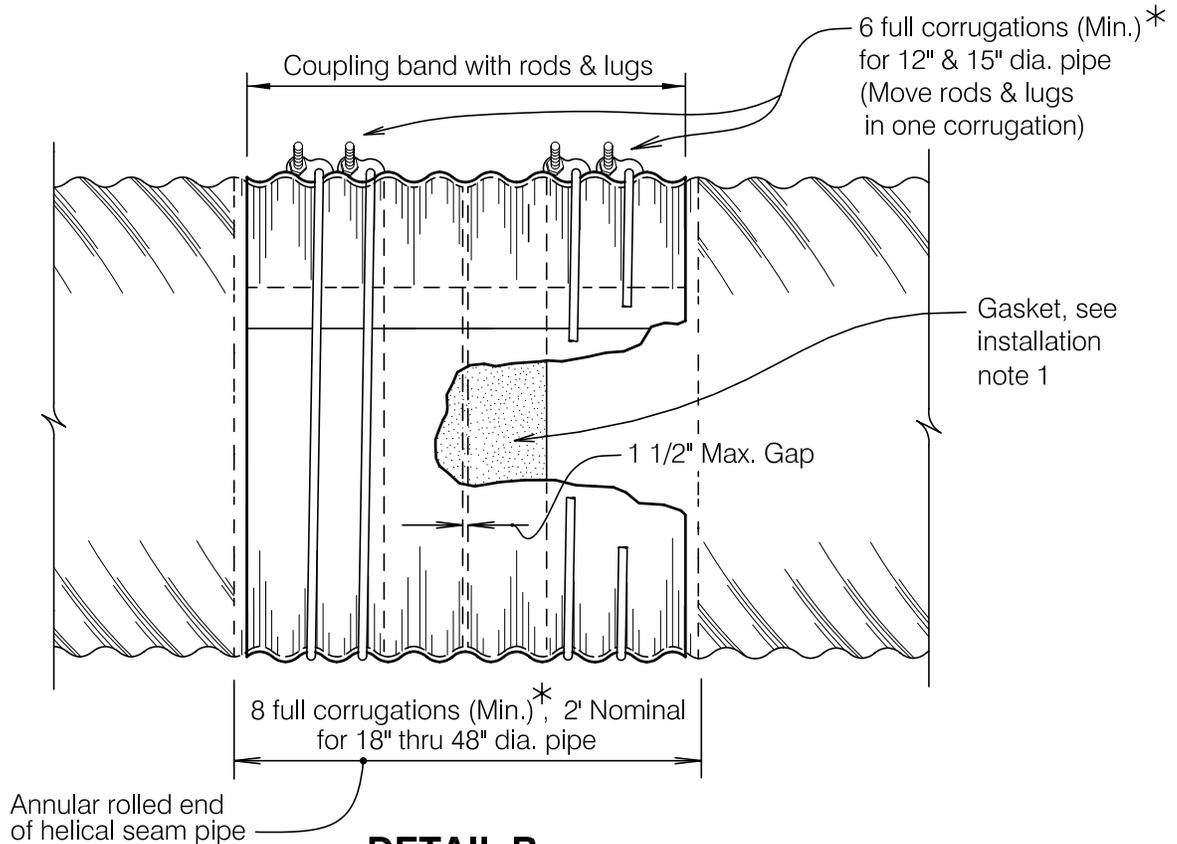
Corrugation size (3 x 1) and (5 x 1) are only available in 36" dia. pipe and larger.

The following table is for information only:

Specified Thickness (inches)	Gage Equivalent
0.168	8
0.138	10
0.109	12
0.079	14
0.064	16

Temporary Variance

WATER TIGHT COUPLING BAND FOR HELICAL PIPE



WATER TIGHT COUPLING BAND FOR HELICAL PIPE

* Minimum full corrugations are measured from valley to valley on the pipe. 1/2 corrugations at the end of the pipe section are not considered in full corrugation requirement.

Fabrication Notes, Installation Notes and Metal Pipe requirements are located on the Metal Requirements and Coupling Band Base Sheet.

Additional Installation Notes

The coupling band will not extend past the re-rolled end of the pipe section onto the helical corrugations.

The lugs will be located in the pipe corrugations so they do not interfere with each other when tightened.

The gap between the pipe sections shall not exceed 1 1/2”.

Variance expires on January 1, 2007

Instructions for
NE Base Drawing NE100-30-002
Metal Pipe Requirements and Coupling Bands

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

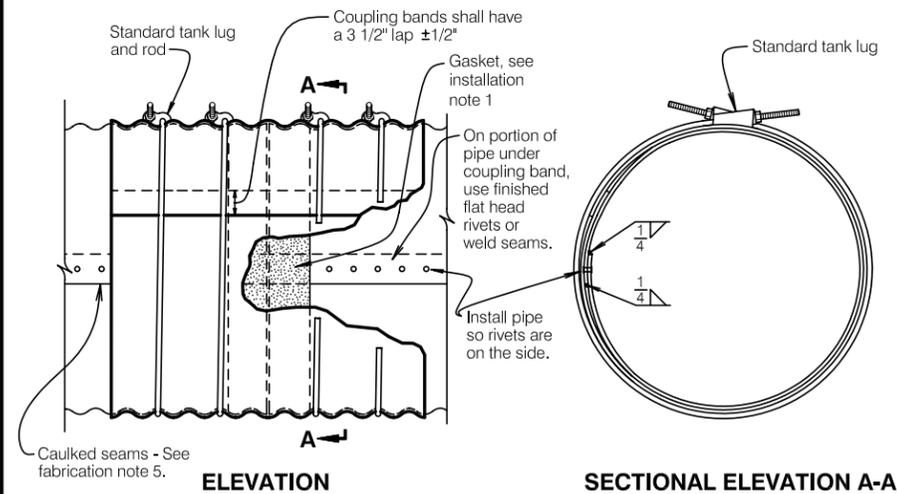
Designed

Drawn

Checked

Enter directly on drawing

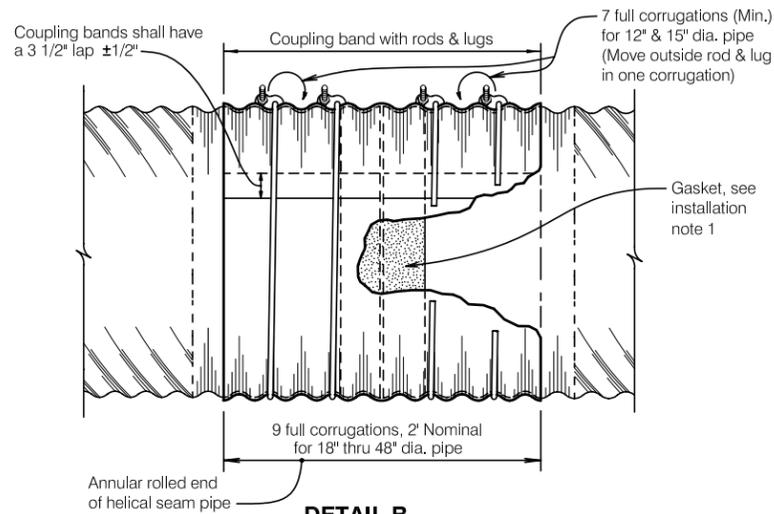
Left click on yellow boxes on drawing to mark with X as required.
Left click blue data fields on drawing to enter required data.



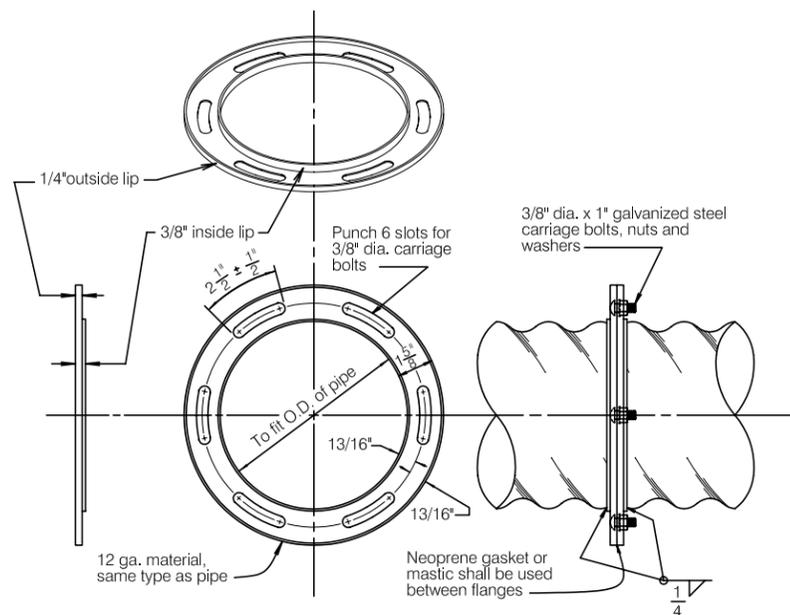
ELEVATION

SECTIONAL ELEVATION A-A

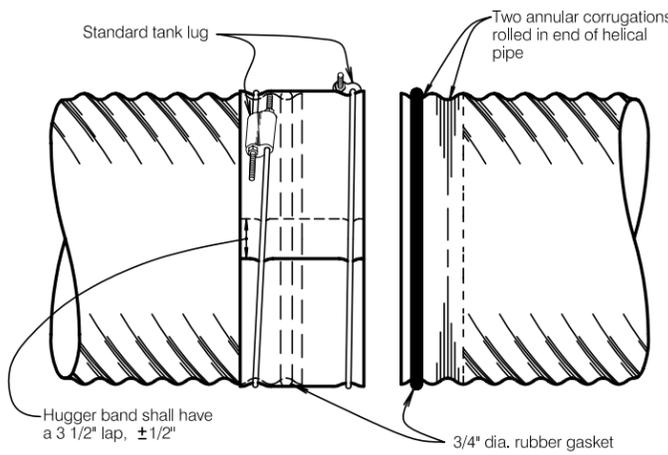
**DETAIL A
WATER TIGHT COUPLING BAND FOR ANNULAR PIPE**



**DETAIL B
WATER TIGHT COUPLING BAND FOR HELICAL PIPE**



**DETAIL C
FLANGE COUPLING FOR 8" & 10" DIA. PIPE**



**DETAIL D
WATER TIGHT HUGGER TYPE COUPLING BAND**

FABRICATION NOTES

1. WHEN SEVERAL DIFFERENT COATINGS OR CORRUGATIONS ARE CHECKED IN THE COLUMN BOXES, EACH TYPE IS ACCEPTABLE, BUT ONLY ONE TYPE SHALL BE USED IN EACH INSTALLATION.
2. COUPLING BANDS PER DETAILS "A" AND "B" SHALL HAVE THE SAME CORRUGATION REQUIREMENT AND THE SAME COATING AS THE DESIGNATED PIPE.
3. ALL WELDS AND ALL HEAT AFFECTED AREAS ON COATED STEEL SHALL BE THOROUGHLY CLEANED AND TREATED IN ACCORDANCE WITH ASTM'S.
4. ROD SIZE FOR 8" THRU 15" DIAMETER PIPE SHALL BE 3/8" DIAMETER. FOR PIPE LARGER THAN 15" DIAMETER THE ROD SHALL BE 1/2" DIAMETER. DIAMETER OF HOLES IN THE LUGS SHALL BE 1/8" LARGER THAN THE DIAMETER OF THE ROD USED.
5. DURING FABRICATION, WHEN ASPHALT COATING IS NOT USED, RIVETED SEAMS SHALL BE CAULKED WITH AN ASPHALT OR TAR BASED MATERIAL MEETING ASTM A849 TO PROVIDE A WATERTIGHT SEAM. ALL CIRCUMFERENTIAL AND LONGITUDINAL SEAMS SHALL BE CAULKED BEFORE RIVETING. THIS SHALL BE ACCOMPLISHED BY APPLYING A UNIFORM BEAD OF THE ASPHALT OR TAR BASED COMPOUND TO THE INNER LAP SURFACE BEFORE RIVETING SUCH THAT WHEN THE RIVETS ARE IN PLACE, ALL VOIDS ARE FILLED.
6. CLOSE RIVETED PIPE SHALL BE FABRICATED SO THAT THE RIVET SPACING IN THE CIRCUMFERENTIAL SEAMS SHALL NOT EXCEED 3 INCHES, EXCEPT THAT 12 RIVETS SHALL BE SUFFICIENT ON 12" DIA. PIPE.

INSTALLATION NOTES

1. THE SLEEVE TYPE NEOPRENE GASKET SIZE SHALL BE 3/8" THICK WITH A MINIMUM WIDTH OF 7" CENTERED ON THE PIPE JOINT AND FASTENED AT ENDS TO FORM A FULL CIRCLE. IN LIEU OF A NEOPRENE GASKET, ASPHALT OR TAR BASED MASTIC MAY BE USED FOR DETAIL "A" AND "B". (SEE NOTE 5)
2. IN CONNECTING THE PIPE SECTIONS, THE COUPLING BANDS WILL BE CENTERED ON THE PIPE JOINT AND ALIGNED FOR COMPLETE AND TIGHT NESTING OF CORRUGATIONS BETWEEN COUPLING BAND AND EACH PIPE SECTION. RODS AND LUGS ON COUPLING BANDS WILL BE INSTALLED ACCORDING TO THE DRAWINGS. THE NUTS ON THE RODS WILL BE TIGHTENED WITHOUT OVER STRESS 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 DETERMINED BY THE ENGINEER. BACKFILLING AROUND THE PIPE, EXCEPT AT COUPLING BANDS, MAY PROCEED DURING THE INTERVALS REQUIRED FOR TIGHTENING BANDS.
3. BEFORE COUPLING BANDS ARE INSTALLED ON RIVETED PIPE, THE PIPE SECTIONS THAT ARE TO BE CONNECTED SHALL BE ROTATED SO RIVETS OF PIPE ARE ON THE SIDE OF THE PIPE (SEE DETAIL "A") AND THE INSIDE LAPS ARE POINTED DOWNSTREAM.
4. ON BITUMINOUS COATED PIPE, REMOVE EXCESS BITUMINOUS COATING FROM CORRUGATIONS WHERE BANDS AND PIPE JOIN.
5. THE ENDS OF THE TWO PIPE SECTIONS AND LAP SEAM WILL BE COATED WITH 1/4" OF ASPHALT OR TAR BASED MASTIC (ASTM A849, TROWEL GRADE) FOR DETAIL "A" AND "B" COUPLING BANDS. THE MASTIC COATED AREAS SHOULD BE KEPT FREE OF ALL DIRT, GRAVEL, AND OTHER FOREIGN MATERIAL UNTIL BANDS ARE IN PLACE AND TIGHTENED. WHEN AIR TEMPERATURE IS 50° F, OR LOWER, HEAT WILL BE APPLIED TO SOFTEN, BUT NOT BURN OR MELT, THE MASTIC.
6. FLANGE COUPLING BANDS SHALL BE ALIGNED WITH MATCHING SLOTS, AND NUTS ON THE BOLTS TIGHTENED SECURELY. NEOPRENE GASKET OR MASTIC SHALL BE USED BETWEEN FLANGES, AND NUTS WILL BE RETIGHTENED AFTER COMPLETE ASSEMBLY.

METAL PIPE REQUIREMENTS

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 CORRUGATED 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.
- A885 STANDARD SPECIFICATION FOR STEEL SHEET, ZINC AND ARAMID FIBER COMPOSITE-COATED FOR CORRUGATED STEEL SEWER, CULVERT AND UNDERDRAIN PIPE.

PIPE CLASSIFICATION

- TYPE I FULL CIRCULAR CROSS-SECTION
- TYPE II, THIS IS TYPE I PIPE WHICH HAS BEEN REFORMED INTO A PIPE ARCH HAVING APPROXIMATELY A FLAT BOTTOM

CORRUGATION REQUIREMENTS FOR TYPE I AND II PIPE

NOMINAL SIZE (INCH)

- 1 1/2 x 1/4 (AVAILABLE ONLY IN HELICALLY CORRUGATED PIPE)
- 2 2/3 x 1/2 (STANDARD CORRUGATIONS)
- 3 x 1

COATINGS - SEE FABRICATION NOTE NO. 1

- ALUMINUM COATED STEEL - SEE FABRICATION NOTE NO. 5
- ZINC COATED STEEL - SEE FABRICATION NOTE NO. 5
- POLYMER PRECOATED - SEE FABRICATION NOTE NO. 5
- ARAMID FIBER COMPOSITE, BITUMINOUS COATED
- FULLY BITUMINOUS COATED

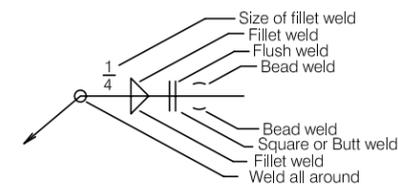
CORRUGATION TYPES - SEE FABRICATION NOTE NO. 1

- ANNULAR, CLOSE RIVETED
- HELICAL

COUPLING BAND REQUIREMENTS

GAGE	BAND TYPE AND NUMBER OF RODS REQUIRED	NUMBER BANDS REQUIRED	SEE DETAIL
	<input type="checkbox"/> 2 FT. WITH 4 RODS FOR ___" DIA. PIPE		<input type="checkbox"/> A <input type="checkbox"/> B
	<input type="checkbox"/> 4 FT. WITH 6 RODS FOR ___" DIA. PIPE		<input type="checkbox"/> A <input type="checkbox"/> B
12	<input type="checkbox"/> FLANGE FOR 8" AND 10" PIPE ___" DIA. PIPE		<input type="checkbox"/> C
	<input type="checkbox"/> HUGGER WITH 2 RODS FOR ___" DIA. PIPE		<input type="checkbox"/> D

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.

**METAL PIPE REQUIREMENTS
AND COUPLING BANDS**