

CIMSCO, INC.  
1840 L & A ROAD  
METAIRIE, LA 70001



BID #50-00131608

TWO (2) YEAR CONTRACT FOR A SUPPLY OF STEEL STORM DRAIN  
CULVERTS AND RELATED ITEMS FOR THE JEFFERSON PARISH  
DEPARTMENT OF PUBLIC WORKS, ALL DISTRICTS EAST & WEST BANK

**August 18, 2020 @ 2:00 P.M.**

ATTENTION VENDORS!!!

Please review all pages and respond accordingly, complying with all  
provisions in the technical specifications and Jefferson Parish Instructions  
for Bidders and General Terms and Conditions. All bids must be received in  
the Purchasing Department by the bid due date and time.

**Jefferson Parish Purchasing Department**

**200 Derbigny Street-Suite 4400**

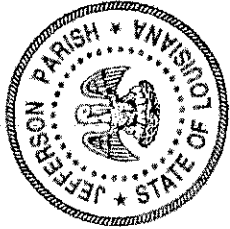
**Gretna, LA 70053**

**Buyer II Name: SHANNA FOLSE**

**Buyer Email: SFOLSE@JEFFPARISH.NET**

**Buyer Phone: 504-364-2680**

CIMSCO, INC.  
1840 L & A ROAD  
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# JEFFERSON PARISH

DEPARTMENT OF PURCHASING

CYNTHIA LEE SHENG  
PARISH PRESIDENT

RENNY SIMNO  
DIRECTOR

January 2020

## Changes to Jefferson Parish Bidding Information

The Jefferson Parish Purchasing Department would like to make vendors aware of the following changes:

**Probable Construction Cost:** Per Jefferson Parish Administrative Policy, the probable construction cost is not revealed in the Jefferson Parish Bidding Documents. Jefferson Parish Administrative Policy has changed and a range of the probable construction cost will be stated in the Jefferson Parish bidding documents, entitled Important Notice to All Bidders – Bid Requirements. Per Louisiana Public Bid Law, the probable construction cost will be read at the bid opening.

**Insurance Requirement:** **All bidders** must provide proof of valid insurance in the required amounts as stated in the Standard Insurance Requirements for bidding purposes. Failure to provide the proof of valid insurance in all of the required coverage amounts will result in bid rejection.

GENERAL GOVERNMENT BLDG. – 200 DERBIGNY ST., SUITE 4400, GRETNA, LA 70053  
OFFICE 504.364.2678

JOSEPH S. YENNI BLDG. – 1221 ELMWOOD PARK BLVD., SUITE 404, JEFFERSON, LA 70123  
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# JEFFERSON PARISH

## DEPARTMENT OF PURCHASING

CYNTHIA LEE SHENG  
PARISH PRESIDENT

RENNY SIMNO  
DIRECTOR

May 2020

### PURCHASING DEPARTMENT ANNOUNCEMENT

#### **Public Access to the General Government Building and Joseph S. Yenni Building:**

Effective **Monday, May 18, 2020**, Jefferson Parish Government buildings will be open to the public. All visitors will be required to wear a mask or face covering and undergo a temperature screening prior to entry.

#### **Bid Openings:**

Due to COVID-19 safety precautions, all public bid openings have been suspended. Bid openings will continue and be made available via phone conference by calling the following:

**Dial-in Number:** (504) 323-1800

**Meeting ID:** 181357

Bids will be accepted through Central Bidding or manual submission. Manually-submitted bids can be delivered to either Purchasing office location; however, if submitting bids on the day of the bid opening, bidders must submit at the West Bank location. Advertised bids will be received until 2 p.m. The bid opening teleconference will begin at 2:30 p.m. on each bid opening date.

If you have any questions, please contact the Purchasing Department at (504) 364-2678 or e-mail [purchasing@jeffparish.net](mailto:purchasing@jeffparish.net) for assistance.

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**A TWO-YEAR CONTRACT FOR THE SUPPLY OF STEEL STORM  
DRAIN CULVERTS, AND RELATED ITEMS FOR THE JEFFERSON  
PARISH DEPARTMENT OF PUBLIC WORKS, ALL DISTRICTS EAST  
AND WEST BANK.**

**BID #50-00131608**

**GENERAL SPECIFICATIONS**

These specifications are prepared for a two-year supply of steel storm drain culverts and related items used by the department of public works, all drainage districts

Parish reserves the right to purchase any quantity of units as needed during the annual contract period.

Bidder is not to pre-ship any quantity until authorized by purchase order.

**TECHNICAL SPECIFICATIONS FOR CORRUGATED STEEL PIPE AND PIPE  
ARCHES (GROUP 1)**

**SPECIFICATIONS FOR ROUND AND ARCH PIPE (GROUP 1 AND 2)**

**SPECIFICATION FOR CANAL OUTFALL PIPE (GROUP 3)**

Canal outfall pipe (Section extended into canal) shall be supplied in 26 feet Sections. The required CSP (corrugated steel pipe) sizes to fit over standard size round RCP (reinforced concrete pipe) are shown in the following Table.

Since corrugated steel arch pipe is not compatible with reinforced concrete arch pipe, these bid documents contain no provisions for arch type outfall pipes.

Connecting bands for outfall pipes shall be (24) inch wide with four (4) inch wide with four (4) rods and lugs and have two (2) piece construction.

RCP NOM. DIA	WALL THICKNESS	RCP O.D.
12 IN.	2 IN.	16 IN.
15 IN.	2.25 IN.	19.5 IN.
18 IN.	2.5 IN.	23 IN.
21 IN.	2.75 IN.	26.5 IN.
24 IN.	3 IN.	30 IN.
27 IN.	3.25 IN.	33.5 IN.
30 IN.	3.50 IN.	37 IN.
36 IN.	4 IN.	44 IN.
42 IN.	4.5 IN.	51 IN.
48 IN.	5 IN.	58 IN.
54 IN.	5.5 IN.	65 IN.
60 IN.	6 IN.	72 IN.
72 IN.	7 IN.	86 IN.
84 IN.	8 IN.	100 IN.
96 IN.	9 IN.	114 IN.

RCP NOM. DIA	REQ'D CSP I.D.
12 IN.	16.5 IN.
15 IN.	20 IN.
18 IN.	23.5 IN.
21 IN.	27 IN.
24 IN.	30.5 IN.
27 IN.	34 IN.
30 IN.	37.5 IN.
36 IN.	44.5 IN.
42 IN.	51.5 IN.
48 IN.	58.5 IN.
54 IN.	65.5 IN.
60 IN.	72.5 IN.
72 IN.	86.5 IN.
84 IN.	100.5 IN.
96 IN.	114.5 IN.

Note: all pipe sections for all types of pipe provided with two lifting lugs per section of pipe sizes 30 inches and larger.

(2-2/3) inch x y2 inch corrugations apply to (2) inch – (60) inch round pipe.  
(3) inch x (1) inch corrugations apply to 66 inch and larger round pipe.

## **SPECIFICATIONS FOR BANDS FOR ALL TYPES AND SIZES OF PIPE.**

- A. 0 ring gaskets shall be provided for hugger type bands
- B. Flexible plastic gaskets shall be provided for angle and bolt or rod and lug type bands. Two (2) rods and lugs for round pipe and four (4) rods and lugs for canal outfall pipe.
- C. Angle and bolt type bands shall be provided for pipe arch and two (2) piece bands shall be provided for pipe arch sizes (42) inch x 29 inch and larger.
- D. D.band widths shall be 12 inches for pipe size up to 30 inch equivalent and 24 inch for pipe size 36 inch equivalent and larger.
- E. Connecting bands for outfall pipe shall be (24) inch wide with four (4) rods and lugs and have two (2) piece construction.

## **STANDARD SPECIFICATION FOR STEEL SHEET, ZINC-COATED (GALVINIZED), FOR CORRUGATED STEEL PIPE AASHTO DESIGNATION: M 218M-96**

### **1 -SCOPE**

1.1 This specification covers steel sheet used in the manufacture of corrugated steel pipe (CSP) for storm sewers, culverts, drains, and similar uses. The sheet is zinc coated (galvanized) by the hot-dip process, and is produced in one coating mass only. Material for this use is furnished in coils, flat in cut lengths, and corrugated in cut lengths.

### **2-REFERENCED DOCUMENTS**

#### **2.1 AASHTO standards:**

M 120 zinc metal (slab zinc)  
T 65 the mass of coating on iron and steel articles with zinc or zinc-alloy coatings  
R 11 using significant digits in test data to determine conformance with specifications

#### **2.2 ASTM standards**

A 754 coating thickness by x-ray fluorescence  
A 902 terminology relating to metallic coated steel products.  
A 924/a 924/m general requirements for steel sheet, metallic coated by the hot-dip process.  
E 376 measuring coating thickness by magnetic-field or eddy-current (electro-magnetic) test methods

### **3.-TERMINOLOGY**

3.1 Definitions -for definitions of terms used in this standard, refer to ASTM a 902. The following definitions are as stated in that standard.

- 3.1.1 Fabricator, n-as related to corrugated metal pipe, (1) the organization that produces the finished pipe, or (2) for structural plate pipe, the organization that processes flat sheets and other items needed for the field assembly of the finished products.
- 3.1.2 Manufacturer---as related to corrugated metal pipe, the organization that produces the metal sheet from which pipe is made.
- 3.1.3 Purchaser, n--as related to corrugated metal pipe, the person or agency that purchases the finished pipe.

Note 1 ---with regard to this specification for sheet for corrugated steel pipe, the fabricator may also be considered as the "purchaser" of the sheet, where that term is used in this specification. Such interpretation would not restrict the purchaser of the finished pipe from enforcing any provisions of this specification.

### **4.-ORDERING INFORMATION**

4.1 All sheet, both flat and formed, covered by this specification shall be ordered only to the specified thicknesses listed in Table 4.

4.2 Unless otherwise specified in the purchase order, all material furnished to this specification shall be chemically treated.

4.3 Orders for material to this specification shall include the following information, as necessary, to adequately describe the desired product.

- 4.3.1 Name of material (galvanized steel sheet for CSP)
- 4.3.2 AASHTO designation and year of issue as m 218-yy,
- 4.3.3 Quantity and dimensions:
  - 4.3.3.1 Cut lengths--show number of sheets; thickness; width; either flat or overall corrugated; length; pitch and depth of corrugations; if corrugated;
  - 4.3.3.2 Coiled sheet--show total mass; thickness; width; coil requirements (maximum outside diameter, acceptable inside diameter, and maximum mass of individual coils)
  - 4.3.3.3 Certification, if required (see Section 11.1) and
  - 4.3.3.4 Special requirements.

Note 2---A typical ordering description is as follows: galvanized steel sheet for CSP in accordance with AASHTO m 218-yy, 45000 kg, 2.77 by 700 mm by coil, 1500mm max OD, 66mm ID, 7000kg max, certified

## **5.-CHEMICAL COMPOSITION**

5.1 Base metal analysis---the base metal cast or product analyses shall conform to the chemical requirements of Table 1.

5.2 Coating bath composition (zinc-coating) ---the coating bath metal shall contain not less than 99 per cent zinc.

**Table 1: Chemical Composition**

	Cast analysis	Product analysis
Sulfur, max, percent	0.05	0.06
Sum of carbon, manganese, phosphorous, silicon, and sulfur. Max. Percent	0.70	0.74

**Table 2: Mechanical Requirements (Properties of Flat Sheet Prior To Fabrication)**

Tensile strength min. MPa	310
Yield point, min. MPa	230
Elongation in 50 mm. min. percent	20

**A** To determine conformance with this specification, round each value for tensile strength and for yield strength in the nearest 1 MPa and each value for elongation to the nearest 1 percent both in accordance with the rounding method of AASHTO R 11.

**B** Yield point and tensile strength are based on thickness of the base metal. If tests are made after coating, determine the base metal thickness after stripping the coating from the ends of the specimen contacting the grips of the tension testing machine prior to tensile testing.

**C** Elongation requirement does not apply to material tested after elongating.

**Table 3: Coating Mass Requirements**

Triple spot Average, Min	Coating mass,		Equivalent coating thickness	
	Total both sides	Single spot, Min	Triple spot average, Min	Single spot, Min
G/m 2	g/m 2		p.m.	
610	550		86	
			78	

Coating thicknesses are approximate, for information only (see 9.5.1). Conversion is based on the following relationship:  $1 \text{ g/m } 2 = 0.1415 \text{ p.m.}$

**Table.4: Coated Steel Sheet Thickness Requirements**

Note--thickness is measured not less than 10 mm from an edge. On corrugated sheet, thickness is measured on the tangents of corrugations,

Specified thickness mm	Minimum thickness mm
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1.02	0.91
1.32	1.17
1.63	1.45
2.01	1.83
2.77	2.57
3.51	3.28
4.27	4.04

## **6.-MECHANICAL PROPERTIES**

- 6.1 The galvanized steel sheet shall conform to the mechanical requirements is Table 2.
- 6.2 Two tension tests shall be made on random samples of finished material from each cast or heat. When the finished material from said cast or heat is less than 45 mg, one test is sufficient. When material rolled from one cast or heat differs 1.25 mm or more in thickness, one tension test shall be made from both the thickest and thinnest material rolled regardless of the mass represented. The samples shall be prepared and tested in accordance with the method specified in ASTM A 924M.

**Table. 5: Flatness Tolerances (Cut Lengths Only)**

Note: ----this table also applies to sheets cut to length from coils by the fabricator when adequate flattening measures are performed.

Specified thickness, mm	Specified width, mm	Flatness tolerance (maximum deviation from a horizontal flat surface).mm
1.63 and thicker	To 1500,incl	13
1.32 and thinner	To 900, incl	13
	Over 900 to 1500, incl	19

**Table 6: Corrugation Size**

				Radius of curvature, mm
Nominal Size	Maximum Pitch mm	Minimum Depth mm	Nominal	Minimum
68 by 13	73	12	17	12
75 by 25	83	24	14	12
125 by 25	135	24	40	36

Pitch is measured from crest to crest of corrugations, at 90 degrees to the direction of the corrugations.

Depth is measured as the vertical distance from a straight edge resting on the corrugation crest to the bottom of the intervening valley.

## **7.-COATING REQUIREMENTS**

- 7.1 The mass of zinc coating shall conform to the requirements in Table 3. The mass of coating is the total amount on both surfaces of the sheet expressed in g/m<sup>2</sup> of sheet.
- 7.2 Adhesion of the coating shall be such that no peeling or flaking occurs while the coated sheet is being corrugated and formed into pipe.

## **8.-DIMENSIONS AND TOLERANCES**

- 8.1 Thickness---sheet thickness shall conform to dimensions prescribed in Table 4. The thickness of the sheet includes both the base steel and the zinc coating.
- 8.2 Length---permissible variations in length of cut-length sheets, both flat and corrugated, shall be in accordance with ASTM A 924M.
- 8.3 Flat sheet---permissible variations in width and camber of flat materials shall be in accordance with ASTM A 924M.
- 8.4 Corrugated sheet:
- 8.4.1 Corrugations---corrugations shall form smooth continuous curves and tangents. The dimensions of the corrugations shall be in accordance with Table 6.
  - 8.4.2 Covering width and lip dimension---covering width of corrugated sheet shall be in accordance with Table 7. Covering width is the distance between the crests of the extreme corrugations. The lip dimensions of corrugated sheet shall be in accordance with Table 8 and is measured along the radial curvature from the crest of the corrugation to the edge of the sheet. There is no established tolerance for overall width since the covering width and lip dimensions are the governing factors for the formed product.

**Table 7: Covering Width Tolerance for Corrugated Sheet**

Covering width, mm	Tolerance over and under mm
To 600, inclusive	6
Over 600 to 900, inclusive	10
Over 900 to 1200; inclusive	13

## **9.-TESTING**

- 9.1 The manufacturer shall make each test and measurements as deemed necessary to ensure that the coated sheet produced complies with this specification.
- 9.2 The purchaser may make tests and measurements as determined to be necessary to confirm conformance with this specification.

- 9.3 Chemical analysis of steel---cast analysis (by the manufacturer) and product analysis (by the purchaser) shall be in accordance with ASTM A 924M.
- 9.4 Mechanical testing- mechanical property tests shall be conducted on the sheet prior to corrugating or other fabrication, when possible, and shall be in accordance with ASTM A 924M. If tests are made after corrugating, specimens shall be taken on the tangents of corrugations and used for determination of tensile and yield strengths only.
- 9.5 Coating mass:
- 9.5.1 Sampling for coating mass determinations shall be in accordance with ASTM A 924M. The mass of coating shall be determined according to AASHTO T 65.
  - 9.5.2 The mass may be converted from the sum of readings on both surfaces of the sheet by a magnetic thickness gage suitably checked and demonstrated for accuracy (note 3)  $1 \text{ p.m}=7.1 \text{ g/m}^2$  each surface. When a magnetic thickness gage is used and a dispute arises, the mass shall be determined by the stripping test in AASHTO T 65.
  - 9.5.3 The mass of coating may be determined from the coating thickness measured by the x-ray fluorescence method, according to ASTM A 754, when this method is used and a dispute arises, the mass shall be determined by the stripping test in AASHTO T 65.

Note 3-----several magnetic and electro-magnetic types of coating thickness gages are commercially available and are a satisfactory basis for acceptance when properly calibrated just prior to inspection use (see ASTM E 376).

## **10. -REJECTION AND REHEARING**

- 10.1 material tested by the purchaser and found not conforming to this specification may be rejected subject to the rejection and rehearing provisions of ASTM A 924M.

## **11.-CERTIFICATION**

- 11.1 When specified in the purchase order or contract, a manufacturer's certification shall be furnished to the purchaser. The certification shall be in accordance with the provisions of ASTM A 924M and shall include reference to this product specification designation.
- 11.2 Test results including chemical composition, mechanical properties, and mass of coating for each heat and coating lot shall be maintained by the sheet manufacturer for 7 years and shall be made available to the fabricator and purchaser upon request.

## **12.-PRODUCT MARKING**

- 12.1 Each 1.5 to 1.5 m of sheet in coils or cut lengths shall be Identified by showing the following:

- 12.1.1.1 Name of manufacturer,
- 12.1.1.2 Brand name,
- 12.1.1.3 Specified thickness,
- 12.1.1.4 Specified coating mass,
- 12.1.1.5 Identification symbols relating to a specific heat number and coating lot number, and
- 12.1.1.6 AASHTO designation number.

12.2 The brand shall be removed, obliterated, or rebranded "non-specification" on each 0.5 to 1 .5m of sheet in a coating lot or heat where control tests show as prescribed herein, nonconformance to this specification.

## **STANDARD SPECIFICATION FOR CORRUGATED STEEL PIPE1 POLYMER PRECOATED, FOR SEWERS AND DRAINS**

**ASSHTO DESIGNATION: M 245m-91 (1995)**  
**(ASTM DESIGNATION: A 762/A 762m95a)**

### **1. SCOPE**

1.1 This specification covers polymer precoated corrugated steel pipe intended for use for storm water drainage, under-drains, the construction of culverts, and similar uses. Pipe covered by this specification is not normally used for the conveyance of sanitary or industrial wastes. The steel sheet used in fabrication of the pipe has a polymer protective coating over a metallic coating of zinc (galvanizing), 55 aluminum-zinc alloy, or zinc-5 percent aluminum -mischmetal alloy.

1.2 The polymer coating provides a degree of extra Protection for the pipe against abrasion and corrosion as compared to metallic-coated pipe without polymer Coating. Some severe environments may cause corrosion problems to accessory items such as rivets or coupling band hardware that does not have a polymer coating. Additional protection for polymer precoated corrugated steel pipe can be provided by use of coatings applied after fabrication of the pipe as described in M I90M.

1.3 This specification does not include requirements for bedding backfill, or the relationship between earth cover load and sheet thickness of the pipe. Experience has shown that the successful performance of this product depends upon the proper selection of sheet thickness, type of bedding and backfill, controlled manufacture in the plant, and care in the installation. The installation procedure is described in AASHTO standard specifications for highway bridges, Division II, Section 26.

### **2.-REFERENCED DOCUMENTS**

2.1 AASHTO standards:

## Specifications for highway bridges

M 190M bituminous coated corrugated metal culvert pipe and pipe arches  
M 198 joints for circular concrete sewer and culvert pipe using flexible watertight gaskets.  
M 218M steel sheet, zinc-coated (galvanized) for corrugated steel pipe.  
M 232 zinc coating (hot-dip) on iron and steel hardware  
M 243M field applied coating of corrugated metal structural plate for pipe, pipe-arches, and arches  
M 246M steel sheet, metallic-coated and polymer precoated for corrugated steel pipe  
M 289M aluminum-zinc alloy coated steel sheet for corrugated steel pipe  
M 291M carbon and alloy steel nuts (metric)  
M 298 coatings of zinc mechanically deposited on iron and steel.  
T 65 mass of coating on zinc-coated (galvanized) iron or steel articles.  
T 249M helical lock seam corrugated pipe

## 2.2 ASTM standards

A 493 stainless and heat-resisting steel for cold heading and cold forging bar and wire  
A 780 repair of damaged hot-dip galvanized coatings  
A 796 structural design of corrugated steel pipe, pipe arches, and arches for storm and sanitary sewers  
A 916M sheet steel, zinc- 5 percent aluminum-mischmetal alloy-coated by the hot-dip process for storm sewer and drainage pipe  
B 633 electrodeposited coatings of zinc on iron and steel  
D 1005 measurement of dry film thickness of organic coatings using micrometers  
D 1056 flexible cellular materials---sponge or expanded rubber  
F 568 carbon and alloy steel externally threaded metric fastener.

## 3.-DESCRIPTONS OF TERMS SPECIFIC TO THIS STANDARD

- 3.1 Fabricator---in this specification, the producer of the pipe.
- 3.2 Manufacturer---in this specification, the producer of the sheet.
- 3.3 Purchaser- in this specification, the purchaser of the finished product.

## 4.-CLASSIFICATION

4.1 The corrugated steel pipe covered by this specification is classified as follows

- 4.1.1 Type 1---this pipe shall have a full circular cross -Section, with a single thickness of corrugated sheet, fabricated with annular (circumferential) or helical corrugations.
- 4.1.2 Type 1a---this pipe shall have a full circular cross Section with an outer shell of corrugated sheet fabricated with helical corrugations and inner liner of Smooth (uncorrugated) sheet attached to the shell at helical lock seams.
- 4.1.3 Type IR---this pipe shall have a full circular cross Section, with a single thickness of smooth sheet, fabricated with helical ribs projecting outwardly.
- 4.1.4 Type II---this pipe shall be a type I pipe which has been reformed into a pipe-arch, having an approximately flat bottom.
- 4.1.5 Type IIA---this pipe shall be a type IA pipe which has been reformed into a pipe-arch, having an approximately flat bottom.

- 4.1.6 Type UR--this pipe shall be a type IR pipe which has been reformed into a pipe-arch, having an approximately flat bottom.
  - 4.1.7 Type III--this pipe, intended for use as underdrains or for underground disposal of water, shall be a type I
- Pipe which has been perforated to permit the in-flow or out-flow of water.
- 4.1.8 Type IIIA---this pipe, intended for use as underdrains, shall consist of a semi-circular cross-Section, having a smooth (uncorrugated) bottom with a corrugated top shield.

4.2 Perforation JN Type III pipe are included in two classes as described in Section 8.3.2.

## **5.-ORDERING INFORMATION**

5.1 Orders for material to this specification shall include the following information as necessary, to adequately describe the desired product.

- 5.1.1 Name of material (polymer-coated corrugated steel pipe):
- 5.1.2 Grade of polymer coating indicating thickness on inside and outside (Section 6.1.1)
- 5.1.3 Type of metallic coating (zinc or aluminum-zinc alloy) (Section 6.1.2);
- 5.1.4 AASHTO designation and date of issue:
- 5.1.5 Type of pipe (Section 4.1);
- 5.1.6 Diameter of circular pipe (Table 6), or span and rise of pipe-arch Section (Tables 8, 9, or 10)
- 5.1.7 Length, either total length or length of each piece and number of pieces:
- 5.1.8 Description of corrugations (Section 7.2);
- 5.1.9 Sheet thickness (Section 8.1.2);
- 5.1.10 For type I and type II pipe, the pipe fabrication method, whether with annular corrugations or helical corrugations (Section 7.1.1) (Note 1);
- 5.1.11 Coupling bands, number, and type (Section 9.1) if special type is required:
- 5.1.12 Gaskets for coupling hands, if required (Section 9.3):
- 5.1.13 For type III pipe, class of perforations, if other than class I (Section 8.3.2)
- 5.1.14 Certification, if required (Section 14.1): and
- 5.1.15 Special requirements

Note 1 ---pipe manufactured with annular corrugations may have an element of weakness in the longitudinal seams as compared to pipe with helical corrugations. Therefore, consideration of the method of fabrication is important when pipe is installed under certain conditions of loading.

## **6.-MATERIALS**

- 6.1 Steel sheet for pipe---all pipe fabricated under this specification shall be formed from polymer precoated sheet conforming to M 246M.
- 6.1.1 The grade of coating shall be stated in the order, and the polymer coating thickness on both inside and outside of the pipe. The polymer coating is classified by grade

corresponding to the thickness in micrometers on each side in SI units. The following grades are usually available (see Table entitled "grades").

- 6.1.1.1 Any combination of polymer coating thicknesses or other than shown above is subject to agreement between the manufacturer and purchaser or fabricator.
- 6.1.2 The polymer coating is applied to steel sheet having a metallic coating of zinc or aluminum-zinc alloy, as described in M 218M, M 289M, OR ASTM A 916M, respectively. The type of metallic coating should be stated in the order, consistent with thickness availability as shown in Table 7. If the type of metallic coating is not stated, zinc-coated sheet conforming to M 218M shall be used. All pipe furnished on the order shall have the same metallic coating unless otherwise specified.

6.2 Steel sheet for coupling bands---the sheet used in fabricating coupling bands shall conform to M 246M with the same polymer coating grade as that used for fabrication of the pipe furnished under the order. And having the same metallic coating.

- 6.2.1 As an alternate, the steel sheet for coupling bands shall conform to M 218M, M 289M, or ASTM 91 6M (with the same metallic coating as the pipe), with the sheet having a bituminous coating according to M 190M, except the thickness requirements shall not apply.
- 6.2.2 When specifically permitted by the purchaser, coupling bands shall be made of steel sheet conforming to the specification listed or Section 6.2.1 having the same metallic coating as the pipe, but without bituminous coatings.

6.3 Rivets--the rivets used in riveted pipe shall be of the same material as the base material specified for the corrugated sheets. They shall be thoroughly galvanized or sherardized. If bolts and nuts are substituted for rivets (see Section 7.3.1), they shall meet the following requirements (see Table entitled "Bolts and Nuts"). The bolts and nuts shall be hot-dip galvanized in conformance with M 232, or be mechanically galvanized in conformance with M 298 Class 40.

- 6.3.1 When specified in the order, rivets used in riveted pipe to be installed in severely corrosive environments shall be made of stainless steel conforming to any of the S3xxxx designations in ASTM A 493. Stainless steel rivets may be substituted for those described in Section 6.3 at the fabricator's option.

Note 2----some polymer precoated pipe in a severe environment is reported to have failed due to corrosion of rivets conforming to Section 6.3, while the sheet was essentially unaffected. The use of stainless steel rivets is recommended to overcome such problems.

GRADES	GRADE	
	PREVIOUS DESIGNATION	COATING THICKNESS p.m
250/0	TYPE A	250/0
250/75	TYPE B	250/75
		12

	Bolts and Nuts	
	Bolts	Nuts
For Pipe Fabrication For M 245M Pipe	F 568. Cl. 8.8	M 291M Cl. 12
For Coupling Bands For M 245M Pipe	F 568 Cl. 4.6	M 291M Cl. 5

#### 6.4 Hardware for coupling bands---

Bolts and nuts for coupling bands shall conform to the following requirements (see Table entitled "Bolts and Nuts"). Bolts, nuts, and other threaded items used with coupling bands shall be zinc coated by one of the following processes: hot-dip process as provided in AASHTO M 232; electroplating process as provided in ASTM B 633; Class Fe/Zn 8; or mechanical process as provided in M 298, Class 8. Other hardware items used with coupling bands shall be zinc coated by one of the following processes: hot-dip process as provided in M 232; electroplating process as provided in ASTM B 633, Class Fe/Zn 25; or mechanical process as provided in AASHTO M 298, Class 25.

6.5 Gaskets---if gaskets are used in couplings, they shall be a band of expanded rubber meeting the requirements of ASTM D 1056 for the "re" closed cell grades, or O-rings meeting the requirements of M 198.

### 7.-FABRICATION

7.1 General requirements- -pipe shall be fabricated in full circular cross Section except for "Type IIIA which is described in Section 8.4.

- 7.1.1 Type I pipe shall have annular corrugations with lap joints fastened with rivets or shall have helical corrugations with a continuous lock seam extending from end to end of each length of pipe. The type of fabrication used shall be" the option of the fabricator unless otherwise specified.
- 7.1.2 Type IA pipe shall be fabricated with a smooth liner and helically corrugated shell integrally attached at helical lock seams extending from end to end of Each length of pipe. The shell shall have corrugations of nominal 68 or 75 mm pitch.
- 7.1.3 Type IR pipe shall be fabricated with helical ribs projecting outward with a continuous lock seam extending from end to end of each length of pipe.

7.2 Corrugations---the corrugations shall be either annular or helical as provided in Section 7.1. The direction of the crests and valleys of helical corrugations shall not be less than 60 degrees from the axis of the pipe for pipe diameters larger than 500 mm and not less than 45 degrees from the axis for pipe diameters of 500 mm and smaller.



- 7.2.1 For Type I and IA pipe, corrugations shall form smooth continuous curves and tangents. The dimensions of the corrugations shall be in accordance with Table 1 for the size indicated in the order, except if the depth measurement of one or more corrugations is less than the minimum depth in Table 1, the depth of all corrugations between adjacent seams shall be measured and the values of Table 1 for minimum average depth and minimum corrugation depth shall apply.

Note 3---inspection frequently consists of measurement of depth of one or a few corrugations. If such measurement indicates insufficient depth, application of the requirements in Table 2 provides for acceptance where greater depth of some corrugations compensates for lack of depth of others. These measurements would normally be made at one location between seams on a length of pipe.

- 7.2.2 For Type IR pipe. The corrugations shall be essentially rectangular ribs projecting outward from the pipe wall. The dimensions-and spacing of the ribs shall be in accordance with Table 3 for the size indicated on the order. For the 292 mm rib spacing, if the sheet between the ribs does not include a lock seam, a stiffener shall be included midway between the ribs. This stiffener shall have a nominal radius of 6.4 run and a minimum height of 5.1 mm toward the outside of the pipe.

Note 4---the nominal dimensions and properties for smooth corrugations and for ribs are given in AASHTO standard specifications for highway bridges, Division I, Section 12, and in ASTM A 796.

7.3 Riveted seams---the longitudinal seams shall be staggered to the extent that no more than three thicknesses of sheet are fastened by any rivet. Pipe to be reformed into pipe arch shape shall have seams meeting the longitudinal seam requirements of Section 8.2.2.

Note 5---fabrication of pipe without longitudinal seams in 120 degrees of arc, so that the pipe may be installed without longitudinal seams in the invert, is subject to negotiation between the purchaser and fabricator.

- 7.3.1 The size of rivets, number per corrugation, and width of lap at the longitudinal seam shall be as stated in Table 4, depending on sheet thickness, corrugation size, and diameter of pipe. For pipe with 25 mm deep corrugations, m 12 diameter bolts and nuts may be used in lieu of rivets on a one-for-one replacement ratio. Circumferential seams shall be riveted using rivets of the same size as for longitudinal seams and shall have a maximum rivet, spacing of 150 mm, measured on centers, except that six rivets will be sufficient in 300 mm diameter pipe.

**Table 1: Corrugation Requirements for Type I, IA, II, IIA, and III Pipe**

Nominal Size	Maximum pitch	Minimum Depth	Inside radius	
			Nominal	Minimum
All values in millimeters				
38 by 6.5	48	6.0	1	6.5
68 by 13	73	12	17	12
75 by 25	83	24	14	12

**Table 2: Referee Requirements for Corrugation Depth**

Nominal size	Diameter	Minimum average depth	Minimum corrugation depth
All values in millimeters			
38 by 6.5	All	6.1	5.0
68 by 13	300 thru 525	12.1	10.0
68 by 13	Over 525	12.4	11.0
75 by 25	All	24.9	23.0
125 by 25	All	24.9	23.0

\*See section 7.2.1 for application of Table 2

- 7.3.2 All rivets shall be driven cold in such a manner that the sheets shall be drawn tightly together throughout the entire lap. The center of a rivet shall be no closer than twice its diameter from the edge of the sheet. All rivets shall have neat, workmanlike> and full hemispherical heads or heads of a form acceptable to the purchaser, shall be driven without bending> and shall completely fill the hole.

7.4 Helical lock seams--the lock seam for Type I pipe shall be formed in the tangent element of the corrugation profile with its center near the neutral axis of the corrugation profile. The lock seam for Type IA pipe shall be in the valley of the corrugation, shall be spaced not more than 760 mm apart, and shall be formed from both the liner and the shell in the same general manner as type I helical lock seam pipe. The lock seam for type IR pipe shall be formed in the flat zone of the pipe wall, midway between two ribs.

- 7.4.1 The edges of the sheets within the cross-Section of the lock seam shall lap at least 4.0 mm for pipe 250 mm in diameter, with an occasional tolerance of minus 10 percent of lap width allowable. The lapped surfaces shall be in tight contact, the profile of the sheet shall include a retaining offset adjacent to the 180- degree fold (as described in T 249M) of one sheet thickness on one side of the lock seam, or one-half sheet thickness on both sides of the lock seam, at the fabricator's option. There shall be no visible cracks in the metal, loss of metal-to-metal contact, or excessive angularity on the interior of the 180-degree fold of metal at the completion of forming the lock seam.
- 7.4.2 specimens cut from production pipe normal to and across the lock seam shall develop the tensile strength as provided in Table 5, when tested according to AASHTO T 249M. For type IA pipe, the lock seam strength shall be as tabulated based on the thickness of the corrugated shell.
- 7.4.3 when the ends of helically corrugated lock seam pipe have been re-rolled to form annular corrugations, either with or without a flanged end finish; the lock seam in the rerolled end shall not contain any visible cracks in the base metal and the tensile strength of the lock seam shall be not less than 60 percent of that required in Section 7.4.2.

## 7.5 END FINISH:

- 7.5.1 To facilitate field jointing, the ends of the individual pipe sections with helical corrugations may be rerolled to form annular corrugations extending at least two corrugations from the pipe end, or to form an upturned flange meeting the requirements in Section 7.5.2, or both. The diameter of ends shall not exceed that of the pipe barrel by more than the depth of the corrugation. All types of pipe ends, whether rerolled or not, shall be matched in a joint such that the maximum difference in the diameter of abutting pipe ends is 13 mm.
  - 7.5.1.1 When pipe with any size helical corrugation or rib is rerolled to form annular corrugations in the ends, the usual size of the annular corrugations is 68 by 13 mm.
- 7.5.2 If a flanged finish is used on the ends of individual pipe sections to facilitate field jointing, the flange shall be uniform in width, be not less than 13 mm wide, and shall be square to the longitudinal axis of the pipe.
- 7.5.3 The ends of all pipe which will form the inlet and outlet of culverts, fabricated of sheets having nominal thicknesses of 2.01 mm and less, shall be reinforced in a manner approved by the purchaser, when specified.

**Table 3: Rib Requirements For Types IR And IIR Pipe**

Rib	Inside radius			
	Nominal size	Minimum width	Minimum depth	Maximum spacing
19 x 19 x 190	17	18	197	2.5
19 x 25 x 292	17	24	298	2.5

Width is a measurement of the inside of the rib. Alternately, it can be measured outside of the rib and shall meet or exceed the minimum width plus 2 wall thicknesses-- $2t + 17\text{mm}$ .

Depth is measured as the minimum vertical distance from a straightedge resting on the tops of the ribs parallel to the axis of the pipe to the outside surface of the flat.

Spacing is measured center to center of the ribs, at 90 degrees to the direction of the ribs.

**Table 4: Riveted Longitudinal Seams**

Nominal corrugation size		
Specified sheet thickness	68 x 13 mm	75 x 25 mm
Rivet diameters, minimum		
mm	mm	mm

1.32	8.0	---	---
1.63	8.0	9.5	9.5
2.01	8.0	9.5	9.5
2.77	9.5	11.0	11.0
3.51	9.5	11.0	11.0
4.27	9.5	11.0	11.0

One rivet each valley for pipe diameters 900 mm and smaller. Two rivets each valley for pipe diameters 1 000 mm and larger.

Two rivets each valley for all pipe diameters.

Two rivets each crest and valley for all pipe diameters

Minimum width of lap: 38mm for pipe diameters 900mm and smaller, and 75mm for pipe diameters 1050mm and larger.

Minimum width of lap: 75mm for all pipe diameters.

**Table 5: Lock Seam Tensile Strength**

Specified sheet thickness mm	Lock seam tensile strength per unit width, minimum kN/m
1.02	30
1.32	42
1.63	60
2.01	91
2.77	122
3.50	154
4.27	210

For Type IA pipe, the thickness shall be that of the corrugated shell.

## **8.-PIPE REQUIREMENTS**

8.1 Type I, Type IA, and Type IR pipe.

- 8.1.1 Pipe dimensions--the nominal diameter of the pipe shall be as stated in the order, selected from the sizes listed in Table 6. The size of corrugations which are standard for each size of pipe are also shown in Table 6. The average inside diameter of circular pipe and pipe to be reformed into pipe-arches shall not vary more than 1 percent or 13 mm whichever is greater, from the nominal diameter when measured on the inside diameter requirement may be determined by measuring the outside circumference, for which minimum values are given in Table 6.

Note 6--the outside circumference of helically corrugated pipe is influenced by the corrugation size and the angle of the corrugations, affecting the number of corrugations crossed, therefore no minimum circumferential measurement can be specified.

- 8.1.2 Sheet thickness---sheet thickness shall be specified by the purchaser from the specified sheet thicknesses listed in Table 7(Notes 7 and 8). For type Ia pipe, the thickness of both the shell and the line shall be given; the thickness of the corrugated shell shall not be less than 60 percent of the thickness of the equivalent Type I pipe; the liner shall have a nominal thickness of at least 1.02mm and the sum of the specified thicknesses of shell and liner shall equal or exceed the specified thickness of an equivalent pipe of identical corrugations as the shell according to the design criteria in AASHTO standard specifications for highway bridges.

Note 7--the sheet thicknesses indicated in Table 7 are the thicknesses listed as available in M 246M. The specified thickness is based on the thickness of the metallic coated sheet, not including the thickness of polymer coating.

Note 8--the purchaser should determine the required thickness for each of the types of pipe described in Section 4.1.1 through 4.1.6, according to the design criteria in AASHTO standard specifications for highway bridges, Division I, Section 12, or other appropriate guidelines.

- 8.1.3 When specified by the purchaser, the finished pipe shall be factory elongated to the extent specified. The elongations shall be accomplished by the use of a mechanical apparatus which will produce a uniform deformation throughout the length of the Section.

## 8.2 Type II, IIA, and IIR pipe:

- 8.2.1 pipe-arch dimensions--pipe furnished as Type II, IIA, or IIR shall be made from Type I, IA or IR pipe respectively, and shall be reformed to provide a pipe-arch shape. All applicable requirements for Type I, IA and IR pipe shall be met by finished Types II, IIA, and UR pipe, respectively. Pipe-arches shall conform to the dimensional requirements of Tables 8, 9, or 10. All dimensions shall be measured from the inside crests of corrugations for Type II pipe or from the inside liner or surface for types IIA or UR pipe, respectively.
- 8.2.2 Longitudinal seams ---longitudinal seams of riveted pipe arches shall not be placed in the corner radius.
- 8.2.3 Reforming TYPE IR into TYPE UR pipe shall be done in such a manner as to avoid damage to the external ribs.

## 8.3 Type III pipe;

- 8.3.1 Type III pipe shall have a full circular cross-Section and shall conform to the requirements for TYPE I pipe> and in addition shall contain perforations conforming to one of the class described in Section 8.3.2.

- 8.3.2 Perforations---the perforations shall conform to the requirements for Class 1, unless otherwise specified in the order. Class 1 perforations are for pipe intended to be used for subsurface drainage. Class 2 perforations are for pipe intended to be used for subsurface disposal of water, but pipe containing class 2 perforations may also be used for subsurface drainage.
  - 8.3.2.1 Class 1 perforations---the perforations shall be approximately circular and cleanly cut, shall have nominal diameters of not less than 4.8 mm nor greater than 9.5mm and shall be arranged in rows parallel to the axis of the pipe. The perforations shall be located on the inside crests or along the neutral axis of the corrugations, with one perforation in each row for each corrugation. Pipe connected by couplings or bands may be unperforated within 100mm of each end of each length of pipe. The rows of perforations shall be arranged in two equal Groups placed symmetrically on either side of a lower unperforated segment corresponding to the flow line of the pipe. The spacing of the rows shall be uniform. The distance between the center lines of rows shall be not less than 25mm. The minimum number of longitudinal rows of perforations, the maximum heights of the center lines of the uppermost rows above the bottom of the invert, and the inside chord lengths of the unperforated segments illustrated in figure 1 shall be as specified in Table II.

Note 9---pipe with class 1 perforations is generally available in diameters from 100 to S2Smm inclusive, although perforated pipe in larger sizes may be obtained.

## SPECIFICATIONS FOR MATERIALS

**Table 6**    **Pipe Sizes**

Nominal inside diameter mm	Corrugation sizes				Minimum outside circumference mm
	38 by 6.5 mm	68 by 13 mm	75 by 25 mm	125 by 25 mm	
100	X				284
150	X				441
200	X				598
250	X				755
300	X	X			912
375	X	X			1148
450	X	X		X	1383
525		X		X	1620
600		X		X	1854
675		X		X	2091
750		X		X	2483
825		X		X	2561
900		X	X	X	2797
1050		X	X	X	3269

1200	X	X	X	X	3739
1350	X	X	X	X	4209
1500	X	X	X	X	4675
1650	X	X	X	X	5142
1800	X	X	X	X	5609
1950	X	X	X	X	6075
2100	X	X	X	X	6542
2250		X	X	X	7008
2400		X	X	X	7475
2550		X	X	X	7941
2700		X	X	X	8408
2850		X	X	X	8874
3000		X	X		9341
3150		X	X		9807
3300		X	X		10274
3450		X	X		10740
3600		X	X		11207

An "X" indicates standard corrugation sizes for each nominal diameter of pipe. Measured in valley of annular corrugations. Not applicable to helically corrugated pipe. Rib sizes 19 X 19 X 190 mm and 19 X 25 X 292 mm

**Table 7: Thicknesses of Metallic Coated Steel Sheet**

Specified thickness mm	Specification designation		
	ASTM A 916M Zn-5Al MM alloy coated	M 218M zinc coated	M 289M 55 aluminum-zinc Alloy coated
1.02	X	X	X
1.32	X	X	X
1.63	X	X	X
2.01	X	X	X
2.77	X	X	X
3.51	X	X	X
4.27	X	X	

An "x" indicates sheet thickness included in the applicable specification which are referenced in M 246M. The specified thickness is the thickness of the metallic-coated steel sheet and does not include the thickness of the polymer coating.

- 8.3.2.2 Class 2 perforations -the perforations shall be circular holes with nominal diameters of 8.0 to 9.5mm or slots with nominal width of 4.8 to 8.0 mm and not to exceed 13 mm in length. The perforations shall be uniformly spaced around the full periphery of the pipe. The perforations shall provide an opening area of not less than 230 square centimeters per square meter of pipe surface based on nominal diameter and length of pipe.

Note 10---323 Perforations; 9.5mm diameter, per square meter satisfies this requirement.

#### 8.4 Type IIIA pipe:

- 8.4.1 Type IIIA pipe shall be fabricated of an unperforated semicircular bottom Section with a top shield of corrugated steel, both of nominal 1.32mm thickness or greater. The smooth semicircular bottom Section shall be approximately 120mm in diameter and shall have a continuous lip extending outward along each side; the corrugated top shield shall be approximately 160mm wide including a 19mm sloping overhang on each side and shall be secured to the lip of the bottom Section by integral tabs spaced at about 90mm center to center. The top shield shall have corrugations approximately 22mm center to center and approximately 8.0mm depth

### **9.-COUPLING BANDS**

9.1 Types of coupling bands---field joints for each type of corrugated steel pipe shall maintain pipe alignment during construction and prevent infiltration of fill material during the life of the installation. Coupling bands may be of the following types:

Bands with annular corrugations,  
Bands with helical corrugations;  
Bands with projections (dimples),  
Channel bands for upturned flanges, with or without annular corrugations.  
Flat bands, and  
Smooth sleeve-type couplers.

Except as provided in Sections 9.1.1 through 9.4, tie type of coupling furnished shall be at the option of the fabricator unless the type is specified in the order.

Note 11---bands are classified according to their ability to resist shear, moment, and tensile forces as described in AASHTO standard specifications for highway ridges, division ii, Section 23, and identified as "standard joints" and "<special joints!" the first four types of bands listed in Section 9.1, and meeting the requirements of Section 9.2, are expected to meet the requirements for "standard joints." some may also be able to meet the requirements for "special joints," but such capability should be determined by analysis or test.

- 9.1.1 Coupling bands with annular corrugations shall be used only with pipe with annular corrugations, or helical pipe in which the ends have been rerolled to form annular corrugations. The corrugations in the band shall have the same dimensions as the corrugations in the pipe end, or may be of a special design to engage only the first or second corrugation from the end of each pipe. The band may also include a u-shaped channel to accommodate upturned flanges on the pipe.
- 9.1.2 Coupling bands with helical corrugations shall be used only with pipe with helically corrugated ends. The corrugations in the bands shall be designed to properly mesh with the corrugations in the pipe.



- 9.1.3 Coupling bands with projections (dimples) may be used with pipe with either annular or helical corrugations. The bands shall be formed with the projections in annular rows with one projection for each corrugation of helical pipe. Bands 265 or 300 mm wide shall have two annular rows of projections, and bands 415 or 560 mm wide shall have four annular rows of projections.
- 9.1.4 Channel bands may be used only with pipe having upturned flanges on the pipe ends.
- 9.1.5 Smooth sleeve-type couplers and flat bands may be used only with type iii and type IIIA pipe of 300 mm diameter or smaller.

9.2 Requirements --coupling bands shall be fabricated to lap on an equal portion of each of the pipe Section to be connected. The ends of the bands shall lap or be fabricated to form a tightly closed joint upon installation. Coupling band thickness shall conform to the requirements in Table 12, based on the sheet thickness of the pipe to be connected except as provided in Sections 9.2.1 and 9.2.2 the band width shall be not less than as shown in Table 13. The bands shall be connected in a manner approved by the purchaser with suitable galvanized devices such as; angles, or integrally or separately formed and attached flanges, bolted with zinc coated bolts; bars and straps; wedge lock and straps; or lugs. Coupling bands shall be fastened with the following size of bolts;

Pipe diameters 450 mm and less--- M 10 diameter  
 Pipe diameters 525 mm and greater---M 12 diameter  
 Type IIIA pipe---M 8 diameter

- 9.2.1 If flanges are provided on the pipe ends, the coupling may also be made by interlocking the flanges with a preformed channel band or other band incorporating a locking channel not less than 19 mm in width. The depth of the channel shall be not less than 13 mm. the channel band shall have a minimum nominal thickness of 2.01 mm.
- 9.2.2 Smooth sleeve type couplings and flat bands shall be steel having a nominal thickness of not less than 1.02 mm, or as an option, may be a plastic sleeve to provide equivalent strength. The coupling shall be close fitting, to hold the pipe firmly in alignment without the use of sealing compounds or gaskets. The coupling or flat band shall contain a device so that the band or coupling will lap equally on the two pipes being joined. The overall length of the coupling shall be equal to or greater than the nominal diameter of the pipe.

9.3 Gaskets--where infiltration or exfiltration is a concern, the couplings may be required to have gaskets. The closed cell expanded rubber gaskets shall be a continuous band, approximately 180 mm wide and approximately 9.5 mm thick. Rubber 0-ring gaskets shall be 20 mm diameter for pipe diameters of 900 mm or smaller, and 22 mm diameter for larger pipe diameters, having 13 mm deep end corrugations. Rubber 0-ring gaskets shall be 15 mm diameter for pipe having 25 mm deep end corrugations.

Note 12---riveted pipe is not water tight, having small openings at the intersection of longitudinal and circumferential seams. Therefore, this type of fabrication should not be used where water tightness is a concern unless the pipe is bituminous coated or lined prior to installations.

**Table 8: Pipe Arch Requirements 68 by 13 mm Corrugations**

Pipe-arch size, mm	Equivalent diameter, mm	Span mm	Rise mm	Minimum corner radius, mm	Maximum B, mm	A tolerance of 25 mm or 2 percent of equivalent diameter, whichever is greater, will be permissible in span and rise. B is defined as the vertical dimension from a horizontal line across
430 x 330	375	430	330	75	135	
530 x 380	450	530	380	75	155	
610 x 460	525	610	460	75	185	
710 x 510	600	710	510	75	205	
780 x 560	675	780	560	75	225	
885 X 610	750	870	630	75	240	
970 x 690	825	970	690	75	255	
1060 x 740	900	1060	740	90	265	
1240 x 840	1050	1240	840	100	290	
1440 x 970	1200	1440	970	130	345	
1620 x 1100	1350	16210	1100	155	380	
1800 x 1200	1500	1800	1200	180	420	
1950 X 1320	1650	1950	1320	205	460	
2100 x 1450	1800	2100	1450	230	510	

the widest portion of the arch to the lowest portion of the base.

**Table 9: Pipe-Arch Requirements 75 by 25 mm or 125 by 25 mm Corrugations**

Pipe-arch size, mm	Equivalent diameter, mm	Span mm	Rise mm	Minimum corner radius, mm
1010 x 790	900	1010 -45	790 + 45	130
1160 x 920	1050	1160 -55	920 + 55	155
1340 x 1050	1200	1340 -60	1050 + 60	180
1520 x 1170	1350	1520 -70	1170 + 70	205
1670 x 1300	1500	1670 -75	1300 + 75	230
1850 x 1400	1650	1850 -85	1400 + 85	305
2050 x 1500	1800	2050 -95	1500 + 95	355
2200 X 1620	1950	2200 -110	1620 + 110	355
2400 X 1720	2100	2400 - 120	1720 + 120	410
2600 x 1820	2250	2600 -130	1820 + 130	410
2840 x 1920	2400	2840 - 145	1920 + 145	460
2970 x 2020	2550	2970 - 150	2020 + 150	460
3240 x 2120	2700	3240 -165	2120 + 165	460
3470 x 2220	2850	3470 -175	2220 + 175	460
3600 x 2320	3000	3600 -180	2320 + 180	460

Negative and positive numbers listed with span and rise dimensions are negative and positive tolerances, no tolerance in opposite direction.

**Table 10: Pipe-Arch Requirements- 19 x 19 x 190 mm or 19 x 25 x 292 mm Rib Corrugations**

Pipe-arch size, mm	Equivalent diameter, mm	Span	Rise	Minimum corner radius, mm
500 x 400	450	500 -25	410 + 25	130
580 x 490	525	580 -25	490 + 25	130
680 x 540	600	680 -40	540 + 40	130
750 x 620	675	750 -40	620 + 40	130
830 x 670	750	830 -40	670 + 40	130
900 x 750	825	900 -45	750 + 45	130
1010 x 790	900	1010 -45	790 + 45	130
1160 x 920	1050	1160 -55	920 + 55	155
1340 x 1050	1200	1340 -60	1050 + 60	180
1520 x 1170	1350	1520 -70	1170 + 70	205
1670 x 1300	1500	1670 -75	1300 + 75	230
1850 x 1400	1650	1850 -85	1400 + 85	305
2050 x 1500	1800	2050 -95	1500 + 95	355

Negative and positive numbers listed with span and rise dimensions are negative and positive tolerances, no tolerance in opposite direction.

**Table 11: Rows of Perforations, Height “H” of the Center Line of the Uppermost Rows above the Invert, and Chord Length “L” of Unperforated Segment, for Class I Perforations**

Internal diameter of pipe mm	Rows of perforations	H, maximum mm	L, minimum mm
100	2	46	64
150	4	69	96
200	4	92	128
250	4	115	160
300	6C	138	192
375	6C	172	340
450	6C	207	288
525	6	241	338
600 and larger	8	D	D

Minimum number of rows. A greater number of rows for increased inlet area shall be subject to agreement between purchaser and fabricator. Note that the number of perforations per unit length in each row (and inlet area) is dependent on the corrugation pitch. C-minimum of 4 rows permitted in pipe with 38 by 6.5 mm corrugations. D - H (max) -0.46D: L (min) -0.64D, where D = internal diameter of pipe; millimeters or inches as appropriate.

**Table 12: Coupling Band Thickness**

Nominal pipe thickness mm	Nominal coupling band thickness, minimum mm
2.77 and thinner	1.32
3.51	1.63
4.27	2.01

9.4 Other types of coupling bands or fastening devices which are equally effective as those described, and which comply with the joint performance criteria of AASHTO standard specifications for highway bridges, Division II, Section 23 may be used when approved by the purchaser.

## **10.-WORKMANSHIP**

10.1 The completed pipe shall show careful; finished workmanship in all particulars. Pipe which has been damaged, either during fabrication or in shipping, may be rejected unless repairs are made which are satisfactory to the purchaser. Among others, the following defects shall be considered as constituting poor workmanship.

Variation from a straight center line. Elliptical shape in pipe intended to be round. Dents or bends in the metal.

Polymer coating or metallic coating or handling which has been bruised, broken, disbonded, or otherwise damaged.

Lack of rigidity.

Illegible markings on the steel sheet.

Ragged or diagonal sheared edges.

Uneven laps in riveted pipe.

Loose, unevenly lined, or unevenly spaced rivets.

Loosely formed lockseams .

## **11.-REPAIR OF DAMAGED COATINGS**

11.1 Pipe on which either the polymer coating or the underlying metallic coating has been damaged in fabrication or handling shall be repaired. Damage to the metallic coating shall be repaired as described in Sections 11.2 through 11.4. Damage to the polymer coating shall be repaired as described in Section 11.5. The repair shall be done so that the completed pipe shall show careful finished workmanship in all particulars. Pipe which, in the opinion of the purchaser, has not been cleaned or coated satisfactorily may be rejected. If the purchaser so elects, the repair shall be done in his presence.

11.2 Damage to the metallic coating shall be repaired as provided in ASTM A 780 (note 13), except as described herein. The damaged area shall be cleaned to bright metal by blast cleaning, power disk sanding, or wire brushing. The cleaned area shall extend at least 12 mm into the undamaged section of the coating. The cleaned area shall be coated within 24 hours and before any rusting or soiling.

Note 13---While ASTM A 780 specifically refers to repair of damaged zinc coatings, the same procedures are applicable to repair of aluminum-zinc alloy coatings except as described in this Section.

11.3 Zinc-rich paint coating---- zinc-rich paint shall be applied to a dry film thickness of at least 0.13 mm over the damaged section and surrounding cleaned area. Zinc-rich paint shall be used for repair of damage to both zinc and aluminum-zinc alloy coatings.

**Table 13: Coupling Band Width Requirements**

Nominal corrugations size	Nominal pipe inside diameter	Coupling Band Width Minimum		
		Annular corrugated bands	Helically corrugated bands	Bands with projections
All values in millimeters				
38 by 6.5 68 by 13	100 to 450	285	180	285
	300 to 900	180	300	285
	1050 to 1800	285	300	285
	1950 to 2100C	285	300	415
75 by 25	900 to 1800	300	350	285
	1950 to 3600	300	350	415
125 by 25	900 to 1800	500	560	300
	1950 to 3600	500	560	560

A for helically corrugated pipe with rerolled ends, the nominal corrugation size refers to the dimensions of the end corrugations in the pipe.

B equivalent diameter for Type II, IIA, and IIR pipe.

C diameters through 3600 mm for annular corrugated bands used on rerolled ends of helically corrugated pipe.

11.4 Metallizing coating----the damaged area shall be cleaned as described in Section 11.2, except it shall be cleaned to the near-white condition. The repair coating applied to the cleaned section shall have a thickness of not less than 0.13 mm over the damaged Section and shall taper off to zero thickness at the edges of the cleaned undamaged section.

- 11.4.1 Where zinc coating is to be metallized, it shall be done with zinc wire containing not less than 99.98 percent zinc.
- 11.4.2 Where aluminum-zinc alloy coating is to be metallized, it shall be done using zinc wire containing not less than 99.98 percent zinc, aluminum wire containing not less than 99 percent aluminum, or an alloy wire of 55 percent aluminum and 45 percent zinc by mass.

11.5 Areas of damaged polymer coating shall be repaired with a polymer coating similar and compatible with respect to durability, adhesion, and appearance of the original polymer coating.

11.5.1 Polymer coating damaged during shipping or installation may be repaired using materials as described in 11.5 or by the application of protective coating material conforming to m 243m.

## **12 -INSPECTION**

- 12.1 The purchaser or his representative shall have free access to the fabricating plant for inspection, and every facility shall be extended to him for this purpose. This inspection shall include an examination of the pipe for the items in Section 1 0.1 and the specific requirements of this specification applicable to the type of pipe and method of fabrication.
- 12.2 On a random basis, samples may be taken for chemical analysis and metallic and polymer coating measurements for check purposes. These samples will be secured from fabricated pipe or from sheets or coils of the material used in fabrication of the pipe. The mass of metallic coating shall be determined in accordance with T 65 for zinc and the dilute hydrochloric acid method of T 65 for aluminum-zinc alloy. The thickness of polymer coating shall be measured according to ASTM D 1005.

## **13. -REJECTION**

- 13.1 Pipe failing to conform to the specific requirements of this specification, or that shows poor workmanship, may be rejected. This requirement applies not only to the individual pipe, but to any shipment as a whole where a substantial number of pipe are defective. If the average deficiency in length of any shipment of pipe is greater than one percent, the shipment may be rejected.

## **14. -CERTIFICATION**

- 14.1 When specified in the purchase order or contract, a manufacturer's or fabricator's certification, or both, shall be furnished to the purchaser stating that samples representing each lot have been tested and inspected in accordance with this specification and have been found to meet the requirements for the material described in the order. When specified in the order, a report of the test results shall be furnished.

## **STANDARD SPECIFICATION FOR STEEL SHEET, METALLIC-COATED AND POLYMER PRECOATED, FOR CORRUGATED STEEL PIPE**

**AASHTO DESIGNATION: M 246M-87 (1995)**  
**(ASTM DESIGNATION: A 742/A 742M-93)**

## **1.-SCOPE**

- 1.1 This specification covers polymer precoated steel sheet for corrugated steel pipe (CSP) which is coated after metallic coating on continuous lines by coil coating (roller coating or laminating) processes. The metallic coating is either zinc or aluminum-zinc alloy. Sheet for this purpose is furnished flat in coils, flat in cut lengths, or corrugated in cut lengths, all being protected by a mill-applied polymer coating on one or both side

## **2.-REFERENCED DOCUMENTS**

### **2.1 AASHTO Standards:**

M 218M steel sheet, zinc-coated (galvanized) for corrugated steel pipe.  
M 289M aluminum-zinc alloy coated steel sheet for corrugated steel pipe.

### **2.2 ASTM standards**

A 916M zinc-5 percent aluminum-mm alloy coated steel pipe D 543 test method for resistance of plastics to chemical reagents.  
D 658 test method for abrasion resistance of organic coatings by the air blast abrasion test.  
D 1005 measurement by dry film thickness of organic coatings using micrometers.  
D 2794 test method for resistance of organic coatings to the effects of rapid deformation (impact)  
G 22 practice for determining resistance of plastics to bacteria  
G 23 practice for operating light and water-exposure apparatus (carbon-arc type) for exposure of nonmetallic materials.  
G 62 test methods for holiday detection in pipeline coatings.

## **3.-CLASSIFICATION**

- 3.1 The polymer coating is classified by grade corresponding to the thickness micrometers on each side in SI units, and the thickness in mils on each side in inch-pound units. The following grades are usually available (see Table entitled "polymer coating").
- 3.2 Any combination of polymer coating thicknesses other than shown above is subject to agreement between the manufacturer and purchaser or fabricator.

## **4.-TERMINOLOGY**

- 4.1 In this specification manufacturer refers to the producer of the sheet, fabricator refers to the producer of the pipe, and purchaser refers to the purchaser of the finished pipe.

## **5.-ORDERING INFORMATION**

- 5.1 The polymer precoated sheet covered by this specification shall be ordered only to the specified thicknesses listed in Table 1. The specified thickness is based on the thickness of the metallic-coated steel sheet, not including the thickness of the polymer coating.
- 5.2 Orders for material to this specification shall include the following information, as necessary, to adequately describe the desired product.

- 5.2.1 Name of material (polymer precoated steel sheet for CSP).
- 5.2.2 Type of metallic coating (see Section 6.1).
- 5.2.3 AASHTO designation number and date of issue.

- 5.2.4 Corrugation size, if corrugated (see Section 6.3).
- 5.2.5 Substrate dimensions (specified thickness, width, either flat or overall corrugated; and length, if cut length).

Grade	Polymer coating	
	Previous designation	Coating thickness p.m.
250/0	Type A	250/0
250/75	Type B	250/75
250/250		250/250

Table 1 Thicknesses of Metallic-Coated Steel Sheet A

Specified thickness mm		Specification Designation		A 916M Zn-5 AL-MM Alloy Coated
		M 218M Zinc-Coated	M 289M 55 Percent Aluminum- Zinc- Coated	
1.02	0.040	X	X	X
1.32	0.052	X	X	X
1.63	0.064	X	X	X
2.01	0.079	X	X	X
2.77	0.109	X	X	X
3.51	0.138	X	X	X
4.27	0.168	X		X

A an "x" indicates sheet thicknesses included in the applicable specification.

- 5.2.6 Grade of polymer coating (see Section 3), indicating thickness on each side.
- 5.2.7 Coil size requirements (specify maximum outside diameter (OD), acceptable inside diameter (ID), and maximum mass).
- 5.2.8 Certification, if required (see Section 11.1).
- 5.2.9 Special requirements.

Note 1---Typical ordering descriptions are as follows: polymer precoated steel sheet, aluminum-zinc alloy coated for CSP, conforming to AASHTO M 246M-\_\_\_\_, 2.77 by 700 mm by coil, with grade 250/10 polymer coating (0.25mm); coil 1200 mm max OD, 600 mm ID, 1000 kg max coil mass (polymer precoated steel sheet, zinc-coated for CSP, conforming to AASHTO M 246-\_\_\_\_.)

## **6.-GENERAL REQUIREMENTS**

- 6.1 The metallic coated steel substrate shall conform to all applicable requirements of the specifications listed below for the kind of metallic coating specified. If the type of metallic coating is not stated in the order, zinc-coated sheet as described in Section 6.1.1 shall be furnished.
- 6.1.1 Zinc coating----zinc coated steel sheet shall conform to the requirements of m 218.



- 6.1.2 Aluminum-zinc alloy coating 55---aluminum-zinc alloy coated steel sheet shall conform to the requirements of m289m and zinc-5 aluminum-mm alloy coated steel sheets shall conform to the requirements of ASTM a 916m.

6.2 The polymer coating shall be capable of being applied to the sheet specified in Section 6.1. After application, the polymer coating shall be free of holes, tears and discontinuities, and shall be sufficiently flexible so that it will withstand the corrugating, forming and lockseaming operations, and punching of holes for rivets or perforations.

6.3 If the polymer coated sheet is to be furnished with corrugations, the corrugations shall conform to the requirements stated in the appropriate specification listed in Section 6.1.

## **7. REQUIREMENTS FOR POLYMER COATINGS**

7.1 Adhesion---there shall be no spalling or cracking of the coating when tested in accordance with Section 9.1. There shall be no disbonding of the coating at the cut to be made as described in Section 9.1.

7.2 Impact---there shall be no break in the polymer coating when tested in accordance with Section 9.2.

7.3 Thickness of coating---the thickness of the polymer coating shall meet the requirements of Section 3, or as specified in the purchase order, when tested in accordance with Section 9.3.

7.4 Holidays---the polymer coating on the steel shall be substantially free of holidays when tested in accordance with Section 9.4. An average of 22 holidays per square meter of actual surface area on the test specimen shall be permitted.

Note 2---Holidays are pinholes or voids in the polymer coating that are not visually discernible.

7.5 Abrasion resistance--the average abrasion coefficient, when tested in accordance with Section 9.5, shall be a minimum of 3.9 (expressed in g/p.m. of thickness).

7.6 Imperviousness--- there shall be no loosening or separation of the polymer coating from the metallic-coated steel substrate when tested in accordance with Section 9.6.

7.7 Freeze-thaw resistance---the specimen shall withstand 100 freeze-thaw cycles, as described in Section 9.7, without spalling, disbonding, or other detrimental effects.

7.8 Weather ability---the specimens shall withstand 1000 hours of weathering with no observable delamination or cracking, when tested in accordance with Section 9.8.

7.9 Resistance to microbial attack---there shall be no effect of microbial attack of the polymer coating when tested in accordance with Section 9.9.

Note 3---Tests 7.1 through 7.4 are suggested as quality control tests. When these tests are used for quality control, they may be run at room temperature only. Tests 7.5 through 7.9 are suggested as qualifying tests. However, the purchaser may use any of the tests listed to verify compliance.

## **8.-SAMPLING AND TESTING**

8.1 The manufacturer shall make adequate tests and measurements to ensure that the material produced complies with this specification.

- 8.1.1 Tests results to show compliance with this specification shall be retained by the manufacturer for 7 years and shall be made available to the fabricator and purchaser upon request.
- 8.2 The purchaser of the sheet (fabricator), or purchaser of the pipe made from the sheet, may make such tests as are determined necessary to determine the acceptability of the material or to verify the correctness of a certification.

8.3 Flat samples of polymer precoated steel shall be taken by the manufacturer from each coil or in accordance with the sampling procedure as mutually agreed between manufacturer and purchaser. Each sample shall be at least 600 mm long by the coil width and shall carry an identification to relate it to the coil from which it was taken.

## **9.-TEST METHODS FOR POLYMER COATINGS**

### **9.1 Adhesion:**

- 9.1.1 Scope---this procedure is to measure the adhesion of the polymer coating to the metallic-coated substrate.
- 9.1.2 Significance and use ---this test indicates the ability of the polymer to withstand forces in fabrication and use tending to disbond the coating from the substrate.
- 9.1.3 Procedure ---cut a 50 by 200 mm coupon from the sample of precoated steel. Bend the coupon 180 degrees over a 12.5 mm diameter mandrel. The surface with the polymer coating to be tested shall be on the outside of the bend. After making bend, make a cut through the polymer coating along an element on the outside of the bend to check for polymer coating adhesion. Perform this test at -18, 25, and 50+ 1C. Check for spalling or cracking of the polymer coating, or for disbonding from the metallic-coated substrate.
- 9.1.4 Precision and bias--no statement is made about either the precision or the bias of the procedure for measuring adhesion since the result merely states whether there is conformance to the criteria for success specified in the procedure .

### **9.2 Impact:**

- 9.2.1 Scope--this procedure is to measure the ability of the polymer coating to withstand impact.

- 9.2.2 Significance and use---this test provides a measure of the ability of the polymer coating to resist damage by impact, to which it may be subjected in service, in order to determine brittleness of the polymer coating.
- 9.2.3 Procedure - cut a 150 mm coupon from the sample of precoated steel to be used for fabrication of the pipe. Direct impact the coating with an energy of 4.0 J using an impact tester with a 15.88 mm diameter punch and with the specimen set on a 16.26 mm diameter punch die. Test at approximately 25 C (Note 4). Check for breaks in the polymer coating.

1. The Gardner-impact tester, variable. Model 1G 1120, available from pacific scientific company, Gardner/Neotec instrument Division, 2431 Linden Lane, Silver Springs, MD 20910, has been found suitable for this purpose.

Note 4---this test procedure is described in detail in ASTM D 2794.

- 9.2.4 Precision and bias----no statement is made about either the precision or the bias of the procedure for measuring impact resistance since the result merely states whether there is conformance to the criteria for success specified in the procedure .
- 9.3 Thickness of coating---measure polymer coating thickness in accordance with ASTM D 1005.

9.4 Holidays--test a specimen that is at least 300 mm long and the full coil width in accordance with ASTM G 62, method a, using a nominal voltage of 67.5 volts.

## 9.5 Abrasion

Resistance----determine the abrasion co-efficient in accordance with ASTM D 658 except use a silicon carbide grain passing a 106-p.m. Sieve and retained on a 90-p.m. Sieve, and an air test pressure of 33.25 kPa (250 mm Hg). .

- 9.5.1 The modifications to the procedure in ASTM D 658 are not expected to have an effect on the precision and bias as indicated in ASTM D 658.

9.6 Imperviousness---test the polymer coating for imperviousness to chemical reagents in accordance with the applicable Sections of ASTM D 543 using a 10 percent solution of sodium chloride, a 10 percent solution of sodium hydroxide, and a 30 percent solution of sulfuric acid. Hold each reagent in a separate confined area of the polymer precoated sheet for a period of 48 hours. Avoid excessive evaporation of the test solutions.

## 9.7 Freeze-thaw resistance.

- 9.7.1 Scope---this procedure is to evaluate the ability of the polymer coating to resist freeze-thaw cycling.
- 9.7.2 Significance and use---as pipe fabricated from polymer coated steel sheet will be exposed to freeze-thaw action while saturated, the procedure will measure ability to withstand such action without damage to the polymer coating.
- 9.7.3 Procedure---cut a minimum of three 150 by 150 mm coupons from the sample of precoated metal. Immerse the coupons in water at room temperature for 2 weeks and then

subject them to freeze-thaw cycling. One (1) cycle shall consist of 8 hours at -18C followed immediately by immersion in water at room temperature for 16 hours. Cycle time may be interrupted over weekends and holidays, but the specimens shall be maintained in water at room temperature, and such interruptions should be noted. Make observations during the cycling and note any visible changes in the coating, such as spalling, disbonding, etc. After 100 cycles, make a final examination of the effects as a result of freezing and thawing.

- 9.7.4 Precision and bias---no statement is made about either the precision or the bias of the procedure for measuring freeze-thaw resistance since the result merely states whether there is conformance to the criteria for success specified in the procedure.

9.8 Weatherability---subject coupons of the precoated metal to accelerated weathering in accordance with ASTM G 23 using the specimen spray arrangement for type e, single open flame sunshine carbon-arc lamp apparatus. Test conditions shall consist of a 2 hour cycle including 18 minutes of water spray and a maximum temperature of 60C,

9.9 Resistance to microbial attack---subject test specimens of the polymer coating to conditions described in ASTM G 22, procedure B. There shall be no visible effects of bacterial attack on the polymer coating after the prescribed incubation period (21 days minimum).

## **10-REJECTION**

10.1 material tested by the purchaser and found not conforming to this specification may be rejected.

## **11-CERTIFICATIONS**

11.1 When specified in the purchase order or contract, a manufacturer's certification shall be furnished to the purchaser of the sheet (fabricator) or to the purchaser of the finished pipe stating that samples representing each lot have been tested and inspected in accordance with this specification and the requirements have been met. When specified in the purchase order or contract, a report of the test results shall be furnished. The results of test suggested in Section 7 as qualifying tests may be typical results rather than results of tests on the specific lot of material.

## **12-MARKING**

12.1 Each 0.6 to 1.5 mm of sheet in coils or cut lengths shall be identified by marking as follows:

- 12.1.1 Name of sheet producer,
- 12.1.2 Brand name
- 12.1.3 Specified thickness of metallic-coated sheet
- 12.1.4 Type of metallic coating.
- 12.1.5 Type or thickness of polymer coating.
- 12.1.6 Identification symbols relating to a specific heat number and coating lot number, and
- 12.1.7 AASHTO designation number.

12.2 The brand shall be removed, obliterated, or the sheet rebranded "non-specification" on each 0.6 to 1.5 mm of material in a coating lot or heat where control tests, as prescribed herein , show nonconformance to this specification, or where the metallic-coated steel substrate shows nonconformance to the appropriate sheet specification .

**COMMENTARY (not part of the specification)**

XI. Principal changes in this revision recorded for the convenience of the user.

XI.1 Aluminum coated steel sheet has been deleted as an acceptable material since it is not produced with polymer coating.

XI.2 The classification based on polymer coating thickness, has been changed from arbitrary Types A, B, and C to grades with the numbers expressing the polymer thickness (Section 3).

XI.3 The polymer coating thickness requirement has been clarified (Section 7.3)

XI.4 Test methods contained in the specification have been revised to add scope, significance and use, and precision statements as required by ASTM (Sections 9.1, 9.2, 9.7). Clarifying details have been added in Sections 9.4 and 9.8.

XI.5 The certification provisions have been revised in accordance to the form and style for ASTM standards.

DATE: 7/24/2020

BID NO.: 50-00131608

INVITATION TO BID  
THIS IS NOT AN ORDER

Page: 1

## JEFFERSON PARISH

PURCHASING DEPARTMENT

P.O. BOX 9

GRETNA, LA. 70054-0009

504-364-2678

BUYER: SFOLSE@jeffparish.net

*CMSCO INC*

BIDS WILL BE RECEIVED IN THE WEST BANK PURCHASING DEPT., SUITE 4400, JEFFERSON PARISH GENERAL GOVERNMENT BUILDING, 200 DERBIGNY STREET, GRETNA, LA 70053 UNTIL 2:00 PM, 8/18/2020 AND PUBLICLY OPENED THEREAFTER.

For convenience, bidders may also submit bids in the East Bank Purchasing Department, Suite 404, Jefferson Parish Joseph S. Yenni Building, 1221 Elmwood Park Blvd., Jefferson LA 70123. However, if submitting bids on the day of bid opening, bidders must submit at the West Bank location only. All bids will be publicly opened at the West Bank location.

At no charge, bidders may also submit via Jefferson Parish's electronic procurement page by visiting [www.jeffparishbids.net](http://www.jeffparishbids.net) to register for this free site. Additional instructions are included in the text box highlighting electronic procurement.

### LATE BIDS WILL NOT BE ACCEPTED

Unless submitting via online (see Page 3), each bid must be submitted in a sealed envelope bearing on the outside, the name of the Bidder, his address, and the name of the project for which the bid is submitted and the bid number.

**NOTE: ONLY BIDS WRITTEN IN INK OR TYPEWRITTEN, AND PROPERLY SIGNED BY A MEMBER OF THE FIRM OR AUTHORIZED REPRESENTATIVE, WILL BE ACCEPTED. PENCIL AND/OR PHOTOSTATIC FIGURES OR SIGNATURES SHALL RESULT IN BID REJECTION.**

### INSTRUCTIONS FOR BIDDERS AND GENERAL CONDITIONS

#### THE FOLLOWING INSTRUCTIONS APPLY TO ALL BIDS

All bids submitted are subject to these instructions and general conditions and any special conditions and specifications contained herein, all of which are made part of this bid proposal reference. By submitting a bid, vendor agrees to comply with all provisions of Louisiana Law as well be in compliance with the Jefferson Parish Code of Ordinances, Louisiana Code of Ethics, applicable Jefferson Parish ethical standards and Jefferson Parish Resolution No. 113646 and/or Resolution No. 113647.

Jefferson Parish adheres to the Louisiana Code of Governmental Ethics, contained in Louisiana Revised Statutes Annotated, R.S. 42:1101, et seq. Vendor/Proposer by this submission, warrants that there are no "conflicts of interest" related to this procurement that would violate applicable Louisiana Law. Violation of the Louisiana Code of Governmental Ethics may result in rescission of contract, permit or licenses, and the imposition of fines and/or penalties, without contractual liability to the public in accordance with applicable law.

All vendors submitting bids should register as a Jefferson Parish vendor if not already yet registered. Registration forms may be downloaded from <http://purchasing.jeffparish.net> and by clicking on Vendor Information. Current W-9 forms with respective Tax Identification numbers and vendor applications may be submitted at any time; however, if your company is not registered and/or a current W-9 form is not on file, vendor registration is mandatory. Vendors may experience a delay in payment if your company is not a registered vendor with Jefferson Parish.

All quotations shall be based on F.O.B. Agency warehouse or job site, anywhere within the Parish as designated by the Purchasing Department. This provision does not apply to public works projects

JEFFERSON PARISH requires all products to be new (current) and all work must be performed according to standard practices for the project. Unless otherwise specified, no aftermarket parts will be accepted. Unless otherwise specified, all workmanship and materials must have at least one (1) year guaranty, in writing, from the date of delivery and/or acceptance of the project. Any deviations or alterations from the specifications must be indicated and/or supporting documentation supplied with bid submission.

Bidders should submit all questions in writing via email to the buyer's email address as indicated above, no later than Five (5) working days prior to the bid opening. Bid numbers should be mentioned in all requests. If submitting online, vendors may send questions via the E-Procurement site no later than Five (5) working days prior to the bid opening.

If this bid requires a pre-bid conference (see Additional Requirements section), bidders are advised that such conference will be held to allow bidders the opportunity to identify any discrepancies in the bid specifications and seek further clarification regarding instructions. The Purchasing Department will issue a written response to bidders' questions in the form of an Addendum. Please note that all official communication will be expressed in the form of an addendum.

Visit our website at [HTTP://PURCHASING.JEFFPARISH.NET](http://PURCHASING.JEFFPARISH.NET)

*CIMSCO INC*

All formal Addenda require written acknowledgement on the bid form by the bidder. Failure to acknowledge an Addendum on the bid form shall cause the bid to be rejected. JEFFERSON PARISH reserves the right to award bid to next lowest responsive and responsible bidder in this event.

JEFFERSON PARISH will accept one price for each item unless otherwise indicated. Two or more prices for one item will result in bid rejection. Bidders are required to complete, sign and return the bid form and/or complete and return the associated line item pricing forms as indicated. Vendors must not alter the bid forms. Doing so will cause the bid to be rejected.

A corporate resolution or written evidence of the individual signing the bid having such authority must be submitted with the bid. Failure to comply will cause bid to be rejected. For corporate entities, such written evidence may be a printout of the Louisiana Secretary of State's website listing the signatory as an officer. Such printout shall be included with the bid submission. Bids submitted by Owners or Sole Proprietors must include certification that he or she owns the entity for which the bid is signed. This documentation must be submitted with the bid. Failure to do so will result in bid rejection.

NOTE: A sample corporate resolution can be downloaded from our website <http://purchasing.jeffparish.net> or you may provide your own document. A sample certification of sole proprietorship can also be downloaded from our website <http://purchasing.jeffparish.net> or you may provide your own document.

### INSTRUCTIONS FOR BIDDERS AND GENERAL CONDITIONS

A. AWARD OF CONTRACT: JEFFERSON PARISH reserves the right to award contracts or place orders on a lump sum or individual item basis, or such combination, as shall in its judgment be in the best interest of JEFFERSON PARISH. Every contract or order shall be awarded to the LOWEST RESPONSIVE and RESPONSIBLE BIDDER, taking into consideration the CONFORMITY WITH THE SPECIFICATIONS and the DELIVERY AND/OR COMPLETION DATE. SPLIT AWARDS MADE TO SEVERAL VENDORS WILL ONLY BE GRANTED TO THOSE DEEMED RESPONSIVE AND RESPONSIBLE.

All bid prices shall remain valid for 45 days. Jefferson Parish and the lowest responsive and responsible bidder(s) by mutual written consent may mutually agree to extend the deadline for award by one (1) or more extensions of thirty (30) calendar days.

PROTESTS: Only those vendors that submit bids in response to this solicitation may protest any element of the procurement, in writing to the Director of the Purchasing Department. Written protest must be received within 48 hours of the release of the bid tabulation by the Purchasing Department. After consultation, the Parish Attorney's Office will then respond to protests in writing. (For more information, please see Chapter 2, Article VII, Division 2, Sec. 2-914.1 of the Jefferson Parish Code of Ordinances.)

PREFERENCE: Unless federal funding is directly spent by Jefferson Parish for this purchase, preference is hereby given to materials, supplies, and provisions produced, manufactured or grown in Louisiana, quality being equal to articles offered by competitors outside the state. "LSA - R.S. 38:2251-2261"

B. USE OF BRAND NAMES AND STOCK NUMBERS: Where brand names and stock numbers are specified, it is for the purpose of establishing certain minimum standards of quality. Bids may be submitted for products of equal quality, provided brand names and stock numbers are specified. Complete product data may be required prior to award.

C. CANCELLATION OF CONTRACT: JEFFERSON PARISH reserves the right to cancel all or any part if not shipped promptly. No charges will be allowed for parking or cartage unless specified in quotation. The order must not be filled at a higher price than quoted. JEFFERSON PARISH reserves the right to cancel any contract at anytime and for any reason by issuing a THIRTY (30) day written notice to the contractor.

For good cause and as consideration for executing a contract with Jefferson Parish, vendor conveys, sells, assigns and transfers to Jefferson Parish or its assigns all rights, title and interest in and to all causes of action it may now or hereafter acquire under the antitrust laws of the United States and the State of Louisiana, relating to the particular good or services purchased or acquired by Jefferson Parish.

D. PRICES: Jefferson Parish is exempt from paying sales tax under LSA-R.S. 47:301 (8)(c). All prices for purchases by Jefferson Parish of supplies and materials shall be quoted in the unit of measure specified and unless otherwise specified, shall be exclusive of state and Parish taxes. The price quoted for work shall be stated in figures. In the event there is a difference in unit prices and totals, the unit price shall prevail.

Quantities listed are for bidding purposes only. Actual requirements may be more or less than quantities listed.

Bidders are not to exclude from participation in, deny the benefits of, or subject to discrimination under any program or activity, any person in the United States on the grounds of race, color, national origin, or sex; nor discriminate on the basis of age under the Age Discrimination Act of 1975, or with respect to an otherwise qualified handicapped individual as provided in Section 504 of the Rehabilitation Act of 1973, or on the basis of religion, except that any exemption from such prohibition against discrimination on the basis of religion as provided in the Civil Rights Act of 1964, or Title VI and VII of the Act of April 11, 1968, shall also apply. This assurance includes compliance with the administrative requirements of the Revenue Sharing final handicapped discrimination provisions contained in Section 51.55 (c), (d), (e), and (k)(5) of the Regulations. New construction or renovation projects must comply with Section 504 of the 1973 Rehabilitation Act, as amended, in accordance with the American National Standard Institute's specifications (ANSI A17.1-1961).

Jefferson Parish and its partners as the recipients of federal funds are fully committed to awarding a contract(s) to firm(s) that will provide high quality services and that are dedicated to diversity and to containing costs. Thus, Jefferson Parish strongly encourages the involvement of minority and/or woman-owned business enterprises (DBE's, including MBE's and SBE's) to stimulate participation in procurement and assistance programs.

## INSTRUCTIONS FOR BIDDERS AND GENERAL CONDITIONS

The purpose and intention of this invitation to bid is to afford all suppliers an equal opportunity to bid on all construction, maintenance, repair, operating supplies and/or equipment listed in this bid proposal. JEFFERSON PARISH WILL ACCEPT ONE BID ONLY FROM EACH VENDOR. Items bid must meet specifications.

Advised bids will be tabulated and a copy of the tabulation will be forwarded to each responding bidder.

**IN ACCORDANCE WITH STATE REGULATIONS JEFFERSON PARISH OFFERS ELECTRONIC PROCUREMENT TO ALL VENDORS**

This electronic procurement system allows vendors the convenience of reviewing and submitting bids online.

This is a secure site and authorized personnel have limited read access only. Bidders are encouraged to submit electronically using this free service, while the website accepts various file types, one single PDF file containing all appropriate and required bid documents is preferred. Bidders submitting uploaded images of bid responses are solely responsible for clarity. If uploaded images/documents are not legible, then bidder's submission will be rejected. Please note all requirements contained in this bid package for electronic bid submission.

Please visit our E-Procurement Page at [www.jeffparishbids.net](http://www.jeffparishbids.net) to register and view Jefferson Parish solicitations. For more information, please visit the Purchasing Department page at <http://purchasing.jeffparish.net>.

The general specifications for construction projects and the purchase of materials, services and/or supplies are those adopted by the JEFFERSON PARISH Council by Resolution No. 113646 or 113647 dated 12/09/09. The general conditions adopted by this resolution shall be considered as much a part of this document as if they were written wholly herein. A copy may be obtained from the Office of the Parish Clerk, Suite 6700, Jefferson Parish General Government Building, 200 Derbigny Street, Gretna, LA 70053. You may also obtain a copy by visiting the Purchasing Department webpage at <http://purchasing.jeffparish.net> and clicking on Online Forms.

**ADDITIONAL REQUIREMENTS FOR THIS BID**

PLEASE MATCH THE NUMBERS PRINTED IN THIS BOX WITH THE  
CORRESPONDING INSTRUCTIONS BELOW.

10, 12, 13, 15

1. All bidders must attend the MANDATORY pre-bid conference and will be required to sign in and out as evidence of attendance. In accordance with LSA R.S. 38:2212(I), all prospective bidders shall be present at the beginning of the MANDATORY pre-bid conference and shall remain in attendance for the duration of the conference. Any prospective bidder who fails to attend the conference or remain for the duration shall be prohibited from submitting a bid for the project.
2. Attendance to this pre-bid conference is optional. However, failure to attend the pre-bid conference shall not relieve the bidder of responsibility for information discussed at the conference. Furthermore, failure to attend the pre-bid conference and inspection does not relieve the successful bidder from the necessity of furnishing materials or performing any work that may be required to complete the work in accordance with the specification with no additional cost to the owner.
3. Contractor must hold current applicable JEFFERSON PARISH licenses with the Department of Inspection and Code Enforcement. Contractor shall obtain any and all permits required by the JEFFERSON PARISH Department of Inspection and Code Enforcement. The contractor shall be responsible for the payment of these permits. All permits must be obtained prior to the start of the project. Contractor must also hold any and all applicable Federal and State licenses. Contractor shall be responsible for the payment of these permits and shall obtain them prior to the start of the project.
4. A LA State Contractor's License will be required in accordance with LSA R.S. 37:2150 et. seq. and such license number will be shown on the outside of the bid envelope. Failure to comply will cause the bid to be rejected. Additionally if submitting the bid electronically, then the license number must be entered in the appropriate field in the Electronic Procurement system. Failure to comply will cause the bid to be rejected.
5. It is the bidder's responsibility to visit the job site and evaluate the job before submitting a bid.
6. Job site must be clean and free of all litter and debris daily and upon completion of the contract. Passageways must be kept clean and free of material, equipment, and debris at all times. Flammable material must be removed from the job site daily because storage will not be permitted on the premises. Precautions must be exercised at all times to safeguard the welfare of JEFFERSON PARISH and the general public.



# INSTRUCTIONS FOR BIDDERS AND GENERAL CONDITIONS

7. PUBLIC WORKS BIDS: All awards for public works in excess of \$5,000.00 will be reduced to a formal contract which shall be recorded at the contractor's expense with the Clerk of Court and Ex-Officio Recorder of Mortgages for the Parish of Jefferson. A price list of recordation costs may be obtained from the Clerk of Court and Ex-Officio Recorder of Mortgages for the Parish of Jefferson. All awards in excess of \$25,000.00 will require both a performance and a payment bond. Unless otherwise stated in the bid specifications, the performance bond requirements shall be 100% of the contract price. Unless otherwise state in the bid specifications, the payment bond requirements shall be 100% of the contract price. Both bonds shall be supplied at the signing of the contract.
8. NON-PUBLIC WORKS BIDS: A performance bond will be required for this bid. The amount of the bond will be 100% of the contract price unless otherwise indicated in the specifications. The performance bond shall be supplied at the signing of the contract.
9. NON-PUBLIC WORKS BIDS: A payment bond will be required for this bid. The amount of the bond will be 100% of the contract price unless otherwise indicated in the specifications. The payment bond shall be supplied at the signing of the contract.
10. All bidders must comply with the requirements stated in the attached "Standard Insurance Requirements" sheet attached to this bid solicitation. Failure to comply with this instruction will result in bid rejection.
11. A bid bond will be required with bid submission in the amount of 5% of the total bid, unless otherwise stated in the bid specifications. Acceptable forms shall be limited to cashier's check, certified check, or surety bid bond. All sureties must be in original format (no copies) If submitting a bid online, vendors must submit an electronic bid bond through the respective online clearinghouse bond management system(s) as indicated in the electronic bid solicitation on Central Auction House. No scanned paper copies of any bid bond will be accepted as part of the electronic bid submission.
12. This is a requirements contract to be provided on an as needed basis. JEFFERSON PARISH makes no representations on warranties with regard to minimum guaranteed quantities unless otherwise stated in the bid specifications.
13. Freight charges should be included in total cost when quoting. If not quoted FOB DELIVERED, freight must be quoted as a separate item. Bid may be rejected if not quoted FOB DELIVERED or if freight charges are not indicated on bid form.
14. PUBLIC WORKS BIDS - Completed, Signed and Properly Notarized Affidavits Required; This applies to all solicitations for construction, alteration or demolition of public buildings or projects, in conformity with the provisions contained in LSA-RS 38:2212.9, LSA-RS 38:2212.10, LSA-RS 38:2224, and Sec 2-923.1 of the Jefferson Parish Code of Ordinances. For bidding purposes, all bidders must submit with bid submission COMPLETED, SIGNED and PROPERLY NOTARIZED Affidavits, including: Non-Conviction Affidavit, Non-Collusion Affidavit, Campaign Contribution Affidavit, Debt Disclosures Affidavit and E-Verify Affidavit. For the convenience of vendors, all affidavits have been combined into one form entitled PUBLIC WORKS BID AFFIDAVIT. This affidavit must be submitted in its original format, and without material alteration, in order to be compliant and for the bid to be considered responsive. A scanned copy of the completed, signed and properly notarized affidavit may be submitted with the bid, however, the successful bidder must submit the original affidavit in its original format and without material alteration upon contract execution. Failure to comply will result in the bid submission being rejected as non-responsive. The Parish reserves the right to award bid to the next lowest responsive and responsible bidder in this event.
15. NON PUBLIC WORK BIDS - Completed, Signed and Properly Notarized Affidavits Required in conformity with the provisions contained in LSA – RS 38:2224 and Sec 2-923.1 of the Jefferson Parish Code of Ordinances. For bidding purposes, all bidders must submit with bid submission COMPLETED, SIGNED and PROPERLY NOTARIZED Affidavits, including: Non-Collusion Affidavit, Debt Disclosures Affidavit and Campaign Contribution Affidavit. For the convenience of vendors, all affidavits have been combined into one form entitled NON PUBLIC WORKS BID AFFIDAVIT. This affidavit must be submitted in its original format, and without material alteration, in order to be compliant and for the bid to be considered responsive. A scanned copy of the completed, signed and properly notarized affidavit may be submitted with the bid, however, the successful bidder must submit the original affidavit in its original format and without material alteration upon contract execution. Failure to comply will result in the bid submission being rejected as non-responsive. The Parish reserves the right to award bid to the next lowest responsive and responsible bidder in this event.
16. The ensuing contract for this bid solicitation may be eligible for FEMA reimbursement and/or Federal funding/reimbursement. As such, the referenced appendix will be applicable accordingly and shall be considered a part of the bid documents. All applicable certifications must be duly completed, signed and submitted with bid submission. Failure to submit applicable certifications with bid submission will result in bid rejection.
17. For this project, the Contractor shall not pay any state or local sales or use taxes on materials and equipment which are affixed and made part of the immovable property of the project or which permanently incorporated in the project (hereinafter referred to as "applicable materials and equipment"). All purchases of applicable materials or equipment shall be made by the contractor on behalf of and as the agent of Jefferson Parish (Owner), a political subdivision of the State of Louisiana. No state and local sales and use taxes are owned on applicable materials and equipment under the provisions of Act 1029 of the 1991 Regular Session – Louisiana Revised Statute 47:301(8)(c). Owner will furnish contractor a certificate form which certifies that Owner is not required to pay such state or local sales and use taxes, and contractor shall furnish a copy of such certificate to all vendors or suppliers of the applicable materials and equipment

**It shall be the duty of every parish officer, employee, department, agency, special district, board, and commission: and the duty of every contractor, subcontractor, and licensee of the parish, and the duty of every applicant for certification of eligibility for a parish contract or program, to cooperate with the Inspector General in any investigation, audit, inspection, performance review, or hearing pursuant to JPCO 2-155.10(19). By signing this document, every corporation, partnership, or person contracting with PARISH, whether by cooperative endeavor, intergovernmental agreement, bid, proposal, application or solicitation for a parish contract, and every application for certification of eligibility for a parish contract or program, attests that it understands and will abide by all provisions of JPCO 2-155.10.**

DATE: 7/24/2020

BID NO.: 50-00131608

**CIMSCO, INC.**  
1840 L & A ROAD  
METAIRIE, LA 70001

Page: 5

**BID FORM**  
Non Public Works

All Public Work Projects are required to use the Louisiana Uniform Public Work Bid Form

All prices must be held firm unless an escalation provision is requested in this bid. Jefferson Parish will allow one escalation during the term of the contract, which may not exceed the U.S. Bureau of Labor Statistics National Index for all Urban Consumers, unadjusted 12 month figure. The most recently published figure issued at the time an adjustment is requested will be used. A request must be made in writing by the vendor, and the escalation will only be applied to purchases made after the request is made.

Are you requesting an escalation provision?

YES        NO   X  

MAXIMUM ESCALATION PERCENTAGE REQUESTED        %  
INITIAL BID PRICES WILL REMAIN FIRM THROUGH THE DATE OF 8-18-2022

For the purposes of comparison of bids when an escalation provision is requested, Jefferson Parish will apply the maximum escalation percentage quoted by the bidder to the period to which it is applied in the bid. The initial price and the escalation will be used to calculate the total bid price. It will be assumed, for comparison of prices only, that an equal amount of material or labor is purchased each month throughout the entire contract.

**DELIVERY: FOB JEFFERSON PARISH**

INDICATE DELIVERY DATE ON EQUIPMENT AND SUPPLIES

2 to 3 weeks

LOUISIANA CONTRACTOR'S LICENSE NO.: (if applicable)       

**THIS SECTION MUST BE COMPLETED BY BIDDER:**

FIRM NAME: CimSCO INC  
ADDRESS: 1840 L & A Road  
CITY, STATE: Metairie LA ZIP: 70001  
TELEPHONE: 504 835-7319 FAX: 504 832-0820  
EMAIL ADDRESS: Tim@cimSCOINC.COM

In the event that addenda are issued with this bid, bidders **MUST** acknowledge all addenda on the bid form. Bidder must acknowledge receipt of an addendum on the bid form as indicated. Failure to acknowledge any addendum on the bid form will result in bid rejection.

Acknowledge Receipt of Addenda: NUMBER:         
NUMBER:         
NUMBER:         
NUMBER:       

TOTAL PRICE OF ALL BID ITEMS: \$ 1,046,028.00

AUTHORIZED SIGNATURE: Timothy Kandall Timothy Kandall  
TITLE: Sales Printed Name

SIGNING INDICATES YOU HAVE READ AND COMPLY WITH THE INSTRUCTIONS AND CONDITIONS.

NOTE: All bids should be returned with the BID NUMBER and BID OPENING DATE indicated on the outside of the envelope submitted to the Purchasing Department.

## CORPORATE RESOLUTION

EXCERPT FROM MINUTES OF MEETING OF THE BOARD OF DIRECTORS OF  
CIMSCO, INC.  
INCORPORATED.

AT THE MEETING OF DIRECTORS OF CIMSCO, INC.  
INCORPORATED, DULY NOTICED AND HELD ON February 6, 2020,  
A QUORUM BEING THERE PRESENT, ON MOTION DULY MADE AND SECONDED. IT  
WAS:

RESOLVED THAT Hunter Burgess, BE AND IS HEREBY  
APPOINTED, CONSTITUTED AND DESIGNATED AS AGENT AND ATTORNEY-IN-  
FACT OF THE CORPORATION WITH FULL POWER AND AUTHORITY TO ACT ON  
BEHALF OF THIS CORPORATION IN ALL NEGOTIATIONS, BIDDING, CONCERNS  
AND TRANSACTIONS WITH THE PARISH OF JEFFERSON OR ANY OF ITS AGENCIES,  
DEPARTMENTS, EMPLOYEES OR AGENTS, INCLUDING BUT NOT LIMITED TO, THE  
EXECUTION OF ALL BIDS, PAPERS, DOCUMENTS, AFFIDAVITS, BONDS, SURETIES,  
CONTRACTS AND ACTS AND TO RECEIVE ALL PURCHASE ORDERS AND NOTICES  
ISSUED PURSUANT TO THE PROVISIONS OF ANY SUCH BID OR CONTRACT, THIS  
CORPORATION HEREBY RATIFYING, APPROVING, CONFIRMING, AND ACCEPTING  
EACH AND EVERY SUCH ACT PERFORMED BY SAID AGENT AND ATTORNEY-IN-  
FACT.

I HEREBY CERTIFY THE FOREGOING TO BE  
A TRUE AND CORRECT COPY OF AN  
EXCERPT OF THE MINUTES OF THE ABOVE  
DATED MEETING OF THE BOARD OF  
DIRECTORS OF SAID CORPORATION, AND  
THE SAME HAS NOT BEEN REVOKED OR  
RESCINDED.

Ohly E. Rure  
SECRETARY-TREASURER

8/18/2020  
DATE

## **STANDARD INSURANCE REQUIREMENTS FOR BIDDING PURPOSES**

All required insurance under this bid shall conform to Jefferson Parish Resolution No. 113646 or No. 113647, as applicable. Contractors may not commence any work under any ensuing contract unless and until all required insurance and associated evidentiary requirements thereto have been met, along with any additional specifications contained in the **Invitation to Bid**. Except as where otherwise precluded by law, the Parish Attorney or his designee, with the concurrence of the Director of Risk Management or his designee, may agree on a case-by-case basis, to deviate from Jefferson Parish's standard insurance requirements, as provided in this Section. Vendors requesting deviation therefrom shall submit such requests in writing, along with compelling substantiation, to the Purchasing Department prior to the bid's due date. Any changes to the insurance requirements will be reflected in the bid specifications and addenda. Prior to contract execution and at all times thereafter during the term of such contract, contractors must provide and continuously maintain all coverages as required by the foregoing Resolutions, and the contract documents. Failure to do so shall be grounds for suspension, discontinuation or termination of the contract.

For bidding purposes, bidders must submit with bid submission a current (valid) insurance certificate evidencing the required coverages. Failure to comply will cause bid to be rejected. The current insurance certificate will be used for proof of insurance at time of evaluation. Thereafter, and prior to contract execution, the low bidder will be required to provide final insurance certificates to the Parish which shall name **the Jefferson Parish, its Districts Departments and Agencies under the direction of the Parish President and the Parish Council** as additional insureds regarding negligence by the contractor for the Commercial General Liability and the Comprehensive Automobile Liability policies. Additionally, said certificates should reflect the name of the Parish Department receiving goods and services and reference the respective Jefferson Parish bid number.

## **JEFFERSON PARISH REQUIRED STANDARD INSURANCE**

### ☐ **WORKER'S COMPENSATION INSURANCE**

As required by Louisiana State Statute, exception; Employer's Liability, Section B shall be \$1,000,000 per occurrence when Work is to be over water and involves maritime exposures to cover all employees not covered under the State Worker's Compensation Act, otherwise this limit shall be no less than \$500,000 per occurrence.

**Note: If your company is not required by law to carry workmen's compensation insurance, i.e. not a Louisiana company, sole employee of the company, then bidders must request a workmen's compensation insurance declaration affidavit prior to the bid opening date. This insurance declaration affidavit must be fully completed, signed, properly notarized and submitted with the bid. A scanned copy may be submitted with the bid; however, the successful bidder must submit the original affidavit in its original format and without material alteration upon contract execution. Failure to comply will result in the bid submission being**

rejected as non-responsive. The Parish reserves the right to award bid to the next lowest responsive and responsible bidder in this event.

☐ **COMMERCIAL GENERAL LIABILITY**

Shall provide limits not less than the following: \$1,000,000.00 Combined Single Limit per Occurrence for bodily injury and property damage.

☐ **COMPREHENSIVE AUTOMOBILE LIABILITY**

Bodily injury liability \$1,000,000.00 each person; \$1,000,000.00 each occurrence.  
Property Damage Liability \$1,000,000.00 each occurrence.

**Note:** This category may be omitted if bidders do not/will not utilize company vehicles for the project or do not possess company vehicles. Bidder must request an automobile insurance declaration affidavit prior to the bid opening date. This insurance declaration affidavit must be fully completed, signed, properly notarized and submitted with the bid. A scanned copy of the completed, signed and properly notarized affidavit may be submitted with the bid; however, the successful bidder must submit the original affidavit in its original format and without material alteration upon contract execution. Failure to comply will result in the bid submission being rejected as non-responsive. The Parish reserves the right to award bid to the next lowest responsive and responsible bidder in this event.

**DEDUCTIBLES** - The Parish Attorney with concurrence of the Director of Risk Management have waived the deductible section of the Terms and Conditions for all Invitations to Bid, until further notice.

**UMBRELLA LIABILITY COVERAGE**

An umbrella policy or excess may be used to meet minimum requirements.

**FOR CONSTRUCTION AND RENOVATION PROJECTS:**

The following are required unless otherwise specified in the bid. Such insurance is due upon contract execution.

1) **OWNER'S PROTECTIVE LIABILITY**

To be for the same limits of liability for bodily injury and property damage liability established for commercial general liability.

2) **BUILDER'S RISK INSURANCE**

The contractor shall maintain Builder's Risk Insurance at his own expense to insure both the owner (Parish of Jefferson) and contractor as their interest may appear.

## **Non-Public Works Bid Affidavit Instructions**

- Affidavit is supplied as a courtesy to Affiants, but it is the responsibility of the affiant to insure the affidavit they submit to Jefferson Parish complies, in both form and content, with federal, state and parish laws.
- Affidavit must be signed by an authorized representative of the entity or the affidavit will not be accepted.
- Affidavit must be notarized or the affidavit will not be accepted.
- Notary must sign name, print name, and include bar/notary number, or the affidavit will not be accepted.
- Affiant **MUST** select either A or B when required or the affidavit will not be accepted.
- Affiants who select choice A must include an attachment or the affidavit will not be accepted.
- If both choice A and B are selected, the affidavit will not be accepted.
- Affidavit marked N/A will not be accepted.
- It is the responsibility of the Affiant to submit a new affidavit if any additional campaign contributions are made after the affidavit is executed but prior to the time the council acts on the matter.

*Instruction sheet may be omitted when submitting the affidavit*



# CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)  
7/29/2020

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

**IMPORTANT:** If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER		CONTRACT Daryl Oser	
E B Ducasse Insurance Agency, Inc		PHONE (A/C No. Ext):	(504) 840-9883
3200 Ridgeland Dr, Suite 401		FAX (A/C No.):	(504) 840-9889
		EMAIL ADDRESS:	doser@ebducasse.com
Metairie LA 70002		INSURER(S) AFFORDING COVERAGE	
INSURED		INSURER A: United Fire and Indemnity Co	NAIC # 19496
Cimsco Inc		INSURER B: Technology Insurance Co	42376
1840 L & A Road		INSURER C:	
		INSURER D:	
		INSURER E:	
Metairie LA 70001-6237		INSURER F:	

**COVERAGES** CERTIFICATE NUMBER: CL1983002598

REVISION NUMBER:

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDITIONAL SUBROGATION	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS
A	<input checked="" type="checkbox"/> COMMERCIAL GENERAL LIABILITY					
	<input type="checkbox"/> CLAIMS-MADE <input checked="" type="checkbox"/> OCCUR					
			60418952	9/1/2019	9/1/2020	EACH OCCURRENCE \$ 1,000,000 DAMAGE TO RENTED PREMISES (Ea occurrence) \$ 100,000 MED EXP (Any one person) \$ 5,000
						PERSONAL & ADV INJURY \$ 1,000,000 GENERAL AGGREGATE \$ 2,000,000 PRODUCTS - COMPOP AGG \$ 2,000,000 Liquor Liability Exclusion \$
A	AUTOMOBILE LIABILITY					
	<input checked="" type="checkbox"/> ANY AUTO					COMBINED SINGLE LIMIT \$ 1,000,000 (Ea accident)
	<input type="checkbox"/> ALL OWNED AUTOS		60418952	9/1/2019	9/1/2020	BODILY INJURY (Per person) \$
	<input type="checkbox"/> HIRED AUTOS					BODILY INJURY (Per accident) \$ PROPERTY DAMAGE (Per accident) \$
A	UMBRELLA LIAB		60418952	9/1/2019	9/1/2020	EACH OCCURRENCE \$ 1,000,000 AGGREGATE \$ 1,000,000
	EXCESS LIAB					
	DED					
	RETENTION \$					
B	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY					
	ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH)					
	If yes, describe under DESCRIPTION OF OPERATIONS below					

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)  
The general liability and auto liability policies contain a blanket additional insured and blanket waiver of subrogation if required by written contract. The general liability is primary and non contributory

Bid # 50-00131608

CERTIFICATE HOLDER

CANCELLATION

Jefferson Parish Purchasing Department  
Attn: Shanna Folse  
200 Derbigny St  
Suite 4400  
Gretna, LA 70053

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

E Ducasse Sr./DARLY

Edmond B Ducasse Sr.

ACORD 25 (2014/01)

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INS025 (201401)

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**CIMSCO, INC.**  
**1840 L & A ROAD**  
**METAIRIE, LA 70001**

DATE: 7/24/2020

**INVITATION TO BID FROM JEFFERSON PARISH - continued**

Page 6

BID NO.: 50-00131608

SEALED BID

ITEM NUMBER	QUANTITY	U/M	DESCRIPTION OF ARTICLES	UNIT PRICE QUOTED	TOTALS
1	120.00	LF	TWO (2) YEAR CONTRACT FOR A SUPPLY OF STEEL STORM DRAIN CULVERTS AND RELATED ITEMS FOR THE JEFFERSON PARISH DEPARTMENT OF PUBLIC WORKS, ALL DISTRICTS EAST AND WEST BANK  0010 - 12 inch pipe, 16 gauge	15.36	1843.20
2	2.00	EA	TWO (2) YEAR CONTRACT FOR A SUPPLY OF STEEL DRAIN CULVERTS & RELATED ITEMS FOR THE JEFFERSON PARISH DEPARTMENT OF PUBLIC WORKS - ALL DISTRICTS EAST AND WESTBANK.  0015 - Lift Lug Nuts (Set of 2)	85.00	170.00
3	120.00	LF	GROUP 1  0020 - 12 inch pipe, 14 gauge	24.00	2880.00
4	2.00	EA	0030 - Hugger Band, 16 gauge (ea) 12 inch	29.00	58.00
5	120.00	LF	0040 - 15 inch pipe, 16 gauge	21.50	2580.00
6	120.00	LF	0050 - 15 inch pipe, 14 gauge	26.50	3180.00
7	2.00	EA	0060 - Hugger Band, 16 gauge (ea) 15 inch	36.00	72.00
8	120.00	LF	0070 - 18 inch pipe, 16 gauge	24.00	2880.00
9	160.00	LF	0080 - 18 inch pipe, 14 gauge	32.00	5,120.00
10	2.00	EA	0090 - Hugger Band, 16 gauge (ea) 18 inch	52.50	105.00
11	120.00	LF	0100 - 21 inch pipe, 16 gauge	19.00	2280.00
12	120.00	LF	0110 - 21 inch pipe, 14 gauge	19.00	2280.00



DATE: 7/24/2020

Page 7

## INVITATION TO BID FROM JEFFERSON PARISH - continued

BID NO.: 50-00131608

SEALED BID

ITEM NUMBER	QUANTITY	U/M	DESCRIPTION OF ARTICLES	UNIT PRICE QUOTED	TOTALS
13	5.00	EA	0120 - Hugger Band, 16 gauge (ea) 21 inch	42.00	210.00
14	340.00	LF	0130 - 24 inch pipe, 14 gauge	39.62	13,470.80
15	120.00	LF	0140 - 24 inch pipe, 12 gauge	54.00	6,480.00
16	24.00	EA	0150 - Hugger Band, 14 gauge (ea) 24 inch	62.00	1,488.00
17	300.00	LF	0160 - 30 inch pipe, 14 gauge	48.00	14,400.00
18	120.00	LF	0170 - 30 inch pipe, 12 gauge	58.00	6,960.00
19	18.00	EA	0180 - Hugger Band, 14 gauge (ea) 30 inch	72.00	1,296.00
20	180.00	LF	0190 - 36 inch pipe, 14 gauge	59.00	10,620.00
21	120.00	LF	0200 - 36 inch pipe, 12 gauge	68.00	8,160.00
22	9.00	EA	0210 - Hugger Band, 14 gauge (ea) 36 inch	88.00	792.00
23	120.00	LF	0220 - 42 inch pipe, 14 gauge	59.00	7,080.00
24	120.00	LF	0230 - 42 inch pipe, 12 gauge	78.00	9,360.00
25	2.00	EA	0240 - Hugger Band, 14 gauge (ea) 42 inch	98.00	196.00
26	120.00	LF	0250 - 48 inch pipe, 14 gauge	68.00	8,160.00
27	120.00	LF	0260 - 48 inch pipe, 12 gauge	94.00	11,280.00

CIMSCO, INC.  
1840 L & A ROAD  
METAIRIE, LA 70001

DATE: 7/24/2020

INVITATION TO BID FROM JEFFERSON PARISH - continued

Page 8

BID NO.: 50-00131608

SEALED BID

ITEM NUMBER	QUANTITY	U/M	DESCRIPTION OF ARTICLES	UNIT PRICE QUOTED	TOTALS
28	10.00	EA	0270 - Hugger Band, 14 gauge (ea) 48 inch	115.00	1,150.00
29	120.00	LF	0280 - 54 inch pipe, 14 gauge	77.00	9,240.00
30	120.00	LF	0290 - 54 inch pipe, 12 gauge	98.00	11,760.00
31	2.00	EA	0300 - Hugger Band, 14 gauge (ea) 54 inch	131.00	262.00
32	120.00	LF	0310 - 60 inch pipe, 14 gauge	106.00	12,720.00
33	120.00	LF	0320 - 60 inch pipe, 12 gauge	144.25	17,310.00
34	5.00	EA	0330 - Hugger Band, 14 gauge (ea) 60 inch	162.00	810.00
35	120.00	LF	0340 - 66 inch pipe, 14 gauge	104.00	12,480.00
36	120.00	LF	0350 - 66 inch pipe, 12 gauge	144.00	17,280.00
37	2.00	EA	0360 - Hugger Band, 14 gauge (ea) 66 inch	178.00	356.00
38	120.00	LF	0370 - 72 inch pipe, 14 gauge	154.00	18,480.00
39	120.00	LF	0380 - 72 inch pipe, 12 gauge	179.00	21,480.00
40	3.00	EA	0390 - Hugger Band, 14 gauge (ea) 72 inch	193.00	579.00
41	120.00	LF	0400 - 78 inch pipe, 14 gauge	119.00	14,280.00
42	120.00	LF	0410 - 78 inch pipe, 12 gauge	161.00	19,320.00

**CIMSCO, INC.**  
**1840 L & A ROAD**  
**METAIRIE, LA 70001**

DATE: 7/24/2020

Page 9

**INVITATION TO BID FROM JEFFERSON PARISH - continued**

BID NO.: 50-00131608

SEALED BID

ITEM NUMBER	QUANTITY	U/M	DESCRIPTION OF ARTICLES	UNIT PRICE QUOTED	TOTALS
43	2.00	EA	0420 - Hugger Band, 14 gauge (ea) 78 inch	210.00	420.00
44	120.00	LF	0430 - 84 inch pipe, 14 gauge	152.00	18,240.00
45	120.00	LF	0440 - 84 inch pipe, 12 gauge	198.00	23,760.00
46	120.00	LF	0450 - 84 inch pipe, 10 gauge	229.00	27,480.00
47	2.00	EA	0460 - Hugger Band, 14 gauge (ea) 84 inch	227.00	454.00
48	120.00	LF	0470 - 90 inch pipe, 14 gauge	158.00	18,960.00
49	120.00	LF	0480 - 90 inch pipe, 12 gauge	204.00	24,480.00
50	120.00	LF	0490 - 90 inch pipe, 10 gauge	258.00	30,960.00
51	2.00	EA	0500 - Hugger Band, 14 gauge (ea) 90 inch	280.00	560.00
52	2.00	EA	0510 - Rod and Lug Band, 14 gauge (ea) 90 inch	631.00	1262.00
53	120.00	LF	0520 - 96 inch pipe, 12 gauge	231.00	27,720.00
54	120.00	LF	0530 - 96 inch pipe, 10 gauge	298.00	35,760.00
55	2.00	EA	0540 - Hugger Band, 14 gauge (ea) 96 inch	270.00	540.00
56	2.00	EA	0550 - 17 inch X 13 inch pipe, 16 gauge 15 inch equivalent	32.00	64.00

DATE: 7/24/2020

INVITATION TO BID FROM JEFFERSON PARISH - continued

Page 10

BID NO.: 50-00131608

SEALED BID

ITEM NUMBER	QUANTITY	U/M	DESCRIPTION OF ARTICLES	UNIT PRICE QUOTED	TOTALS
			GROUP 2 Arch Pipe		
57	2.00	EA	0560 - Angle and Bolt Type Band, 16 gauge (ea) for 17 inch x 13 inch pipe	58.00	116.00
58	120.00	LF	0570 - 21 inch x 15 inch pipe, 16 gauge 18 inch equivalent	27.00	3,240.00
59	2.00	EA	0580 - Angle and Bolt Type Band, 16 gauge (ea) for 21 inch x 15 inch pipe	43.00	86.00
60	120.00	LF	0590 - 24 inch x 18 inch pipe, 16 gauge 21 inch equivalent	24.00	2,880.00
61	2.00	EA	0600 - Angle and Bolt Type Band, 16 gauge (ea) for 24 inch x 18 inch pipe	49.00	98.00
62	120.00	LF	0610 - 28 inch X 20 inch pipe, 14 gauge 24 inch equivalent	44.00	5,280.00
63	2.00	EA	0620 - Angle and Bolt Type Band, 14 gauge (ea) for 28 inch x 20 inch pipe	64.00	128.00
64	120.00	LF	0630 - 35 inch x 24 inch pipe, 14 gauge 30 inch equivalent	44.00	5,280.00
65	2.00	EA	0640 - Angle and Bolt Type Band, 14 gauge (ea) for 35 inch x 24 inch pipe	68.00	136.00
66	120.00	LF	0650 - 42 inch X 29 inch pipe, 14 gauge 36 inch equivalent	63.00	7,560.00
67	2.00	EA	0660 - Angle and Bolt Type Band, 14 gauge (ea) for 42 inch X 29 inch	79.00	158.00

CIMSCO, INC.  
1840 L & A ROAD  
METAIRIE, LA 70001

DATE: 7/24/2020

INVITATION TO BID FROM JEFFERSON PARISH - continued

Page 11

BID NO.: 50-00131608

SEALED BID

ITEM NUMBER	QUANTITY	U/M	DESCRIPTION OF ARTICLES	UNIT PRICE QUOTED	TOTALS
68	120.00	LF	pipe 0670 - 49 inch X 33 inch pipe, 14 gauge 42 inch equivalent	64.00	7,680.00
69	2.00	EA	0680 - Angle and Bolt Type Band, 14 gauge (ea) for 49 inch X 33 inch pipe	112.00	224.00
70	120.00	LF	0690 - 57 inch X 38 inch pipe, 12 gauge 48 inch equivalent	119.00	14,280.00
71	2.00	EA	0700 - Angle and Bolt Type Band, 12 gauge (ea) for 57 inch X 38 inch pipe	480.00	960.00
72	120.00	LF	0710 - 64 inch X 43 inch pipe, 12 gauge 54 inch equivalent	105.00	12,600.00
73	2.00	EA	0720 - Angle and Bolt Type Band, 14 gauge (ea) for 64 inch X 43 inch pipe	378.00	756.00
74	120.00	LF	0730 - 66 inch X 51 inch pipe, 14 gauge 60 inch equivalent	105.00	12,600.00
75	2.00	EA	0740 - Angle and Bolt Type Band, 14 gauge (ea) for 66 inch X 51 inch pipe	480.00	960.00
76	120.00	LF	0750 - 73 inch X 55 inch pipe, 14 gauge 66 inch equivalent	199.00	23,880.00
77	2.00	EA	0760 - Angle and Bolt Type Band, 14 gauge (ea) for 73 inch X 55 inch pipe	840.00	1,680.00
78	630.00	LF	0770 - 81 inch X 59 inch pipe, 14 gauge 72 inch equivalent	148.00	93,240.00

ITEM NUMBER	QUANTITY	U/M	DESCRIPTION OF ARTICLES	UNIT PRICE QUOTED	TOTALS
79	20.00	EA	0780 - Angle and Bolt Type Band, 14 gauge (ea) for 81 inch X 59 inch pipe	564.00	11,280.00
80	120.00	LF	0790 - 87 inch X 63 inch pipe, 14 gauge 78 inch equivalent	136.00	16320.00
81	2.00	EA	0800 - Angle and Bolt Type Band, 14 gauge (ea) for 87 inch X 63 inch pipe	581.00	1,162.00
82	160.00	LF	0810 - 95 inch X 67 inch pipe, 14 gauge 84 inch equivalent	172.00	27,520.00
83	6.00	EA	0820 - Angle and Bolt Type Band, 12 gauge (ea) for 95 inch X 67 inch pipe	628.00	3,768.00
84	120.00	LF	0830 - 103 inch X 71 inch pipe, 12 gauge 90 inch equivalent	164.00	19,680.00
85	2.00	EA	0840 - Angle and Bolt Type Band, 12 gauge (ea) for 103 inch X 71 inch pipe	672.00	1,344.00
86	2.00	EA	0850 - RCP Dia 12 in CSP Dia 16.56.5 in 14 gauge	791.35	1,583.50
87	2.00	EA	GROUP 3 Outfall  Polymer coated steel pipe (canal outfall pipe) 26 foot section with ban	1553.00	3,106.00
88	2.00	EA	0860 - RCP Dia 15 inch CSP Dia 20.0 inch 12 gauge	1625.00	3,250.00
89	2.00	EA	0870 - RCP Dia 18 inch CSP Dia 23.5 inch 12 gauge	1519.00	3,038.00
			0880 - RCP Dia 21 inch CSP Dia 27.0 inch 12 gauge		

**CIMSCO, INC.**  
**1840 L & A ROAD**  
**METAIRIE, LA 70001**

DATE: 7/24/2020

**INVITATION TO BID FROM JEFFERSON PARISH - continued**

BID NO.: 50-00131608

Page 13

SEALED BID

ITEM NUMBER	QUANTITY	U/M	DESCRIPTION OF ARTICLES	UNIT PRICE QUOTED	TOTALS
90	2.00	EA	0890 - RCP Dia 24 inch CSP Dia 34.0 inch 12 gauge	2700.00	5,400.00
91	2.00	EA	0900 - RCP Dia 27 inch CSP Dia 34.0 inch 12 gauge	2100.00	4,200.00
92	2.00	EA	0910 - RCP Dia 30 inch CSP Dia 37.5 inch 12 gauge	2800.00	5,600.00
93	2.00	EA	0920 - RCP Dia 36 inch CSP Dia 44.5 inch 12 gauge	3490.00	6,980.00
94	2.00	EA	0930 - RCP Dia 42 inch CSP Dia 51.0 inch 12 gauge	3500.00	7,000.00
95	2.00	EA	0940 - RCP Dia 48 inch CSP Dia 58.0 inch 12 gauge	4500.00	9,000.00
96	2.00	EA	0950 - RCP Dia 54 inch CSP Dia 65.5 inch 12 gauge	5400.00	10,800.00
97	2.00	EA	0960 - RCP Dia 60 inch CSP Dia 72.5 inch 12 gauge	6900	13,800.00
98	2.00	EA	0970 - RCP Dia 72 inch CSP Dia 86.5 inch 12 gauge	7300	14,600.00
99	2.00	EA	0980 - RCP Dia 84 inch CSP Dia 100.5 in 12 gauge	8100	16,200.00
100	2.00	EA	0990 - RCP Dia 96 inch CSP Dia 114.5 in 12 gauge	9400	18,800.00
101	1.00	ONLY	1000 - Flap Gate (Model F-10 S.B. or equal) 18 inch	1330.00	1330.00

CIMSCO, INC.  
1840 L & A ROAD  
METAIRIE, LA 70001

DATE: 7/24/2020

INVITATION TO BID FROM JEFFERSON PARISH - continued

Page 14

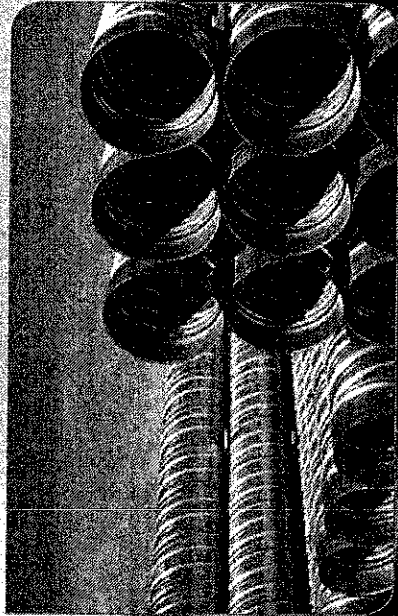
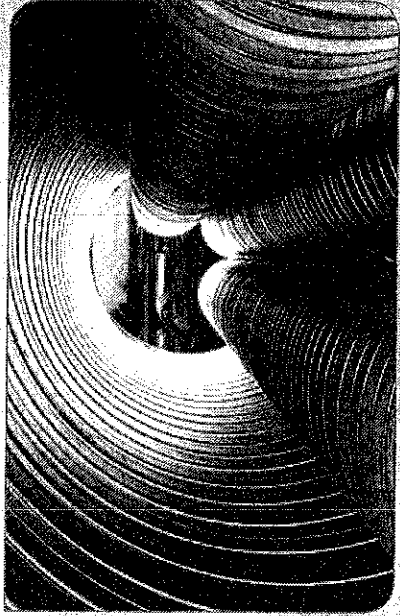
BID NO.: 50-00131608

SEALED BID

ITEM NUMBER	QUANTITY	U/M	DESCRIPTION OF ARTICLES	UNIT PRICE QUOTED	TOTALS
			GROUP 4 Gates		
			Flap Gates, Sluice Gates, and Handwheel Lifts (Waterman)		
102	1.00	ONLY	1010 - Flap Gate 24 inch	2035.00	2,035.00
103	1.00	ONLY	1020 - Flap Gate 30 inch Spigotbak	2998.00	2,998.00
104	1.00	ONLY	1030 - Flap Gate 36 inch	4336.00	4,336.00
105	1.00	ONLY	1040 - Sluice Gate (Model C-10 S.B. or equal) 18 inch	1461.00	1,461.00
106	1.00	ONLY	1050 - Sluice Gate 24 inch	2194.00	2,194.00
107	1.00	ONLY	1060 - Sluice Gate 30 inch	3590.00	3,590.00
108	1.00	ONLY	1070 - Sluice Gate 36 inch	4368.00	4,368.00
109	1.00	ONLY	1080 - Handwheel Lift 14 inch	210.00	210.00
110	1.00	ONLY	1090 - Handwheel Lift 18 inch	210.00	210.00
111	1.00	ONLY	1100 - Handwheel Lift 24 inch	288.00	288.00
112	20.00	GL	1110 - Grundy 5-X grush grade repair coating compound (for polymer coated pipe)	189.00	1,890.00
			GROUP 5 Touch UPO		

\*\*\*PLEASE SEE ATTACHED SPECIFICATIONS\*\*\*





## Corrugated Metal Pipe Solutions

**CONTECH**  
ENGINEERED SOLUTIONS

**CONTECH**  
**PIPE SOLUTIONS**

# Contech® Corrugated Metal Pipe

## Solutions for severe-to-normal conditions

Coast-to-coast, engineers and contractors rely on Contech Corrugated Metal Pipe for culverts, storm sewers, small bridges, stormwater detention systems, conduits and windmill foundations. No other type of drainage structure offers the range of structural strength that's available with Corrugated Metal Pipe—it performs where rigid pipe fails.

Contech Engineered Solutions LLC manufactures to repeatable and exacting standards HEL-COR® and ULTRA FLO® pipe—which has a 0.012 Manning's "n"—in galvanized, Aluminized Steel Type 2, polymer-coated and aluminum.

Numerous industry standards for pipe configurations, coatings and linings have been conceived and developed by Contech. That is how we have earned the reputation as the world leader in pipe design and innovation.

## Corrugated Steel Pipe ... The Core of Strength

Corrugated steel pipe is similar to the superstructure of a building in that it supports the interior walls and gives structure to the facade. Steel is the proven, strong-shouldered material that is coated with zinc, Aluminized Steel Type 2, tough polymer or asphalt to increase durability for prolonged design life. Corrugated steel pipe is the strength at the core of all coatings and linings.

Contech's Corrugated Steel Pipe provides the power and tenacity to your culverts, storm sewers and stormwater detention systems to withstand severe environmental conditions and burial depths. We offer coatings and linings to increase the life of installations up to 100 years as well as provide products with a Manning's "n" equivalent to other smooth wall drainage products.



Long lightweight sections make corrugated steel pipe easy to install.

### Two primary shapes

Fullround pipe is recommended for most applications. However, for limited headroom conditions, Contech produces a pipe-arch shape. The low, wide pipe-arch design distributes the area horizontally to provide adequate capacity without raising the grade.

### Corrugations and wall thicknesses

Both Contech Pipe and Pipe-Arch are produced in a variety of gages, which are available with either helical or annular corrugations. Contech HEL-COR® Pipe (helical corrugations) is furnished with continuous locked seams, and with reroiled annular ends. Contech riveted pipe is furnished with annular corrugations only.

Corrugations include  $1\frac{1}{2}$ " x  $1\frac{1}{4}$ " and  $2\frac{2}{3}$ " x  $1\frac{1}{2}$ " for economical and efficient metal use in small diameters; 3" x 1" and 5" x 1" offer high sectional properties in large diameter pipe.

The wide variety of corrugations and thicknesses permits selection of materials for a balanced design to meet specific jobsite conditions. Each project can be designed individually for the most cost-effective combination of corrugations, thicknesses, sizes, materials and installations, maximizing your investment on a job-by-job basis. For guidance, call your local Contech sales representative.

# HEL-COR® Corrugated Steel Pipe

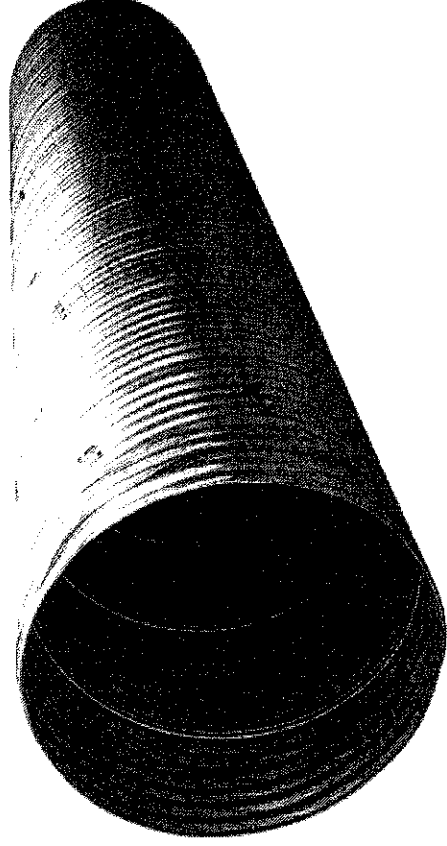
Helically corrugated HEL-COR steel pipe, available in round and pipe-arch shapes, has over 65 years of proven performance. It is manufactured with continuous locked seams with annular corrugated ends to use with soilight HUGGER® Bands.

Typical applications are culverts, stormwater detention systems, small bridges, conduits and storm sewers. A wide variety of wall thicknesses [gages], corrugations, diameters and pipe section lengths permit a choice of materials to meet specific job site requirements.

Durability requirements are addressed by a wide choice of materials: galvanized steel, aluminized steel type 2 [ALT2] and polymer-coated steel. For increased hydraulic efficiency, HEL-COR Smooth Cor™ has a steel lining.

Standard fittings include tees, wyes, elbows, saddle branches, reducers and manholes for detention systems. Manholes and catch basins are fabricated to meet specific job requirements.

As a construction shaft liner, HEL-COR Pipe, with or without ring beam stiffeners, can be supplied in up to 171 inch diameters.



Over 60 years of proven performance

Reference Specifications	
Material	Galvanized Steel AASHTO M218 ASTM A 929
	Aluminized Steel Type 2 (ALT2) AASHTO M274 ASTM A 929
	Polymer-Coated Steel AASHTO M246 ASTM A 742 ASTM A 849
	Aluminum Alloy AASHTO M197 ASTM B 744
Pipe	Steel (Galvanized and ALT2 HEL-COR and ULTRA FLO) AASHTO M36 ASTM A 760
	Steel (Polymer-Coated HEL-COR, ULTRA FLO, and Smooth Cor) AASHTO M36 AASHTO M245 ASTM A 762
	Aluminum (Corlix, ULTRA FLO) AASHTO M196 ASTM B 745
	Asphalt AASHTO M190 ASTM A 849
Design	Steel (HEL-COR, ULTRA FLO, Smooth Cor) AASHTO Section 12* ASTM A 796
	Aluminum (Corlix, ULTRA FLO) AASHTO Section 12* ASTM A 790
Installation	Steel (HEL-COR, ULTRA FLO, Smooth Cor) AASHTO Section 26* ASTM A 798
	Aluminum (Corlix, ULTRA FLO) AASHTO Section 26* ASTM A 788

\*AASHTO LRFD Bridge Design Specification and AASHTO Standard Specification for highway bridges.

# Pipe Coating Alternatives

## Galvanized Steel Pipe

Pre-galvanizing is the most widely used and most economical metallic coating for corrugated steel pipe. Pre-galvanizing protects and extends service life. In addition to forming a physical barrier against corrosion, the zinc coating sacrifices itself slowly by galvanic action to protect the base steel. This action continues as long as any zinc remains. The design life of galvanized pipe—installed in a corrosive environment—can be extended by coating the pipe with asphalt.

## Aluminized Type 2 (ALT2) Steel Pipe

Corrugated pipe is fabricated from steel that has been hot-dipped in commercially pure aluminum. Over 50 years of field-testing confirms that ALT2 corrugated steel pipe offers 75 years or more of maintenance free service life in the environmental ranges of pH 5-9 with resistivities as low as 1,500 ohm-cm.

### Excellent Barrier Protection

Aluminum forms a passive aluminum oxide reaction product film that adds to the service life by providing good barrier protection. This passive film forms rapidly and maintains better protection over a wider environmental range than zinc reaction product films. The aluminum oxide passive film is effective in both hard and soft water.

The passive oxide film will endure as long as the free aluminum coating layer lasts. When this layer is eventually penetrated, there is an underlying hard, thick aluminum-alloy layer that provides further corrosion protection plus some significant abrasion protection.

In the environmental range of pH 5-9 and resistivities as low as 1,500 ohm-cm, 43-year old field installations have shown that the multiple layer coating protection of Aluminized Steel Type 2 provides a service life 3 to 10 times longer than plain galvanized steel.



In some cases, the pH/ resistivity ranges may be extended somewhat as is the case in arid regions where moisture availability is generally a controlling factor, and satisfactory service life may be realized at soil resistivities somewhat below the 1,500 ohm-cm lower limit. In wetter climates, satisfactory service life may be realized as soil pH values below the 5.0 lower limit when resistivities are relatively high.



## Polymer-Coated Steel Pipe offers 100-Year protection against abrasion and corrosion

Contech's Corrugated Steel Pipe (CSP) with heavy-gage polymer coating offers long-term protection for storm drains and culverts. Even under harsh conditions, Polymer coating protects against abrasion and corrosion to provide at least 100 years of service life.

This tough film, bonded to both the inside and outside of Contech's galvanized CSP, serves as a protective barrier—resisting corrosion from acids, salts and alkalis found in today's storm sewers and culverts.

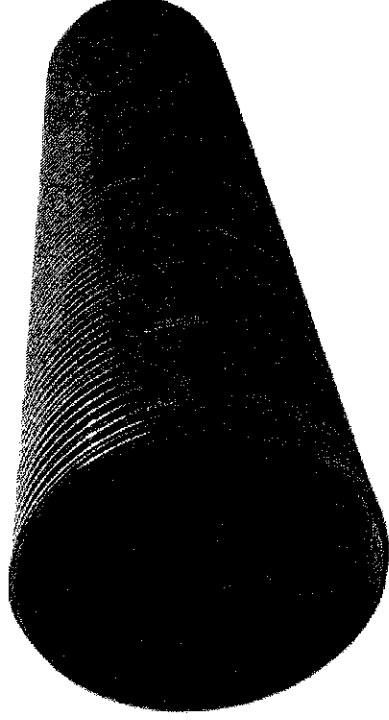
The film has been subjected to chemical resistance tests such as ASTM A 543 and A 742. These tests and others, including exposure to detergent, 10% sodium hydroxide (pH 14), 10% sodium chloride, 10% hydrochloric acid (pH less than 0.1) and 10% ammonium hydroxide dramatically demonstrate the corrosion resistance of the polymer film.

### NCSPA Research

The National Corrugated Steel Pipe Association (NCSPA) has conducted field studies of corrugated steel pipe with heavy-gage protective film—under various environmental conditions—at numerous sites throughout the United States.

From this research, NCSPA predicts the following service life expectancies:

Service Life	pH Levels	Min. Resistivity
100 Years	5-9	1,500 ohm.cm
75 Years	4-9	750 ohm.cm
50 Years	3-12	250 ohm.cm



Polymer coating is available on corrugated steel pipe and pipe-arch as well as hydraulically superior products—such as Smooth Cor and ULTRA FLO. Your local Contech sales representative can provide details on availability.

A polymer-coated corrugated steel pipe system also provides excellent performance in methane gas recovery applications in landfills. The CSP is structurally capable of handling the heavy and settling loads in a landfill and the polymer coating provides added corrosion resistance to the pipe.

If you have a project with corrosive soil conditions such as bluish-gray or green clays or other tough environmental conditions, CSP coated with polymer protective coating may be the solution to your drainage problems.

Installed in 1975 by the Arkansas State Highway Department as a test installation, this 60"-diameter polymer-coated corrugated steel pipe remains in excellent condition. After more than 40 years of exposure to pH 5.5, sediment and moderate abrasion, the triple-barreled structure keeps on performing. Also, test sites in Michigan, Wisconsin and New York—under harsh conditions—demonstrate the superb performance of polymer-coated pipe.





# Aluminum Durability

## Superior abrasion resistance

CORLUX® aluminum pipe's superior abrasion resistance has been proven through years of exposure to wet/dry abrasion-corrosion cycles. In normally abrasive runoffs, aluminum will onlypeen with minimum metal loss.

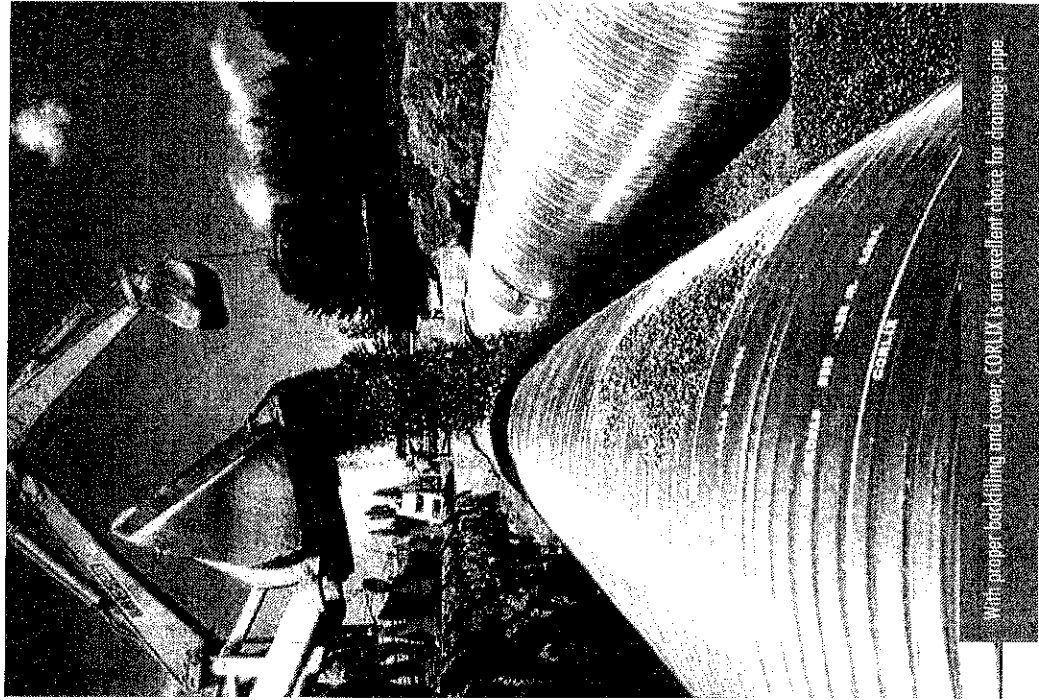
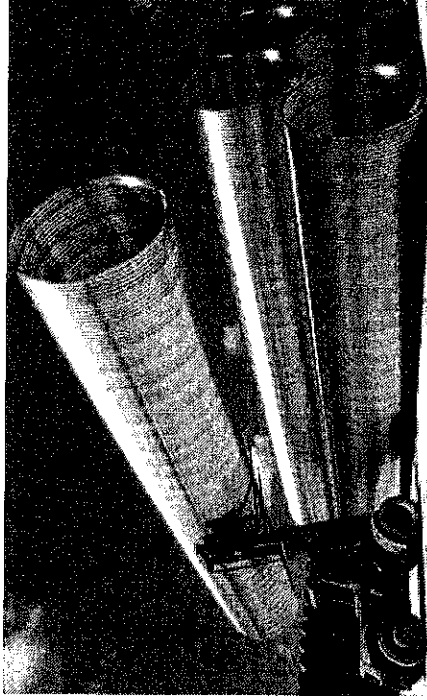
## Superior corrosion resistance

CORLUX's superior corrosion resistance is achieved by a special aluminum clad culvert material. The rugged core alloy 3004-(H32 or H34) is rated as highly corrosion resistant. Then to increase its resistance, the aluminum culvert coil is clad on both sides with alloy 7072, which is anodic to the core alloy—protecting it both physically and electrochemically against corrosion. This is primarily due to a thin, tenacious, inert oxide barrier that forms on the metal surface when exposed to air. This tough, tightly adhering oxide barrier cannot be easily removed. If damaged or affected by an aggressive environment, it reforms.

This is referred to as a "self-healing" effect. The oxide barrier appears on the pipe surface as a grayish-white coating that will build up over time.

Service-life expectancy studies on installed aluminum drainage products have been conducted since the early 1960s by state and federal agencies. 16 gage (0.060") corrugated aluminum pipe provides a predictable service life of 75+ years in the recommended soil/water environments with a pH range of 4.0 to 9.0 and a resistivity of 500 ohm-cm or greater.

In addition, good performance can be expected in seawater environments of 35 ohm-cm when the pipe is backfilled with a clean, free draining granular material.



With proper backfilling and cover, CORLUX is an excellent choice for drainage pipe.

## End Sections

Contech End Sections provide an economical, attractive, hydraulically efficient and durable inlet and outlet on culverts and storm sewers. End sections provide protection against erosion and scouring. They improve hydraulic capacity by channeling flow into and out of the pipe efficiently. They are also reusable if lengthening or relocating the drainage structure is necessary.

Galvanized End Sections present a clean-cut effect that is aesthetically pleasing. The tapered sides blend with the contour of the slope to increase roadside aesthetics. Compared with concrete headwalls, end sections are safer and easier to maintain. Weeds are cut easily with regular highway mowers. The wide opening minimizes collection of debris and silt.

End sections provide protection against erosion and scouring.

For multiple barrel applications, Contech manufactures multi-outlet end sections.



# Joints and Fittings

Contech Lock-Seam HELCOR Pipe and Pipe-Arch feature universal ends, so a variety of standard couplings may be used.

## Hugger® Joint

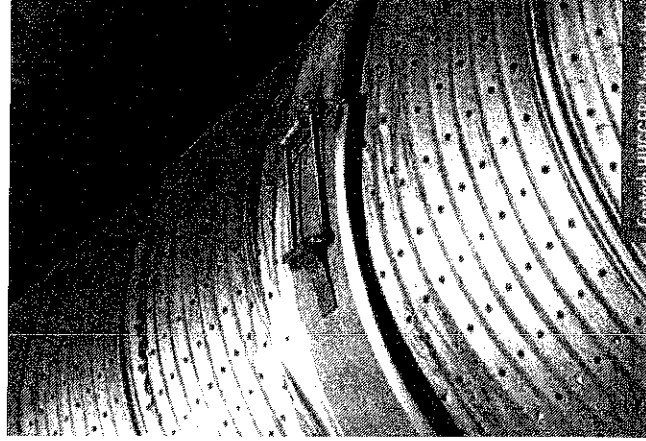
Contech offers the HUGGER Joint, which uses an annular corrugation to fully engage each annular pipe end for 360°. When used with optional rubber O-ring gaskets, the HUGGER Joint is the industry's tightest.

## QUICK STAB® Joint

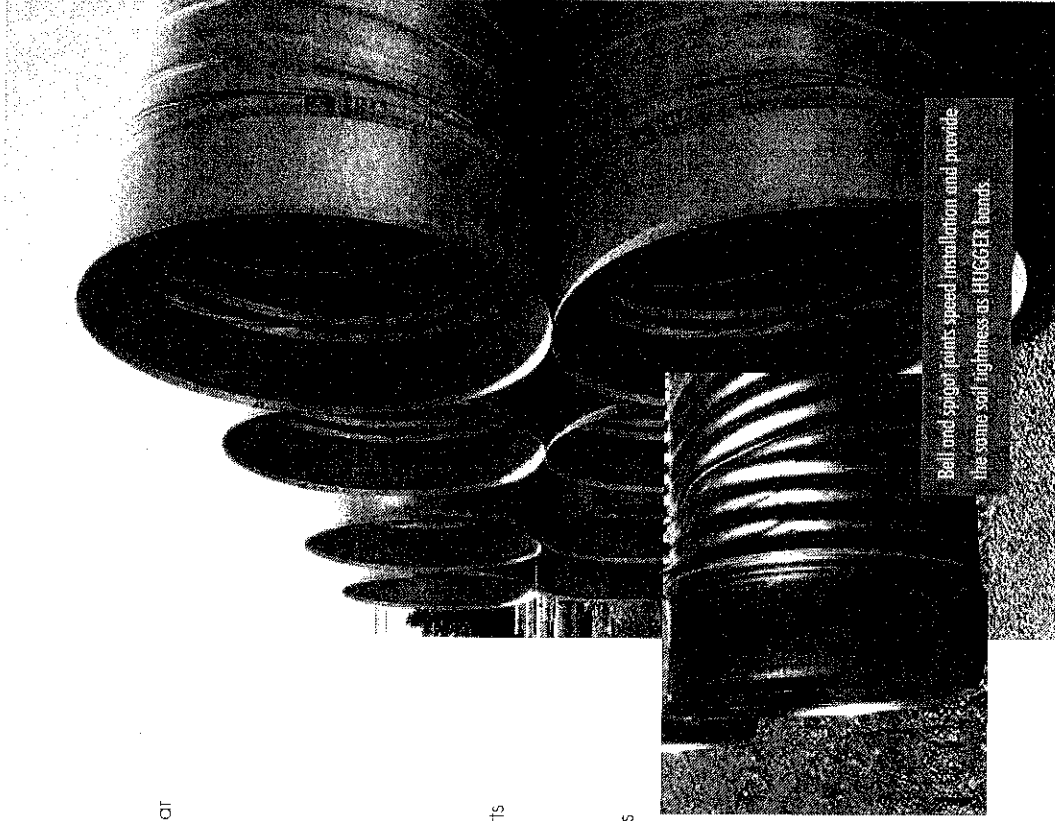
### Saves Time and Money With Faster Pipe Coupling

The Contech QUICK STAB joint speeds installation, reducing your costs—installing storm sewers and culverts has never been easier or faster.

The QUICK STAB joint is a bell and spigot joining system with the bell only 1'-1/2" larger than the pipe. It is attached to the pipe at the factory, then shipped to the job site ready for installation.



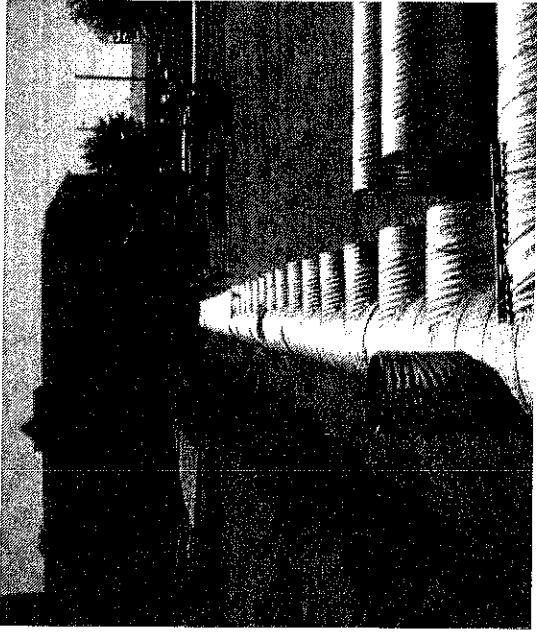
Contech HUGGER® Joint is the industry's tightest.



Bell and spigot joints speed installation and provide the same soil tightness as HUGGER bands.

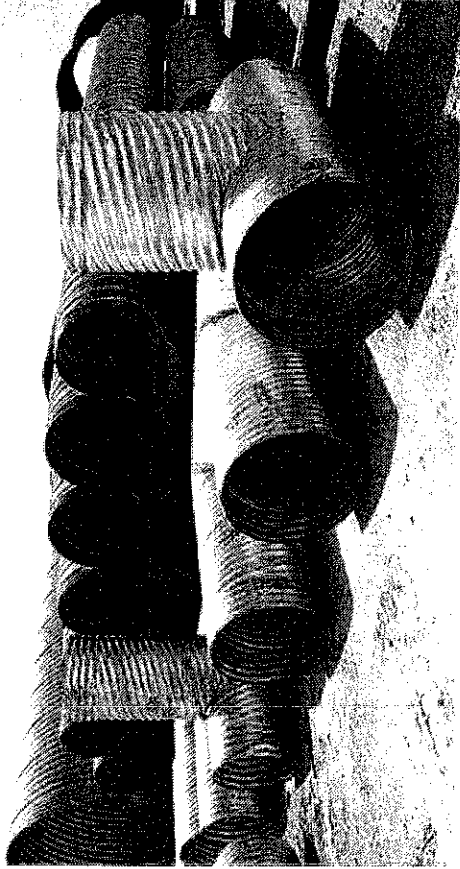
Contech QUICK STAB save time and money over conventional banding systems.





## Fittings

Standard fittings such as tees, wyes, elbows, saddle branches, manifolds and reducers are available for Contech Pipe and Pipe-Arches. Special fittings, including manholes and catch basins, can be fabricated to meet your needs.



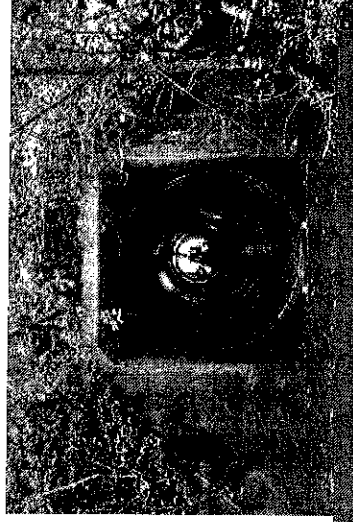
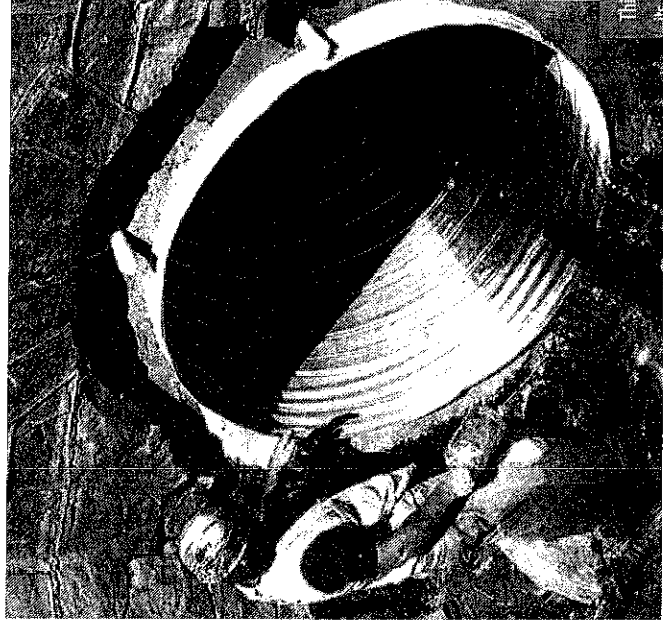
Contech is a leader in Underground Detention Systems. Pre-fabricated fittings can be designed and constructed to efficiently meet project requirements.

# Relining & Rehabilitation

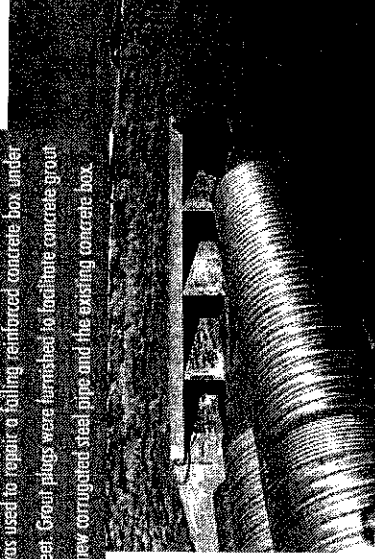
As our infrastructure ages, the roadway, water management and sewer control systems are deteriorating and losing integrity. Maintaining these critical structures is a major challenge.

However, it is often possible to salvage failing structures and eliminate the time, cost and safety problems of complete replacement.

Restoring structural and/or hydraulic capacity without road closure is usually achieved with less time, expense and disruption than the replacement alternative. Contech offers a variety of products and systems to facilitate rehabilitation of storm and sanitary sewers, culverts and bridges.

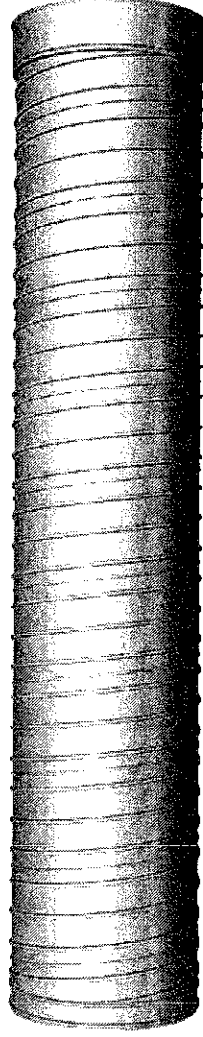


Corrugated Steel Pipe was used to repair a failing reinforced concrete box under a height of cover of 91 feet. GROUT plugs were furnished to facilitate concrete grout placement between the new corrugated steel pipe and the existing concrete box.



Contech offers a variety of products and systems to facilitate rehabilitation.

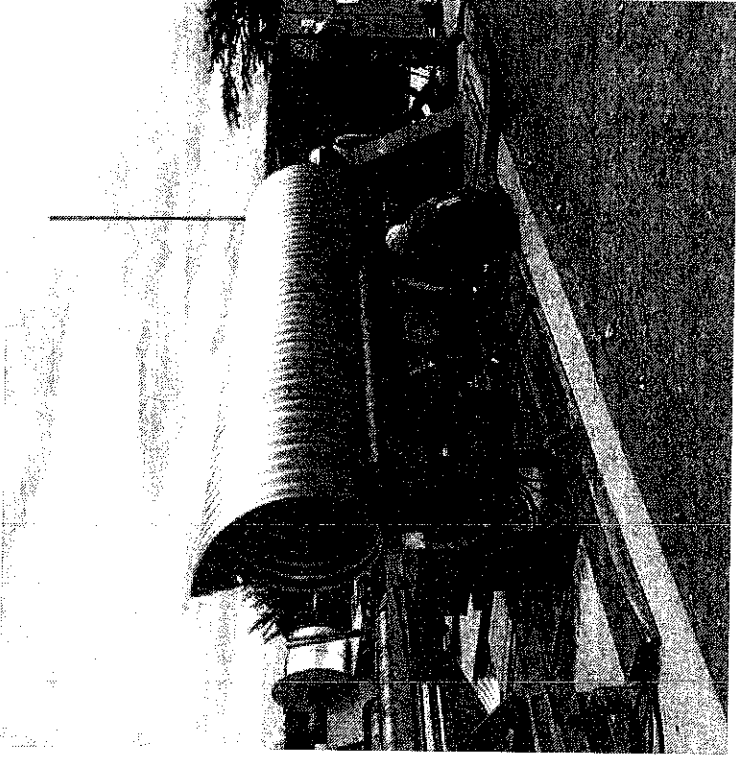
This aging drainage structure was relined with steel ULTRA FID pipe, restoring its hydraulic and structural properties while avoiding costly and time-consuming replacement.



## MOBILE PIPE®

MOBILE PIPE® modular mill can be delivered to remote site locations on trucks and assembled on-site for fast and cost-effective on-site steel pipe manufacturing. The MOBILE PIPE modular mill is designed to be a self-supporting factory that can be quickly deployed and put into production. Re-corrugated ends are also available to meet specific project needs. Once on-site, pipe manufacturing progresses quickly enough to allow pipe installation within four hours.

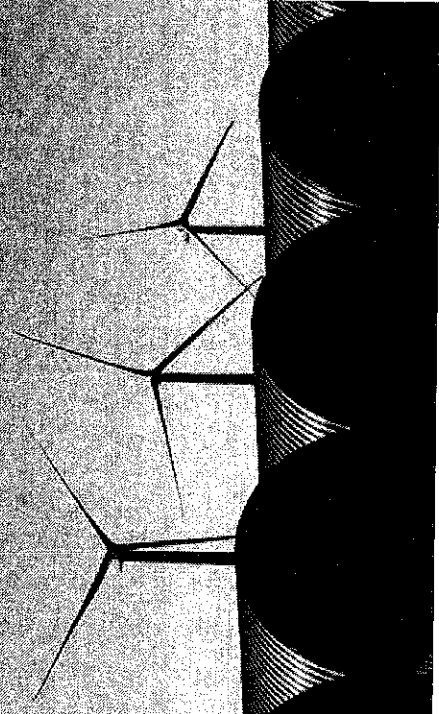
MOBILE PIPE can produce HEL-COR®, ULTRA FLO® and Smooth Cor™ corrugated metal pipe in a variety of sizes. Diameters from 3 to 16 feet and lengths up to 35 feet can be accommodated. This pipe meets the same levels of quality construction as does all Contech manufactured pipe, with high coil feedrate speeds and the same lock-seam edge process used in conventional pipe manufacturing. The intermodal capabilities allow these systems to be moved via truck, train or ship.



## MOBILE PIPE® is ideal for:

- Remote Jobs
- Projects requiring large continuous pipe production (detention systems, windmill foundation forms, vertical shafts, caissons)
- Support for natural disasters where immediate deployment and rebuilding is required
- Sites with limited storage space or restricted traffic patterns (mines, military bases, airports, etc.)

**Air Power/Windmill** — Contech large-diameter CMP — manufactured with the MOBILE PIPE® — is used as a deep foundation form at the base of the windmill. CMP is placed vertically to act as a form for the poured-in-place concrete foundation along with being used in the many access roads.



# CONTECH

ENGINEERED SOLUTIONS

## COMPLETE SITE SOLUTIONS



### STORMWATER SOLUTIONS

Helping easily stormwater management requirements on land development projects

- Pollutant Treatment
- Detention/Infiltration
- Rainwater Harvesting
- Pollution Prevention

### PIPE SOLUTIONS

Meeting project needs for durability, hydraulics, corrosion resistance, and stiffness

- Corrugated Metal Pipe (CMP)
- Steel Reinforced Polyethylene (SRPE)
- High Density Polyethylene (HDPE)
- Polyvinyl Chloride (PVC)

### STRUCTURES SOLUTIONS

Providing innovative options and support for design of vertical structures

- Plate, Precast & Trestle Bridges
- Hard Armor
- Retaining Walls
- Tunnel Liner Pipe

## Site Development Solutions

From normal to severe conditions, Contech provides a full-range of corrugated metal pipe for culverts, storm sewers, small bridges, stormwater detention systems and conduits.

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## CONTECH

ENGINEERED SOLUTIONS

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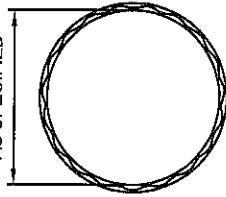
ULTRA-FLO Big 6x17-3M MC



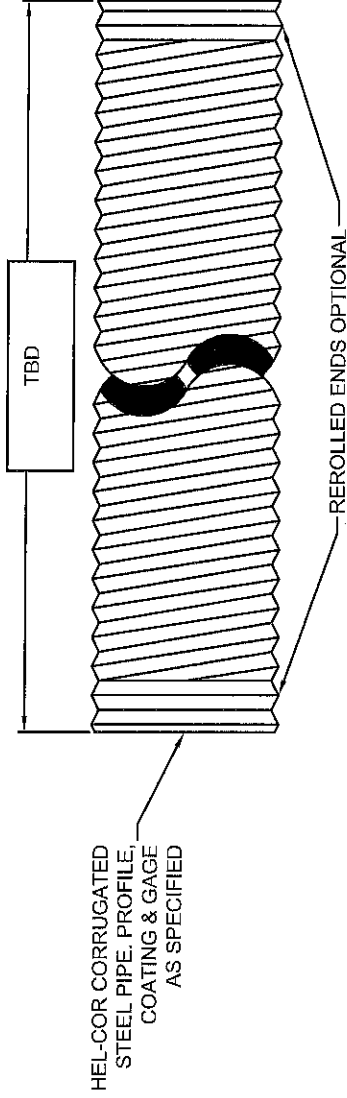
NOTES:

- 1.) MATERIAL PER SPECIFICATION  
ASTM A929 FOR GALVANIZED OR  
ALUMINIZED STEEL & ASTM 742  
FOR POLYMER COATED STEEL.
- 2.) PIPE IS SUBJECT TO TOLERANCES  
AS NOTED IN SPECIFICATIONS  
AASHTO M36 AND ASTM A760. THE  
AVERAGE INSIDE DIAMETER SHALL  
NOT VARY FROM THE NOMINAL  
DIAMETER BY MORE THAN 1/2" FOR  
PIPES 12" THROUGH 48" AND NO  
MORE THAN 1% OF THE NOMINAL  
DIAMETER FOR PIPES LARGER  
THAN 48"Ø.
- 3.) THE AVERAGE OUTSIDE DIAMETER  
IS EQUAL TO THE AVERAGE INSIDE  
DIAMETER (PER ABOVE), PLUS TWO  
TIMES THE CORRUGATION DEPTH,  
PLUS TWO TIMES THE METAL  
THICKNESS.

PIPE DATA	
NOMINAL DIA:	All
GAGE:	All
COATING:	Polymer
CORRUGATION PROFILE:	All



INSIDE NOMINAL  
DIAMETER  
AS SPECIFIED



Total Amount or Length Needed (B.O.M.):

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9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069

800-338-1122 513-645-7000 513-645-7993 FAX

HEL-COR - CORRUGATED STEEL PIPE  
CIMSCO

DATE: 12/01/09

SCALE: NONE

PROJECT No.: 400100

SEQ. No.: 001

DRAWN: ASAP

CHECKED:

Technical Data Sheet

Electronic & Engineering Materials

**RanVar™ TPC-515-7 Black**

Protective Coating

**ELANTAS PDG, Inc.**  
5200 North Second Street  
St. Louis, MO 63147  
USA  
Tel +1 314 621-5700  
Fax +1 314 436-1030  
info.elantas.pdg@alliana.com  
www.elantas.com

## RanVar™ TPC-515-7 Black

### Product Description

RanVar™ TPC-515-7 Black is a solvent-borne, air-drying, protective coating system.

### Areas of Application

Mechanical and environmental protection of pipe and other metallic, ceramic and glass substrates

### Features and Benefits

- Fast setting
- Excellent salt spray resistance
- Dries to a tough, rubbery protective film
- Medium gloss black appearance

### Application Methods

Apply by brush or roller to clean, dry substrate free of grease, oil and dirt

### Transportation / Storage

Store below 25°C / 77°F in a dry controlled environment out of direct sunlight. This material should be suitable for use stored under these conditions in the original sealed containers for twelve (12) months from the date of shipment.

Failure to store the product as recommended above may lead to deterioration in product performance.

Keep containers tightly sealed to minimize evaporation.

Mix thoroughly before use.

### Health / Safety

Refer to the Material Safety Data Sheet.

### Typical Properties of Material as Supplied

Property	Conditions	Value	Units
Viscosity	25°C / 77°F	3,500 - 5,500	cP
Non-Volatile Content	1 g - 3 h - 110°C	37.0 - 40.0	%
Weight per Gallon		7.5 - 7.8	pounds
Viscosity Reducer		ELAN-Plus™ BS-107 Reducer	
Flash Point	ASTM D93	25 77	°C °F



**RanVar™ TPC-515-7 Black**

**Application / Drying Schedule**

Apply to achieve a dry film thickness of about 1.5 mils (40 microns) per coat.

RanVar™ TPC-515-7 Black dries to touch in 25 - 30 minutes at room temperature and develops full properties with 24 hours.

The above properties are typical values and are not intended for specification use.

ELANTAS PDG, Inc. warrants the chemical composition of its products within stated tolerances, but does not guarantee that a product will be appropriate for any particular application. Any recommendation, performance of tests or suggestion is offered merely as a guide and is not a substitute for a thorough evaluation by the user. No representative of ELANTAS PDG, Inc. has the authority to offer a warranty that a product will perform satisfactorily in manufacturing a product and no such representation should be relied upon.



# SAFETY DATA SHEET



## RanVar™ TPC-515-7 Black

Version 3

Revision Date 09/20/2016

Print Date 09/20/2016

### SECTION 1. IDENTIFICATION

Product name : RanVar™ TPC-515-7 Black

#### Manufacturer or supplier's details

Company : ELANTAS PDG, INC.  
5200 North 2nd Street  
St. Louis MO 63147  
Telephone : (314) 621-5700  
Visit our web site : [www.elantas.com](http://www.elantas.com)  
E-mail address : [Todd.Thomas@altana.com](mailto:Todd.Thomas@altana.com)  
Emergency telephone number : INFOTRAC - 1-800-535-5053

#### Recommended use of the chemical and restrictions on use

Recommended use : Protective Coating

Restrictions on use : Refer to Section 15 for any restrictions that may apply

### SECTION 2. HAZARDS IDENTIFICATION

#### GHS Classification

Flammable liquids : Category 3  
Acute toxicity (Inhalation) : Category 4  
Skin irritation : Category 2  
Eye irritation : Category 2A  
Carcinogenicity : Category 2  
Reproductive toxicity : Category 2  
Specific target organ toxicity - single exposure : Category 3 (Central nervous system)  
Specific target organ toxicity - repeated exposure : Category 2 (Kidney, Liver)

#### GHS label elements

Hazard pictograms



Signal word

: Warning

Hazard statements

: H226 Flammable liquid and vapour.

# SAFETY DATA SHEET



## RanVar™ TPC-515-7 Black

Version 3

Revision Date 09/20/2016

Print Date 09/20/2016

H315 Causes skin irritation.  
H319 Causes serious eye irritation.  
H332 Harmful if inhaled.  
H336 May cause drowsiness or dizziness.  
H351 Suspected of causing cancer.  
H361 Suspected of damaging fertility or the unborn child.  
H373 May cause damage to organs (Kidney, Liver) through prolonged or repeated exposure.

### Precautionary statements

#### Prevention:

P201 Obtain special instructions before use.  
P202 Do not handle until all safety precautions have been read and understood.  
P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking.  
P233 Keep container tightly closed.  
P240 Ground/bond container and receiving equipment.  
P241 Use explosion-proof electrical/ ventilating/ lighting/ equipment.  
P242 Use only non-sparking tools.  
P243 Take precautionary measures against static discharge.  
P260 Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.  
P264 Wash skin thoroughly after handling.  
P271 Use only outdoors or in a well-ventilated area.  
P280 Wear protective gloves/ eye protection/ face protection.  
P281 Use personal protective equipment as required.

#### Response:

P303 + P361 + P353 IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/shower.  
P304 + P340 + P312 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/ physician if you feel unwell.  
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
P308 + P313 IF exposed or concerned: Get medical advice/ attention.  
P332 + P313 If skin irritation occurs: Get medical advice/ attention.  
P337 + P313 If eye irritation persists: Get medical advice/ attention.  
P362 Take off contaminated clothing and wash before reuse.  
P370 + P378 In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction.

#### Storage:

P403 + P233 Store in a well-ventilated place. Keep container tightly closed.

P403 + P235 Store in a well-ventilated place. Keep cool.  
P405 Store locked up.

#### Disposal:

P501 Dispose of contents/ container to an approved waste

# SAFETY DATA SHEET



## RanVar™ TPC-515-7 Black

Version 3

Revision Date 09/20/2016

Print Date 09/20/2016

disposal plant.

### Other hazards

The following percentage of the mixture consists of ingredient(s) with unknown acute toxicity: 16 %

## SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical nature : Modified Hydrocarbon Resin Solution

### Hazardous components

Component	CAS-No.	Concentration (%)
Xylene	1330-20-7	$\geq 48$ - $< 49$
Ethylbenzene	100-41-4	$\geq 12$ - $< 13$
Carbon black	1333-86-4	$\geq 1$ - $< 2$
Toluene	108-88-3	$\geq 0$ - $< 1$
Cumene	98-82-8	$\geq 0$ - $< 1$

## SECTION 4. FIRST AID MEASURES

### General advice

- : Move out of dangerous area.  
Show this safety data sheet to the doctor in attendance.  
Do not leave the victim unattended.

### If inhaled

- : Consult a physician after significant exposure.  
If unconscious, place in recovery position and seek medical advice.

### In case of skin contact

- : If skin irritation persists, call a physician.  
If on skin, rinse well with water.  
If on clothes, remove clothes.

### In case of eye contact

- : Immediately flush eye(s) with plenty of water.  
Remove contact lenses.  
Protect unharmed eye.  
Keep eye wide open while rinsing.  
If eye irritation persists, consult a specialist.

### If swallowed

- : Keep respiratory tract clear.  
Do not give milk or alcoholic beverages.  
Never give anything by mouth to an unconscious person.  
If symptoms persist, call a physician.  
Take victim immediately to hospital.

## SAFETY DATA SHEET



### RanVar™ TPC-515-7 Black

Version 3

Revision Date 09/20/2016

Print Date 09/20/2016

#### SECTION 5. FIREFIGHTING MEASURES

- Suitable extinguishing media : Alcohol-resistant foam  
Carbon dioxide (CO<sub>2</sub>)  
Dry chemical
- Unsuitable extinguishing media : High volume water jet
- Specific hazards during firefighting : Do not allow run-off from fire fighting to enter drains or water courses.
- Further information : Collect contaminated fire extinguishing water separately. This must not be discharged into drains.  
Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.  
For safety reasons in case of fire, cans should be stored separately in closed containments.  
Use a water spray to cool fully closed containers.
- Special protective equipment for firefighters : Wear self-contained breathing apparatus for firefighting if necessary.

#### SECTION 6. ACCIDENTAL RELEASE MEASURES

- Personal precautions, protective equipment and emergency procedures : Use personal protective equipment.  
Ensure adequate ventilation.  
Remove all sources of ignition.  
Evacuate personnel to safe areas.  
Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas.
- Environmental precautions : Prevent product from entering drains.  
Prevent further leakage or spillage if safe to do so.  
If the product contaminates rivers and lakes or drains inform respective authorities.
- Methods and materials for containment and cleaning up : Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13).

#### SECTION 7. HANDLING AND STORAGE

- Advice on safe handling : Avoid formation of aerosol.  
Do not breathe vapours/dust.  
Avoid exposure - obtain special instructions before use.  
Avoid contact with skin and eyes.

# SAFETY DATA SHEET



## RanVar™ TPC-515-7 Black

Version 3

Revision Date 09/20/2016

Print Date 09/20/2016

For personal protection see section 8.

Smoking, eating and drinking should be prohibited in the application area.

Take precautionary measures against static discharges.

Provide sufficient air exchange and/or exhaust in work rooms.

Open drum carefully as content may be under pressure.

Dispose of rinse water in accordance with local and national regulations.

### Conditions for safe storage

Store under conditions specified on the product Technical Data Sheet to maintain product quality.

No smoking.

Keep container tightly closed in a dry and well-ventilated place.

Containers which are opened must be carefully resealed and kept upright to prevent leakage.

Observe label precautions.

Electrical installations / working materials must comply with the technological safety standards.

## SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### Components with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
Xylene	1330-20-7	TWA	100 ppm 435 mg/m <sup>3</sup>	OSHA Z-1
		STEL	150 ppm	OSHA P0
		TWA	655 mg/m <sup>3</sup>	
		TWA	100 ppm 435 mg/m <sup>3</sup>	OSHA P0
		TWA	100 ppm	ACGIH
		STEL	150 ppm	ACGIH
Ethylbenzene	100-41-4	TWA	20 ppm	ACGIH
		TWA	100 ppm 435 mg/m <sup>3</sup>	OSHA Z-1
		TWA	100 ppm 435 mg/m <sup>3</sup>	OSHA P0
		STEL	125 ppm	OSHA P0
Carbon black	1333-86-4	TWA	545 mg/m <sup>3</sup>	
		TWA	3.5 mg/m <sup>3</sup>	ACGIH
Toluene	108-88-3	TWA	3.5 mg/m <sup>3</sup>	OSHA Z-1
		TWA	20 ppm	ACGIH
		TWA	200 ppm	OSHA Z-2
		CEIL	300 ppm	OSHA Z-2
		Peak	500 ppm	OSHA Z-2
		TWA	100 ppm	OSHA P0

# SAFETY DATA SHEET



## RanVar™ TPC-515-7 Black

Version 3

Revision Date 09/20/2016

Print Date 09/20/2016

			375 mg/m3	
		STEL	150 ppm	OSHA P0
Cumene			560 mg/m3	
	98-82-8	TWA	50 ppm	ACGIH
		TWA	50 ppm	OSHA Z-1
		TWA	245 mg/m3	
			50 ppm	OSHA P0
			245 mg/m3	

### Engineering measures

: Use with adequate ventilation.

All application areas should be ventilated in accordance with applicable OSHA regulations. (29 CFR 1910.94)

This product contains a particulate(s) that is considered hazardous per OSHA (29 CFR 1910.1200) and is listed in Section III as a precautionary warning.

Under normal conditions of use, this product as supplied does not pose a health risk from particulate matter.

Physical degradation of the cured product (i.e. sanding, abrading, etc.) may pose a dust hazard.

Repeated inhalation of such dust may cause lung injury.

### Personal protective equipment

Respiratory protection

: In the case of vapour formation use a respirator with an approved filter.

Hand protection

Remarks

: The suitability for a specific workplace should be discussed with the producers of the protective gloves.

Eye protection

: Eye wash bottle with pure water

Tightly fitting safety goggles

Wear face-shield and protective suit for abnormal processing problems.

Skin and body protection

: Impervious clothing

Choose body protection according to the amount and

concentration of the dangerous substance at the work place.

Hygiene measures

: When using do not eat or drink.

When using do not smoke.

Wash hands before breaks and at the end of workday.

## SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

: liquid

Odour Threshold

: No data available

pH

: No data available

# SAFETY DATA SHEET



## RanVar™ TPC-515-7 Black

Version 3

Revision Date 09/20/2016

Print Date 09/20/2016

Melting point/freezing point	: No data available
Initial boiling point and boiling range	: No data available
Vapour pressure	: No data available
Flash point	: 77 °F (25 °C) Method: ASTM D 93
Upper explosion limit	: No data available
Lower explosion limit	: No data available
Evaporation rate	: No data available
Flammability (solid, gas)	: No data available
Relative vapour density	: No data available
Relative Density/Specific Gravity	: No data available
Density	: 0.9135 g/cm3 (77 °F (25 °C))
Solubility(ies) Water solubility	: No data available
Solubility in other solvents	: No data available
Partition coefficient: n-octanol/water	: No data available
Auto-ignition temperature	: No data available
Thermal decomposition	: No data available
Viscosity Viscosity, dynamic	: No data available
Viscosity, kinematic	: Greater than 22 mm2/s (104 °F (40 °C))

### SECTION 10. STABILITY AND REACTIVITY

Reactivity : No decomposition if stored and applied as directed.

# SAFETY DATA SHEET



## RanVar™ TPC-515-7 Black

Version 3

Revision Date 09/20/2016

Print Date 09/20/2016

Chemical stability

: No decomposition if stored and applied as directed.

Possibility of hazardous reactions

: No decomposition if stored and applied as directed.

Vapours may form explosive mixture with air.

Conditions to avoid

: Heat, flames and sparks.

Hazardous decomposition products

: Carbon monoxide in a fire.  
Nitrogen oxides in a fire.

### SECTION 11. TOXICOLOGICAL INFORMATION

#### Information on likely routes of exposure

Inhalation  
Skin contact  
Skin absorption  
Eyes

#### Acute toxicity

##### Product:

Acute oral toxicity

: Acute toxicity estimate : 4,847 mg/kg  
Method: Calculation method

Acute inhalation toxicity

: Acute toxicity estimate : 6829 ppm  
Exposure time: 4 h  
Test atmosphere: gas  
Method: Calculation method

Acute dermal toxicity

: Acute toxicity estimate : 2,976 mg/kg  
Method: Calculation method

#### Components:

##### **1330-20-7 Xylene:**

Acute oral toxicity

: LD50 (Rat, male): 3,523 mg/kg  
Method: Directive 67/548/EEC, Annex V, B.1.

Acute inhalation toxicity

: LC50 (Rat): 5000 ppm  
Exposure time: 4 h

Acute dermal toxicity

: LD50 (Rabbit): 1,700 mg/kg

##### **100-41-4 Ethylbenzene:**

Acute oral toxicity

: LD50 (Rat): 3,500 mg/kg

Acute dermal toxicity

: LD50 (Rabbit): 5,510 mg/kg

##### **108-88-3 Toluene:**



# SAFETY DATA SHEET



## RanVar™ TPC-515-7 Black

Version 3

Revision Date 09/20/2016

Print Date 09/20/2016

Acute oral toxicity

: LD50 (Rat): 2,600 mg/kg

### 98-82-8 Cumene:

Acute oral toxicity

: LD50 (Rat): 1,400 mg/kg

Acute inhalation toxicity

: LC50 : Remarks: No data available

Acute dermal toxicity

: LD50 : Remarks: No data available

### Skin corrosion/irritation

#### Product:

Remarks: May cause skin irritation in susceptible persons.

#### Components:

##### 1330-20-7 Xylene:

Species: Rabbit

Result: Moderate skin irritation

##### 100-41-4 Ethylbenzene:

Species: Rabbit

Result: Moderate skin irritation

### Serious eye damage/eye irritation

#### Product:

Remarks: May cause irreversible eye damage.

#### Components:

##### 1330-20-7 Xylene:

Species: Rabbit

Result: Eye irritation

##### 100-41-4 Ethylbenzene:

Species: Rabbit

Result: Moderate eye irritation

### Respiratory or skin sensitisation

#### Carcinogenicity

#### IARC

Group 2B: Possibly carcinogenic to humans

Ethylbenzene

100-41-4

Carbon black

1333-86-4

Cumene

98-82-8

# SAFETY DATA SHEET



## RanVar™ TPC-515-7 Black

Version 3

Revision Date 09/20/2016

Print Date 09/20/2016

### ACGIH

No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

### OSHA

No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

### NTP

Reasonably anticipated to be a human carcinogen

Cumene

98-82-8

### Further information

#### Product:

Remarks: Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting., Concentrations substantially above the TLV value may cause narcotic effects., Solvents may degrease the skin.

## SECTION 12. ECOLOGICAL INFORMATION

### Ecotoxicity

No data available

### Persistence and degradability

No data available

### Bioaccumulative potential

No data available

### Mobility in soil

No data available

### Other adverse effects

No data available

#### Product:

Regulation

40 CFR Protection of Environment; Part 82 Protection of Stratospheric Ozone - CAA Section 602 Class I Substances

### Remarks

This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App. A + B).

Additional ecological information

: No data available

# SAFETY DATA SHEET



## RanVar™ TPC-515-7 Black

Version 3

Revision Date 09/20/2016

Print Date 09/20/2016

### SECTION 13. DISPOSAL CONSIDERATIONS

#### Disposal methods

EPA Hazardous Waste Code(s) : D001: Ignitable  
D018: Benzene

#### Waste from residues

: Do not dispose of waste into sewer.  
Do not contaminate ponds, waterways or ditches with chemical or used container.  
Send to a licensed waste management company.

#### Contaminated packaging

: Empty remaining contents.  
Dispose of as unused product.  
Do not re-use empty containers.  
Do not burn, or use a cutting torch on, the empty drum.

### SECTION 14. TRANSPORT INFORMATION

#### International Regulations

##### IATA-DGR

UN/ID No. : UN 1263

Proper shipping name : Paint

Class : 3

Packing group : III

Labels : Flammable liquid

Packing instruction (cargo aircraft) : 366

Packing instruction (passenger aircraft) : 355

##### IMDG-Code

UN number : UN 1263

Proper shipping name : PAINT

Class : 3

Packing group : III

Labels : 3

EmS Code : F-E, S-E

Marine pollutant : no

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable for product as supplied.

#### National Regulations

##### 49 CFR

UN/ID/NA number : UN 1263

Proper shipping name : Paint

Class : 3

# SAFETY DATA SHEET



## RanVar™ TPC-515-7 Black

Version 3

Revision Date 09/20/2016

Print Date 09/20/2016

Packing group : III  
Labels : Flammable liquid  
ERG Code : 128  
Marine pollutant : no

### SECTION 15. REGULATORY INFORMATION

#### EPCRA - Emergency Planning and Community Right-to-Know Act US. EPA CERCLA Hazardous Substances (40 CFR 302)

Components	CAS-No.	Component RQ (lbs)	Calculated product RQ (lbs)
Xylene	1330-20-7	100	208

#### SARA 304 - Emergency Release Notification

This material does not contain any components with a section 304 EHS RQ.

#### US. EPA Emergency Planning and Community Right-To-Know Act (EPCRA) SARA Title III Section 302 Extremely Hazardous Substance (40 CFR 355, Appendix A)

This material does not contain any components with a SARA 302 RQ.

#### SARA 311/312 Hazards

: Acute Health Hazard  
Chronic Health Hazard  
Fire Hazard

#### SARA 302

: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

#### SARA 313

: This product contains the following toxic chemical(s) subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR part 372.

Xylene	1330-20-7	48.0 %
Ethylbenzene	100-41-4	12.2 %

#### Clean Air Act

The following chemical(s) are listed as HAP under the U.S. Clean Air Act, Section 12 (40 CFR 61):  
Xylene 1330-20-7 48.0 %  
Ethylbenzene 100-41-4 12.2 %

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 112(r) for Accidental Release Prevention (40 CFR 68.130, Subpart F).

The following chemical(s) are listed under the U.S. Clean Air Act Section 111 SOCM I Intermediate or Final VOC's (40 CFR 60.489):

Xylene	1330-20-7	48.0 %
--------	-----------	--------

# SAFETY DATA SHEET



## RanVar™ TPC-515-7 Black

Version 3

Revision Date 09/20/2016

Print Date 09/20/2016

Ethylbenzene

100-41-4

12.2 %

Non-volatile (Wt)

: Refer to the product technical data sheet for VOC information.

### Massachusetts Right To Know

Xylene

1330-20-7

Ethylbenzene

100-41-4

Carbon black

1333-86-4

Benzene

71-43-2

### Pennsylvania Right To Know

Xylene

1330-20-7

Hydrogenated styrene-butadiene polymer

Hydrocarbon Resin

Not Assigned

Ethylbenzene

100-41-4

Carbon black

1333-86-4

Toluene

108-88-3

Cumene

98-82-8

Methanol

67-56-1

### New Jersey Right To Know

Xylene

1330-20-7

Hydrogenated styrene-butadiene polymer

Hydrocarbon Resin

Not Assigned

Ethylbenzene

100-41-4

Carbon black

1333-86-4

Toluene

108-88-3

### New Jersey Trade Secret

Registry Number for the

product (NJ TSRN)

: NOT APPLICABLE

### California Prop 65

WARNING! This product contains a chemical known to the State of California to cause cancer.

Ethylbenzene

100-41-4

Carbon black

1333-86-4

Cumene

98-82-8

Naphthalene

91-20-3

Benzene

71-43-2

WARNING: This product contains a chemical known to the State of California to cause birth defects or other reproductive harm.

Toluene

108-88-3

Methanol

67-56-1

Benzene

71-43-2

The components of this product are reported in the following inventories:

# SAFETY DATA SHEET



## RanVar™ TPC-515-7 Black

Version 3

Revision Date 09/20/2016

Print Date 09/20/2016

### TSCA

: We certify that all of the components of this product are either listed on the TSCA Inventory or are not subject to the notification requirements per 40 CFR 720.30(h).

### Section 4 / 12(b)

: Not applicable

### Section 5

: Not applicable

### DSL

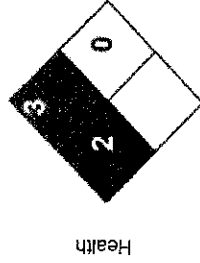
: We certify that all of the components of this product are listed on the DSL.

## SECTION 16. OTHER INFORMATION

### Further information

### NFPA:

Flammability



Health

Instability

Special hazard.

### HMIS III:

HEALTH	2*
FLAMMABILITY	3
PHYSICAL HAZARD	0

0 = not significant, 1 = Slight,  
2 = Moderate, 3 = High  
4 = Extreme, \* = Chronic

Revision Date

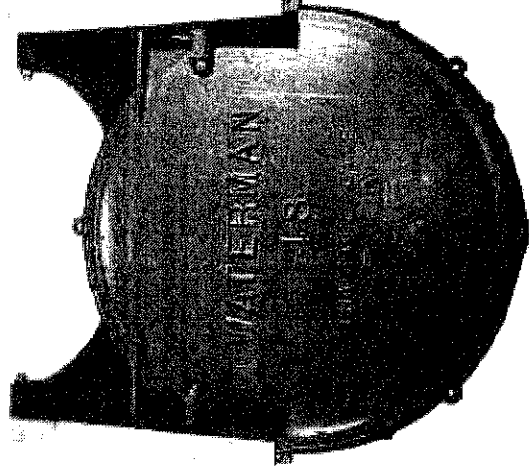
: 09/20/2016

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

# F-10 CAST IRON DRAINAGE GATE

## CAST IRON • AUTOMATIC

- Flatback or Spigotback
- Cast Iron Frame and Cover
- Galvanized Steel Angle Links
- Bronze Bushings Standard
- Built-in "Safety Bar" Prevents Sticking
- 5° seat on 6" - 24" sizes
- 2½° seat on 30" - 72" sizes
- Steel Assembly Hardware



The Waterman Red Top Drainage Gate has been designed as a competitive flap gate for use with concrete pipe, headwalls, and corrugated metal pipe with up to a ten foot seating head. The frame and cover are of heavy duty cast iron. Steel angle links have been used to absorb unbalanced side shock, and are balance-pivoted on bronze bushings.

A 5° seat on sizes six inches to twenty-four inches and 2½° seat on sizes 30 inches to 72 inches eliminates the need for special pipe cuts or sections, and prevents the gate from standing open due to slight pipe sagging or settling. An innovation in the cover provides each gate with a safety to prevent jamming, without additional cost.

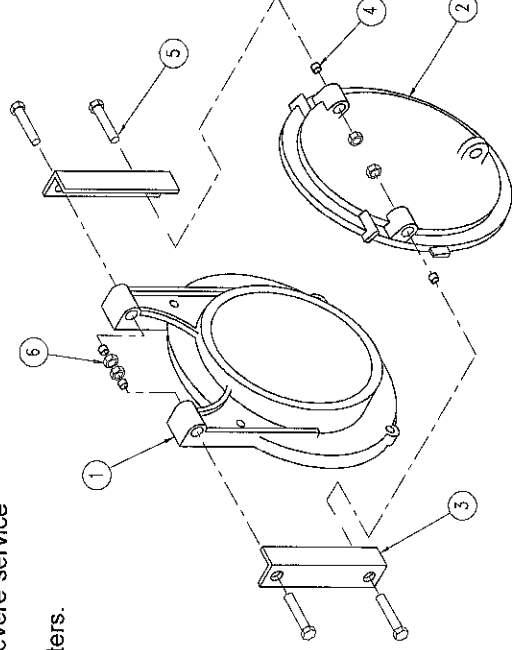
Gates are available with special stainless steel or brass links and bolts as well as bronze seating faces.

This gate has been extensively used on federal, state and municipal projects for drainage, waste line, sewage treatment, flood control and irrigation systems. A free outflow with practical sealing against back flow combine with maintenance-free operation to assure years of service.

This gate is not recommended for pump discharge or other applications where violent slamming may occur. Heavy-duty links and bushings are available when severe operating conditions are anticipated.

### OPTIONAL ITEMS INCLUDE:

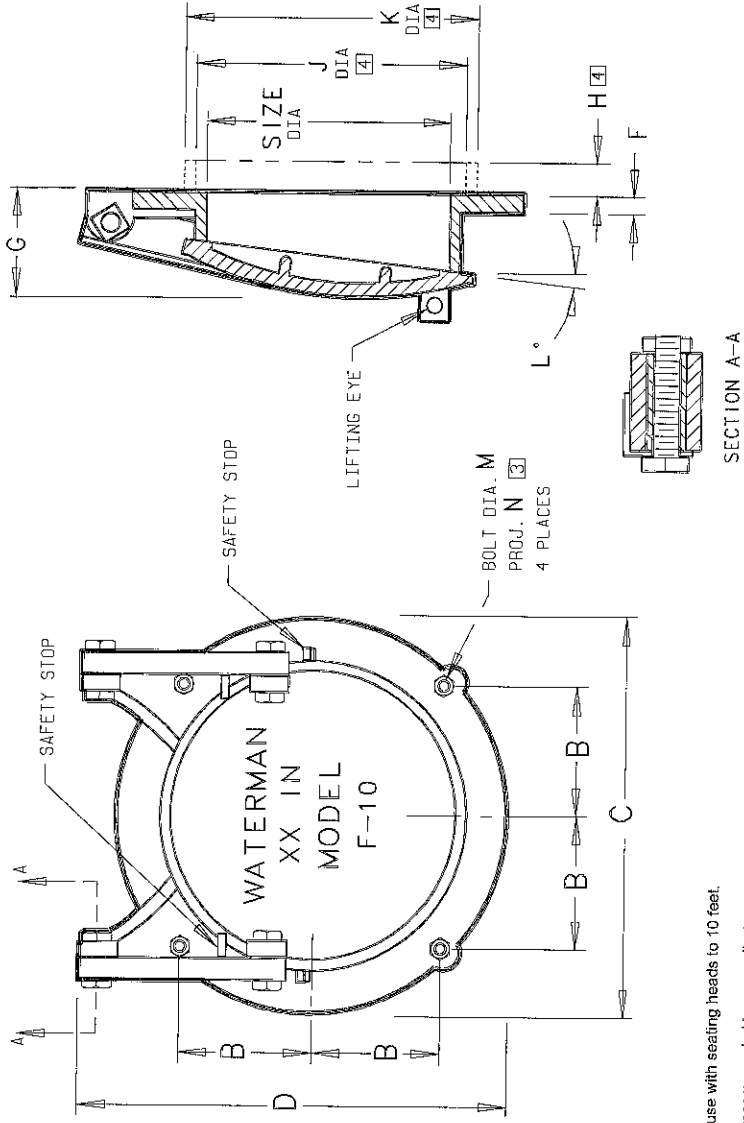
- Bronze seats
- Stainless Steel or bronze links, and bolts.
- Special heavy-duty links and bushings for severe service
- Special paint coatings or ASTM galvanizing
- Taper setting collars and special pipe adapters.



PARTS LIST		
No.	Name	Qty.
1	Frame	1
2	Cover	1
3	Hinge Link	2
4	Hinge Bushing	4
5	Bolt	4
6	Nut	4

Maximum 10 foot seating head

# F-10 DRAINAGE GATE

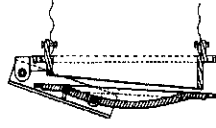


1. For use with seating heads to 10 feet.
2. Not recommended for pump discharge use.
3. Add grout pad thickness to anchor bolt projection.
4. Applies to spigotback gate only. Spigot, shown in phantom, is optional.

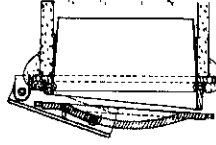
GATE DIMENSIONS IN INCHES

SIZE DIA.	B	C	D	F	G	H	J	K	L°	M	N
4	2 1/4	6 3/16	8 1/2	3/8	4 1/8	2 1/4	5 1/8	5 1/8	5	1/2	1 3/8
6	2 9/16	8 1/8	10	3/8	4 1/8	2 1/4	7 1/8	7 1/8	5	1/2	1 3/8
8	3 1/2	10	12	3/8	4 1/8	2 3/16	9 1/8	9 1/8	5	1/2	1 3/8
10	4 1/4	12 1/4	14 1/2	3/8	4 1/8	2 3/4	11 3/16	11 3/16	5	1/2	1 3/8
12	5 1/8	15	17 1/8	3/8	4 1/8	2 3/8	13 3/16	13 3/16	5	1/2	1 3/8
14	5 9/16	16 1/8	19 1/8	3/8	4 1/8	2 3/8	15 1/16	15 1/16	5	1/2	1 3/8
15	6 1/4	18 1/8	20	3/8	5	2 1/4	16	16 1/4	5	1/2	1 3/8
16	6 5/8	18 11/16	21 1/8	7/16	5	2 3/8	17	17 1/4	5	1/2	1 3/8
18	7 1/16	21	24 3/8	7/16	5 3/8	2 3/8	19	19 3/4	5	1/2	1 3/8
20	8 1/4	23 9/16	26 1/2	1/2	6	2 1/4	21 1/8	21 3/4	5	5/8	1 3/8
21	8 3/8	24 1/8	27 1/2	1/2	7	2 1/4	22	22 3/4	5	5/8	1 3/8
24	9 1/16	27 1/2	32	1/2	7 3/8	2 1/4	25	26 1/2	5	5/8	1 3/8
30	12	34	39 5/8	3/4	8 1/2	2 3/8	31	32	2 1/2	3/4	2
36	14 3/8	40 3/8	46	3/4	8	2 1/8	37	38	2 1/2	3/4	2
42	16 11/16	47 1/8	55 1/4	3/4	8	2 1/8	43 1/8	44 1/8	2 1/2	3/4	2
48	19 5/16	54 1/2	63 3/8	3/4	9 1/8	3	49 1/8	50 1/2	2 1/2	3/4	2
54	22 1/8	60 1/4	71	3/8	9 3/4	3	55 1/4	57	2 1/2	1	2 3/4
60	24 11/16	72	80 3/8	1	10 3/8	3	61 1/4	62 1/4	2 1/2	1	2 3/4
72	29	83	95 1/2	1	11 1/2	3 3/8	74 1/4	76 1/2	2 1/2	1	2 3/4

Flatback  
(Head Wall Mounting)



Spigotback  
(For Corrugated Metal Pipe)



With Setting Collar  
(For Concrete Pipe)



# C-10 CANAL GATE

This gate is designed for use on canal and pipeline systems which operate at low "heads" and where a moderately priced gate is desired. Typical installations include: farm turnouts, control of industrial wastes, drainage and for tide control.

Construction is of grey iron with an all-bolted steel frame with  $\frac{1}{4}$ " minimum thickness. The standard stem is of a special leaded steel which resists corrosion. The stem is operated at the structural frame top by a heavy cast-bronze lift nut and a cast iron wheel.

Adjustable cast iron wedge blocks, held securely in place by two machine bolts, assure a dependable seating closure with a practical degree of water tightness. The cast iron seats are machined or ground. A solid rim "easy-grip" handwheel is standard.

Optional materials include: bronze seats; stainless steel structural frame and bolts; stainless steel or brass stems; and special epoxy, coal tar or ASTM galvanized coatings.

When desired, design variation in stem diameter, pitch and thread rotation are available to match existing equipment. Extended stems, special lifts, oil seals, stem guides and limit nuts are a few of the optional items available for use with these gates.

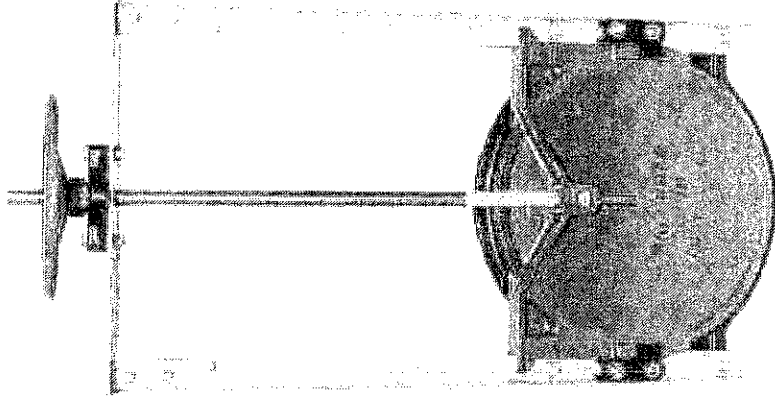
Various sizes and options are available.

Special materials available include: "Ni-Resist" iron castings, stainless steel structural frame and assembly bolts; total galvanizing per ASTM A-123; coal tar, and epoxy coatings.

Recommended Maximum Seating Heads			
6" - 24"	23 foot head		
30" - 36"	11 foot head		
42" - 48"	9 foot head		
54" - 72"	6 foot head		
Recommended Maximum Unseating Head - 0			

## Frame Types for Various Installation Requirements

- F ..... Flatback for headwall mounting
- SB ..... Spigotback for annular or recor spiral corrugated pipe.
- CIP ..... For solvent cement mounting over plastic pipe
- C ..... With galvanized steel tapered setting collar for concrete or asbestos cement pipe.
- SA ..... Spigotback for annular corrugated pipe.
- TYPE 4 .... For mounting in plastic pipe utilizing special two part epoxy.



Bronze lift nut furnished as standard on all Waterman Canal Gates.



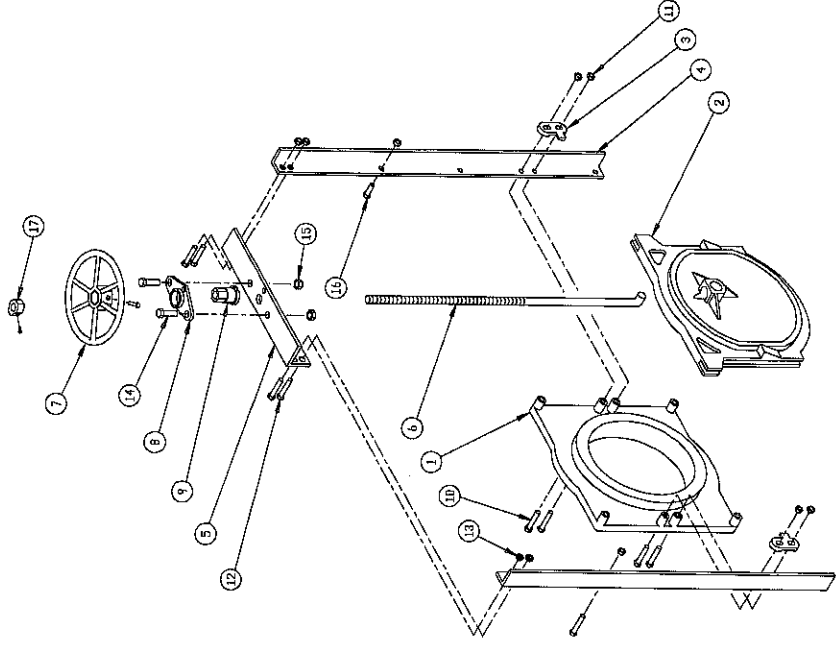
Features  $\frac{1}{4}$ " minimum thickness. Compare to competitor's gates.

Waterman Model C-10 wedging system offers two point adjustment and larger wedging surfaces for a more positive contact.

## C-10 CANAL GATE PARTS

PARTS LIST		
No.	Name	Qty.
1	Frame	1
2	Cover	1
3	Wedge (R&L)	2
4	Guide Rail (R&L)	2
5	Headrail	1
6	Stem	1
7	Handwheel	1
8	Thrust Collar	1
9	Lift Nut	1
10	Wedge Bolt	4
11	Wedge Nut	4
12	Frame Bolt	4
13	Frame Nut	4
14	Collar Bolt	2
15	Collar Nut	2
16	Stop Bolt & Nut	1
17	Limit Nut (optional) *	1

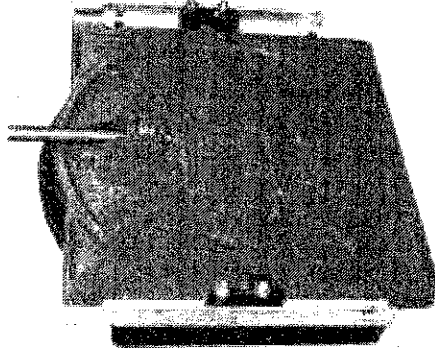
\* With set screw



## CL-10 CANAL GATE

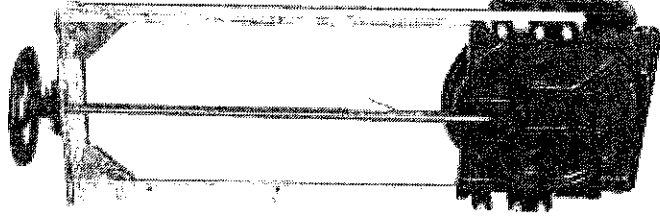
Waterman CL-10 Canal Gates are identical to our model C-10 Gates with the exception of the cast iron cover (slide) which is of a flat plate type construction with ribs reinforcing its face, to withstand the maximum heads as noted for our C-10 gates. This gate cover also features a square bottom design, which allows a more open "clog-free" flow at points of initial opening. The seat being only slightly raised above the cover plate surface helps prevent trash from collecting behind the cover which can cause difficulty in operation.

Available with threaded thrust nut for true NRS application. All parts are interchangeable with our Standard C-10 gate. Available in a variety of sizes.



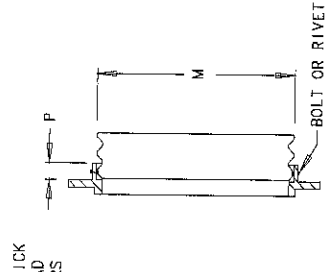
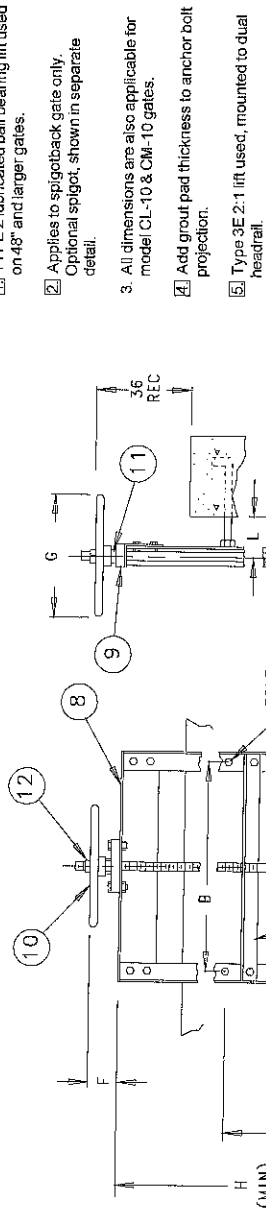
Shown with  
optional  
threaded thrust nut  
for true non-rising  
stem operation

CL-10



Flat Plate Type,  
Square Bottom

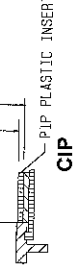
# C-10 CANAL GATE



Corrugated Pipe  
Attached to Spigot  
Back Frame



CM-10



Type 4 Spigot

## PARTS LIST

No.	Name	Qty.
1	Frame	1
2	Cover	1
3	Wedge (Right & Left)	1 ea.
4	Stem	1
5	Wedge Bolts	4
6	Guide Rail	2
7	Stem Support	A/R
8	Head Rail	1
9	Lift Collar	1
10	Handwheel	1
11	Lift Nut	1
12	Limit Nut	1

A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T	V	W
6	8	9 1/8	4	7 1/8	2 1/8	10	24	3	3 1/2	2 1/8	7	3 1/2	2 1/4	1/2	-	-	-	6,180	6,645
8	10	12	4 1/8	7 1/8	2 1/8	10	24	3	3 1/4	2 1/8	9	3 1/2	2 1/4	1/2	4	7 3/16	8	8,180	8,645
10	12	13 1/8	6	7 1/8	2 1/8	10	24	3 1/2	3 1/2	2 1/8	11	3 1/2	2 1/4	1/2	3 1/8	9 1/8	10	10,220	10,770
12	14	15 1/8	7	7 1/8	2 1/8	10	24	4	3 1/2	3	13	4	2 1/4	1/2	4	11 1/8	12	12,270	12,780
14	16	17 1/8	8	7 1/8	2 1/8	10	27	4 1/8	3 3/4	3 1/4	15	4	2 1/4	1/2	-	-	-	-	-
15	17	18 1/8	8 1/4	7 1/8	2 1/8	10	30	5	4 1/2	3 1/2	16	4	2 1/4	1/2	4	14 1/8	15	-	-
16	18 1/8	20 1/8	9 1/4	7 1/8	2 1/8	10	32	5 1/2	4 1/2	3 1/2	17	4 1/2	2 1/4	1/2	-	-	-	-	-
18	21	22 1/8	10 1/2	1	3 1/4	12	34	6	4 1/2	4 1/2	19	4 1/2	2 1/4	1/2	4	17 1/8	18	-	-
20	23 1/4	25 1/8	11 1/4	1	3 1/4	12	38	7	4 1/2	4	21	4 1/2	2 1/4	1/2	-	-	-	-	-
21	24	25 1/8	12 1/8	1	3 1/4	12	40	7	4 1/2	4	22	4 1/2	2 1/4	1/2	-	-	-	-	-
24	27 1/4	29 1/8	13 1/4	1	3 1/4	12	44	8	5 1/4	4 1/2	25	4 1/2	2 1/4	1/2	-	-	-	-	-
30	33 1/4	36 1/8	17 1/4	1 1/4	4	15	54	10	6	4 1/2	31	6	2 1/4	1/2	-	-	-	-	-
36	39 1/4	42 1/8	20 1/4	1 1/4	4	15	62	12	6 1/2	5 1/2	37	6	2 1/4	1/2	-	-	-	-	-
42	45 1/4	48 1/8	23 1/4	1 1/2	5	18	84	14	7	6	43	6	2 1/2	1/2	-	-	-	-	-
48	51 1/4	54 1/8	26 1/4	1 1/2	6	24	90	16	7 1/8	6 1/2	49 1/2	6	2 1/4	1/2	-	-	-	-	-
54	58 1/2	61 1/8	30	2	6	30	100	18	7 1/8	6 1/2	55 1/2	7	3	1	-	-	-	-	-
60	65	68	34	2	6	30	102	20	8 1/8	7 1/8	61 1/4	8	3 1/4	1	-	-	-	-	-
72	77 1/2	80 1/4	41	2	13	5	121	25 1/2	10 1/8	8 1/4	73 1/4	8	3 3/8	1	-	-	-	-	-

GATE DIMENSIONS IN INCHES

