



**LAVACA-NAVIDAD RIVER AUTHORITY  
EDNA, TEXAS**

**BID FORM AND SPECIFICATIONS  
FOR**

**SELECTIVE TREATMENT OF PROTECTIVE COATINGS  
ON SPILLWAY GATES**

**April 9, 2024, at 1:00 p.m.**

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## INVITATION TO BID

Sealed Bids addressed to the Lavaca-Navidad River Authority, clearly labeled, “**BID – Selective Treatment of Protective Coatings on Spillway Gates**” shall be received at the LNRA Headquarters located 4631 FM 3131, Jackson County, Texas (Mailing Address: PO Box 429 Edna, Texas 77957) until **1:00 p.m., April 9, 2024**, whereas Bids will be opened and read aloud. Bids received after 1:00 p.m. shall be returned unopened. **No faxed, emailed, or late bids will be accepted.**

Bids shall be received for the furnishing of all labor, superintendence, equipment, and tools for performing the specified work required to complete surface preparation and spot treatment of select locations on twelve (12) radial gates for the Lavaca-Navidad River Authority, Edna, Jackson County, Texas.

The Contract Document Package(s) may be examined at the Authority’s headquarters or said Packages may be obtained from the Lavaca-Navidad River Authority during normal business hours (8:00 a.m. to 4:30 p.m., Monday-Friday):

Potential Bidders are required to examine the project site prior to submitting their bid.

The Lavaca-Navidad River Authority reserves the right to reject any and all bids and waive informalities in bidding. In case of ambiguity or lack of clearness in stating prices in any bid, the Lavaca-Navidad River Authority reserves the right to consider the most advantageous bid thereof, and/or to reject any and all Bids.

The Award of the Contract for this project shall be made to the responsible Bidder submitting the lowest, qualified, acceptable Bid who, in the opinion of the Lavaca-Navidad River Authority, offers the Bid in the best interest of the Authority. It is the intention of the Authority to Award this contract; therefore, it is imperative that all data requested be completed in full and submitted with the Bid to allow for an expeditious recommendation.

The Lavaca-Navidad River Authority is an equal opportunity employer without regard to race, color, sex, age, religion, national origin, handicap, or limited English proficiency.

## **SECTION 00100**

### **INSTRUCTIONS TO BIDDERS**

#### **1. DEFINED TERMS**

Certain terms used in these Contract Documents have the meanings indicated below which are applicable to both the singular and plural thereof.

- A. **CONTRACTING AGENT** - Whenever the term “CONTRACTING AGENT” is used in these specifications, it shall be construed to mean the Lavaca-Navidad River Authority.
- B. **BIDDER** - Whenever the term “BIDDER” is used in these Specifications, it shall mean anyone submits a BID directly to AGENT as distinct from a Sub-Bidder, submits a BID to BIDDER.
- C. **SUCCESSFUL BIDDER** - Whenever the term “SUCCESSFUL BIDDER” is used in these Specifications, it shall be constructed to mean the most responsible, responsive BIDDER to whom OWNER makes an award.
- D. **OWNER**- Whenever the term “OWNER” is used in these specifications, it shall be constructed to mean the Lavaca-Navidad River Authority.

#### **2. DESCRIPTION OF WORK**

- a. Coordinate with CONTRACTING AGENT as to any Work specified as being done by CONTRACTING AGENT.
- b. Coordinate with other contractors on site as to any Work undertaken.
- c. Clean by pressure washing the entire area of the gate on the downstream side of the twelve (12) radial gates including the support arms on the Palmetto Bend Spillway.
- d. Surface prep select treatment areas of the twelve (12) radial gates including the support arms on the Palmetto Bend Spillway, as identified the Attachments – Daily Inspection Reports.
- e. Apply specified coating to the treated areas.
- f. BIDDER is responsible for any dewatering and for protection of the workspace.
- g. Any work performed from atop the Spillway deck will need coordination with the Texas Department of Transportation for traffic control.

#### **3. COPIES OF BIDDING DOCUMENTS**

- a. Complete sets of Contract Documents may be obtained from the CONTRACTING AGENT.
- a. Complete sets of Bidding Documents must be used in preparing Bids. The CONTRACTING AGENT will not assume any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.

#### **4. BIDDER QUALIFICATIONS**

To demonstrate qualifications to perform the Work, each BIDDER must be prepared to submit within five days after Bid Opening, upon CONTRACTING AGENT's request, detailed written evidence such as financial data, previous experience, present commitments and other such data as may be called for below. Each Bid must contain evidence of BIDDER's qualification to do business in the State of Texas or covenant to obtain such qualification prior to award of the contract.

#### **5. EXAMINATION OF CONTRACT DOCUMENTS AND SITE**

- A. It is the responsibility of each BIDDER, before submitting a BID, to do the following:
  - 1. Thoroughly examine the Contract Documents and other related data identified in the bidding Documents including technical data.
  - 2. Visit the site (mandatory) to become familiar with and satisfy BIDDER as to the local site conditions that may affect cost, progress, and performance or otherwise hinder completion of the project. The gates will be available for contractors to inspect the week of March 18 – 22, 2024 from 9:00 am to 3:00 pm. or upon special request.
  - 3. Consider federal, state, and local laws and regulations that may affect cost, progress, performance, or otherwise hinder completion of the project.
  - 4. Study and carefully correlate BIDDER's knowledge and observations with the Contract Documents and other such related data.
  - 5. Promptly notify the CONTRACTING AGENT of all conflicts, errors, ambiguities, or discrepancies which BIDDER has discovered in or between the Contract Documents and other such related documents.
- B. Before submitting a BID each BIDDER will be responsible to obtain such additional or supplementary examinations, investigations, explorations, tests, studies and data concerning conditions (surface, subsurface, and

underground facilities) at or contiguous to the site or otherwise, which may affect cost, progress, performance or furnishing of the Work or which relate to any aspect of the means, methods, techniques, sequences or procedures of construction to be employed by BIDDER and safety precautions and programs incident thereto or which BIDDER deems necessary to determine its BID for performing and furnishing the Work in accordance with the time, price and other terms and conditions of the Contract Documents. The Bidder shall note that AC power and telephone is not available at the work location.

- C. On request, the CONTRACTING AGENT will provide each BIDDER access to the site to conduct such examinations, investigations, explorations, tests and studies as each BIDDER deems necessary for submission of a BID. BIDDER must fill all holes and clean up and restore the site to its former condition upon completion of such explorations, investigations, tests and studies.
- D. The submission of a BID will constitute an incontrovertible representation by BIDDER that BIDDER has complied with every requirement of this Article 5, that without exception the BID is premised upon performing and furnishing the Work required by the Contract Documents and applying the specific means, methods, techniques, sequences or procedure of construction that may be shown or indicated or expressly required by the Contract Documents, that BIDDER has given written notice of all conflicts, errors, ambiguities and discrepancies that BIDDER has discovered in the Contract Documents and the written resolutions thereof are acceptable to BIDDER, and that the Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performing and furnishing the Work.

**6. AVAILABILITY OF LANDS FOR WORK, ETC.:**

The lands upon which the Work is to be performed, rights-of-way and easements for access thereto and other lands designated for use by CONTRACTOR in performing the Work are identified in the Contract Documents.

**7. INTERPRETATIONS AND ADDENDA:**

- A. All questions about the meaning or intent of the Bidding Documents are to be directed to the CONTRACTING AGENT. Interpretations or clarifications considered necessary by CONTRACTING AGENT in response to such questions will be issued by Addenda mailed or delivered to all parties recorded by CONTRACTING AGENT as having received the Bidding Documents.

Questions received less than 5 working days prior to the date of Bid Opening may not be answered. Only questions answered by formal written Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect.

- B. Addenda may also be issued to modify the Bidding Documents as deemed advisable by CONTRACTING AGENT.

**8. BID SECURITY:**

- a. Each BID must be accompanied by Bid Security made payable to the CONTRACTING AGENT in an amount of two (2) percent of BIDDER's maximum Bid Price and in the form of a certified check or a Bid Bond issued by a surety. Power-of-Attorney for person signing for surety must be attached to Bid Bond.
- b. The Bid Security of Successful BIDDER will be retained until such BIDDER has executed the Agreement, furnished the required contract security and met the other conditions of the Notice of Award, whereupon the Bid Security will be returned. If the Successful BIDDER fails to execute and deliver the Agreement and furnish the required contract security within fifteen days after the Notice of Award, CONTRACTING AGENT may annul the Notice of Award and the Bid Security of that BIDDER will be forfeited. The Bid Security of other BIDDERS whom CONTRACTING AGENT believes to have a reasonable chance of receiving the award may be retained by CONTRACTING AGENT until the earlier of the seventh day after the Effective Date of the Agreement or the sixtieth day after the Bid opening, whereupon Bid Security furnished by such BIDDERS will be returned. Bid Security with BIDS which are not competitive may be returned within seven days after the Bid Opening.

**9. CONTRACT TIMES:**

The Bidder shall specify the number of days within which, or the dates by which, the Work is to be completed and ready for final payment.

**10. LIQUIDATED DAMAGES:**

Provisions for liquidated damages, if any, are set forth in the Agreement.

**11. SUBCONTRACTORS, SUPPLIERS AND OTHERS:**

CONTRACTOR shall not be required to employ any Subcontractor, Supplier, other person or organization against whom CONTRACTOR has reasonable objection.

**12. BID FORM:**

- A. The Bid Form is included with the Bidding Documents.
- B. All blanks on the Bid Form must be completed by printing in black ink or by typewriter.

- C. BIDS by corporations must be executed in the corporate name by the president or a vice-president (or other corporate officer accompanied by evidence of authority to sign) and attested by the secretary or an assistant secretary. Authorization of this person to sign for corporation shall be evidenced by a properly executed CONTRACTOR's Corporate Resolution, the form of which is included in the Bidding Documents. The corporate address and state of incorporation must be shown below the signature.
- D. BIDS by partnerships must be executed in the partnership name and signed by a partner, whose title must appear under the signature and the official address of the partnership must be shown below the signature.
- E. All names must be typed or printed in black ink below the signature.
- F. The BID shall contain an acknowledgement of receipt of all Addenda (the numbers of which must be filled in on the Bid Form).
- G. The address and telephone number for communications regarding the BID must be shown.
- H. Evidence of authority to conduct business as an out-of-state corporation in the state where the Work is to be performed shall be provided. State contractor license number, if any, must also be shown.

**13. SUBMISSION OF BIDS:**

BIDS shall be submitted at the time and place indicated in the Advertisement of Invitation to Bid and shall be enclosed in an opaque sealed envelope, marked with the Project title (and, if applicable, the designated portion of the Project for which the BID is submitted) and name and address of BIDDER and accompanied by the Bid Security and other required documents. If the BID is sent through the mail or other delivery system, the sealed envelope shall be enclosed in a separate envelope with the notation "BID ENCLOSED" on the face of it. The Bidding Documents may be retained by BIDDER. An unbound copy of the Bid Form is to be completed and submitted with the Bid Security and any additional data that may be called for elsewhere in these Bidding Documents.

**14. MODIFICATION AND WITHDRAWAL OF BIDS:**

- A. BIDS may be modified or withdrawn by an appropriate document duly executed (in the manner that a BID must be executed) and delivered to the place where BIDS are to be submitted at any time prior to the Bid Opening.
- B. If within twenty-four hours after BIDS are opened, any BIDDER files a duly signed, written notice with CONTRACTING AGENT and promptly thereafter demonstrated to the reasonable satisfaction of CONTRACTING AGENT that there was a material and substantial mistake in the preparation of its BID, that



BIDDER may withdraw its BID and the Bid Security will be returned. Thereafter, that BIDDER may be disqualified from further bidding on the Work to be provided under the Contract Documents.

**15. OPENING OF BIDS:**

BIDS will be opened and (unless obviously non-responsive) read aloud publicly at the place where BIDS are to be submitted. An abstract of the amounts of the base BIDS and major alternates (if any) will be made available to BIDDERS after the opening of BIDS.

**16. BIDS TO REMAIN SUBJECT TO ACCEPTANCE:**

All BIDS will remain subject to acceptance for forty-five (45) days after the day of the Bid Opening, but the CONTRACTING AGENT may, in its sole discretion, release any BID and return the Bid Security prior to that date.

**17. AWARD OF CONTRACT:**

- A. CONTRACTING AGENT reserves the right to reject any or all BIDS, including without limitation the rights to reject any or all nonconforming, nonresponsive, unbalanced or conditional BIDS and to reject the BID of any BIDDER if CONTRACTING AGENT believes that it would not be in the best interest of the Project to make an award to that BIDDER, whether because the BID is not responsive or the BIDDER is unqualified or of doubtful financial ability or fails to meet any other pertinent standard or criteria established by CONTRACTING AGENT.
- B. CONTRACTING AGENT also reserves the right to waive all informalities not involving price, time or changes in the Work and to negotiate contract terms with the Successful BIDDER. Discrepancies between the multiplication of units of Work and unit prices will be resolved in favor of the unit prices. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum. Discrepancies between words and figures will be resolved in favor of the words.
- C. In evaluating BIDS, CONTRACTING AGENT will consider the qualifications of BIDDERS, whether or not the BIDS comply with the prescribed requirements, and such alternates, unit prices and other data, as may be requested in the Bid Form or prior to the Notice of Award.
- D. CONTRACTING AGENT may consider the qualifications and experience of Subcontractors, Suppliers, and other persons and organizations proposed for those portions of the Work as to which the identity of Subcontractors, Suppliers, and other persons and organizations must be submitted as provided in the Supplementary Conditions.

- E. CONTRACTING AGENT also may consider the operating costs, maintenance requirements, performance data and guarantees of major items of materials and equipment proposed for incorporation in the Work when such data is required to be submitted prior to the Notice of Award.
- F. CONTRACTING AGENT may conduct such investigations as CONTRACTING AGENT deems necessary to assist in the evaluation of any BID and to establish the responsibility, qualifications and financial ability of BIDDERS, proposed Subcontractors, Suppliers and other persons and organizations to perform and furnish the Work in accordance with the Contract Documents to CONTRACTING AGENT's satisfaction within the prescribed time.
- G. If the contract is to be awarded, it will be awarded to the lowest BIDDER whose evaluation by CONTRACTING AGENT indicated to CONTRACTING AGENT that the award will be in the best interests of the Project.
- H. If the contract is to be awarded, the CONTRACTING AGENT will give Successful BIDDER a Notice of Award within thirty days after the day of the Bid Opening.

**18. SIGNING OF AGREEMENT:**

When the CONTRACTING AGENT gives a Notice of Award to the Successful BIDDER, it will be accompanied by the required number of unsigned counterparts of the Agreement with all other written Contract Documents attached. Within fifteen days thereafter CONTRACTOR shall sign and deliver the required number of counterparts of the Agreement and attached documents to CONTRACTING AGENT with the required Bonds. Within ten days thereafter, the CONTRACTING AGENT shall deliver one fully signed counterpart to CONTRACTOR. Each counterpart is to be accompanied by a complete set of the Contract Drawings with appropriate identification.

**19. WAGES AND SALARIES:**

CONTRACTOR shall pay not less than the prevailing wage rates if specified in the Contract Documents. These rates are minimums to be paid during the life of the Contract. It is therefore the responsibility of the BIDDER to inform themselves as to local labor conditions.

**20. EQUAL EMPLOYMENT OPPORTUNITY:**

CONTRACTOR shall ensure that no discrimination will occur against employees and applicants for employment because of their race, color, creed, sex, national origin, or physical or mental handicap.

## 21. CONTRACTOR INSURANCE

- A. The Successful BIDDER shall not commence work under the Contract until he has obtained at his expense all insurance required by the Contract Documents and such insurance has been approved by LNRA. Such insurance shall remain in full force and effect on all phases of the work, until all work under the Contract is completed and has been accepted by LNRA.
- B. The Successful BIDDER shall procure and maintain for the term of the contract those types of insurance as defined:
  - 1. Workmen's Compensation
  - 2. Public Liability and Property Damage Insurance
  - 3. Automobile Liability and Property Damage Insurance
- C. Before commencement of any work, the Successful BIDDER shall submit written evidence that the minimum insurance required by the Contract Documents has been obtained. Such written evidence shall be in the form of a Certificate of Insurance executed by the Contractor's insurance carrier showing such policies in force for the specified period or by furnishing a copy of the actual policy or policies. Each certificate shall contain an endorsement or statement waiving right of cancellation or reduction in coverage unless 30 days prior written notice is given to LNRA by registered or certified mail, and, in regard to the liability policy, shall specifically state that LNRA is named as an insured party. Minimum limits of insurance are provided in the Special Conditions of the Agreement.

\*\*\* END OF SECTION \*\*\*

SECTION 00200

**INSURANCE REQUIREMENTS**

The CONTRACTOR is advised of the following requirements:

- a. The successful BIDDER will maintain a minimum of \$1,000,000 General Liability Insurance. Evidence of insurance shall be required. LNRA shall be named as additional insured on the policy.
- b. Workers Compensation Insurance is required on all employees of the successful Bidder. Evidence of insurance shall be required.

\*\*\* END OF SECTION \*\*\*

## SECTION 00300

### **BID FORM**

\_\_\_\_\_, hereinafter called "**BIDDER**",  
(Legal Firm Name)  
is submitting this BID for furnishing and performing the work specified herein as the Selective Treatment of Protective Coatings on Spillway Gates, for the Lavaca-Navidad River Authority, Edna, Jackson County, Texas.

This BID is submitted to the **Lavaca-Navidad River Authority**, hereinafter called "**CONTRACTING AGENT**".

1. Terms used in this BID FORM are defined in the Instructions to Bidders.
2. BIDDER proposes and agrees, if this BID is accepted, to enter into an Agreement with CONTRACTING AGENT in the form included in the Contract Documents to furnish and perform all Work as specified or otherwise indicated in the Contract Documents for the Bid Price and within the Bid Times indicated in this Bid and in accordance with other terms and conditions of the Contract Documents.
3. BIDDER accepts all of the terms and conditions of the Advertisement of Invitation to Bid and Instructions to Bidders. This Bid will remain subject to acceptance for forty-five (45) Calendar Days after the Bid Opening. BIDDER shall sign and deliver the required number of counterparts of the Agreement, including all required documents indicated by the Bidding Requirements, within Ten (10) Calendar Days after the date of the CONTRACTING AGENT'S Notice of Award.
4. In submitting this Bid, BIDDER represents, as more fully set forth in the Agreement, that:
  - a. BIDDER has visited the site (mandatory) and is familiar and satisfied with the site conditions that may affect cost, progress, and furnishing and performing the work as specified. The gates will be available for contractors to inspect the week of March 18 – 22, 2024 and March 25-28, 2024 from 9:00 am to 3:00 pm. or upon special request.
  - b. BIDDER is familiar and satisfied with all federal, state, and local laws and regulations that may affect cost, progress, and furnishing and performing the work specified.
  - c. BIDDER is fully aware of the general nature of work, if any, to be performed by CONTRACTING AGENT at the site in relation to the Work for which this Bid is submitted.
  - d. BIDDER has correlated the information known to BIDDER, information and observations obtained from site visits, reports and drawings identified in the Contract Documents and all additional examinations, investigations, explorations, test, studies and data with the Contract Documents.
  - e. BIDDER has given CONTRACTING AGENT written notice of all conflicts, errors, ambiguities or discrepancies that BIDDER has discovered in the Contract

Documents, and the resolution thereof by CONTRACTING AGENT is acceptable to BIDDER, and the Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for furnishing and performing the Work for which this Bid is Submitted.

f. This Bid is GENUINE and not made in the interest of or on behalf of any undisclosed person, firm or corporation and is not submitted in conformity with any agreement or rules of any group, association, organization or corporation. BIDDER has not directly or indirectly induced or solicited any other BIDDER to submit a false or sham Bid. BIDDER has not solicited or induced any person, firm or corporation to refrain from bidding. BIDDER has not sought by collusion to obtain for itself any advantage over any other BIDDER or over CONTRACTING AGENT.

5. BIDDER agrees to complete the Work in accordance with the Contract Documents.

- a. Bidder acknowledges that the amounts are to be shown in both words and figures, and in case of discrepancy, the amount in words shall govern.
- b. BIDDER acknowledges that the quantities are not guaranteed and final payment will be based on the actual quantities determined as provided in the Contract Documents.
- c. BIDDER acknowledges that, at CONTRACTING AGENT option and/or at CONTRACTING AGENT request, any of the line items may be deleted, reduced, or increased based upon the respective Lump Sum Prices in order to satisfy budget constraints.
- d. BIDDER agrees to furnish all necessary labor, superintendence, machinery, equipment, tools, insurance, services and all other requirements deemed necessary to complete the items of Work indicated on the following pages for the specified dollar amounts shown and stated.

SIGNED: \_\_\_\_\_

\_\_\_\_\_  
(Printed Name & Title of Authorized Person)

Attest: \_\_\_\_\_  
(Secretary)

Legal Firm Name: \_\_\_\_\_

Address: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Telephone Number: \_\_\_\_\_

State of Incorporation, if applicable: \_\_\_\_\_

State Contractors License No.: \_\_\_\_\_

**BASE BID**

Item	Quantity/Unit	Description	Unit Price	Extension
1.	12	each	Clean, surface prep and paint select areas of 12 radial gates as in outlined in the specifications.	
		Per Gate	\$ _____	\$ _____

**BASE BID PRICE** to complete the **Cleaning, Prepping and Painting of select areas on 12 Radial Gates** for the Lavaca-Navidad River Authority, Edna, Jackson County, Texas being the sum of items 1 and 2 is:

\_\_\_\_\_ Dollars  
and \_\_\_\_\_ Cents.  
\$ \_\_\_\_\_

Signed: \_\_\_\_\_

\_\_\_\_\_  
(Printed Name & Title of Authorized Person)

Attest: \_\_\_\_\_  
(Secretary)

Legal Firm Name: \_\_\_\_\_

Address: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Telephone Number: \_\_\_\_\_

State of Incorporation, if applicable: \_\_\_\_\_

State Contractors License No.: \_\_\_\_\_

Signed: \_\_\_\_\_

\_\_\_\_\_  
(Printed Name & Title of Authorized Person)

Attest: \_\_\_\_\_  
(Secretary)

Legal Firm Name: \_\_\_\_\_

Address: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

State of Incorporation, if applicable: \_\_\_\_\_

State Contractors License No.: \_\_\_\_\_

\*\*\* END OF SECTION \*\*\*



SECTION 00400

**NON-COLLUSION AFFIDAVIT OF BIDDER**

State of \_\_\_\_\_ §

County of \_\_\_\_\_ §

\_\_\_\_\_, being duly sworn, deposes and

Says that:

(1) He (she) is \_\_\_\_\_ of \_\_\_\_\_

\_\_\_\_\_, the Bidder submitting the attached Proposal:

(2) He (she) is fully informed respecting the preparation and contents of the attached Bid and any and all appurtenances thereof;

(3) Such Bid is genuine and is not a collusive Bid:

(4) Neither the said Bidder nor any of its officers, partners, owners, agents, representatives, employees or parties in interest, including this affiant, has in any way colluded, conspired, connived or agreed, directly or indirectly with another Bidder, firm or person to submit a collusive Bid in connection with the Contract for which the attached bid has been submitted or to refrain from bidding in connection with such contract, or has in any manner, directly or indirectly, sought by agreement or collusion or communication or conference with any other Bidder, firm or person to fix the price or prices in the attached Bid or of any other Bidder, or to fix an overhead, profit or cost element of the Bid price or the Bid price of any other Bidder, or to secure through any collusion, conspiracy, connivance or unlawful agreement any advantage against the Owner or any other person interested in the proposed contract; and

(5) The price or prices quoted in the attached Bid are fair and proper and are not tainted by any collusion, conspiracy, connivance or unlawful agreement on the part of the Bidder or any of its agents, representatives, owners, employees, or parties of interest, including this affidavit.

\_\_\_\_\_

\_\_\_\_\_  
(Title)

**Subscribed and sworn** to me this \_\_\_\_\_ day of \_\_\_\_\_, 2024,

By:

\_\_\_\_\_

Notary Public in and for \_\_\_\_\_

County, Texas

My commission expires \_\_\_\_\_

\*\*\* END OF SECTION \*\*\*

SECTION 00500

**BIDDER QUALIFICATION STATEMENT**

BIDDER shall answer all questions, and answers shall be clear and comprehensive. This form shall be notarized upon completion. If necessary, BIDDER may use and separate attached sheets to answer questions, and may submit additional information, if desired. Resume for each officer of the Company and the Superintendent for this Project shall also be attached.

BIDDER's Name:  
Address:

Organization Date:  
Incorporation Date:

Type of Work Performed:

Ever Fail to Complete Awarded Work?

Y or N

Ever Default on Any Contract?

Y or N

On-going Contracts:

Y or N

<b><u>DATE</u></b>	<b><u>CONTRACT NAME</u></b>	<b><u>AMOUNT</u></b>	<b><u>ANTICIPATED COMPLETION</u></b>
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Recently completed Projects (similar Type and Importance):

<b><u>PROJECT NAME</u></b>	<b><u>AMOUNT</u></b>	<b><u>MONTH/YEAR COMPLETED</u></b>
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Equipment Available for this Contract:

Credit Available: \$

Bank Reference/Contact:

The undersigned hereby authorizes any person, firm, or corporation to furnish any information requested by the LAVACA-NAVIDAD RIVER AUTHORITY (LNRA) in relation to the verification of the statements comprising this BIDDER's Qualification Statement.

Signed: \_\_\_\_\_

Executed and sworn to before me, the undersigned authority, on this \_\_\_\_ day of \_\_\_\_\_, 20 \_\_\_\_.

Name & Title: \_\_\_\_\_

\_\_\_\_\_  
Notary Public in and for

\*\*\* END OF SECTION \*\*\*

SECTION 00600

**FORM OF AGREEMENT BETWEEN CONTRACTING AGENT AND CONTRACTOR**

THIS AGREEMENT is dated as of the \_\_\_\_\_ day of \_\_\_\_\_ in the year of 2024, by and between the **LAVACA-NAVIDAD RIVER AUTHORITY (LNRA)** (hereinafter called **CONTRACTING AGENT**) and \_\_\_\_\_ (hereinafter called **CONTRACTOR**).

CONTRACTING AGENT and CONTRACTOR, in consideration of the mutual covenants hereinafter set forth, agree as follows:

**1. THE WORK:**

CONTRACTOR shall complete all Work as specified or indicated in the Contract Documents. The Work is generally described as follows: **The cleaning, surface preparation and spot painting of 12 radial gates including support arms for the Lavaca-Navidad River Authority, Edna, Jackson County, Texas.**

**2. CONTRACT TIMES:**

The Work shall be complete and ready for final payment within \_\_\_\_\_ Calendar Days after the date when the Contract Times commence to run.

**3. CONTRACT PRICE:**

CONTRACTING AGENT shall pay CONTRACTOR for the performance of the Work in accordance with the Contract Documents in current funds as per CONTRACTOR's BID FORM which forms a part of this contract.

**4. PAYMENT PROCEDURE:**

Upon final completion and acceptance of work by CONTRACTING AGENT, CONTRACTING AGENT shall pay CONTRACTOR in full as per CONTRACT price per BID FORM. (Base Bid including any add/deduct items.)

**5. CONTRACTOR'S REPRESENTATION:**

In order to induce CONTRACTING AGENT to enter into this Agreement, CONTRACTOR makes the following representations:

- a. CONTRACTOR has examined and carefully studied the Contract Documents including all Addenda and the other related data identified in the Bidding Documents including "technical data".

- b. CONTRACTOR has visited the site (mandatory) and become familiar with and is satisfied as to the general, local and site conditions that may affect cost, progress, performance or furnishing of the Work. The gates will be available for contractors to inspect the week of March 18 – 22, 2024 from 9:00 am to 3:00 pm. or upon special request.
- c. CONTRACTOR is familiar with and is satisfied as to all federal, state and local Laws and Regulations that may affect cost, progress, performance and furnishing of the Work.
- d. CONTRACTOR is aware of the general nature of the Work to be performed by the CONTRACTING AGENT and others at the site that relates to the Work as indicated in the Contract Documents.
- e. CONTRACTOR has correlated the information known to CONTRACTOR, information and observations obtained from visits to the site, reports and drawings identified in the Contract Documents and all additional examinations, investigations, explorations, tests, studies and data with the Contract Documents.
- f. CONTRACTOR has given CONTRACTING AGENT written notice of all conflicts, errors, ambiguities or discrepancies that CONTRACTOR has discovered in the Contract Documents and the written resolution thereof by CONTRACTING AGENT is acceptable to CONTRACTOR, and the Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for furnishing and performing of the Work.

**6. CONTRACT DOCUMENTS:**

The Contract Documents which comprise the entire Agreement between CONTRACTING AGENT and CONTRACTOR are attached to this Agreement, made a part hereof and consists of the following:

- a. This Agreement.
- b. Exhibits to this Agreement.
- c. CONTRACTOR's Proposal.
- d. Notice of Award.
- e. Notice to Proceed.
- f. Technical Specifications.

- g. Drawings numbered & titled for the different areas of work as indicated below:

<u>SHEET NO.</u>	<u>DESCRIPTION</u>
1	Site Plan
2	Site Details

- h. Addendum numbers \_\_\_\_\_ to \_\_\_\_\_ inclusive.
- i. The following of which may be delivered or issued after the Effective Date of the Agreement and are not attached hereto:

There are no Contract Documents other than those listed above.

**7. MISCELLANEOUS:**

- a. No assignment by a party hereto of any rights under or interests in the Contract Documents will be binding on another party hereto without the written consent of the party sought to be bound; and, specifically but without limitation, moneys that may become due and moneys that are due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment no assignment will release or discharge the assignor from any duty or responsibility under the Contract Documents.
- b. CONTRACTING AGENT and CONTRACTOR each binds itself, its partners, successors, assigns and legal representatives to the other party hereto, its partners, successors, assigns and legal representatives in respect to all covenants, agreements and obligations contained in the Contract Documents.
- c. Any provision or part of the Contract Documents held to be void or unenforceable under any Law or Regulation shall be deemed stricken, and all remaining provisions shall continue to be valid and binding upon CONTRACTING AGENT and CONTRACTOR, who agree that the Contract Documents shall be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.

IN WITNESS WHEREOF, the parties hereto have signed this Agreement in duplicate. One counterpart each has been delivered to CONTRACTING AGENT and CONTRACTOR. All portions of the Contract Documents have been signed or identified by the CONTRACTING AGENT and CONTRACTOR.

This AGREEMENT shall be effective as of the \_\_\_\_\_ day of \_\_\_\_\_, 2024.

OWNER:  
**LAVACA-NAVIDAD RIVER  
AUTHORITY (LNRA)**

CONTRACTOR:  
\_\_\_\_\_

BY: \_\_\_\_\_  
Patrick Brzozowski, P.E.  
General Manager

BY: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

ATTEST: \_\_\_\_\_

ATTEST: \_\_\_\_\_

ADDRESS: **P. O. Box 429  
Edna, Texas 77957**

ADDRESS: \_\_\_\_\_  
\_\_\_\_\_

PHONE: 361-782-5229

PHONE: \_\_\_\_\_

\*\*\* END OF SECTION \*\*\*

SECTION 00700

**CONTRACTOR'S CORPORATE RESOLUTION**

I hereby certify that it was RESOLVED by a quorum of the directors of

\_\_\_\_\_,  
(Name of Corporation)

meeting on the \_\_\_\_\_ day of \_\_\_\_\_, 20 \_\_\_\_\_,

that \_\_\_\_\_, \_\_\_\_\_, be,  
(Name of Principal) (Title)

and hereby is, authorized to execute all documents necessary for the transaction of  
business in the State of Texas on behalf of the said \_\_\_\_\_,  
(Name of Corporation)

and

That the above resolution was unanimously ratified by the Board of Directors at said  
meeting and that the resolution has not been rescinded or amended and is now in full  
force and effect; and in authentication of the adoption of this resolution, I subscribe my  
name this \_\_\_\_\_ day of \_\_\_\_\_, 2024.

\_\_\_\_\_  
Secretary

\*\*\* END OF SECTION \*\*\*



SECTION 00800

**BID BOND**

KNOW ALL MEN BY THESE PRESENTS: That we the undersigned, \_\_\_\_\_  
\_\_\_\_\_ as PRINCIPAL, and \_\_\_\_\_

as SURETY, are held and firmly bound unto **LAVACA-NAVIDAD RIVER AUTHORITY**, hereinafter called CONTRACTING AGENT in the penal sum of \_\_\_\_\_ Dollars(\$ \_\_\_\_\_), lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that Whereas the Principal has submitted the Accompanying Bid, dated the \_\_\_th day of \_\_\_\_\_, 2024, which is hereto attached and made a part hereof for:

SELECTIVE TREATMENT OF PROTECTIVE COATINGS ON SPILLWAY GATES  
LAVACA NAVIDAD RIVER AUTHORITY

NOW, THEREFORE, if the Principal shall not withdraw said Bid within the period specified therein after the opening of the same, or, if no period be specified, within sixty (60) days after the said opening, and shall within the period specified therefore, or if no period be specified, within ten (10) days after the prescribed forms are presented to him for signature, enter into written Contract with the Owner in accordance with the Bid as accepted, and give bond with good and sufficient surety or sureties, as may be required, for the faithful performance and proper fulfillment of such Contract, or in the event of the withdrawal of said Bid within the period specified, or the failure to enter into such Contract and give such bond within the time specified, if the Principal shall pay the Owner the difference between the amount specified in said Bid and the amount for which the Owner may procure the required work or supplies or both, if the latter be in excess of the former, then the above obligation shall be void and of no effect, otherwise to remain in full force and virtue.

IN WITNESS WHEREOF, the above bound Parties have executed this instrument under their several seals this \_\_\_th day of \_\_\_\_\_, 2024. The name and corporate seal of each corporate party hereto affixed and these presents signed by its undersigned representative, pursuant to authority of its governing body.

ATTEST:

\_\_\_\_\_  
(Principal) Secretary

\_\_\_\_\_  
Principal

(SEAL)

\_\_\_\_\_

\_\_\_\_\_  
Business Address

\_\_\_\_\_  
Witness as to Principal

\_\_\_\_\_

\_\_\_\_\_  
Business Address

ATTEST:

\_\_\_\_\_  
(Surety) Secretary                      Surety

\_\_\_\_\_

(SEAL)

By: \_\_\_\_\_

Attorney-

in-Fact

\_\_\_\_\_

Address

\_\_\_\_\_  
Witness as to Surety

\_\_\_\_\_

\_\_\_\_\_  
Address

Attorney-in-Fact, State \_\_\_\_\_.

(Power-of-attorney for person signing for Surety Company must be attached to bond.)

\*\*\* END OF SECTION \*\*\*

SECTION 00900

**PERFORMANCE BOND**

State of Texas §

County of Jackson §

**KNOW ALL MEN BY THESE PRESENTS:** That \_\_\_\_\_, hereinafter called "Surety", of the City of \_\_\_\_\_, County of \_\_\_\_\_, and State of \_\_\_\_\_, as authorized under the laws of the State of Texas to act as surety on bonds for principals, are held and firmly bound unto LAVACA NAVIDAD RIVER AUTHORITY, hereinafter referred to as "Owner", in the penal sum of \_\_\_\_\_ Dollars (\$ \_\_\_\_\_) for the payment whereof, \_\_\_\_\_, hereinafter called "Principal", and surety bind themselves, and their heirs, administrators, executors, successors, and assigns, jointly and severally, by these presents:

**WHEREAS,** the Principal has entered into a certain written Contract, hereinafter called "Contract", with the Owner, dated the \_\_\_\_\_ day of \_\_\_\_\_, 2024, to which Contract is hereby referred to and made a part hereof as if included herein in its entirety.

**NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION IS SUCH,** that if the said Principal shall faithfully perform said Contract and shall in all respects duly and faithfully observe and perform all and singular the covenants, conditions, and agreements in and by said Contract agreed and convened by the Principal, to be observed and performed, and according to the true intent and meaning of said Contract and the Contract Documents, Specifications, and Drawings hereto annexed, then this obligation shall be void; otherwise to remain in full force and effect;

**PROVIDED, HOWEVER,** that this bond is executed pursuant to the provisions of Article 5160 of the Revised Civil Statutes of Texas, as amended, and all liabilities on this bond shall be determined in accordance with the provisions of said Article to the same extent as if included herein in its entirety.

**SURETY**, for value received, stipulates and agrees that no change, extension of time, alteration or addition to the terms of this Contract, or to the work performed thereunder, or the Contract documents, Specifications, and Drawings accompanying the same, shall in anyway affect its obligation on this Bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the Contract, or the work performed thereunder.

**IN WITNESS WHEREOF**, the said Principal and Surety have caused this instrument to be executed in five (5) original copies, this \_\_\_\_\_ day of \_\_\_\_\_, 2024

\_\_\_\_\_  
PRINCIPAL (CONTRACTOR)

\_\_\_\_\_  
SURETY

\_\_\_\_\_  
By: \_\_\_\_\_  
Title: \_\_\_\_\_

\_\_\_\_\_  
By: \_\_\_\_\_  
Title: \_\_\_\_\_

ATTEST

By: \_\_\_\_\_  
Title: \_\_\_\_\_

By: \_\_\_\_\_  
Title: \_\_\_\_\_

The name and address of the Resident Agent of Surety is:

\_\_\_\_\_  
\_\_\_\_\_

\*\*\* END OF SECTION \*\*\*

SECTION01000

**PAYMENT BOND**

State of Texas §

County of \_\_\_\_\_ §

**KNOW ALL MEN BY THESE PRESENTS:** That \_\_\_\_\_  
\_\_\_\_\_, hereinafter called "Surety," of the City of \_\_\_\_\_,  
County of \_\_\_\_\_, and State of \_\_\_\_\_,

as authorized under the laws of the State of Texas to act as Surety on bonds for Principals,  
are held and firmly bound unto LAVACA NAVIDAD RIVER AUTHORITY, hereinafter  
referred to as "CONTRACTING AGENT", in the penal sum of \$ \_\_\_\_\_

(\$ \_\_\_\_\_ ) for the payment whereof, \_\_\_\_\_  
\_\_\_\_\_ hereinafter called "Principal," and surety bind  
themselves, and their heirs, administrators, executors, successors, and assigns, jointly and  
severally, by these presents:

**WHEREAS, THE PRINCIPAL** has entered into a certain written Contract,  
hereinafter called "Contract", with the Owner, dated the \_\_\_\_\_ th day of \_\_\_\_\_, 2024,  
to which Contract is hereby referred to and made a part hereof as if included herein in its  
entirety.

**NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION IS SUCH,**  
that if the said Principal shall pay all Claimants supplying labor and material to him or a  
Subcontractor in the prosecution of the work provided for in said Contract, then, this  
obligation shall be void; otherwise, to remain in full force and effect;

**PROVIDED, HOWEVER,** that this Bond is executed pursuant to the provisions of  
Article 5160 of the Revised Civil Statutes of Texas, as amended, and all liabilities on this  
bond shall be determined in accordance with the provisions of said Article to the same  
extent as if included herein in its entirety.

**SURETY,** for value received, stipulates and agrees that no change, extension of  
time, alteration or addition to the terms of this Contract, or to the work performed

thereunder, or the Contract Documents, Specifications, and Plans accompanying the same, shall in anyway affect its obligation on this Bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the Contract, or the work performed thereunder.

**IN WITNESS WHEREOF**, the said Principal and surety have caused this instrument to be executed in five (5) original copies, this \_\_\_\_ th day of \_\_\_\_\_, 2024.

\_\_\_\_\_  
PRINCIPAL (CONTRACTOR)

\_\_\_\_\_  
SURETY

\_\_\_\_\_  
By: \_\_\_\_\_

\_\_\_\_\_  
By: \_\_\_\_\_

Title: \_\_\_\_\_

Title: \_\_\_\_\_

By: \_\_\_\_\_

By: \_\_\_\_\_

Title: \_\_\_\_\_

Title: \_\_\_\_\_

The name and address of the Resident Agent of surety is:

\_\_\_\_\_  
\_\_\_\_\_

\*\*\* END OF SECTION \*\*\*

## DIVISION 1 - GENERAL REQUIREMENTS

### SUMMARY OF WORK

#### 1. GENERAL

- a) The following is a general description of the work under this contract. It has been prepared in an effort to aid in a better understanding of the total scope of the project. This summary of work shall in no way be considered complete in such description and in all cases the requirements of the following Technical Specifications Sections and of the Drawings govern. Report any major discrepancies between these descriptions and the requirements of the Specifications and Drawings and request directions before proceeding.
- b) The "CONTRACTING AGENT", the **LAVACA-NAVIDAD RIVER AUTHORITY (LNRA)**, desires to clean, surface prep, and spot paint 12 radial gates including support arms on the Palmetto Bend Dam.
- c) The construction site is located on Palmetto Bend Dam along FM 3131, approximately eight (8) miles north of Edna, Texas and is wholly within the County of Jackson, Texas.

#### 2. WORK TO BE PERFORMED:

Contractor shall complete all Work as specified or indicated in the Contract Documents. The Work is generally described as follows:

The principal components of the work to be performed under this Contract shall include the following:

- a) Coordinate with LNRA as to any Work specified as being done by CONTRACTING AGENT.
- b) Coordinate with other contractors on site as to any Work undertaken.
- c) Furnish all material needed to clean, prep and paint gates and appurtenances. Since the original coating was Carboline products the recoat will be required to be Carboline products or equal as specified below.
- d) Surface Preparation: See Technical Specifications.
- e) Contractor responsible for dewatering and protection of workspace.
- f) Coordinate with TxDOT for traffic control if needed.

## DIVISION 2

### TECHNICAL SPECIFICATIONS

#### 1.0 SURFACE PREPARATION – GENERAL

Prior to performing any work under this item, the CONTRACTOR shall submit a detailed plan to the Contracting Agent describing the CONTRACTOR's plan to manage construction waste including solids handling and surface contamination reduction. This includes protecting all electrical components including motors, electrical panels and exposed connections. The Contractor shall submit a detailed plan describing the management of wastewater and shrouding.

The CONTRACTOR shall be responsible for furnishing, installing, and removing all materials and structures necessary to provide the required containment, protection, and ventilation.

- 1.1 Prior to pressure washing operations, the surface shall be free of oil, grease, chemical deposits, dirt and debris. Oil and grease shall be removed by solvent, while chemical deposits and dirt shall be removed by flushing the surface with clean, treated water (potable). The use of untreated lake water shall not be permitted. Surface irregularities including corrosion pits with sharp or abrupt edges, weld spatter, burrs, pits, laminations, or other objectionable surfaces shall be removed and/or treated prior to pressure washing.
- 1.2 Following removal or repair of surface irregularities, specific surface preparation shall be using one or more of the following methods to achieve the desired cleanliness and surface profile:
  - a. Method A – Initial surface preparation shall be by pressure washing the downstream side of the entire gate including support arms with potable water.
  - b. Method B – Surface preparation shall equal or exceed NACE SSPC-SP1 “Solvent Cleaning”; except that, the solvent chosen, such as xylene, shall not leave a residue on the surface.
  - c. Method C – Surface preparation shall equal or exceed NACE SSPC-SP11, “Power Tool Cleaning to Bare Metal”.
  - d. Method D – Surface preparation shall equal or exceed NACE SSPC-SP3, “Power Tool Cleaning”.
  - e. Method E - Surface preparation shall equal or exceed NACE SSPC-SP2.82, “Hand Tool Cleaning”.



## 2.0 SURFACE PREPARATION

The Contractor shall clean steel surfaces as set forth in the Surface Preparation and Coating Schedule and in accordance with paint manufacturer's printed instructions.

- 2.1 All surfaces will be high pressure washed (minimum 3,600 psi) to remove all loose paint, grease, oil, etc., followed by the appropriate surface preparation method as described in section 1.2 as necessary to remove all loose paint, even to bare metal as necessary and to protect sensitive areas from damage as mutually agreed to by CONTRACTOR and CONTRACTING AGENT.

The Paint Manufacturer's representative recommends at a minimum that the surface preparation shall be according to SSPC-SP3 Power tool clean to remove all rusted and flaking coating. Where not possible, hand tool cleaning should be incorporated. In either case, all mil scale, rust and paint shall be removed in preparation for applying specified coatings.

The pretreatment (if any), or the prime coat of paint shall be applied as soon as possible after cleaning and before further deterioration of the surface occurs.

- 2.2 The CONTRACTOR shall collect and properly dispose of the spent abrasive media, removed coating material, and removed surface contaminants. The pressure wash water shall be contained and filtered per the CONTRACTOR'S solids handling and surface contamination reduction plan.

- 2.3 At the CONTRACTOR's option, cleanliness of surface pertaining to acceptable chloride, sulfate and soluble ferrous ion contamination levels may be achieved by using a chemical liquid compound in conjunction with low pressure water cleaning, NACE LPWC.

- a. The chemical liquid compound for removal of chloride, sulfates and other soluble salts shall be CHLOR\*RID Liquid soluble salt Remover as manufactured by Chlor\*rid International Inc., P.O. Box 908, Chandler AZ 85244, Telephone 800-422-3217 or 602-821-0039.

- b. The chemical liquid compound shall not inhibit or reduce the subsequent adhesion and shall not result in osmotic blisters in the specified applied coatings.

- 2.4 All wash water to be used shall be potable. The chemical liquid compound, if used, shall be added to the wash water by means of a siphoning device with a backflow prevention device installed.

- a. The mix ratio of chemical liquid compound to wash water shall be per the manufacturer's instructions. The initial application rate shall be approximately 300 square feet per 100 gallons of wash water solution.
- 2.5 An initial washed surface area of approximately 25 square feet shall be tested for soluble salt contamination with test apparatus capable of a lower threshold measurement limit of 7 micrograms per square centimeter. The following test apparatus are approved for use:
- a. CHLOR\*TEST Kit as manufactured by Chlor\*Rid International, Inc.
  - b. Elcometer 130 Salt Meter Kit as manufactured by Elcometer, 1893 Rochester Industrial Drive, Rochester Hills, MI 48309, telephone 248-650-0500.
- 2.6 Contamination levels exceeding specified cleanliness shall be rewashd by either increasing the application rate of the chemical liquid compound or by additional cleaning using water blasting equipment until the retested surface shows allowable levels of that meet or exceed specified cleanliness levels. After establishing the application rate to achieve the specified cleanliness, blasting operations shall be allowed to proceed for final surface preparation.

### **3.0 SURFACE PREPARATION – QUALITY CONTROL**

- 3.1 All work performed under this specification shall be done by a qualified, responsible person. All surfaces and property shall be protected from damage as a result of work performed on this project. The appearance of adjacent surfaces and property shall be acceptable to the CONTRACTING AGENT. Repairs and restoration of surfaces or property necessary, if any, shall be made by the CONTRACTOR at no additional expense to the CONTRACTING AGENT.
- 3.2 The CONTRACTOR shall proceed with coating operations as soon as possible after blasting operations to prevent the formation of rust, oxide, or other surface contamination. Under no circumstance will the CONTRACTOR be allowed to apply a coating if the blasted surface is exposed overnight or has deteriorated to an unacceptable level for coating application.

### **4.0 SAFETY PRECAUTIONS**

If fire or explosion hazards are present, proper precautions shall be taken before any work is done.

Filter type air respirators should be worn by all operators who are exposed to dust.

Safety goggles shall be worn by all persons near cleaning operations.

## **5.0 SURFACE PREPARATION – PAYMENT**

Cost for initial cleaning and final surface preparation including the cost of furnishing all materials, equipment and supplies shall not be paid for separately, but will be paid for at the unit price under the bid item, “Cleaning and Painting”.

## **DIVISION 3**

### **PAINTING**

#### **1.0 COATINGS – GENERAL**

The paint system shall be applied in three coats. The thickness of the prime coat shall be 4 to 6 mils dry film thickness (DFT). The thickness of the intermediate coat shall be 3 to 5 mils DFT. The thickness of the finish coat shall be 3 to 4 mils DFT.

Each coat shall be sprayed, brushed or rolled on in accordance with the manufacturer's recommendations. Thinning is allowed per manufacturers recommendation.

Each coat shall be dry to the touch before the next coat is applied. Follow the manufacturer's directions implicitly.

All sharp edges, weld seams, nuts, bolts and other items difficult to coat shall receive a brush applied coat of the specified epoxy mastic primer (50% paint, 50% thinner) liberally worked in after prime coating and prior to finish coat of paint.

During and after application of each coating, all metal surfaces shall be checked with appropriate wet and dry mil gauges to ensure that the required thickness of coating is being obtained.

The Contractor shall guarantee to the Owner for a period of one (1) year from the date of the final inspection and acceptance to the extent that he will repair any defects which may appear due to faulty surface preparation and/or painting.

Up on completion of all the work, the Contractor shall remove all surface materials and rubbish and dispose in accordance with directions of the CONTRACT AGENT. He shall repair all damage caused by his workers and shall leave the premise in a clean and orderly condition.

#### **2.0 MATERIAL DESCRIPTION**

- 2.1 The coating system for all steel surfaces on this project shall incorporate a three coat, epoxy mastic primer coat applied over all edges, corners, bolts, rivets and weld seams (all bolts are to be brush stripe coated), an intermediate coat and a urethane finish coat.
- 2.2 All steel coating products furnished for this project shall be manufactured by the same manufacturer and shall be compatible with one another.
- 2.3 All paint shall be prepared at the factory ready for application. The addition of thinner or other material to the paint after the paint has been shipped shall not be permitted, except as recommended by the manufacturer and by permission of the CONTRACTING AGENT. CONTRACTOR shall furnish paint manufacturer's certification that the paint complies with paint system requirements specified.

- 2.4 Tinting – All tinting materials required shall be added to the paint at the time of paint manufacture. Field tinting shall not be allowed.
- 2.5 All containers shall be labeled showing the exact title of the paint, the manufacturer's name, date of manufacture, the manufacturer's batch number, the specification number and the lot number if appropriate. Containers shall be packaged in new approved cans.
- 2.6 Precautions concerning the handling and application of paint shall be as shown and described on the label of paint and solvent.
- 2.7 The Contractor shall make every effort to feather in the new paint with the surrounding old paint so that a seamless blend is achieved.

### **3.0 PHYSICAL PROPERTIES**

Coating supplied shall conform to the following minimum requirements:

#### **3.1 PRIMER COAT**

Primer Coat shall conform to the specifications of Carbomastic 15, high-solids epoxy coating as manufactured by Carboline or its equivalent.

#### **3.2 INTERMEDIATE COAT**

Intermediate Coat shall conform to the specifications of Carboguard 890 manufactured by Carboline or its equivalent.

#### **3.3 FINISH COAT**

Finish Coat shall conform to the specifications of Carboxane 2100FC manufactured by Carboline or its equivalent.

### **4.0 PERFORMANCE PROPERTIES**

The system identified in this specification meets or exceeds the following test requirements (all proposed equivalents must certify compliance to same requirements):

#### **4.1 Corrosion Resistance, ASTM B117, Salt Spray Test**

Must pass 3000 hours minimum with less than 2mm creep from scribe.

#### **4.2 Accelerated Weathering, ASTM G53**

Must pass 400 hours QUV B bulb with no chalking, cracking, or gloss loss greater than 20 percent.

4.3 Forward Impact, ASTM D2794

Must pass minimum 24 in-lb impact.

4.4 Abrasion Resistance, ASTM D4060

Less than 90 mg loss on CS-17 wheel, 1000 gram/load, 1000 cycles.

4.5 Moisture Resistance, ASTM D4548

Must pass 1000 hours with no change in appearance.

4.6 Flexibility, ASTM D522, Conical Mandrel Bend Test

Must pass ½ inch mandrel bend with no cracking.

4.7 Adhesion, ASTM D4541

Must pass minimum 500 psi on certified pull test. The CONTRACTING AGENT requires that a minimum of five (5) and a maximum of ten (10) random certified pull tests. The CONTRACTING AGENT will pay for all passing test. The CONTRACTOR will pay for all failing test and subsequent test to verify reliability of applied coatings. Upon completion of all tests, the CONTRACTOR will repair all test areas at no additional cost to the CONTRACTING AGENT.

**5.0 PRE-APPROVED PRODUCTS**

5.1 Carboline

Carboline Global Headquarters  
2150 Schuetz Rd.  
St. Louis, Missouri 63146  
(314) 644-1000  
(800) 848-4645

Full Primer Coat:	Carbomastic 15
Intermediate Coat:	Carboguard 890
Finish Coat:	Carboxane 2100FC

**6.0 SURFACE CLEANING AND PREPARATION**

CONTRACTOR shall remove all paint as specified below.

6.1 Before pressure washing, surface irregularities shall be removed to the extent required by procurement documents (project specifications).

- 6.2 Prior to painting, all metal surfaces shall be blown down and free of all surface dust. Cleanliness shall be approved by the CONTRACTING AGENT prior to painting.
- 6.3 Particular attention shall be given to edges, crevices, nuts, bolts, rivets and weld seams.
- 6.4 Tight, inaccessible metal to metal plates, etc. shall be sealed with a compatible joint sealing compound, as approved by manufacturer.
- 6.5 All bare metal surfaces shall be primed on the same day as cleaning.

## 7.0 APPLICATION REQUIREMENTS

### 7.1 Dry Film Thickness (DFT) Schedule:

FULL PRIMER COAT:	4-6 mils (101 – 152 microns) DFT
INTERMEDIATED COAT:	4-6 mils (101 -152 microns) DFT
FINISH COAT:	3-4 mils (76 – 101 microns) DFT

- 7.2 All painting to be performed under this contract shall be performed in conformance with the best practices of the trade, in conformance with recommendations of the coating manufacturer, and in conformance with applicable portions of the Steel Painting Council Specification SSPC-PA 1 when, those specifications are not in conflict with these standard specifications.
- 7.3 All surfaces cleaned to bare metal shall be coated with the specified prime coat the same working day. Any cleaned surface which flash rusts before the application of the prime coat shall be re-cleaned.
- 7.4 Preliminary paint film thickness measurements may be made during wet film application, utilizing an approved wet film thickness gauge. The dry film thickness (DFT) shall be measured on hardened completed coating system, with an approved magnetic or digital dry film gauge, such as an Elcometer 211 or Positest digital gauge, before the application of each subsequent coat DFT measurements shall be taken from the peaks and not the valleys of surface profile. Where thickness measurements fall below the specified minimum, additional applications of paint shall be made as necessary to meet the thickness required, at no additional cost to CONTRACTING AGENT. The maximum DFT or wet film thickness shall not be exceeded.
- 7.5 Each coat shall be applied to produce an even film of uniform thickness which will completely cover irregularities, fill crevices, and be tightly bonded to the substrate or previous coat. Each coat shall be free of pin holes, runs, sags, laps, brush marks, and other defects. Sufficient time shall elapse between successive coats to permit them to dry properly for re-coating. **Consult specific product data sheets for proper cure times.**

- 7.6 Apply coatings via spray, brush and/or roll methods, utilizing approved equipment that is standard to the industry according to the “Application Information” sheet attached to this specification. Cleaning procedures for such equipment are also outlined on this instruction.
- 7.7 A primer stripe coat shall be applied to all surfaces (all bolts shall be brush-stripe coated) with additional brush application of a penetrating nature into tight metal-to-metal areas prior to application of approved joint sealer compound.

## **8.0 PAYMENT**

Payment for the Selective Treatment of Protective Coatings on Spillway Gates will be made at the Unit price established in the bidding documents. This shall include the cost of all cleaning and final surface preparation including pressure washing, sand blasting, mechanical cleaning and hand tool cleaning and the cost of application of coatings to all surfaces.



**ATTACHMENTS -  
DAILY INSPECTION REPORTS**

# Daily Inspection Report

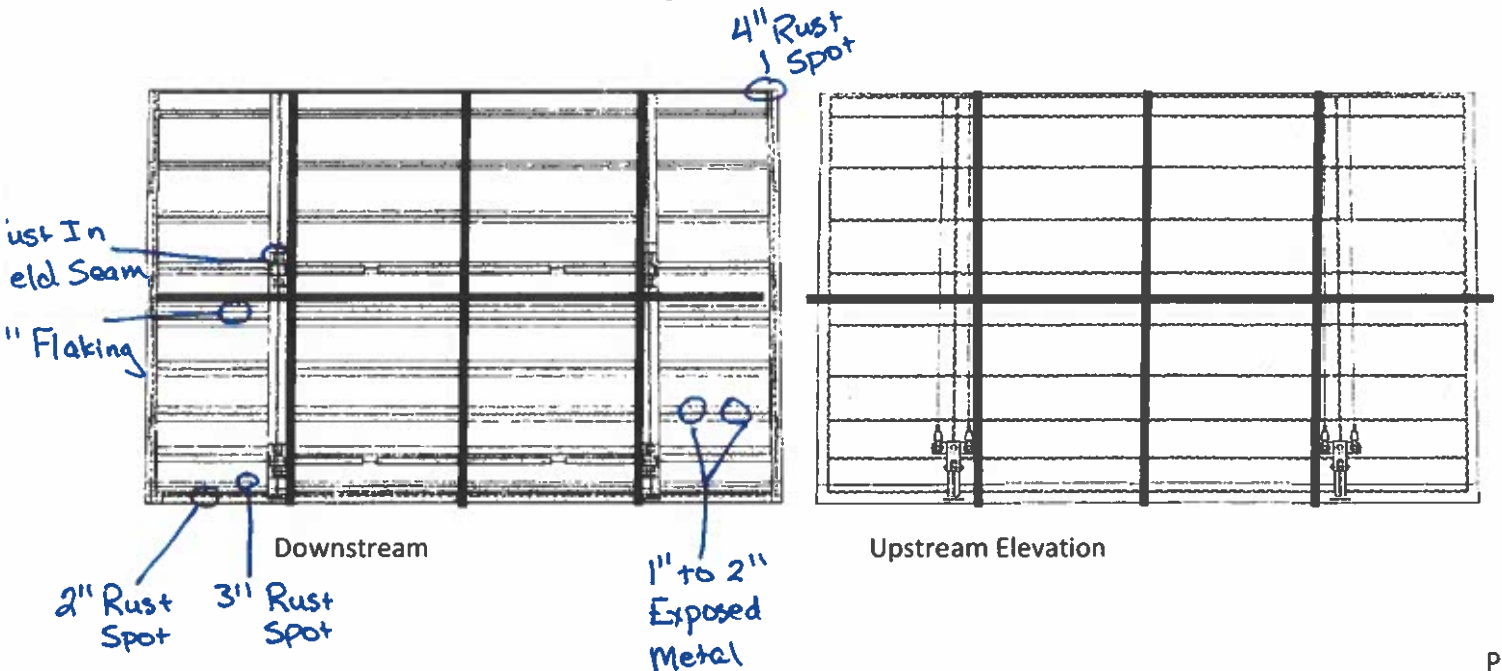
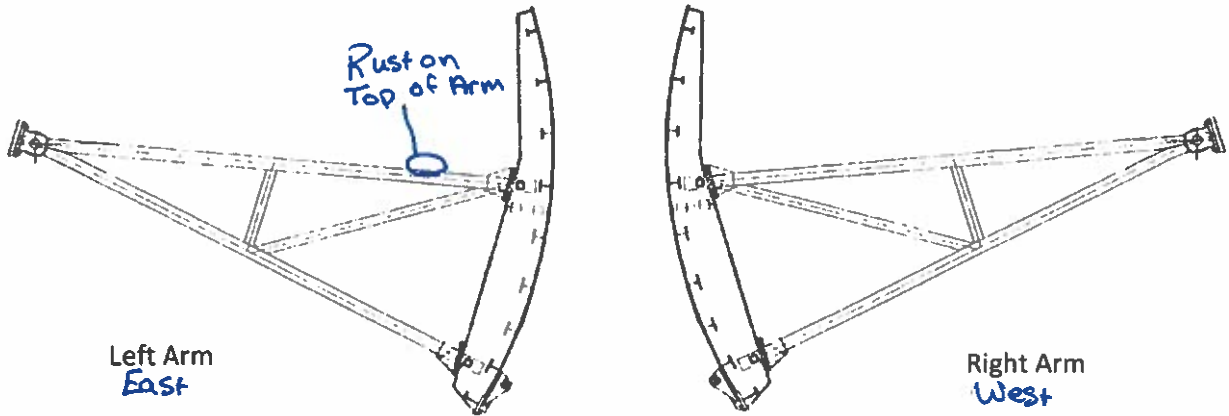


PO Box 429, Edna, Texas 77957  
361-782-5229

<b>Project:</b>	Palmetto Bend Dam Spillway Gate Rehabilitation
<b>Contractor:</b>	CFG Industries
<b>Engineer:</b>	Freese and Nichols, Inc.
<b>Date:</b>	6/16/23
<b>Inspector:</b>	Gate 1
	Bobby Gendke    Jared Darilek    Jeffery Hudson

Time	Work Description
	Bottom of Gate where it meets concrete is rusted
	Guides on gates are rusted & Bolts on guides are rusted
	West Tension Cable on Hoist Deck is Missing

### Work Location Diagram



# Daily Inspection Report

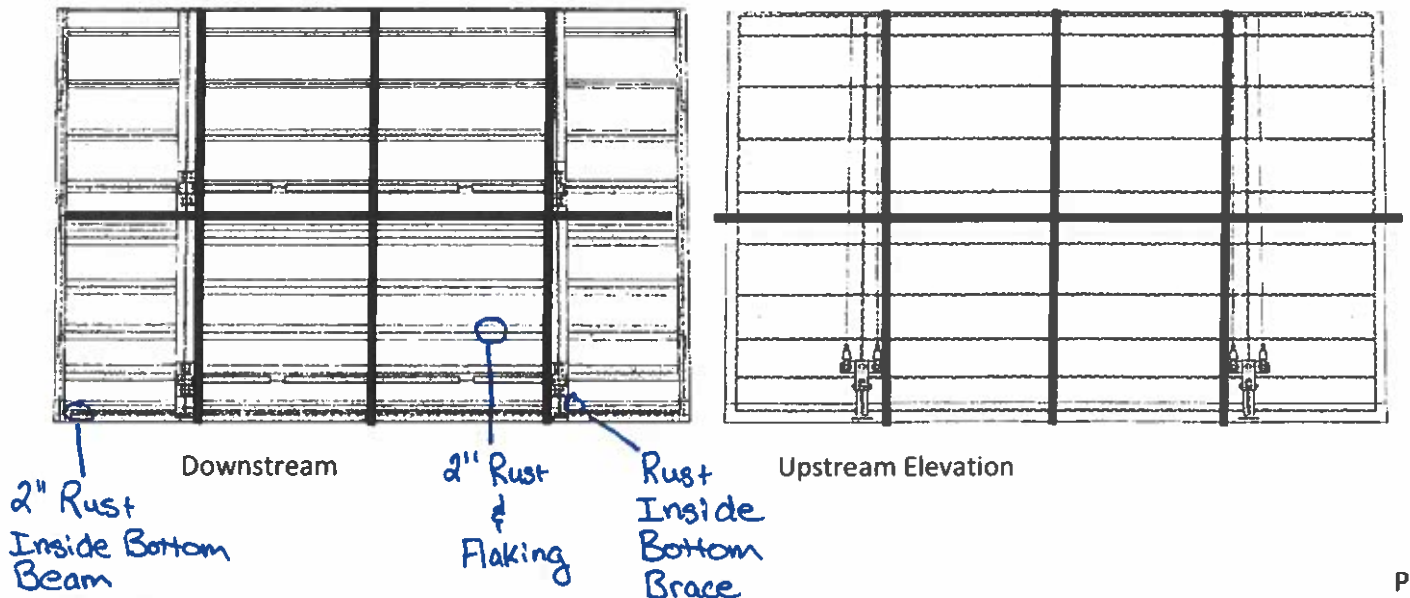
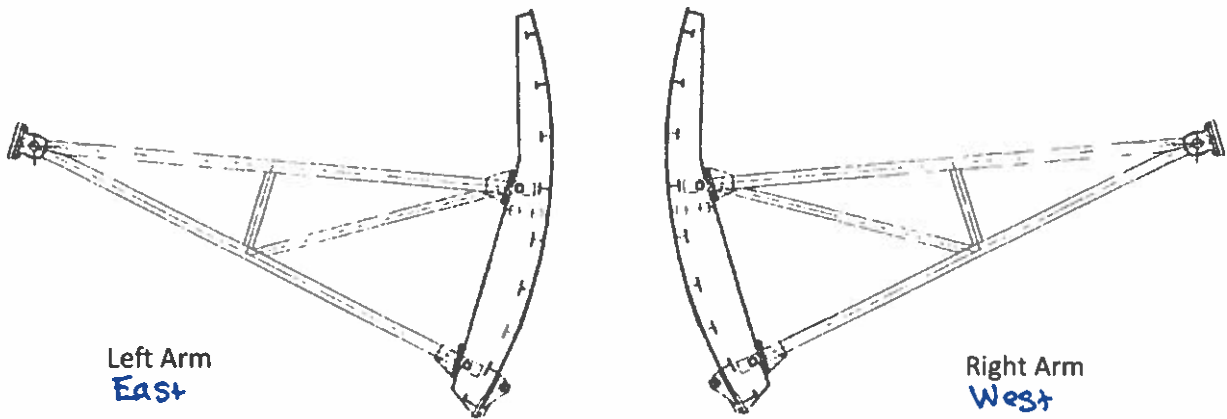


PO Box 429, Edna, Texas 77957  
361-782-5229

<b>Project:</b>	Palmetto Bend Dam Spillway Gate Rehabilitation
<b>Contractor:</b>	CFG Industries
<b>Engineer:</b>	Freese and Nichols, Inc.
<b>Date:</b>	6/16/23
<b>Inspector:</b>	Gate 2 Bobby Gendke Jared Darilek Jeffery Hudson

Time	Work Description
	Bottom of Gate where it meets concrete is rusted
	Guides for Gates are rusted
	Guide Bolts are rusted
	Inside Flats on Trunnion Block are rusted on East Side
	Middle Tension Cable on Hoist Deck Missing

**Work Location Diagram**



# Daily Inspection Report

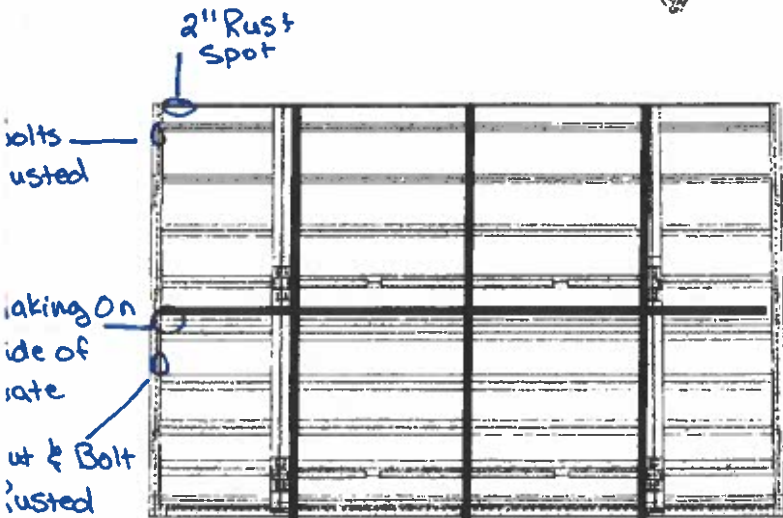
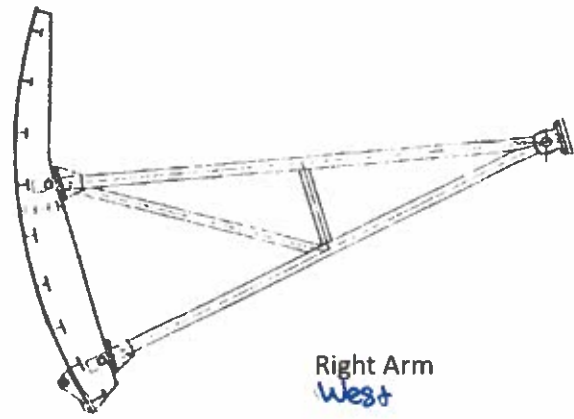
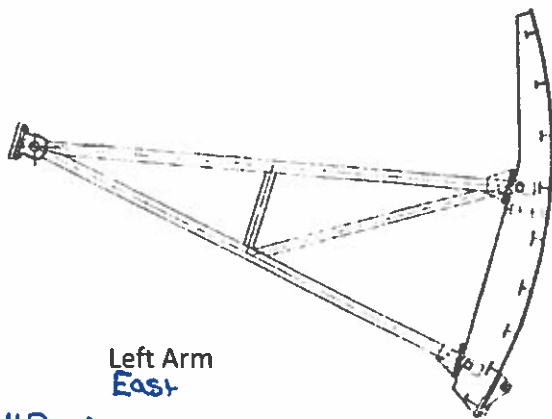


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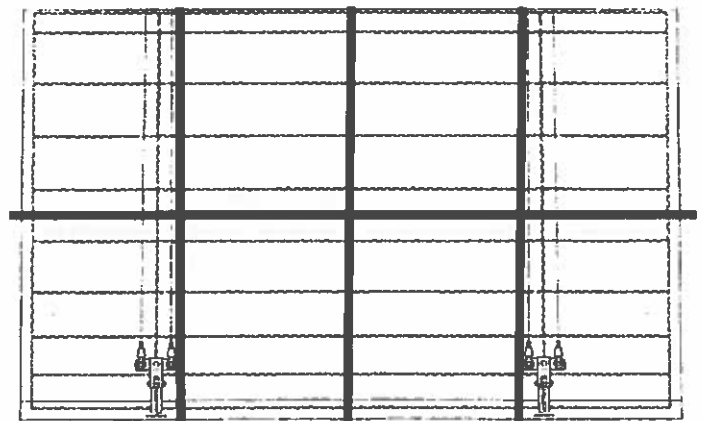
<b>Project:</b>	Palmetto Bend Dam Spillway Gate Rehabilitation
<b>Contractor:</b>	CFG Industries
<b>Engineer:</b>	Freese and Nichols, Inc.
<b>Date:</b>	6/14/23
<b>Inspector:</b>	Gate 3 Bobby Gondke Jared Darilek Jeffery Hudson

Time	Work Description
	Bottom of Gate where it meets Concrete is rusted
	West Tension Cable on Holst Deck is missing

**Work Location Diagram**



Downstream



Upstream Elevation

# Daily Inspection Report

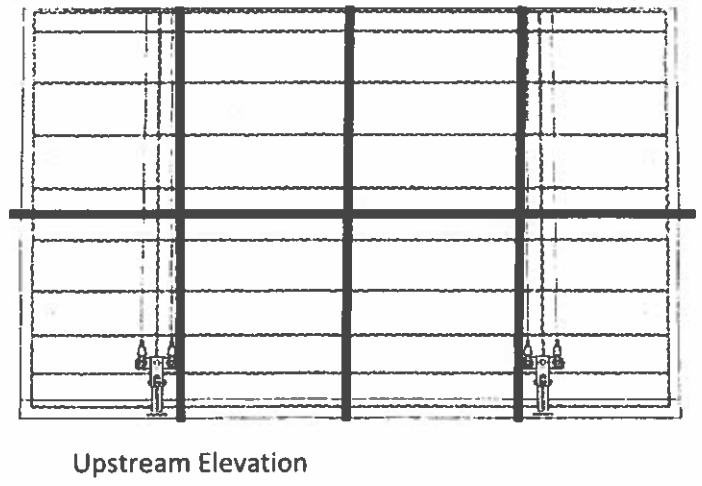
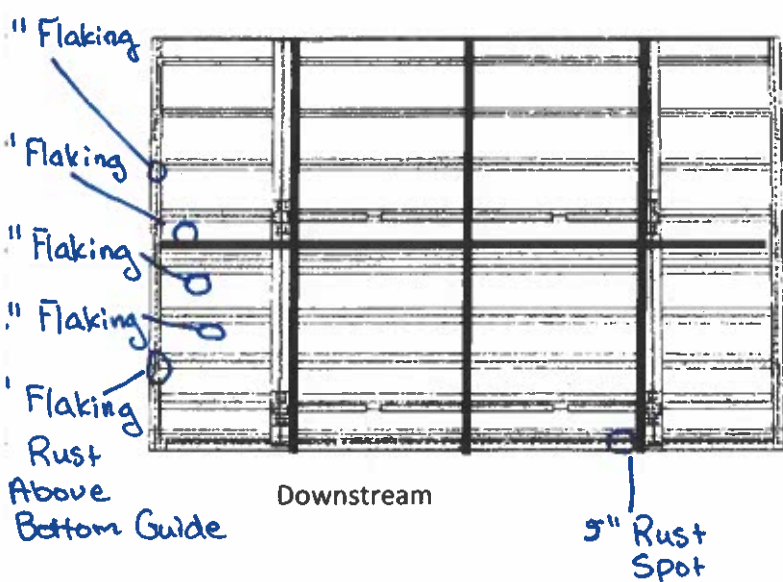
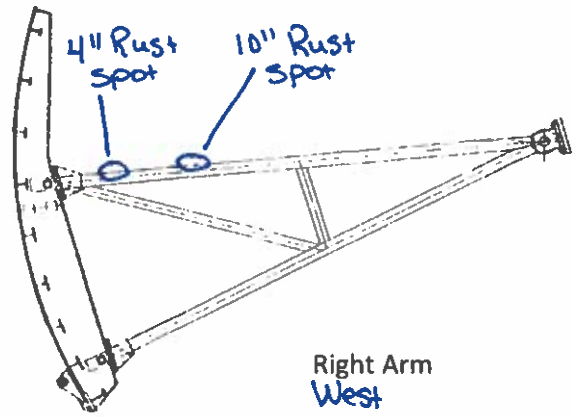
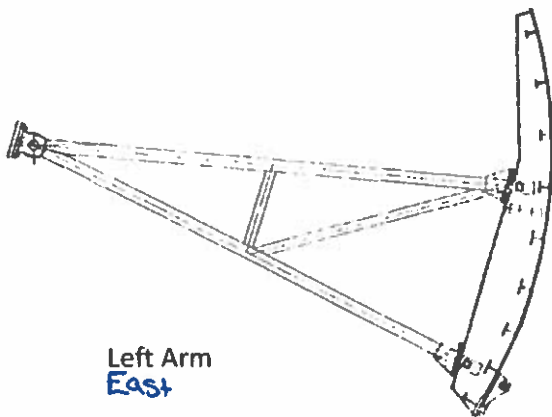


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<b>Project:</b>	Palmetto Bend Dam Spillway Gate Rehabilitation
<b>Contractor:</b>	CFG Industries
<b>Engineer:</b>	Freese and Nichols, Inc.
<b>Date:</b>	6/16/23
<b>Inspector:</b>	Gate 4 Bobby Gendke Jared Derillek Jeffery Hudson

Time	Work Description
	Bottom of Gate where it Meets Concrete is rusted
	West & East Tension Cable on Hoist Deck is missing

**Work Location Diagram**





# Daily Inspection Report

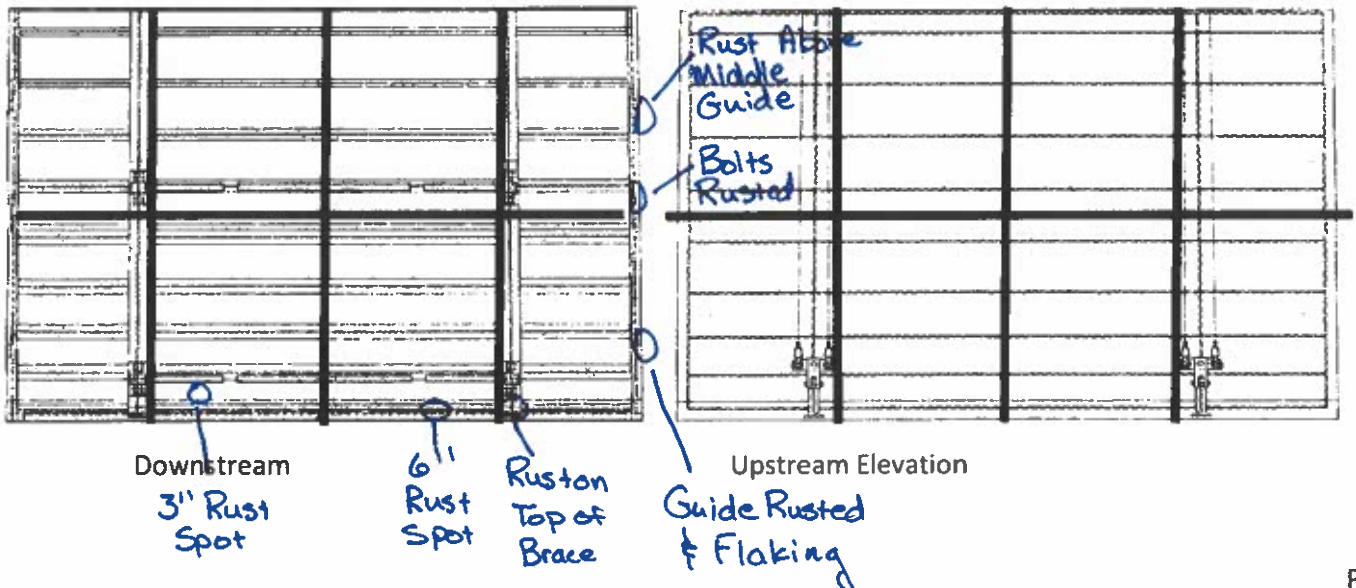
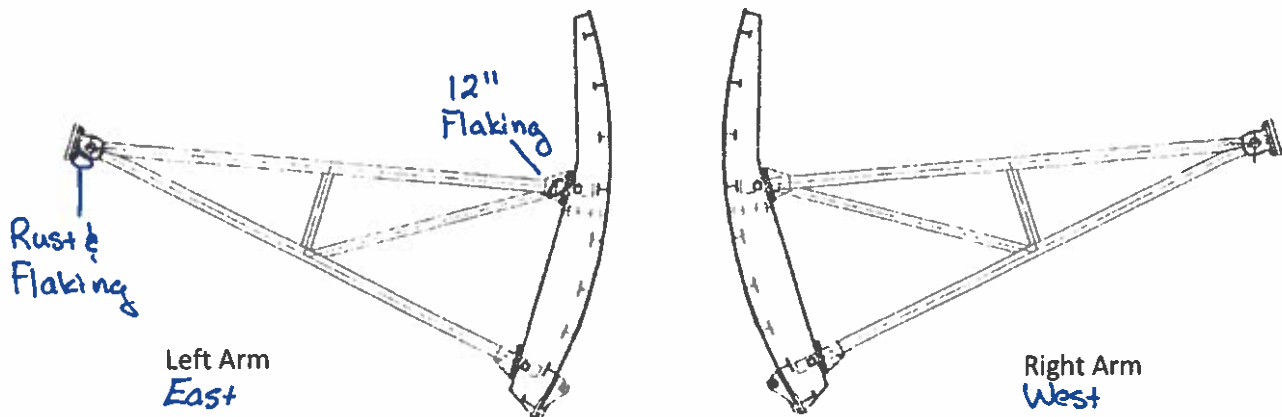


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<b>Project:</b>	Palmetto Bend Dam Spillway Gate Rehabilitation
<b>Contractor:</b>	CFG Industries
<b>Engineer:</b>	Freese and Nichols, Inc.
<b>Date:</b>	6/16/23
<b>Inspector:</b>	Gate 5 Bobby Gendke Jared Darilek Jeffery Hudson

Time	Work Description
	Bottom of Gate where it meets concrete is rusted
	East Trunnion Block is Rusted & Flaking, Large Area
	West & East Tension Cable on Hoist Deck is Missing

### Work Location Diagram



# Daily Inspection Report

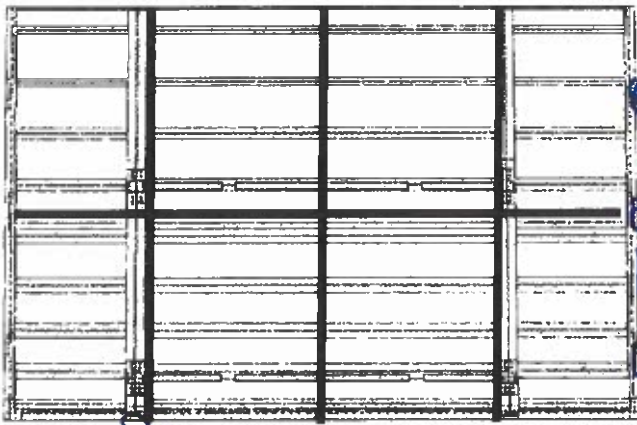
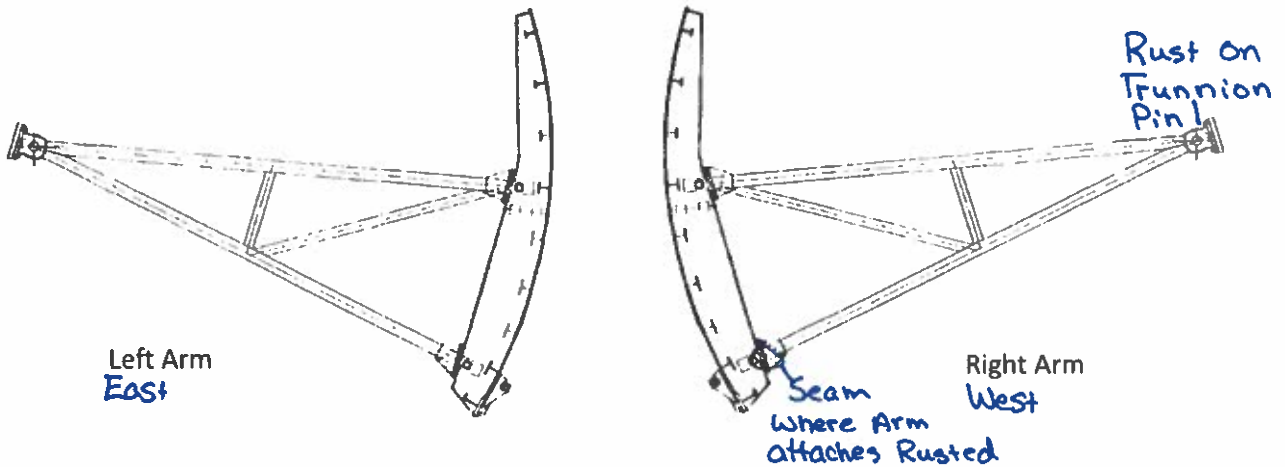


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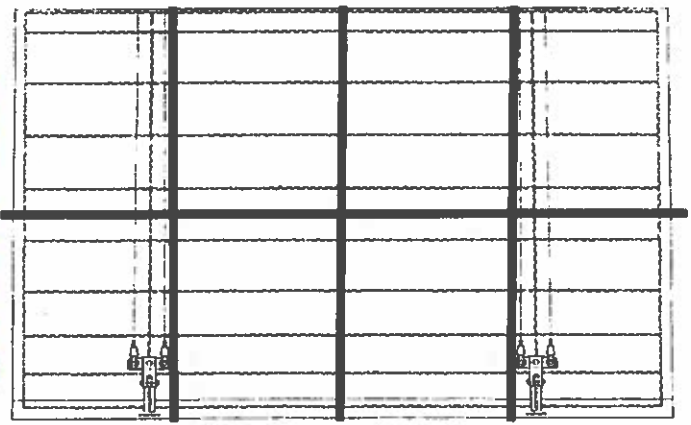
<b>Project:</b>	Palmetto Bend Dam Spillway Gate Rehabilitation
<b>Contractor:</b>	CFG Industries
<b>Engineer:</b>	Freese and Nichols, Inc.
<b>Date:</b>	6/16/23
<b>Inspector:</b>	Gate 6 Bobby Gendke Jared Darilek Jeffery Hudson

Time	Work Description
	Bottom of Gate where it meets concrete is rusted
	East Tension Cable on Hoist Deck is missing

**Work Location Diagram**



Downstream  
Rust under  
Bottom Beam



Upstream Elevation

All 3  
Guides  
Have  
Rust

# Daily Inspection Report

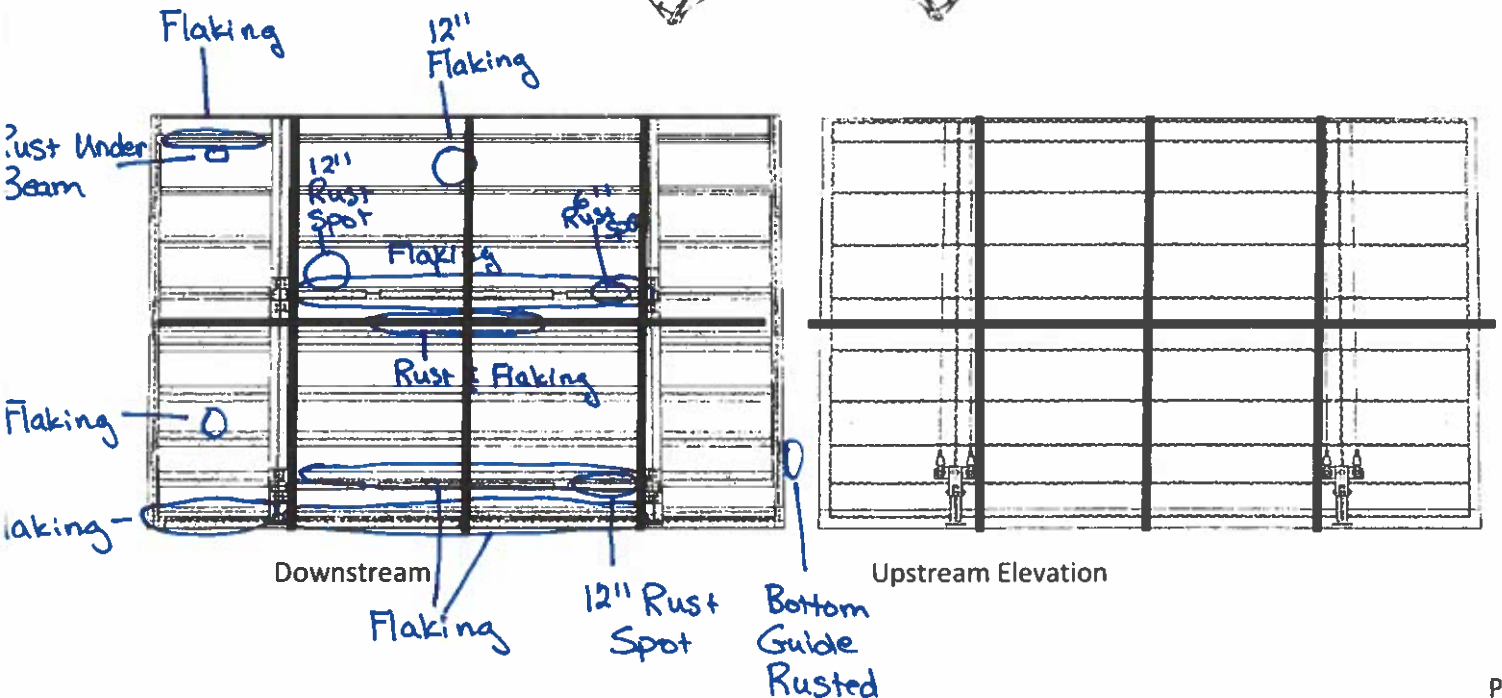
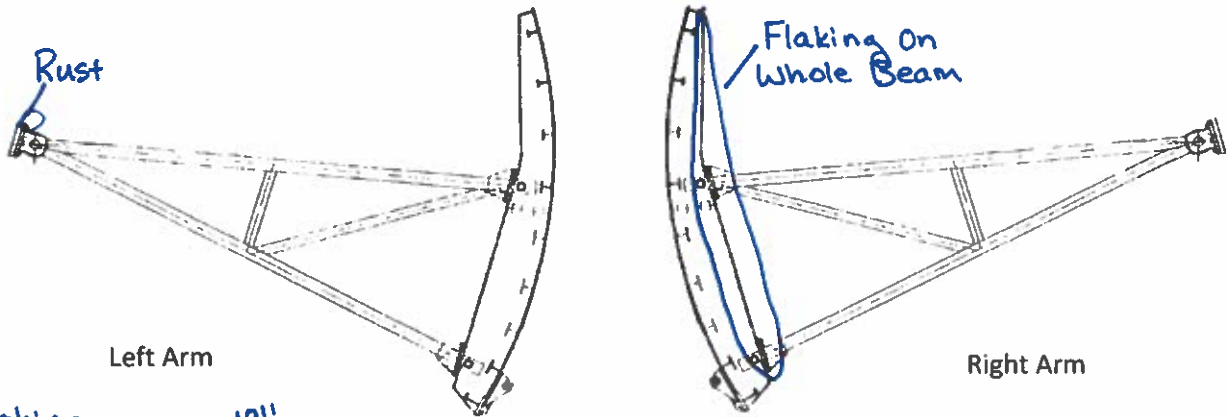


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<b>Project:</b>	Palmetto Bend Dam Spillway Gate Rehabilitation
<b>Contractor:</b>	CFG Industries
<b>Engineer:</b>	Freese and Nichols, Inc.
<b>Date:</b>	6/16/23
<b>Inspector:</b>	Gate 7 Bobby Gendke Jared Darilek Jeffery Hudson

Time	Work Description
	Bottom of Gate where it meets concrete is rusted
	Rust on the underside of all ribs
	Flaking on whole gate
	Middle tension cable on hoist deck is missing

### Work Location Diagram





# Daily Inspection Report

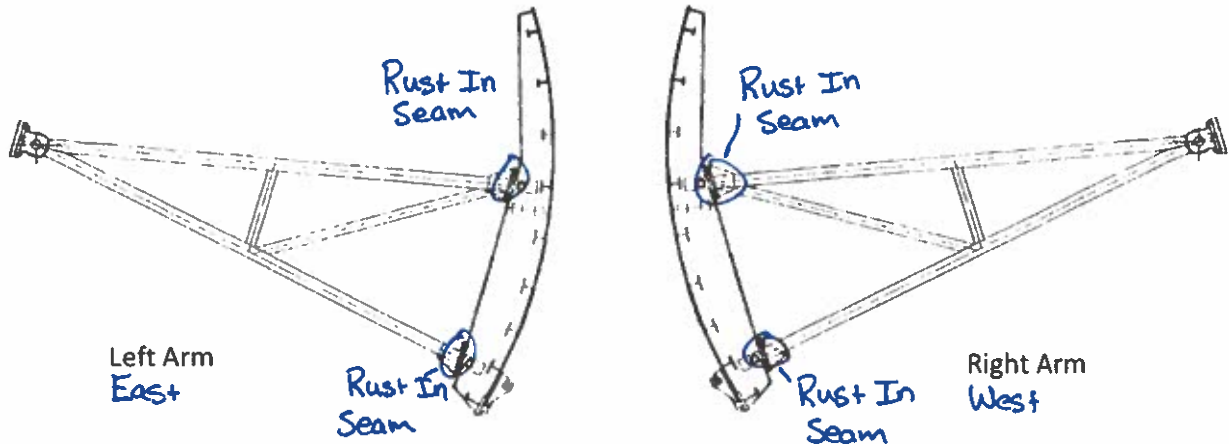


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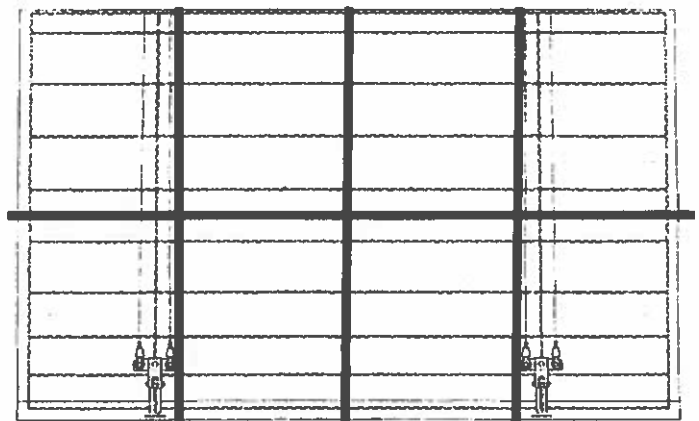
<b>Project:</b>	Palmetto Bend Dam Spillway Gate Rehabilitation
<b>Contractor:</b>	CFG Industries
<b>Engineer:</b>	Freese and Nichols, Inc.
<b>Date:</b>	6/16/23
<b>Inspector:</b>	Gate 8 Bobby Gendke Jared Darilek Jeffery Hudson

Time	Work Description
	Bottom of Gate Where it Meets Concrete is Rusted

**Work Location Diagram**



Downstream



Upstream Elevation

# Daily Inspection Report

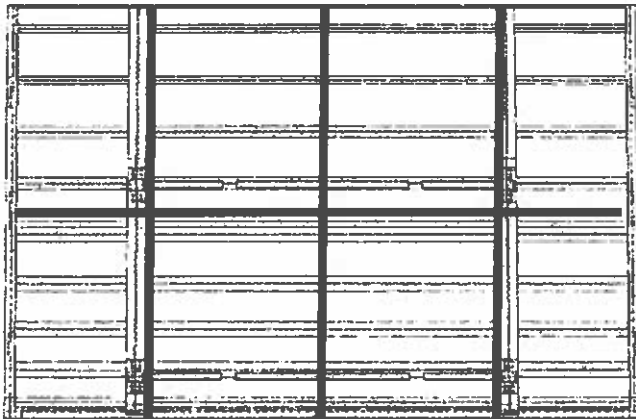
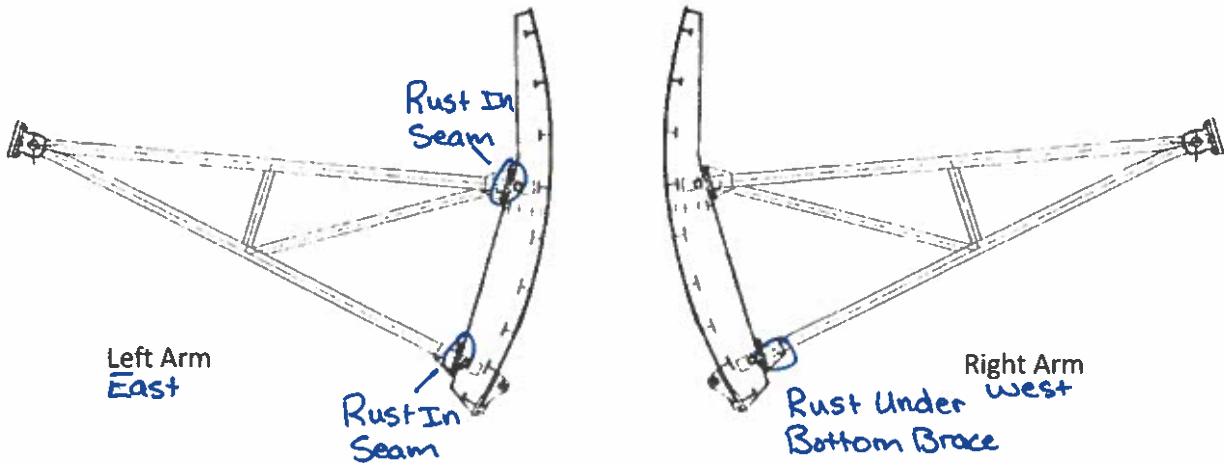


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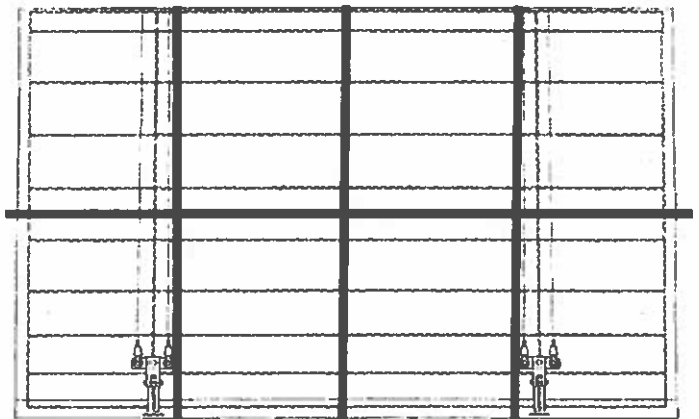
<b>Project:</b>	Palmetto Bend Dam Spillway Gate Rehabilitation
<b>Contractor:</b>	CFG Industries
<b>Engineer:</b>	Freese and Nichols, Inc.
<b>Date:</b>	6/16/23
<b>Inspector:</b>	Gate 9 Bobby Gendke Jared Darilek Jeffery Hudson

Time	Work Description
	Bottom of Gate where it meets concrete is Rusted
	Middle Tension Cable on Hoist Deck is Missing

**Work Location Diagram**



Downstream



Upstream Elevation

# Daily Inspection Report

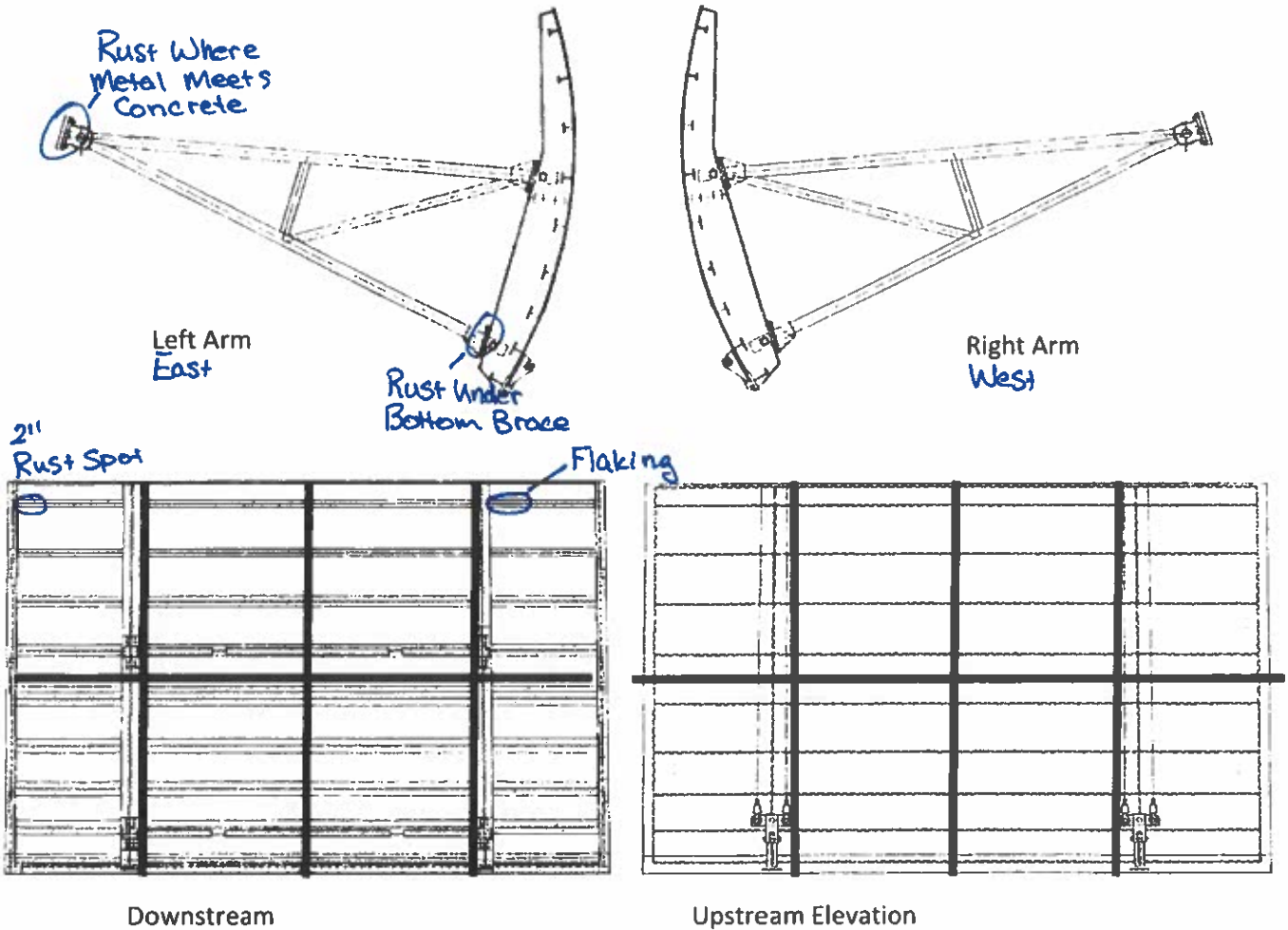


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361-782-5229

<b>Project:</b>	Palmetto Bend Dam Spillway Gate Rehabilitation
<b>Contractor:</b>	CFG Industries
<b>Engineer:</b>	Freese and Nichols, Inc.
<b>Date:</b>	6/16/23
<b>Inspector:</b>	Gate 10 Bobby Gendke Jared Darilek Jeffery Hudson

Time	Work Description
	Bottom of Gate where it meets concrete is Rusted
	Middle & West Tension Cables on Bridge are Broken But Still There

**Work Location Diagram**



# Daily Inspection Report

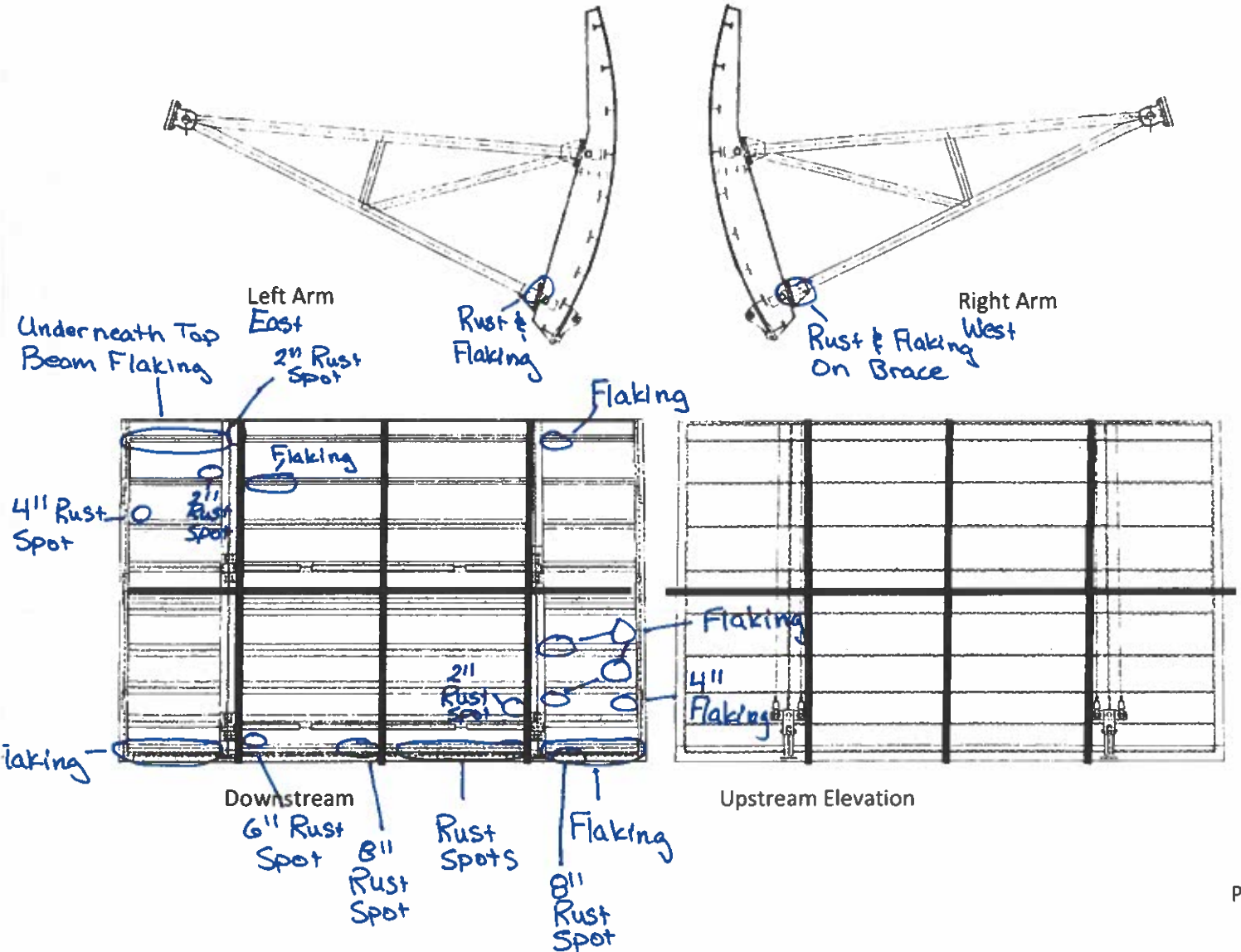


PO Box 429, Edna, Texas 77957  
361-782-5229

<b>Project:</b>	Palmetto Bend Dam Spillway Gate Rehabilitation
<b>Contractor:</b>	CFG Industries
<b>Engineer:</b>	Freese and Nichols, Inc.
<b>Date:</b>	6/16/23
<b>Inspector:</b>	Gate 11 Bobby Gendke Jared Darilek Jeffery Hudson

Time	Work Description
	Bottom of Gate Where It Meets Concrete Is Rusted
	Bottom East Side Cathodic cap is Seeping Water
	West Tension Cable On Bridge Is Missing

**Work Location Diagram**





# Daily Inspection Report

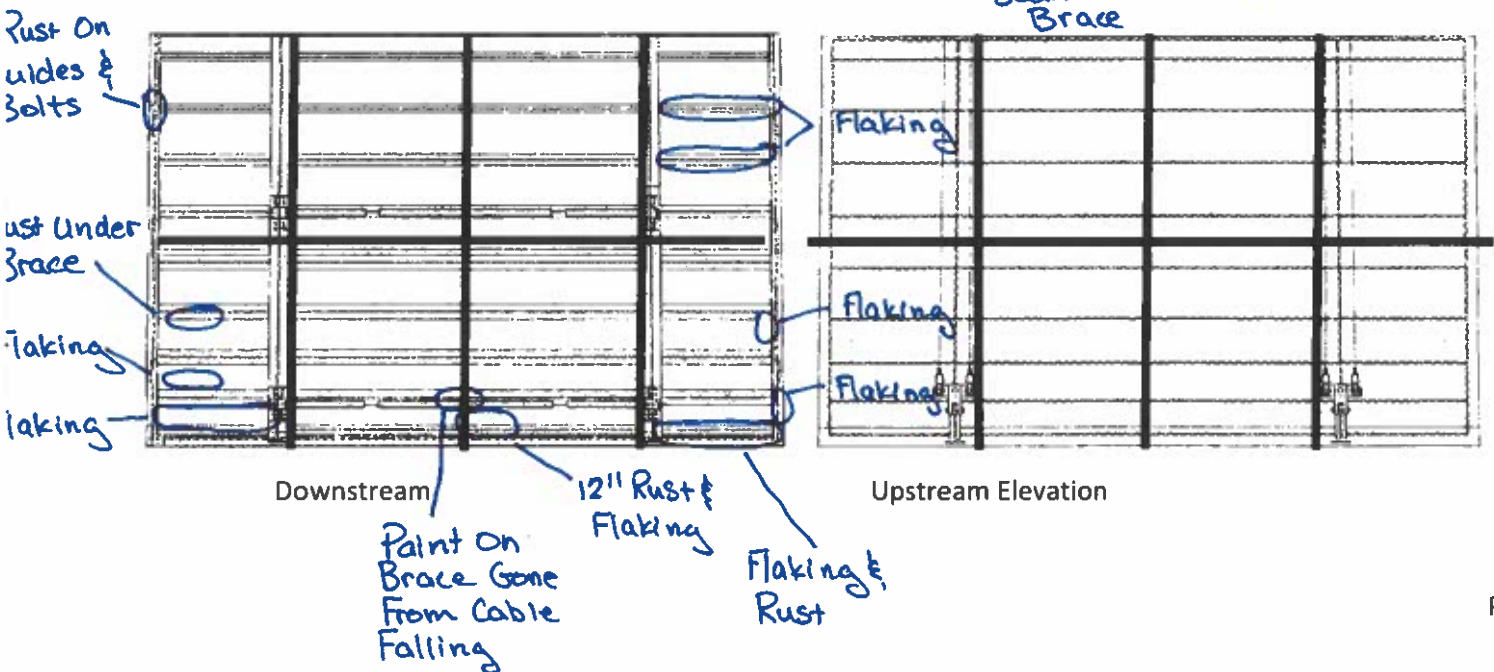
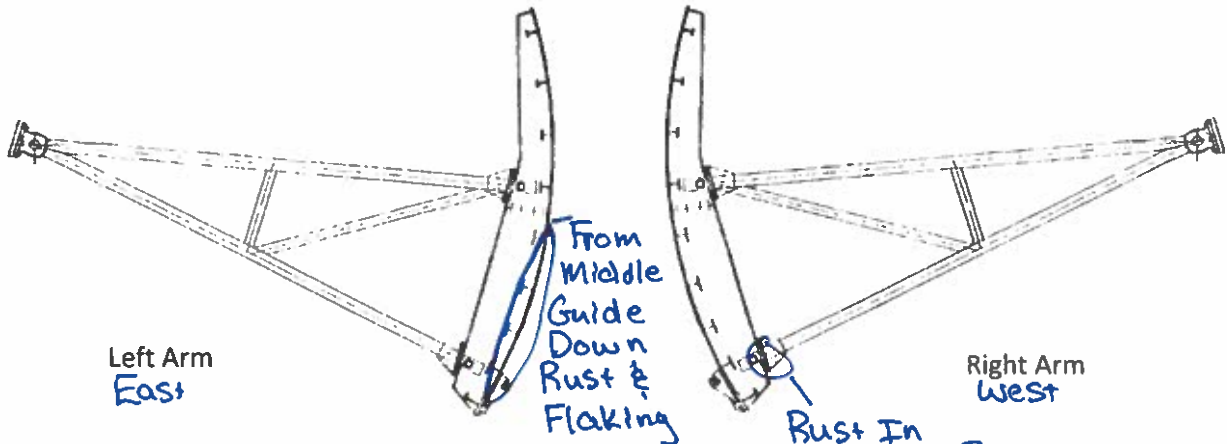


PO Box 429, Edna, Texas 77957  
361-782-5229

<b>Project:</b>	Palmetto Bend Dam Spillway Gate Rehabilitation
<b>Contractor:</b>	CFG Industries
<b>Engineer:</b>	Freese and Nichols, Inc.
<b>Date:</b>	6/16/23
<b>Inspector:</b>	Gate 12 Bobby Gendke Jared Darilek Jeffery Hudson

Time	Work Description
	Bottom of Gate where it meets concrete is rusted
	Middle tension cable on bridge is missing

**Work Location Diagram**



**APPENDIX -  
PAINT SPECIFICATIONS**

## SELECTION & SPECIFICATION DATA

<b>Generic Type</b>	Cycloaliphatic Amine Epoxy
<b>Description</b>	Highly chemical resistant epoxy mastic coating with exceptionally versatile uses in all industrial markets. Self-priming and suitable for application over most existing coatings, and tightly adherent rust. Serves as stand-alone system for a variety of chemical environments and is also designed for various immersion conditions. An optional micaceous iron oxide additive (MIO Filler) can be purchased separately and may be used per the Product Data Sheet to enhance corrosion protection and film strength for more aggressive service such as severe marine or heavy industrial uses.
<b>Features</b>	<ul style="list-style-type: none"> <li>• Excellent chemical resistance</li> <li>• Surface tolerant characteristics</li> <li>• Conventional and low-temperature versions</li> <li>• Self-priming and primer/finish capabilities</li> <li>• Very good abrasion resistance</li> <li>• VOC compliant to current AIM regulations</li> <li>• Suitable for use in USDA inspected facilities</li> <li>• Intermediate coat for AWWA D102 Outside System #6 and #7</li> <li>• Approved MPI #98</li> </ul> <p>For specific performance data, please contact your Carboline sales representative.</p>
<b>Color</b>	C900 (Black), S800 (White), C703 (Grey), C705 (Light Grey), 0500 (Tile Red), 5555 (Safety Red), 0200 (Tan), 6666 (Safety Yellow), 1675 (Ignition Yellow) Other colors may be available on request. Contact your Carboline Representative for availability.  Note: The low temperature formulation will cause most colors to yellow or discolor more than normal in a short period of time.
<b>Finish</b>	Gloss
<b>Primer</b>	Self-priming.
<b>Dry Film Thickness</b>	4 - 6 mils (102 - 152 microns) per coat  6.0-8.0 mils (150-200 microns) over light rust and for uniform gloss over inorganic zincs. Don't exceed 10 mils (250 microns) in a single coat. Excessive film thickness over inorganic zincs may increase damage during shipping or erection.
<b>Solids Content</b>	By Volume 75% +/- 2%
<b>Theoretical Coverage Rate</b>	1203 ft <sup>2</sup> /gal at 1.0 mils (29.5 m <sup>2</sup> /l at 25 microns) 301 ft <sup>2</sup> /gal at 4.0 mils (7.4 m <sup>2</sup> /l at 100 microns) 200 ft <sup>2</sup> /gal at 6.0 mils (4.9 m <sup>2</sup> /l at 150 microns) Allow for loss in mixing and application.
<b>VOC Values</b>	<p><b>As Supplied</b> : 1.81 lbs/gal (217 g/l)</p> <p>Thinner 2 : 13 oz/gal (106.8 mg/ml) = 2.30 lbs/gal (276 g/l)</p> <p>Thinner 33 : 16 oz/gal (131.5 mg/ml) = 2.43 lbs/gal (291 g/l)</p> <p>Thinner 33 : 7 oz/gal (57.5 mg/ml) = 2.08 lbs/gal (250 g/l)</p> <p>Thinner 2 : 7 oz/gal (57.5 mg/ml) = 2.08 lbs/gal (250 g/l)</p> <p>Use Thinner 76 up to 8 oz/gal for 890 and 16 oz/gal for 890 LT where non-photochemically reactive solvents are required. These are nominal values and may vary with color.</p>

## SELECTION & SPECIFICATION DATA

<b>Dry Temp. Resistance</b>	Continuous: 300°F (149°C) Non-Continuous: 350°F (177°C)  Discoloration and loss of gloss occurs above 200°F (93°C) but does not affect performance.
<b>Under Insulation Resistance</b>	Continuous: 300°F (149°C)  Discoloration and loss of gloss occurs above 200 F (93 °C) but does not affect performance.
<b>Limitations</b>	Do not apply over latex coatings. For immersion projects use only factory made material in special colors. Epoxies may lose gloss, discolor, and chalk when exposed to sunlight. Consult Technical Service for specifics.
<b>Topcoats</b>	<ul style="list-style-type: none"><li>• Acrylics</li><li>• Epoxies</li><li>• Polyurethanes</li></ul>

## SUBSTRATES & SURFACE PREPARATION

<b>General</b>	Surfaces must be clean and dry. Remove all dirt, dust, oil and all other contaminant.
<b>Steel</b>	<b>Immersion:</b> SSPC-SP10 <b>Non-immersion:</b> SSPC-SP6 1.5-3.0 mils (38-75 microns) <i>SSPC-SP2 or SP3 are suitable cleaning methods for mild environments.</i>  When using under fireproofing products, defer to the primer surface preparation requirements in the product data sheet of the fireproofing product.
<b>Concrete or CMU</b>	Concrete shall be designed, placed, cured, and prepared per NACE No. 6/SSPC-SP 13, latest edition. This includes abrading to remove all laitance, loose concrete, etc. and to create the surface profile required for the coating system to be used. The concrete shall be considered cured sufficiently for coating when it passes the moisture tests.
<b>Drywall &amp; Plaster</b>	Joint compound and plaster should be fully cured prior to coating application.
<b>Previously Painted Surfaces</b>	Lightly sand or abrade to roughen surface and degloss the surface. Existing paint must attain a minimum 3A rating in accordance with ASTM D3359 "X-Cut" adhesion test.
<b>Non-Ferrous Metals</b>	Surface profile should be a dense angular 1.5 - 3 mils and is best achieved through abrasive blasting in accordance with SSPC-SP16 for atmospheric exposure, or SSPC-SP17 for immersion environments.



## PERFORMANCE DATA

Test Method	System	Results
ASTM B 117 Salt Fog	Blasted Steel 2 cts. 890	No effect on plane, rust in scribe. 1/16" (0.16 cm) undercutting at scribe after 2000 hours
ASTM B117 Salt Fog	Blasted Steel 1 ct. IOZ 1 ct 890	No effect on plane, no rust in scribe and no undercutting after 4000 hours
ASTM D 4060 Abrasion	Blasted Steel 1 ct Epoxy Pr. 1 ct 890	85 mg. loss after 1000 cycles, CS17 wheel 1000 gm. load
ASTM D1735 Water Fog	Blasted Steel 1 ct. Epoxy Pr. 1 ct. 890	No blistering, rusting or delamination after 2800 hours
ASTM D2486 Scrub Resistance	Blasted Steel 1 ct. 890	93% gloss retained after 10,000 cycles w/liquid scrub medium
ASTM D3359 Adhesion	Blasted Steel 1 ct 890	5A
ASTM D3363 Pencil Hardness	Blasted Steel 2 cts 890	Greater than 8H
ASTM E84 Flame and Smoke	2 ct 890	5 Flame 5 Smoke Class A

Test reports and additional data available upon written request.

## MIXING & THINNING

**Mixing** | Power mix separately, then combine and power mix. DO NOT MIX PARTIAL KITS.

**Thinning** | **Preferred Thinner Uses and Application:**  
 Spray: Up to 13 oz/gal (10%) w/ #2  
 Brush: Up to 16 oz/gal (12%) w/ #33  
 Roller: Up to 16 oz/gal (12%) w/ #33  
 Thinner #33 can be used for spray in hot/windy conditions.  
 Mist coating: Thin up to 32 oz/gal (263 g/l) with Thinner 2 or 33 in VOC restricted (2.8 lb/gal) areas. May thin up to 48 oz/gal where VOC restricted levels are at 3.5 lb/gal (0.42 kg/l) for mist coat only. If necessary, use Thinner 230 only in hot (above 100°F/38°C) and windy conditions, to slow down the evaporation rate.  
**Alternate Compatible Thinners for Atmospheric Service:**  
 Carboline Thinner 2, 10, 15, 76, 225E, 229, 236E, 243E, 248 and Plasite Thinner #19 or #20  
 Use of thinners other than those supplied or recommended by Carboline may adversely affect product performance and void product warranty, whether expressed or implied.

**Ratio** | 1:1 Ratio (A to B)

**Pot Life** | 3 Hours at 75°F (24°C)

**Pot Life** | Pot life ends when coating loses body and begins to sag. Pot life times will be less at higher temperatures.

## APPLICATION EQUIPMENT GUIDELINES

Listed below are general equipment guidelines for the application of this product. Job site conditions may require modifications to these guidelines to achieve the desired results.

**Spray Application (General)** | This is a high solids coating and may require adjustments in spray techniques. Wet film thickness is easily and quickly achieved. The following spray equipment has been found suitable and is available from manufacturers such as Binks, DeVilbiss and Graco.

## APPLICATION EQUIPMENT GUIDELINES

Listed below are general equipment guidelines for the application of this product. Job site conditions may require modifications to these guidelines to achieve the desired results.

<b>Conventional Spray</b>	Pressure pot equipped with dual regulators, 3/8" (0.95 cm) I.D. minimum material hose, 0.070" (0.18 cm) I.D. fluid tip and appropriate air cap.
<b>Airless Spray</b>	Pump Ratio: 30:1 (min.)* GPM Output: 3.0 (min.) Material Hose: 3/8" I.D. (0.95 cm)(min.) Tip Size: 0.017-0.021" (0.04-0.05 cm) Output PSI: 2100-2300 Filter Size: 60 mesh *PTFE packings are recommended and available from the pump manufacturer.
<b>Brush &amp; Roller (General)</b>	Multiple coats may be required to obtain desired appearance, recommended dry film thickness and adequate hiding. Avoid excessive re-brushing or rerolling. For best results, tie-in within 10 minutes at 75°F (24°C).
<b>Brush</b>	Use a medium bristle brush.
<b>Roller</b>	Use a short-nap solvent resistant roller cover.

## APPLICATION CONDITIONS

Condition	Material	Surface	Ambient	Humidity
Minimum	50°F (10°C)	50°F (10°C)	50°F (10°C)	0%
Maximum	90°F (32°C)	125°F (52°C)	110°F (43°C)	90%

This product simply requires the substrate temperature to be above the dew point. Condensation due to substrate temperatures below the dew point can cause flash rusting on prepared steel and interfere with proper adhesion to the substrate. Special application techniques may be required above or below normal application conditions.

## CURING SCHEDULE

Surface Temp.	Dry to Recoat	Dry to Topcoat w/ Other Finishes	Final Cure General	Final Cure Immersion
50°F (10°C)	12 Hours	24 Hours	3 Days	NR
60°F (16°C)	8 Hours	16 Hours	2 Days	10 Days
75°F (24°C)	4 Hours	8 Hours	1 Day	5 Days
90°F (32°C)	2 Hours	4 Hours	16 Hours	3 Days

Higher film thickness, insufficient ventilation or cooler temperatures will require longer cure times and could result in solvent entrapment and premature failure. Excessive humidity or condensation on the surface during curing can interfere with the cure, can cause discoloration and may result in a surface haze. Any haze or blush must be removed by water washing before recoating. During high humidity conditions, it is recommended that the application be done while temperatures are increasing. Recoat intervals may vary from those listed above when using under intumescent fireproofing products. Consult Carboline Technical Service for recommended cure times before applying Carboline intumescent products. **Maximum recoat/topcoat times are 30 days for epoxies and 90 days for polyurethanes at 75°F (24°C).** If the maximum recoat times have been exceeded, the surface must be abraded by sweep blasting or sanding prior to the application of additional coats.

## CLEANUP & SAFETY

<b>Cleanup</b>	Use Thinner 2 or Acetone. In case of spillage, absorb and dispose of in accordance with local applicable regulations.
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## CLEANUP & SAFETY

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<b>Safety</b>	Read and follow all caution statements on this product data sheet and on the SDS. Employ normal workmanlike safety precautions. Keep container closed when not in use.
<b>Ventilation</b>	When used as a tank lining or in enclosed areas, thorough air circulation must be used during and after application until the coating is cured. User should test and monitor exposure levels to insure all personnel are below guidelines.

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## PACKAGING, HANDLING & STORAGE

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<b>Shelf Life</b>	Part A: 36 months at 75°F (24°C) Part B: 24 months at 75°F (24°C)  *When kept at recommended storage conditions and in original unopened containers.
<b>Storage Temperature &amp; Humidity</b>	40-120 °F (4-49 °C) Store indoors Can be stored down to 20 °F (-7 °C) for no longer than 30 days 0-100% Relative Humidity
<b>Storage</b>	Store Indoors
<b>Shipping Weight (Approximate)</b>	2 Gallon Kit - 29 lbs (13 kg) 10 Gallon Kit - 145 lbs (66 kg)
<b>Flash Point (Setaflash)</b>	89 °F (32 °C) for Part A 73 °F (23 °C) for Part B

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## WARRANTY

To the best of our knowledge the technical data contained herein is true and accurate on the date of publication and is subject to change without prior notice. User must contact Carboline Company to verify correctness before specifying or ordering. No guarantee of accuracy is given or implied. We guarantee our products to conform to Carboline quality control. We assume no responsibility for coverage, performance, injuries or damages resulting from use. Carbolines sole obligation, if any, is to replace or refund the purchase price of the Carboline product(s) proven to be defective, at Carbolines option. Carboline shall not be liable for any loss or damage. NO OTHER WARRANTY OR GUARANTEE OF ANY KIND IS MADE BY CARBOLINE, EXPRESS OR IMPLIED, STATUTORY, BY OPERATION OF LAW, OR OTHERWISE, INCLUDING MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. All of the trademarks referenced above are the property of Carboline International Corporation unless otherwise indicated.

## SELECTION & SPECIFICATION DATA

<b>Generic Type</b>	Epoxy mastic
<b>Description</b>	Aluminum-pigmented, low-stress, high-solids mastic with a proven field history. Carbomastic 15 was the pioneer mastic coating in a number of industrial markets and today still provides unmatched levels of barrier protection and corrosion resistance over existing finishes and rusted or SSPC-SP2 or SP3-cleaned steel.
<b>Features</b>	<ul style="list-style-type: none"> <li>• Excellent performance over minimal surface preparation of steel substrates</li> <li>• Suitable as a topcoat for most tightly adhered existing coatings</li> <li>• Excellent choice for field touch-up of zinc-rich primers and galvanized steel</li> <li>• Unique formulation with aluminum flakes provides exceptional barrier protection</li> <li>• Available in a low temperature cure version (Carbomastic 15 FC)</li> <li>• Suitable for use under insulation on hot surfaces operating up to 300 °F (150 °C)</li> <li>• VOC compliant to current AIM regulations</li> </ul>
<b>Color</b>	Aluminum (C901); Red (M500)  Color variations within a batch and from batch to batch may occur due to the metallic pigments and variations in application techniques and conditions. *Red (M500) is available for use as a contrasting primer in multiple coat applications, but should always be topcoated.
<b>Primer</b>	Self-priming. May be applied over most tightly adhering coatings as well as inorganic zinc primers.
<b>Dry Film Thickness</b>	3 - 5 mils (76 - 127 microns) over existing coatings 7 - 10 mils (178 - 254 microns) in one or two coats in severe exposures  <b>Do not exceed 10.0 mils (250 microns) in a single coat.</b>
<b>Solids Content</b>	By Volume 90% +/- 2%
<b>HAPs Values</b>	As supplied: 0.70 lbs/solid gal
<b>Theoretical Coverage Rate</b>	1444 ft <sup>2</sup> /gal at 1.0 mils (35.4 m <sup>2</sup> /l at 25 microns) 481 ft <sup>2</sup> /gal at 3.0 mils (11.8 m <sup>2</sup> /l at 75 microns) 144 ft <sup>2</sup> /gal at 10.0 mils (3.5 m <sup>2</sup> /l at 250 microns) Allow for loss in mixing and application.
<b>Severe Exposures</b>	Temperature resistance under insulation: Up to 300°F(150°C)  Discoloration is observed above 180°F(82°C) but does not affect performance.
<b>VOC Values</b>	<b>As Supplied</b> : 0.7 lbs/gal (88 g/l) Thinner 10 : 32 oz/gal: 2.0 lbs/gal (242 g/l) Thinner 236 E : 32 oz/gal: 0.7 lbs/gal (88 g/l) Thinner 72 : 32 oz/gal: 2.07 lbs/gal (248 g/l) Thinner 76 : 32 oz/gal: 1.9 lbs/gal (231 g/l)  These are nominal values.
<b>Topcoats</b>	May be coated with Acrylics, Epoxies, Alkyds, or Polyurethanes depending on exposure and need.

## SELECTION & SPECIFICATION DATA

<b>Generic Type</b>	Modified siloxane hybrid
<b>Description</b>	Carboxane 2100 FC is an isocyanate free, ultra-durable, fast-cure corrosion resistant coating that provides outstanding color and gloss retention for exterior exposures that exceeds many acrylic aliphatic polyurethanes. It combines the chemical resistant properties of epoxies with the weathering characteristics of acrylic-polyurethanes. This tightly cross-linked film results in a finish with outstanding barrier properties. It provides good corrosion protection and can be applied direct to metal (DTM) in exposures designated "urban to light industrial" (C1 - C4 according to ISO 12944). For improved corrosion protection it can be applied over approved primers. It is most often used as the finish coat of a 2 coat system utilizing a zinc-rich primer for maximum corrosion resistance and longevity. These 1 - 2 coat systems can eliminate the need for typical primers and/or intermediate coats to significantly speed up the painting process. This product meets the most stringent VOC regulations for field applied coatings of less than 100 g/l volatile organic content.
<b>Features</b>	<ul style="list-style-type: none"> <li>• Isocyanate free</li> <li>• Fast cure with good pot life - speeds the painting process</li> <li>• Excellent weathering - SSPC Coating Spec. No. 36 Level 3A (highest level) for polyurethanes</li> <li>• Can be applied DTM</li> <li>• Excellent corrosion protection - ISO 12944-6 C3 High and C4 Medium, 1 coat applied DTM</li> <li>• 1 - 2 coats instead of 2 - 3 coats saves significant time, labor, and money</li> <li>• Low VOC (less than 100 g/l)</li> <li>• Excellent durability - abrasion and impact resistant</li> <li>• Meets IEEE ANSI C57.12.29-2005 Standard For Pad Mounted Equipment</li> </ul>
<b>Color</b>	1864 (White), 5555 (Safety Red), 6666 (Safety Yellow), C703 (Grey), C705 Light Grey), and C900 (Black). Other colors are available on request. Contact your Carboline Representative for availability.
<b>Finish</b>	Gloss
<b>Primer</b>	Compatible with inorganic and organic zinc rich primers, epoxies and others as recommended by Carboline Technical Service
<b>Dry Film Thickness</b>	3 - 7 mils (76 - 178 microns) per coat  As a single-coat (DTM) or as the finish of a 2 coat system (over a primer) a minimum of 5 mils (125 microns) is recommended. As the finish of a 3 coat system (primer and intermediate coat), a minimum of 3 mils (75 microns) is recommended. See Severe Exposures below.
<b>Solids Content</b>	By Volume 85% +/- 2%
<b>Theoretical Coverage Rate</b>	1363 ft <sup>2</sup> /gal at 1.0 mils (33.5 m <sup>2</sup> /l at 25 microns) 454 ft <sup>2</sup> /gal at 3.0 mils (11.2 m <sup>2</sup> /l at 75 microns) 195 ft <sup>2</sup> /gal at 7.0 mils (4.8 m <sup>2</sup> /l at 175 microns) Allow for loss in mixing and application.
<b>Severe Exposures</b>	For severe marine environments (offshore structures) a 3 coat system is recommended. For other severe industrial exposures, a 2 coat system may be used provided the minimum film thickness of 5 mils (125 microns) for the finish is achieved.

### SELECTION & SPECIFICATION DATA

<b>VOC Value(s)</b>	Per EPA Method 24: 0.75 lbs/gal (90 g/l) mixed 10 oz/gal of Thinner 10: 1.23 lbs/gal (148 g/l) 10 oz/gal of Thinner 236 E: 0.75 lbs/gal (90 g/l)  These are nominal values and may vary slightly with color. This product contains US EPA VOC-exempt solvent(s).
<b>Dry Temp. Resistance</b>	Continuous: 302°F (150°C) Non-Continuous: 338°F (170°C)  Some discoloration and loss of gloss may be experienced at elevated temperatures.

### SUBSTRATES & SURFACE PREPARATION

<b>General</b>	Surfaces must be clean and dry. Employ adequate methods to remove dirt, dust, oil and all other contaminants that could interfere with adhesion of the coating. Refer to specific primer's Product Data Sheet for detailed requirements of the specified primer
<b>Steel</b>	For use over recommended primer: Follow specific primer recommendations For use direct-to-metal: SSPC-SP6 with a 1.5-2.5 mil (37.5-62.5 micron) surface profile for optimum performance.
<b>Galvanized Steel</b>	Recommended: SSPC-SP 16

### MIXING & THINNING

<b>Mixing</b>	Power mix components separately then combine and power mix. DO NOT MIX PARTIAL KITS.
<b>Thinning</b>	Not normally required. May be thinned up to 10% (13 oz/gal) with Thinner 236 E or up to 8% (10 oz/gal) with Thinner 10 for areas allowing more than 100 g/l VOC emissions.
<b>Ratio</b>	4:1 by volume.
<b>Pot Life</b>	5 hours at 75°F (23°C) and less at higher temperatures. Material is moisture sensitive. If left uncovered for extended periods or under very high humidity conditions, check for and remove any skinning that may occur.

### APPLICATION EQUIPMENT GUIDELINES

Listed below are general equipment guidelines for the application of this product. Job site conditions may require modifications to these guidelines to achieve the desired results.

<b>Spray Application (General)</b>	This is a high solids coating and may require adjustments in spray techniques. Wet film thickness is easily and quickly achieved. The following spray equipment has been found suitable and is available from manufacturers.
<b>Airless Spray</b>	Pump Ratio: 30:1 (min.) Volume Output: 2.5 gpm min. (11.5 l/minute min.) Material Hose: ½" I.D. min. (12.5 mm min.) Tip Size: 0.017-0.021" (0.43-0.53 mm) Output Pressure: 1500-2000 psi (105-140 kg/cm <sup>2</sup> )

## APPLICATION EQUIPMENT GUIDELINES

Listed below are general equipment guidelines for the application of this product. Job site conditions may require modifications to these guidelines to achieve the desired results.

**Brush & Roller (General)** | Multiple coats may be required to obtain desired appearance, recommended dry film thickness and adequate hiding. Avoid excessive re-brushing or re-rolling.

**Brush** | Use a medium natural bristle brush.

**Roller** | Use a short to medium-nap mohair roller cover with phenolic core.

## APPLICATION CONDITIONS

Condition	Material	Surface	Ambient	Humidity
Minimum	50°F (10°C)	35°F (2°C)	35°F (2°C)	20%
Maximum	90°F (32°C)	110°F (43°C)	110°F (43°C)	90%

**Industry standards are for substrate temperatures to be 5°F (3°C) above the dew point.** Protect from high humidity, dew and direct moisture contact until it is dry to handle. Application and/or curing in humidities above maximum, or exposure to moisture from rain or dew may result in a loss of gloss and/or staining of the product.

## CURING SCHEDULE

Surface Temp.	Dry to Touch	Dry to Recoat	Dry to Handle
35°F (2°C)	10 Hours	24 Hours	24 Hours
50°F (10°C)	9 Hours	8 Hours	9 Hours
75°F (24°C)	2 Hours	3 Hours	4 Hours
90°F (32°C)	1 Hour	2 Hours	3 Hours

These times are based on recommended coverage rates and 50% RH. Curing under low humidity conditions will extend times. Maximum recoat for this product is 30 days. After this period it is best to degloss the surface by abrasive blasting or sanding prior to recoating.

Product may be force cured up to 140°F as needed. Product will cure to handle after 30 min when force cured at 140°F.

## CLEANUP & SAFETY

**Cleanup** | Use Thinner 2, Thinner 225 E or Acetone. In case of spillage, absorb and dispose of in accordance with local applicable regulations.

**Safety** | Read and follow all caution statements on this product data sheet and on the SDS for this product. Employ normal workmanlike safety precautions.

**Ventilation** | When used in enclosed areas, thorough air circulation must be used during and after application until the coating is cured. The ventilation system should be capable of preventing the solvent vapor concentration from reaching the lower explosion limit for the solvents used. User should test and monitor exposure levels to insure all personnel are below guidelines. If not sure or if not able to monitor levels, use MSHA/NIOSH approved supplied air respirator.

# Carboxane<sup>®</sup> 2100 FC

## PRODUCT DATA SHEET



### PACKAGING, HANDLING & STORAGE

<b>Shelf Life</b>	Part A: 24 months at 75°F (24°C) Part B: 12 months at 75°F (24°C)  *Shelf Life: (actual stated shelf life) when kept at recommended storage conditions and in original unopened containers.
<b>Storage Temperature &amp; Humidity</b>	40 -110°F (4°C-43°C) 0-90% Relative Humidity
<b>Storage</b>	Store Indoors. KEEP DRY.
<b>Shipping Weight (Approximate)</b>	1 Gallon Kit - 13 lbs. (6 kg) 5 Gallon Kit - 67 lbs. (30 kg)
<b>Flash Point (Setaflash)</b>	Part A: 109°F (43°C) Part B: 100°F (38°C)

### WARRANTY

To the best of our knowledge the technical data contained herein is true and accurate on the date of publication and is subject to change without prior notice. User must contact Carboline Company to verify correctness before specifying or ordering. No guarantee of accuracy is given or implied. We guarantee our products to conform to Carboline quality control. We assume no responsibility for coverage, performance, injuries or damages resulting from use. Carbolines sole obligation, if any, is to replace or refund the purchase price of the Carboline product(s) proven to be defective, at Carbolines option. Carboline shall not be liable for any loss or damage. NO OTHER WARRANTY OR GUARANTEE OF ANY KIND IS MADE BY CARBOLINE, EXPRESS OR IMPLIED, STATUTORY, BY OPERATION OF LAW, OR OTHERWISE, INCLUDING MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. All of the trademarks referenced above are the property of Carboline International Corporation unless otherwise indicated.



## SUBSTRATES & SURFACE PREPARATION

<b>General</b>	Surfaces must be clean and dry. Employ adequate methods to remove dirt, dust, oil and all other contaminants that could interfere with adhesion of the coating in accordance with SSPC-SP 1 and follow the guidelines below.
<b>Steel</b>	<u>Immersion</u> : NACE No. 2/SSPC-SP 10 with a 2.0-3.0 mil (50-75 microns) surface profile. <u>Non-Immersion</u> : NACE No. 3/SSPC-SP 6 with a 2.0-3.0 mil (50-75 microns) surface profile for maximum protection. SSPC-SP 2, SSPC-SP 3, NACE No. 4/SSPC-SP 7, NACE/SSPC WJ-1 to WJ-4, or SSPC-SP 14 are also acceptable methods. For alternate methods contact Carboline Technical Service.
<b>Galvanized Steel</b>	For optimum performance clean and abrade in accordance with SSPC-SP 16.
<b>Previously Painted Surfaces</b>	Clean and lightly sand or abrade to roughen and degloss the surface. Existing coating must attain a minimum 3A rating in accordance with ASTM D3359 adhesion test.

## PERFORMANCE DATA

Test Method	System	Results
ASTM 4060 Taber Abrasion	1 ct. CM15	130 mg loss; 1000 cycles using CS 17 wheel and 1000 gm load,
ASTM B117 Salt Spray	Rusted Steel 1 ct. CM 15	No blistering, rusting, or softening No rust creep from scribe
ASTM D1735 Water Fog	Rusted Steel 1ct CM 15	No blistering or softening, No creep from scribe
ASTM D522 Flexibility	Blasted steel 1 ct. CM15	A) Conical - crack 0.38", actual elongation 48.57% B) Cylindrical- no cracking observed
ASTM G 14 Impact Resistance	A) Blasted Steel 1 ct. CM 15, B) Rusted Steel 1 ct. CM 15	Area Damaged A) 1/4 inch (0.25") B) 1/4 - 9/16 inch (0.44")

Test reports and additional data available upon written request.

## MIXING & THINNING

<b>Mixing</b>	Power mix separately, then combine and power mix. DO NOT MIX PARTIAL KITS.
<b>Thinning</b>	May be thinned up to 32 oz/gal (25%) with Thinner 10 for normal conditions. For application to hot substrates up to 200 °F (93 °C) it is recommended to thin approximately 25% (32 oz/gal) with Thinner 230. Thinner 72 may be used for hot or windy conditions. Use Thinner 76 for nonphotochemically reactive thinner or Thinner 236E for exempt thinner. Use of thinners other than those recommended and supplied by Carboline may adversely affect product performance and void product warranty, whether expressed or implied.
<b>Ratio</b>	1:1 Ratio (A to B)
<b>Pot Life</b>	2 hours @ 75 °F (24 °C) unthinned. 1 hour @ 90 °F (32 °C) unthinned  Pot life ends when coating becomes too viscous to use

## APPLICATION EQUIPMENT GUIDELINES

Listed below are general equipment guidelines for the application of this product. Job site conditions may require modifications to these guidelines to achieve the desired results.

<b>Spray Application (General)</b>	The following spray equipment has been found suitable and is available from manufacturers such as Binks, DeVilbiss and Graco.
<b>Conventional Spray</b>	Pressure pot equipped with dual regulators, 3/8" I.D. minimum material hose, 0.086" I.D. fluid tip and appropriate air cap.
<b>Airless Spray</b>	Pump Ratio: 30:1 (min.)* GPM Output: 3.0 (min.) Material Hose: 3/8" I.D. (min.) Tip Size: 0.019-0.025" Output PSI: 1900-2100 Filter Size: 60 mesh *PTFE packings are recommended and available from the pump manufacturer.
<b>Plural Component</b>	May be applied by plural component spray equipment. Contact Carboline Technical Service for specific recommendations.
<b>Brush &amp; Roller (General)</b>	Multiple coats may be required to obtain desired appearance, recommended dry film thickness and adequate hiding. Avoid excessive re-brushing or rerolling. Use clean natural bristle brush or medium nap phenolic core roller. Work coating into all irregularities.

## APPLICATION CONDITIONS

Condition	Material	Surface	Ambient	Humidity
Minimum	50°F (10°C)	50°F (10°C)	50°F (10°C)	0%
Maximum	90°F (32°C)	200°F (93°C)	100°F (38°C)	95%

This product simply requires the substrate temperature to be above the dew point. Condensation due to substrate temperatures below the dew point can cause flash rusting on prepared steel and interfere with proper adhesion to the substrate. Special application techniques and/or thinning may be required for application when conditions are above and below normal application conditions.

## CURING SCHEDULE

Surface Temp.	Final Cure Immersion	Dry to Recoat or Topcoat
50°F (10°C)	15 Days	5 Days
60°F (16°C)	10 Days	3 Days
75°F (24°C)	5 Days	24 Hours
90°F (32°C)	3 Days	18 Hours

**For CM 15 Dry to Touch is 5 hours at 75 °F (24 °C). Maximum re-coat/topcoat times are 30 days for epoxies and 90 days for polyurethanes at 75 °F (24 °C).**

\*These times are based on a 5.0-7.0 mil (125-175 micron) dry film thickness. Higher film thickness, insufficient ventilation or cooler temperatures will require longer cure times and could result in solvent entrapment and premature failure. Excessive humidity or condensation on the surface during curing can interfere with the cure, can cause discoloration and may result in a surface haze. Any haze or blush must be removed by water washing before recoating. If the maximum recoat time is exceeded, the surface must be abraded by sweep blasting prior to the application of additional coats. **Note:** This product contains conductive pigments and cannot be holiday tested.

### CLEANUP & SAFETY

<b>Cleanup</b>	Use Thinner 2 or Acetone. In case of spillage, absorb and dispose of in accordance with local applicable regulations.
<b>Safety</b>	Read and follow all caution statements on this product data sheet and on the SDS for this product. Employ normal workmanlike safety precautions. Use adequate ventilation. Keep container closed when not in use.
<b>Ventilation</b>	When used as a tank lining or in enclosed areas, thorough air circulation must be used during and after application until the coating is cured. The ventilation system should be capable of preventing the solvent vapor concentration from reaching the lower explosion limit for the solvents used. In addition to ensuring proper ventilation, appropriate respirators must be used by all application personnel.

### PACKAGING, HANDLING & STORAGE

<b>Shelf Life</b>	Part A & B: Min. 36 months at 75°F (24°C) *Shelf Life : (actual stated shelf life) when kept at recommended storage conditions and in original unopened containers.
<b>Storage Temperature &amp; Humidity</b>	45° - 110°F (7-43°C) 0-90% Relative Humidity
<b>Storage</b>	Store Indoors. This product is solvent based and not affected by excursions below these published storage temperatures, down to 10°F, for a duration of no more than 14 days. Always inspect the product prior to use to make sure it is smooth and homogeneous when properly mixed.
<b>Shipping Weight (Approximate)</b>	2 Gallon Kit - 25 lbs (11 kg) 10 Gallon Kit - 124 lbs (56 kg)
<b>Flash Point (Setaflash)</b>	Part A: >200°F (93°C) Part B: 76°F (24°C)

### WARRANTY

To the best of our knowledge the technical data contained herein is true and accurate on the date of publication and is subject to change without prior notice. User must contact Carboline Company to verify correctness before specifying or ordering. No guarantee of accuracy is given or implied. We guarantee our products to conform to Carboline quality control. We assume no responsibility for coverage, performance, injuries or damages resulting from use. Carbolines sole obligation, if any, is to replace or refund the purchase price of the Carboline product(s) proven to be defective, at Carbolines option. Carboline shall not be liable for any loss or damage. NO OTHER WARRANTY OR GUARANTEE OF ANY KIND IS MADE BY CARBOLINE, EXPRESS OR IMPLIED, STATUTORY, BY OPERATION OF LAW, OR OTHERWISE, INCLUDING MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. All of the trademarks referenced above are the property of Carboline International Corporation unless otherwise indicated.