

PHILIPPINE BIDDING DOCUMENTS



Republika ng Pilipinas

National Irrigation Administration

(PAMBANSANG PANGASIWAAN NG PATUBIG)

Cavite-Batangas Irrigation Management Office

A. Soriano Highway, Ibayo Silangan, Naic, Cavite

**Installation of Sluice Gate
TRES CRUZES RIVER IRRIGATION SYSTEM**

Tanza, Cavite

CONTRACT NO. 4AC-RRN-21-045D

**Sixth Edition
July 2020**

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Section I. Invitation to Bid



REPUBLIC OF THE PHILIPPINES
NATIONAL IRRIGATION ADMINISTRATION
CAVITE-BATANGAS IRRIGATION MANAGEMENT OFFICE

Invitation to Bid for the *Installation of Sluice Gate of TRES CRUZES River Irrigation System*

1. The *NIA Cavite-Batangas Irrigation Management Office*, through the *GAA FY 2021* intends to apply the sum of *Five Million One Hundred Ninety-Nine Thousand Eight Hundred Twenty-One and 26/100 Pesos (Php 5,199,821.26)* being the Approved Budget for the Contract (ABC) to payments under the Contract No. *4AC-RRN-21-045D for the Installation of Sluice Gate of Tres Cruzes River Irrigation System in Tanza, Cavite*. Bids received in excess of the ABC shall be automatically rejected at bid opening.
2. The *NIA Cavite-Batangas Irrigation Management Office* now invites bids for the above Procurement Project. Completion of the Works is required *one hundred twenty (120) days*. Bidders should have completed a contract similar to the Project. The description of an eligible bidder is contained in the Bidding Documents, particularly, in Section II (Instructions to Bidders).
3. Bidding will be conducted through open competitive bidding procedures using non-discretionary “*pass/fail*” criterion as specified in the 2016 revised Implementing Rules and Regulations (IRR) of Republic Act (RA) No. 9184.
4. Interested bidders may obtain further information from *NIA Cavite-Batangas Irrigation Management Office* and inspect the Bidding Documents at *NIA Cavite-Batangas Irrigation Management Office Ibayo Silangan, Naic, Cavite from 8:00AM to 5:00 PM, Monday to Friday*.
5. Onetime group site inspection is schedule on *23 February 2021, Tuesday, 9:00 A.M.* The meeting place will be at *NIA Cavite-Batangas Irrigation Management Office, Naic, Cavite* at *9:00 A.M.* The inspection is necessary in coming up of a responsive bid.
6. A complete set of Bidding Documents may be acquired by interested bidders on *26 February 2021, Friday*, from given address and website/s below *and* upon payment of the applicable fee for the Bidding Documents, pursuant to the latest Guidelines issued by the GPPB, in the amount of *Ten Thousand Pesos (Php 10,000)*. The Procuring Entity shall allow the bidder to present its proof of payment for the fees in person, by facsimile, or through electronic means.
7. The *NIA Cavite-Batangas Irrigation Management Office* will hold a Pre-Bid Conference¹ on *26 February 2021, Friday, 10:01 A.M. at NIA Cavite-Batangas Irrigation Management Office Ibayo Silangan, Naic, Cavite* which shall be open to prospective bidders.
8. All bids must be accompanied by a bid security in any of the acceptable forms and in the amount stated in **ITB** Clause 16.



REPUBLIC OF THE PHILIPPINES
NATIONAL IRRIGATION ADMINISTRATION
CAVITE-BATANGAS IRRIGATION MANAGEMENT OFFICE

9. Bid opening shall be on **09 March 2021, Tuesday, 3:01 P.M. at NIA Cavite-Batangas Irrigation Management Office Ibayo Silangan, Naic, Cavite**. Bids will be opened in the presence of the bidders' representatives who choose to attend the activity. Late bids shall not be accepted.
10. The **NIA Cavite-Batangas Irrigation Management Office** reserves the right to reject any and all bids, declare a failure of bidding, or not award the contract at any time prior to contract award in accordance with Sections 35.6 and 41 of the 2016 revised Implementing Rules and Regulations (IRR) of RA No. 9184, without thereby incurring any liability to the affected bidder or bidders.
11. For further information, please refer to:

EDWIN C. NAZARENO

NIA Cavite-Batangas Irrigation Management Office

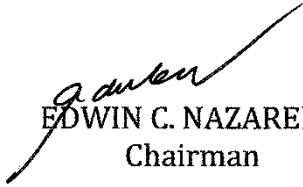
A. Soriano Hi-way, Ibayo Silangan, Naic, Cavite 4110 cavitebatangasimo@yahoo.com

046-412-0282

www.region4a.nia.gov.ph

12. You may visit the following websites: For downloading of Bidding Documents:

www.philgeps.gov.ph and www.region4a.nia.gov.ph


EDWIN C. NAZARENO
Chairman

Section II. Instructions to Bidders

1. Scope of Bid

The Procuring Entity, *NIA Cavite-Batangas Irrigation Management Office* invites Bids for the **Installation of Sluice Gate** with Project Identification Number **4AC-RRN-21-045D**.

The Procurement Project (referred to herein as “Project”) is for the Installation of Sluice Gate as described in Section VI (Specifications).

2. Funding Information

2.1. The GOP through the source of funding as indicated below for *FY 2021* in the amount of ***Five Million One Hundred Ninety-Nine Thousand Eight Hundred Twenty-One and 26/100 Pesos (Php 5,199,821.26)***.

2.2. The source of funding is: NGA, the National Expenditure Program.

3. Bidding Requirements

The Bidding for the Project shall be governed by all the provisions of RA No. 9184 and its 2016 revised IRR, including its Generic Procurement Manual and associated policies, rules and regulations as the primary source thereof, while the herein clauses shall serve as the secondary source thereof.

Any amendments made to the IRR and other GPPB issuances shall be applicable only to the ongoing posting, advertisement, or invitation to bid by the BAC through the issuance of a supplemental or bid bulletin.

The Bidder, by the act of submitting its Bid, shall be deemed to have inspected the site, determined the general characteristics of the contracted Works and the conditions for this Project, such as the location and the nature of the work; (b) climatic conditions; (c) transportation facilities; (c) nature and condition of the terrain, geological conditions at the site communication facilities, requirements, location and availability of construction aggregates and other materials, labor, water, electric power and access roads; and (d) other factors that may affect the cost, duration and execution or implementation of the contract, project, or work and examine all instructions, forms, terms, and project requirements in the Bidding Documents.

4. Corrupt, Fraudulent, Collusive, Coercive, and Obstructive Practices

The Procuring Entity, as well as the Bidders and Contractors, shall observe the highest standard of ethics during the procurement and execution of the contract. They or through an agent shall not engage in corrupt, fraudulent, collusive, coercive, and obstructive practices defined under Annex “I” of the 2016 revised IRR of RA No. 9184 or other integrity violations in competing for the Project.

5. Eligible Bidders

- 5.1. Only Bids of Bidders found to be legally, technically, and financially capable will be evaluated.
- 5.2. The Bidder must have an experience of having completed a Single Largest Completed Contract (SLCC) that is similar to this Project, equivalent to at least fifty percent (50%) of the ABC adjusted, if necessary, by the Bidder to current prices using the PSA's CPI, except under conditions provided for in Section 23.4.2.4 of the 2016 revised IRR of RA No. 9184.

A contract is considered to be "similar" to the contract to be bid if it has the major categories of work stated in the **BDS**.
- 5.3. For Foreign-funded Procurement, the Procuring Entity and the foreign government/foreign or international financing institution may agree on another track record requirement, as specified in the Bidding Document prepared for this purpose.
- 5.4. The Bidders shall comply with the eligibility criteria under Section 23.4.2 of the 2016 IRR of RA No. 9184.

6. Origin of Associated Goods

There is no restriction on the origin of Goods other than those prohibited by a decision of the UN Security Council taken under Chapter VII of the Charter of the UN.

7. Subcontracts

- 7.1. The Bidder may subcontract portions of the Project to the extent allowed by the Procuring Entity as stated herein, but in no case more than fifty percent (50%) of the Project.

The Procuring Entity has prescribed that:

- a. Subcontracting is not allowed.

8. Pre-Bid Conference

The Procuring Entity will hold a pre-bid conference for this Project on the specified date and time and either at its physical address *NIA Cavite-Batangas Irrigation Management Office Ibayo Silangan, Naic, Cavite from 8:00AM to 5:00 PM, Monday to Friday*.

9. Clarification and Amendment of Bidding Documents

Prospective bidders may request for clarification on and/or interpretation of any part of the Bidding Documents. Such requests must be in writing and received by the Procuring Entity, either at its given address or through electronic mail indicated in the

IB, at least ten (10) calendar days before the deadline set for the submission and receipt of Bids.

10. Documents Comprising the Bid: Eligibility and Technical Components

- 10.1. The first envelope shall contain the eligibility and technical documents of the Bid as specified in **Section IX. Checklist of Technical and Financial Documents**.
- 10.2. If the eligibility requirements or statements, the bids, and all other documents for submission to the BAC are in foreign language other than English, it must be accompanied by a translation in English, which shall be authenticated by the appropriate Philippine foreign service establishment, post, or the equivalent office having jurisdiction over the foreign bidder's affairs in the Philippines. For Contracting Parties to the Apostille Convention, only the translated documents shall be authenticated through an apostille pursuant to GPPB Resolution No. 13-2019 dated 23 May 2019. The English translation shall govern, for purposes of interpretation of the bid.
- 10.3. A valid PCAB License is required, and in case of joint ventures, a valid special PCAB License, and registration for the type and cost of the contract for this Project. Any additional type of Contractor license or permit shall be indicated in the **BDS**.
- 10.4. A List of Contractor's key personnel (e.g., Project Manager, Project Engineers, Materials Engineers, and Foremen) assigned to the contract to be bid, with their complete qualification and experience data shall be provided. These key personnel must meet the required minimum years of experience set in the **BDS**.
- 10.5. A List of Contractor's major equipment units, which are owned, leased, and/or under purchase agreements, supported by proof of ownership, certification of availability of equipment from the equipment lessor/vendor for the duration of the project, as the case may be, must meet the minimum requirements for the contract set in the **BDS**.

11. Documents Comprising the Bid: Financial Component

- 11.1. The second bid envelope shall contain the financial documents for the Bid as specified in **Section IX. Checklist of Technical and Financial Documents**.
- 11.2. Any bid exceeding the ABC indicated in paragraph 1 of the **IB** shall not be accepted.
- 11.3. For Foreign-funded procurement, a ceiling may be applied to bid prices provided the conditions are met under Section 31.2 of the 2016 revised IRR of RA No. 9184.

12. Alternative Bids

Bidders shall submit offers that comply with the requirements of the Bidding Documents, including the basic technical design as indicated in the drawings and specifications. Unless there is a value engineering clause in the **BDS**, alternative Bids shall not be accepted.

13. Bid Prices

All bid prices for the given scope of work in the Project as awarded shall be considered as fixed prices, and therefore not subject to price escalation during contract implementation, except under extraordinary circumstances as determined by the NEDA and approved by the GPPB pursuant to the revised Guidelines for Contract Price Escalation guidelines.

14. Bid and Payment Currencies

14.1. Bid prices may be quoted in the local currency or tradeable currency accepted by the BSP at the discretion of the Bidder. However, for purposes of bid evaluation, Bids denominated in foreign currencies shall be converted to Philippine currency based on the exchange rate as published in the BSP reference rate bulletin on the day of the bid opening.

14.2. *Payment of the contract price shall be made in: **Philippine Pesos.***

15. Bid Security

15.1. The Bidder shall submit a Bid Securing Declaration or any form of Bid Security in the amount indicated in the **BDS**, which shall be not less than the percentage of the ABC in accordance with the schedule in the **BDS**.

15.2. The Bid and bid security shall be valid *up to 120 days from the date of issuance*. Any bid not accompanied by an acceptable bid security shall be rejected by the Procuring Entity as non-responsive.

16. Sealing and Marking of Bids

Each Bidder shall submit one copy of the first and second components of its Bid.

The Procuring Entity may request additional hard copies and/or electronic copies of the Bid. However, failure of the Bidders to comply with the said request shall not be a ground for disqualification.

If the Procuring Entity allows the submission of bids through online submission to the given website or any other electronic means, the Bidder shall submit an electronic copy of its Bid, which must be digitally signed. An electronic copy that cannot be opened or is corrupted shall be considered non-responsive and, thus, automatically disqualified.

17. **Deadline for Submission of Bids**

The Bidders shall submit on the specified date and time and either at its physical address or through online submission as indicated in paragraph 7 of the **IB**.

18. **Opening and Preliminary Examination of Bids**

18.1. The BAC shall open the Bids in public at the time, on the date, and at the place specified in paragraph 9 of the **IB**. The Bidders' representatives who are present shall sign a register evidencing their attendance. In case videoconferencing, webcasting or other similar technologies will be used, attendance of participants shall likewise be recorded by the BAC Secretariat.

In case the Bids cannot be opened as scheduled due to justifiable reasons, the rescheduling requirements under Section 29 of the 2016 revised IRR of RA No. 9184 shall prevail.

18.2. The preliminary examination of Bids shall be governed by Section 30 of the 2016 revised IRR of RA No. 9184.

19. **Detailed Evaluation and Comparison of Bids**

19.1. The Procuring Entity's BAC shall immediately conduct a detailed evaluation of all Bids rated "*passed*" using non-discretionary pass/fail criteria. The BAC shall consider the conditions in the evaluation of Bids under Section 32.2 of 2016 revised IRR of RA No. 9184.

19.2. If the Project allows partial bids, all Bids and combinations of Bids as indicated in the **BDS** shall be received by the same deadline and opened and evaluated simultaneously so as to determine the Bid or combination of Bids offering the lowest calculated cost to the Procuring Entity. Bid Security as required by **ITB** Clause 16 shall be submitted for each contract (lot) separately.

19.3. In all cases, the NFCC computation pursuant to Section 23.4.2.6 of the 2016 revised IRR of RA No. 9184 must be sufficient for the total of the ABCs for all the lots participated in by the prospective Bidder.

20. **Post Qualification**

Within a non-extendible period of five (5) calendar days from receipt by the Bidder of the notice from the BAC that it submitted the Lowest Calculated Bid, the Bidder shall submit its latest income and business tax returns filed and paid through the BIR Electronic Filing and Payment System (eFPS), and other appropriate licenses and permits required by law and stated in the **BDS**.

21. **Signing of the Contract**

The documents required in Section 37.2 of the 2016 revised IRR of RA No. 9184 shall form part of the Contract. Additional Contract documents are indicated in the **BDS**.

Section III. Bid Data Sheet

ITB Clause	
1	<p>The PROCURING ENTITY is <i>National Irrigation Administration – Cavite -Batangas Irrigation Management Office Reg. IV-A</i></p> <p>The name of the Contract is Installation of Sluice Gate for TRES CRUZES RIVER IRRIGATION SYSTEM</p> <p>The Identification number of the Contract No is <i>4AC-RRN-21-045D</i></p>
2	<p>The Funding Source is <i>General Appropriation Act (GAA) CY 2021</i></p> <p>The name of the Project is Installation of Sluice Gate for TRES CRUZES RIVER IRRIGATION SYSTEM</p>
5.2	Bidding is restricted to eligible bidders as defined in ITB Clause 5.1.
5.4	<i>The Bidders must have completed, a single contract that is similar to this Project, equivalent to at least fifty percent (50%) of the ABC.</i>
7	<i>Sub-contracting is not allowed</i>
8	<p><i>The Procuring Entity will hold a pre-bid conference for this Project on 26 February 2021, Friday, 10:01 A.M. at NIA Cavite-Batangas Irrigation Management Office, Ibayo Silangan, Naic, Cavite.</i></p> <p>Bidders/Company Owner who purchased the bidding documents are required to attend the pre-bid conference.</p>
9	<p><i>The Procuring Entity’s address is: National Irrigation Administration Cavite-Batangas Irrigation Management Office A. Soriano Highway, Ibayo Silangan, Naic, Cavite</i></p> <p><i>EDWIN C. NAZARENO Chairman, Bids and Awards Committee Fax No. (046) 412-0282</i></p>
10.1	No other acceptable proof of registration is recognized
10.3	valid Special PCAB License , and registration is required in case of joint ventures

10.4	<p>The key personnel must meet the required minimum years of experience set below:</p> <p>Project Engineer-Licensed Civil Engineer with at least three (3) year experience in construction of similar project</p> <p>Project Foreman- With at least three (3) year experience in construction of similar project</p> <p>Quality Engineer-Accredited Materials Engineer with two (2) year experience</p> <p>Lead Man-With at least two (2) year experience in construction</p> <p>Survey Team/Instrument man-With at least two (2) year experience</p>
10.5	<p>The minimum major equipment requirements are the following: <i>No minimum equipment required.</i></p>
11	<p><i>The ABC is Php 5,199,821.26. Any bid with a financial component exceeding this amount shall not be accepted.</i></p>
13	<p><i>The bid prices shall be quoted in Philippine Pesos.</i></p>
16	<p><i>Each Bidder shall submit One (1) original and Two (2) copies of the first and second components of its bid arranged according to enclosed checklist complete with tabs.</i></p>
17	<p><i>The address for submission of bids is</i> THE BAC CHAIRMAN NIA, Cavite-Batangas Irrigation Management Office A. Soriano Highway, Ibayo Silangan, Naic, Cavite</p> <p><i>The deadline for submission of bids 09 March 2021, 3:00 P.M</i></p>
15.1	<p>The Bid Security shall be in the following form and amount:</p> <ol style="list-style-type: none"> 1. Bid Securing Declaration: or 2. Surety Bond callable 1n demand, issued by a surety or insurance company duly certified by the Insurance Commission as authorized to issue such security amounting to Php 259,991.06 (5% of the ABC).
19	<p><i>Partial bid is not allowed. The infrastructure project is packed in a single lot and the lot shall not be divided into sub-lots for the purpose of bidding, evaluation and contract award.</i></p>
20	<p><i>[List licenses and permits relevant to the Project and the corresponding law requiring it, e.g. Environmental Compliance Certificate, Certification that the project site is not within a geohazard zone, etc.]</i></p>
21	<p>Partial bid is not allowed. The infrastructure project is packed in a single lot and the lot shall not be divided into sub-lots for the purpose of bidding, evaluation and contract award.</p>

Section IV. General Conditions of Contract

1. Scope of Contract

This Contract shall include all such items, although not specifically mentioned, that can be reasonably inferred as being required for its completion as if such items were expressly mentioned herein. All the provisions of RA No. 9184 and its 2016 revised IRR, including the Generic Procurement Manual, and associated issuances, constitute the primary source for the terms and conditions of the Contract, and thus, applicable in contract implementation. Herein clauses shall serve as the secondary source for the terms and conditions of the Contract.

This is without prejudice to Sections 74.1 and 74.2 of the 2016 revised IRR of RA No. 9184 allowing the GPPB to amend the IRR, which shall be applied to all procurement activities, the advertisement, posting, or invitation of which were issued after the effectivity of the said amendment.

2. Sectional Completion of Works

If sectional completion is specified in the **Special Conditions of Contract (SCC)**, references in the Conditions of Contract to the Works, the Completion Date, and the Intended Completion Date shall apply to any Section of the Works (other than references to the Completion Date and Intended Completion Date for the whole of the Works).

3. Possession of Site

4.1. The Procuring Entity shall give possession of all or parts of the Site to the Contractor based on the schedule of delivery indicated in the **SCC**, which corresponds to the execution of the Works. If the Contractor suffers delay or incurs cost from failure on the part of the Procuring Entity to give possession in accordance with the terms of this clause, the Procuring Entity's Representative shall give the Contractor a Contract Time Extension and certify such sum as fair to cover the cost incurred, which sum shall be paid by Procuring Entity.

4.2. If possession of a portion is not given by the above date, the Procuring Entity will be deemed to have delayed the start of the relevant activities. The resulting adjustments in contract time to address such delay may be addressed through contract extension provided under Annex "E" of the 2016 revised IRR of RA No. 9184.

4. The Contractor's Obligations

The Contractor shall employ the key personnel named in the Schedule of Key Personnel indicating their designation, in accordance with **ITB** Clause 10.3 and specified in the **BDS**, to carry out the supervision of the Works.

The Procuring Entity will approve any proposed replacement of key personnel only if their relevant qualifications and abilities are equal to or better than those of the personnel listed in the Schedule.

5. Performance Security

- 5.1. Within ten (10) calendar days from receipt of the Notice of Award from the Procuring Entity but in no case later than the signing of the contract by both parties, the successful Bidder shall furnish the performance security in any of the forms prescribed in Section 39 of the 2016 revised IRR.
- 5.2. The Contractor, by entering into the Contract with the Procuring Entity, acknowledges the right of the Procuring Entity to institute action pursuant to RA No. 3688 against any subcontractor be they an individual, firm, partnership, corporation, or association supplying the Contractor with labor, materials and/or equipment for the performance of this Contract.

6. Site Investigation Reports

The Contractor, in preparing the Bid, shall rely on any Site Investigation Reports referred to in the SCC supplemented by any information obtained by the Contractor.

7. Warranty

- 7.1. In case the Contractor fails to undertake the repair works under Section 62.2.2 of the 2016 revised IRR, the Procuring Entity shall forfeit its performance security, subject its property(ies) to attachment or garnishment proceedings, and perpetually disqualify it from participating in any public bidding. All payables of the GOP in his favor shall be offset to recover the costs.
- 7.2. The warranty against Structural Defects/Failures, except that occasioned-on force majeure, shall cover the period from the date of issuance of the Certificate of Final Acceptance by the Procuring Entity. Specific duration of the warranty is found in the SCC.

8. Liability of the Contractor

Subject to additional provisions, if any, set forth in the SCC, the Contractor's liability under this Contract shall be as provided by the laws of the Republic of the Philippines.

If the Contractor is a joint venture, all partners to the joint venture shall be jointly and severally liable to the Procuring Entity.

9. Termination for Other Causes

Contract termination shall be initiated in case it is determined *prima facie* by the Procuring Entity that the Contractor has engaged, before, or during the implementation of the contract, in unlawful deeds and behaviors relative to contract acquisition and implementation, such as, but not limited to corrupt, fraudulent, collusive, coercive, and obstructive practices as stated in ITB Clause 4.

10. Dayworks

Subject to the guidelines on Variation Order in Annex “E” of the 2016 revised IRR of RA No. 9184, and if applicable as indicated in the **SCC**, the Dayworks rates in the Contractor’s Bid shall be used for small additional amounts of work only when the Procuring Entity’s Representative has given written instructions in advance for additional work to be paid for in that way.

11. Program of Work

11.1. The Contractor shall submit to the Procuring Entity’s Representative for approval the said Program of Work showing the general methods, arrangements, order, and timing for all the activities in the Works. The submissions of the Program of Work are indicated in the **SCC**.

11.2. The Contractor shall submit to the Procuring Entity’s Representative for approval an updated Program of Work at intervals no longer than the period stated in the **SCC**. If the Contractor does not submit an updated Program of Work within this period, the Procuring Entity’s Representative may withhold the amount stated in the **SCC** from the next payment certificate and continue to withhold this amount until the next payment after the date on which the overdue Program of Work has been submitted.

12. Instructions, Inspections and Audits

The Contractor shall permit the GOP or the Procuring Entity to inspect the Contractor’s accounts and records relating to the performance of the Contractor and to have them audited by auditors of the GOP or the Procuring Entity, as may be required.

13. Advance Payment

The Procuring Entity shall, upon a written request of the Contractor which shall be submitted as a Contract document, make an advance payment to the Contractor in an amount not exceeding fifteen percent (15%) of the total contract price, to be made in lump sum, or at the most two installments according to a schedule specified in the **SCC**, subject to the requirements in Annex “E” of the 2016 revised IRR of RA No. 9184.

14. Progress Payments

The Contractor may submit a request for payment for Work accomplished. Such requests for payment shall be verified and certified by the Procuring Entity’s Representative/Project Engineer. Except as otherwise stipulated in the **SCC**, materials and equipment delivered on the site but not completely put in place shall not be included for payment.

15. Operating and Maintenance Manuals

- 15.1. If required, the Contractor will provide “as built” Drawings and/or operating and maintenance manuals as specified in the **SCC**.
- 15.2. If the Contractor does not provide the Drawings and/or manuals by the dates stated above, or they do not receive the Procuring Entity’s Representative’s approval, the Procuring Entity’s Representative may withhold the amount stated in the **SCC** from payments due to the Contractor.

Section V. Special Conditions of Contract

GCC Clause									
1	<i>The Works consist of Installation of Sluice Gate</i>								
2	<i>The Intended Completion Date is (120) calendar days upon receipt of Notice to Proceed</i>								
3.1	<i>The Procuring Entity shall give possession of all parts of the Site to the Contractor</i>								
4	<p><i>The Contractor shall employ the following Key personnel:</i></p> <table style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th style="text-align: center;"><u>Positions</u></th> <th style="text-align: center;"><u>Number</u></th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">Project Foreman</td> <td style="text-align: center;">1</td> </tr> <tr> <td style="text-align: center;">Skilled Worker</td> <td style="text-align: center;">1</td> </tr> <tr> <td style="text-align: center;">Laborer</td> <td style="text-align: center;">1</td> </tr> </tbody> </table>	<u>Positions</u>	<u>Number</u>	Project Foreman	1	Skilled Worker	1	Laborer	1
<u>Positions</u>	<u>Number</u>								
Project Foreman	1								
Skilled Worker	1								
Laborer	1								
5	<i>The Performance Bond should be submitted (10) calendar days from receipt of the Notice of Award from the Procuring Entity</i>								
7	<i>[In case of semi-permanent structures, such as buildings of types 1, 2, and 3 as classified under the National Building Code of the Philippines, concrete/asphalt roads, concrete river control, drainage, irrigation lined canals, river landing, deep wells, rock causeway, pedestrian overpass, and other similar semi-permanent structures:] Five (5) years.</i>								
8	<i>State here “No additional provision” or, if the Contractor is a joint venture “All partners to the joint venture shall be jointly and severally liable to the Procuring Entity”.</i>								
10	a. Dayworks are applicable at the rate shown in the Contractor’s original Bid.								
11.1	The Contractor shall submit the Program of Work to the Procuring Entity’s Representative within 3 days of delivery of the Notice of Award.								
13	The amount of the advance payment is <i>15% of the total contract price and schedule of payment.</i>								
15.1	The date by which “as built” drawings are required is <i>upon submission of Final Billing requirements.</i>								
15.2	<i>Final Payment will be withheld in case of non-compliance.</i>								

Section VI. Specifications

STEEL GATES AND LIFTING MECHANISM

3301 SCOPE

The Contract work calls for the fabrication, supply, delivery and installation supervision of steel gates, stoplog, lifting mechanism, embedded parts including all accessories and field painting all in accordance with these specifications and the drawings:

3302 STANDARDS AND SPECIFICATIONS

All materials and equipment to be incorporated in the works shall conform to the latest applicable standards and specifications as specified in the Contract Documents or to approved equivalent applicable standards and specifications established and adopted in the country of manufacture of the materials and equipment.

Reference to standards and specifications or to materials shall be considered as followed by the words "or equivalent". Contractor may propose equivalent standards, specifications and materials which shall conform to that specified.

If Contractor proposes equivalent standards and specifications or equivalent materials, Contractor shall state the exact nature of the change, and shall submit complete standards and specifications of the materials for the approval of NIA.

Such submittals shall be along with the bid and failure to do so, or purchase of any proposed equivalent materials prior to approval of NIA, will be at the Contractor's risk.

Abbreviations of the titles of official bodies which issue standards or specifications whenever referred to in these specifications are as follows:

ASTM	- American Society for Testing Materials
AISC	- American Institute of Steel Construction
AISI	- American Iron and Steel Institute
ANSI	- American National Standards Institute
AISE	- Association of Iron and Steel Engineers
AWS	- American Welding Society
JIS	- Japanese Industrial Standards
SSPC	- Steel Structures Painting Council
AGMA	- American Gear Manufacturers Association
SAE	- Society of Automotive Engineers
ASME	- American Society of Mechanical Engineers

3303 MATERIALS

A. General

All materials shall be new and shall be the best available for the purpose for which they will be used, considering strength, ductility, durability for the intended service and best engineering practice.

Materials to be used for the various components of gates and hoists shall conform to the following specifications:

Components	Material	International Specifications
Fixed wheel gates frames, girders, sill beam, rail beams, guide frames, seal clamps and other miscellaneous fabricated parts	Structural Steel	ASTM A36 Specifications for Structural Steel
Gate Wheels & Guide Rollers	Wrought Steel	ASTM A-504/A-148 Specifications for Wrought Carbon Steel
Wheel pins	Corrosion Resistant Steel	ASTM A-276 Specifications for Hot-Rolled and cold finished corrosion resisting steel bars Type 316
Seal seats and clamp plates for rubber seals	Corrosion Resistant Steel	ASTM A-240 Specifications for Chromium-Nickel Stainless Plate, Sheet and Strip
Standard steel bolts, nuts and washers	Galvanized Steel	ASTM A-307 Specifications for Low Carbon Steel Externally Threaded Fasteners
High strength steel bolts, nuts and washers	Carbon Steel	ASTM A-325 Specifications for Steel bolts and studs with suitable nuts and plain washers
Rope drum	Cast steel	ASTM A-27/ASTM A-36 Specifications for mild to medium strength carbon steel castings for General Applications
Gears/Pinions	Cast Steel/Forged Steel	ASTM A-27/ASTM A-291 Specifications for Alloy and Carbon Steel Forgings for Gears and Pinions
Worm Gear	Phosphor Gear Bronze	SAE 65
Worm	Case hardened Ground Steel	AISI-3120
Iron Castings		ASTM A-48, Class 30
Stems & Shaftings	Carbon Steel	ASTM A-108, Grade 1018 or Grade 1117 Specifications for cold finished carbon steel bars and shaftings
Wire Rope	Improved Plow Steel	R R W-410 Fed. Specifications
Bronze bushings, bearings, washers	High Lead Tin Bronze or Manganese Bronze	ASTM B-144 or B-147
Covers	Mild Steel	ASTM A-36

Bronze casting for lift nut, thrust nut Manganese Bronze ASTM B-147 Specifications for Manganese Bronze Sand Castings- Alloy 8A

Anti-friction Bearing Gear Housing Oil Seals Lubricating Fitting Ball & Roller Bearings shall be equivalent to those manufactured by SKF Industries
 Spring loaded and made of synthetic compound enclosed in a metal retainer, "Synthetic Seals" or equivalent
 Alemite type 1610-3 or equivalent

Rubber Seal

The rubber seal shall be molded from natural or synthetic rubber containing not less than one percent by weight of copper inhibitor and shall have the following physical properties:

Property	Limit	ASTM-Test
a) Shore A Durometer Hardness	65 + or - 5	D-675
b) Minimum Elongation	450 percent	D-412
c) Ultimate Tensile Strength (min.)	14.5 N/sq.mm	D-412
d) Water Absorption (70 ⁰ C - 7 days)	Less than 10% by weight	D-471
e) Tensile strength after accelerated ageing test of 48 hours in oxygen at 70 ⁰ C and 2.1 N/sq.mm pressure	80 or more percent of strength before ageing	D-572
f) Compression Set (Max.)	30 percent	D-395

B. Tests of Materials

- i. All materials, supplies, parts, assemblies used for the work to be done under these Specifications shall be tested according to modern approved methods for the particular type and class of work. Certified copies in triplicate of the tests made and results thereof shall be made available to NIA and the as soon as possible. The data shall be in such a form as to provide means of assessing compliance with the applicable relevant specifications for the material tested. The Contractor shall state in his tender the place of manufacture, testing, inspection of the various components of the work included in the contract.
- ii. Wherever required, at their discretion, NIA may nominate an Inspector to inspect the tests or trials on their behalf. Sufficient notice must be given by the Contractor to the Inspector to enable him to reach the site of tests/trials except the pay and expenses of the Inspector shall be included in the quoted price. All authorized representatives of shall have free access to the work premises of the contract at all reasonable times and shall be provided by the Contractor full facilities and safety to inspect the process of manufacture and the materials used. NIA will reject any material/work that in their opinion does not conform to the specifications and will order the same to be removed and replaced or altered at the expense of the Contractor to conform to the specifications.

- iii. If materials are not referred to in the applicable Standard Specifications but are required to have certain physical and /or chemical properties, such properties shall be checked by two chemical samples for each 5 tons of materials and fractions thereof in each lot. For lots less than 250 kilograms, Contractor's warrants will be acceptable in lieu of actual tests provided heat treatment of the fabricated parts using such materials is not required. A lots shall consist of all materials of the same physical size and conditions submitted at one time in which the material is from the same melt or heat and on which any subsequent heat treatment has been performed at the same conditions. Not more than two heat treatment to attain the desired physical properties shall be permitted.
- iv. Notwithstanding the above tests, examination and inspection, the Contractor shall be responsible for the acceptability of the finished work.

C. Manufacturing/Fabrication Program

- i. The fabricator/manufacturer shall prepare a manufacturing/fabrication program in Bar Graph Form showing the activities and its sequencing in sufficient details such that the contract works can be properly monitored from commencement to completion.
- ii. The fabricator/manufacturer shall submit said program within thirty (30) calendar days after the date of receipt of Notice of Award.
- iii. The fabricator/manufacturer shall show the target dates for commencing and completing the principal activities as required for in the contract works including but not limited to the following:
 - a. procurement of materials and the like
 - b. fabrication and manufacture
 - c. painting
 - d. delivery dates

D. Pre-fabrication Inspection Works

- i. The fabricator/manufacturer shall be required to submit mill and/or manufacturer's certificate for the steel materials, welding electrode, paints, etc. intended for use in the works.
- ii. Materials to be used in the fabrication shall be adequately sampled and tested to check its compliance with the specification/standard requirements.
- iii. No fabrication work and/or use of materials in such works shall commence unless materials for said works are duly inspected, tested, and certified by NIA or its authorized representatives as to conformity with the specification/ standard requirements.
- iv. NIA technical inspectors shall prepare and submit inspection and acceptance report on materials for use in the fabrication works.

E. Inspection Works During Actual Fabrication

1. The NIA should assign a knowledgeable and experienced technical inspectors, to conduct inspection.
2. The NIA authorized technical inspector shall be entitled at all reasonable time free access to the manufacturer's/fabricator's plant to conduct inspection during fabrication, to ascertain that all the works shall comply in all aspect with the standards and requirements set forth in the contract documents.
3. The technical inspectors shall monitor progress and conduct of the fabrication works and prepare and submit progress report on said works at regular intervals.

F. Final Inspection Works

1. Intake Gates, Main Canal Gates, Lateral and Turnout Gates

- i. The technical inspector shall conduct final inspection based on the approved fabrication drawings and specifications.
- ii. The gates should be properly marked with the corresponding identification as per approved schedule of dimension such as size of gate, lateral, stationing for proper identification by the end user.

2. Sluice Gate, Barrage, Stoplog and Radial Steel Gates

- i. The technical inspector should see to it that all component parts should be properly pre-assembled at the fabricator's/manufacturer's shop to ascertain the proper fitness of all adjoining parts and should be properly punch mark before disassembling for guidance and reference during field installation.
- ii. The NIA shall issue certificate of pre-delivery inspection and acceptance of completed fabrication works as a basis for the final inspection and acceptance by the field office of deliveries made at the site.

3304 WORKMANSHIP

A. General

- i) All works shall be performed in accordance with the best modern practice of the manufacturer of high grade machinery. All parts shall have accurately machined mounting and bearing surfaces so that they can be assembled without filing, chipping, or remachining. All parts shall conform accurately to the design dimensions and shall be free from any defect in workmanship or material that will impair their services. All attaching bolt holes shall be accurately drilled to the layout indicated on the approved drawings. The steel gates shall be completely shop assembled to insure the proper fit and adjustment.

B. Welding

- i) *General*

Whenever welding is specified or permitted, the electric arc welding process, manual or machine welding shall be used.

Contractor shall provide adequate amount of materials for each type of welding and shall specify the materials on all relevant drawings. Contractor shall also provide detailed drawings showing joint preparation required for each type of welding to be carried out on the site.

ii) *Preparation*

The parts to be joined by electric welding shall be cut precisely to the correct size by machine methods suitable for the type of weld to be used and to allow the proper penetration and good fusion of the weld with the base metal. The cut surfaces shall not have visible defects such as scabs, superficial defects caused by shearing or torch cutting operations or any other damaging effect. The surfaces of a 40 mm wide strip on each side of the plate adjacent to the edge and the edges to be welded shall be free from rust, oil, grease and other foreign matter.

iii) *Lamination*

Any plate in which lamination has been discovered after cutting shall be rejected unless the laminated portion of plate is local and can be cut out and replaced by the welding of a sound plate in the cut out area with the approval of NIA. Repaired surfaces shall be ground smooth to assure neat appearance.

iv) *Welding Methods and Welder's Qualifications*

The welding method that would be employed by the Contractor shall be submitted to NIA for approval. Welds shall be balanced as far as possible to minimize distortion. Welding shall conform to AWS D1.1, Parts Procedures (Welding of Stressed Structural Components) not only with regard to workmanship but also with regard to qualifications of welders. Welders should be certified in the trade and such certification shall be submitted to NIA.

v) *Electrodes*

Contractor shall indicate on all detailed drawings the type and size of electrode he proposed for use for shop and/or field welding.

In general, welding electrodes for structural steel shall conform to Table 1.17.2 of the AISC Specification for the Design, Fabrication and Erection of Structural Steel for Buildings.

Contractor shall provide the net quantity plus ten percent (10%) of each type of electrode required to complete each field welded joint.

C. Non-Destructive Testing

i) *General*

All tests shall be conducted with the approval of NIA and the cost of tests shall be borne by the Contractor.

Radiographic, ultrasonic, magnetic particles or liquid dye penetrant tests shall be conducted on components as specified below. Where ultrasonic or magnetic particle tests indicate the possibility of a flaw, the suspected part shall be tested by radiography. All flaws shall be removed by thermal or mechanical gauging processed and replaced by welding. The replacement weld and contiguous parts of the original weld, if any, shall then be tested radiographically. All radiographs shall become the property of NIA.

The acceptability of parts inspected by magnetic particle and liquid dye penetrant test and the acceptability of use of these methods will be subject to agreement between Contractor and NIA.

ii) *Welds*

Radiographic examination shall be applied to the whole length of butt welds in plate furnishing stressed members.

Ultrasonic examination shall be applied to all other stressed groove welds.

Radiographic and ultrasonic examination shall be in accordance with AWS D1.1, Section 6.

iii) *Castings*

Castings shall be of fine grain quality and the surfaces which do not undergo machining, particularly those of steel or iron in contact with water, shall be dressed smooth in the foundry with all joints blended into adjacent surfaces and shall be free from foundry irregularities, such as projections, ridges, hollows, honeycombing, pock marks, blow holes and crack or chip marks, so that they will not require surface smoothing operations prior to painting. All defects shall be fully explored and castings shall be repaired, plugged or welded to the satisfaction of NIA.

iv) *Carbon Steel Plates and Shapes*

Carbon steel plates, shapes, bars, etc. for welded construction shall conform to materials specifications ASTM A-36, Steel shapes shall be in accordance with ASTM specifications. Plates from which webs, flanges and other stressed members are cut shall be ultrasonically tested for laminations according to ASTM A-578 at the place of manufacture.

v) *Forgings*

Forgings shall conform to ASTM A-668 Class D and shall be free from defects affecting their strength and durability, including seams, pipes, flaws, cracks, scales, fins, porosity, hard spots, excessive non-metallic inclusions and segregations.

The largest fillets compatible with the design shall be incorporated wherever a change in section occurs.

Tool marks or tearing of the metal by the finishing tools will not be acceptable on the surface of fillets. Such marks if it occurs, shall be removed by grinding or polishing. All finished surfaces of forging shall be smooth and free from tool marks.

All forgings in excess of 150 mm diameter shall be subjected to examination internally for the detection of flaws and to heat treatment for the relief of residual stresses.

D. Fastenings

- i) All screws, bolts, studs and nuts shall be of International Standard (Metric) form of threads. Bolt heads and nuts shall be hexagonal. Hexagonal recesses shall be provided in the head of countersunk head bolts and machine screws. The bolt length shall be such as to ensure that at least two full threads are projecting after the nut has been tightened.
- ii) Nuts and bolts for pressure containing parts shall be of best quality bright steel machined on the shank and bearing faces of head and nut.
- iii) Where there is risk of corrosion, bolts shall be finished flush with the top of the nut after tightening, except in cases where the connected components are required to be frequently removed for replacement or adjustment when the bolts and nuts shall be of corrosion resisting steel or bronze.

All nuts shall be provided with washers, parallel or taper as appropriate. Mechanical locking devices of an approved form shall be provided where there is a possibility of nuts becoming loose due to vibration. Spring type washers will not be permitted where they maybe damaged any protective coating. Special locking compounds may be used as an alternative to mechanical devices subject to NIA approval.

E. Structural Work

- i) Unless otherwise, specified, design and fabrication of structural parts shall conform to the applicable provisions of the AISC "Specifications for the Design, Fabrication and Erection of Structural Steel in Building" of the AISC "Code Standard Practice for Steel Building and Bridges".

F. Machine Work

All tolerances, allowances and gauges for metal shall conform to the ASA Standard B42, Tolerances, Allowances and Gauges for Metal Fits, for the class of fits as required.

Finished contact or bearing surfaces shall be true and exact to secure full contact. All holes or field assembly with bolts shall be accurately located and drilled for shop assembly. Journal surfaces shall be polished and all surfaces shall be finished

with sufficient smoothness and accuracy to insure proper operation when assembled. All drilled holes for bolts shall be accurately located and drilled from template.

3305 PROTECTION OF MACHINED SURFACES

Machined finished surfaces shall be thoroughly cleaned of foreign matter. Finished surfaces of large parts and other surfaces shall be protected with wooden pads or other suitable means. Unassembled pins and bolts shall be oiled and wrapped with moisture resistant paper or protected by other approved means.

3306 FABRICATION

a. General

All members shall be free from twist, bonds or other deformations, and all surfaces that will be in contact shall be thoroughly cleaned before assembling.

All parts shall be cut accurately to the dimensions shown on the drawings. All edges shall show sound metal, free from laminations, surface cracks and other injurious defects.

Bumping or heating will not be allowed. Parts shall be adjusted to fit, and shall be firmly bolted or otherwise held securely together so that surfaces are in closer contact before welding is commenced. Close adherence to the dimensions and tolerance called for in the drawings is required.

b. Straightening

Rolled materials shall be straight and true before being laid out or worked. Necessary straightening shall be accomplished by methods that will not injure the metal. Sharp kinks or bents will be considered causes for rejection.

c. Bending

Where bending or forming of plates or shapes is required, the plates or shapes shall be bent to the proper curvature by cold forming. Heating shall not be employed except with specified approval of the Administrator, and special precautions, therefore shall be taken to avoid overheating. Prior to rolling or bending the plates, the edges shall be pressed properly to the correct curvature, as determined by templates, to produce continuity from the edges. Corrections of curvature by hammering will not be permitted.

d. Shearing, Chipping and Flame-Cutting

All plates or shapes shall be cut accurately to shape and size, with the edges to be joined by welding formed properly to suit the selected type of welding and to allow thorough penetration of the weld metal. Sheared edges shall be machined to a depth of not less than one-quarter of the thickness of the materials, to remove surface cracks caused by the shearing operation. Flame-cut edges shall be uniform and smooth and shall be free from loose scale and slag accumulations before being welded. Whenever

possible, flame-cutting shall be guided by mechanical means. No materials shall be cut by electric arc. Chipping shall be done neatly and accurately, and exposed edges, shall be smooth.

e. Preparation for Field Welding

All necessary chipping, grinding, leveling and other preparation for joints or splice to be made by field welding shall be done in the shop.

f. Punching

In punch works, holes in materials having a thickness of less than three-quarter of an inch may be punched to full size. Holes in material having a thickness equal to or greater than three-quarter of an inch shall be drilled to full size. All holes shall be clean-cut, without torn or ragged edges.

g. Drilling, Reaming, Countersinking and Tapping

Unless otherwise called for on the drawings and except where reaming or tapping is required or where tight bolts are to be used, full sized drill and/or reamed holes shall be not less than 1.59 millimeter not more than 2.38 millimeter larger than the nominal drilled and/or reamed perpendicular to the face of the member and if necessary, shall be drilled to a template. Countersinking, where required, shall be true and square with the holes. Outside burns shall be removed. Tapped holes shall be drilled to the proper diameter for the tap used and shall be tapped carefully so that the threads will be continuous, smoothly cut, and free from imperfection.

h. Tolerance

Contact faces of gates and guides shall not depart more than 1 millimeter from a plane surface. Bottom contact edges shall not depart more than 2 millimeters from the designated planes. Fits, tolerance and finish when not specified, shall conform with the best modern shop practice in the manufacture of finished products of similar nature.

i. Lubrication

Before assembly all bearing surfaces, journals, grease and oil grooves shall be carefully cleaned and lubricated with an approved oil or grease. After assembly each lubricating system shall be filled with an approved lubricant.

3307 GENERAL DESCRIPTION OF THE INSTALLATION AND OPERATING ARRANGEMENT

A. Sluice Gates

Sluice gates as shown on the Drawings are to be installed to desilt the sluiceway. The gates shall be of fixed wheel type. Each gate shall consist of an upstream skin plate supported by vertical and horizontal stiffeners spaced at required intervals which in turn shall be supported by end vertical girders. Wheels are to be mounted on the end vertical girders and provided with necessary bronze bushings. The total horizontal load on the gate shall be transmitted through the wheels on to the wheel track plates fixed on the

piers with necessary embedments. Rubber seals on sides and bottom shall be provided on the upstream side of the gate to render the gate leak proof.

B. Intake Gates

- i) Intake Gates of different sizes as shown on the drawing are to be installed to regulate the flow of water through the intake. The gates shall be of sliding type. Each gate shall consist of a downstream skin plate supported by vertical stiffeners spaced at required intervals and horizontal girders which in turn shall be supported by end vertical girders. The total horizontal load on the gate shall be transmitted to the vertical frame fixed on the piers with necessary embedments. The details of construction are shown in the NIA bid drawings.
- ii) The gates are to operate at water level corresponding to normal and high flood level condition and the operation is hydraulically unbalanced.
- iii) The gates are to be operated through manually operated pedestal lift with rising stem, of adequate capacity.

C. Flap Gate

a. General

Flap gates are to be installed to allow free flow through the gate and to close automatically to prevent backflow should a head reversal occur.

b. Flap Cover and Frame

The flap gate cover shall be made of steel and shall consist of an upstream skin plate supported by vertical and horizontal stiffeners spaced at required intervals. Music note type rubber seals shall be provided on the two sides as well as on the top and bottom of the upstream side of the flap to render the gate leak proof. These rubber seals shall be fixed to the flap by means of clamp steel plate and stainless steel bolts.

The flap gate shall be provided with arms mounted on steel hinges of the double pivot type using stainless steel pins and bronze bushings. A concrete counterweight shall be provided and attached to the arms in such a way that its position is adjustable in order to ease the opening of the flap gate. Final position of this counterweight will be determined by the field office.

All edges of the gate opening where the music note type rubber seal is in contact shall be provided with stainless steel seal seats. This seal seats shall be fixed/welded to the steel frames embedded on the concrete.

3308 STRUCTURAL DESIGN CRITERIA FOR GATES

a. General

The design shall ensure that:

- 1) The gates shall be reasonably watertight.
- 2) They shall be capable of being raised or lowered by the hoist at the speed specified.
- 3) Since all the gates are for regulation, they shall be held in partially open position within the range of travel to pass the required discharge without undue vibration.

b. Wheels and Wheel Tracks

- 1) The gate wheels shall be suitable to withstand the stresses developed due to the loads they carry.
- 2) The wheels and wheel tracks shall be machined true and shall operate smoothly without vibration and without undue drift.
- 3) The hardness of wheel track shall be 50 points Brinell Hardness Number (BHN) higher than the BHN of the wheel tread.

c. Wheel Bearing

- 1) The wheel bearing shall be bronze bushing with grooves for lubrication.

d. Wheel Pin

- 1) The wheels shall be mounted on fixed pins and the pin shall be harder than the bushing. Wheel pin shall be of stainless steel and the contact surfaces shall be finished smoothly.
- 2) The wheel pin shall be of cantilever type with support from the cantilever box of the end vertical girder. The rigidity of cantilever box should be ensured.

e. Seals and Accessories

- 1) Seals shall be fixed by means of stainless steel seal clamps and galvanized steel bolts to ensure positive water pressure between the seal and the gate and to bear tightly on the seal seat to prevent leakage. Edges of seal clamp adjacent to seal bulb shall be rounded.
- 2) Side rubber seals shall be flat or angle shape type - Bottom seal may be of wedge type.
- 3) The initial interference of side rubber seals shall be 3 mm pre-compression. The projection of bottom wedge seal shall be 6 mm. Suitable chamfer shall be provided at the bottom of skin plate/clamp plate to accommodate the bottom wedge seal in compressed position.

f. Guides and Sill Frames

- 1) The guide frames and sill frames shall be composed of steel plates and steel sections so built up as to suit the gate structure. They shall be securely fixed in concrete by means of anchor members to ensure that all hydraulic loads exerted on the gate will be safely carried and transmitted to the concrete works.
- 2) The guide frames shall be true and shall be sufficient for the lifting height of the gate.
- 3) The side seal seat shall be stainless steel with a minimum width of 75 mm. The seal seat shall be fixed on the seal seat base by welding. The fixing of the seal seat on its base shall ensure rigidity and watertightness. The seal seat shall be finished smooth and the edges shall be rounded/chamfered to prevent damage to the seal.
- 4) All the seal seat base including the sill beam shall be embedded in concrete.
- 5) Sill beam flange width shall not be less than 100 mm and the length shall cover the entire waterway. The seal seat (stainless steel plate) welded to the top flange shall be at least 25 mm wider than the top flange width of sill beam. It shall be flushed with surrounding concrete. Each end of sill beam shall have provision for the connection of each side vertical frame to facilitate their location.

g. Embedded Parts

- i) All structural parts of the guides, seal seats, wheel tracks shall be constructed straight and be free from twists and warping. The ends of sections of side guides shall be machined so that when assembled, the finished surfaces of adjoining sections shall be flushed and ends shall butt firmly to form watertight joints. The faces of all seal seats shall be in a true common plane and this plane shall be parallel to the plane tangent to wheel-track face. The ends of track sections shall also be machined smooth and square so that when tracks are assembled to the track base, the ends of adjoining sections shall butt firmly.

3309 HOISTS

A. Hoist for Sluice Gate

1. General

- a) The Contractor shall provide manually operated rope drum hoist of adequate capacity complete in every respect along with hoist supporting units and all accessories that would be required for the satisfactory operation of the sluice gates.
- b) Each hoist mechanism shall consist of gear reducers, wire ropes, rope drums, shaftings, bearings, sprockets for diesel engine drive and all other mechanical accessories for the satisfactory operation of hoist.
- c) The hoisting equipment shall be designed to raise, lower and hold the gate in any position between fully opened and fully closed positions. Hoisting equipment

shall be enclosed in dust proof housing with suitable lugs and eye bolts for handling.

- d) The complete equipment shall rest on a steel base framework which shall rest on the pier top.

B. Mechanical Parts

1. General

- a) The components of the hoist mechanism shall be so proportioned as to take the severest load coming on individual components.

2. Wire Rope

- a) The wire rope shall be made from improved plough steel of 6 x 37 construction with steel center, right regular lay, preformed and lubricated.
- b) A turnbuckle shall be provided on one side of the wire rope connecting the gate and hoist to equalize the tension in the rope. Turnbuckle and wire rope fitting shall be galvanized.
- c) The breaking strength of wire rope shall be as per standard manufacturer's specifications.
- d) The strength of socket end of wire rope shall be approximately equal to the strength of the rope itself. The ends shall be safely secured against twisting.

3. Drums

- a) The groove drum shall be of such size that there will be not more than one layer of rope on the drum when the rope is in its fully wound position.
- b) The length of drum shall be such that each lead-off rope has minimum two full turns on the drum when the gate is at its lowest position and one spare groove for each lead-off of the drum when the gate is at its highest position.
- c) If the ends of the drum are flanged, the flanges shall project to a height not less than two rope diameters above the rope. A spur gear secured to the drum may be regarded as forming as one of the flanges.
- d) The lead angle (fleet angle) of the ropes shall not exceed 5 degrees or 1 in 12 on either side of helix angle of groove in the drum.
- e) The drum shall be made of cast steel.
- f) The drum shall be machined groove. Grooving shall be finished smooth and edges between groove rounded. The contour at the bottom of the grooves shall be circular over an angle of at least 120 degrees. The groove radius shall be 0.53 times the diameter of rope. The depth of groove shall not be less than 0.35 times the diameter of the rope.

- g) The pitch of the grooves shall be such that the clearance between adjacent turn of rope is at least:

1.5 mm for ropes up to 12 mm diameter

2.5 mm for ropes over 12mm diameter up to 30 mm diameter and

3.0 mm for ropes of over 30 mm diameter

- h) The ends of the rope shall be fixed to the drum to such a way that the fixing device is accessible. Each rope shall be wound at least two turns before it is fixed (dead wrap).

4. *Gearing*

- a) The reduction units of the hoist shall be composed of spur gears, bevel gears, worm and worm gears. The gears shall be machined cut with smooth finish.
- b) Tooth form of spur and bevel gears shall be 20 degrees full depth involute system.
- c) Spur and bevel gears shall be of cast steel, forged steel or surface hardened steel. The gears and pinions shall be made from two different grades of materials; the higher strength grade material for the pinion.
- d) Standard worm and worm gears shall be high grade reduction unit of good efficiency suitable for long service life. The proportioning of parts therein shall be in accordance with the best engineering practice. The bearing section of the rotating shaft shall be fitted with anti-friction bearings designed for thrust and radial loads and the helical angle of the worm shall be designed for self-locking.
- e) Keys in gear trains shall be fitted and secured that they should not work loose when in service.
- f) Gears shall have removable housing with provision for convenient access for lubrication. All bolts and cap screws shall be provided with lock washers. All machined units shall be thoroughly cleaned to ensure that they are free of cutting and objectionable and abrasive material.

5. *Shafts*

- a) The shafts shall be designed for appropriate torque/load that is being transmitted. Shafts shall have liberal factor of safety for strength and rigidity and shall have adequate bearing surfaces. They shall be finished smooth and, if shouldered, shall be provided with fillets of large radius.
- b) All shafts shall be designed for safety against simple bending, pure torsion and the combined effect of bending and torsion.

6. *Bearings*

- a) All the running shafts shall be provided with ball, roller or bush bearings. Selection of bearings shall be done on consideration of duty, load and speed of the shaft.
- b) Bearings shall be easily accessible for lubrication and/or replacement.

C. Intake Gate Hoists

1. General

Intake gate hoist shall be manually operated. The pedestal lift shall be crank operated and the direction of rotation of the crank to open the gate shall be clearly indicated on the lifting mechanism.

2. Manual Operation

- i) The manual operation should be designed in such a manner that the continuous effort per man does not exceed a crank force of 98 Newtons (10 Kgf) with 400 mm of crank radius at a continuous rating of 24 RPM.

3. Gate Stem, Coupling and Stem Guides

- i) Stems shall be of cold finished steel. Each stem shall be of adequate size to safely withstand operation of the gate (both raising and lowering) under the specified head and shall be furnished in sections of suitable length with necessary couplings to facilitate removal and replacement, if necessary. The couplings shall be of the same materials as the stem and shall be safely pinned, bolted or threaded and keyed to the stem. The bolts and pins shall be of stainless steel. The stems shall be provided with suitable stop nuts with provision for adjustment to prevent damage to the bottom of the gate due to overrun of the gate when closing.
- ii) Stem guides shall be as recommended by the manufacturer and shall be adjustable in two directions. Stem guides shall be provided with either bronze-bushed cast iron or steel collars bolted into place.

4. Pedestal and Lifting Mechanism

- i) The pedestal shall have a cast bronze lift nut threaded to fit the operating stem. Ball thrust bearings shall be provided above and below the flange of this lift nut to take the computed maximum thrust developed in opening and closing the gate.
- ii) Gears shall be of cast steel accurately machined with cut teeth and smooth operating with drive shafts running in bronze sleeve bearing of ample size.
- iii) All gears and bearings shall be enclosed in a cast iron housing. The gears and bearings shall be easily accessible for maintenance and lubrication. The housing shall be adequate to withstand the tropical climate.

- iv) The lift mechanism shall be provided with a cast iron or structural steel pedestal machined and drilled to accommodate the gear housing and suitable for bolting to the operating floor.
- v) The crank shall be of cast iron and detachable and provided with a rotating handle.

D. Lubrication

1. General

- i) All bearings, journals and locations where sliding between parts takes place shall be provided with adequate means of lubrication.
- ii) Adequate seals shall be provided wherever necessary to prevent the escape of lubricants during normal operation and the entry of foreign matter.
- iii) All the equipment covered under the scope of this contract shall be handed over to NIA in running order with all moving parts properly lubricated and fully charged with the recommended lubricant.
- iv) Contractor shall provide a list of all recommended lubricants for each location and the compatible types of lubricant from the product line of all major companies in the Philippines.

2. Grease Lubrication

- i) Unless otherwise specified, all greasing shall be effected by high pressure hand grease gun.
- ii) All fittings shall, if possible, be of the same size.
- iii) Underwater equipment shall be charged with lithium based grease, for other locations the grease shall be calcium based.

3. Oil Lubrication

- i) Gear boxes shall be provided with an oil level sight glass or dipstick, a screw capped filling hole and drain cock.
- ii) Where pressure oil lubrication of bearings is adopted, a filter and overload facility shall be provided in an accessible position.
- iii) All opening or joints in the gear box casing shall be provided with gaskets to avoid oil leakage.
- iv) Contractor shall provide the net quantity plus ten percent (10%) of the required oils and grease for the first filling and charging of the equipment at site.
- v) The oil shall be delivered in steel drums and grease in steel kegs. The containers shall be non-returnable.

3310 LIFTING MECHANISM INSTALLATION, TESTS AND ADJUSTMENTS

The installation of the lifting mechanism and anchorage shall be in accordance with the details as shown on the Drawings. The Contractor shall send qualified and experienced Installation Supervisor who will supervise the installation of the lifting mechanism.

Lifting mechanism shall be installed complete with gear reductions, couplings, shafting, shaft bearings, drums, wire ropes, anchor bolts and all other materials for complete assembly. Lifting mechanism shall be assembled and accurately placed in correct alignment by the use of shims and wedges between the sole plates or base plates and concrete. Dry packing shall be done after the dry-pack has set.

After the lifting mechanism have been completely installed, adjusted and made ready for operation, the Contractor shall conduct test runs for the gates and lifting mechanism. All units shall be tested for normal operating speed to ensure that all necessary clearances and tolerances have been provided and that no binding occurs in any moving part. The cost of performing all the required test shall be borne by the Contractor.

All tests shall be performed in the presence of authorized representatives of NIA. All data shall be certified correct and submitted to NIA. All defects found during the test as a result of the installation work shall be corrected accordingly to the satisfaction of NIA.

3311 EMBEDDED PARTS

Special attention shall be given to the method by which embedded parts are aligned during erection and secured against movement during the placing of the second stage concrete.

The proposed method which is indicated on the Drawings utilize adjusting anchors welded at one end to anchor plates embedded in first stage concrete and fastened by means of two adjusting nuts at the other end to the embedded parts.

3312 ANTI-CORROSION MEASURES AND PAINTING

a. General

- i. The steel gate shall be designed to minimize as much as possible the effects of localized corrosion. Drain holes shall be provided in all locations where the entrapment of water can occur.
- ii. All steel surfaces except stainless steel surfaces shall be coated and/or painted with a protective film specified under Section C below.
- iii. Crevices over which the protective film can bridge shall be retouched or repaired prior to coating.

- iv. Boxed in members shall be provided with access holes or shall be treated internally with an effective coating material.
- v. All coating or paint materials to be used shall be original sealed container bearing the manufacturer's label revealing complete identification of content and shall be subject to inspection by NIA prior to coating and/or painting. The NIA shall have the right to reject any paint material supplied under these specifications which is found to be defective.

b. Surface Preparation and Shop Painting

Upon completion of fabrication and machining works but prior to application of coating materials, the Contractor shall notify NIA in writing that the surface preparation for painting is in progress. Coating application shall commence only after the NIA or their duly authorized representatives have inspected and subsequently approved the surface preparation in accordance with these specifications.

The NIA, or their designated inspectors shall undertake from time to time, inspection of the painting works while it is in progress. The NIA shall be at liberty to reject outright any deviation to material specifications and procedure noted during inspection.

Notwithstanding such inspection, the Contractor shall be held responsible for the acceptability of the finished work.

All oil, grease, soil and other contaminants shall be removed from steel and cast iron surfaces by the use of clean solvent, emulsion, cleaning compound or other methods which involve cleaning action.

Following the solvent, the surfaces shall be cleaned of all defective or damage areas of existing paint, and of all loose rust, loose mill scale and other foreign substance in accordance with the requirements for surface preparation as specified hereunder.

i. Immersed Steel

Except where otherwise specified, all steel surfaces and all parts of structures that have surfaces which are exposed and/or permanently immersed in water, shall be blast cleaned by commercial blast cleaning (SSPC-SP6) then painted with 2 coats of coal tar epoxy paint conforming to U.S. Military Specifications MIL-P23236 (Ships) Type I, Class 2 to produce a total dry film thickness of 400 microns (16 mils.),

ii. Steel Exposed to Atmosphere (Lifting Mechanism and Accessories including Enclosures)

Except where otherwise specified all steel and cast iron surfaces of lifting mechanism and accessories including its enclosure which are exposed to atmosphere shall be blast cleaned by commercial blast cleaning (SSPC-SP6) then applied with 1 coat of Alkyd Red Lead Primer. After proper drying time is attained apply 2 coats of Alkyd Enamel finish to attain a total dry film thickness of 175 microns (7 mils.).

iii. Embedded Steel Work

Where not otherwise specified, all steel surfaces which will be embedded or against which concrete will be placed shall be cleaned by power tool cleaning (SSPC-SP3) then painted with 1 coat of cement latex milk consisting of 10 parts of Portland Cement (by weight), 5 parts of water and 1 part modified latex emulsion.

iv. Repair of Paint Film

The Contractor shall retouch or repair areas of steel gates which maybe damaged during transit from shop to the site of delivery.

All paints shall be applied in conformity with SSPC-PAI Shop, Field and Maintenance Painting, by skilled personnel fully experienced in this type of work.

C. Machine Surfaces

All finished surfaces of ferrous metals that will be exposed during shipment or while awaiting installation shall be cleaned in accordance with a coating of heavy, gasoline rust preventive compound.

D. Stainless Steel Surfaces

No painting is required for finished or unfinished stainless steel parts.

3313 PREPARING FOR TRANSPORTATION

- i) Shipment of fabricated works to the Project Office should be made only upon issuance of pre-delivery inspection and acceptance report to the fabricator/manufacturer by the NIA Office.
- ii) The Project Office reserves the right to conduct its own final inspection upon arrival at the project office before issuance of final acceptance report and any findings made thereat should be noted in the final inspection report for appropriate action by the Central Office.
- iii) All parts shall be prepared for transportation so that slings for handling maybe attached readily wherever the parts are to be moved. When it is unsafe to attach slings to the boxes/crates, boxed parts shall be packed with sling attached to the part and the slings shall project through the box or crate so that attachments can be made easily.
- iv) All exposed finished surfaces shall be adequately protected against abrasion and injury during transportation and all long and slender pieces shall be safely supported and blocked.
- v) Rubber seals shall be dismantled after shop assembly and shall be transported separately. They shall be so packed and protected that their size, shape and physical properties are not affected during transportation.

- vi) The gates shall be prepared for transportation as to involve the minimum amount of field assembly.

a. Packing

- i) The bid price shall include and provide for securely protecting and packing the equipment so as to avoid the damage during transport. All packing shall allow for easy removal and checking at site. Special precaution shall be taken to prevent rusting of the parts. Gas seals or other methods if proposed to be used shall have the approval of NIA. Each carton or package shall contain a packing memorandum mentioning the name of the Contractor, the number and date of the Contract and the name of the office placing the order.
- ii) The equipment shall be insured for loss or damage during transit to the field, the cost being borne by the Contractor.
- iii) Notwithstanding anything stated above, the Contractor shall be entirely responsible for loss, damage or depreciation to the equipment and materials.

b. Marking

Each part of gates, hoist and embedded parts which need to be transported from the shop to the field site as separate piece shall be marked to show the unit of which it is a part and match marked to show its relative position in the unit to facilitate assembly in the field. Unit marks and match marks shall be made with heavy steel stamps and paints. Each piece, sub-assembly or package to be transported separately shall be labeled or tagged with transportation designation consisting of the Specification number and the mark number of such piece or the number of parts grouped in such assemblies or package.

3314 ACCEPTANCE OF WORKS

After the steel gates have been installed in the field, it will be operated and tested by the NIA and when so operated and tested it shall meet all the requirements of the specifications. The gates shall be raised and lowered several times for the full length of the travel. The primary requisite for acceptance shall be that each gate operates smooth and shall be watertight.

A. Tests

- i) The Contractor shall carry out such tests on the gates and hoist equipment as maybe required by the Engineer. Contractor shall be responsible for all modifications and adjustments required for the works as a result of such tests.
- ii) The test shall include:
 - a) operational tests in the dry
 - b) operational tests with fully hydrostatic load
 - c) leakage test
- iii) Test maybe repeated, if necessary, until they successfully carried out to the satisfaction of the Engineer.

- iv) The tests will be carried out at the convenience of the Engineer the cost thereof shall be borne by the Contractor.

B. Operational Tests in the Dry

Operational tests in the dry shall be carried out after completion of erection when all the power supply have been connected and adjusted. The tests shall include at least two complete traverses from the maximum raised position to the full seating position. Manual operation will also be similarly tested. All adjustments, clearances, brakes, motors and controls, etc. shall be checked for proper operation.

C. Operational Test under Hydrostatic Head

- i) These tests shall simulate the actual operating conditions as closely as possible.
- ii) At least one complete traverse will be made on the sluice and intake gates from the fully closed position to the normal raised position as follows:
- a) With the gate initially in the fully closed position raise it to the normal open position until stopped by the limit switch;
 - b) Lower the gate to the fully closed position;
 - c) Ascertain proper operation against over-travel;
 - d) Record and report fan speed, motor torque and current while raising and fan speed during closing;

D. Leakage Tests

Leakage test shall be carried out with the gate lowered on the sill. Before the observation for leakage, the gate shall be raised and lowered by about one meter, several times to dislodge any debris that might have lodged on the side seals. The leaking shall then be measured. Excessive leakage shall be rectified until it is reduced to 15 (fifteen) litres/minute/metre length of the seal.

3315 MANUALS

The fabricator/manufacturer shall prepare and furnish NIA and the installation contractor's staff, the installation procedure, operation, and maintenance manuals for all of the works as provided for in the Contract Documents.

3316 METHOD OF MEASUREMENT

Measurement for furnishing and installation of gates and stoplog will be made on the number of assemblies of the different classes and sizes acceptably installed and tested.

3317 BASIS OF PAYMENT

The cost for the supply and delivery of various steel gates will be paid at the contract unit price per assembly or the lump sum price whichever is stated in the Bill of Quantities, which shall include all equipment and materials prescribed in this section and directed by the Engineer.

The cost for the installation provided under this item will be paid at the contract unit price which shall constitute full compensation for furnishing all labor, materials, tools, equipment, supplies and all incidentals and subsidiary works necessary for the successful completion of the works.

Payment for the work provided under this item will be made separately for the supply and delivery, and installation of various gates and lifting mechanism as follows:

a) Supply and delivery

For the supply and delivery of various gates and lifting mechanism, eighty percent (80%) of the respective unit price in the Bill of Quantities shall be paid upon delivery to the project site in accordance with this technical specification acceptable to NIA.

All equipment/materials delivered at the site, shall be kept by the Contractor and will be responsible for any loss or damage of the equipment/materials until they are installed. Any loss or damage to the equipment/materials shall be replaced by the Contractor at his own expense.

Twenty percent (20%) shall be paid upon installation of the equipment and materials, and ready for operation as certified by the Engineer.

b) Installation

One hundred percent (100%) of the respective unit price of each installation works which shall include labor, consumable materials, subsidiary works and other incidentals required for the successful completion of the works shall be paid upon complete installation of the respective equipment/ materials all in accordance with the drawings and accepted by the Engineer.

Section VII. Drawings

Please refer to:

EDWIN C. NAZARENO

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Section VIII. Bill of Quantities

BILL OF QUANTITIES AND BID PRICES

Installation of Sluice Gate

Tres Cruces RIS

Tanza, Cavite

Contract No.: **4AC-RRN-21-045D**

DESCRIPTION		QUANTITY/UNIT		UNIT BID PRICE IN WORDS & IN FIGURES	TOTAL
1	Steel Gate	1.00	l.s.		
2	Construction Safety and Health Program	1.00	l.s.		
3	Temporary Facility	1.00	l.s.		
TOTAL AMOUNT OF BIDS (In Words & Figures)					

The undersigned bidder hereby certifies that he has fully informed himself of all conditions, local and otherwise affecting the carrying out of the Contract Works and that has been in strict accordance with the terms and conditions of these Bid Documents.

Name of Firm: _____

Name in Print & Signature of Bidder

Section IX. Checklist of Technical and Financial Documents

Checklist of Technical and Financial Documents

I. TECHNICAL COMPONENT ENVELOPE

Class “A” Documents

Legal Documents

- (a) Valid PhilGEPS Registration Certificate (Platinum Membership) (all pages);
And
- (b) Registration certificate from Securities and Exchange Commission (SEC), Department of Trade and Industry (DTI) for sole proprietorship
And
- (c) Mayor’s or Business permit issued by the city or municipality where the principal place of business of the prospective bidder is located, or the equivalent document for Exclusive Economic Zones or Areas;
And
- (e) Tax clearance per E.O. No. 398, s. 2005, as finally reviewed and approved by the Bureau of Internal Revenue (BIR).

Technical Documents

- (f) Statement of the prospective bidder of all its ongoing government and private contracts, including contracts awarded but not yet started, if any, whether similar or not similar in nature and complexity to the contract to be bid; **and**
- (g) Statement of the bidder’s Single Largest Completed Contract (SLCC) similar to the contract to be bid, except under conditions provided under the rules;
and
- (h) Philippine Contractors Accreditation Board (PCAB) License;
or
Special PCAB License in case of Joint Ventures;
and registration for the type and cost of the contract to be bid; **and**
- (i) Original copy of Bid Security. If in the form of a Surety Bond, submit also a certification issued by the Insurance Commission;
or
Original copy of Notarized Bid Securing Declaration; **and**
- (j) Project Requirements, which shall include the following:
 - a. Organizational chart for the contract to be bid;
 - b. List of contractor’s key personnel (*e.g.*, Project Manager, Project Engineers, Materials Engineers, and Foremen), to be assigned to the contract to be bid, with their complete qualification and experience data;
 - c. List of contractor’s major equipment units, which are owned, leased, and/or under purchase agreements, supported by proof of ownership or certification of availability of equipment from the equipment lessor/vendor for the duration of the project, as the case may be; **and**

- (k) Original duly signed Omnibus Sworn Statement (OSS); **and** if applicable, Original Notarized Secretary's Certificate in case of a corporation, partnership, or cooperative; or Original Special Power of Attorney of all members of the joint venture giving full power and authority to its officer to sign the OSS and do acts to represent the Bidder.

Financial Documents

- (l) The prospective bidder's audited financial statements, showing, among others, the prospective bidder's total and current assets and liabilities, stamped "received" by the BIR or its duly accredited and authorized institutions, for the preceding calendar year which should not be earlier than two (2) years from the date of bid submission; **and**
- (m) The prospective bidder's computation of Net Financial Contracting Capacity (NFCC).

Class "B" Documents

- (n) If applicable, duly signed joint venture agreement (JVA) in accordance with RA No. 4566 and its IRR in case the joint venture is already in existence; **or** duly notarized statements from all the potential joint venture partners stating that they will enter into and abide by the provisions of the JVA in the instance that the bid is successful.

II. FINANCIAL COMPONENT ENVELOPE

- (o) Original of duly signed and accomplished Financial Bid Form; **and**

Other documentary requirements under RA No. 9184

- (p) Original of duly signed Bid Prices in the Bill of Quantities; **and**
- (q) Duly accomplished Detailed Estimates Form, including a summary sheet indicating the unit prices of construction materials, labor rates, and equipment rentals used in coming up with the Bid; **and**
- (r) Cash Flow by Quarter.