PHILIPPINE BIDDING DOCUMENTS

(As Harmonized with Development Partners)

Procurement of INFRASTRUCTURE PROJECTS

Government of the Republic of the Philippines

SUPPLY DELIVERY, INSTALLATION OF 3 UNITS SOLAR POWER PUMP INCLUDING ACCESSORIES AND CONSTRUCTION OF IRRIGATION FACILITIES for ORAS, AMOMONTING AND SAN RAFAEL SPIP, Castilla and Sta. Magdalena, Sorsogon

SPIP-SOR-001-25

Sixth Edition
July 2020

Preface

These Philippine Bidding Documents (PBDs) for the procurement of Infrastructure Projects (hereinafter referred to also as the "Works") through Competitive Bidding have been prepared by the Government of the Philippines for use by all branches, agencies, departments, bureaus, offices, or instrumentalities of the government, including government-owned and/or -controlled corporations, government financial institutions, state universities and colleges, local government units, and autonomous regional government. The procedures and practices presented in this document have been developed through broad experience, and are for mandatory use in projects that are financed in whole or in part by the Government of the Philippines or any foreign government/foreign or international financing institution in accordance with the provisions of the 2016 revised Implementing Rules and Regulations (IRR) of Republic Act (RA) No. 9184.

The PBDs are intended as a model for admeasurements (unit prices or unit rates in a bill of quantities) types of contract, which are the most common in Works contracting.

The Bidding Documents shall clearly and adequately define, among others: (i) the objectives, scope, and expected outputs and/or results of the proposed contract; (ii) the eligibility requirements of Bidders; (iii) the expected contract duration; and (iv) the obligations, duties, and/or functions of the winning Bidder.

Care should be taken to check the relevance of the provisions of the PBDs against the requirements of the specific Works to be procured. If duplication of a subject is inevitable in other sections of the document prepared by the Procuring Entity, care must be exercised to avoid contradictions between clauses dealing with the same matter.

Moreover, each section is prepared with notes intended only as information for the Procuring Entity or the person drafting the Bidding Documents. They shall not be included in the final documents. The following general directions should be observed when using the documents:

a. All the documents listed in the Table of Contents are normally required for the procurement of Infrastructure Projects. However, they should be adapted as necessary to the circumstances of the particular Project.

b. Specific details, such as the "*name of the Procuring Entity*" and "*address for bid submission*," should be furnished in the Instructions to Bidders, Bid Data Sheet, and Special Conditions of Contract. The final documents should contain neither blank spaces nor options.

c. This Preface and the footnotes or notes in italics included in the Invitation to Bid, BDS, General Conditions of Contract, Special Conditions of Contract, Specifications, Drawings, and Bill of Quantities are not part of the text of the final document, although they contain instructions that the Procuring Entity should strictly follow.

d. The cover should be modified as required to identify the Bidding Documents as to the names of the Project, Contract, and Procuring Entity, in addition to date of issue.

e. Modifications for specific Procurement Project details should be provided in the Special Conditions of Contract as amendments to the Conditions of Contract. For easy completion, whenever reference has to be made to specific clauses in the Bid Data Sheet or Special Conditions of Contract, these terms shall be printed in bold typeface on Sections I (Instructions to Bidders) and III (General Conditions of Contract), respectively.

f. For guidelines on the use of Bidding Forms and the procurement of Foreign-Assisted Projects, these will be covered by a separate issuance of the Government Procurement Policy Board.

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Glossary of
Terms, Abbreviations, and Acronyms

ABC – Approved Budget for the Contract.

ARCC – Allowable Range of Contract Cost.

BAC – Bids and Awards Committee.

Bid – A signed offer or proposal to undertake a contract submitted by a bidder in response to and in consonance with the requirements of the bidding documents. Also referred to as *Proposal* and *Tender.* (2016 revised IRR, Section 5[c])

Bidder – Refers to a contractor, manufacturer, supplier, distributor and/or consultant who submits a bid in response to the requirements of the Bidding Documents. (2016 revised IRR, Section 5[d])

Bidding Documents – The documents issued by the Procuring Entity as the bases for bids, furnishing all information necessary for a prospective bidder to prepare a bid for the Goods, Infrastructure Projects, and/or Consulting Services required by the Procuring Entity. (2016 revised IRR, Section 5[e])

BIR – Bureau of Internal Revenue.

BSP – Bangko Sentral ng Pilipinas.

CDA – Cooperative Development Authority.

Consulting Services – Refer to services for Infrastructure Projects and other types of projects or activities of the GOP requiring adequate external technical and professional expertise that are beyond the capability and/or capacity of the GOP to undertake such as, but not limited to: (i) advisory and review services; (ii) pre-investment or feasibility studies; (iii) design; (iv) construction supervision; (v) management and related services; and (vi) other technical services or special studies. (2016 revised IRR, Section 5[i])

Contract – Refers to the agreement entered into between the Procuring Entity and the Supplier or Manufacturer or Distributor or Service Provider for procurement of Goods and Services; Contractor for Procurement of Infrastructure Projects; or Consultant or Consulting Firm for Procurement of Consulting Services; as the case may be, as recorded in the Contract Form signed by the parties, including all attachments and appendices thereto and all documents incorporated by reference therein.

Contractor – is a natural or juridical entity whose proposal was accepted by the Procuring Entity and to whom the Contract to execute the Work was awarded. Contractor as used in these Bidding Documents may likewise refer to a supplier, distributor, manufacturer, or consultant.

CPI – Consumer Price Index.

DOLE – Department of Labor and Employment.

DTI – Department of Trade and Industry.

Foreign-funded Procurement or Foreign-Assisted Project – Refers to procurement whose funding source is from a foreign government, foreign or international financing institution as specified in the Treaty or International or Executive Agreement. (2016 revised IRR, Section 5[b]).

GFI – Government Financial Institution.

GOCC – Government-owned and/or –controlled corporation.

Goods – Refer to all items, supplies, materials and general support services, except Consulting Services and Infrastructure Projects, which may be needed in the transaction of public businesses or in the pursuit of any government undertaking, project or activity, whether in the nature of equipment, furniture, stationery, materials for construction, or personal property of any kind, including non-personal or contractual services such as the repair and maintenance of equipment and furniture, as well as trucking, hauling, janitorial, security, and related or analogous services, as well as procurement of materials and supplies provided by the Procuring Entity for such services. The term "related" or "analogous services" shall include, but is not limited to, lease or purchase of office space, media advertisements, health maintenance services, and other services essential to the operation of the Procuring Entity. (2016 revised IRR, Section 5[r])

GOP – Government of the Philippines.

Infrastructure Projects – Include the construction, improvement, rehabilitation, demolition, repair, restoration or maintenance of roads and bridges, railways, airports, seaports, communication facilities, civil works components of information technology projects, irrigation, flood control and drainage, water supply, sanitation, sewerage and solid waste management systems, shore protection, energy/power and electrification facilities, national buildings, school buildings, hospital buildings, and other related construction projects of the government. Also referred to as *civil works or works*. (2016 revised IRR, Section 5[u])

LGUs – Local Government Units.

NFCC – Net Financial Contracting Capacity.

NGA – National Government Agency.

PCAB – Philippine Contractors Accreditation Board.

PhilGEPS - Philippine Government Electronic Procurement System.

Procurement Project – refers to a specific or identified procurement covering goods, infrastructure project or consulting services. A Procurement Project shall be described, detailed, and scheduled in the Project Procurement Management Plan prepared by the agency which shall be consolidated in the procuring entity's Annual Procurement Plan. (GPPB Circular No. 06-2019 dated 17 July 2019)

PSA – Philippine Statistics Authority.

SEC – Securities and Exchange Commission.

SLCC – Single Largest Completed Contract.

UN – United Nations.

Section I. Invitation to Bid

Notes on the Invitation to Bid

The Invitation to Bid (IB) provides information that enables potential Bidders to decide whether to participate in the procurement at hand. The IB shall be posted in accordance with Section 21.2 of the 2016 revised IRR of RA No. 9184.

Apart from the essential items listed in the Bidding Documents, the IB should also indicate the following:

a. The date of availability of the Bidding Documents, which shall be from the time the IB is first advertised/posted until the deadline for the submission and receipt of bids;

b. The place where the Bidding Documents may be acquired or the website where it may be downloaded;

c. The deadline for the submission and receipt of bids; and

d. Any important bid evaluation criteria.

The IB should be incorporated into the Bidding Documents. The information contained in the IB must conform to the Bidding Documents and in particular to the relevant information in the Bid Data Sheet.

Invitation to Bid for SUPPLY DELIVERY, INSTALLATION OF 3 UNITS SOLAR POWER PUMP INCLUDING ACCESSORIES AND CONSTRUCTION OF IRRIGATION FACILITIES FOR ORAS, AMOMONTING AND SAN RAFAEL SPIP, Castilla and Sta. Magdalena, Sorsogon

1. The ***National Irrigation Administration-SMIMO, Buhatan, Sorsogon City***, through the ***EGPIP CY 2025*** intends to apply the sum of ***₱ 48,531,525.24*** being the Approved Budget for the Contract (ABC) to payments under the contract for the **SUPPLY DELIVERY, INSTALLATION OF 3 UNITS SOLAR POWER PUMP INCLUDING ACCESSORIES AND CONSTRUCTION OF IRRIGATION FACILITIES FOR ORAS, AMOMONTING AND SAN RAFAEL SPIP, Castilla and Sta. Magdalena, Sorsogon** *with* ***Contract Reference No. SPIP-SOR-001-25.*** Bids received in excess of the ABC shall be automatically rejected at bid opening.

2. The ***National Irrigation Administration-SMIMO, Buhatan, Sorsogon City*** now invites bids for the above Procurement Project. Completion of the Works is required ***three hundred sixty (360) calendar 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 ***National Irrigation Administration-SMIMO, Buhatan, Sorsogon City*** and inspect the Bidding Documents at the address given below from ***8:00 AM of May 8, 2025 to 9:00 AM of May 28, 2025.***

5. A complete set of Bidding Documents may be acquired by interested bidders on ***8:00 AM of May 8, 2025 to 9:00 AM of May 28, 2025*** at the given address and upon payment of the applicable fee for the Bidding Documents, pursuant to the latest Guidelines issued by the GPPB, in the amount of ***₱ 25,000.00.*** The Procuring Entity shall allow the bidder to present its proof of payment for the fees to be presented in person only.

6. The ***National Irrigation Administration-SMIMO, Buhatan, Sorsogon City*** will hold a Pre-Bid Conference[1] on ***May 16, 2025 at 9:00 AM*** at ***NIA-SMIMO, BAC Office, Buhatan, Sorsogon City***, which shall be open to prospective bidders.

7. Bids must be duly received by the BAC Secretariat through (i) manual submission at the office address as indicated below, on or before ***8:30 AM of May 28, 2025.*** Late bids shall not be accepted.

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.

9. Bid opening shall be on ***May 28, 2025 at 9:00 AM*** at the given address below. Bids will be opened in the presence of the bidders' representatives who choose to attend the activity.

[1] May be deleted in case the ABC is less than One Million Pesos (PhP1,000,000) where the Procuring Entity may not hold a pre-bid conference.

10. The ***National Irrigation Administration-SMIMO, Buhatan, Sorsogon City*** 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:

    MARIDOL G. VALERIANO
    Head BAC Secretariat
    NIA-SMIMO
    Buhatan, Sorsogon City
    bac.smimo2022@yahoo.com

12. You may visit the following websites:

    For downloading of Bidding Documents: *Log-in to PhilGEPS website.*

13. Interested bidders should submit the following:

    a. Letter of Intent

    b. Special Power of Attorney (SPA) or Secretary Certificate for Incorporated/Corporation for Representative with Valid Company ID.

May 2, 2025

_____
SGD. Engr. SHERWIN ROIS R. NOPRE
BAC Chairperson

Section II. Instructions to Bidders

Notes on the Instructions to Bidders

This Section on the Instruction to Bidders (ITB) provides the information necessary for bidders to prepare responsive bids, in accordance with the requirements of the Procuring Entity. It also provides information on bid submission, eligibility check, opening and evaluation of bids, post-qualification, and on the award of contract.

1. Scope of Bid

The Procuring Entity, **SUPPLY DELIVERY, INSTALLATION OF 3 UNITS SOLAR POWER PUMP INCLUDING ACCESSORIES AND CONSTRUCTION OF IRRIGATION FACILITIES FOR ORAS, AMOMONTING AND SAN RAFAEL, Castilla and San Rafael, Sorsogon** with Project Identification Number ***SPIP-SOR-001-25.***

The Procurement Project (referred to herein as "Project") is for the construction of Works, as described in Section VI (Specifications).

2. Funding Information

2.1. The GOP through the source of funding as indicated below for ***GAA/EGPIP CY 2025*** in the amount of ***₱ 48,531,525.24***

2.2. The source of funding is:

a. GOCC and GFIs, the Corporate Operating Budget.

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 and attached certificate of site inspection concurred by National Irrigation System (NIS) Head, 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.

7.1. Subcontracting of any portion of the Project does not relieve the Contractor of any liability or obligation under the Contract. The Supplier will be responsible for the acts, defaults, and negligence of any subcontractor, its agents, servants, or workmen as fully as if these were the Contractor's own acts, defaults, or negligence, or those of its agents, servants, or workmen.

8. 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.

9. Documents Comprising the Bid: Eligibility and Technical Components

9.1 The first envelope shall contain the eligibility and technical documents of the Bid as specified in **Section IX. Checklist of Technical and Financial Documents**.

9.2 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.

9.3 A valid PCAB License at least Small B in Irrigation and Flood Control, 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**.

9.4 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**.

9.5 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**.

10. Documents Comprising the Bid: Financial Component

10.1 The second bid envelope shall contain the financial documents for the Bid as specified in **Section IX. Checklist of Technical and Financial Documents**.

10.2 Any bid exceeding the ABC indicated in paragraph 1 of the **IB** shall not be accepted.

10.3 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.

11. 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.

12. 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.

13. Bid and Payment Currencies

13.1 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.

13.2 Payment of the contract price shall be made in:

a. Philippine Pesos.

14. Bid Security

14.1 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**.

14.2 The Bid and bid security shall be valid until ***September 25, 2025***. Any bid not accompanied by an acceptable bid security shall be rejected by the Procuring Entity as non-responsive.

15. Sealing and Marking of Bids

Each Bidder shall submit one original copies 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.

16. Deadline for Submission of Bids

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

17. Opening and Preliminary Examination of Bids

17.1 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.

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

18. Detailed Evaluation and Comparison of Bids

18.1 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.

18.2 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.

18.3 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.

19. 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**.

20. 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

Notes on the Bid Data Sheet (BDS)

The Bid Data Sheet (BDS) consists of provisions that supplement, amend, or specify in detail, information, or requirements included in the ITB found in Section II, which are specific to each procurement.

This Section is intended to assist the Procuring Entity in providing the specific information in relation to corresponding clauses in the ITB and has to be prepared for each specific procurement.

The Procuring Entity should specify in the BDS information and requirements specific to the circumstances of the Procuring Entity, the processing of the procurement, and the bid evaluation criteria that will apply to the Bids. In preparing the BDS, the following aspects should be checked:

a. Information that specifies and complements provisions of the ITB must be incorporated.

b. Amendments and/or supplements, if any, to provisions of the ITB as necessitated by the circumstances of the specific procurement, must also be incorporated.

Bid Data Sheet

For Procurement USE ONLY.
NIA Official Receipt #/Date: _____

<table>
<tr><td>ITB Clause</td><td></td></tr>
<tr><td>5.2</td><td>For this purpose, contracts similar to the Project refer to contracts which have the same major categories of work completed within five (5) years ago from the date of bid opening (May 28, 2020 to May 28, 2025), which shall be SUPPLY DELIVERY, INSTALLATION OF 3 UNITS SOLAR POWER PUMP INCLUDING ACCESSORIES AND CONSTRUCTION OF IRRIGATION FACILITIES FOR ORAS, AMOMONTING AND SAN RAFAEL, Castilla and Sta. Magdalena, Sorsogon.</td></tr>
<tr><td>7.1</td><td>Subcontracting is not allowed.</td></tr>
<tr><td>9.3</td><td>Valid PCAB License for at least Medium A in GE-2 Irrigation or Flood Control.</td></tr>
<tr><td>9.4</td><td>The full-time key personnel both for Oras SPIP must meet the required minimum years of experience set below:
<table>
<tr><th colspan="3">Full-Time Key Personnel</th><th>General Experience</th><th>Relevant Experience</th></tr>
<tr><td>1.</td><td>Project Manager</td><td>1</td><td>RELEVANT EXPERIENCE IN CONSTRUCTION OF CANAL STRUCTURES AND CONCRETE CANAL LINING AND SOLAR PROJECT</td><td>2 years</td></tr>
<tr><td>2.</td><td>Project Engineer</td><td>1</td><td>RELEVANT EXPERIENCE IN CONSTRUCTION OF CANAL STRUCTURES AND CONCRETE CANAL LINING AND SOLAR PROJECT</td><td>2 years</td></tr>
<tr><td>3.</td><td>Foreman</td><td>1</td><td>RELEVANT EXPERIENCE IN CONSTRUCTION OF CANAL STRUCTURES AND CONCRETE CANAL LINING AND SOLAR PROJECT</td><td>2 years</td></tr>
<tr><td>4.</td><td>Materials Engineer</td><td>1</td><td>Duly Accredited by Authorized Agency</td><td></td></tr>
<tr><td>5.</td><td>Safety Officer</td><td>1</td><td>with COSH Training/Seminar in DOLE</td><td></td></tr>
<tr><td>6.</td><td>Electical Engineer</td><td>1</td><td>EXPERIENCE IN ELECTRICAL AND SOLAR PROJECT</td><td>1 year</td></tr>
</table>
The full-time key personnel both for Amomonting SPIP must meet the required minimum years of experience set below
<table>
<tr><th colspan="3">Full-Time Key Personnel</th><th>General Experience</th><th>Relevant Experience</th></tr>
<tr><td>1.</td><td>Project Manager</td><td>1</td><td>RELEVANT EXPERIENCE IN CONSTRUCTION OF CANAL STRUCTURES AND CONCRETE CANAL LINING AND SOLAR PROJECT</td><td>2 years</td></tr>
<tr><td>2.</td><td>Project Engineer</td><td>1</td><td>RELEVANT EXPERIENCE IN CONSTRUCTION OF CANAL STRUCTURES AND CONCRETE CANAL LINING AND SOLAR PROJECT</td><td>2 years</td></tr>
<tr><td>3.</td><td>Foreman</td><td>1</td><td>RELEVANT EXPERIENCE IN CONSTRUCTION OF CANAL STRUCTURES AND CONCRETE CANAL LINING AND SOLAR PROJECT</td><td>2 years</td></tr>
<tr><td>4.</td><td>Materials Engineer</td><td>1</td><td>Duly Accredited by Authorized Agency</td><td></td></tr>
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<tr><td>6.</td><td>Electical Engineer</td><td>1</td><td>EXPERIENCE IN ELECTRICAL AND SOLAR PROJECT</td><td>1 year</td></tr>
</table>
The full-time key personnel both for San Rafael SPIP must meet the required minimum years of experience set below
<table>
<tr><th colspan="3">Full-Time Key Personnel</th><th>General Experience</th><th>Relevant Experience</th></tr>
<tr><td>1.</td><td>Project Manager</td><td>1</td><td>RELEVANT EXPERIENCE IN CONSTRUCTION OF CANAL STRUCTURES</td><td>2 years</td></tr>
</table></td></tr>
</table>

			AND CONCRETE CANAL LINING AND SOLAR PROJECT	
2.	Project Engineer	1	RELEVANT EXPERIENCE IN CONSTRUCTION OF CANAL STRUCTURES AND CONCRETE CANAL LINING AND SOLAR PROJECT	2 years
3.	Foreman	1	RELEVANT EXPERIENCE IN CONSTRUCTION OF CANAL STRUCTURES AND CONCRETE CANAL LINING AND SOLAR PROJECT	2 years
4.	Materials Engineer	1	Duly Accredited by Authorized Agency	
5.	Safety Officer	1	with COSH Training/Seminar in DOLE	
6.	Electical Engineer	1	EXPERIENCE IN ELECTRICAL AND SOLAR PROJECT	1 year

Conditions regarding Full-Time Key Personnel:

1. All proposed full-time key personnel must be available starting on the bid submission date. If any of the proposed full-time key personnel is found to be committed to or deployed in any ongoing infrastructure project/contract, the said personnel shall not be considered. This becomes a ground for the bidder's ineligibility or disqualification/post disqualification. The relevant qualifications, experience and abilities of the key personnel must be equivalent or better than those of the personnel stated in the List of Contractor's Key Personnel that are within the conditions stated in Bid Data Sheet ITB Clause 5.2.

2. For the purpose of procurement in NIA-SMIMO, the bidder may participate and submit the same set of full-time key personnel in the on-going procurement of NIA-SMIMO' infrastructure projects. If any of these infrastructure projects is awarded to the bidder (through the issuance of NOA), this means that its proposed full-time key personnel are already committed to the awarded project and are no longer available for the other procurement projects. This becomes a ground for the bidder's ineligibility or disqualification/post-disqualification when it comes to the other ongoing NIA-SMIMO' procurement activities that are participated in by the bidder.

3. All full-time key personnel proposed during the procurement shall be the default full-time key personnel upon commencement of the contract.

4. During contract implementation, any proposed replacement of key personnel shall be subjected to NIA-SMIMO' approval. The relevant qualifications, experience and abilities of the new key personnel must be equivalent or better than those of the personnel stated in the List of Contractor's Key Personnel that are within the conditions stated in Bid Data Sheet ITB Clause 5.2. Reasons for personnel replacement shall be limited to the following: illness, death or resignation, provided that the proposed replacement is duly supported by relevant document/s.

(c) Duly signed Bio-Data of Contractor's Full-Time Key Personnel. For the Project Engineer, submit their valid PRC License. For Foreman and skilled workers (Skill as Steel Fabricator) general experience must be from the stated conditions of ITB Clause 5.2. For Materials Engineer, submit their valid PRC License as Civil Engineer and copy of accreditation from authorized agency. For the Safety Officer, submit the copy of Certificate of Training issued by or in coordination with Bureau of Working Conditions (BWC) or Department of Labor and Employment (DOLE).

(d) List of contractor's 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. No duplication of major equipment requirements (Dump Truck, Drilling Rig and Boom Truck) on proposed technical documents (list of equipment pledge to the contract) and other on-going infrastructure projects;

The minimum major equipment requirements **ORAS SPIP** for are the following:

Equipment	Capacity	Number of Units
Concrete Mixer	1 bagger	1.00
Dump Truck	6-8 MT	1.00
Drilling Rig	100 MTRS	1.00
Welder Generator	3kva	1.00
Boom Truck	3 tons	1.00

The minimum major equipment requirements **AMOMONTING SPIP** for are the following:

Equipment	Capacity	Number of Units
Concrete Mixer	1 bagger	1.00
Dump Truck	6-8 MT	1.00
Drilling Rig	100 MTRS	1.00
Welder Generator	3kva	1.00
Boom Truck	3 tons	1.00

9.5	The minimum major equipment requirements **SAN RAFAEL SPIP** for are the following: Equipment — Capacity — Number of Units Concrete Mixer — 1 bagger — 1.00 Dump Truck — 6-8 MT — 1.00 Drilling Rig — 100 MTRS — 1.00 Welder Generator — 3kva — 1.00 Boom Truck — 3 tons — 1.00
12	*No instructions*
15.1	The bid security shall be in the form of a Bid Securing Declaration or any of the following forms and amounts: a. The amount of not less than **₱ 970,630.50** *two (2%) of ABC,* if bid security is in cash, cashier's/manager's check, bank draft/guarantee or irrevocable letter of credit; b. The amount of not less than **₱ 2,426,576.26** *or five percent (5%) of ABC]* if bid security is in Surety Bond.
19	Other appropriate licenses and permit required by law, to wit: Certificate of Site Inspection concurred by EOD Section Chief and BIR Registration Certificate attached during bid opening. All notarized documents with documentary stamps.
19.2	No Partial bids are allowed.
20	Additional Contract Documents should be attached to the Technical Documents during bid opening with Specifications, General and Special Conditions of the Contract, Supplemental or Bid Bulletin, if any.
21	Additional contract documents relevant to the Project that may be required by existing laws and/or the Procuring Entity, such as construction schedule and S-curve, manpower schedule, construction methods in narrative form, equipment utilization schedule, construction safety and health program approved by the DOLE, and other acceptable tools of project scheduling.

For <u>Procurement</u> USE ONLY.
NIA Official Receipt #/Date: _____

Section IV. General Conditions of Contract

Notes on the General Conditions of Contract

The General Conditions of Contract (GCC) in this Section, read in conjunction with the Special Conditions of Contract in Section V and other documents listed therein, should be a complete document expressing all the rights and obligations of the parties.

Matters governing performance of the Contractor, payments under the contract, or matters affecting the risks, rights, and obligations of the parties under the contract are included in the GCC and Special Conditions of Contract.

Any complementary information, which may be needed, shall be introduced only through the Special Conditions of Contract.

Section V. Special Conditions of Contract

Notes on the Special Conditions of Contract

Similar to the BDS, the clauses in this Section are intended to assist the Procuring Entity in providing contract-specific information in relation to corresponding clauses in the GCC found in Section IV.

The Special Conditions of Contract (SCC) complement the GCC, specifying contractual requirements linked to the special circumstances of the Procuring Entity, the Procuring Entity's country, the sector, and the Works procured. In preparing this Section, the following aspects should be checked:

a. Information that complements provisions of the GCC must be incorporated.

b. Amendments and/or supplements to provisions of the GCC as necessitated by the circumstances of the specific purchase, must also be incorporated.

However, no special condition which defeats or negates the general intent and purpose of the provisions of the GCC should be incorporated herein.

Special Conditions of Contract

GCC Clause	
2	*No instructions.*
4.1	*Upon receipt of NTP.*
6	*No instructions.*
7.2	*[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.
10	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 ***thirty (30) calendar day*** of delivery of the Notice of Award.
11.2	The amount to be withheld for late submission of an updated Program of Work is 1% of contract amount.
13	The amount of the advance payment *shall not exceed 15% of the total contract price and schedule of payment*
14	No instructions.
15.1	The date by which "as built" drawings are required within 30 days after completion.
15.2	The amount to be withheld for failing to produce "as built" drawings and/or operating and maintenance manuals by the date required is 1% of contract amount.

Section VI. Specifications

Notes on Specifications

A set of precise and clear specifications is a prerequisite for Bidders to respond realistically and competitively to the requirements of the Procuring Entity without qualifying or conditioning their Bids. In the context of international competitive bidding, the specifications must be drafted to permit the widest possible competition and, at the same time, present a clear statement of the required standards of workmanship, materials, and performance of the goods and services to be procured. Only if this is done will the objectives of economy, efficiency, and fairness in procurement be realized, responsiveness of Bids be ensured, and the subsequent task of bid evaluation facilitated. The specifications should require that all goods and materials to be incorporated in the Works be new, unused, of the most recent or current models, and incorporate all recent improvements in design and materials unless provided otherwise in the Contract.

Samples of specifications from previous similar projects are useful in this respect. The use of metric units is mandatory. Most specifications are normally written specially by the Procuring Entity or its representative to suit the Works at hand. There is no standard set of Specifications for universal application in all sectors in all regions, but there are established principles and practices, which are reflected in these PBDs.

There are considerable advantages in standardizing General Specifications for repetitive Works in recognized public sectors, such as highways, ports, railways, urban housing, irrigation, and water supply, in the same country or region where similar conditions prevail. The General Specifications should cover all classes of workmanship, materials, and equipment commonly involved in construction, although not necessarily to be used in a particular Works Contract. Deletions or addenda should then adapt the General Specifications to the particular Works.

Care must be taken in drafting specifications to ensure that they are not restrictive. In the specification of standards for goods, materials, and workmanship, recognized international standards should be used as much as possible. Where other particular standards are used, whether national standards or other standards, the specifications should state that goods, materials, and workmanship that meet other authoritative standards, and which ensure substantially equal or higher quality than the standards mentioned, will also be acceptable. The following clause may be inserted in the SCC.

Sample Clause: Equivalency of Standards and Codes

Wherever reference is made in the Contract to specific standards and codes to be met by the goods and materials to be furnished, and work performed or tested, the provisions of the latest current edition or revision of the relevant standards and codes in effect shall apply, unless otherwise expressly stated in the Contract. Where such standards and codes are national, or relate to a particular country or region, other authoritative standards that ensure a substantially equal or higher quality than the standards and codes specified will be accepted subject to the Procuring Entity's Representative's prior review and written consent. Differences between the standards specified and the proposed alternative standards shall be fully described in writing by the Contractor and submitted to the Procuring Entity's Representative at least twenty-eight (28) days prior to the date when the

Contractor desires the Procuring Entity's Representative's consent. In the event the Procuring Entity's Representative determines that such proposed deviations do not ensure substantially equal or higher quality, the Contractor shall comply with the standards specified in the documents.

These notes are intended only as information for the Procuring Entity or the person drafting the Bidding Documents. They should not be included in the final Bidding Documents.

Technical Specifications

Solar Panel

1. 700w 2384mmx1303mmx33mm High Power- producing solar panels

2. Mono crystalline Panel

Pumps

1. 15hp Submersible multi-stage stainless steel (304) impeller

2. 250GPM @ 36m TDH.

3. 6” diameter pump body

4. 4” diameter discharge size

5. Coupled to submersible 10HP, 3phase, 60hz, 230/380 V and 3450 RPM

Solar Controllers/Inverter

1. 15HP, 230V,3Phase with manual/auto change over switch

2. Self Diagnostic protection

3. Auto start based on solar light intensity

4. Water level sensor for storage tank

5. Protects dry run, high/low voltage, over/under load operations

6. With phase failures indicators for faulty operations

PV Combiner Box

1.6-way with key lock

Suggested additional requirements to be submitted during the bidding: (to ensure the credibility of bidders)

1. Certificate of dealership/distributorship of the bidder from solar panel manufacturer

2. Certificate of dealership/distributorship of the bidder from pump and controller manufacturer

3. ISO-9001 certification of Solar Panel manufacturer

4. ISO-9001 certification of Pumps and Controller manufacturer

5. Must have NWRB water permit.

SECTION I

TEMPORARY WORKS, CONSTRUCTIONS PLANT, MOBILIZATION OF CONSTRUCTION EQUIPMENT AND DEMOBILIZATION WORK

SCOPE

[a] Temporary works

The contractor shall furnish all materials, labor, equipment's, tools and install such temporary works as are necessary for the successful completion of the Contract Work. The Contractor shall negotiate the site for his construction camp, office and work areas.

The temporary works and construction plant shall include but will not be limited to the following:

Construction camp for housing, feeding and accommodating of all the Contractor's employees. The Contractor shall also, within close proximity of his camp, provide an office and sleeping quarters for NIA employees, complete with facilities [specifies in item 2 below] and shall have a minimum floor are of 80 square meters.

Facilities such as potable water, drainage, sewage, disposal, sanitation, first aid and fire protection facilities.

Workshops, warehouses, site offices, stockpile areas, storage areas for materials, equipment, spare parts, fuel and oil.

All other temporary facilities not specifically listed but nevertheless required for the proper functioning of the camp set-up and construction activities.

Temporary works shall conform to all government standards and codes and shall meet the sanitary requirements of the Department of Health.

Contractor shall submit to the assistant Administrator for the Project Development and Implementation for approval layout drawings, program of erection and specifications for the Temporary Works within 30 calendar days following the date of the Notice to Proceed. No construction or erection of Temporary Works shall be started without the approval layout drawings, program of erections and specifications.

[b] Mobilization of Equipment

The Contractor shall mobilize and move into Project Site within 20 calendar days after receipt of Notice to Proceed the required initial equipment requirement as listed Supplemental Information of the Bid Documents.

Notwithstanding the mobilization of the initial equipment requirements, the Contractor shall mobilize to the site the additional equipment requirement within 20 calendar days upon receipt of the approval Equipment Moving-in and Utilization Schedule.

If for the reasons or causes other than "major calamities", the Contractor fails to mobilize fully the initial equipment required with said period, and all other equipment's listed in his approved Equipment Moving-in and Utilization Schedule, at the discretion of the Administrator, he may be given an extension of time to mobilize them fully but in no case shall it exceed 30 calendar days. Failure to fully mobilize the required construction equipment's within said period will be a ground for contract rescission. During said extension period liquidated damages equivalent to the daily operated ACEL rental rate of eight hours of the undelivered equipment per day of delay shall be imposed and collectible from any subsequent payment due the Contractor. If delays are caused by "major calamities", the corresponding number of calendar days caused by such calamities will not be counted. Delays shall be reckoned starting at 12:00 O'clock noon of the succeeding day

after the date scheduled for the mobilization of the programmed equipment. The Engineer shall certify to the date of actual mobilization of the programmed equipment to the site.

The Engineer shall check and verify the number, type and actual condition of the equipment moved into the Project Site. The NIA reserves the right to order the removal of such equipment that are not in good working condition from the Project Site at the Contractor's expenses and said equipment's are not be counted for as mobilized.

Construction equipment once moved into the Project Site, checked and accounted for by the Engineer shall not be permitted, prior to the completion of the Contract Work, to be moved out or transferred by the Contractor to another Project Site without the written approval of the Engineer.

Periodic check-up of the Contractor's equipments moved-in for the Contract Work shall be conducted by NIA. The Contractor will pay to NIA the amount equivalent to the ACEL Rental Rate of any equipment not accounted for during said check-up for the number of calendar days the equipment have been removed [without the written consent of the Engineers] from the Project Site until said equipment have been returned. Such cases are grounds for disapproval of claims by the Contractor for time extensions.

[c] Demobilization

Demobilization shall include dismantlement and removal from the site of Contractor's Plant, materials and equipments and all Temporary Facilities with the exception of some facilities which NIA shall consider to remain and which shall be handed over to NIA at the time of demobilization in a fully operational condition. Demobilization shall also include clean up of the site after completion of the Contract Work as approved and accepted by NIA and transportation of Contractor's employees from the site.

BASIS OF PAYMENT

Payment for furnishing of all materials, equipment and labor for the temporary works, mobilization of construction equipments including demobilization work, shall be made at the fixed lump sum price or lump sum bid price whichever is stated in the Bid of Quantities which shall not be subject to price escalation and adjustment, in accordance with the following:

Twenty percent [20%] of the lump sum price will be paid upon complete mobilization of the initial equipment requirement.

Ten percent [10%] of the lump sum price will be paid upon submittal and approval by the NIA of the Contractor's plan for the temporary works including list of equipment based on his work schedule as approved by NIA.

Twenty percent [20%] of the lump sum price will be paid upon the completion of the Contractor temporary works.

Thirty percent [30%] of the lump sum price will be paid upon the completion of moving-in of all the construction equipments approved under Equipment Moving-in and Utilization Schedule, duly certified by the Engineer, Project Auditor or their duly authorized representatives. Partial payment of this 30 % may be given on a pro-rata basis after fifty percent [50%] of the approved equipment has been moved-in to the project site.

For the purposes of computing the percentage of equipment moved-in. corresponding number of points of each equipment listed in the Equipment Moving-in and Utilization Schedule shall be provided by NIA to serve as the basis for any partial payment.

The remaining twenty percent [20%] of the lump sum price will be paid to the contractor upon final acceptance of the Contract Work.

SECTION II

CONCRETE WORKS

GENERAL

This Section covers all the materials as cement, aggregates, water, admixtures and proportioning, mixing, transporting, placing, finishing, curing and protecting of concrete, including supplies, equipment, tools and all other incidentals necessary for concrete works.

All the applicable provisions of the latest revision of the ACI Building Code (ACI-308-63) and American Society for Testing Materials (ASTM) or other equivalent standards approved by the Engineer shall govern in all cases not specifically provided for herein.

CONCRETE COMPOSITION

Concrete shall be composed of Portland cement, fine and coarse aggregates, water, and if necessary admixtures or agents approved by the Engineer. The design of concrete mixtures and consistency shall be specified in this Section.

CEMENT

(1) General

The cement shall conform to the requirements of the standard Specifications for Portland Cement (ASTM: C-150 Type 1). Special cement may be used subject to the approval of the Engineer provided it meets the requirements of Portland Cement with respect to strength, soundness and setting time.

(2) Storage

The Contractor shall, immediately upon delivery of cement to the jobsite, store the same in a dry, weather tight and properly ventilated structure with adequate provisions for the prevention of absorption of moisture. All storage facilities shall be subject to the approval of the Engineer and shall be such as to permit easy access for inspection and identification. The Contractor's method of handling and storing cement shall be subject to the approval of the Engineer. The Contractors shall not use any cement which is stored at the site for the period more than three (3) months. Not more than fourteen (14) sacks of cement shall be permitted to be piled up and this number shall be limited to seven (7) each, when the storage is expected to be longer than two (2) months; these sacks of cement shall be piled up or stored so as to permit easy access for identification, inspection and testing.

WATER

The water used in concrete, mortar and grout shall be free from objectionable quantities of silt, organic matter, alkali, salts other impurities. The recommendation of the seventh edition of the U.S. Bureau of Reclamation Concrete Manual for mixing water shall be followed.

FINE AGGREGATES

(1) General

The term "Fine Aggregates" is used to designate aggregates in which the maximum size of particles is 3/16 of an inch (5 millimeters). Fine aggregates for concrete, mortar and grout shall be provided by the Contractor and shall consist of natural sand, manufactured sand, or a combination of both. The different components shall be batched separately, or subject to the written approval of the Engineer, or blended prior to delivery to the batching plant.

As a means of providing moisture control, the Contractor may be required to stockpile the fine aggregates over porous drain to prevent excessive water and to stabilize the moisture content.

(2) Quality

Fine aggregates shall conform to the requirements of ASTM C-33 and shall consist of hard, tough, durable, uncoated rock particles. The Contractor shall exercise every possible precaution in transporting, washing and screening operations to prevent contamination of sand particles. Fine aggregates shall conform to the following requirements:

Grading

It is assumed that the sand available in natural deposits will require processing to provide a suitable gradation. Regardless of the source, the fine aggregate shall be well graded from fine to coarse and the gradation as delivered to the mixers shall conform to the following requirements unless otherwise approved:

Sieve Designation US Standard Square-Mesh		Percent by Weight Passing Individual - Sizes		
3/8”	(9.50 mm)			100
No. 4	(4.75 mm)	95	-	100
No. 8	(2.36 mm)	80	-	95
No. 16	(1.18 mm)	60	-	85
No. 30	(0.600 mm)	25	-	60
No. 50	(0.300 mm)	10	-	30
No. 100	(0.150 mm)	2	-	10
No. 200	(0.074 mm)	0	-	-

In addition to the grading limits shown above, the fine aggregates as delivered to the mixer shall have the fineness modulus of not less than 2.30 or more than 3.00.

The grading of the fine aggregates shall be also controlled so that the fineness moduli of at least 9 to 10 test samples of the fine aggregates as delivered to the mixer shall not vary more than 0.10 from the average fineness modulus of all samples previously taken. The fineness modulus shall be determined by dividing by 100, the sum of the cumulative percentages retained on US Standard Sieves No. 4, 8, 16, 50 and 100. At the option of the Contractor fine aggregates may be separated into two or more sizes or classifications, but the resulting sand when combined before entering the concrete mixer shall be of uniform grading within the limits specified above.

Particles Shape

The shape of the particles shall be generally spherical or cubical and reasonably free from flat or elongated particles. A flat or elongated particles is defined as a particle having a maximum dimension. Rock which breaks down into such shape, regardless of the type of processing equipment used, will not be approved for use in the production of fine aggregates.

Deleterious Substance

The maximum percentages of deleterious substance in the fine aggregates as delivered to the mixer shall not exceed the following values:

Deleterious Substance	Percent by Weight	Designation*
- Materials passing No. 200 screen	3	16
- Shale	1	17
- Clay	1	13
- Total of each other deleterious substance (such as alkali, mica, soft, flaky particles and loam)	2	-

*Note: The designation refers to methods of testing described in the seventh (7^{th}) edition of the Bureau of Reclamation Concrete Manual and ASTM.

The sum of the percentage of all deleterious substances shall not exceed 5% by weight. Fine aggregates producing a color darker than the standard in the colometric test for organic impurity (USBR Designation 14 or ASTM C-40) may be rejected. The fine aggregates may be rejected if the portion retained on No. 50 (0.300 mm)

screen, when subjected to five cycles of sodium sulphate test for soundness (USBR Designation 19 or ASTM C-88) shows an average loss of more than 18% by weight.

Fine aggregates delivered to the batching plant may be rejected if it contains more than 0.15% soluble sulphate for any one sample or more than 0.10% for an average of at least 9 out of 10 consecutive test samples of finished sand, when samples are taken hourly. The percent soluble sulphate in fine aggregates shall be determined in accordance with the method of test prescribed in Sub-paragraph (d) below.

Sampling

Sampling of fine and coarse aggregates shall be done in accordance with the appropriate requirements of Section 12 of ASTM: C-33.

The source from which fine and coarse aggregates are to be obtained shall be selected well in advance of the time when the materials will be required in the work.
Unless otherwise specified, all test samples shall be taken under the supervision of the Engineer in sufficient time as approved to permit adequate testing and examination of results sufficient in advance at the time for use in concrete.

Routine control test and analysis of the fine and coarse aggregates at various stages in the processing operation shall be made. The approval of a source shall not be construed as containing approval of all materials from the source, and the Contractor shall be responsible for the specified quality of all such materials used in the work.

(3) Storage

Fine aggregates shall be stored in such a manner as to avoid the inclusion of any foreign materials in the concrete. The storage or stockpile shall be constructed so as to prevent segregation. Depositing of materials in storage and its removal there from shall be done in such a manner as to result in increasing the uniformity of the grading insofar as this is practicable. All fine aggregates shall remain in free drainage storage for at least seventy two (72) hours prior to use. Sufficient live storage shall be maintained at all times to permit continuous placement of concrete.

(4) Measurement and Payment

Fine aggregates will not be measured for payment. The cost of excavation, stockpiling, transporting, processing, blending, handling and other costs for providing fine aggregates shall be considered to be included in the contract unit prices bid for the various items in the Bill of Quantities for which fine aggregates are used.

COARSE AGGREGATES

(1) General

The term “Coarse Aggregates” is used to designate aggregates of such sizes as to fall within the range of 3/16 inch to 2 inches (0.5 cm to 5.1 cm) or any size or range of sizes within such limits. The coarse aggregate shall be reasonably well graded within the nominal size ranges hereinafter specified. Coarse aggregates for concrete shall be furnished by the Contractor and shall consist of natural gravel, crushed rock or mixture of natural gravel and crushed rock as provided in Paragraph 1008. Coarse aggregates as delivered to the batching plant shall have a uniform and stable moisture content. Any rewashing found necessary to provide clean aggregate shall be done prior to finish screening. Re-washing shall not be performed in finish screens.

(2) Quality

Coarse aggregates shall conform to the requirement of ASTM C-33 and shall consist of hard, dense, uncoated durable rock fragments.

Grading

The coarse aggregates shall be well graded from fine to coarse. It shall be stocked separately in the following specific size groups. The grading of the aggregates within the separated size groups as delivered to the mixer shall be as follows:

Sieve Sizes US Std. Sq. mesh		Size Group (% by weight) ¾" Size (20 mm)			1-½ Size (40 mm)		
2"	(50.8 mm)		-			-	100
1½"	(38.1 mm)		-		90	-	100
1"	(25.4 mm)			100	20	-	55
¾"	(19.1 mm)		-			-	
½"	(12.7 mm)		-			-	
⅜"	(9.52 mm)	20	-	55	0	-	5
No. 4	(4.76 mm)	0	-	10		-	

Coarse aggregates shall contain not more than one and one half (1-½) percent of materials passing the NO. 200 sieve by meshing, or more than 5 percent of soft fragments.

It shall have an abrasion loss of not more than 45 percent at 500 revolutions.

Unless otherwise directed, the maximum sizes of aggregates to be used in concrete for the various parts of the works shall be in accordance with the following:

	General Use	Maximum Size of Aggregates	
(a)	Concrete for thin walls, slabs, beams, less than 0.22 meters thick	¾"	(20 mm)
(b)	Concrete for reinforced concrete pipes	¾"	(20 mm)
(c)	Concrete for footings, walls, slabs, beams, more than 0.22 meters thick	1-½"	(40 mm)
(d)	Concrete for canal lining	1-½"	(40 mm)
(e)	Mass concrete for diversion conduit, and spillway wire and wall	1-½"	(40 mm)
(f)	Lean concrete and other miscellaneous use	1-½"	(40 mm)

In all cases, the size of the aggregates shall not exceed ½ the distance between the reinforcing steel bars of the members being placed.

Particles Shape

The particle shape of the crushed coarse aggregate shall be generally spherical or cubical and reasonably free from flat or elongated particles. A flat or elongated particle is defined as a particle having a maximum dimension in excess of five times the minimum dimensions. Rocks which break down into such shape will not be approved for the production of aggregate.

Deleterious Substances

The deleterious substances in any size of coarse aggregate, as delivered to the mixer, shall not exceed the following values:

	Deleterious Substances	Percent by Weight		Designation *
-	Materials passing No. 200 screen	1/2	16	
-	Shale	1		18
-	Clay lumps	1/2		13
-	Other deleterious substances	1		-

*Note: The designation refers to methods of Testing described in the seventh (7^{th}) edition of the U.S. Bureau of Reclamation Concrete Manual and ASTM.

The sum of the percentages of all deleterious substances in any size, as delivered to the mixer, shall not exceed three (3) % by weight. Coarse aggregates may be rejected if it fails to meet the following requirements:

(i) Petrographic Examination

If more than 10 % of poor aggregate particles can be identified in physical quality test and in case 20 % of the particles would be classified with respect to the chemical quality (USBR Designation 7 or ASTM C-295).

Sodium Sulfate Test for Soundness (USBR Designation 9 or ASTM C-88)

If the weighted average loss, after 5 cycles is more than 10 % by weight.

Specific Gravity (USBR Designation 10 or ASTM C-127

If the specific gravity (saturated surface-dry basis) is less than 2.60.

Sampling
All sampling of coarse aggregates shall be in accordance with Paragraph 1006 (2) d.

(3) Storage

Coarse aggregate storage or stockpiles shall be built in such a manner as to avoid the inclusion of any foreign materials in the concrete and to prevent segregation and excessive breakage. Water sprayers shall be installed to keep that portion of the coarse aggregate stockpiles saturated which is intended for immediate use in the concrete. Sufficient live storage shall be maintained at all times to permit continuous placement of concrete.

(4) Measurement and Payment

Coarse aggregates will not be measured for payment. The cost of excavation, production, stockpiling processing, blending handling and other cost providing coarse aggregates shall be considered to be included in the contract unit prices bid for the various items in the Bill of Quantities for which coarse aggregates are used.

AGGREGATES SAMPLING AND TESTING

Sampling of the aggregate materials approved for use in the work shall be done by the Contractor in accordance with ASTM Sampling Method 10 days in advance of the time when placing of concrete is expected to begin. Aggregate studies and tests shall be made by the Contractor at its own expense. It shall be the responsibility of the Contractor to obtain the necessary samples and subject them to tests.
The samples of aggregates shall be obtained and tested in accordance with the following ASTM standard methods:

Items		ASTM code No.	
-	Sampling aggregate	C	75
-	Sieve analysis	C	136
-	Amount of material finer than 200 sieve	C	117
-	Organic impurities	C	40
-	Mortar strength	C	87
-	Soundness	C	88
-	Soft particles	C	235
-	Abrasion	C	131
-	Clay lumps	C	142

No aggregate shall be used until official advice has been received that it has satisfactorily pass all tests, at which time written authority shall be given for its use. Material from source which has been previously tested and shown satisfactory compliance with all the requirements given herein may be used without further testing upon written permission of the Engineer. Test reports for previous rests shall be available before approval can be given.

During construction aggregates shall be sampled at weighing hopper to determine compliance with the provisions of the Specification. Test shall be made in accordance with the applicable ASTM Standards. Routine

control test and analysis of aggregates at various stages in processing, transporting, stockpiling, redraining, and batching shall be made by the Contractor. The Contractor shall provide such facilities as may be considered necessary for the counter test and supervision to be made by the Engineer.

CLASSIFICATION AND PROPORTIONING OF CONCRETE MIXTURES

(1) Classification and Design Mixture

The mixtures for all classes of concrete shall be designed by the Contractor and approved by the Engineer to obtain the compressive strength at the age of twenty eight (28) days as specified below.

Class	Minimum Aggregate Size (inch)	(mm)	Minimum Compressive Strength (psi eq.)	(kg/cm^2)	Maximum Water/Cement Ratio (%)	Minimum Cement Content (kg/m^3)	Allowable Slump (cm)
A	1-1/2	40	3,000	210	60	300	7 – 9
B	¾”	20	3,000	210	60	320	10 – 12
BB	¾”	20	3,500	240	55	350	5 – 8
C	1-1/2	40	2,500	180	55	250	5 – 7
D	1-1/2	40	2,000	140	60	200	5 - 10

Class A Concrete for ordinary structural members having more than 22 cm thick with clear space between reinforcing bars not less than 10 cm.

Class B Concrete for reinforced members such as thin wall, slabs, beams etc., less than 22 cm thick and concrete block-out (secondary concrete) with clear space between reinforcing bars less than 10 cm.

Class BB Concrete for pre-cast structures such as concrete flume, concrete pipes, etc.
Class C Concrete for canal lining, plain and massive structure section.

Class D Dental works, leveling structure, backfill concrete and foundation concrete.

Design of mixture by the Contractor shall be completed and submitted for approval of the Engineer not later than 45 days prior to use of the respective class of concrete for the contract works.

The Contractor shall at his own expense adjust mix proportion by trial mix depending on the physical properties of aggregates, moisture content, brand of cement, etc. subject to the direction of the Engineer.

(2) Aggregate Content

Concrete mixture shall be designed to use the largest size and the maximum amount of coarse aggregate as practicable for the intended use of the concrete.

(3) Consistency

The amount of water to be used in the concrete shall be regulated as required to secure concrete of the proper consistency and to adjust for any variation in the moisture content or grading of the aggregates as they enter the mixer.

It shall be of such consistency that it will flow around reinforcing steel bars, but individual particles of the coarse aggregate when isolated shall have coating of mortar containing its proportionate amount of sand. The consistency shall be gauged by the ability of the equipment to properly place it and not by the difficulty in mixing or transporting. Addition of water to compensate for stiffening of the concrete before placing shall not be permitted. Uniformity in concrete consistency from batch to batch will be required.

(4) Not withstanding the approval of the Engineer of the design mixtures and minimum cement content for different classes or gradation of aggregates, the Contractor shall be responsible that all the concrete meet the designed strength.

MEASUREMENT OF MATERIALS

All materials from which the concrete will be manufactured shall be mechanically measured by weight, except as otherwise specified and/or authorized by the Engineer and admixture solutions which may be measured by volume.

Measuring devices shall be suitably designed and constructed for the purpose and shall be weighing separately the cement, fine and the respective group of coarse aggregates and water. The accuracy of all weighing devices shall be such that successive quantities can be measured to one percent of the desired weights. The water measuring devices shall be of such type that can measure up to one half percent of the desired quantity of water.

Whenever volumetric proportioning and measurement is permitted due to failure or malfunction of weighing devices, the equivalent volumetric proportions of weighed representative samples of the concrete ingredients shall be computed taking into consideration bulking effect of cement and variations of moisture content of the aggregates.

SAMPLING AND TESTING OF CONCRETE

The Contractor shall at his expense perform sampling and testing of concrete materials in accordance with the latest Japanese Industrial Standards and the Manual of Concrete Quality Control to be prepared by NIA.

All the tests designated in the manual shall be carried out at the Project site by the Contractor under the direction of the Engineer. The Contractor shall furnish all materials and labor for testing and shall provide own laboratory, tools and equipment for testing except compression machine.

Concrete sampling shall be carried out during concrete operations at the rate of one standard sample for each 100 cubic meters of concrete or fraction thereof placed during each continuous placing operations but in no case shall there be less than one sample for each day of concreting. Each standard sample shall consist of three (3) standard cylinders 6 inch (15 cm) diameter by 12 inch (30 cm) high.

The Contractor shall keep a record of the samples and the portion of the structures and volume represented which shall be available to NIA on demand.

Superintendents, testing equipment and tools to be provided by the Contractor for quality control of the construction shall be subject to the prior approval of the Engineer.

FAILURE TO CURE

The Engineer shall have the authority to suspend the work wholly or in part, by written order, for such period as he may deem necessary for failure on the part of the Contractor to perform proper curing of the concrete work and to withhold payment for the corresponding work pending result of test, that shall subsequently be made on these concrete works. The contractor shall immediately secure core samples of such members and from parts of the structure as shall be designated by the Engineer and shall have them tested in a Testing Laboratory approved by the Engineer. If the results of test are found satisfactory, payment of the concrete in question shall be made and the work ordered be resumed, but if the results of tests are unsatisfactory to meet the structural requirements, the Contractor shall replace such parts at his own expense.

FAILURES TO MEET SPECIFIED STRENGTHS

If the specified strengths have not been met, the Contractor shall remove and replace the concrete concerned or take such other remedial measures as the Engineer order, all at his own expense.

Before proceeding with the remedy, the Contractor shall subject for approval of the Engineer details of the action proposed to ensure that the concrete and steel to be placed in the works will comply with the Specifications.

PROTECTION OF CONCRETE WORKS

The Contractor shall protect all concrete against injury until final acceptance by NIA. Final acceptance shall be considered to mean acceptance of the whole after the Contract has been completed or satisfactorily terminates.

MEASUREMENT AND PAYMENT

(1) Concrete

Measurement and payment of concreting works shall be made separately for every class specified in the Bill of Quantities. Measurement for payment of concreting works for each class shall be made by volume in cubic meter for respective items of various works in the Bill of Quantities, unless otherwise stipulated. It shall be computed to the neat lines as if these works were constructed to the details shown on the Drawings or as established by the Engineer. In measuring concrete for payment, volume of all cavities, depressions, openings, embedded wood works and metal works, except reinforcement bar, anchor bolts and bars, and dowel bars, will be deducted.

Payment for concrete works measured as provided above shall be made at the unit prices per cubic meter bid therefore in the Bill of Quantities, which price and payment shall include the cost of all labor, materials and equipment, furnishing and handling of cement, aggregates and admixtures, mixing hauling, placing and finishing concrete furnishing of forms and subsequent removal of form works and necessary false work (unless otherwise stipulated), construction of joint (excluding furnishing and placing such joint materials as waterstops, dowel bars, etc., as specified in Section XVI “Concrete Joints and Joints Materials”), dewatering and keeping dry during pouring concrete, and all necessary items incidental thereto for the successful completion of the work described in the Drawings and these Specifications, except for payments for furnishing and placing reinforcement bars and joint materials which shall be separately made at appropriate unit prices therefore in the Bill of Quantities.

SECTION III

REINFORCING STEEL BARS

SCOPE

All reinforcing steel bars required for the works as detailed in the construction drawings or as directed by the engineer shall be furnished by the contractor.

The work under this section includes the hauling of all reinforcing steel bars required for the works to the project site, storing, cutting, bending and proper placing, all in accordance with the drawings in these Specifications.

The length for each size of reinforcing steel bar to be furnished by the contractor shall be computed by taking the theoretical length required for the work. All reinforcing steel bars shall be furnished in commercial standard lengths and the contractor shall cut and bend the reinforcing steel bars to the detail and dimensions shown on the drawings.

MATERIALS

All reinforcing steel bars to be furnished by the contractor shall be Grade 40or PS 275, deformed type and conforming to the requirements of ASTM A-615. The nominal dimensions and unit weights of bars designation shall be in accordance with the following table:

Nominal Perimeter Bar Diameter	Unit wt. Kg/m. Area (sq. mm.)	Nominal Dimensions Cross Section	(mm.)
6 mm	0.222	28.27	18.85
8 mm	0.395	50.27	25.13
10 mm.	0.616	78.54	31.42
12 mm.	0.888	113.10	37.70
16 mm.	1.579	201.10	50.17
20 mm.	2.466	314.20	62.83
25 mm.	3.854	491.90	78.54
28 mm.	4.833	615.75	87.96
32 mm.	6.313	804.15	13.10
36 mm.	7991	1,017.90	113.10

The nominal diameter of a deformed bar is equivalent to the diameter of a plain bar having the same weight per unit length of the deformed bar.

CONSTRUCTION REQUIREMENT

Workmanship shall be the highest grade and shall be in accordance with the latest standard practice of the industry.

Cutting and Bending - Cutting and bending of reinforcing bars may be done in shop or at the job site. All bending works shall be in accordance with the latest standard practice and by approved machine methods. Radii for bends and hooks will be specified on the approved detailed reinforcement drawings in accordance with sound design procedures.

Placing - Reinforcement shall be laid, anchored and embedded in the concrete as shown on the drawings or as directed by the engineer. Unless otherwise directed, the spacing of reinforcement bars shall be measured along the center line of the bars. Reinforcement shall be inspected for compliance with requirements as to size, length, splicing, position and number after placement based on the approved reinforcement drawings.

Before reinforcement are placed, the surfaces of the bars and the surfaces of any metal support shall be cleaned of heavy flaky rust, loose scales, dirt, grease or other foreign substances which, in the opinion of the Engineer, are objectionable. Heavy flaky rust that can be removed by firm rubbing with burlap or equivalent treatment is considered objectionable. After being placed, the reinforcing bars shall be maintained in a clean condition until in a clean condition until completely embedded in concrete.

Reinforcing bars shall be accurately placed and secured in position so as to avoid displacement during the pouring of concrete. Special care shall be exercised to prevent any disturbance of the embedded reinforcement during the setting of concrete. Metal chairs, hangers, spacers or other approved support may be used by the Contractor for supporting bars. Metal supports shall be galvanized when they are to be exposed to view on completed concrete surfaces or where it is contribute in any way to discoloration or deterioration of the concrete.

Relation of Bars to concrete surfaces - the minimum cover for all reinforcements shall conform to the dimensions shown on the reinforcement drawings.

Splicing - all splices in reinforcement shall be as shown on the drawings or as directed by the Engineer. The lapped ends bars shall be either supported sufficiently to permit the embedment of the entire surface of each bar in concrete or shall be securely wired.

Welding - welding of bars shall be performed only where shown on the Drawings or as authorized in writing by the Engineer and shall conform to the requirements of LAWS: D12.1, latest revision. All welders employed shall be shown proof of their welding qualifications to the engineer. All welding shall be done using metal arc welding, pressure gas welding, submerged arc welding or thermo welding. A electric shall be acceptable to NIA. Covering of low hydrogen electrodes must be thoroughly dry when used. The surfaces to be welds shall be clean and shall be clean and shall be free from rust and dirt. All welds shall be develop the full strength of the bar or the smaller bar when two different sizes are welded. Test will be required of not more than five percent of the welds. Approved testing equipment for testing welds shall be furnished by Contractor.

Protection - Reinforcement to remain exposed and intended for future concrete embedment shall be protected from corrosion or other damages in an approved manner where directed. The reinforcement protection shall be of such nature that it can be thoroughly cleaned without difficulty prior to encasement in concrete.

PREPARATION OR REINFORCEMENT DRAWINGS

Contractor shall submit for the approval of NA detailed reinforcement drawings in accordance with Article GC-47. These drawings will include bar-placing drawings, bar bending drawings, bar list, and any other reinforcement drawings as may be required to facilitate placement and checking of reinforcing bars. No work shall be done by contractor until such approval has been secured from NA.

The reinforcement drawings submitted shall show the name of the structure location by stationing where the reinforcement drawings is intended and all the necessary information required by NA. It shall likewise bear the stamp or seal of Contractor as evidence that the drawings have been checked by contractor.

Contractor shall be held responsible for any delay in the progress of the work occasioned by his failure to observe the requirements and the time for the completion of the contract will not be extended on account of his failure to promptly submit said drawings in strict adherence herewith.

SAMPLING FOR TESTING AND ACCEPTANCE OF MATERIALS THAT FAIL TO MEET CONTRACT REQUIREMENTS (FOR STEEL BARS FURNISHED BY CONTRACTOR)

Sampling of reinforcing steel bars furnished by the contractor for incorporation in the Permanent Works shall be carried out by NA at the Manufacturer's stockyard before delivery to the project site. The NA authorized representative shall, at random, take two representative samples of reinforcing steel bars per lot covered by the manufacturer's mill certificate. A lot shall consist of all steel bars of the same heat or blow as shown in the mill certificate, and the same nominal cross-section and grade. Samples shall be tested at the manufacturer's testing laboratory, if any, or to any approved Government testing laboratory at Contractor's expense. A lot or lots represented by samples tested which failed to meet specified requirements shall be rejected and will not be counted for delivery to the project site. Sampling and testing shall be in accordance with ASTM requirements. All deliveries shall be subject to prior approval of NA.

The NA reserves the right to accept steel bars that fail to meet the contract requirement provided that the deficiency is not more than nine percent {9%) of the requirement per each type of test and provided further that a corresponding reduction in the unit price will be made. The percentage of reduction equal to the percentage of deficiency based on the minimum requirement of the ASTM A-615 Standard. For example, if the value of the test result for one type of test is five percent [5%] below the minimum requirement, the unit price for payment will be reduced by 5%. If the non-compliance with the test requirements is on two or more tests, the price reduction will be the summation of the percentage of the deficiencies.

NA FINANCING FOR STEEL BARS, IF FURNISHED BY CONTRACTOR

Contractor will be paid 80% of the procurement cost of the reinforcing steel bars delivered to the project site [but in no case shall the cumulative amount exceed 80% of the total contract amount for furnishing steel bars] after presentation of the following documents:

Delivery receipt duly acknowledged by the Engineer and the Project Auditor or their duly authorized representatives.

Manufacturer's certificate showing the details manufacture, completion and physical properties of the steel bars.

All invoices and all other documents covering the deliveries.

Certificate of acceptance from the engineer.

The basis for payment of these steel bars will be the unit cost indicated in the invoice or the unit bed price, whichever is lower.

All amounts paid for these steel bars shall be deducted from the monthly progress payment for furnishing and installing reinforcing steel bars. If at any time the amount of monthly payment for furnishing and installing reinforcing steel bars shall be less than the amount deductible there from the balance shall be carried forward and be added to the sum deductible from the next monthly payment.

METHOD OF MEASUREMENT

Measurement for payment of reinforcing steel bars will be made on the weight of reinforcing steel bars actually places with the concrete structure in accordance with the drawings and bar schedule approved by NA or as directed by the Engineer and weights or in the absence thereof on the weights specified in the table presented in Paragraph 2302. Steel bars in laps or splices indicated in the approved reinforcement Drawings, as required by NA will be measured for payment. Additional steel bars in laps which are authorized for the convenience of the Contractor and such items are wires, clips, or other devices for securing the steel bars in place will not be measured for payment. Where weld splices are specified on the drawings, weld splices will not be measured for payment but the weight for its equivalent lap splices will be measured for payment instead. Where contractor chooses to weld reinforcement bars for his convenience and welding is not specified, no separate payment will be made for such welds. Where contractor substitute welded splices for lapped splices, separate payment will not be made for such welds, but instead the weight for the lapped splices shown on the Drawings will be measured payment.

BASIS OF PAYMENT

Payment for reinforcing steel bars measured as provided above, will be paid for at the Contract unit price per kilogram which price and payment shall constitute full compensation for furnishing all labor, tools, equipment and all incidentals and subsidiary works necessary for the successful completion of the work descried under this Section.

As indicated in the Bill of Quantities, payment per kilogram of reinforcing steel bars [same measurement as provided above] shall be made separately for the:

Furnishing and delivery cost which shall include all labor, tools, equipment and supplies involves in the manufacture and delivery to the project site which include loading, hauling, unloading and stockpiling at the delivery site;

Installation cost which shall include all labor, tools and equipment involved in cutting, bending and placing into permanent structures and all incidentals necessary for the successful completion of the work under this section.

SECTION IV

STRUCTURE EXCAVATION

SCOPE

Structure excavation includes the removal of all materials within the structure lines including necessary dewatering operations not otherwise specified. It shall also include additional excavation within the vicinity of the structure in order to shape the ground shown on the Drawing or as directed by the Engineer.

CLASSIFICATION

Common Excavation - Excavation of any materials and boulders [whose volume is less than cubic meter] that can be ripped to be loosened by, a dozer of equal or below 180 HP capacity.

METHOD OF CONSTRUCTION

All structure where practicable shall be constructed in open excavation. The method of construction or excavations shall be in accordance with the applicable provisions of Canal Excavation and the following requirements.

Foundation shall be excavated according to the outline of the footing and floors of structure as shown on the Drawings or as directed by the Engineers, and shall be of sufficient size to permit free movement of workers.

On excavation of common materials the foundation bed upon which structures are to be placed shall be finished accurately to the established lines and grades after a thorough compaction and trimming of the foundation with the use of suitable tools and equipment. As soon as the foundation excavations have been trimmed to their final level, it should be protected from degradation by weathering. Should the foundation materials soften exposure then the soft materials shall be removed and replaces at the Contractor's expense. If at any point, material is excavated beyond the lines and grades of any part of the structure, the over-excavation shall be more filled with selected materials approved by the engineer and shall be placed in the layers of not more than 20 centimeters think, moistened and thoroughly compacted by special roller mechanical tempers or by other approved methods. A density not less than 90% of the maximum dry density determines by ASTM test D-698 is required. The cost of filling over-excavation ordered by the Engineer shall be borne by the contractor.

On excavation of rock materials, the bottom and side surfaces of excavated rock excavation upon or against which concrete and weep holes are to place shall conform to the required grades and dimensions as shown on the drawings or as established by the engineer. If at any point, materials are excavated beyond the required limits the over-excavation shall be filled with concrete at the expense of the Contractor including the cost of all materials required.

When concrete is to be placed upon or against rock, the excavation shall be of sufficient dept to provide for the minimum thickness of concrete at all points and any deviation from the required minimum thickness of concrete shall be avoid as much as possible. The surface on which concrete will be laid shall be trimmed ad thoroughly cleaned as directed by the engineer.

When excavation of rock materials reaches the surface upon or against which concrete is to placed, blasting

On excavation of rocks materials, the bottom and side surfaces of excavated rock excavation upon or against which concrete and weep holes are to be placed shall conform to the required grades and dimensions as shown on the drawings or as established by the engineers. If they filled with concrete at the expense of the contractor including the cost of all materials required.

When concrete is to be upon or against rock, the excavation shall be of sufficient dept to provide for the minimum thickness of concrete at all points and any deviation from the required minimum thickness of concrete shall be avoided as much as possible. The surface on which concrete will be laid shall be trimmed and thoroughly cleaned as directed by the Engineer.

When excavation of rock materials reaches the surface upon or against which concrete is to be placed, blasting shall be stopped and the remaining mass of rocks shall be carefully removed by means of jack-hammer or any appropriate hand tool. The point beyond which blasting will not be allowed shall be determined by the engineer. All damages to the rock foundation caused by improper blasting operation shall be repaired by the contractor at his own expense in a manner acceptance to the engineer.

All foundations for bridge pier footing shall be excavated to such depths as may be necessary to secure stable bearing for the structure. Whenever the safe bearing power of the soil as uncovered is less that that called for on the drawing, pilings or appropriate spread footings will be used. The elevations of the bottoms of footings, as shown in the drawings shall be considered as approximate, and the engineers may order, in writing, such changes in elevations and dimensions of footings as may be necessary to ensure a satisfactory foundations. Bearing test, upon written order of the engineer, shall be taken to determine the supporting power of the soil. Cost of bearing test will be paid as "Extra work".

If, in the opinion of the engineer, the material at the base of the excavation is unsuitable for the foundation he shall instruct the contractor to either a] carry out additional excavation to a depth of 50 cm. below the proposed bottom of concrete shown on the drawings and to maximum depth of 60 cm. outside of the outermost lines of said base and replace with backfill compacted to at least 90% of the maximum dry density or b] strengthen the soft materials by ramming in gravel and cobbles until a firm foundation is obtained. Measurement and payment for the backfill shall be made under section XII, "Structure backfill".

METHOD OF MEASUREMENT

Structure excavation shall be measured by the cubic meter in its original position before being excavated in accordance with the drawings, or as may be ordered by the engineer, no excavation beyond the pay lines shown on the drawings will be measured for payment. For canal structures, the limit of measurement along the lines perpendicular to the flow of water shall be the vertical planes at the outer edges of the inlet cut-ff walls. The upper limits of the solid, measured for payment shall be the canal bottom for canal structures of the original ground surface in case of diversion structures. The lower limits shall be the bottom of the required excavation. Excavated materials not vertically above the boundaries as specified above shall not be measures for payment. The volume measured shall not include water and other liquids removable by pumping. Such materials as mud, quagmire and other similar semi-solid not removable by ordinary pumping shall be considered pay quantities and shall be measured and paid for as "Structure Excavation".

However, in case of structure excavation for canal structures is done before canal excavation, the upper limit of the solid measured for payment shall be the original ground surface in accordance with the surface in accordance with the structure excavation pay lines.

BASIS OF PAYMENT

The volume measured as provided above will be paid per cubic meter, which price and payment shall constitute full compensation for furnishing all materials, supplies, labor, equipment, tools and accidents and subsidiary works necessary to complete the work described under this section.

For diversion works, canal siphons and bridge structure excavations, the cost of the dewatering operation unless otherwise specifies in the Bill of Quantities shall be paid under a separate item in the Bill of Quantities. For all other structure excavations, dewatering operations involved are considered subsidiary work and the cost thereof shall be considered included in the unit price of structure excavation.

The contractor shall be paid sixty percent [60%] of the pay quantities of the actual excavation acceptably accomplished in accordance with the pay lines as shown on the drawings or as directed by the engineer. The remaining forty percent [40%] will be paid upon pouring of concrete for the foundation or upon placing the riprap, gravel blanket or grouted riprap in accordance with drawing and specifications.

SECTION V

STRUCTURE BACKFILL

SCOPE

The work under this section shall include hauling [if necessary] and backfilling with suitable materials taken either from Structure excavation, canal excavation, side borrow or borrow haul all spaces excavated and not occupied by the structure and spaces between the natural ground surface and the finished lines indicted to be filled and all other sections directed to be filled by the engineer, all in accordance with these specifications and in conformity with the lines, grades and dimensions shown in the drawings or as ordered by the engineer. It shall also include the dewatering and removal of all unsuitable materials as ordered by the Engineer from the spaces to the backfilled or filled.

METHOD OF CONSTRUCTION

All spaces to be backfilled or filled shall be cleared of all rubbish and other objectionable matter. The excavation pit to be backfilled shall be dewatered and all mud and loose materials shall be removed before backfilling. The filling materials, with the proper moisture content determined by the Engineer, shall be deposited loose and in layers not exceeding 30 centimeters and then thoroughly compacted by ramming rolling or by means of mechanical tampers or portable vibratory compactors to obtain at least 85% compaction bridge abutments, increasing to at least 90% compaction up to the surface of the roadway in the case of approaches to bridges, Road Crossing or Culvert Structures. The time when to start backfilling operation shall be determined by the Engineer.

Materials for structure backfill shall be as described in paragraph 902 [c].

METHOD OF MEASUREMENT

Structure backfill shall be measured in cubic meters in its final compacted and uncompacted position within the limits of structure excavation pay lines and surfaces of concrete in contact with the backfilled materials as shown on the drawings or directed by the engineer. Volumes occupied by the structure and other features will not be included.

BASIS OF PAYMENT

Structure backfill will be paid for at the contract unit price cubic meter, which price and payment shall constitute full compensation for side borrow, borrow haul and overhaul operations and for furnishing all labor, equipments, tools and all incidentals and subsidiary works necessary for the successful completion of the work under this section.

For newly constructed drainage culvert, the volume between the original ground surface and the top of the canal embankment construction operation and therefore shall not be included for payment under this section [which payment shall be included under Embankment construction and compaction].

SECTION VI

MISCELLANEOUS METALWORKS AND MATERIALS

SCOPE

The work under this section shall consist of furnishing and installing all miscellaneous metalwork and materials shown on the drawings which shall include the galvanized steel pipe and railings.

All metal works treated in this section shall conform to the latest applicable standards of the American Society for Testing Materials (ASTM).

FABRICATION AND INSTALLATION

Fabrication and installation of miscellaneous metalwork and materials shall be performed in accordance with the provisions of this section. In bolted connections, holes for bolts shall not be more than 1/6 inch larger than the nominal diameter of the bolt unless closer tolerance are shown on the drawings. Slotted holes shall be made by machine. Holes shall not be made by burning.

Welding if required, shall be done by the shielded-arc method except where otherwise specifically permitted by the Engineer. Welding rods shall be furnished by contractor and shall be of heavily coated type designed for all position welding, and the size, type and manufacture of the rods shall be subject to the approval of NIA. Weld shall be made as specified on the drawings and in accordance with the conventional welding symbols of the American Welding Society. Welding shall be done in accordance with the American Welding Society's "Code of Arc and Gas Welding in Building Construction", latest version. All butt welds shall have complete penetration. Peening of multiple layer welds will not be required.

GALVANIZED STEEL PIPE AND RAILINGS

Galvanized steel pipe railing shall be furnished and installed by the contractor with sizes, dimensions, for joints as shown on the drawing details. Railings shall be of threated ends which shall be furnished complete with joint fittings.

Vertical members shall be installed plumb and horizontal members shall be parallel to the surface of anchorage. Vertical members shall be installed in prepared sockets, braced in true alignment and secured permanently by either threaded floor flange which is anchored to the concrete structure below by means of expansion bolts or by cement consisting of 1 part cement to 3 parts sand (by weight) mixed to a consistency as directed by NIA. Bolts in bolted members shall be firmly tightened.

Galvanized steel pipes shall conform to the specifications of ASTM Designation: A153. Galvanized surfaces that are abraded or damaged at anytime after the application of the zinc coating shall be repaired by thoroughly wire brushing the damaged areas and removing all loose and cracked coating after which the cleaned areas shall be painted with 2 coats of paint, high zinc dust content, conforming to the requirements of federal specifications MIL-P-21035.

GROUT AND MORTAR

Grout and mortar for miscellaneous metalwork shall be mixed in the proportions and to a specified consistency in accordance with the requirements of concrete. Before placing grout and mortar, the surfaces existing concrete on which grout will be placed shall be roughened and shall be cleaned of all laitance, loose or defective means followed by a thorough washing and such surfaces shall be kept moist for at least 24 hours immediately prior to grout and mortar placement.

PAINTING

All ungalvanized metal required under this section shall be give coat of paint in accordance with the provisions of Painting and Metal Works.

METHOD OF MEASUREMENT

Measurement for payment of miscellaneous metal work and materials will be made on the number of kilograms or on the number of pieces of materials actually installed (weights shall be computed based on the theoretical weight if such material duly certified by the manufacturer) and accepted.

BASIS OF PAYMENT

Payment for furnishing and/or fabrication and installation of miscellaneous metal work and materials will be made at the contract unit price per kilogram (or per piece whichever is called for in the Bill of Quantities) which price and payment shall constitute full compensation for furnishing all materials, labor, supplies, tools and all incidentals or subsidiary works necessary for the successful completion of the installation of metal works and materials described under this section.

SECTION V

RUBBLE MASONRY

SCOPE

The work under this section shall include furnishing all materials, supplies, tools and equipment; construction of all necessary form work; placing rubble stone and concrete binder on an approved foundation and form work; the removal of forms and curing of the rubble masonry, all in accordance with the drawings and this specification or as directed by the engineer.

MATERIALS

Rubble stones consists of filed stones that are cleans, sound durable, resistant the action of water, and must have specific gravity of at least two and six tenths [2.6], and diameter ranging from 15 centimeters to 60 centimeters, sixty percent [60%] which comprises the bigger sizes. Stones shall have the prior approval of the engineer before their use. Materials for concrete binder shall be in accordance with the applicable provisions of Section XV. Concrete binder shall be Class "A" concrete with 37.50 millimeters maximum size of aggregates.

METHOD OF CONSTRUCTION

Preparation and handling of the concrete binder shall be in accordance with section XV. The stones shall be thoroughly wet before they are installed in place. The entire surface of every stone shall be thoroughly covered with concrete binder. In general, one cubic meter of rubble masonry will require one-half cubic meter of concrete binder. Actual variation in this proportion will not entitle the contractor to any price adjustment. It is expected that the whole rubble masonry especially in the case of dam and apron as well as other structures should be well encased and covered by the concrete so that it forms the heating of the body of dam and apron and will act contiguous with the concrete shell. This can be achieved by tamping the stones into the concrete using heavy wooden blocks handled by one or two people. After the bed has been prepared as required the first layer of mortar should be laid and rubble embedded in them. The thickness of mortar should be such that each rubble embedded at least 50% of its longest dimension in the mortar so that when the next layer of mortar is poured the rubble which has been embedded is not disturbed. The next layer of boulders can be arranged in the mortar now placed following the same procedure. This will ensure that all the boulders are fully covered with mortar and they are well entrenched and stable in the mortar so that they are not disturbed when subsequent layers of mortar stones are poured. The stones shall be well set such that no stone will protect beyond the lines on the drawings.

The concrete binder shall be properly worked into the spaces between stones so that no void is left within the rubble masonry. In case reinforcements are placed, no stone shall be closer than four inches [10 centimeters] to the nearest reinforcing bars. Rubble masonry shall be cured by water for five days.

The general construction procedure should be always to start from lowest elevations so that the sub-grade on which the concrete is laid is not disturbed by the seepage forces when concrete is laid is not disturbed by the seepage forces when the higher layers are excavated and prepared for concrete pouring.

In situation when rubble masonry is directly constructed on the sub-grade should be prepared exactly as for any other concrete structures. In these cases, also the first layer can consist of concrete of 15 centimeters thickness in the case of minor structures and 20 centimeters in the case of major structures. The concrete manufacture etc. will be as specified under section XV and the strength will be as of Class "A" concrete.

METHOD OF MEASUREMENT

"Rubble Masonry" will be measured in cubic meters in its final position based on the treat lines of the structure as shown on the drawings.

BASIS OF PAYMENT

The volume measured as provided above will be paid at the contract unit price per cubic meter, which price and payment shall constitute full compensation for furnishing all materials, supplies, labor, tools, equipment and all incidentals or subsidiary works necessary for the success completion of the work described under this section.

SECTION VI

FILTER DRAIN

SCOPE

The work under this section shall consist of furnishing, placing on approved subgrade and compacting graded sand and gravel in layers and to the thickness and dimensions indicated on the drawings, including construction of weep holes to provide outlet for filter all in accordance with the specifications or as directed by the Engineer.

MATERIALS:

Filter materials shall consist of unweathered sand and gravel obtained from river bed deposits or from designated quarries. To meet the gradation requirements, crushing, screening and washing may be required. The materials shall be composed of tough, durable particles, shall be reasonably free from thin, flat and elongated pieces and shall be well graded between the following limits:

U.S standard Sieve Size	Percent Passing by Weight			
	1st stage	2nd stage	3rd stage	Bedding
2 inches			100	100
1 inch		100	5-35	70-90
½ inch	100	90-100	0-5	45-75
No. 4	85-100	70-90		25-60
No. 8	70-95	40-75		15-45
No. 16	50-85	10-40		0-20
No. 30	25-70	0-20		
No. 50	5-50			
No. 100	0-30			
No. 200	0-10			

METHOD OF CONSTRUCTION

The bed for the filter drain shall be excavated to the required elevation and dimension shown on the drawings and then properly compacted as directed by the Engineer. The materials shall de damped and spread on the prepared bed and each layer shall be compacted by a suitable compactor to a degree approved by the engineer. Placement of succeeding layers will be allowed only after the Engineer has approved the placement and compaction of the preceding layer. When concrete is to be placed directly on the filter, the entire surface upon which concrete to be placed shall be covered with a layer of reinforced building paper before concrete is placed.

METHOD OF MEASUREMENT

Filter drain will be measured by the number of cubic meter of materials acceptably laid, compacted and provided with weep holes for outlets.

BASIS OF PAYMENT

The volume measured as provided above will be paid at the contract unit price, which price and payment shall constitute full compensation for furnishing all materials, supplies, labor, equipment, tools and all incidentals or subsidiary work necessary for the successful completion of the work described under this section.

SECTION VI

GRAVEL BLANKET

SCOPE

The work under this section shall consist of furnishing, placing on approved subgrade and compacting the graded sand and gravel to the thickness indicated on the drawings or as established by the Engineer.

MATERIALS:

Materials for gravel blanket shall meet all the requirements specified for fine and coarse aggregate for a two-inch (2") concrete. The sizes of coarse aggregate shall be from No. 4 Sieve to 2 inches.

METHOD OF CONSTRUCTION/PLACING

The material shall be dumped on the prepared subgrade and spread in the layers having an uncompacted thickness of not more than 25 centimeters. Each layer shall be compacted by four complete passes of a vibratory plate compactor. The Contractor has the option to adopt any method of compacting the layers of materials approved by the Engineer.

METHOD OF MEASUREMENT

Gravel blanket will be measured by the cubic meter of materials acceptably placed and computed based on the neat lines and dimensions on the drawings.

If materials placed by the contractor are more than what is required, the excess material will not be measured for payment.

BASIS OF PAYMENT

The volume measured as provided above will be paid at the unit contract price per cubic meter, which price and payment shall constitute full compensation for furnishing all materials, supplies, labors, tools, equipment and all incidentals or subsidiary works necessary for the successful completion of the work described under this Section. Excavation involved under this section is not considered as subsidiary work for Gravel Blanket, hence it will not be measured for payment under section, rather, it will be measured and paid for under Structure Excavation.

SECTION V

DIVERSION & CARE OF RIVER DURING CONSTRUCTION & UNWATERING FOUNDATIONS

GENERAL

The contractor shall be fully responsible for the successful diversion and care of the river and dewatering of all excavations, foundations and elsewhere as required to undertake construction works in dry.

The contractor shall construct and maintain all necessary cofferdams, channels, flumes, drains and sumps and/or temporary diversion and protective works during construction operations. The contractor shall furnish, install, maintain and operate all necessary pumping and other equipment for the diversion and care of river and removal of water from excavations, foundations and the various parts of the work as required for construction. After having served this purpose, all cofferdams or other protective works unless otherwise

directed by the Engineer, shall be removed or levelled to give slightly appearance and so as not to interfere in any way with the operation of the project. Materials placed in cofferdams from required excavations as shown on the drawings or as approved will be paid for at the appropriate bid item for structure excavation in the bill of quantities.

If materials removed from "structure excavation" are used by the contractor for construction of cofferdams and other temporary protective works and are washed out and carried away by floods, or rendered unsuitable for "structure backfill" by virtue of such use by the contractor, these materials shall be replaced by the contractor at his own expenditures.

METHOD OF CONSTRUCTION

The contractor shall submit for approval to NIA his proposed scheme/s for handling the river during construction within thirty (30) calendar days after date of receipt of the Notice to Proceed.

The contractor may use the stream flow records and rainfall graphs attached to volume II of IV of the Bid documents as a basis for his plans for diversion care of the river. However, the NIA does not guarantee the reliability and accuracy of any of the tables and assumes no responsibility for any deductions or conclusions that may derived from them.

The arrangement of the cofferdams and that materials used in these structures and the procedure of placing and compacting the fill materials shall be subject to approval by NIA. If steel sheet piles are necessary in the construction of the cofferdams, same shall be furnished and installed or driven by the contractor.

The contractor's method of dewatering excavation and foundations shall be subject to approval by the NIA. Where foundation excavation extend below the water table in common material, the portion below the water table shall be dewatered in advance of excavation. The dewatering shall be accomplished in a manner that will maintain stability of the excavated slopes and bottom of the excavation and will result in all construction operations being performed in the dry. The contractor will also be required to control seepage along the bottom of the excavation.

BASIS OF PAYMENT

The cost of furnishing all labor, equipment and materials for construction of cofferdam, dikes, channel, flumes, sumps and other diversion and protective works, where required, maintaining the work free from water as required or removal of water from excavations and foundations, disposing of materials in cofferdams, and all other works required by this section shall be included in the lumpsum price in the bill of quantities for the diversion and care of river during construction and unwatering foundation.

In order to have a working basis for making progress payments, the contractor shall submit a detailed drawings of their proposed cofferdams covering several stages corresponding to the number of dry season period to enable computation of cofferdam fill volume. Payment for the construction of cofferdams for a certain stage can be made to the contractor on a pro-rata basis using the cofferdam fill volume for the particular stage as proportioned against the total cofferdam fill volume for all stages, and shall further be made on the following basis:

Fifty per cent (50%) of the corresponding lump sum price will be paid after completion of the coffer damming work.
Thirty per cent (30%) of the corresponding lump sump price will be paid for maintenance after all works within the said enclosing cofferdam have been satisfactorily performed.
The remaining twenty percent (20%) of the corresponding lump sump price shall be paid after the removal of all cofferdams and corresponding clean-up operations shall have been satisfactorily undertaken by the contractor.

All dewatering in excavation and foundations for structures along canals other than bridges and siphons which may pass across rives are considered subsidiary works for the construction of said canal structures and

will not be included for payment under this section. The cost of such work shall be considered included in the unit price for Type C, Structure Excavation, in the bill of quantities.

SECTION V

STRUCTURE BACKFILL

SCOPE

The work under this section shall include hauling [if necessary] and backfilling with suitable materials taken either from Structure excavation, canal excavation, side borrow or borrow haul all spaces excavated and not occupied by the structure and spaces between the natural ground surface and the finished lines indicted to be filled and all other sections directed to be filled by the engineer, all in accordance with these specifications and in conformity with the lines, grades and dimensions shown in the drawings or as ordered by the engineer. It shall also include the dewatering and removal of all unsuitable materials as ordered by the Engineer from the spaces to the backfilled or filled.

METHOD OF CONSTRUCTION

All spaces to be backfilled or filled shall be cleared of all rubbish and other objectionable matter. The excavation pit to be backfilled shall be dewatered and all mud and loose materials shall be removed before backfilling. The filling materials, with the proper moisture content determined by the Engineer, shall be deposited loose and in layers not exceeding 30 centimeters and then thoroughly compacted by ramming rolling or by means of mechanical tampers or portable vibratory compactors to obtain at least 85% compaction bridge abutments, increasing to at least 90% compaction up to the surface of the roadway in the case of approaches to bridges, Road Crossing or Culvert Structures. The time when to start backfilling operation shall be determined by the Engineer.

Materials for structure backfill are materials from excavation which are suitable for compacted backfill shall be the same as those which are suitable for compacted embankment, except that it shall be free of all materials larger than 7.5 centimeters in maximum dimension and that compacted backfill behind bridge abutments and retaining walls shall conform to the materials specified in the drawings.

METHOD OF MEASUREMENT

Structure backfill shall be measured in cubic meters in its final compacted and uncompacted position within the limits of structure excavation pay lines and surfaces of concrete in contact with the backfilled materials as shown on the drawings or directed by the engineer. Volumes occupied by the structure and other features will not be included.

BASIS OF PAYMENT

Structure backfill will be paid for at the contract unit price cubic meter, which price and payment shall constitute full compensation for side borrow, borrow haul and overhaul operations and for furnishing all labor, equipments, tools and all incidentals and subsidiary works necessary for the successful completion of the work under this section.

For newly constructed drainage culvert, the volume between the original ground surface and the top of the canal embankment construction operation and therefore shall not be included for payment under this section [which payment shall be included under Embankment construction and compaction].

SECTION X
CHB LAYING AND PLASTERING

SCOPE

The work under Section shall include furnishing all materials, supplies, tools and equipment, construction of all necessary CHB lining; placing of mortar; reinforcing steel bars and plastering/finishing on both sides of the of the CHB installed, all in accordance with the Drawing and these Specification or as directed by the Engineer.

MATERIALS

Cement, reinforcing steel bars, Sand, 4" Concrete Hollow Blocks, Tie wire #16. Materials for reinforced CHB lining with plaster should pass the quality required. No work shall commence unless materials delivered will be properly inspected by the Project Engineer.

METHOD OF CONSTRUCTION

Laying of 4" Concrete Hollow Blocks, Plastering/Finishing and Rebar Works shall be done in accordance with the Drawings or as directed by the Engineer.

METHOD OF MEASUREMENT

Reinforced 4" CHB lining with Plastering will be measured square meter of CHB installed in its final position based on the neat lines of the structure as shown on drawings.

BASIS OF PAYMENT

The quantity measured as provided above shall be paid for at the respective contract unit price per square meter, which price and payment shall constitute full compensation for furnishing all materials, supplies, labor, tools, equipment and other incidentals or subsidiary work necessary for the successful completion of the work under this Section.

Section VII. Drawings

[Insert here a list of Drawings. The actual Drawings, including site plans, should be attached to this section, or annexed in a separate folder.]

Section VIII. Bill of Quantities

Notes on the Bill of Quantities

Objectives

The objectives of the Bill of Quantities are:

a. to provide sufficient information on the quantities of Works to be performed to enable Bids to be prepared efficiently and accurately; and

b. when a Contract has been entered into, to provide a priced Bill of Quantities for use in the periodic valuation of Works executed.

In order to attain these objectives, Works should be itemized in the Bill of Quantities in sufficient detail to distinguish between the different classes of Works, or between Works of the same nature carried out in different locations or in other circumstances which may give rise to different considerations of cost. Consistent with these requirements, the layout and content of the Bill of Quantities should be as simple and brief as possible.

Daywork Schedule

A Daywork Schedule should be included only if the probability of unforeseen work, outside the items included in the Bill of Quantities, is high. To facilitate checking by the Entity of the realism of rates quoted by the Bidders, the Daywork Schedule should normally comprise the following:

a. A list of the various classes of labor, materials, and Constructional Plant for which basic daywork rates or prices are to be inserted by the Bidder, together with a statement of the conditions under which the Contractor will be paid for work executed on a daywork basis.

b. Nominal quantities for each item of Daywork, to be priced by each Bidder at Daywork rates as Bid. The rate to be entered by the Bidder against each basic Daywork item should include the Contractor's profit, overheads, supervision, and other charges.

c.

Provisional Sums

A general provision for physical contingencies (quantity overruns) may be made by including a provisional sum in the Summary Bill of Quantities. Similarly, a contingency allowance for possible price increases should be provided as a provisional sum in the Summary Bill of Quantities. The inclusion of such provisional sums often facilitates budgetary approval by avoiding the need to request periodic supplementary approvals as the future need arises. Where such provisional sums or contingency allowances are used, the SCC should state the manner in which they will be used, and under whose authority (usually the Procuring Entity's Representative's).

The estimated cost of specialized work to be carried out, or of special goods to be supplied, by other contractors should be indicated in the relevant part of the Bill of Quantities as a

particular provisional sum with an appropriate brief description. A separate procurement procedure is normally carried out by the Procuring Entity to select such specialized contractors. To provide an element of competition among the Bidders in respect of any facilities, amenities, attendance, etc., to be provided by the successful Bidder as prime Contractor for the use and convenience of the specialist contractors, each related provisional sum should be followed by an item in the Bill of Quantities inviting the Bidder to quote a sum for such amenities, facilities, attendance, etc.

Signature Box

A signature box shall be added at the bottom of each page of the Bill of Quantities where the authorized representative of the Bidder shall affix his signature. Failure of the authorized representative to sign each and every page of the Bill of Quantities shall be a cause for rejection of his bid.

These Notes for Preparing a Bill of Quantities are intended only as information for the Procuring Entity or the person drafting the Bidding Documents. They should not be included in the final documents.

For Procurement USE ONLY.
NIA Official Receipt #/Date: _____

BILL OF QUANTITIES/BID PROPOSAL SHEET
CR NO. *SPIP-SOR-001-25*

Date: _____

I HEREBY propose to undertake the **SUPPLY DELIVERY, INSTALLATION OF 3 UNITS SOLAR POWER PUMP INCLUDING ACCESSORIES AND CONSTRUCTION OF IRRIGATION FACILITIES for ORAS, AMOMONTING AND SAN RAFAEL, Castilla and Sta. Magdalena, Sorsogon** under **EGPIP CY 2025** fund, per your invitation to bid posted **May 8, 2025** with an ABC of **₱** ***48,531,525.24*** and schedule of public bidding on ***May 28, 2025*** **at 9:00 AM** following the one envelope systems, with the detailed items of work and unit costs as follows:

Scope of Work	Unit	Quantity	Unit Cost	Total Cost
CONTRACT WORKS				
I. CIVIL WORKS				
ORAS SPIP				
A. Supply, Delivery and Installation of Solar PV Submersible Pumping System				
a.1 Solar Panel (700 watts)	set	1.00		
a.2 Pump (15hp) with Controller/Inverter	set	1.00		
a.3 PVC Combiner Box (6 way w/ Key lock)	set	1.00		
a.4 Installation, Testing and Commissioning of Solar Panel & Pumps	lot	1.00		
B. Well Drilling	lin.m.	80.00		
C. Well Development and Casing Installation				
c.1 Well Development	unit	1.00		
c.2 8" Ø UPVC Pipe Casing	lin.m.	80.00		
c.3 4" Ø GI Pipe Schd. 40	lin.m.	60.00		
c.4 Gravel Pack Filter	cu.m	14.94		
D. Distribution Pipe				
d.1 Flow Meter	pc.	1.00		
d.2 HDPE ISO4426 SDR 21 2" dia x 6m				
i. Supply and Delivery	roll	50.00		
ii. Installation	roll	50.00		
d.3 Pipes and Fittings	lot	1.00		
d.4 4" Layflat Pipes (including end connectors)				
i. Supply and Delivery	roll	30.00		
ii. Installation	roll	30.00		
d.5 3" Layflat Pipes (including end connectors)				
i. Supply and Delivery	roll	20.00		
ii. Installation	roll	20.00		
d.6 2" Layflat Pipes (including end connectors)				
i. Supply and Delivery	roll	8.00		
ii. Installation	roll	8.00		
E. Pump Test	lot	1.00		
F. Mounting Structure and Perimeter Fence				
f.1 Solar Panel Mounting Structure	lot	1.00		
f.2 Class "A" Concrete	cu.m.	6.29		
f.3 RSB	kg.	1,381.49		
f.4 10cm CHB	sq.m.	9.80		
f.5 Plaster Finish	sq.m.	19.61		
f.6 Gravel Blanket	cu.m.	29.26		
f.7 Manual Excavation	cu.m.	11.24		
f.8 Manual Backfill	cu.m.	3.58		

f.9 Painting Works (Masonry)	sq.m.	24.65		
G. Stilling Pool and Control Room				
g.1 Class “A” Concrete	cu.m.	8.09		
g.2 RSB	kg.	1,000.81		
g.3 10cm CHB	sq.m.	26.55		
g.4 Cement Plaster Finish	sq.m.	53.10		
g.5 Fence (Galvanized Cyclone Wire & GI Pipe	lot	1.00		
g.6 Manual Excavation	cu.m.	4.03		
g.7 Manual Backfill	cu.m.	1.53		
g.8 Painting Works (Masonry)	sq.m.	64.32		
g.9 Cementitious Waterproofing	sq.m.	11.22		
g.10 Acrylic Pin Mounted Logo with Project Details	lot	1.00		
H. Supply, Delivery and Installation of AI Satellite Assisted Monitoring & Fertigation System				
h.1 AI Assisted Monitoring System	lot	1.00		
h.2 Fertigation System	lot	1.00		
h.3 Installation	lot	1.00		
I. Mobilization & Demobilization	lot	1.00		
J. Construction Safety & Health Program	lot	1.00		
K. Project Billboard	unit	1.00		
AMOMONTING SPIP				
A. Supply, Delivery and Installation of Solar PV Submersible Pumping System				
a.1 Solar Panel (700 watts)	set	1.00		
a.2 Pump (15hp) with Controller/Inverter	set	1.00		
a.3 PVC Combiner Box (6 way w/ Key lock)	set	1.00		
a.4 Installation, Testing and Commissioning of Solar Panel & Pumps	lot	1.00		
B. Well Drilling	lin.m.	80.00		
C. Well Development and Casing Installation				
c.1 Well Development	unit	1.00		
c.2 8” Ø UPVC Pipe Casing	lin.m.	80.00		
c.3 4” Ø GI Pipe Schd. 40	lin.m.	60.00		
c.4 Gravel Pack Filter	cu.m	14.94		
D. Distribution Pipe				
d.1 Flow Meter	pc.	1.00		
d.2 HDPE ISO4426 SDR 21 2” dia x 6m				
i. Supply and Delivery	roll	50.00		
ii. Installation	roll	50.00		
d.3 Pipes and Fittings	lot	1.00		
d.4 4” Layflat Pipes (including end connectors)				
i. Supply and Delivery	roll	30.00		
ii. Installation	roll	30.00		
d.5 3” Layflat Pipes (including end connectors)				
i. Supply and Delivery	roll	20.00		
ii. Installation	roll	20.00		
d.6 2” Layflat Pipes (including end connectors)				
i. Supply and Delivery	roll	8.00		
ii. Installation	roll	8.00		
E. Pump Test	lot	1.00		
F. Mounting Structure and Perimeter Fence				
f.1 Solar Panel Mounting Structure	lot	1.00		
f.2 Class “A” Concrete	cu.m.	6.29		
f.3 RSB	kg.	1,381.49		
f.4 10cm CHB	sq.m.	9.80		
f.5 Plaster Finish	sq.m.	19.61		
f.6 Gravel Blanket	cu.m.	29.26		
f.7 Manual Excavation	cu.m.	11.24		
f.8 Manual Backfill	cu.m.	3.58		
f.9 Painting Works (Masonry)	sq.m.	24.65		
G. Stilling Pool and Control Room				

g.1 Class “A” Concrete	cu.m.	8.09		
g.2 RSB	kg.	1,000.81		
g.3 10cm CHB	sq.m.	26.55		
g.4 Cement Plaster Finish	sq.m.	53.10		
g.5 Fence (Galvanized Cyclone Wire & GI Pipe	lot	1.00		
g.6 Manual Excavation	cu.m.	4.03		
g.7 Manual Backfill	cu.m.	1.53		
g.8 Painting Works (Masonry)	sq.m.	64.32		
g.9 Cementitious Waterproofing	sq.m.	11.22		
g.10 Acrylic Pin Mounted Logo with Project Details	lot	1.00		
H. Supply, Delivery and Installation of AI Satellite Assisted Monitoring & Fertigation System				
h.1 AI Assisted Monitoring System	lot	1.00		
h.2 Fertigation System	lot	1.00		
h.3 Installation	lot	1.00		
I. Mobilization & Demobilization	lot	1.00		
J. Construction Safety & Health Program	lot	1.00		
K. Project Billboard	unit	1.00		
SAN RAFAEL SPIP				
A. Supply, Delivery and Installation of Solar PV Submersible Pumping System				
a.1 Solar Panel (700 watts)	set	1.00		
a.2 Pump (15hp) with Controller/Inverter	set	1.00		
a.3 PVC Combiner Box (6 way w/ Key lock)	set	1.00		
a.4 Installation, Testing and Commissioning of Solar Panel & Pumps	lot	1.00		
B. Well Drilling	lin.m.	100.00		
C. Well Development and Casing Installation				
c.1 Well Development	unit	1.00		
c.2 8” Ø UPVC Pipe Casing	lin.m.	100.00		
c.3 4” Ø GI Pipe Schd. 40	lin.m.	72.00		
c.4 Gravel Pack Filter	cu.m	18.68		
D. Distribution Pipe				
d.1 Flow Meter	pc.	1.00		
d.2 HDPE ISO4426 SDR 21 2” dia x 6m				
i. Supply and Delivery	roll	120.00		
ii. Installation	roll	120.00		
d.3 Pipes and Fittings	lot	1.00		
d.4 4” Layflat Pipes (including end connectors)				
i. Supply and Delivery	roll	100.00		
ii. Installation	roll	100.00		
d.5 3” Layflat Pipes (including end connectors)				
i. Supply and Delivery	roll	65.00		
ii. Installation	roll	65.00		
d.6 2” Layflat Pipes (including end connectors)				
i. Supply and Delivery	roll	31.00		
ii. Installation	roll	31.00		
E. Pump Test	lot	1.00		
F. Mounting Structure and Perimeter Fence				
f.1 Solar Panel Mounting Structure	lot	1.00		
f.2 Class “A” Concrete	cu.m.	6.29		
f.3 RSB	kg.	1,381.49		
f.4 10cm CHB	sq.m.	9.80		
f.5 Plaster Finish	sq.m.	19.61		
f.6 Gravel Blanket	cu.m.	29.26		
f.7 Manual Excavation	cu.m.	11.24		
f.8 Manual Backfill	cu.m.	3.58		
f.9 Painting Works (Masonry)	sq.m.	24.65		
G. Stilling Pool and Control Room				
g.1 Class “A” Concrete	cu.m.	8.09		
g.2 RSB	kg.	1,000.81		

g.3 10cm CHB	sq.m.	26.55		
g.4 Cement Plaster Finish	sq.m.	53.10		
g.5 Fence (Galvanized Cyclone Wire & GI Pipe	lot	1.00		
g.6 Manual Excavation	cu.m.	4.03		
g.7 Manual Backfill	cu.m.	1.53		
g.8 Painting Works (Masonry)	sq.m.	64.32		
g.9 Cementitious Waterproofing	sq.m.	11.22		
g.10 Acrylic Pin Mounted Logo with Project Details	lot	1.00		
H. Supply, Delivery and Installation of AI Satellite Assisted Monitoring & Fertigation System				
h.1 AI Assisted Monitoring System	lot	1.00		
h.2 Fertigation System	lot	1.00		
h.3 Installation	lot	1.00		
I. Canalization Works				
i.1 Class "B" Concrete	cu.m.	29.90		
i.2 RSB	kg.	392.04		
i.3 Gravel Blanket	cu.m.	5.20		
i.4 Manual Excavation	cu.m.	23.00		
i.5 Manual Backfill	cu.m.	19.00		
J. Mobilization & Demobilization	lot	1.00		
K. Construction Safety & Health Program	lot	1.00		
L. Project Billboard	unit	1.00		
GRAND TOTAL				
Total Amount (in figures)				
Total Amount (in words)				

In support of my bid, enclosed in the first envelope is, in cash/manager's check/bank guarantee/surety bond in the amount of _____(₱_____) which is two percent (2%)/five percent (5%) of the total Approved Budget Ceiling (ABC) or Bid Securing Declaration.

Further enclosed herein, are the following documents to wit:

1. Bid Prices in the Bill of Quantities
2. Detailed estimates including a summary sheet indicating the unit prices of construction materials, labor rates and equipment rental used in coming up with the bid.

I further certify to complete the contract works within _____ calendar days.

_____
Business Name

_____
Name and Signature

_____
Address

Signature

Section IX. Checklist of Technical and Financial Documents

Notes on the Checklist of Technical and Financial Documents

The prescribed documents in the checklist are mandatory to be submitted in the Bid, but shall be subject to the following:

a. GPPB Resolution No. 09-2020 on the efficient procurement measures during a State of Calamity or other similar issuances that shall allow the use of alternate documents in lieu of the mandated requirements; or

b. any subsequent GPPB issuances adjusting the documentary requirements after the effectivity of the adoption of the PBDs.

The BAC shall be checking the submitted documents of each Bidder against this checklist to ascertain if they are all present, using a non-discretionary "pass/fail" criterion pursuant to Section 30 of the 2016 revised IRR of RA No. 9184.

Checklist of Technical and Financial Documents

I. TECHNICAL COMPONENT ENVELOPE

Class "A" Documents

Legal Documents

☐ (a) Valid PhilGEPS Registration Certificate (Platinum Membership) (all pages);
Or

☐ (b) Registration certificate from Securities and Exchange Commission (SEC), Department of Trade and Industry (DTI) for sole proprietorship, or Cooperative Development Authority (CDA) for cooperatives or its equivalent document;
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 shee indicating the unit prices of construction materials, labor rates, and equipmen rentals used in coming up with the Bid; **and**

☐ (r) Cash Flow by Month (below 180 days)


Republic of the Philippines
gppb
Government Procurement Policy Board