



REPUBLIC OF THE PHILIPPINES  
**NATIONAL IRRIGATION ADMINISTRATION**  
REGIONAL OFFICE NO. VII (CENTRAL VISAYAS)  
DAO, TAGBILARAN CITY, BOHOL

**CALUNASAN SRIP, PACKAGE 4  
(CONSTRUCTION OF LINED CANAL,  
CANAL STRUCTURE, SLOPE PROTECTION  
WORKS FOR LINE CANAL AND REPAIR OF  
DAMAGED CANAL)  
CALAPE, BOHOL  
RIO-LMC-10d-2022**

**2 June 2022**

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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)

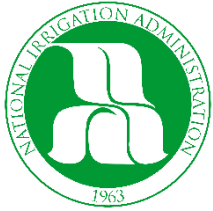
**PSA** – Philippine Statistics Authority.

**SEC** – Securities and Exchange Commission.

**SLCC** – Single Largest Completed Contract.

**UN** – United Nations.

## ***Section I. Invitation to Bid***



REPUBLIC OF THE PHILIPPINES  
**NATIONAL IRRIGATION ADMINISTRATION**  
REGIONAL OFFICE NO. VII (CENTRAL VISAYAS)  
DAO, TAGBILARAN CITY, BOHOL

**INVITATION TO BID**

**FOR CALUNASAN SRIP, PACKAGE 4 (CONSTRUCTION OF LINED CANAL,  
CANAL STRUCTURE, SLOPE PROTECTION WORKS FOR LINE CANAL AND  
REPAIR OF DAMAGED CANAL), CALAPE, BOHOL**

1. National Irrigation Administration - Regional Office 7 (NIA-RO7), through General Appropriation Act – Small Reservoir Irrigation Project (GAA-SRIP) for Calendar Year (CY) 2022 intends to apply the sum of **Seven Million Two Hundred Fifty Three Thousand Thirty Five Pesos and 55/100 (Php 7,253,035.55)** being the Approved Budget for the Contract (ABC) to payment under contract for **Calunasan SRIP, Package 4 (Construction of Lined Canal, Canal Structure, Slope Protection Works for Line Canal and Repair of Damaged Canal), Calape, Bohol** with Contract No. **RIO-LMC-10d-2022**. Bids received in excess of the ABC shall be automatically rejected at bid opening.
2. The NIA-RO7 now invites bid for the above Procurement Project. Completion of the Work is required **One Hundred Fifty (150) 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. Instruction 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 the NIA-RO7 and inspect Bidding Documents at the address given below from 8:00 AM to 5:00 PM except during declared (special & regular) holidays and weekends.
5. A complete set of Bidding Documents may be acquired by interested Bidders who were able to log-in in the Philippine Government Electronic Procurement System (PhilGEPS) wherein the name of the company will be reflected in the Documents Request List of the Bid Notice Abstract of the Procuring Entity, from **August 2, 2022, 8:00 AM to August 22, 2022, 2:30 PM** during office hour from the given address and website(s) below & upon presentation of the payment from NIA-RO7 Cashier of nonrefundable fee of **Seven Thousand Three Hundred Pesos (Php 7,300.00)** only. The Procuring Entity shall allow the bidder to present its proof of payment for the fees in person, by facsimile, or through electronic means.

Interested Bidders’ representatives must also present a letter duly signed by the General Manager/Owner, if a Sole Proprietorship, or authorized Signatory if a Corporation, authorizing him/her to acquire the Bidding Documents.



6. The NIA-RO7, will hold a Pre-Bid Conference on **August 10, 2022, 9:00 AM** at **Central Visayas Training Center (CVTC), NIA-RO7, Dao District, Tagbilaran City, Bohol** and/or through videoconferencing/webcasting via Google Meet, which shall be open to prospective bidders.
7. Bids must be duly received by the BAC Secretariat through manual submission at the office address as indicated below on or before **August 22, 2022, 3:00 PM**. 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 18.
9. Bid opening shall be on **August 22, 2022, 3:00 PM** at **Central Visayas Training Center (CVTC), NIA-RO7, Dao District, Tagbilaran City, Bohol** and/or through video conferencing/webcasting Google Meet. Bids will be opened in the presence of the bidders' representatives who choose to attend the activity.
10. The NIA-RO7, 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:  
NIA-RO7, BAC Secretariat  
J.A. Clarin St., Dao District  
Tagbilaran City, Bohol  
Email Address: niaro7.bacsec@gmail.com  
Telephone No. (038) 501 9421/ (038) 427 1018
12. You may visit the website ([region7.nia.gov.ph](http://region7.nia.gov.ph)) for downloading of Bidding Documents.

**ENGR. ORENCIO M. APALE**  
BAC Chairperson

## ***Section II. Instructions to Bidders***

## **1. Scope of Bid**

The *National Irrigation Administration - Regional Office 7(NIA-RO7)* invites Bids for the *Calunasan SRIP, Package 4 (Const. of Lined Canal, Canal Structure, Slope Protection of Works for Line Canal and Repair of Damaged Canal), Calape, Bohol*, with Project Identification Number *RIO-LMC-10d-2022*.

*[Note: The Project Identification Number is assigned by the Procuring Entity based on its own coding scheme and is not the same as the PhilGEPS reference number, which is generated after the posting of the bid opportunity on the PhilGEPS website.]*

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-SRIP Project FY 2022 in the amount of PhP 7,253,035.55.

2.2. The source of funding is:

- a. NGA, the General Appropriations Act or Special Appropriations.

## **3. Bidding Requirements**

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

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

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

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

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

## 5. Eligible Bidders

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

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

## 6. Origin of Associated Goods

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

## 7. Subcontracts

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

The Procuring Entity has prescribed that:

- a. Subcontracting is not allowed.
- 7.1. *[If Procuring Entity has determined that subcontracting is allowed during the bidding, state:]* The Bidder must submit together with its Bid the documentary requirements of the subcontractor(s) complying with the eligibility criterial stated in **ITB** Clause 5 in accordance with Section 23.4 of the 2016 revised IRR of RA No. 9184 pursuant to Section 23.1 thereof.
  - 7.2. *[If subcontracting is allowed during the contract implementation stage, state:]* The Supplier may identify its subcontractor during the contract implementation stage. Subcontractors identified during the bidding may be changed during the implementation of this Contract. Subcontractors must submit the documentary requirements under Section 23.1 of the 2016 revised

IRR of RA No. 9184 and comply with the eligibility criteria specified in **ITB** Clause 5 to the implementing or end-user unit.

- 7.3. 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. Pre-Bid Conference**

The Procuring Entity will hold a pre-bid conference for this Project on the specified date and time and either at its physical address and/or through videoconferencing/webcasting} as indicated in paragraph 6 of the **IB**.

## **9. Clarification and Amendment of Bidding Documents**

Prospective bidders may request for clarification on and/or interpretation of any part of the Bidding Documents. Such requests must be in writing and received by the Procuring Entity, either at its given address or through electronic mail indicated in the **IB**, at least ten (10) calendar days before the deadline set for the submission and receipt of Bids.

## **10. Documents Comprising the Bid: Eligibility and Technical Components**

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

- 10.5. A List of Contractor's major equipment units, which are owned, leased, and/or under purchase agreements, supported by proof of ownership, certification of availability of equipment from the equipment lessor/vendor for the duration of the project, as the case may be, must meet the minimum requirements for the contract set in the **BDS**.

## **11. Documents Comprising the Bid: Financial Component**

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

## **12. Alternative Bids**

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

## **13. Bid Prices**

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

## **14. Bid and Payment Currencies**

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

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

- a. Philippine Pesos.

## **15. Bid Security**

- 15.1. The Bidder shall submit a Bid Securing Declaration or any form of Bid Security in the amount indicated in the **BDS**, which shall be not less than the percentage of the ABC in accordance with the schedule in the **BDS**.
- 15.2. The Bid and bid security shall be valid until *120calendar days from opening of bid*. Any bid not accompanied by an acceptable bid security shall be rejected by the Procuring Entity as non-responsive.

## **16. Sealing and Marking of Bids**

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

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

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

## **17. Deadline for Submission of Bids**

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

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

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

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

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

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

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

- 19.2. If the Project allows partial bids, all Bids and combinations of Bids as indicated in the **BDS** shall be received by the same deadline and opened and evaluated simultaneously so as to determine the Bid or combination of Bids offering the lowest calculated cost to the Procuring Entity. Bid Security as required by **ITB** Clause 16 shall be submitted for each contract (lot) separately.
- 19.3. In all cases, the NFCC computation pursuant to Section 23.4.2.6 of the 2016 revised IRR of RA No. 9184 must be sufficient for the total of the ABCs for all the lots participated in by the prospective Bidder.

## **20. Post Qualification**

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

## **21. Signing of the Contract**

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



### ***Section III. Bid Data Sheet***

# Bid Data Sheet

ITB Clause																	
5.2	For this purpose, contracts similar to the Project refer to contracts which have the same major categories of work, which shall be: <b><i>Canalization, Canal Structure and Road Construction</i></b>																
7.1	<b><i>Sub-contracting is not allowed</i></b>																
10.3	<i>[Specify if another Contractor license or permit is required.] None</i>																
10.4	<p>The key personnel must meet the required minimum years of experience set below:</p> <table> <tr> <th><u>Key Personnel</u></th><th><u>Relevant Experience</u></th></tr> <tr> <td>1 – Project Manager</td><td>– Preferably Technical individual with at least three (3) years’ experience as Project Manager;</td></tr> <tr> <td>1 – Project Engineer</td><td>– A licensed Civil Engineer with at least two (2) years’ experience as Project Engineer in similar works;</td></tr> <tr> <td>1 – Materials Engineer</td><td>– With at least two (2) years’ experience as Materials Engineer duly accredited by the DPWH provided that the limits of</td></tr> <tr> <td>Materials Engineer II</td><td>- Two (2) projects located within the same province for simultaneous assignments, with an aggregate cost of not more than P150M</td></tr> <tr> <td>Materials Engineer I</td><td>- Four (4) projects located within the same province for simultaneous assignments, with an aggregate cost of not more than P 50M</td></tr> <tr> <td>1 – Safety/Health Officer</td><td>– With Training Certificate and with at least two (2) years’ experience as Safety Officer.</td></tr> <tr> <td>1 - Foreman</td><td>– with at least two (2) years’ experience as Foreman for Earthworks, concreting and/or other related works;</td></tr> </table>	<u>Key Personnel</u>	<u>Relevant Experience</u>	1 – Project Manager	– Preferably Technical individual with at least three (3) years’ experience as Project Manager;	1 – Project Engineer	– A licensed Civil Engineer with at least two (2) years’ experience as Project Engineer in similar works;	1 – Materials Engineer	– With at least two (2) years’ experience as Materials Engineer duly accredited by the DPWH provided that the limits of	Materials Engineer II	- Two (2) projects located within the same province for simultaneous assignments, with an aggregate cost of not more than P150M	Materials Engineer I	- Four (4) projects located within the same province for simultaneous assignments, with an aggregate cost of not more than P 50M	1 – Safety/Health Officer	– With Training Certificate and with at least two (2) years’ experience as Safety Officer.	1 - Foreman	– with at least two (2) years’ experience as Foreman for Earthworks, concreting and/or other related works;
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10.5	<p>The minimum major equipment requirements are the following:</p> <table><tr><th colspan="2">Equipment</th><th>Capacity</th><th>Number of Units</th></tr><tr><td>1.</td><td>Dump Truck</td><td>12 cu.m.</td><td>1</td></tr><tr><td>2.</td><td>Backhoe</td><td>0.50-0.75 cu.m.</td><td>1</td></tr><tr><td>3.</td><td>Vibratory Plate Compactor</td><td>450-600mm, 8Hp</td><td>2</td></tr><tr><td>4.</td><td>Water Truck</td><td>5,000-10,000 liter</td><td>1</td></tr><tr><td>5.</td><td>Bar Cutter</td><td></td><td>2</td></tr><tr><td>6.</td><td>Concrete Mixer</td><td>1 Bagger</td><td>3</td></tr><tr><td>7.</td><td>Concrete Vibrator</td><td></td><td>3</td></tr><tr><td>8.</td><td>Total Station</td><td>set</td><td>1</td></tr><tr><td>7.</td><td>Jack Hammer</td><td></td><td>1</td></tr><tr><td>8.</td><td>Grinder Machine with Cutting Disc</td><td></td><td>2</td></tr></table>	Equipment		Capacity	Number of Units	1.	Dump Truck	12 cu.m.	1	2.	Backhoe	0.50-0.75 cu.m.	1	3.	Vibratory Plate Compactor	450-600mm, 8Hp	2	4.	Water Truck	5,000-10,000 liter	1	5.	Bar Cutter		2	6.	Concrete Mixer	1 Bagger	3	7.	Concrete Vibrator		3	8.	Total Station	set	1	7.	Jack Hammer		1	8.	Grinder Machine with Cutting Disc		2
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6.	Concrete Mixer	1 Bagger	3																																										
7.	Concrete Vibrator		3																																										
8.	Total Station	set	1																																										
7.	Jack Hammer		1																																										
8.	Grinder Machine with Cutting Disc		2																																										
12	<i>[Insert Value Engineering clause if allowed.]</i>																																												
15.1	<p>The bid security shall be in the form of a Bid Securing Declaration or any of the following forms and amounts:</p> <p>a. The amount of not less than 2% of the ABC, if bid security is in cash, cashier's/manager's check, bank draft/guarantee or irrevocable letter of credit;</p> <p>b. The amount of not less than 5% of the ABC if bid security is in Surety Bond.</p>																																												
19.2	Partial bids are not allowed:																																												
20	<i>None</i>																																												
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, equipment utilization schedule, construction safety and health program approved by the DOLE, and other acceptable tools of project scheduling.																																												

## ***Section IV. General Conditions of Contract***

## 1. Scope of Contract

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

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

## 2. Sectional Completion of Works

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

## 3. Possession of Site

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

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

## 4. The Contractor's Obligations

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

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

## **5. Performance Security**

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

## **6. Site Investigation Reports**

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

## **7. Warranty**

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

## **8. Liability of the Contractor**

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

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

## **9. Termination for Other Causes**

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

## **10. Dayworks**

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

## **11. Program of Work**

- 11.1. The Contractor shall submit to the Procuring Entity’s Representative for approval the said Program of Work showing the general methods, arrangements, order, and timing for all the activities in the Works. The submissions of the Program of Work are indicated in the **SCC**.
- 11.2. The Contractor shall submit to the Procuring Entity’s Representative for approval an updated Program of Work at intervals no longer than the period stated in the **SCC**. If the Contractor does not submit an updated Program of Work within this period, the Procuring Entity’s Representative may withhold the amount stated in the **SCC** from the next payment certificate and continue to withhold this amount until the next payment after the date on which the overdue Program of Work has been submitted.

## **12. Instructions, Inspections and Audits**

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

## **13. Advance Payment**

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

## **14. Progress Payments**

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

## **15. Operating and Maintenance Manuals**

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



## ***Section V. Special Conditions of Contract***

# Special Conditions of Contract

GCC Clause	
2	<i>[If different dates are specified for completion of the Works by section, i.e. "sectional completion," these dates should be listed here.]</i>
4.1	<i>[Specify the schedule of delivery of the possession of the site to the Contractor, whether full or in part.]</i>
6	The site investigation reports are: <i>[list here the required site investigation reports.]</i>
7.2	<i>[In case of semi-permanent structures, such as buildings of types 1, 2, and 3 as classified under the National Building Code of the Philippines, concrete/asphalt roads, concrete river control, drainage, irrigation lined canals, river landing, deep wells, rock causeway, pedestrian overpass, and other similar semi-permanent structures:]</i> Five (5) years.
10	a. Dayworks are applicable at the rate shown in the Contractor's original Bid.
11.1	The Contractor shall submit the Program of Work to the Procuring Entity's Representative within 7 days of delivery of the Notice to Award.
11.2	The amount to be withheld for late submission of an updated Program of Work is <i>[insert amount]</i> .
13	<p>The amount of the advance payment is 15% of the Contract Price and to be recouped every progress billing, to be made as per herein schedule:</p> <p>a. First (1<sup>st</sup>) Installment – 7.5% of the Contract Price – upon submission to and acceptance by NIA of an Irrevocable Standby Letter of Credit of equivalent value issued by a commercial bank, a bank guarantee or surety bond, callable upon demand, issued by a surety or insurance company duly accredited by the Insurance Commission and confirmed by NIA.</p> <p>b. Second (2<sup>nd</sup>) Installment – 7.5% of the Contract Price – upon submission to and acceptance by NIA of an Irrevocable Standby Letter of Credit of equivalent value issued by a commercial bank, a bank guarantee or surety bond, callable upon demand, issued by a surety or insurance company duly accredited by the Insurance Commission and confirmed by NIA (if amount is not included in the first Installment), and after Contractor has fully mobilized the initial equipment requirement and Key Personnel indicated in its Manpower Utilization Schedule.</p>
14	Materials and equipment delivered on the site but not completely put in place shall not be included for payment.
15.1	The date by which operating and maintenance manuals are required is <i>[date]</i> .

	The date by which “as built” drawings are required is <i>[date]</i> .
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 <i>[amount in local currency]</i> .

## ***Section VI. Specifications***

## COMMON EXCAVATION

### **SCOPE**

The work under this Section shall consist of excavating and removal of all classes of materials in canal prism and backfilling, and trimming of side slopes inside canal prism and canal beds except on portion of the canal where concrete lining is required (trimming of the foundation bed will be considered included under Section XV “Concrete Canal Lining”) all in accordance with the Drawings and these Specifications or as directed by the Engineer.

All excavations shall be true to lines, grades, slopes and profiles shown on the Drawings or as required by the Engineer.

### **1. CLASSIFICATION**

All excavated materials under this Section will be classified as follows:

#### **(a) Rock Excavation**

For purpose of classification of excavation, rock is defined as sound and solid masses or formation, layers or ledges of mineral matter in place of such hardness and texture that:

- 1) Cannot be effectively loosened or broken down by ripping in a single pass with a latest model tractor mounted hydraulic ripper equipped one digging point of standard manufacturer’s design adequately sized for use with and propelled by a crawler-type tractor above 300HP
- 2) In the areas where it is impracticable to classify the use of the ripper described above, rock is defined as sound and solid material of such hardness and texture which cannot be loosened or broken by a 2.72 kg (6 pound) drifting pick.
- 3) Can only be loosened or broken by special equipment such as jackhammer and pencil hammer attached to an excavator.

All formation of materials as defined above whose volume is one (1) cubic meter or more will be classified as rock.

- (b) Common Excavation** - Excavation of any materials and boulders (whose volume is less than one cubic meter) that can be ripped to be loosed by, a dozer of equal or below 180 HP capacity.
- (c) Hard Excavation** - Excavation of any materials and boulders (whose volume is less than one cubic meter) that can be ripped to be loosed by, a dozer of above 180 HP to 300 HP.
  - 1) Excavation of all soil materials, which can easily be removed by ordinarily excavator or manual operation.

2. **METHOD OF CONSTRUCTION**

Canal excavation shall include all excavation works in the canal prism whether common, indurated or rock materials, except additional excavations at structure sites which is specified to be done and measured for payment under excavation for structure.

3. **BASIS OF PAYMENT**

The volume measured as provided above shall be paid per cubic meter, which price and payment shall constitute full compensation for furnishing all materials, supplies, labor, equipment, tools and all incidentals necessary for the successful completion of the work described under this Section and for all subsidiary works except for hauling of excavated materials beyond the free haul distance for disposal to waste areas which shall be paid under Section.

## **BACKFILL WITH COMPACTION**

### **1. SCOPE**

The work under this section shall include hauling (if necessary) and backfilling with suitable materials taken under from 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 finish lines indicated 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 suitable materials as ordered by the Engineer from the spaces to be backfilled or filled.

### **2. 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 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 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 behind bridge abutments, retaining walls, cut-off walls and immediately above pipes, box or barrel conduits and gradually increasing to at least 90% compaction p 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.

### **3. METHOD OF MEASUREMENT**

Backfill with Compaction shall be measured by the cubic meter in its final compacted and uncompacted position within the limits of structure excavation paylines and surfaces of concrete in contact with the backfilled materials as shown on the Drawings or as directed by the Engineer. Volumes occupied by the structures and other features will not be included.

### **4. BASIS OF PAYMENT**

Backfill with Compaction will be paid for at the contract unit price per cubic meter, which price and payments shall constitute full compensation for the 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.

## **EMBANKMENT CONSTRUCTION AND COMPACTION**

### **1301 SCOPE**

The work under this section shall consist of spreading materials taken from canal excavation, structure excavation, side borrow and borrow haul into canal embankments or protection dikes or approaches to bridges and road crossings into all other embankments indicated on the drawings; moisture conditioning and then compacting said materials into the desired degree of compaction, all in accordance with the drawings and these specifications or as directed by the engineer. All works associated with side borrow and borrow haul operations and overhaul for canal embankment are considered subsidiary works for embankment Construction and Compaction.

### **1302 SOURCES OF MATERIALS**

Materials for embankment and structure backfill for canal and diversion structures may be taken from canal or structure excavation in accordance with section IV and VI. In case where excavated materials from canal prism or from structure excavations are insufficient or unsuitable for embankment formation, additional materials may be taken from side borrow or borrow haul areas not necessarily designated by NIA including acquisition of necessary right-of-way and access thereto. Likewise, materials for protection dikes and approaches to bridges and road crossing may be taken from sources at the Contractor's choice including acquisition of necessary right-of-way. However, possible borrow areas are indicated in the Bid Drawings or as suggested by the Engineer.

### **1303 COMPACTION EQUIPMENT**

Compaction of canal roadway embankments, protection dikes or approaches to bridges and road crossings or for backfill [if applicable may be done by the use of sheep's foot roller, pneumatic rollers, vibratory compactors or other type of compaction equipment at the Contractor's option as approved by the engineers. The suitability of the proposed compaction equipment to achieve the desired degree of compaction must be demonstrated during the initial phases of compaction operations. The engineer shall have the right to require the Contractor to change compaction equipment if such equipment is deemed unsuitable in achieving the specified degree of compaction with a reasonable period of time.

Watering equipment for moisture conditioning of the embankment materials, prior to compaction, shall be designed to apply water uniformly at the rates required by NIA. Water tank shall be equipped with positive shut-off valves that no leakage will result from the nozzle when the equipment is not in used.



Soil Classification and/ or Proctor maximum Dry Density Obtained	Minimum Compaction Required Percent of In place Density Maximum Dry Density for	
	Roads, Dikes and Canal Embankments with roadway	For normal Embankment [without roadway and intrasite or Feeder Roads]
L, SM & ML, 85-89	100%	100%
CL, SM & ML, 90-99	95%	95%
SC, 100-109.9	95%	95%
GC, 110-119.9	90%	90%
GC, 130- and above	90%	90%

When embankments are to be made on hillsides, whether paralleling a hillside, abutting into a hillside or crossing over a hill, the slope of the original hillside shall be cut horizontally as the work is brought up in layer. Material thus cut shall be recompacted, along with the new embankment material.

During construction, the contractor shall keep the top of the embankments at such elevation and section to provide natural surface drainage at all times. If the contractor stops work on any portion of the embankment on account of rain or the surface shall be graded to facilitate drainage and the surfaces shall be sealed by passing rubber tired equipment or flat drum rollers over the surface. Before work is resumed on the area, the surface scarified to a minimum depth of not less than 15 cm., releveled, moisture conditioned, and recompacted to the specified density.

Should the NIA determined that any portion of the surface of the embankment has become so dry glazed during construction that bond with the succeeding layer to be thereon cannot be obtained, or should ruts develop on the embankment, such surface shall be surface shall be scarified to a minimum depth of 15 cm., releveled, moisture conditioned and recompacted to the specified density just prior placing of the succeeding layer of the embankment.

All surfaces of the compacted embankment shall be compacted to the lines, and grades shown on the Drawing or as directed by the Engineer with the tolerances in accordance with paragraph 403 [b] for slopes and surfaces and a tolerance of  $\pm 10$  cm. for profile surfaces and shall be graded to a uniform slope.

### **1304 METHOD OF CONSTRUCTION**

This paragraph covers the construction of all embankments designated on the drawing as compacted embankment including the placing of embankment materials to the low and over excavated areas in the canal. All compacted embankments shall be constructed to the lines, grades and dimensions shown on the drawings, or established by the NIA on a properly prepared foundations approved by the NIA. No objectionable materials shall be placed on the embankments.

Ground surface upon which the embankment is to be constructed shall be scarified to a depth of at least 15 cm. after clearing and grubbing, moisture conditioned, and compacted to not less than the required degree of compaction as shown in Table A below. Materials unsuitable for embankment foundations shall be removed as directed and replaced with suitable materials and compacted as compacted embankment.

Where canal embankment is to be constructed across low swampy ground or where the top soil is not satisfactory for foundation as determined by the Engineer stripping of top soil of the foundation area and compaction will be ordered before construction of the embankment, stripping and disposal of the stripped material is subsidiary work and will not be measured for payment; Provided, however that when stripping to a depth beyond 10 centimeters from the natural ground surface is ordered by the Engineer the stripped materials below the 10 centimeters free stripping depth will be paid for under "Canal Excavation". In case stripping of the top soil exceeds 10 centimeters, the Contractor should requests to NIA for a re-survey to determine the actual volume subject for payment. Verification and approval by the administrator should be obtained first before proceeding with the stripping operation.

Embankments shall be constructed to the lines, grades and dimensions shown on the Drawings or as established by the engineer. Embankment shall be constructed in horizontal layers which extends the full width of the embankment. Thickness of the layers shall not exceed 15 cm. after compaction. The moisture content of the material at the start of compaction shall have optimum moisture of plus or minus 5% as determined by the standard laboratory compaction test on soils [ ASTM Designation D698]. Embankment materials which do not contain sufficient moisture for compaction in accordance with the above requirement shall be thoroughly mixed additional water as directed by the engineer. Embankment material containing excess moisture shall be permitted to dry to the proper consistency before being compacted. After layer has been spread for the full width of the cross-section and brought to satisfactory moisture content, it shall be compacted. The degree of compaction in each layer shall be determined by the standard field density test ASTM D-1556. each layer should attain the required percentage of compaction before the succeeding layer is allowed to be placed. The compaction requirements for the different type of soil placed on embankments are shown in the following table:

### **1305 METHOD OF MEASUREMENT**

Measurement shall be done by the cubic meter of embankment in its final accepted compacted position less the volume for road surfacing materials if any, regardless of the origin of materials and the required degree of compaction. Computation shall be by the Average End Area Method for every 20 M station or by the applicable method suitable for the work involved. The volume shall be the theoretical volume of the embankment as computed based on the neat lines or pay lines shown on the Drawings. The lower limit shall be the elevation of the ground surface stripping and the upper limit shall be the top of the embankment.

### **1306 BASIS OF PAYMENT**

The volume measured for embankment as provided above shall be paid at the contract unit price per cubic meter, the price and payment shall constitute full compensation for any side borrow, borrow haul, blending, moisture conditioning and compaction and trimming side

slopes [where necessary] including all labor, tools, equipment and all incidentals and subsidiary works, necessary for the successful completion of the work described under this section. Provided, however, that payment shall only be made after preservation by the Contractor of a certification issued by the NIA Materials Testing Engineering to the effect that the constructed embankment measured and covered by such progress payment has attained degree of compaction.

## 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 and 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 of steel bars down on the drawings multiplied by 1.07 to get the approximate 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 40 or 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 Dimensions	
Nominal Bar Diameter	Unit Weight (kg/m.)	Cross Section Area (sq. mm)	Perimeter (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	50.27
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	804.25	100.53
36 mm.	7.991	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 Workmanship shall be at the highest grade and shall be in accordance Requirement with the latest standard practice of the industry.

### 1. 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 approved detailed reinforcement Drawings in accordance with sound design procedures.

## **2. 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 bar support shall be cleaned of heavy flaky rust, loose scales, dirt, grease or other foreign substance 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 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 reinforcing bars. Metal supports shall be galvanized when they are to be exposed to view on completed concrete surfaces or where it is use will contribute in any way to the discoloration of deterioration of the concrete.

## **4. Relation of Bars to Concrete Surfaces.**

The minimum cover for all reinforcements shall conform to the dimensions shown on the detailed reinforcement Drawings.

## **5. Splicing.**

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

## **6. 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 AWS: D12.1, latest revision. All welders employed shall show proof of their welding qualifications to the Engineer. All welding shall be done using metal arc welding, pressure gas welding, submerged arc welding or thermit welding. All electric shall be acceptable to NIA. Coverings of low hydrogen electrodes must be thoroughly dry when used. The surfaces to be welds shall be clean and shall be free from rust and dirt. All welds shall 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.

## **7. 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.

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 Work shall be carried out by NIA at the manufacturer's stockyard before delivery to the project site. The NIA 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 in accordance with ASTM requirements. All deliveries shall be subject to prior approval of NIA.

The NIA 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 per cent (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.

### ***Method of Measurement***

a. Cutting Bending and Placing. Measurement for payment of reinforcing steel bars will be made on the weight of reinforcing steel bars actually placed with the concrete structure and drilled holes for anchorage in accordance with the Drawings and Bar Schedule approved by NIA or as directed by the Engineer and weights will be computed based on the published manufacturer's weights or in the absence thereof, on the weights specified in the table presented in Paragraph 902. Steel bars in laps or splices indicated in the approved reinforcement Drawings, as required by NIA will be measured for payment. Additional steel bars in laps which are authorized for the convenience of the Contractor and such items as measured for payment. Where weld splices are specified on the Drawings, weld splices will not be measured for payment. 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 for 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 described under this Section.

## **CONCRETING 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.

#### **(3) Payment**

Payment for cement shall be considered to be included in the unit prices for the various items for concrete in the Bill of Quantities for which cement is used.

### **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:

#### **(a) 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.

(b) 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.

(c) 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<sup>th</sup>) 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.

(d) 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.

(a) 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.		Size Group (% by weight)	
Sq. mesh		$\frac{3}{4}$ " Size (20 mm)	1- $\frac{1}{2}$ " Size (40 mm)
2"	(50.8 mm)	-	- 100
1 $\frac{1}{2}$ "	(38.1 mm)	-	90 - 100
1"	(25.4 mm)	100	20 - 55
$\frac{3}{4}$ "	(19.1 mm)	-	-
$\frac{1}{2}$ "	(12.7 mm)	-	-
$\frac{3}{8}$ "	(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- $\frac{1}{2}$ ) 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	$\frac{3}{4}$ "	(20 mm)
(b) Concrete for reinforced concrete pipes	$\frac{3}{4}$ "	(20 mm)
(c) Concrete for footings, walls, slabs, beams, more than 0.22 meters thick	1- $\frac{1}{2}$ "	(40 mm)
(d) Concrete for canal lining	1- $\frac{1}{2}$ "	(40 mm)
(e) Mass concrete for diversion conduit, and spillway wire and wall	1- $\frac{1}{2}$ "	(40 mm)
(f) Lean concrete and other miscellaneous use	1- $\frac{1}{2}$ "	(40 mm)

In all cases, the size of the aggregates shall not exceed  $\frac{1}{2}$  the distance between the reinforcing steel bars of the members being placed.

#### (b) 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.

(c) 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<sup>th</sup>) 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).

(ii) 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.

(iii) Specific Gravity (USBR Designation 10 or ASTM C-127)

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

(iv) 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 tests 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		1	Minimum Compressive Strength		Maximum Water/Cement Ratio		Minimum Cement Content		Allowable Slump	
	(inch)(mm)			(psi eq.)(kg/cm <sup>2</sup> )		Ratio		(kg/m <sup>3</sup> )		(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) Notwithstanding 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.

#### **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 75 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.

## **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**

Structure excavation shall be classified in accordance with paragraph 402.

### **CONSTRUCTION REQUIREMENTS**

All excavation requirements described 403 are applicable under this section.

### **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 paragraph 404 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 replaced 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 thick, moistened and thoroughly compacted by special roller mechanical tampers or by other approved methods. A density not less than 90% of the maximum dry density determined 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 be placed 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 depth 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

On excavation of rock 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 depth 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 acceptable 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 than 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-off 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.

## **STRUCTURE BACKFILL WITH COMPACTION**

### **1. SCOPE**

The work under this section shall include hauling (if necessary) and backfilling with suitable materials taken under from 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 finish lines indicated 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 suitable materials as ordered by the Engineer from the spaces to be backfilled or filled.

### **2. 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 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 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 behind bridge abutments, retaining walls, cut-off walls and immediately above pipes, box or barrel conduits and gradually increasing to at least 90% compaction p 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.

### **3. METHOD OF MEASUREMENT**

Backfill with Compaction shall be measured by the cubic meter in its final compacted and uncompacted position within the limits of structure excavation paylines and surfaces of concrete in contact with the backfilled materials as shown on the Drawings or as directed by the Engineer. Volumes occupied by the structures and other features will not be included

### **4. BASIS OF PAYMENT**

Backfill with Compaction will be paid for at the contract unit price per cubic meter, which price and payments shall constitute full compensation for the side borrow, borrow haul and overhaul operations and for furnishing all labor, equipment, tools and all incidentals and subsidiary works necessary for the successful completion of the work under this Section.

## CANAL EXCAVATION

### 401 **SCOPE**

The work under this Section shall consist of excavating and removal of all classes of materials in canal prism including placing into canal embankments within excavated suitable materials, stocking of excavated materials suitable for embankment and backfilling, and trimming of side slopes inside canal prism and canal beds except on portion of the canal where concrete lining is required [trimming of the foundation bed will be considered included under Section XX. Concrete Canal Lining] all in accordance with the Drawing and these Specifications or as directed by the Engineers.

### 402 **CLASSIFICATION**

All excavated materials under this Section shall be classified as follows:

1. **Rock Excavation-** For purpose of classification of excavation, rock is defined as sound and solid masses or formation, layers or ledges of mineral matter in place of such hardness and texture that:
  - a. Cannot be effectively loosened or broken down by ripping in a single pass with a latest model tractor mounted hydraulic ripper equipped with one digging point of standard manufacturer's design adequately sized for use with and propelled by a crawler-type tractor above 300 HP.
  - b. In the areas where it is impracticable to classify the use of the ripper described above, rock is defined as sound and solid material of such hardness and texture which cannot be loosened or broken by 2.72 kg. [6 pound] drifting pick.
  - c. Can only be loosened or broken by a special equipment such as jack hammer and pencil hammer attached to an excavator.

All formation of materials as defined above whose volume is one [1] cubic meter or more will be classified as rock.

2. **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.
3. **Hard Excavation** - Excavation of any materials and boulders [volume of which is at least one cubic meter] that can only be ripped to be loosed by a dozer of above 180 HP to 300 HP.

### 403 **CONSTRUCTION REQUIREMENTS**

#### [a] **Explosives and Blasting**

## 1. Explosives

Caps or other exploders or fuses shall in no case be stored in the same place in which dynamite or other explosives are stored, transported to keep. The location and design of powder magazines, the magazines, the methods of transporting explosives and the precautions taken to prevent accidents shall be in accordance with the provisions of all laws, orders, regulations and decrees that are in force in the Philippines or may be issued from time to time by the Government.

The Contractor shall maintain an inventory for storage and withdrawal of power stocks and detonators. The NIA shall be notified immediately of any loss or theft of explosives. The Contractor shall provide such reasonable and adequate subversive action or sabotage to any property. Only reliable personnel shall be permitted to store and handle explosives.

Explosives, if used, shall be of such quantity and power and shall be used in such locations so as to minimize opening of seams and disturbing of material outside the prescribed limits of excavation. As excavation approaches its final limits, the depth of hole for blasting and the quantity of explosives used for each hole shall be reduced so that the underlying or adjacent material will not be disturbed or shattered. Whenever further blasting might injure the surface of the final excavation and determined by the Engineer, the use of explosive shall be discontinued.

The Cost of furnishing, hauling, storing and handling all explosives shall be included in the contract unit price of the work for which they are required.

## 2. Blasting

Blasting will be permitted only when no proper precautions are taken for the protection of persons, the works, and public or private property. The Contractor shall satisfactorily cover all shots in deep cut excavations and shall take extra precautions on all blasting work as maybe required by the NIA. The Contractor shall blast to the extent necessary and in such a manner that the excavation will not be unduly large or irregular, nor unduly disturb the ground and make it unstable, nor shatter the rock, if encountered, upon or against which concrete is to be placed, nor injure concrete already placed or existing structures at the site or in the vicinity thereof. Whenever, in NIA's opinion, the Contractor's operations are liable to result in unduly large excavations or unstable ground, as to injure the rock, concrete or structures, the Contractor shall drill shorter holes and use lighter charges. Approval by the NIA of any of the Contractor's blasting operations shall not relieve the Contractor of his responsibility under this paragraph.

The Contractor shall submit his drilling and blasting operations for approval of the Engineers before commencing with his blasting works. No blasting operations shall be undertaken without the approval of the Engineer.

When concrete is to be placed upon or against rock, the excavation shall be of sufficient depth 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 rock shall be carefully removed by means of jackhammer or any appropriate hand tool. The point beyond which blasting will not be allowed shall be determined by the Engineers. The damages to the rocks foundation caused by improper blasting operation shall be repaired by the Contractor at his own expenses in a manner acceptable to the Engineer.

**[b]     Section and Slopes**

Excavation sections, profiles and slopes shall be cut true and straight in conformity with the lines and grades shown on the Drawings within the following tolerances, measured normal to the excavated surfaces:

<u>ITEM</u>	<u>TOLERANCES</u>
1. Side slopes above minimum elevation of cms. operating	$\pm 30$ cms.
2. Profile of operating roads, access roads and protection dike	$\pm 9$ cms.
3. Profile of invert of canals	$\pm 3$ cms.
4. Side slopes inside canal prism for canal and laterals	$\pm 15$ cms.
5. Side slopes inside canal prism for canal and laterals	$\pm 15$ cms.

The extreme of the above tolerance shall not be continuous over a distance of 40 meters measured at any place, in any direction, parallel to the excavated surface.

**[c]     Excavation Beyond Established Lines**

Precautions shall be taken to preserve, in an undisturbed condition, materials beyond the designated limits of excavation as shown on the Drawings except unsuitable materials ordered removed by the Engineers. Material loosened beyond the excavation limits as result of excavation limits as a result of excavation operations shall be considered defective work and shall be compacted or removed and replaced with compacted embankment at the Contractor's expenses, as directed by the Engineer.

**404     METHOD OF CONSTRUCTION**

Canal excavation shall include all excavation works in the canal prism whether common, indurate or rock materials, except additional at structure sites which is specified to be done and measured for payment under excavation for structure.

The Contractor shall only excavate after the area of operation is acceptably cleared grubbed in accordance with Section II, "Clearing and Grubbing". Excavation of all canals shall be accordance with the cross section, lines and grades shown on the Drawings. On portion of the canal where concrete lining is required, canal excavation shall not extend beyond the neat lines of the underside face of the canal lining as shown on the Drawing. The Contractor must exercise care not to extend his excavation beyond the limits called for in the



Drawings. Excavation operations shall be such that all materials suitable for embankment or backfilling and filling shall be separated from objectionable materials which are to be wasted. All surfaces from excavation shall be trimmed to the required slopes and grades within the specified tolerances under paragraph 403 [b]. blasting if permitted by the NIA, shall be in accordance with paragraph 403 [a]. “Explosive and Blasting”.

In sections of deep cut in which the canal section is continuous with the road way section and its side slopes, excavation for roadway shall be included under this section. If slides occur on excavated slopes or if run-off flows deposit additional materials in excavations before acceptance of the works, the removal of said slides and/or deposits shall be at the expense of the Contractor.

Large canals like main canals should preferably be excavated with the use of motorized scrapers, excavating in successive layers of about 30 centimeters followed subsequently by trimming of the side slopes using a Grader. Medium sized canals like laterals should preferably be excavated by initially using a D-6 or D-7 Bulldozer for the upper layers and then excavating the bottom layers and side slopes with the use of a Backhoe. Should the Contractor propose to do excavation works by some other means, prior approval of the Engineer must be secured.

#### **405     FINISHING CANAL AND ROADWAYS**

Upon completion of all construction operations, the canal section, including slopes embankments, and roadway embankments, shall be finished as specified and shown on the Drawings. Canal beds, canal embankments and side slopes shall be trimmed and shaped to the finished cross-section to produce smooth surfaces and slopes, and uniform cross-sections.

Stockpiling of materials on finished canal sections, roadways and embankments shall not be permitted. All finished works and surfaces shall be cleaned of all dirt and foreign materials.

The contractor shall also be required to clear the entire right-of-way and areas outside the limits of the right-of-way for all excess of objectionable materials, if such excess or objectionable materials are the result of the Contractor’s operation as determined by the Engineer.

All weeds and other objectionable growth, roots, excess earth, debris, loosened rock larger than 7.5 centimeters shall be removed and disposed off in approved sites outside the right-of-way as specified or directed by the Engineer.

The entire canal sections including roadways, side slopes and structure approaches shall be left in a neat and presentable condition.

#### **406     METHOD OF MEASUREMENT**

Canal excavation will be measured for every cubic meter of material excavated from the canal prism. Measurement shall be made in its original position after undertaking clearing and grubbing including stripping operations and computed by the Average-End-Area method for every 20 meter section of finished canal within the pay lines or neat lines shown on the

Drawings, acceptably excavated and formed into embankments or used for structure backfill, or wasted as directed.

Hauling of excavated materials within the free haul distance either for embankment or disposal to waste areas and trimming of side slopes in canal prism and canal beds except on portion of the canal where concrete lining is required subsidiary work under canal excavation, thus, shall be paid under this section and the cost thereof shall be considered included in the contract unit price for Canal Excavation. Hauling beyond the free haul distance [for waste materials only] and spreading of excavated materials into a canal and roadway embankments and structure backfill shall be paid under Section IX and XII, respectively. Hauling or overhauling for disposal of excavated materials into canal embankments is a subsidiary work for embankment construction and compaction, thus, it will not be measured for payment and the cost thereof is considered included in the contract unit price for Embankment Construction and compaction.

#### **407    BASIS OF PAYMENT**

The volume measured as provided above shall be paid per cubic meter, which price and payment shall constitute full compensation for furnishing all materials, supplies, labor, equipment, tools and all incidentals necessary for the successful completion of work described under this Section and for all subsidiary works except for hauling of excavated materials beyond the free haul distance for disposal to waste areas which shall be paid under Section IX, OVERHAUL, and except for trimming of side slopes on portion of canal where concrete lining is required which shall be considered as a subsidiary work under Section XX, Concrete canal Lining.

## **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 these 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 been 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.

## **GRAVEL BEDDING**

### **SCOPE**

The work under this section shall include furnishing, placing on approved sub-grade and compacting the graded sand and gravel to the thickness indicated on the drawings or as established by the engineer.

### **MATERIALS**

Materials for the gravel blanket shall meet all the requirements for 50 mm coarse aggregate.

### **PLACING**

The materials shall be dumped on the prepared sub-grade and spread in layers having an uncompacted thickness of not more than 10 centimeters. Each layer shall be compacted to achieved a relative density of 70% as determined by USBR Test-12 by four complete passes of a vibratory compactor. The contractor has the option to adopt any method of compacting the layers of materials approved by the engineer.

### **METHOD OF MEASUREMENT**

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

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

### **BASIS OF PAYMENT**

The volume measured as provided above shall be paid at the unit contract 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 successful completion of the work described under this section is not considered a subsidiary work hence it will not be measured for payment under this section. Rather, it will be measured and paid for under Structure Excavation.

## **CONCRETE DEMOLITION WORK**

### **1601 SCOPE**

The work under this section shall include demolition, removal and disposal in a manner approved by the engineer of all portions of the existing structures indicated to be demolished, all in accordance with the drawings and these specifications. All other objectionable materials shall be disposed off to the designated disposal areas as ordered by the Engineer.

### **1602 METHOD OF CONSTRUCTION**

Contractor shall submit for approval his proposed plans and operations for undertaking the demolition of structures. The proposed plans shall show details of the proposed method of demolition, removal and disposal of materials, blasting, drilling and other devices the Contractor may propose. The work shall conform to the lines and grades as shown on the drawings, or as directed by the engineer. In cases of modification or renovation of an existing concrete structure may be required, Contractor shall perform his chipping or demolition or damage of the entire structure. Over chipping or over demolition or entire structure. Over shipping or over demolition or entirely damage structures shall be restored at the expense of Contractor in a manner satisfactory to NIA.

### **1603 METHOD OF MEASUREMENT**

Concrete demolition of existing structures will be measured by the number of cubic meter in its original before demolition. Measurement will be made only to acceptably demolished by contractor beyond the lines and grades indicated on the drawings will be included for measurement unless additional demolition has been previously authorized by the engineer in writing.

### **1604 BASIS OF PAYMENT**

Concrete demolition of existing structures measured as provided above shall be paid for a the contract unit price per cubic meter, which price and payment shall constitute full compensation for furnishing labor, supplies, tools and equipment and other incidentals or subsidiary works necessary for the successful completion of the work described under this Section.

## **TEMPORARY WORKS, CONSTRUCTIONS, MOBILIZATION OF CONSTRUCTION EQUIPMENT AND DEMOBILIZATION WORK**

### **SCOPE**

#### **[a] Temporary works**

The contractor shall furnish all materials, labor, equipment, 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 shall include but will not be limited to the following:

1. Construction of temporary facilities shall have a minimum floor area of 50 (5x10) square meters.
2. Facilities such as potable water, drainage, sewage, disposal, sanitation, first aid and fire protection facilities.
3. Workshops, warehouses, site offices, stockpile areas, storage areas for materials, equipment, spare parts, fuel and oil.

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

#### **[b] Mobilization of Equipment**

The Contractor shall mobilize and move into Project Site within 7 calendar days after receipt of Notice to Proceed the required initial equipment requirement as listed 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 listed in his approved Equipment Moving-in and Utilization Schedule, at the discretion of the Regional Manager, 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 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 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 equipment 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 equipment 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 equipment 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:

1. Twenty percent [20%] of the lump sum price will be paid upon complete mobilization of the initial equipment requirement.
2. Twenty percent [30%] of the lump sum price will be paid upon the completion of the Contractor temporary works.
3. Thirty percent [30%] of the lump sum price will be paid upon the completion of moving-in of all the construction equipment 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.



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

## **CONSTRUCTION SAFETY AND HEALTH**

### **BASIC PPE'S FOR WORKERS:**

- 1. Helmet/Safety Hardhat**
- 2. Safety Shoes**
- 3. Rubber Boots**
- 4. Working Gloves**
- 5. Rain Coats**

## ***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***

BILL OF QUANTITIES AND BID PRICES			
Contract No.:	RIO-LMC-10d-2022		
Description of Contract:	Calunasan SRIP, Package 4 (Construction of Lined Canal, Canal Structure, Slope Protection Works for Line Canal and Repair of Damaged Canal)		
Location:	Calape, Bohol		
ITEM NO.	DESCRIPTION	QTY.	UNIT
<b>Canalization</b>			
1	Common Excavation (Manual)	383.33	cu.m.
2	Backfill with Compaction	682.32	cu.m.
3	Embankment Construction and Compaction	45.00	cu.m.
4	Class B Plain Concrete	193.68	cu.m.
5	Reinforcing Steel Bars	11,266.43	kg.
<b>Canal Structure</b>			
1	Structure Common Excavation (Mechanized)	108.47	cu.m.
2	Structure Backfill with Compaction	42.95	cu.m.
3	Class A Plain Concrete	18.42	cu.m.
4	Reinforcing Steel Bars	1,568.96	kg.
5	Lean Concrete	3.21	cu.m.
6	Rubble Masonry	310.68	cu.m.
7	Gravel Bedding	0.49	cu.m.
8	Demolition of Concrete	67.40	cu.m.
<b>Project Facilities</b>			
1	Temporary Works Construction, Mobilization and Demobilization	1.00	l.s.
2	Construction Safety, Health and Fire Protection Program	1.00	l.s.

## ***Section IX LOCAL CONDITION***

### **LC-01 PROJECT LOCATION**

Calunasan SRIP is located at Calunasan, Calape, Bohol. The project site is approximately 45 kilometers from Tagbilaran City accessible through Tagbilaran City - Calape, Bohol route.

### **LC-02 ACCESS TO THE SITE**

The contract work is located at Mabini, Bohol. Passing through different service roads by fairly to well graveled road which may deteriorate if used during rainy days. Maintenance and repair of these service roads by the contractor is necessary if so used by them. The cost of maintenance and repair shall be included in the unit bid price of the contractor.

### **LC-03 FUEL AND POWER SUPPLIES**

The major fuel station outlets such as Petron, Caltex and Shell are found in the nearest city of the project and other surrounding municipalities.

The main source of energy is supplied by the National Grid Corporation of the Philippines (NGCP) and locally distributed by the respective electric cooperatives and is presently available at the above-stated address of the project site.

### **LC-04 CLIMATE AND HYDROLOGY**

Bohol belongs to the type IV climate zone of the Philippines. It has a characteristic that the rainfall distribution is fairly even throughout the year as seen in the climatic data, three months from March to May are comparatively dry. Heavy rains are always brought by typhoons. During the past twenty years two super-typhoon visited Bohol: Ining in November, 1964 (record rainfall typhoons were accompanied by big floods in Wahig River. The peak flood water level of Ining reached the hand rail of the national highway bridge over the Wahig river.

But most of the normal rainfalls are strong showers but short. Earth gets dry very quickly after rainfall. On this account considerable working days will be secured even in the wet season.

Rainfall summarized in the following table, but NIA will assume no responsibility whatsoever for the accuracy of these data. Any risk arising from the interpretation of such data is to be entirely borne by the Contractor.

### **CLIMATE**

<b>Month</b>	<b>Rainfall in BES/1 (mm)</b>	<b>Rainy Days BES/2</b>
Jan.	199.40	10
Feb.	170.50	8
March	127.40	8
April	90.06	5
May	178.30	7
June	174.03	8
July	142.65	9
Aug.	163.00	10
Sept.	165.25	8
Oct.	196.00	8
Nov.	212.30	9
Dec.	164.60	9
Total	2049.6	

*/1: BES is the rainfall station close to the project area*

*/2: Daily rainfall less than 5 mm is deemed zero and not counted as rainy day.*

### **LC-05 BANKING FACILITIES**

Most rural banks are available at nearby of the project area while major banking facilities are found in Tagbilaran City like; Development Bank of the Philippines, Land Bank of the Philippines, Philippine National Bank and other private banks.

### **LC-06 COMMUNITY AND FIRST AID FACILITIES**

The Contractor is advised that the NIA will take no direct part in providing community facilities such as churches, shops, community center and recreation facilities for Contractor's employees. The Contractor shall make his own arrangements for such as he considers being necessary for the approval of the NIA and shall meet all codes or regulations in effect. It shall be the responsibility of the Contractor to furnish and operate first aid for his personnel. Such facilities may be integrated with the NIA facilities, if any, upon mutual agreement.

### **LC-07 CONTRACTOR'S WORKING AREA AND SITE OFFICE**

The Contractor shall, at his own expense, be responsible for housing, feeding and accommodation of all his employees for the execution of the Contract Work. Construction equipment, materials, tools, supplies, and other incidentals, and all cost incurred for the protection and safety shall be borne by him.

### **LC-08 WATER SUPPLY**

The Contractor shall, at his own expense, be responsible for the provision or installation, operation and maintenance of a safe, adequate and temporary supply of drinking and domestic water, and the adequate water supply for his construction purposes.

#### **LC-09 RIGHT OF WAY**

The NIA will provide all right of way, free of charge to the contractor, which, in the opinion of the Regional Manager, necessary for carrying out the contract work.

#### **LC-10 SITE INVESTIGATION**

It is the responsibility of the Contractor to visit the work site to make their own investigation to satisfy themselves as to the existing conditions affecting the work to be done under these Specifications.

The Contractor shall assume all responsibilities for deduction and conclusions that he may obtain or arrive at from the site inspection.



## INFORMATION AND DATA REFERRED TO IN THESE BID DOCUMENTS

PROJECT: Calunasan SRIP, Package 4 (Const. of Lined Canal, Canal Structure, Slope Protection Works for Line Canal and Repair of Damaged Canal), Calape, Bohol

1. Site Visit and Inspection

Register at NIA, Regional Office No.7, Dao District, Tagbilaran City, Bohol

2. Wet Season Period, Article LC-04

3. Contract Duration, Article SCC 1.16, ITB

150 calendar days

4. List of Officers/Offices to be furnished correspondence from the Contractor

The Regional Manager  
NIA Regional Office 7  
Dao District, Tagbilaran City

5. Minimum Equipment Requirement for the Contract:

	Equipment	Capacity	Number of Units
1.	Dump Truck	12 cu.m.	1
2.	Backhoe	0.50-0.75 cu.m.	1
3.	Vibratory Plate Compactor	450-600mm, 8Hp	2
4.	Water Truck	5,000-10,000 liter	1
5.	Bar Cutter		2
6.	Concrete Mixer	1 Bagger	3
7.	Concrete Vibrator		3
8.	Total Station	set	1
7.	Jack Hammer		1
8.	Grinder Machine with Cutting Disc		2

6. List of Initial Equipment required to be mobilized within ten (7) calendar days after receipt of Notice to Proceed

	Equipment	Capacity	Number of Units
1.	Dump Truck	12 cu.m.	1
2.	Backhoe	0.50-0.75 cu.m.	1
3.	Vibratory Plate Compactor	450-600mm, 8Hp	2
4.	Water Truck	5,000-10,000 liter	1
5.	Bar Cutter		2
6.	Concrete Mixer	1 Bagger	3
7.	Concrete Vibrator		3
8.	Total Station	set	1
7.	Jack Hammer		1
8.	Grinder Machine with Cutting Disc		2

## ***Section X. Checklist of Technical and Financial Documents***

# Checklist of Technical and Financial Documents

## I. TECHNICAL COMPONENT ENVELOPE

### *Class “A” Documents*

#### Legal Documents

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

**Or**

#### Technical Documents

- ☐ (b) 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**
- ☐ (c) 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**
- ☐ (d) Special PCAB License in case of Joint Ventures;  
**and** registration for the type and cost of the contract to be bid; **and**
- ☐ (e) 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**
- ☐ (f) 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**
- ☐ (g) 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

- ☐ (h) The prospective bidder’s computation of Net Financial Contracting Capacity (NFCC).

***Class “B” Documents***

- ☐ (i) 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**

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

**Other documentary requirements under RA No. 9184**

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

## **Section X. BIDDING FORMS**

National Irrigation Administration  
Region 7

**STATEMENT OF THE BIDDERS OF ALL ITS ONGOING GOVERNMENT & PRIVATE  
CONTRACTS INCLUDING CONTRACTS AWARDED BUT NOT YET STARTED**

Business Name : \_\_\_\_\_

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

NAME OF CONTRACT	CONTRACT DATE	CONTRACT PERIOD	CONTRACT AMOUNT	Amount or Value of Outstanding Works or Unperformed Portion
<u>Government</u> -				
<u>Private</u> -				

Submitted by : \_\_\_\_\_  
(Printed Name & Signature)

Designation : \_\_\_\_\_

Date : \_\_\_\_\_

National Irrigation Administration  
Region 7

**STATEMENT OF THE BIDDER'S SINGLE LARGEST COMPLETED CONTRACTS (SLCC) SIMILAR TO  
THE CONTRACT TO BE BID**

Business Name : \_\_\_\_\_

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

NAME OF COMPLETED CONTRACT	DATE OF CONTRACT	CONTRACT DURATION	CONTRACT AMOUNT
<u>Government</u> -			
<u>Private</u> -			

Note: This statement shall be supported with:

Owner's Certificate of Final Acceptance or a final rating of at least Satisfactory in the CPES

Submitted by : \_\_\_\_\_  
(Printed Name & Signature)

Designation : \_\_\_\_\_

Date : \_\_\_\_\_



REPUBLIC OF THE PHILIPPINES)  
CITY OF \_\_\_\_\_) S.S.

**BID SECURING DECLARATION**  
Project Identification No.: RIO-LMC-10d-2022

To: [Insert name and address of the Procuring Entity]

I/We, the undersigned, declare that:

1. I/We understand that, according to your conditions, bids must be supported by a Bid Security, which may be in the form of a Bid Securing Declaration.
2. I/We accept that: (a) I/we will be automatically disqualified from bidding for any procurement contract with any procuring entity for a period of two (2) years upon receipt of your Blacklisting Order; and, (b) I/we will pay the applicable fine provided under Section 6 of the Guidelines on the Use of Bid Securing Declaration, within fifteen (15) days from receipt of the written demand by the procuring entity for the commission of acts resulting to the enforcement of the bid securing declaration under Sections 23.1(b), 34.2, 40.1 and 69.1, except 69.1(f), of the IRR of RA No. 9184; without prejudice to other legal action the government may undertake.
3. I/We understand that this Bid Securing Declaration shall cease to be valid on the following circumstances:
  - a. Upon expiration of the bid validity period, or any extension thereof pursuant to your request;
  - b. I am/we are declared ineligible or post-disqualified upon receipt of your notice to such effect, and (i) I/we failed to timely file a request for reconsideration or (ii) I/we filed a waiver to avail of said right; and
  - c. I am/we are declared the bidder with the Lowest Calculated Responsive Bid, and I/we have furnished the performance security and signed the Contract.

IN WITNESS WHEREOF, I/We have hereunto set my/our hand/s this \_\_\_\_ day of [month] [year] at [place of execution].

[Insert NAME OF BIDDER OR ITS AUTHORIZED  
REPRESENTATIVE]  
[Insert signatory's legal capacity]  
Affiant

**SUBSCRIBED AND SWORN** to before me this \_\_\_\_ day of *[month]* *[year]* at *[place of execution]*, Philippines. Affiant/s is/are personally known to me and was/were identified by me through competent evidence of identity as defined in the 2004 Rules on Notarial Practice (A.M. No. 02-8-13-SC). Affiant/s exhibited to me his/her *[insert type of government identification card used]*, with his/her photograph and signature appearing thereon, with no. \_\_\_\_\_ and his/her Community Tax Certificate No. \_\_\_\_\_ issued on \_\_\_\_ at \_\_\_\_\_.

Witness my hand and seal this \_\_\_\_ day of *[month]* *[year]*.

**NAME OF NOTARY PUBLIC**

Serial No. of Commission \_\_\_\_\_

Notary Public for \_\_\_\_\_ until \_\_\_\_\_

Roll of Attorneys No. \_\_\_\_\_

PTR No. \_\_\_\_\_ *[date issued]*, *[place issued]*

IBP No. \_\_\_\_\_ *[date issued]*, *[place issued]*

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Series of \_\_\_\_\_



## Omnibus Sworn Statement

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REPUBLIC OF THE PHILIPPINES )  
CITY/MUNICIPALITY OF \_\_\_\_\_ ) S.S.

### AFFIDAVIT

I, [Name of Affiant], of legal age, [Civil Status], [Nationality], and residing at [Address of Affiant], after having been duly sworn in accordance with law, do hereby depose and state that:

1. [Select one, delete the other:]

[If a sole proprietorship:] I am the sole proprietor or authorized representative of [Name of Bidder] with office address at [address of Bidder];

[If a partnership, corporation, cooperative, or joint venture:] I am the duly authorized and designated representative of [Name of Bidder] with office address at [address of Bidder];

2. [Select one, delete the other:]

[If a sole proprietorship:] As the owner and sole proprietor, or authorized representative of [Name of Bidder], I have full power and authority to do, execute and perform any and all acts necessary to participate, submit the bid, and to sign and execute the ensuing contract for [Name of the Project] of the [Name of the Procuring Entity], as shown in the attached duly notarized Special Power of Attorney;

[If a partnership, corporation, cooperative, or joint venture:] I am granted full power and authority to do, execute and perform any and all acts necessary to participate, submit the bid, and to sign and execute the ensuing contract for [Name of the Project] of the [Name of the Procuring Entity], as shown in the attached [state title of attached document showing proof of authorization (e.g., duly notarized Secretary's Certificate, Board/Partnership Resolution, or Special Power of Attorney, whichever is applicable)];

3. [Name of Bidder] is not "blacklisted" or barred from bidding by the Government of the Philippines or any of its agencies, offices, corporations, or Local Government Units, foreign government/foreign or international financing institution whose blacklisting rules have been recognized by the Government Procurement Policy Board, **by itself or by relation, membership, association, affiliation, or controlling interest with another blacklisted person or entity as defined and provided for in the Uniform Guidelines on Blacklisting;**

4. Each of the documents submitted in satisfaction of the bidding requirements is an authentic copy of the original, complete, and all statements and information provided therein are true and correct;

5. [Name of Bidder] is authorizing the Head of the Procuring Entity or its duly authorized representative(s) to verify all the documents submitted;

6. [Select one, delete the rest:]

[If a sole proprietorship:] The owner or sole proprietor is not related to the Head of the Procuring Entity, members of the Bids and Awards Committee (BAC), the Technical Working Group, and the BAC Secretariat, the head of the Project Management Office or the end-user unit, and the project consultants by consanguinity or affinity up to the third civil degree;

[If a partnership or cooperative:] None of the officers and members of [Name of Bidder] is related to the Head of the Procuring Entity, members of the Bids and Awards Committee (BAC), the Technical Working Group, and the BAC Secretariat, the head of the Project Management Office or the end-user unit, and the project consultants by consanguinity or affinity up to the third civil degree;

[If a corporation or joint venture:] None of the officers, directors, and controlling stockholders of [Name of Bidder] is related to the Head of the Procuring Entity, members of the Bids and Awards Committee (BAC), the Technical Working Group, and the BAC Secretariat, the head of the Project Management Office or the end-user unit, and the project consultants by consanguinity or affinity up to the third civil degree;

7. [Name of Bidder] complies with existing labor laws and standards; and

8. [Name of Bidder] is aware of and has undertaken the responsibilities as a Bidder in compliance with the Philippine Bidding Documents, which includes:

- a. Carefully examining all of the Bidding Documents;
- b. Acknowledging all conditions, local or otherwise, affecting the implementation of the Contract;
- c. Making an estimate of the facilities available and needed for the contract to be bid, if any; and
- d. Inquiring or securing Supplemental/Bid Bulletin(s) issued for the [Name of the Project].

9. [Name of Bidder] did not give or pay directly or indirectly, any commission, amount, fee, or any form of consideration, pecuniary or otherwise, to any person or official, personnel or representative of the government in relation to any procurement project or activity.

**10. In case advance payment was made or given, failure to perform or deliver any of the obligations and undertakings in the contract shall be sufficient grounds to constitute criminal liability for Swindling (Estafa) or the commission of fraud with unfaithfulness or abuse of confidence through misappropriating or converting any payment received by a person or entity under an obligation involving the duty to deliver certain goods or services, to the prejudice of the public and the government of the Philippines pursuant to Article 315 of Act No. 3815 s. 1930, as amended, or the Revised Penal Code.**

IN WITNESS WHEREOF, I have hereunto set my hand this \_\_\_ day of \_\_\_, 20\_\_\_ at \_\_\_\_\_, Philippines.

AUTHORIZED [Insert NAME OF BIDDER OR ITS  
REPRESENTATIVE]  
[Insert signatory's legal capacity]  
Affiant

**SUBSCRIBED AND SWORN** to before me this \_\_\_\_ day of [month] [year] at [place of execution], Philippines. Affiant/s is/are personally known to me and was/were identified by me through competent evidence of identity as defined in the 2004 Rules on Notarial Practice (A.M. No. 02-8-13-SC). Affiant/s exhibited to me his/her [insert type of government identification card used], with his/her photograph and signature appearing thereon, with no. \_\_\_\_\_ and his/her Community Tax Certificate No. \_\_\_\_\_ issued on \_\_\_\_ at \_\_\_\_\_.

Witness my hand and seal this \_\_\_\_ day of [month] [year].

**NAME OF NOTARY PUBLIC**

Serial No. of Commission \_\_\_\_\_

Notary Public for \_\_\_\_\_ until \_\_\_\_\_

Roll of Attorneys No. \_\_\_\_\_

PTR No. \_\_\_\_\_ [date issued], [place issued]

IBP No. \_\_\_\_\_ [date issued], [place issued]

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## **BID FORM**

Date : \_\_\_\_\_

Project Identification No. : RIO-LMC-10d-2022

To: [name and address of Procuring Entity]

Having examined the Philippine Bidding Documents (PBDs) including the Supplemental or Bid Bulletin Numbers [insert numbers], the receipt of which is hereby duly acknowledged, we, the undersigned, declare that:

- a. We have no reservation to the PBDs, including the Supplemental or Bid Bulletins, for the Procurement Project: [insert name of contract];
- b. We offer to execute the Works for this Contract in accordance with the PBDs;
- c. The total price of our Bid in words and figures, excluding any discounts offered below is: [insert information];
- d. The discounts offered and the methodology for their application are: [insert information];
- e. The total bid price includes the cost of all taxes, such as, but not limited to: [specify the applicable taxes, e.g. (i) value added tax (VAT), (ii) income tax, (iii) local taxes, and (iv) other fiscal levies and duties], which are itemized herein and reflected in the detailed estimates,
- f. Our Bid shall be valid within the a period stated in the PBDs, and it shall remain binding upon us at any time before the expiration of that period;
- g. If our Bid is accepted, we commit to obtain a Performance Security in the amount of [insert percentage amount] percent of the Contract Price for the due performance of the Contract, or a Performance Securing Declaration in lieu of the the allowable forms of Performance Security, subject to the terms and conditions of issued GPPB guidelines<sup>12</sup> for this purpose;
- h. We are not participating, as Bidders, in more than one Bid in this bidding process, other than alternative offers in accordance with the Bidding Documents;
- i. We understand that this Bid, together with your written acceptance thereof included in your notification of award, shall constitute a binding contract between us, until a formal Contract is prepared and executed; and
- j. We understand that you are not bound to accept the Lowest Calculated Bid or any other Bid that you may receive.
- k. We likewise certify/confirm that the undersigned, is the duly authorized representative of the bidder, and granted full power and authority to do, execute and perform any and all acts necessary to participate, submit the bid, and to sign and

execute the ensuing contract for the [Name of Project] of the [Name of the Procuring Entity].

1. We acknowledge that failure to sign each and every page of this Bid Form, including the Bill of Quantities, shall be a ground for the rejection of our bid.

Name: \_\_\_\_\_

Legal Capacity: \_\_\_\_\_

Signature: \_\_\_\_\_

Duly authorized to sign the Bid for and behalf of: \_\_\_\_\_

Date: \_\_\_\_\_



BILL OF QUANTITIES AND BID PRICES						
Contract No.: <u>RIO-LMC-10d-2022</u>						
Description of Contract: <u>[Calanasan SRIP, Package 4 (Construction of Lined Canal, Canal Structure, Slope Protection Works for Line Canal and Repair of Damaged Canal)]</u>						
Location: <u>Calape, Bohol</u>						
ITEM NO.	DESCRIPTION	QTY.	UNIT	UNIT BID PRICE IN WORDS & IN FIGURES		TOTAL
<b>Canalization</b>						
1	Common Excavation (Manual)	383.33	cu.m.	P		P
2	Backfill with Compaction	682.32	cu.m.	P		P
3	Embankment Construction and Compaction	45.00	cu.m.	P		P
4	Class B Plain Concrete	193.68	cu.m.	P		P
5	Reinforcing Steel Bars	11,266.43	kg.	P		P
<b>Canal Structure</b>						
1	Structure Common Excavation (Mechanized)	108.47	cu.m.	P		P
2	Structure Backfill with Compaction	42.95	cu.m.	P		P
3	Class A Plain Concrete	18.42	cu.m.	P		P
4	Reinforcing Steel Bars	1,568.96	kg.	P		P
5	Lean Concrete	3.21	cu.m.	P		P
6	Rubble Masonry	310.68	cu.m.	P		P
7	Gravel Bedding	0.49	cu.m.	P		P
8	Demolition of Concrete	67.40	cu.m.	P		P
<b>Project Facilities</b>						
1	Temporary Works Construction, Mobilization and Demobilization	1.00	l.s.	P		P
2	Construction Safety, Health and Fire Protection Program	1.00	l.s.	P		P
	TOTAL AMOUNT OF BIDS					P
	(In words and Figures)					
The undersigned bidder hereby certifies that he has fully informed himself of all condition, local and otherwise affecting the carrying out of the Contract works and that his bid has been prepared in strict accordance with the terms and condition.						
Name of Firm: _____		Name in Print & Signature of Bidder _____				

