MONCADA WATER DISTRICT
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24/7 SERVICE OF POTABLE WATER

Water is Life

BIDDING DOCUMENTS

BULK WATER SUPPLY FOR MONCADA WATER DISTRICT

Government of the Republic of the Philippines

First Edition
July 2024

Preface

These Philippine Bidding Documents (PBDs) for the procurement of Goods through Competitive Bidding have been prepared by the Government of the Philippines for use by any branch, constitutional commission or office, agency, department, bureau, office, or instrumentality of the Government of the Philippines, National Government Agencies, including Government-Owned and/or Controlled Corporations, Government Financing Institutions, State Universities and Colleges, and Local Government Unit. The procedures and practices presented in this document have been developed through broad experience, and are for mandatory use in projects that are financed in whole or in part by the Government of the Philippines or any foreign government/foreign or international financing institution in accordance with the provisions of the 2016 revised Implementing Rules and Regulations of Republic Act No. 9184.

The Bidding Documents shall clearly and adequately define, among others: (i) the objectives, scope, and expected outputs and/or results of the proposed contract or Framework Agreement, as the case may be; (ii) the eligibility requirements of Bidders; (iii) the expected contract or Framework Agreement duration, the estimated quantity in the case of procurement of goods, delivery schedule and/or time frame; and (iv) the obligations, duties, and/or functions of the winning bidder.

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

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

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

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

c. This Preface and the footnotes or note in italics included in the Invitation to Bid, Bid Data Sheet, General Conditions of Contract, Special Conditions of Contract, Schedule of Requirements, and Specifications are not part of the text of the final document, although they contain instructions that the Procuring Entity should strictly follow.

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

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

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

Table of Contents

Glossary of Acronyms, Terms, and Abbreviations

ABC – Approved Budget for the Contract.

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.

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])

CDA - Cooperative Development Authority.

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.

CIF – Cost Insurance and Freight.

CIP – Carriage and Insurance Paid.

CPI – Consumer Price Index.

DDP – Refers to the quoted price of the Goods, which means "delivered duty paid."

DTI – Department of Trade and Industry.

EXW – Ex works.

FCA – "Free Carrier" shipping point.

FOB – "Free on Board" shipping point.

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]).

Framework Agreement – Refers to a written agreement between a procuring entity and a supplier or service provider that identifies the terms and conditions, under which specific purchases, otherwise known as "Call-Offs," are made for the duration of the agreement. It is in the nature of an option contract between the procuring entity and the bidder(s) granting the procuring entity the option to either place an order for any of the goods or services identified in the Framework Agreement List or not buy at all, within a minimum period of one (1) year to a maximum period of three (3) years. (GPPB Resolution No. 27-2019)

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.

GPPB – Government Procurement Policy Board.

INCOTERMS – International Commercial Terms.

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.

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.

Supplier – refers to a citizen, or any corporate body or commercial company duly organized and registered under the laws where it is established, habitually established in business and engaged in the manufacture or sale of the merchandise or performance of the general services covered by his bid. (Item 3.8 of GPPB Resolution No. 13-2019, dated 23 May 2019). Supplier as used in these Bidding Documents may likewise refer to a distributor, manufacturer, contractor, or consultant.

UN – United Nations.

Section I. Invitation to Bid

Notes on the Invitation to Bid

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

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

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

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

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

d. Any important bid evaluation criteria (*e.g.*, the application of a margin of preference in bid evaluation).

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

INVITATION TO BID FOR BULK WATER SUPPLY FOR MONCADA WATER DISTRICT (BARANGAY STA MONICA AND CALAPAN) (TEN YEAR CONTRACT)

1. The Moncada Water District, intends to purchase Bulk Water Supply at Thirteen Pesos and Fifty Centavos (P13.50) per cubic meter subject to parametric formula every three (3) years thereafter, through the MWD approved budget for the contract for the year 2024 in the amount of Twelve Million Five Hundred Ninety Seven Thousand One Hundred Twenty Pesos (12,597,120.00) for the first year inclusive of tax being the ABC to payments under the contract for Bulk Water Supply for Moncada Water District (MWD).

Number of Years	Flow Rate (Sta Monica & Calapan)
1^{st} – 3^{rd} year	2,592 cu.m./day
4^{th} – 6^{th} year	3,024 cu.m./day
7^{th} – 10^{th} year	3,456 cu.m./day

Bids received in excess of the ABC shall be automatically rejected at bid opening.

The *Moncada Water District* now invites bids for the above Procurement Project. Delivery of the Goods is required for the period of ten (10) years. Bidders should have completed, within three (3) years from the date of submission and receipt of bids, a contract similar to the Project which is at least fifty percent (50%) of the ABC. The description of an eligible bidder is contained in the Bidding Documents, particularly, in Section II (Instructions to Bidders).

2. Bidding will be conducted through open competitive bidding procedures using a non-discretionary "*pass/fail*" criterion as specified in the 2016 revised Implementing Rules and Regulations (IRR) of Republic Act (RA) No. 9184.

3. Prospective Bidders may obtain further information from *Moncada Water District* and inspect the Bidding Documents at the address given below during office hours from 8:00AM to 5:00PM Monday thru Friday.

4. A complete set of Bidding Documents may be acquired by interested Bidders on July 9 to 26, 2024 from the given address below, Phil GEPS and Procuring Entity's website and upon payment of the applicable fee for the Bidding Documents, pursuant to the latest Guidelines issued by the GPPB, in the amount of Ten Thousand Pesos (10,000.00). The fee shall be paid by the prospective bidder to the MWD's cashier prior to bid submission. The proof of payment, official receipt, shall be presented to the BAC Secretariat upon submission of bidding documents or send through electronic means prior to bid submission.

5. The *Moncada Water District* will hold a Pre-Bid Conference[1] on July 17, 2024 at 10:00 AM at *MWD Main Office at Barangay Poblacion 2 Moncada, Tarlac, face to face,* and 1:30 PM for the site visit which shall be open to prospective bidders.

6. Bids must be duly received by the BAC Secretariat through manual submission at the office address indicated below before 10:00 AM on July 29, 2024. Late bids shall not be accepted.

7. All Bids must be accompanied by a bid security in any of the acceptable forms and in the amount stated in **ITB** Clause 14.

8. Bid opening and evaluation shall be started on July 29-August 5, 2024 @ 10:30 AM at MWD Main Office at Barangay Poblacion 2 Moncada, Tarlac. Bid opening shall be face to face and bids will be opened in the presence of the bidders' representatives who choose to attend the activity.

The complete schedule of activities is listed as follows:

ACTIVITIES	SCHEDULE
Issuance of Complete Tender Documents	July 9 – 26, 2024
Pre-Bid Conference	July 17, 2024 @ 10:00 AM
Site Visit	July 17, 2024 @ 1:30 PM
Submission of Queries and Comments	July 18–26, 2024
Submission of Bid Proposals	July 29, 2024 @ 10:00 AM
Opening of Bid Proposals	July 29, 2024 @ 10:30 AM
Completion of Evaluation of Technical Proposal	July 30- August 5, 2024 @ 10:00 AM
Opening of Financial Proposal	July 29, 2024 @ 10:00 AM
Completion of Evaluation of Financial Proposal	July 30- August 5, 2024 @ 10:00 AM
Determination of Winning Bidder and Submission of Recommendation for Award to MWD Board	August 6, 2024
Issuance of Notice of Award	August 7, 2024
Issuance of Notice to Proceed	August 14, 2024

The *Moncada Water District* 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 IRR of RA No. 9184, without thereby incurring any liability to the affected bidder or bidders.

1. For further information, please refer to:

Engr. Marwin Christian A. Pagarigan
BAC Member
Barangay Poblacion 2,
Moncada, Tarlac
CP #: 09178674785
Email Address: moncadawd1978@gmail.com
Website:

Date of Issue: July 9, 2024

Jose C. Niegos
BAC Chairman

Section II. Instructions to Bidders

1. Scope of Bid

1.1. The procuring entity Moncada Water District hereinafter referred to as the "Procuring Entity" wishes to receive bids for supply and delivery of the goods as described in Bid Documents hereinafter referred to as the "Goods".

1.2. The name, identification, and number of lots specific to this bidding are provided in the BDS. The contracting strategy and basis of evaluation of bids is described in **ITB** Clause.

2. Funding Information

2.1. The GOP through the source of funding as indicated below in the amount of not exceeding Thirteen Pesos and Fifty Centavos (P 13.50) per cubic meter for the first three (3) years.

2.2. The source of funding is:

a. GOCC and GFIs, the proposed Corporate Operating Budget.

3. Bidding Requirements

The Bidding for the Project shall be governed by all the provisions of RA No. 9184 and its 2016 revised IRR, including its Generic Procurement Manuals 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 **ITB** 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 verified and accepted the general requirements of this Project, including 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, and Coercive Practices

The Procuring Entity, as well as the Bidders and Suppliers, 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.

a. Foreign ownership limited to those allowed under the rules may participate in this Project.

5.2. Pursuant to Section 23.4.1.3 of the 2016 revised IRR of RA No.9184, the Bidder shall have an SLCC that is at least one (1) contract similar to the Project the value of which, adjusted to current prices using the PSA's CPI, must be at least equivalent to:

For procurement where the Procuring Entity has determined, after the conduct of market research, that imposition of either (a) or (b) will likely result to failure of bidding or monopoly that will defeat the purpose of public bidding: The Bidder should comply with the following requirements: [*Select either failure or monopoly of bidding based on market research conducted*]

i. Completed at least two (2) similar contracts, the aggregate amount of which should be equivalent to at least *fifty percent (50%) in the case of non-expendable supplies and services or twenty-five percent (25%) in the case of expendable supplies*] of the ABC for this Project; and

ii. The largest of these similar contracts must be equivalent to at least half of the percentage of the ABC as required above.

5.3. The Bidders shall comply with the eligibility criteria under Section 23.4.1 of the 2016 IRR of RA No. 9184.

6. Origin of 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, subject to Domestic Preference requirements under **ITB** Clause 18.

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 twenty percent (20%) of the Project.

The Procuring Entity has prescribed that:

Subcontracting is not allowed.

7.2. *[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 criteria 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.

7.3. *[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.

7.4. Subcontracting of any portion of the Project does not relieve the Supplier 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 Supplier'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 at *MWD Main Office at Barangay Poblacion 2, Moncada, Tarlac* face to face as indicated in paragraph 5 of the **ITB.**

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 **ITB**, 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 VIII (Checklist of Technical and Financial Documents)**.

10.2. The Bidder's SLCC as indicated in **ITB** Clause 5.3 should have been completed within *five (5) years* prior to the deadline for the submission and receipt of bids.

10.3. 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. Similar to the required authentication above, 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.

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 VIII (Checklist of Technical and Financial Documents)**.

11.2. If the Bidder claims preference as a Domestic Bidder or Domestic Entity, a certification issued by DTI shall be provided by the Bidder in accordance with Section 43.1.3 of the 2016 revised IRR of RA No. 9184.

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

11.4. For Foreign-funded Procurement, a ceiling may be applied to bid prices provided the conditions are met under Section 31.2 of the 2016 revised IRR of RA No. 9184.

11.5. *[Include if Framework Agreement will be used:] Financial* proposals for single or multi-year Framework Agreement shall be submitted before the deadline of submission of bids as prescribed in the **ITB**. For multi-year Framework Agreement, evaluation of the financial proposal during this stage is for purposes of determining eligibility and whether or not such financial proposal is within the ABC.

12. Bid Prices

12.1. Prices indicated on the Price Schedule shall be entered separately in the following manner:

a. For Goods offered from within the Procuring Entity's country:

i. The price of the Goods quoted EXW (ex-works, ex-factory, ex-warehouse, ex-showroom, or off-the-shelf, as applicable);

ii. The cost of all customs duties and sales and other taxes already paid or payable;

iii. The cost of transportation, insurance, and other costs incidental to delivery of the Goods to their final destination; and

iv. The price of other (incidental) services, if any, listed in e.

b. For Goods offered from abroad:

i. Unless otherwise stated in the **BDS**, the price of the Goods shall be quoted delivered duty paid (DDP) with the place of destination in the Philippines as specified in the **BDS**. In quoting the price, the Bidder shall be free to use transportation through carriers registered in any eligible country. Similarly, the Bidder may obtain insurance services from any eligible source country.

ii. The price of other (incidental) services, if any, as listed in **Section VII (Technical Specifications).**

12.2. *[Include if Framework Agreement will be used:]* For Framework Agreement, the following should also apply in addition to Clause 12.1:

a. For a single year Framework Agreement, the prices quoted by the Bidder shall be fixed during the Bidder's performance of the contract and not subject to variation or escalation on any account. Price schedules required under Clause 12.1 shall be submitted with the bidding documents.

b. For a multi-year Framework Agreement, the prices quoted by the Bidder during submission of eligibility documents shall be the ceiling and the price quoted during mini-competition must not exceed the initial price offer. The price quoted during call for mini-competition shall be fixed during the Bidder's performance of that Call-off and not subject to variation or escalation on any account. Price schedules required under Clause 12.1 shall be submitted with the bidding documents.

13. Bid and Payment Currencies

13.1. For Goods that the Bidder will supply from outside the Philippines, the bid prices may be quoted in the local currency or tradeable currency accepted by the BSP at the discretion of the Bidder. However, for purposes of bid evaluation, Bids denominated in foreign currencies, shall be converted to Philippine currency based on the exchange rate as published in the BSP reference rate bulletin on the day of the bid opening.

13.2. Payment of the contract price shall be made in:

a. Philippine Pesos.

14. Bid Security

14.1. The Bidder shall submit a Bid Securing Declaration[2] or any form of Bid Security in the amount indicated in the **BDS**, which shall be not less than the percentage of the ABC in accordance with the schedule in the **BDS**.

14.2. The Bid and bid security shall be valid until [date]. Any Bid not accompanied by an acceptable bid security shall be rejected by the Procuring Entity as non-responsive.

14.3. *[Include if Framework Agreement will be used:]* In the case of Framework Agreement, other than the grounds for forfeiture under the 2016 revised IRR, the bid security may also be forfeited if the successful bidder fails to sign the Framework Agreement, or fails to furnish the performance security or performance securing declaration. Without prejudice on its forfeiture, bid securities shall be returned only after the posting of performance security or performance securing declaration, as the case may be, by the winning Bidder or compliant Bidders and the signing of the Framework Agreement.

15. 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 or any other electronic means, the Bidder shall submit an electronic copy of its Bid, which must be digitally signed. An electronic copy that cannot be opened or is corrupted shall be considered non-responsive and, thus, automatically disqualified.

16. Deadline for Submission of Bids

16.1. The Bidders shall submit at the specified date and time at their physical address through manual submission as indicated in paragraph 6 of the **ITB.**

16.2 *[Include if Framework Agreement will be used:] For* multi-year Framework Agreement, the submission of bids shall be for the initial evaluation of their technical and financial eligibility. Thereafter, those declared eligible during the said initial eligibility evaluation and entered into a Framework Agreement with the Procuring Entity shall submit anew their best financial offer at the address and on or before the date and time indicated in the Call for each mini- competition.

17. Opening and Preliminary Examination of Bids

17.1. The BAC shall open the Bids in public at the time, on the date, and at the place specified in paragraph 8 of the **ITB**. The Bidders' representatives who are present shall sign a register evidencing their attendance.

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

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

18. Domestic Preference

18.1. The Procuring Entity will grant a margin of preference for the purpose of comparison of Bids in accordance with Section 43.1.2 of the 2016 revised IRR of RA No. 9184.

18.2. *[Include if Framework Agreement will be used:] For* multi-year Framework Agreement, determination of margin of preference shall be conducted every call for Mini-Competition.

19. Detailed Evaluation and Comparison of Bids

19.1. The Procuring 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 the 2016 revised IRR of RA No. 9184.

[Include the following options if Framework Agreement will be used:]

a. In the case of single-year Framework Agreement, the Lowest Calculated Bid shall be determined outright after the detailed evaluation;

b. For multi-year Framework Agreement, the determination of the eligibility and the compliance of bidders with the technical and financial aspects of the projects shall be initially made by the BAC, in accordance with Item 7.4.2 of the Guidelines on the Use of Framework Agreement.

19.2. If the Project allows partial bids, bidders may submit a proposal on any of the lots or items, and evaluation will be undertaken on a per lot or item basis, as the case maybe. In this case, the Bid Security as required by **ITB** Clause 15 shall be submitted for each lot or item separately.

19.3. The descriptions of the lots or items shall be indicated in **Section VII (Technical Specifications)**, although the ABCs of these lots or items are indicated in the **BDS** for purposes of the NFCC computation pursuant to Section 23.4.2.6 of the 2016 revised IRR of RA No. 9184. The NFCC must be sufficient for the total of the ABCs for all the lots or items participated in by the prospective Bidder.

19.4. The Project shall be awarded as follows:

Option 1 – One Project having several items that shall be awarded as one contract.

19.5. Except for bidders submitting a committed Line of Credit from a Universal or Commercial Bank in lieu of its NFCC computation, all Bids must include the NFCC computation pursuant to Section 23.4.1.4 of the 2016 revised IRR of RA No. 9184, which must be sufficient for the total of the ABCs for all the lots or items participated in by the prospective Bidder. For bidders submitting the committed Line of Credit, it must be at least equal to ten percent (10%) of the ABCs for all the lots or items participated in by the prospective Bidder.

20. Post-Qualification

20.1. *[Include if Framework Agreement will be used:] F*or multi-year Framework Agreement, all bidders initially determined to be eligible and financially compliant shall be subject to initial post-qualification. The BAC shall then recommend the execution of a Framework Agreement among all eligible, technically and financially compliant bidders and the Procuring Entity shall be issued by a Notice to Execute Framework Agreement. The determination of the Lowest Calculated Bid (LCB) shall not be performed by the BAC until a Mini-Competition is conducted among the bidders who executed a Framework Agreement. When a Call for Mini-Competition is made, the BAC shall allow the bidders to submit their best financial proposals on such pre-scheduled date, time and place to determine the bidder with the LCB.

20.2. 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, {*[Include if Framework Agreement will be used:]* or in the case of multi-year Framework Agreement, that it is one of the eligible bidders who have submitted bids that are found to be technically and financially compliant,}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**. {*[Include if Framework Agreement will be used:]* For every mini-competition in Framework Agreement, the LCB shall likewise submit the required documents for final Post Qualification.}

21. Signing of the Contract

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

Section III. Bid Data Sheet

Notes on the Bid Data Sheet

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

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

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

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

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

Bid Data Sheet

ITB Clause	
1	For this purpose, contracts similar to the Project shall be related to ***water utility business or supply of bulk water to water utilities***; Conditions: a. Contract should have been completed within three (3) years prior to the deadline for the submission and receipt of bids. b. SLCC must be equal or at least fifty percent (50%) of the ABC. c. Bidders can also submit at least two (2) similar contracts with an aggregate amount equivalent to fifty percent (50%) of the ABC but the largest of which must be twenty-five percent (25%) of the ABC. d. Contract must be supported by any of the following; i. End User's Final Acceptance; or ii. Official Receipt; or iii. Sales Invoice
2	Subcontracting is not allowed.
3	MWD will hold a pre-bid conference for this Project on *July 17, 2024, 10:00 A.M., Thursday* face to face and site visit at *1:30 P.M.*.
4	Any request for clarification on the Bidding Documents must be done in writing at least ten (10) calendar days before the opening of bids and must be received through the given address below or through electronic mail: Moncada Water District, Barangay Poblacion 2 Moncada, Tarlac *Engr. Marwin Christian A. Pagarigan* BAC Member Cellphone No. 09178674785 Email: moncadawd1978@gmail.com
5	Documents comprising the Bid: **Legal Documents (Envelope 1)** a. PhilGEPS Platinum Certificate of Registration and Membership with Annex A; b. Statement of bidder's ongoing government and private contracts; c. Statement of bidder's Single Largest Completed Contract (SLCC); d. Net Financial Contracting Capacity computation (NFCC); e. Joint Venture Agreement (JVA), if applicable; **Technical Components** a. Bid Security; b. Production/Delivery Schedule;

	c. Site Inspection Certificate issued by Engineering Department d. Manpower Requirements; e. Conformity to Technical Specifications; f. BIR Certificate of Registration; g. Notarized Omnibus Sworn Statement with Secretary Certificate **<u>Financial Component (Envelope 2)</u>** a. Financial Bid Form; b. Price Schedule
6	The price of the Goods shall be quoted DDP *MWD Injection Points, as specified in the Terms of Reference (TOR).* No incidental services are required.
7	Payment of the contract price shall be made in Philippine Pesos.
8	The bid security shall be in the form of a Notarized Bid Securing Declaration, or any of the following forms and amounts: a. The amount of not less than ₱251,942.40 *(2% of ABC)*, if bid security is in cash, cashier's/manager's check, bank draft/guarantee or irrevocable letter of credit; or b. The amount of not less than ₱629,856.00 *(5% of ABC)* if bid security is in Surety Bond. Bidders must attach the Insurance Commissioner's Certificate.
9	The bid and bid security shall be valid until 120 days from the date of opening of bids.
10	Each Bidder shall submit in three (3) clear copies sealed and labeled one (1) original and two (2) duplicates of the first and second components of its bid. All copies of the documents shall be certified true copy and signed by the owner or authorized representative. Bidders are requested to properly tag or label each documentary requirements for easy reference during the evaluation.
11	The address for submission of bids is Moncada Water District, Barangay Poblacion 2, Moncada, Tarlac. The deadline for submission of bids is *July 29, 2024, 10:00 A.M.*
12	The address for opening of bids is Moncada Water District, *Barangay Poblacion 2, Moncada, Tarlac.* The opening of bids will be on *July 29, 2024, 10:30 A.M.* through face to face.

13	Partial bid is not allowed. The goods are grouped in a single lot and the lot shall not be divided into sub-lots for the purpose of bidding, evaluation, and contract award.
14	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 the following additional requirements filed and paid through the BIR Electronic Filing and Payment System (eFPS): 1. Latest Annual Income Tax Returns; and 2. Business Tax Returns (six [6] months prior to the opening of bids [VAT or Percentage Tax]); In case the bidder opted to submit their Class "A" Documents, the Certificate of PhilGEPS Registration (Platinum Membership) shall remain as a post-qualification requirement to be submitted in accordance with Section 34.2 of the 2016 Revised IRR of RA 9184 (Circular 07-2017).
15	*No additional requirements.*

Section IV. General Conditions of Contract

Notes on the General Conditions of Contract

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

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

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

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.

Additional requirements for the completion of this Contract shall be provided in the **Special Conditions of Contract** (**SCC).**

2. Advance Payment and Terms of Payment

2.1. Advance payment of the contract amount is provided under Annex "D" of the revised 2016 IRR of RA No. 9184.

2.2. The Procuring Entity is allowed to determine the terms of payment on the partial or staggered delivery of the Goods procured, provided such partial payment shall correspond to the value of the goods delivered and accepted in accordance with prevailing accounting and auditing rules and regulations. The terms of payment are indicated in the **SCC**.

3. Performance Security

Within ten (10) calendar days from receipt of the Notice of Award by the Bidder from the Procuring Entity but in no case later than prior to 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 of RA No. 9184.

4. Inspection and Tests

The Procuring Entity or its representative shall have the right to inspect and/or to test the Goods to confirm their conformity to the Project Specifications at no extra cost to the Procuring Entity in accordance with the Generic Procurement Manual. In addition to tests in the **SCC**, **Section IV (Technical Specifications)** shall specify what inspections and/or tests the Procuring Entity requires, and where they are to be conducted. The Procuring Entity shall notify the Supplier in writing, in a timely manner, of the identity of any representatives retained for these purposes.

All reasonable facilities and assistance for the inspection and testing of Goods, including access to drawings and production data, shall be provided by the Supplier to the authorized inspectors at no charge to the Procuring Entity.

5. Warranty

5.1 In order to assure that manufacturing defects shall be corrected by the Supplier, a warranty shall be required from the Supplier as provided under Section 62.1 of the 2016 revised IRR of RA No. 9184.

5.2 The Procuring Entity shall promptly notify the Supplier in writing of any claims arising under this warranty. Upon receipt of such notice, the Supplier shall, repair or replace the defective Goods or parts thereof without cost to the Procuring Entity, pursuant to the Generic Procurement Manual.

6. Liability of the Supplier

The Supplier's liability under this Contract shall be as provided by the laws of the Republic of the Philippines.

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

Section V. Special Conditions of Contract

Notes on the Special Conditions of Contract

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

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

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

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

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

Special Conditions of Contract

GCC Clause	
1	*[List here any additional requirements for the completion of this Contract. The following requirements and the corresponding provisions may be deleted, amended, or retained depending on its applicability to this Contract:]* **Delivery and Documents –** For purposes of the Contract, "EXW," "FOB," "FCA," "CIF," "CIP," "DDP" and other trade terms used to describe the obligations of the parties shall have the meanings assigned to them by the current edition of INCOTERMS published by the International Chamber of Commerce, Paris. The Delivery terms of this Contract shall be as follows: *[For Goods supplied from abroad, state:]* "The delivery terms applicable to the Contract are DDP delivered to *MWD Injection Points, as specified in the Terms of Reference (TOR)*. In accordance with INCOTERMS." *[For Goods supplied from within the Philippines, state:*] "The delivery terms applicable to this Contract are delivered *MWD Injection Points, as specified in the Terms of Reference (TOR).* Risk and title will pass from the Supplier to the Procuring Entity upon receipt and final acceptance of the Goods at their final destination." Delivery of the Goods shall be made by the Supplier in accordance with the terms specified in Section VI (Schedule of Requirements). For purposes of this Clause the Procuring Entity's Representative at the Project Site is the *Engineering Department.* **Incidental Services –** The Supplier is required to provide all of the following services, including additional services, if any, specified in Section VI. Schedule of Requirements: a. performance or supervision of on-site assembly and/or start-up of the supplied Goods; b. furnishing of tools required for assembly and/or maintenance of the supplied Goods; c. furnishing of a detailed operations and maintenance manual for each appropriate unit of the supplied Goods; d. performance or supervision or maintenance and/or repair of the supplied Goods, for a period of time agreed by the parties, provided that this service shall not relieve the Supplier of any warranty obligations under this Contract; and

	e. training of the Procuring Entity's personnel, at the Supplier's plant and/or on-site, in assembly, start-up, operation, maintenance, and/or repair of the supplied Goods. The Contract price for the Goods shall include the prices charged by the Supplier for incidental services and shall not exceed the prevailing rates charged to other parties by the Supplier for similar services. **Spare Parts –** The Supplier is required to provide all of the following materials, notifications, and information pertaining to spare parts manufactured or distributed by the Supplier: a. such spare parts as the Procuring Entity may elect to purchase from the Supplier, provided that this election shall not relieve the Supplier of any warranty obligations under this Contract; and b. in the event of termination of production of the spare parts: i. advance notification to the Procuring Entity of the pending termination, in sufficient time to permit the Procuring Entity to procure needed requirements; and ii. following such termination, furnishing at no cost to the Procuring Entity, the blueprints, drawings, and specifications of the spare parts, if requested. The spare parts and other components required are listed in **Section VI (Schedule of Requirements)** and the cost thereof are included in the contract price. The Supplier shall carry sufficient inventories to assure ex-stock supply of consumable spare parts or components for the Goods for a period of three (3) years. Spare parts or components shall be supplied as promptly as possible, but in any case, within three (3) years of placing the order.
	Packaging – The Supplier shall provide such packaging of the Goods as is required to prevent their damage or deterioration during transit to their final destination, as indicated in this Contract. The packaging shall be sufficient to withstand, without limitation, rough handling during transit and exposure to extreme temperatures, salt and precipitation during transit, and open storage. Packaging case size and weights shall take into consideration, where appropriate, the remoteness of the Goods' final destination and the absence of heavy handling facilities at all points in transit.

	The packaging, marking, and documentation within and outside the packages shall comply strictly with such special requirements as shall be expressly provided for in the Contract, including additional requirements, if any, specified below, and in any subsequent instructions ordered by the Procuring Entity. The outer packaging must be clearly marked on at least four (4) sides as follows: Name of the Procuring Entity Name of the Supplier Contract Description Final Destination Gross weight Any special lifting instructions Any special handling instructions Any relevant HAZCHEM classifications
	A packaging list identifying the contents and quantities of the package is to be placed on an accessible point of the outer packaging if practical. If not practical the packaging list is to be placed inside the outer packaging but outside the secondary packaging. **Transportation –** Where the Supplier is required under Contract to deliver the Goods CIF, CIP, or DDP, transport of the Goods to the port of destination or such other named place of destination in the Philippines, as shall be specified in this Contract, shall be arranged and paid for by the Supplier, and the cost thereof shall be included in the Contract Price. Where the Supplier is required under this Contract to transport the Goods to a specified place of destination within the Philippines, defined as the Project Site, transport to such place of destination in the Philippines, including insurance and storage, as shall be specified in this Contract, shall be arranged by the Supplier, and related costs shall be included in the contract price.
	Where the Supplier is required under Contract to deliver the Goods CIF, CIP or DDP, Goods are to be transported on carriers of Philippine registry. In the event that no carrier of Philippine registry is available, Goods may be shipped by a carrier which is not of Philippine registry provided that the Supplier obtains and presents to the Procuring Entity certification to this effect from the nearest Philippine consulate to the port of dispatch. In the event that carriers of Philippine registry are available but their schedule delays the Supplier in its performance of this Contract the period from when the Goods were first ready for shipment and the actual date of shipment the period of delay will be considered force majeure. The Procuring Entity accepts no liability for the damage of Goods during transit other than those prescribed by INCOTERMS for DDP deliveries. In the case of Goods supplied from within the Philippines or supplied by domestic Suppliers risk and title will not be deemed to have passed to the Procuring Entity until

	their receipt and final acceptance at the final destination. **Intellectual Property Rights –** The Supplier shall indemnify the Procuring Entity against all third-party claims of infringement of patent, trademark, or industrial design rights arising from use of the Goods or any part thereof.
2	The terms of payment shall be made as stipulated in the Purchase Order.
3	The inspections and tests that will be conducted are initial operation and performance.

Section VI. Schedule of Requirements

The delivery schedule expressed as weeks/months stipulates hereafter a delivery date which is the date of delivery to the project site.

PHASE I

Description	Quantity	Unit	Delivered, Calendar Days
Bulk Water Supply for Moncada Water District (Barangay Sta Monica – Phase I)	1,296 (1st – 3rd year)	cu.m./day	One Hundred Eighty (180) Calendar Days upon receipt of Notice to Proceed.
	1,512 (3rd – 6th year)	cu.m./day	
	1,728 (7th – 10th year)	cu.m./day	

PHASE II

Description	Quantity	Unit	Delivered, Calendar Days
Bulk Water Supply for Moncada Water District (Barangay Calapan – Phase II)	1,296 (1st – 3rd year)	cu.m./day	One Hundred Eighty (180) Calendar Days upon receipt of Notice to Proceed.
	1,512 (3rd – 6th year)	cu.m./day	
	1,728 (7th – 10th year)	cu.m./day	

Section VII. Technical Specifications

Notes for Preparing the Technical Specifications

A set of precise and clear specifications is a prerequisite for Bidders to respond realistically and competitively to the requirements of the Procuring Entity without qualifying their Bids. In the context of Competitive Bidding, the specifications (*e.g.* production/delivery schedule, manpower requirements, and after-sales service/parts, descriptions of the lots or items) must be prepared to permit the widest possible competition and, at the same time, present a clear statement of the required standards of workmanship, materials, and performance of the goods and services to be procured. Only if this is done will the objectives of transparency, equity, efficiency, fairness, and economy in procurement be realized, responsiveness of bids be ensured, and the subsequent task of bid evaluation and post-qualification facilitated. The specifications should require that all items, materials and accessories to be included or incorporated in the goods be new, unused, and of the most recent or current models, and that they include or incorporate all recent improvements in design and materials unless otherwise provided in the Contract.

Samples of specifications from previous similar procurements are useful in this respect. The use of metric units is encouraged. Depending on the complexity of the goods and the repetitiveness of the type of procurement, it may be advantageous to standardize the General Technical Specifications and incorporate them in a separate subsection. The General Technical Specifications should cover all classes of workmanship, materials, and equipment commonly involved in manufacturing similar goods. Deletions or addenda should then adapt the General Technical Specifications to the particular procurement.

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

Sample Clause: Equivalency of Standards and Codes

Wherever reference is made in the Technical Specifications to specific standards and codes to be met by the goods and materials to be furnished or tested, the provisions of the latest edition or revision of the relevant standards and codes shall apply, unless otherwise expressly stated in the Contract. Where such standards and codes are national or relate to a particular country or region, other authoritative standards that ensure substantial equivalence to the standards and codes specified will be acceptable.

Reference to brand name and catalogue number should be avoided as far as possible; where unavoidable they should always be followed by the words "*or at least equivalent*." References to brand names cannot be used when the funding source is the GOP.

Where appropriate, drawings, including site plans as required, may be furnished by the Procuring Entity with the Bidding Documents. Similarly, the Supplier may be requested to provide drawings or samples either with its Bid or for prior review by the Procuring Entity during contract execution.

Bidders are also required, as part of the technical specifications, to complete their statement of compliance demonstrating how the items comply with the specification.

Technical Specifications

DESCRIPTIONS/SPECIFICATIONS	STATEMENT OF COMPLIANCE (State "Comply or not Comply" for each item description and specifications and attach your company shop/drawing and or brochures / and or Literatures)

BULK WATER SUPPLY FOR MONCADA WATER DISTRICT (BARANGAY STA MONICA (Phase I) AND CALAPAN (Phase II), TEN-YEAR CONTRACT)

TERMS OF REFERENCES (TOR)

SECTION	CLAUSE NO. AND TITLE	DETAILS	
1	**PROJECT DESCRIPTION**	1.1 This is a bulk water supply contract whereby potable and treated water shall be delivered by the BULK WATER SUPPLIER to MWD at a specified volume and at a pre-determined injection point and location in Barangay Sta Monica (Phase I) and Calapan, (Phase II) Moncada, Tarlac. 1.2 It is expressly understood by the BULK WATER SUPPLIER that the installation of equipment or appurtenances required under the contract shall not change the nature of the agreement which is strictly a water supply contract which will fall under the procurement of goods as defined in the Revised IRR of the R.A. 9184. 1.3 The BULK WATER SUPPLIER shall abstract, design and construct a Water Extraction Facility including its transmission lines that will extract and treat water from deep well water sources.	
2	**DEFINITION OF TERMS**	Agreement: - refers to this Bulk Water Supply Contract (including all schedules attached thereto), as the same may be amended, supplemented and modified from time to time. This shall be interchangeably used with the term "CONTRACT". Base Rate:	

		- shall mean the initial water price/rate inclusive of VAT offered by the winning SUPPLIER. For purposes of computing the water price adjustment, this shall mean the current water price/rate. BWSP: - shall mean "BULK WATER SUPPLY PROJECT." It may be interchangeably with the word "PROJECT" or the phrase "WATER PLANT." Calibration: - the process of checking and verifying the performance and accuracy of the flow meter system using verificator equipment and clamp-on flowmeter calibrated by a third-party accredited calibrator. MWD: - shall mean Moncada Water District Dispute: - Disagreement, controversy, claim or difference of any kind whatsoever arising out of or relating to this Agreement or any arrangement relating thereto or contemplated herein, or breach or termination or invalidity hereof. Facilities: - includes the extraction, treatment, distribution, land structures and improvements and other related equipment and instruments. Force Majeure: - shall mean any event or circumstance or combination thereof that wholly or partly prevents or unavoidably delays any party in the performance of its obligation under this Agreement, but only to the extent that such events and circumstances are not within reasonable control, directly or indirectly, of the affected party and could not have been avoided even if the affected party had taken reasonable care. "Force Majeure Event" includes the events and circumstances provided for in Section 12 of this agreement to the extent that they, or their consequences, satisfy the above requirement. Government Permits: - shall mean such permits, licenses, agreements, orders, certificates, exemptions, registrations, filings, enrollments, authorizations, consents, and	

		other approvals by or with the Government, which may be required in connection with SUPPLIER'S design, construction, testing, operation, maintenance, or management of the Water Plant. Ground Water: - is water extracted beneath the surface of the ground. Independent Laboratory: - is any DOH-accredited laboratory capable of conducting water analysis not owned or controlled by either or both parties. Inspection: - means the conduct of any investigation/ verification/ examination which includes but not limited to water sampling for analysis. LWUA: - shall mean Local Water Utilities Administration. Monthly Charge: - means the amount that the MWD shall be liable to the Supplier for the delivery of the bulk treated water to be computed in accordance with Appendix A. Party/Parties: - shall mean MWD and BULK WATER SUPPLIER. A party shall mean any of them. Portable Water: - refers to delivered treated water whose quality complies with Philippine National Standards for Drinking Water (PNSDW) (LWUA-DOH) for Bulk Water. Privatization: - is the event that the equity interests of MWD, or any other portion of the assets or business activities of MWD is sold, taken over or otherwise transferred to another Person (or any such sale, taking over or transfer is announced), or if LWUA takes over the facilities or management of MWD, or any merger or other corporate reorganization or privatization of MWD takes place. Project: - shall mean the financing, design, supply, construction, testing, operation, maintenance, and	

		management of the Water Plant. It may be used interchangeably with the initials "BWSP" or the phrases "Bulk Water Supply Project' or "Water Plant." Sunset Date: - is a measure within a statute, regulation or other law that provides that the law shall cease to have effect after a specific date, unless further legislative action is taken to extend the law. Surface Water: - is water from rivers, streams, springs, lake and the like. Start-up of Delivery: - shall mean One Hundred Eighty (180) calendar days each Phase of the project from receipt of notice to proceed issued by MWD. Taxes: - shall mean any tax, charge, impost, tariff, duty, fee, imposition, or assessment of any kind charged, imposed or levied, directly or indirectly, by the Republic of the Philippines, or any of its agencies or instrumentalities, against BULK WATER SUPPLIER, its Lenders, shareholders, or contractors, or against the Project itself, including but not limited to any income tax, value-added tax, sales tax, stamp tax, import duty, tax (whether on dividends, interest payments, fees, equipment rentals or otherwise), tax on foreign currency loans or foreign exchange transactions, excise tax, property tax, registration fee or license, or environmental assessments. Third Party: - shall mean any entity, corporation or individual other than MWD and BULK WATER SUPPLIER. Water Treatment Plant: - shall mean the facility where bulk water supply is treated and processed for supply to the MWD. It is the bulk water supply project owned, operated and managed by BULK WATER SUPPLIER. This term may be used interchangeably with the word "PROJECT," the initials "BWSP", and the phrase "BULK WATER SUPPLY PROJECT." Water Quality Standard: - refers to Philippine National Standards for Drinking	

Water (PNSDW) (LWUA-DOH) for Bulk Water.

Water Supply Contract:

- shall mean the supply of potable water to the MWD point of delivery by the BULK WATER SUPPLIER. This falls under the procurement of goods and services as differentiated from infrastructure project of the Revised IRR of RA. 9184.

3 **TERM AND PROJECT MILESTONES**

3.1 This Agreement shall commence on the date of signing. It shall remain in full force and effect for a period of ten (10) years from the intended Start-up delivery.

3.2 Start-up delivery should be within One Hundred Eighty (180) calendar days each Phase of the project from receipt of Notice to Proceed issued by MWD. Any delay in the date of delivery shall in no way extend the term of this Agreement.

3.3 Prior to start-up delivery, the BWS should be able to pass the following parameters:

PARAMETER	STANDARD VALUES	CONDUCTED BY
I. MICROBIOLOGICAL		MWD
1. Total Coliform	MTFT: <1.1 MPN/100 mL CST: Absent or <1.1 MPN/100mL	
2. Thermotolerant Coliform / *E.coli*	MTFT: <1.1 MPN/100 mL CST: Absent or <1.1 MPN/100mL	
3. Heterotrophic Plate Count (HPC)	<500 CFU/mL	
II. PHYSICAL		BWS FROM ACCREDITED LABORATORY
Color		
- **Apparent**	10 color units	
- **True**	5 color units	
Turbidity	≤ 5 NTU	
III. CHEMICAL		BWS FROM ACCREDITED LABORATORY
Arsenic	0.05 mg/L	
Cadmium	0.003 mg/L	
Lead	0.01 mg/L	
Nitrate	≤ 50 mg/L	
Benzene	0.01 mg/L	
Iron	< 1 mg/L	
pH	6.5 – 8.5	

Manganese	<0.40 mg/L	
Chloride	< 250 mg/L	
Sulfate	≤ 250 mg/L	
Total Dissolved Solids	≤ 500 mg/L	
IV. RESIDUAL DISINFECTANT		COWD
Chlorine Residual (as free chlorine)	0.3 ppm to 1.5 ppm	

(Based on the mandatory parameters required by PNSDW 2017 ed.)

Sample will be collected at the following points:

TYPE	LOCATION
1. Microbiological	Mother Meter
2. Physical	Deep Well Pump
3. Chemical	Deep Well Pump
4. Residual Chlorine	Mother Meter

When the parameters listed under Section 3.3 has been complied with, MWD shall issue a Certificate of Acceptance.

4	**PERMITS, LICENSES, TAXES, LAND RIGHTS AND ENVIRONMENTAL STANDARDS**	4.1 With the assistance of MWD, the BULK WATER SUPPLIER shall secure water rights from the National Water Resources Board (NWRB). The BULK WATER SUPPLIER shall also be responsible for securing licenses and/or permit required by the local government unit agency or office for the operation of the water source and land rights. The BULK WATER SUPPLIER shall also be responsible for the payment of all national and local taxes, customs, duties, fees and the like whatsoever arising in connection with the project. The acquisition or lease of lot for the duration of this contract in putting up their water treatment plant shall be the responsibility of the BULK WATER SUPPLIER, including right of way acquisition of such lots needed for the projects. 4.2 Any other license and/or permit required by the local government unit, agency or office for the operation of the water source and land rights shall be the sole responsibility of the BULK WATER SUPPLIER. Cease and desist order or any similar interruption in the operation due to the BULK WATER SUPPLIER's noncompliance of permits and/or licenses shall make the BULK WATER SUPPLIER liable for penalties under Section 15. Termination and shall further give MWD the option to rescind this Agreement.	

		4.3 The BULK WATER SUPPLIER shall be responsible for the payment of any fee, assessment or imposition including LGU share, business permit, franchising fees or such other fees if applicable that may be imposed by any agency or local government unit in the process of extracting or collecting water from its source and its transportation to the specified injection points. 4.4 The BULK WATER SUPPLIER shall submit environmental compliance documents required by the Government.	
5	**INJECTION POINT**	5.1 The water to be delivered shall be injected directly to the following injection points: a. Barangay Sta Monica existing distribution line b. Barangay Calapan existing distribution line The interconnection at the respective injection points must be provided with electromagnetic flowmeters and other appurtenances enclosed in a metering chamber by the BULK WATER SUPPLIER. 5.2 The BULK WATER SUPPLIER shall allow MWD to install data loggers for monitoring of flow and pressure.	
6	**QUANTITY/ VOLUME OF WATER METERING AND MEASUREMENT**	6.1 The BULK WATER SUPPLIER shall deliver to MWD the potable water at volume and pressure indicated in Appendix A. Schedule of Delivery. 6.2 The total volume of potable water delivered by the BULK WATER SUPPLIER shall be measured by a flowmeter which shall be installed in a metering chamber to be constructed by the BULK WATER SUPPLIER at the respective injection points. The said flowmeter and appurtenances shall be provided, owned, installed and maintained by the BULK WATER SUPPLIER. The MWD on the other hand, may also install a flowmeter for counter checking purposes. 6.3 To ensure volume calculation accuracy, the flowmeter must be calibrated every year by an accredited Third party agreed by MWD and BWS as specified in Section 8, Calibration and Inspection. 6.4 The Bulk Water Supplier shall be penalized in accordance with Appendix B. Penalties for Under-delivery of Minimum Contracted Water Demand.	
7	**METERING AND MEASUREMENT**	7.1 The BWS shall install the Metering System using Electromagnetic Flowmeter. The BWS shall be responsible in the construction of the metering chamber including valves and other fittings.	

		7.2 The bulk treated water delivered at the Delivery Points shall be measured by the Metering System in accordance with the following reading and recording procedures: (a) representatives of the Parties shall jointly attend and witness such reading of the figures of the Metering System every 1:00 PM in the afternoon for Barangay Sta Monica and 2:30 PM for Barangay Calapan. In the absence of either party's representative, the present party's meter reading shall still be valid and must be supported with the photo of the water meter reading with time and date stamp; (b) this shall be supported by Minutes of Reading and Record duly confirmed by authorized representatives of both parties; (c) copy of the Minutes of Reading and Record in respect of each billing period shall be delivered by the BWS to MWD as part of the invoicing documents for that billing period. 7.3 The metering system shall be installed with two (2) padlocks. (1st padlock shall be maintained by BWS, and the 2nd padlock shall be maintained by MWD.) Any adjustment and maintenance of the metering system shall be done in the presence of the representatives from both parties.	
8	**CALIBRATION AND INSPECTION**	8.1 The Bulk Water Supplier shall procure the Metering System to be: (a) calibrated by a third-party accredited calibrator jointly appointed by the Bulk Water Supplier and the MWD using an on-site verification system and clamp-on flowmeter witnessed by representatives of MWD and (b) re-calibrated every 12 months using the same procedure stated above. In addition, the accuracy of the Metering System shall be tested periodically in accordance with the procedures to be agreed upon in writing by the Parties. The costs of such calibration, re-calibration, and inspection of the Metering System shall be shouldered by the Bulk Water Supplier. 8.2 Notwithstanding the foregoing, if MWD has any doubt as to the accuracy of the Metering System, MWD may require the Bulk Water Supplier to re-calibrate the Metering System in addition to the regular and schedule re-calibration of the Metering System. If upon recalibration the result is normal, the cost of such calibration, re-calibration, and inspection of the Metering System shall be charged to MWD. Otherwise, the costs of such calibration, re-calibration,	

		and inspection of the Metering System shall be for the account of the Bulk Water Supplier. 8.3 The determination of the actual volumes of bulk treated water delivered for purposes of calculating the payments due by MWD to the Bulk Water Supplier shall be based on the following principles: a. the bulk treated water volume shall be the total flow readings from Barangay Sta Monica and Barangay Calapan delivery points; b. the bulk water meters should be electro-magnetic full-bore flow meters; c. the meters shall be deemed to be accurate for the purpose of calculation of payment; d. if an obvious error or malfunctioning of the bulk meter has been established in the flow reading of certain bulk meter, an averaging of the hourly readings of the previous 30 days should be considered; e. if the total readings of any of the bulk meters differ by more or less than 30% from the previous months without any reasonable explanation for the variance, the volume of the bulk treated water delivered shall be based on the average hourly readings for the previous 30 days, and the Bulk Water Supplier shall immediately repair/ replace the electro-magnetic flowmeter; f. the time of reckoning for the 24-hour flow meter reading shall be every 1:00 PM and 2:30 PM of the day for Barangay Sta Monica and Barangay Calapan, respectively.	
9	**QUALITY OF WATER**	9.1 The water produced must, at all times, pass the standards set by the Philippine National Standard for Drinking Water (PNSDW). There shall be two (2) kinds of water analyses to be performed at the Injection Point Area to check the quality standards of water: the microbiological and physical and chemical analyses. 9.2 The BWS shall, at its own cost and expense, engage the services of an Independent Laboratory acceptable to MWD for the Annual Physical and Chemical Analyses. BWS is also required to collect samples and to conduct daily analysis for the microbiological, residual chlorine, pH and turbidity test. A copy of the test results shall be submitted monthly to MWD for monitoring of the BULK WATER SUPPLIER's compliance with the water quality standards. 9.3 To ensure that the quality of potable water is within the required PNSDW for BULK WATER, the BULK	

		WATER SUPPLIER shall allow MWD to conduct inspection of its potable water as it deems fit and is allowed free and unhampered access to its facilities. 9.4 MWD reserves the right to demand from the BULK WATER SUPPLIER the immediate repeat testing on particular water quality parameters with aesthetic effects, when it is found out to be questionable or to be out of order within six (6) hours therefrom. When the repeat testing results of the BULK WATER SUPPLIER would not accord with MWD laboratory findings, immediate split sampling and testing with other accredited independent laboratory shall be sought by the BULK WATER SUPPLIER to resolve the questionable water quality issue. If the water quality parameter in dispute has not been resolved within 24 hours, MWD reserves the right to order for an immediate shutdown of the water supply. 9.5 The BULK WATER SUPPLIER is required to submit reports to MWD pertaining water quality as required by the PNSDW and LWUA-DOH standards. 9.6 The BULK WATER SUPPLIER must maintain at all times 0.3-1.5 ppm Gas Chlorine residual and less than 5 NTU turbidity at the injection point. 9.7 In any event, when other water quality parameters with health significance are found to be deviating from PNSDW standards, such as but not limited to bacteriological, heavy metals, pesticides, organics and the like, MWD may give a cease and desist order for the immediate shutdown of the operation of the BULK WATER SUPPLIER if not resolved within 24 hours as specified in Section 9.4. In such case, MWD shall likewise close the valve at the injection point and shall not be liable for any damage that may be incurred by the closing of the valve. Operations shall only resume if all water quality disputes shall be resolved. 9.8 The Bulk Water Supplier shall be penalized in accordance with Appendix C. Penalties for Delivery of Bulk Treated Water for nonconformance of Water Quality Standards.	
10	**PAYMENT**	10.1 MWD shall pay for the water delivered by the BULK WATER SUPPLIER at a base rate of Thirteen Pesos and Fifty Centavos (P13.50) per cubic meter inclusive of all taxes and shall be subjected to rate adjustment every three (3) years thereafter based on the parametric formula set forth in Appendix D. Monthly Charge.	

		10.2 The BULK WATER SUPPLIER shall bill MWD on a monthly basis. MWD shall ensure that all billings for water produced and delivered shall be paid not later than thirty (30) calendar days upon determination of the accuracy of the billed volume and amount. 10.3 The BULK WATER SUPPLIER shall be responsible for the payment of any fee, assessment or imposition including LGU share, business permit, franchising fees or such other fees if applicable that may be imposed by any agency or local government unit in the process of extracting or collecting water from its source and its transportation to the specified injection point. This likewise includes all other fees and expenses made or due to any public or private entity. 10.4 MWD is authorized to withhold 1% and 5% thereof an expanded withholding tax and final withholding value added tax respectively until the BULK WATER SUPPLIER can present an exemption from payment of these taxes. These percentages shall accordingly change in compliance with any subsequent government changes in laws, regulations, and rules pertaining to these taxes. 10.5 That any provision to the contrary notwithstanding, all payment shall be subject to existing laws and accounting and auditing rules and regulations in the Philippines.	
11	**WATER PRICE/RATES**	11.1 The treated bulk water shall be sold by the BULK WATER SUPPLIER to MWD at a base rate for the first 3 years of operation, as specified in Appendix D. Monthly Charge, hereof. 11.2 The Bulk Water Rate is subject to either increase or decrease (as applicable) every three (3) years thereafter based on the parametric formula set out in Appendix D. 11.3 Provided further that no increase in bulk water rate shall be implemented unless MWD has able to implement its projected water rate increase.	
12	**FORTUITOUS EVENT/FORCE MAJEURE**	12.1 "Force Majeure Event"' shall mean any event or circumstance or combination thereof that wholly or partly prevents or unavoidably delays any party in the performance of its obligation under this Agreement, but only to the extent that such events and circumstances are not within reasonable control, directly or indirectly, of the affected party and could	

		not have been avoided even if the affected party had taken reasonable care. As used in this Agreement, "Force Majeure Event" shall mean: a. unusual flood, drought, earthquake, volcanic eruption, storm, lightning, tide (other than normal tide), tidal wave, unusually severe weather conditions, perils of the sea, accidents of navigation or breakdown or injury of vessels, accidents to harbors, docks, canals or other assistance to or adjuncts of shipping or navigation, epidemic, quarantine, strikes or combination of workmen, lockouts or other labor disturbances, or any other event, matter or thing, wherever occurring, which shall not be within the reasonable control of the Party affected thereby or any war, declared or not, or hostilities or belligerence, blockade, revolution, insurrection, insurgency, riot, public disorder expropriation, requisition, confiscation or nationalization, export or import restrictions, closing of harbors, docks, canals or other assistance to or adjuncts of shipping or navigation of or within any place, rationing or allocation, whether imposed by law, decree or regulation by, or by compliance of industry at the insistence of, any government, in each of the above cases not involving any Governmental Authority of, or within, the Philippines; 12.2 Procedure to invoke Force Majeure. The Party invoking a Force Majeure Event shall notify the other Party not later than three (3) days after commencement of the force majeure, in writing or through electronic mail, of the occurrence and nature of the Force Majeure Event and the extent to which such Force Majeure Event suspends the affected Party's obligations under the relevant Project Agreement; provided, that such Party shall resume performance of its obligations as soon as the effects of the Force Majeure Event cease to exist. If: a. Any single Force Majeure Event applies for a period in excess of 90 days; or b. the effect of a single Force Majeure Event, together with the effects of all prior Force Majeure Events applies for a period in excess of 180 days in the aggregate, then at the Private Sector Partner's request or request of either party, the Parties shall meet to discuss and agree on the	

		basis and terms upon which the Agreement may be continued. In case the Parties are unable to agree on such basis and terms within 20 Business Days following the expiry of such 180-day period, then Section 15 (Termination) shall apply.	
13	**STEP-IN RIGHTS**	13.1 MWD shall have the right but not the obligation to assume operational responsibility of the Facilities in place of the BULK WATER SUPPLIER for purposes of assuring continued and uninterrupted supply of treated water to MWD. For this purpose, prior notice should be given by MWD to the BULK WATER SUPPLIER. 13.2 This right may be exercised by MWD in the following cases: a. Failure to correct deviation in the PNSDW parameter for Bulk Water for more than 48 hours. b. Complete stoppage of its operations for any reason and for whatever circumstance and such stoppage continued for more than 48 hours. c. Other circumstances which could adversely affect BULK WATER SUPPLIER's ability to comply with any of its obligation under this Agreement. 13.3 The BULK WATER SUPPLIER hereby authorizes MWD and its authorized representatives to immediately enter the BWS's premises and take control of its facilities, equipment, and devices, for purposes of exercising its Step-In Rights under the grounds provided in the preceding paragraph. MWD shall exercise due care in operating the Facilities. On the other hand, the BULK WATER SUPPLIER shall be allowed to monitor MWD's operations. 13.4 The exercise of this right shall not in any way be construed as a buyout or takeover of the Facilities by MWD. 13.5 MWD shall revert operational responsibility to the BULK WATER SUPPLIER at MWD's sole discretion or after the circumstances warranting the exercise of this right shall have ceased. 13.6 The exercise of Step-In Rights by MWD shall be without prejudice to the imposition of any penalty upon the BULK WATER SUPPLIER in accordance	

		with the provisions of this agreement or any case pending before courts of law or issues subjected to mediation or arbitration proceedings.	
14	**DAMAGES AND PENALTIES**	14.1 LIQUIDATED DAMAGES. MWD shall impose liquidated damages for delay in start-up of delivery to be computed as follows: LD per day = 2,592 cu.m./day x No. of days delayed x price per cu.m. x 0.001. It is understood that the liquidated damages herein provided are fixed and not by way of penalty, and that to be entitled to such damages. MWD shall not be required to prove that it has incurred damages. In case of such delay, MWD is hereby authorized to deduct immediately the amount of the liquidated damages from any money due or which may become due to the BULK WATER SUPPLIER in this or any other contract or to collect such amount from the latter's Performance Security, whichever is convenient and expeditious to MWD. Failure on the part of the BULK WATER SUPPLIER to submit NWRB Permit to MWD shall not constitute a valid cause or ground to exempt it from imposition of the liquidated damages herein stipulated. 14.2 PENALTIES. If the Bulk Water Supplier shall have failed or refused to deliver the Minimum Contracted Water Demand at any time, unless excused by any reason acceptable to MWD, the latter shall be entitled to impose the penalties and sanctions set out in Appendix B. Penalties for Under-delivery of Minimum Contracted Water Demand. 14.3 In the event that the Bulk Water Supplier (BWS) fails to meet the water quality standards set out in Schedule 1. Water Quality Standards due to reasons attributable solely to the fault of the BWS, the BWS shall be subject to the appropriate sanctions and penalties set out in Appendix C. 14.4 In the event that the BULK WATER SUPPLIER has delivered more than the required daily volume of water under this contract without prior notice and approval from the MWD, the excess water shall not be included in the payment. 14.5 The BULK WATER SUPPLIER agrees and binds itself to indemnify MWD for whatever injuries or damages suffered by the latter by reason of the failure, negligence, delay or conduct of the former and/or its employees or representatives in the performance of its obligation.	

		For this purpose, MWD shall have the right to withhold payment or any amount due or that becomes due the BULK WATER SUPPLIER to compensate MWD for any damages it suffered on account of the failure, negligence or conduct of the BULK WATER SUPPLIER or its employees in the performance of its obligation. 14.6 The BWS shall hold MWD free from any liability or damages for any injuries committed or caused upon any third party by reason of the failure, negligence, delay or conduct of the former and/or its employees or representatives, and shall indemnify MWD for any loss that it may suffer or incur due to such incidents. 14.7 It is understood that any payment made by MWD to the BULK WATER SUPPLIER or the failure of MWD to demand compliance of any of the terms and conditions of this contract shall not be considered as a waiver on the part of MWD for the enforcement of this Agreement or any portion hereof. 14.8 The imposition of any of the penalties under this section shall be without prejudice to the enforcement of any other remedy provided under this agreement, including those provided in the next paragraphs under Termination. Conversely, the termination of this agreement shall not be construed as a waiver of any of the penalties and damages that may be imposed upon the BWS under this section, and under the law.	
15	**EVENTS OF DEFAULT**	15.1 Bulk Water Supplier (BWS) Events of Default. If any of the following events (each a "BWS Event of Default") occurs, the provisions of Section 15.2 shall apply: a. the BWS fails to pay the sanctions and penalties set out in Appendix B and Appendix C when they become due; b. after the Initial Delivery Date, there is failure to operate for a period exceeding forty-eight (48) hours, without prejudice to the exercise by MWD of its step-in rights under Section 13; c. the BWS fails to perform or comply with any provision, term, condition, covenant or obligation to be performed by it under this Agreement (other than as contemplated by Section 15.1(a) and 15.1(b); or d. any representation or warranty made by the BWS in this Agreement proves to be untrue, incorrect or	

		misleading in any material respect as of the time it was made or deemed to have been made. 15.2 Remedies for BWS Event of Default. a. If a BWS Event of Default shall have occurred, MWD shall give notice in writing to the BWS, and the Parties shall forthwith enter into discussions in good faith with the view of mitigating the consequences of such event and to agreeing on the terms, if any, upon which the arrangement contemplated in this Agreement may be continued, giving regard to all the circumstances existing at such time. b. If the BWS Event of Default subject of the notice referred to in Section 15.2(a) shall not have been remedied to the reasonable satisfaction of MWD notwithstanding the expiry of 30 days from the BWS receipt of such notice, then MWD may enforce its rights under Section 16 of this agreement. 15.3 MWD Events of Default. If any of the following events (each a "MWD Event of Default") occurs, the provisions of Section 15.4 shall apply: a. MWD fails to pay any sum due hereunder, which failure to pay remains unremedied after Sixty (60) days from the date MWD receives notice of such breach from the BWS; b. MWD fails to perform or comply with any material provision, term, condition, covenant or obligation to be performed by it under this Agreement (other than as contemplated by Section 15.3 (a); or c. any representation or warranty made by MWD in this Agreement proves to be untrue, incorrect or misleading in any material respect as of the time it was made or deemed to have been made. 15.4 Remedies for MWD Event and Default. a. For an Event of Default under Section 15.3(a) upon the occurrence of the MWD Event of Default, the BWS may enforce its rights under Section 16 of this agreement. b. In case of an Event of Default under Section 15.3(b) and 15.3(c) the BWS shall give notice in writing to the MWD, and the Parties shall	

		forthwith enter into discussions in good faith with the view of mitigating the consequences of such event and to agreeing on the terms, if any, upon which the arrangement contemplated in this Agreement may be continued, giving regard to all the circumstances existing at such time. c. If the MWD Event of Default subject of the notice referred to in Section 15.4(b) shall not have been remedied to the reasonable satisfaction of the BWS notwithstanding the expiry of 30 days from MWD's receipt of such notice, then the BWS may enforce its rights under Section 16 of this agreement.	
16	**TERMINATION**	16.1 This Agreement and the other Project Agreements may be terminated: a. Upon expiration of the terms of this Agreement unless otherwise extended or renewed; b. if an Event of Default shall have occurred and be continuing, by the Party not in default (the "Non-Defaulting Party") upon at least 20 Business Days' prior written notice of termination to the Party in default (the "Defaulting Party"), if the Event of Default is not remediable, or if such Event of Default is capable of being remedied, upon the lapse of Thirty (30) Business Days from the Defaulting Party's receipt of written notice of the occurrence of such Event of Default without such event having been remedied to the reasonable satisfaction of the Non-Defaulting Party pursuant to the provisions under Section 15; or c. by the Bulk Water Supplier, upon at least five (5) Business Days' prior written notice of termination to the other Party, if following the lapse of 60 Business Days from the commencement of discussions under Privatization; d. by either Party, upon at least five Business Days' prior written notice of termination to the other Party, if following the lapse of Sixty (60) Business Days from the commencement of discussions under Force Majeure, the Parties are unable to agree on the basis and terms upon which this Agreement and the other Project Agreements may be continued notwithstanding the occurrence and continuing effect of a Force Majeure Event. e. By MWD where the requirements under Paragraph 4 are not complied with within Two Hundred Forty (240) days from receipt of the Notice to Proceed, or although complied with, such requirements are subsequently revoked or	

		otherwise lost for whatever reason and are not restored within a period of 15 days from such revocation or loss;	
17	**NOTIFICATION**	Notification and communication as referred to in this agreement shall only be in writing, personally furnished upon the other party's authorized representative at the address of the parties set forth in this agreement unless prior thereto a different address is furnished by the addressee party to the sending party. In addition to personal service, electronic mail may be resorted to by the parties for purposes of convenience and expediency. The following e-mail addresses shall be used by each party for any notification and communication under this agreement: MWD's e-mail:_____ BWS's e-mail: _____	
18	**DISPUTES AND JURISDICTION**	Any dispute, controversy or claim arising out or relating to this contract or the breach, termination, or invalidity thereof, if same cannot be settled amicably, may be submitted for arbitration in accordance with Republic Act 9285, otherwise known as the "Alternative Dispute Resolution Act of 2004" and the place of arbitration shall be in Moncada, Tarlac, Philippines, otherwise said dispute or controversy arising out of the contract or breach thereof shall be submitted to a court of law in Moncada Tarlac the exclusions of all other venue.	
19	**AMENDMENTS**	This contract or any part or portions thereof shall be modified or revised only thru formal written agreement between the parties hereto, citing therein the specific clause(s) or provisions to be revised and the corresponding amendment.	
20	**NON-TRANSFERRABILITY AND SUBCONTRACTING**	The operation of the BULK WATER SUPPLY PROJECT facilities shall be operated by the BULK WATER SUPPLIER. The BULK WATER SUPPLIER shall not transfer, assign, pledge, subcontract, or make any other disposition of interest in the BULK WATER SUPPLY PROJECT. Any transfer, assignment, pledge, subcontract or any other disposition, shall be sufficient ground for COWD to terminate or cancel the BULK WATER SUPPLY PROJECT moto proprio without need of judicial action. Subcontracting may be allowed in the construction of the WATER FACILITIES and shall cease upon its completion.	
21	**RENEWAL**	This contract may be renewed for another period upon the agreement by both parties.	
22	**CONFIDENTIAL**	The parties shall hold in strict confidence any and all	

	ITY OF DOCUMENTS	documents and information contained in the project proposals, except for such matters, which by nature are public documents.	

SCHEDULE 1

Water Quality Standards

A. *MICROBIOLOGICAL PROPERTY (PNSDW STANDARDS)*

PARAMETERS	**METHOD OF DETERMINATION**	**VALUE ***	**UNITS OF MEASUREMENT**	**MONITORING FREQUENCY**	
Total Coliform	Multiple Tube Fermentation Technique (MTFT)	<1.1	MPN/ 100mL	Monthly	
	Chromogenic Substrate Test (Presence – Absence) *	Absent <1.1	MPN/ 100mL		
	Membrane Filter Technique (MFT)	<1	Total Coliform Colonies/ 100mL		
Fecal Coliform	Multiple Tube Fermentation Technique (MTFT)	<1.1	MPN/ 100mL	Monthly	
	Membrane Filter Technique (MFT)	<1	Fecal Coliform Colonies/ 100mL		
	Chromogenic Substrate Test (Presence – Absence) *	<1.1	MPN/ 100mL		
Heterotrophic Plate Count	- Pour Plate - Spread Plate - Membrane Filter - Technique	<500	CFU/mL	Monthly	

*** Should be validated and approved by Department of Health (DOH)**
Sampling Frequency: Monthly

B. *PHYSICAL AND CHEMICAL PROPERTY (PNSDW STANDARDS)*

CONSTITUENT	**METHOD OF DETERMINATION**	**MAXIMUM LEVEL (mg/L) OR CHARACTERISTIC**	**MONITORING FREQUENCY**	
Taste	Sensory Evaluation Technique	No Objectionable Taste	Monthly	

Odor	Sensory Evaluation Technique	No Objectionable Odor	Monthly	
Color (Apparent)	Visual Comparison Colorimetric	10 / Color Units	Monthly	
Color (True)	Visual Comparison Colorimetric	5 / Color Units	Monthly	
Aluminum	FAAS, EAAS, ICP, Colorimetry Method	0.2	Monthly	
Chloride	Argentometric Method, IC	250	Monthly	
Copper	FAAS, EAAS, ICP, Neocuproine Method, Bathocuproine Method	1.0	Monthly	
Hardness	FAAS, EAAS, ICP, Colorimetry Method	300 as CaCO3	Monthly	
Hydrogen Sulfide	Methylene Blue Method, Iodometric Method	0.05	Monthly	
Iron	Phenanthroline, AAS, ICP, Colorimetric Method	1.0	Monthly	
Manganese	Persulfate Method, AAS, ICP, ICP/MS	0.4	Monthly	
Sodium	AAS (Flame absorption mode), ICP/MS, Flame photometry	200	Monthly	
Sulfate	Turbidimetric Method, Ion Chromatography, Gravimetric Method	250	Monthly	
Total Dissolved Solids (TDS)	Gravimetric, dried at 180˚C	500	Monthly	
Zinc	FAAS, ICP, ICP/MS	5.0	Monthly	
pH	Electrometric Method	6.5-8.5	Hourly	
Turbidity	Turbidimetry	5 NTU	Hourly	
Chlorine Residual	Iodometric; Amperometric Titration; DPD Colorimetric Method	0.3-1.5	Hourly	

***Sampling Frequency: as specified**

C. *RADIOLOGICAL PROPERTY (PNSDW STANDARDS)*

APPENDIX A
Schedule of Delivery

	2024	*2025*	*2026*	*2027*	*2028*	*2029*	*2030*	*2031*	*2032*	*2033*	
IN CUBIC METERS/DAY											
STA MONICA	1,296	1,296	1,296	1,512	1,512	1,512	1,728	1,728	1,728	1,728	
CALAPAN	1,296	1,296	1,296	1,512	1,512	1,512	1,728	1,728	1,728	1,728	
TOTAL	2,592	2,592	2,592	3,024	3,024	3,024	3,456	3,456	3,456	3,456	

APPENDIX B **Penalties for Under-delivery of Minimum Contracted Water Demand.**	
Penalties for Under-Delivered volume shall be computed as follows:	
A. Hourly:	
Barangay Sta Monica Delivery Point:	
Equation A.1: $\%Undelivered\ Volume\ h\ = \left(\frac{A_h}{Contracted\ Hourly\ Flow\ Rate} - 1\right) x\ 100\%$ if % Undelivered Volume = > -10%, No Penalty if % Undelivered Volume < -10%, Equation A.2 ***Equation A.2:*** $Penalty\ h\ = [(\%Undelivered\ Volume\ h + 10\%) x\ CFHR_P] x\ B$	
Barangay Calapan Delivery Point:	
Equation A.3: $\%Undelivered\ Volume\ h\ = \left(\frac{A_h}{Contracted\ Hourly\ Flow\ Rate} - 1\right) x\ 100\%$ if % Undelivered Volume = > -10%, No Penalty if % Undelivered Volume < -10%, Equation A.2 ***Equation A.4:*** $Penalty\ h\ = [(\%Undelivered\ Volume\ h + 10\%) x\ CFHR_F] x\ B$	
Total Hourly Penalty:	
Equation A.5: $\sum \boldsymbol{Penalty}\ h\ (Total) = \sum \boldsymbol{Penalty}\ h$ (Sta Monica) $+ \sum \boldsymbol{Penalty}\ h$ (Calapan)	
B. Daily:	
Barangay Sta Monica Delivery Point:	
Equation B.1: $Penalty\ d = [60{,}000 - A_d]\ x\ B$	
Barangay Calapan Point:	
Equation B.2: $Penalty\ d\ = [40{,}000 - A_d]\ x\ B$	
Total Daily Penalty:	
Equation B.3: $Penalty\ d\ (total)$=$Penalty\ d$ (Sta Monica) + $Penalty\ d$ (Calapan)	
Where:	

A_h – Actual volume of treated water delivered at delivery point in cubic meters/hour (cm/h)
A_d – Actual volume of treated water delivered at delivery point in cubic meters/day (cm/d)
B – 50% x MWD's effective tariff rate
$CHFR_P$ – Contracted Hourly Flow Rate for Sta Monica
$CHFR_Y$ – Contracted Hourly Flow Rate for Calapan

The basis of penalty shall be; whichever is higher between penalty equation A.5 and B.3.

APPENDIX C
Penalties for Delivery of Bulk Treated Water for nonconformance of Water Quality Standards

Hourly*:

Particulars	Penalties	Delivery Point's Location
Per Failed Test Parameter		
Sta Monica Delivery Point	PhP 5,000 / parameter/ day Parameters Included: 1. pH 2. Turbidity 3. Residual Chlorine Acceptable Level: PNSDW	Barangay Sta Monica, Moncada, Tarlac
Calapan Delivery Point	PhP 5,000 / parameter/ day Parameters Included: 1. pH 2. Turbidity 3. Residual Chlorine Acceptable Level: PNSDW	Barangay Calapan, Moncada, Tarlac

*The Bulk Water Supplier has six hours from the time of detection to correct any non-compliance with the Standards for Bulk Treated Water Supplied by the BWS set out in Schedule 1, failure of which shall subject the BWS to penalties under Appendix C starting on the seventh hour of its detection and until such time that the water quality issues have been corrected.

Monthly*:

Particulars	Penalties	Delivery Point's Location
Per Failed Test Parameter		
Sta Monica Delivery Point	PhP 5,000 / parameter/ day	Barangay Sta Monica, Moncada, Tarlac
Calapan Delivery Point	PhP 5,000 / parameter/ day	Barangay Calapan, Moncada, Tarlac

The daily water quality monitoring as agreed with MWD shall cover three (3) parameters; (1) pH, (2) Turbidity, (3) Chlorine Residual. These parameters will be tested and monitored using in-situ testing equipment and data loggers respectively.

APPENDIX D
Monthly Charge

A. MONTHLY CHARGE

The Monthly Charge will be calculated in accordance with the following formula:			
Monthly Charge = Base Rate Fee + Fee Adjustment			
The Base Rate Fee and Fee Adjustment will be calculated as set out in Parts B and C of this Annex A. For the avoidance of doubt, the Parties confirm that if the Fee Adjustment (as calculated in accordance with Part C below) is a negative value, the corresponding deduction shall be made to the then-prevailing Monthly Charge.			
B. BASE RATE FEE			
The Base Rate Fee will be calculated in accordance with the following formula:			
Base Rate Fee = BWRp x Vm			
Where:			
BWRp	=	BWRe x (1 + 12%)	
BWRe	=	$BWRe_{-1}$ x (1 + $3YrCPIp_{-1}$)	
$BWRe_{-1}$	=	BWRe for the previous Rate Period ÷ 1.12	
$3YrCPIp_{-1}$	=	$(1 + AveCPIp_{-1})^3 - 1$	
$AveCPIp_{-1}$	=	Arithmetic mean of the year-on-year headline inflation rates for the Philippines for each of the 36 months during the previous Rate Period, as published and provided by the National Statistical Coordination Board of the Philippine Statistics Authority at the websitehttp://www.nscb.gov.ph/secstat/d_price.asp or, if such inflation rates cease to be published by the Philippine Statistics Authority or any entity which succeeds to its functions, or are otherwise unavailable, then the applicable inflation rates shall be determined by the Expert.	
Vm	=	Volume of bulk treated water supplied by the Supplier to COWD for the billing Month	

Table 1: Bulk Water Rates

Rate Period	Billing Month		Billing Month	BWRp (in Php)	BWRe (in Php)
1	1	to	36	15	15
2	37	to	72	BWRe x (1 + 12%)	$BWRe_{-1}$ x (1 + $3YrCPIp_{-1}$)
3	73	to	120	BWRe x (1 + 12%)	$BWRe_{-1}$ x (1 + $3YrCPIp_{-1}$)

TECHNICAL SPECIFICATIONS
DIVISION 1 DUCTILE PIPES

1.01 General

The Proponent shall furnish and install all pipe, valves and fittings, closure pieces, supports, bolts, nuts, gaskets, jointing materials, and appurtenances as shown and specified, and as required for a complete and workable piping system. Shop drawings of all piping systems shall be furnished. All pipes to be used for this purpose shall be of the standard specification for AWWA Standard for Polyvinyl Chloride (PVC) Pressure Pipe and Galvanized Iron Pipe (G.I.). All exposed piping shall be adequately supported with devices of appropriate design. Where details are shown, the supports shall confirm thereto and shall be placed as indicated. Support for all piping shall be complete and adequate regardless of whether or not supporting devices are specifically shown. All pipes shall be laid in a uniform profile as shown on the drawings.

1.02. Hydrostatic Pressure Test

Piping hydrostatic pressure test should be 1.5 times the working pressure. Valves and other appurtenances at 2.0 times the working pressure.

1.03 **Special**

1) Definition - special are defined as bends, reducers, wyes, tees, crosses, outlets and manifolds, wherever located, and all piping above ground or in structures.

2) Design - except as otherwise provided herein, materials, fabrication and shop testing of straight pipe shall conform to the "AWWA Standard for Steel Water Pipe 6 inches and Larger" (AWWA C200). Minimum plate thickness of specials shall be computed using the following formula:

   T = D x P/2 x Y/s
   Where:
   T = plate thickness in inches
   D = outside diameter or steel cylinder in inches
   P = design pressure in psi
   S = factor of safety 2.50
   Y = specified yield point of steel in psi

   But in no case shall be design stress/s exceed 91 MPa (13,200 psi) nor shall plate thickness be less than the following:

Pipe Manifolds	Elbows	
Nominal Pipe	Piping Above Ground	Bends
Diameter (mm)	Piping in Structures	Reducers
600 and under	4.76 mm	10-ga
625 to 1200	6.35 mm	6.35 mm
Over 1200	7.94 mm	7.94 mm

3) Small Steel Pipe – unless otherwise shown, galvanized steel pipe in sizes less than 100 mm (4 in.) in diameter and smaller shall conform with the requirements of the “Specification for Black and Hot-Dipped Zinc-Coated (Galvanized) Welded and Seamless Steel Pipe for Ordinary Uses” (ASTM A-120) and shall be Schedule 40. Galvanized steel pipe shall not be cement mortar-lined unless otherwise shown. Fittings for galvanized steel pipe shall be of galvanized steel pipe shall not be used for buried service, except where shown on the Drawings.

4) Galvanized steel pipe for service connections shall be allowed only if and when specifically shown on the Construction Drawings. The pipe shall be wrapped with a 500 micron thick PVC tape to a total thickness of 1000 microns, with half width overlapping. PVC tape shall be of a type approved by the Project Manager and shall be applied in accordance with the manufacturer’s recommendations.

5) Dimensions – unless otherwise shown, dimensions of specials shall conform to “AWWA Standard for Dimensions for Steel Water Pipe Fittings” (AWWA C208) for Service in Transmission and Distribution Systems.”

6) Steel Welding Fittings – Steel welding fittings shall conform to ASTM A234.

7) Ends for Mechanical Type Couplings – except as otherwise provided herein, where mechanical-type couplings are indicated, the ends of the pipe shall be handed with Type C collared ends using double fillet welds. Where pipe 300 mm (12-in) and smaller is furnished in standard schedule thickness, and where the wall thickness equals or exceeds the coupling manufacturer’s minimum wall thickness, the pipe ends may be grooved.

8) Flanges – where the design pressure is 1.2 MPa (175 psi) or less, flanges shall conform to either AWWA C207 Class D or E, or ANSI BL6.5 1.0 MPa (140 psi) class. Where the design pressure is greater than 2 MPa (300 psi) class, flanges shall have flat or raised faces. Flanges shall be attached with bolt holes straddling the vertical axis of the pipe.

9) Shop Testing - upon completion of welding, each special shall be bulk-headed and tested under a hydrostatic pressure of not less than one and one-half (1- l\2) times the pressure for which the pipe has been designed provided, however, that if straight pipe used in fabricating the special has been previously tested in accordance with Subsection (m) (2) herein, the circumferential welds may be tested by a dye penetrate process using Turco Cy-Check or approved equivalent with no further hydrostatic test. Any pinholes or porous welds, which may be revealed by the test, shall be chipped out and rewelded and the special retested.

1.04 Cleanliness of Pipe

The interior of each pipe section and special shall be clean and free of foreign materials when they are delivered to the site of the work

1.05 Transport and Handling

General - Steel pipe shall be transported and handled as specified herein. Any pipe section that becomes damaged as a result of improper transporting, handling or stockpiling shall be repaired to the satisfaction of the Project Manager. Where damaged areas are extensive or wherein the Project Manager's opinion, field repairs are not practicable, the Project Manager may order the Proponent to remove the damaged pipe section from the site of the work and replace it with a new section.

1.06. Installation of Piping

1) General - unless otherwise provided, the Proponent shall furnish and install all pipes, specials, fittings, closure pieces valves, supports, bolts, nuts, gaskets, jointing materials and all other appurtenances as shown and as required to provide a complete and workable installation. Where pipe support details are shown, the supports shall conform thereto and shall be placed as indicated; provided, that the support for all exposed piping shall be complete and adequate regardless of whether or not supporting devices are specifically shown. Concrete thrusts blocks, anchor blocks or welded joints shall be provided at all junctions, changes in direction exceeding ll-l\2 degrees or where otherwise shown. At all times when the work of installing pipe is not in progress, all openings into the pipe and the ends of the pipe in trenches or structures shall be kept tightly closed to prevent entrance of foreign materials. The Proponent shall maintain the inside of the pipe free from foreign materials and in a clean and sanitary condition until its acceptance by the Water District.

2) Laying - trenches shall be in a reasonably dry condition when the pipe is laid. Necessary facilities including slings shall be provided for lowering and properly placing the pipe section in the trench without damage. The pipe sections shall be laid to the line and grade when shown and they shall be closely jointed to form a smooth flow line. Immediately before placing each section of pipe in final position for jointing, the bedding for the pipe shall be checked for firmness and uniformity of surface.

3) Rubber and Gasket Joints - the rubber gasket joint shall be made by properly lubricating the rubber gasket with a suitable vegetable compound soap before it is placed in the groove at the spigot end. The gasket shall be stretched over the spigot of the pipe and carefully seated in the groove, with care taken to equalize the stress in the gasket around the circumference of the joint. The gasket shall not be twisted, rolled, cut, crimped, or otherwise, injured or forced out of position during the closure of the joint. A "feeler" gage shall be used to check the position of the rubber gasket after the joint has been telescoped.

4) Field-Welded Joints - field welding of pipe joints shall conform to the requirements of the "AWWA Standards for Field Welding of Steel Water Pipe Joints" (AWWA C206). Prior to welding, the joint shall be made up in accordance with acceptable engineering practice. Such joints shall be inspected and approved by the Project Manager before any protective coating is placed around the outside of the joint.

5) Protective Coatings - welded joints shall be painted with anti-corrosion paints and finally topped with rubberized epoxy paint.

6) Butt-straps - where a butt-strap is used, both the interior and exterior surfaces of the butt-strap shall be given a coating equivalent to the factory-applied coating of the adjoining pipe sections.

1.07. PVC (Polyvinyl Chloride) Pipe

1) Materials - pipe shall conform to the requirements of "AWWA Standard for Polyvinyl Chloride (PVC) Pressure Pipe, 4-in through 12-in (AWWA C900) and shall be pressure Class 100 or 150 or as specified in the Construction Drawings and Specifications as approved by the Project Manager. The pipe shall have steel pipe equivalent or cast iron equivalent outside dimensions and furnished with rubber ring gasket joints.

Alternate outside diameters and wall thickness as shown below shall be allowed for the specified pressure class.

Nominal	Nominal Wall (Thickness mm)		
Pipe Size (mm)	Outside Diameter (mm)	Class 100	lass 150
50	63	3.0	3.6
75	90	4.3	5.1
100	110	5.3	6.3
150	160	7.7	9.1
200	225	10.8	12.8
250	280	13.4	15.9
300	314	15.0	17.9
350	355	16.9	20.1
400	400	19.1	22.7

The ISO Short Term Hydrostatic Pressure Test may be used in lieu of the 5 second AWWA Hydrostatic Proof Test providing the following criteria is used. A short-term hydrostatic pressure test shall be performed on a specimen produced from each extrusion outlet at the beginning of production of each specific material, style, size and thereafter once every two hours and upon start up following any planned or unplanned interruption of production. The bell, including any reinforcement sleeve, shall be included as part of at least 50 percent of the test specimens. One short-term hydrostatic pressure test failure from a production run requiring four or less tests shall cause the rejection of all pipe from production run. Pipe from production runs requiring five or more tests shall be rejected upon the second test specimen failure. A production run to be rejected per set of specimens tested shall in no case exceed 8 hours production. An affidavit of compliance to these specifications shall be provided to the Water District. Fittings shall be of Polyvinyl Chloride (PVC). PVC fittings shall in general conform to "Socket Type Polyvinyl Chloride (PVC) Plastic Pipe Fittings Schedule 40 (ASTM D2466), Type I (normal impact). The inside diameter of fittings shall be suitable for making a water tight joint with the pipe furnished. Joints for pipe and fittings shall be especially constructed for joining with neoprene ring gaskets. A sufficient number of ring gaskets and lubricant shall be furnished to provide for a two percent (2Vo) over-run. Pipe and fittings shall be labeled by the manufacturer to indicate class rating, type material, manufacturer's trade name and production code. The minimum thickness for Polyvinyl Chloride (PVC) flanges shall be as follows:

Nominal Pipe Size	Minimum Flange Thickness
75 mm (3-in)	25 mm (I-in)
100mm(4-in)	28mm(l-l\8-in)
150mm(6-in)	32mm(l-l\4-in)
200 (8-in)	35 mm (l-3\8-in)

1) Installation - after a section of pipe has been lowered into the prepared trench and immediately before joining the pipe, the ends of the pipe to be joined shall be cleaned, and the rubber gasket lubricated, with a vegetable compound soap all in accordance with the pipe manufacturer's instructions. Assembly of the pipe lengths shall be in accordance with the recommendations of the manufacturer of the type of joint used. All special tools and appliance required for joining the pipe shall be provided by Proponent. When cutting or machining of the pipe is necessary, only tools and methods recommended by the pipe manufacturer and approved by the Project Manager shall be employed.

1.08. PE (POLYETHYLENE) Plastic Tubing

1) Materials - the extrusion compound shall be either Grade P33, Class C or grade P34, Class C (PE3306 or PE3406) as defined by ASTM D 1248. All compounds used shall be virgin plastics except that clean rework material from the manufacturers own pipe production may be used so long as the original was virgin material. The pipe shall meet the requirements of the National Sanitation Foundation (NF) for potable water use as tested

by the National Institute of Science and Technology or other approved testing laboratories and shall be made from non-toxic, non-lead base plasticizer approved by the Project Manager.

2) Dimensions - the Standard Dimension Ratio (SDR) shall be 9 with nominal dimensions as follows (in English units):

Nominal (mm)	Size (in)	Average P.P.
19	3\4	0.875"
25	1	1,125”
38	1-1/2	1,625”
50	2	2,125”
63	2-1/2	2,874”

Nominal Pipe Size		Outside Diameter	Minimum Wall Thickness	Tolerance (t)
(mm)	(in)	(mm)	(mm)	(mm)
20	½	20	2.3	0.5
25	¾	25	2.8	0.5
2	1	32	3.6	0.6
50	1-1/2	50	5.6	0.8

3) Rating - all service tubing shall be rated for use with water at 23,0 C (73.40 F) and at a minimum working pressure of I.I MPa (160 psi). Other requirements shall be in accordance with ASTM D2737.

4) Marking - all tubing shall be clearly marked at intervals of not more 0.6M with nominal size, type of material (PE 3306, or PE 3406). Standard Dimension Ratio (SDR 9), manufacturer's trade name and production code, and the seal of approval from an accredited testing laboratory.

5) Installation - The installation and method of end connections of PE plastic tubing shall be as shown on the drawings and as specified in Section 23.10. All procedures and tools used shall comply with the recommendations of the manufacturer and be approved by the Project Manager.

1.09. Services Lines

1) Materials

The services line piping 50 mm (2-in) and smaller shall be polyethylene as specified herein and in the sizes shown on the construction drawings. Service piping having diameter larger than 50 mm (2-in) shall be constructed of the same materials approved for water mains of similar sizes. Small tubing-size for service connections lines of 19 mm (3/4") shall have brass fittings as shown on the construction standard drawings using cold flare method of connection or compression type connections and stainless steel inserts as shown. The brass fittings shall be manufactured according to AWWA Standard C800 Threads for Underground Service Line Fittings. Where saddles are required, as shown on the construction standard drawings, they shall conform to whatever is acceptable to the Project Manager.

Welded outlets on steel pipe shall be insulated from brass fittings with nylon bushings approved by the Project Manager.

1) Installation

All workmanship shall be in accordance with the manufacturer's recommendations and approved by the Project Manager. Service taps for plastic service lines shall be made between 45 degrees to 90 degrees from the top of the pipe and the tubing shall be laid in a serpentine fashion along the service trench bottom to resist pull out. Galvanized steel pipe for service lines shall be installed only where specifically shown on the standard drawings. Unless otherwise directed, all service lines shall be installed prior to the hydrostatic test of the water main, and they shall be tested with pressure test of the water main. Each stop cock valve shall be operated to thoroughly flush the service and remove any accumulated air present prior to the hydrostatic test.

1.10. Gasket and Bolts

Except as otherwise provided, gaskets for flanged joints shall be 1.5 mm (1/16-in) thick vellumoid gaskets. Except as otherwise provided, bolts shall conform to acceptable engineering practice.

1.11. Pressure Gauge

Pressure gauges shall have 89 mm (3-l\2 in) dials, 6 mm (l\4-in) threaded connections and shut-off cocks. Gauges shall be calibrated to read 1.0 MPa (140 psi), unless otherwise shown on the Drawings. The pressure element of the gauge shall be protected against excessive pulsations and surges by an external pressure snubber. Gauges shall be as manufactured by U.S. Gauge, Foxboro, or approved equivalent.

1.12 Concrete Drain Pipe

The Proponent shall furnish and install concrete drain pipe where shown on the Drawings. Concrete drainpipe shall conform to the Standard Specifications for Concrete Drain Pipe of the Department of Public Highways.

1.13. Steel Casing

The Proponent shall famish and install steel casing where shown on the Drawings. Steel casings shall be of welded steel pipe of the diameters and plate thickness specified. Joints in steel casing may be either butt-welded, lap-welded, or welded using butt straps. No protective coating need be applied to casings. Casings shall be installed as required in accordance with details as shown, and subject to the approval of the agency having jurisdiction.

TECHNICAL SPECIFICATION
DIVISION 2 – VALVES

2.01 General

The Proponent shall famish and install all valves as specified herein and as shown on the drawings. All valves shall be new and of current manufacture. Flanged valves may be raised or plain faced with serrated gasket surface. Flanges of valves for water working pressure of 1.2 MPa (175 psi) or less shall be faced and drilled to 125 Ib. American Standard dimensions; flanges of valves for water working pressure greater than 1.2 MPa (175 psi) shall be faced and drilled to 250 Ib. American Standard dimensions. Each valve body shall be tested under a test pressure equal to twice its design water working pressure, except that gate valves shall be tested in accordance with "STANDARD GATE VALVES FOR ORDINARY WATER WORKS SERVICE" (AWWA C500). Valve operators shall turn counter clockwise to open. Shop drawings for all valves shall be furnished in accordance with Section 7.02.

2.02. Gate Valves

1) Valves

This Section applies to gate valves 25 mm (I-in) through 150 mm (6-in) in size. All valves shall conform to the "STANDARD FOR GATE VALVES FOR ORDINARY WATER WORKS SERVICE"(AWWA C500). Gate valves where the pipeline design pressure is 1.0 MPa (150 psi) or less shall be designed for a minimum water working pressure of 1.0 MPa (140 psi) and shall be cast iron bodied, bottom-wedging, double disc with parallel seats. Discs shall be cast iron with bronze disc rings and the seat ring shall be bronze and replaceable. The valve shall be non-rising stem with a minimum of two "0" rings seals (at least one above the stem collar), or rising stem when shown on the drawings. The valves shall have a 50mm (2-in) square operating nut with a cast arrow showing direction in which the nut is to be turned to open the valve. Valves shall be constructed to permit the replacement of the "0" rings above the stem collar under full working water pressure with the valves in the fully open position.

2) Reliability Testing

Whenever condition warrants, LGU may require a reliability test to be conducted in the following manner. For

every size and type of wedging mechanism, two sample gate valves representing each lot of one hundred (100) pieces or less shall be tested for reliability of operation. This test is in addition to those required under Sections 28.2 and 28.3 of AWWA C-500. Subsequent examination of the operating parts, i.e., body seat rings, disc rings, stem, stem threads, stem nuts and stem packing must show no indication of failure or other defects that adversely affect the proper functioning of parts and operation of the valve. After this test, the stuffing box shall be removed from the bonnet and the o-rings above the stem collar shall be replaced under full working water pressure with the valve in the fully open position. In the event that any of the firsts two samples tested fail to pass the test, a second sample of four shall be tested. Failure of any of one in the second sample shall be grounds for rejection of the whole lot. If all four in the second sample pass, the lot shall be accepted.

2.03 Butterfly Valves

1) Valves - Butterfly valves shall conform to the "AWWA Standard for Rubber- Seated Butterfly Valves: (AWWA C504), subject to the following requirements: Valves shall be of Class 140B, and unless otherwise shown may be either short bodied or long bodied. Shaft seals shall be designed for use with standard split V type packing or "0" ring seals. The valve ends shall be either flanged or of the water type except where otherwise shown on the drawings. The valves shall be any of correct specifications acceptable to Water District.

2) Operators - Operators shall conform to the above referenced AWWA Standard, subject to the following requirements: Valves shall be equipped with 50 mm (2-in) square operating nuts or with hand wheels 600 mm (24-in) maximum diameter as shown, and shall be provided with watertight gear housings. The valve manufacturer shall furnish a written certification staling that the operator torque has been computed and the operators have been sized to met the full AWWA Class specified in Subsection (a) herein.

2.04 Check Valves

Check valves 50 mm (2-in) and larger shall have flanged connections and be of the swing type with outside lever and weight. The valves shall be designed for a minimum water working pressure of 1.0 MPa (140 psi) and shall have 125 lb American Standard Flanges. Valve bodies shall be cast iron or steel. The valves shall have bronze gate rings and seat rings and type 18-8 stainless steel hinge pins. The check valves shall be designed to that disc and body seat may be easily removed without removing valve from the line.

2.05 Air-Vacuum and Air Release Valves

Air-vacuum and air release valves shall have screwed connections. The bodies shall be of high-strength cast iron and the float shall be of stainless steel. Float guides bushings, lever pens and all other internal parts shall be constructed of stainless steel or bronze. Seat washers and gasket shall be of a material insuring water-tightness with a minimum of maintenance. Valves shall be designed to automatically operate so that they shall (a) positively open under atmospheric pressure as water drains from the body of the valve it shall allow air to flow into the pipe while it is being emptied, (b) positively close as water, under low head, fills the body of the valve, (c) not blow shut under high velocity air discharge, and (d) permit the escape e of accumulated air under pressure while the pipe is in operation. The valves shall be APCO, Model No. 145 C as manufactured by Valve and Primer Corporation' McCracken; Rennselear; or approved substitute.

2.06 Miscellaneous Small Valves

Valves 50 mm (2-in) and smaller unless otherwise shown, shall be all bronze brass with screwed connections designed for a water working pressure not more than 1.0 MPa (140 psi). Gate valves shall be rising stems with double disc are parallel seats.

TECHNICAL SPECIFICATION
DIVISION 3 PRESSURE AND LEAKAGE TESTING AND DISINFECTION

3.01 General

The Proponent shall furnish all equipment, labor and materials, including taps, valves and bulkheads as required and exclusive of water and water meter for testing and proper disinfection of the pipelines and steel reservoir. The water and any water meter used for testing shall be furnished by the Owner, but the Proponent shall provide the facilities necessary to convey the water from the Owner-designated source to the points of use. All testing and chlorinating operations shall be done in the presence of the Engineer.

3.02 Pipeline Testing

All pipelines shall be thoroughly flushed out with water prior to testing. The Proponent shall test the pipeline in sections prior to permanent resurfacing after the trench is backfilled, but with joints exposed for examination except in heavily traveled roadways. Maximum length of test section shall be 500 meters for distribution mains and 1,000 meters for transmission mains unless otherwise approved by the Engineer. Where test sections are approved which exceed the above maximum lengths, the allowable leakage for the lengths in excess of the maximum allowable shall be reduced by fifty percent (50%). The pipeline shall not be filled with water until the following curing periods have elapsed.

Description		Minimum Allowable Time
1.	Cement Mortar Linings	14 days
2.	Cement Mortar at Joints	8 hours
3.	Concrete Thrust Block	
	a. Standard Cement	7 days
	b. High early strength cement	36 (hours)

The pipeline shall be prepared for testing by closing valves when available, or by placing temporary bulkheads in the pipe and filling the line slowly with water. During the filling of the pipe and before the application of the specified test pressure, all air shall be expelled from the pipeline. To accomplish this, taps shall be made, if necessary, at points of highest elevation and after completion of the test, and taps shall be tightly plugged unless otherwise specified. After the line or section thereof has been completely filled, it shall be allowed to stand under a slight pressure for a minimum of forty-eight (48) hours to allow the escape of air from any air pockets and to allow the pipe or mortar lining to absorb as much water as possible. During this period, all exposed pipes, fittings, valves, joints and couplings shall be examined for leaks. If found to be cracked or defective, the pipes shall be removed and replaced by the Proponent with sound material at his own expense. The pipeline shall then be refilled and all bulkheads, joints and connections shall be examined for leaks. If any are found, these shall be stopped. The test shall consist of holding the test pressure on each section of the line for a period of two (2) hours. The test pressure at the lowest point shall be 690 KPa or 1.0 MPa according to the class of pipe installed, class 100 or class 150, and as approved by the Engineer, pressure gauges shall also be provided at all ends of the section tested. The water necessary to maintain the pressure shall be measured through a meter or by other means satisfactory to the Engineer. The leakage shall be considered the amount of water entering the pipeline during the two-hour test period. The allowable leakage for cast iron pipe or ductile pipe shall not exceed the values listed in Table 3 of the AWWA Standard for Installation of Cast Iron Water Main (AWWA C600). All other types of pipes shall have an allowable leakage not exceeding 1.85 L/mm (20 gal/in.) of diameter of pipe per kilometer (mile) per day. Should any test of a section of pipeline disclose joint leakage greater than that permitted, the Contractor shall, at his own expense, locate and repair or replace the defective pipe, fitting, joint, coupling or other appurtenances. The test shall be repeated until the leakage is within the permitted allowance. Closure pieces between newly installed and existing mains shall be tested after the pipe has passed the pressure and leakage test specified above. The test shall include subjecting the joint to a pressure of 345 Pa (50 psi) for a period of five (5) minutes and visually checking for leakage. All visible leaks shall be repaired by the Proponent at no expense to the Owner.

3.03 Pipeline Disinfecting

Before being placed in service, and before certification of completion by the Engineer, all new domestic water mains or extension to existing systems, or valve section of such extension or any replacement in the existing water system shall be disinfected with chlorine in accordance with AWWA Standard C601 "Standard for Disinfecting Water Mains". Disinfection shall be completed not more than three (3) days prior to placing the

pipeline into service unless otherwise approved by the Engineer and care shall be taken to prevent recontamination of the pipeline. A bacteriological test shall be taken, at the expense of the owner, prior to acceptance of the pipeline disinfected. The amount and concentration of chlorine solution applied shall be such as to provide a dosage of not more than fifty milligrams per liter (50 mg/L) and shall be introduced into the lines as directed by the Engineer. After a contact period of twenty-four hours, the chlorine residual of samples taken at service connections or sampling points along the entire length of the pipelines shall not be less than twenty-five milligrams per liter (25 mg/L) as determined by the Engineer. The systems shall then be flushed with clear water until the residual chlorine is not greater than 0.75 mg/l but not less than 0.20 mg/L. All valves and appurtenances in the pipeline being disinfected shall be operated several times during the chlorine contact periods. The preferred point of application of the chlorinating agent is at the beginning of the pipeline extension or any valve section and through a corporation stop inserted on the top of the laid pipes. Should the initial treatment fail to result in the conditions stipulated above, the chlorination procedures shall be repeated until satisfactory results are obtained. Where connections are to be made to existing water mains, HTH shall be added at points of interconnections as directed by the Engineer.

3.04 Testing and Disinfection of Reservoir and Appurtenant Piping

a. General

The operation of testing and disinfecting the reservoir shall be combined. Any leaks found after the reservoir is filled shall be repaired and the disinfection procedures repeated to the satisfaction of the Engineer.

b. Cleaning

Prior to disinfecting, the reservoir shall be thoroughly cleaned by hosing down with a high-pressure hose and nozzle of sufficient size to deliver a minimum flow of 3.15 LPS (50 GPM).

c. Testing of Steel Reservoir

The steel reservoir shall be tested prior to the application of protective coatings by filling the reservoir with water to the elevation of the overflow. The reservoir shall show no leaks at the end of a 24-hour test period. Any leaks shall be repaired by welding. The reservoir shall be retested and repaired until no leaks occur.

d. Disinfection

A strong chlorine solution (200 mg per liter) shall be sprayed on all interior surfaces of the reservoir. Following this, the reservoir shall be partially filled with water to a minimum depth of approximately 30 cm (1.0 ft.). During the filling operation, a chlorine water mixture shall be injected by means of a solution-feed chlorinating device. The dosage applied to the water shall be sufficient to give a chlorine residual of at least 50 mg per liter upon completion of the partial filling operation. Precaution shall be taken to prevent the strong chlorine solution from flowing back into the lines supplying the water. After the partial filling has been completed, sufficient water shall be drained from the lower ends of the appurtenant piping to insure filling the lines with heavily chlorinated water. Disinfection of the steel reservoir shall be done after protective coatings have been applied to the inside surfaces of the reservoir. The reservoirs and connecting lines thereto shall be thoroughly disinfected with chlorine before being placed in operation.

e. Retention Period

Chlorinated water shall be retained in the reservoir and in the appurtenant piping long enough to destroy all non-spore-forming bacteria and, in any event, for at least twenty-four (24) hours. After the chlorine-treated water has been retained for the required time, the chlorine residual in the reservoir and in the lines shall be at least 25 mg per liter. All valves shall be operated while the lines are filled with the heavily chlorinated water.

f. Final Filing of Reservoir

After the chlorine residual has been in accordance with Subsection (d), the water level in the reservoir shall be raised uniformly to approximately 30 cm (1 ft.) below the overflow level by the addition of potable water. Before final filling is commenced, the quantity of heavily chlorinated water remaining in the reservoir after filling the piping shall be sufficient when the water level is raised to its final elevation to produce a chlorine residual of between 1 mg per liter and 2 mg per liter. After the reservoir has been filled, the strength of the chlorinated water in the reservoir shall be determined by the Engineer. If the chlorine residual is less than 1 mg per liter,

an additional dosage shall be applied to the water in the reservoir. If the chlorine residual is greater than 2 mg per liter in the reservoir, the reservoir shall be partially emptied and additional potable water added. In no case shall water be released through the drain lines prior to the expiration of the required retention period.

g. Leakage Allowance of Reservoir

After the reservoir has been filled, if leakage is such that the water surface drops more than 5.1 cm (2 in.) in a 30-day period, the Proponent shall empty the reservoir to permit close examination for evidence of any cracking or other conditions that might be responsible for the leakage. Any cracks shall be "veed" and sealed with rubber sealant in accordance with Division 25.13 (b). Any evidence of leakage through the joints shall be repaired to the satisfaction of the Engineer. Following these operations, the Proponent shall again sterilize the reservoir in accordance with this Division, exclusive of the spraying operation.

TECHNICAL SPECIFICATION
DIVISION 4 - SURFACE RESTORATION AND PAVING

4.01 General

The Proponent shall furnish all materials, labor, plant, and equipment for the removal of all pavement, sidewalks, curbs and gutters, fences, poles, driveways, walks, other property, and surface structures that are necessary for the proper prosecution of the work, but only upon approval of the parties having jurisdiction thereof and of the Engineer. Unless otherwise shown, the Proponent shall restore at his own expense all property removed or destroyed by his operation at least equal to conditions prior to work under this Proponent or to the satisfaction of the property owner.

4.02 Removal of Existing Pavement

a. In cutting or breaking up street surfacing required for the performance of the work, the Proponent shall not use equipment, which will damage the adjacent pavement. All concrete pavement surfaces to be removed shall be scored with concrete sawing equipment; provided, that any cement concrete based under an asphaltic mix surface will not be required to be scored by sawing. Asphaltic concrete pavement shall be removed to clean straight lines. The Proponent shall remove the pavement and road surfaces as part of the trench excavation, and the amount removed shall not exceed the maximum width of trench for pipelines as indicated on the Drawings, unless otherwise ordered in writing by the Engineer. The width and length of the pavement area requires to be removed for the installation of valves, valve chambers, spirals, or other structures shall not exceed the maximum linear dimensions of such structures by more than 0.30 meter on each side. The width of the pavement area required to be removed for the installation of service connections shall not exceed the maximum width as shown on the Drawings.

b. Concrete sidewalks, curbs and gutters required to be removed in connection with performing the work under the Proponent shall be cut to the nearest score marks and shall be replaced with the same kind or better material by the Proponent in conformance with the latest specifications, rules and regulations, and subject to the inspection and approval of the agency having jurisdiction.

4.03 Restoration of Damaged Surface and Property

Except where shown on the drawings or otherwise specified, any pavement, trees, shrubbery, fences, poles or other property and surface structures which have been damaged, removed, or disturbed by the Proponent, whether deliberately or through failure to carry out the requirements of the Contract Documents, municipal ordinances, or the specific directions of the Engineer, or through failure to employ usual and reasonable safeguards shall be replaced or repaired at the expense of the Proponent.

4.04 Replacement of Disturbed Surface Structure and Private Property

Except where shown on the drawings, the Proponent shall restore all private property and surface structures removed or disturbed as a part of the work. He shall also furnish all labor and materials incidental thereto at his own expense. No payment shall be allowed for dirt road restoration.

4.05 Temporary Resurfacing and Repaving

Immediately upon completion of backfilling of the trench or excavation in paved areas, the Proponent shall place a temporary pavement, at least 40 mm (1.5 in.) in thickness, over all disturbed areas of the streets, paved driveways, alleys, and other traveled places where the original surface has been disturbed by his operation. The temporary pavement shall be of a character satisfactory in all respects and safe for public travel. The temporary surfacing may consist of compacting broken stone at such depth as is necessary to withstand the traffic to which it is subjected. The broken stone shall be surfaced with "cold patch" or, if approved, sufficient sand, soil, or other materials shall be spread to hold the stone in place and prevent raveling. As fill settles, new stone and binder must be added and compacted. The surface of all temporary repaving shall conform with the street grades. Mounding up of the material over the trench and covering the same with loose broken stone will not be considered as a compliance with the above requirements. The temporary re-pavement shall be placed and maintained by the Proponent at his own expense until permanent surfacing is completed. The Proponent shall immediately remove and replace in a satisfactory condition any and all such pavement as shall become unsatisfactory and not in accordance with the terms and intent of the specifications. Upon completion of substantial parts of the project but not before the pipeline has been tested, the temporary resurfacing shall be replaced with permanent resurfacing.

4.06 Paving

General

Paving materials and methods of construction shall be in accordance with referenced sections of the latest addition of the Standard Specifications of the Department of Public Highways, Republic of the Philippines. Thickness and extent of base course, paving course and other construction details shall be as shown on the drawings. All provisions contained in the referenced Standard Specification involving "measurement" and "payment" are not applicable to work performed under this contract.

a. Borrow

When sufficient suitable material is not available from the roadway excavations, additional "borrow" materials shall be obtained from other sources. This "borrow" materials shall be in accordance with Item 107 of the referenced Standard Specification.

b. Sub Grade Preparation

This item shall consist of the preparation and conditioning of the subgrade to the full width of the roadbed in accordance with Item 112 of the referenced Standard Specifications and in conformity with the lines, grades, and cross-sections shown on the plans. This subsection supersedes applicable Sections in Division 20.

c. Aggregate Sub Base and Base Course

This item shall consist of a foundation for the surface course, composed of gravel of crushed stone and filler materials in accordance with Item 200 & 201 of the referenced Standard Specifications. Grading shall be as indicated in Table 200-1 for sub-base and 201-1. This shall also be applied for Base Course to the gravel roadway and parking area.

d. Bituminous Concrete Surface Course

This item shall consist of pavement composed of bituminous concrete on a prepared base in accordance with Item 310 of the referenced Standard Specifications.

e. Portland Cement Concrete Pavement

This item shall consist of a pavement composed of Portland cement concrete on a prepared base course. Ancillary Works (Curb, Gutter & Sidewalks) shall conform with the referenced Standard Specifications.

TECHNICAL SPECIFICATION
DIVISION 5 - ELECTRO-MECHANICAL EQUIPMENT

5.01 General

a. The Proponent shall furnish, deliver, install, test and commission at site all mechanical/electrical equipment specified herein. He shall provide the necessary supervision, tools, materials, supplies and appurtenances for the proper installation, testing and operation of the completely assembled equipment.

b. All equipment furnished and installed shall be brand new and non-obsolete (at most three years ex-stock), unused and guaranteed from defects in material design and/or workmanship. Importation papers of ex-stock equipment shall be submitted. No equipment or material shall be delivered for installation on site prior to the return of acceptable shop drawings submitted by the Contractor in accordance with Section 4, Article 8(2) of Volume 1. The contractor shall submit together with the shop drawings, a certification of the availability of spare parts and service locally in case of system breakdown for a period of five (5) years.

c. The work under this Contract shall be done in accordance with the requirements of the latest edition of the Philippine Electrical Code, the rules regulations and requirements of electrical and telephone utilities as far as their permanent services are concerned, and the government ordinances enforced in the locality. In case of conflict with these specifications or the drawings, the preceding clause shall govern.

d. The Proponent shall be responsible for securing all necessary permits from the appropriate government authorities at his own expense for the mechanical construction and for the operation of the system upon completion of the work. The Proponent shall furnish the Owner with the approved Certificate of Final Mechanical Inspection.

e. All electrical equipment, materials and components shall be as specified unless specifically exempted, in which case, they shall be the best of their respective kind. Samples of material to be supplied shall be submitted for approval when required by the Engineer. All electrical equipment and material shall bear the manufacturer's inspection label, unless exception to this requirement is inherent to a particular item.

f. The Proponent shall coordinate and work with all other parties with whose apparatus he shall connect part/s of the work required herein. The Proponent shall prepare drawings or details of the equipment he supplied, location of sleeves, conduits and supports that may be required by other trades and shall furnish the Owner with at least five (5) copies of these drawings, for the information of all parties concerned. The approval for such drawings shall not relieve the Proponent in any way from the responsibility of properly locating and/or coordinating his work with those of other parties involved.

g. The minimum efficiencies specified herein are the minimum laboratory efficiencies for a completely staged unit. The Proponent shall furnish copies of certified non-witnessed performance test for the imported equipment. In the absence of such certification and for locally-manufactured/assembled equipment, a local laboratory testing shall be conducted on the equipment in the presence of authorized Water District representatives. In no case shall the Proponent be allowed to deliver and install the unit until satisfactory laboratory test is attained. The cost of making the test shall be borne entirely by the Proponent.

h. The Proponent shall be responsible for all components, and for satisfactory installation and operation of the completely assembled unit, including the motors, motors controllers and pumps.

i. The equipment and installation shall be guaranteed for a period of at least one (1) year of trouble-free operation. The Proponent shall furnish and replace, without cost to the Owner, any equipment or part that is defective or shows undue wear within one (1) year after acceptance of the contract work. A warranty certificate shall be issued to the Owner, effectivity date of which shall start on the same day the units have been accepted. A duplicate copy of the same shall be furnished to the Engineer. All incidental expenses relative to the warranty work shall be borne entirely by the Proponent.

j. All mechanical equipment shall be tested to the satisfaction of the Engineer before any facility is put into operation. Tests shall be made to determine whether the equipment has been properly assembled, aligned, adjusted and connected. Any changes, adjustments replacements required to make the equipment operate as specified shall be carried out by the Proponent as part of the work. In addition to the mentioned testing conditions, the following field test requirements should be considered for electrical equipment materials and

components:

1. **System Test** – Each panel board shall be tested with the power equipment connected, circuit breakers closed and all loads and fixtures permanently connected for their intended operation for a minimum of 24 hours continuous operation in the presence of the Engineer, at the expense of the Proponent. The entire installation shall be free from any ground fault and from any short circuit. In no case shall the insulation resistance be less than that allowed by PEC regulations for Electrical Equipment of Buildings and/or manufacturers recommendations. Failures shall be corrected in a manner satisfactory working condition.

2. **Performance Test and Equipment Setting** – It shall be the responsibility of the Proponent to test the entire electrical system for the proper equipment operation. Setting of all protective relays, pilot devices, and auxiliary systems shall conform with the operating requirements of the installations. The Proponent shall turn-over the entire electrical installation in a satisfactory working condition.

k. Upon completion of the contract work, the Proponent shall arrange that a field test be conducted on the mechanical equipment by the Engineer/s in his presence. The test shall be made to show that the installed equipment satisfies its specifications and operational requirements. The contract work will not be accepted and final payment will not be recommended until satisfactory test has been made. In the event of failure of the equipment to meet the guaranteed efficiencies or to operate to the Engineer's satisfaction during the first official field test, the Proponent shall make such modifications and repairs and shall receive no additional compensation therefore. Failure of the equipment to meet the contract requirements in three (3) official field tests shall be charge to the Contractor. The test run shall be made within thirty (30) days upon receipt of the Proponent request for such testing. Provided, however, that if the Engineer/s fail to make the test within the said period, the field test shall not further delay the acceptance of the work. Above field test shall be made only after the Proponent has furnished the Engineer/s a copy of satisfactory results of his initial or preliminary test on the equipment as part of his work and without cost to the Owner. During the testing of the equipment, the Proponent shall arrange to have available qualified persons who shall instruct the plant personnel in the operation and care thereof. Only after all the equipment have been tested and adjusted shall the new facilities be put into operation. Acceptance testing of equipment shall not include initial start-up and adjustment of equipment. All equipment shall be tested for proper operation and undergo initial adjustments prior to acceptance. If at the time of acceptance testing, the equipment is not working in order, the Engineer shall direct the Proponent to make the necessary repairs or adjustments.

l. Before the acceptance of the work, Proponent shall furnish, for each piece of equipment supplied, two (2) complete bound sets giving information listed below (in English Language):

    1. Clear and concise instructions for the operation, adjustment and lubrication and other maintenance of the equipment.

    2. Parts list of the equipment with catalog numbers and other data necessary for ordering replacement parts in the future.

    3. All equipment furnished under these specifications shall comply with all applicable mandatory safety codes.

m. Where materials of construction are not specified, the Contractor shall use first class commercial grades best suited for the particular use for which they are employed.

n. The Proponent shall employ licensed Mechanical/Electrical Engineer to supervise the mechanical/electrical works as required by Commonwealth Act. No. 294, known as the Mechanical Engineering Law and Republic Act No. 7920 known as Electrical Engineering Law.

5.02 MECHANICAL EQUIPMENT

5.02.1 General

1. SCOPE OF WORK

The Proponent shall furnish, deliver, install, test and commissioning in accordance with these specifications and

drawings four (4) submersible pump and motor set, complete with motor controller, discharge elbow/head, discharge pipelines with valves and fittings; including accessories and other appurtenances as specified herein and shown on the drawing.

2. SUBMERSIBLE PUMP

A. OPERATING REQUIREMENTS – The pumps shall meet the following operating requirements:

DESCRIPTION	STA MONICA	CALAPAN
➢ Number of units	1	1
➢ Nominal capacity at design head, LPS (GPM)	15(238)	15(238)
➢ Design head, TDH, m	60	60
➢ Minimum pump laboratory efficiency at design head, percent	75	75
➢ Maximum diameter of Pump, mm	150	150
➢ Nominal design speed, rpm	3450	3450
➢ Nominal diameter of motor/pump bowl Including cable guard, mm	150	150
➢ Recommended Nom. Motor Rating, KW (HP)	15(20)	15(20)

There shall no point within the operating range of the pump wherein the required horsepower exceeds the rated motor horsepower. In addition to the above requirements, the design point shall be located within the best efficiency range of the pump. Efficiency range shall be within the ± 5% of the best efficiency point (0.05 x BEP).

Note: * The selection of pump requirement shall be undertaken only after the pumping test of the completed well has been conducted. The resulting data from the pumping test shall be used as the basis for proper design and calculation of the pumping equipment, i.e. submersible pump to be installed in a well.

B. PUMP CONSTRUCTION

Pump Element – The impellers shall be of the enclosed type, constructed of stainless steel, accurately fitted, smoothly finished, and dynamically balanced at normal pump speeds. They shall have removable wearing rings for sand handling capability and lateral seal rings mounted in their companion casing with maximum sand content of 50 mg/l and maximum particle size of 2 mm. The bowl casing shall be constructed of closed-grained cast iron G-Cu Sn10. The pump bearing shall be at least 2-1/2 times the diameter of the shaft. The pump shaft shall be of type 1.4462 stainless steel. The pump inlet suction shall include a stainless steel strainer with the inlet area equal to at least five (5) times the impeller inlet area.

C. SUBMERSIBLE ELECTRIC MOTOR

Motor – The motor shall be of squirrel cage, submersible induction type, encapsulated type, rated at 20 HP, 240/460 volts, thee phase, 3450 rpm, 60 hz AC. The motor shall be designed for continuous duty operation and shall have a minimum service factor of 1.15. The motor shall be water filled and incorporate a mechanical seal to restrict foreign matter from entering the motor. The thrust bearings shall be of ample capacity to carry the weight of all rotating parts plus the hydraulic thrust and shall be an integral part of the driver. It shall be equipped with expansion diaphragm to compensate for filing water expansion/contraction due to temperature changes. It shall be fitted with a permanent non-corrosive nameplate on which all standard motor date shall be stamped or engraved in English/Metric.

5.03 ELECTRICAL EQUIPMENT

5.03.1 Scope of Work

The Proponent shall furnish, deliver, install, test and commission in accordance with these specification and drawings wires and cables, conduits and fittings, outlet boxes and fittings wall switches and receptacles, lighting fixtures, panel board, Variable Speed Drive Motor Controller/s and its auxiliary control devices, grounding system, control transformers, level relay, electrodes and feeder and other appurtenances as specified herein and shown on the drawing.

5.03.2 Codes and Standards

All equipment and materials shall conform to the latest revision of the following standards: Philippine Electrical Code; American National Standards Institute (ANSI); National Electrical Manufacturers Association (NEMA); Underwriters' Laboratories (UL).

In addition, all electrical equipment and materials require a higher degree of workmanship or better quality of material that are implied by the above codes and standards, then, these drawings and specifications shall prevail.

5.03.3 Working Drawings

The electrical drawings constitute an integral part of this Contract and serve as the working drawings. They indicate general arrangements and locations for equipment conduit and outlets and other work. Installed locations must be determined after careful review of its conditions, of approved shop drawings, of the drawings of other Divisions, as well as the drawings of this Division, to assure a workable installation. All items not specifically shown but obviously required to obtain a workable installation shall be included.

5.03.4 Equipment, Material and Workmanship

It is the intent of these specifications and of the drawings to establish quality standards of all equipment and materials and to require first class workmanship in order to facilitate trouble-free operation and minimum maintenance of the work. All equipment and materials shall be new, shall be listed by UL, and shall bear the UL Label, where UL requirements apply, unless exemption to this requirement is inherent to an individual item specified herein, or exception is otherwise granted by the Project Manager. All equipment and materials shall be products of reputable, experienced manufacturers. Similar items in the project shall be the products of the same manufacturer. All equipment and materials shall be of industrial grade and standard of construction, shall be of sturdy design and manufacture, and shall be capable of long, reliable, trouble-free service. All works, including installation, connection, calibration, testing, and adjustment, shall be accomplished by qualified, experienced personnel working under continuous, competent supervision. The final completed installation shall display superior work, employing industrial standards and methods.

5.03.5 Testing and Coordination

The Proponent shall perform on-site tests, in the presence of the Project Manager, to demonstrate compliance with the requirements of this specification. Such testing shall include the insulation resistance tests as specified under Field Testing of Wire and Cable.

5.03.6 Shop Drawings

Shop drawings shall provide sufficient information to evaluate the suitability of the proposed material and compliance with these specifications; data shall include:

Part C - Technical Specifications
a) Front, side, rear and top elevations
b) Location of conduit entrances and access plates
c) Component data

d) Connection diagrams, terminal diagrams, internal wiring diagrams, conductor sizes, etc.
e) Method of anchoring
f) Finish

Catalog data shall be submitted to supplement the shop drawings. Catalog cuts, bulletins, brochures or the like, or photocopies of applicable pages thereof, shall be submitted.

5.03.7 Permits and Fees

All permits and electrical fees required for the work shall be obtained by and at the expense of the Proponent. The Proponent shall furnish the Project Manager and the Water District final certificates of inspection and approval from the proper government authorities after the completion of the work. The Proponent shall prepare all as-built drawings and all other paper work required by the Approving authorities.

5.03.8 Grounding

Ground continuity throughout each facility shown shall be maintained by installing an electrically continuous raceway system. Metallic raceway shall be installed with double lock-nuts or hubs at enclosures; non-metallic raceway for branch circuits shall contain a copper grounding conductor either bare or green if insulated; such conductor shall be bonded to terminal and intermediate metallic enclosures.

5.03.9 Conduit

Empty conduit terminations not in pull boxes shall be plugged. Exposed raceway shall be installed perpendicular or parallel to building lines. Conduit shall be supported by two-hole straps where concealed and one-hole cast clamps elsewhere at intervals specified by the Philippine Electrical Code. Conduit which pierces concrete slabs or walls shall be terminated with flush couplings. Conduit stubbed up for floor standing equipment shall be placed in strict accordance with approved shop drawings. Conduit stubbed out at walls shall be perpendicular to the wall. Metallic raceway installed below grade or in wet locations shall be made up with a conductive waterproof compound applied to threaded joints. Rigid steel conduit shall be full weight, mild steel, hot dip galvanized inside and out. Joints of steel conduit cast in concrete shall be made with a conductive waterproof compound. Flexible conduit shall be used in lengths up to 450 mm (18-in) for the connection of equipment such as motors, transformers, pressure switches, and the like. Flexible conduit may be used in lengths as required of the connection of recessed lighting fixtures. Liquid-tight flexible conduit shall be equal to Sealtite Type UA as manufactured by American Brass, Anaconda, Electroflex, with fittings designed for use with this type of conduit. Equipment subject to vibration or movement which is normally provided with wiring leads, such as solenoid valves, shall be installed with a cast fitting one size larger than the conduit entrance for the make-up of connections.

5.03.9 Conduit Fittings

Fittings shall comply with the same requirements as the raceway with which they shall be used. Fittings for use with rigid steel conduit shall be cast or malleable of non- ferrous metal. Covers of fittings not in "Indoor Locations" shall be closed with gaskets. Cast fittings, housing wiring devices in outdoor locations, shall have mounting lugs.

a. Access fittings (elbows, tees, crosses, etc.) shall have threaded hubs.

b. Insulated bushings shall be molded plastic or malleable iron with insulating ring.

c. Insulated grounding bushings shall be malleable iron with insulating ring and with ground lug.

d. Erickson Couplings shall be used at all exposed points of union between ends of rigid steel conduits which cannot be coupled; running threads and thread less couplings shall not be used.

e. Liquid-tight fittings shall be Appleton Type ST. or equivalent.

f. Hubs for threaded attachment of steel conduit to sheet metal enclosures, where required,

shall be Appleton Type HUB, or equivalent.

5.03.10 Boxes and Covers

Outlet boxes shall be used as junction boxes wherever possible. Where separate pull boxes are required, they shall have screwed covers; outdoor boxes shall be galvanized with gasket covers and threaded hubs. Indoor boxes shall be painted.

a. Outlets, switches, and junction boxes in concealed locations, where cast in concrete, and where surface-mounted shall be one-piece, pressed steel, galvanized.

b. Outlets, switches, and junction boxes in outdoor, non-corrosive locations, and where surface-mounted, shall be cast ferrous with zinc or cadmium plating and enamel finish. Surface-mounted boxes shall have integrally cast mounting lugs.

5.03.11 Wiring Devices

All wiring devices shall be a product of a single manufacturer and shall conform to a applicable NEMA Standards

5.03.12 Wires and Cable

Conductors including ground conductors shall be copper. Insulation shall bear manufacturer's trademark, and voltage rating, conductor size. Conductors shall not be pulled into raceway until:

a. Raceway system has been inspected and approved by the Project Manager.
b. Plastering and concrete have been completed in affected areas.
c. Raceway system has been freed of moisture and debris. Conductors shall be hand pulled. Use wire pulling lubricant, where needed. Building wire conductors 22 mm2 and larger installed below grade or in concrete slabs on grade shall have type RHW-USE insulation, 600-volt. All building wire shall be 600-volt. Type THW. Building wire 8.0 mm and larger shall be stranded; size 3.5 mm and smaller shall be solid. Primary cable for 13.2 kV circuits shall be rated for continuous service at 15 kV, grounded neutral three - phase wye at 90 C. Conductors shall be tin-coated copper, covered with a semi-conducting tape; over this tape shall be a tinned copper shield, a polyester film tape, and an overall jacket of PVC. However, if it is overhead, Aluminum Conductor Steel Reinforced (ACSR) shall be used. Control wires to be field-installed shall be Type THWN. Wire shall be rated at 600-volts at 90 C in dry location and 75 C in wet locations.

5.03.13 Splices and Terminations

Control conductors shall be spliced or terminated only at the locations indicated on the drawings and only on terminal strips or terminal lugs of vendor-furnished equipment. For the purposes of this portion of the specification, "control conductors" are defined as conductors operating at 120-volts or less in circuit that indicate equipment status or that control the electric energy delivered to a power consuming device. Branch circuit conductors may be spliced in suitable fittings at locations determined by the Contractor. Conductors shall be spliced or terminated only at equipment terminals shown on the drawings. Wire in panels, cabinets, and gutters shall be neatly grouped using nylon to straps and fanned out to terminals. Control conductors shall be terminated under terminal screws with pre-insulated fork tongue lugs. Splices to motor leads in motor terminal boxes shall be taped with varnished cambric tape.

5.03.14 Wires and Cable Identification

Completed electrical installation shall be provided with adequate identification to facilitate the proper control of circuits and equipment and to reduce maintenance.

a) Engraved white on black lamicoid nameplates shall be provided for panel board, starters, switches, push-button stations, etc. In addition to the nameplates shown on the drawings, control devices shall be equipped with standard collar type Leggett plates.
b) Control devices within enclosures shall be identified in accordance with the drawings, identification shall be by embossed plastic tape.

c) General purpose AC control conductors shall be red. Wire markers shall be plastic impregnated cloth. Control conductor identification legend shall be in accordance with approved shop drawings as well as the construction drawings. In instances where these drawings do not state the required identification, the Contractor shall assign wire numbers. Identification shall be attached within 75 mm (3-in) of the conductor termination. Contractors may use imprinted plastic, split-sleeve markers cemented together after installation, at his option. Motor control conductors shall be identified at each termination, including intermediate terminal strips.

d) Terminal strip shall be identified by imprinted, varnish, market strips, attached under the terminal strip. Feeder cables and branch circuit conductors shall be color coded black, Phase A; red. Phase B; and blue. Phase C. Color coding tape shall be used where colored insulation is not available. Branch circuit switch wire shall be yellow. Color coding and phasing shall be consistent throughout the site, bus bars at panel boards, switchboards, and motor control centers shall be connected Phase A- B-C, top to bottom, or left to right facing connection lugs.

5.03.15 Lighting Fixtures

Lighting fixtures shall be furnished complete with lamps, ballast's, diffusers, lens, supports, and hangers as shown. Industrial fixtures shall be fitted with end laptops, except where fixtures are joined. Exact fixture locations shall be determined after mechanical equipment has been set. Ballasts for fluorescent fixtures shall be high power factor. Class P, and shall bear the seal of the Certified Ballast Manufacturers Association, in addition to the UL label, Ballasts for mercury fixtures shall be stabilized or constant wattage type. Pendant mounted fixtures shall be suspended by conduit and ball aligners. Fixtures mounted to sloping surfaces shall be plumb.

5.03.16 Lighting Panel

Lighting panel shall be dead-front, factory-assembled, bolt-on circuit breaker type; interior shall be enclosed in galvanized steel cabinet, surface-mounted with knockouts, if not shown or specified otherwise. Interior shall have solderless, anti-turn connectors and shall be constructed so that branch circuit breaker can be replaced without disturbing adjacent units or resorting to field drilling and tapping. Bus bars and connecting drops shall be copper or tin-plated aluminum. Neutral bar shall be full-sized and shall have one terminal screw for each branch circuit; main bus bar shall be frill-sized for entire length. Indicated spaces shall have cross connections for the maximum sized device that can be fitted. Cabinet shall be 500 mm (20-inch) wide minimum, with 100 mm (4-inch) minimum side gutters and 125 mm (5-inch) minimum top and bottom gutters. Panelboard trim shall be the same size as cabinet. Door in trim shall have concealed spring hinges and shall have cylindrical lock. Trim shall have circuit directory pocket. All trim and cabinet of 178 section m. Design-Build Contract surface-mounted panel shall be phosphate treated, primed and finished with baked enamel. The number of circuit breakers and the ampere ratings shall be in accordance with panel schedules as shown. The panelboards shall be Type NQOB with 2-pole main breakers as required and 10,000 A.I.C. branch circuit breakers. The cover plate shall be given a priming coat and two coats of high grade baked gray enamel. Panelboard shall carry the UL seal of approval. All breakers controlling fluorescent lighting circuits shall be equipped with handle lock-off devices.

5.03.17 Motor Controls

5.03.17.01 Circuit Breakers

Circuit breakers shall be molded case type, manually-operated, shall have trip-free operating mechanism of the quick-make, quick-break type, and except as noted, and shall be of automatic trip type with combination thermal and instantaneous magnetic trip units. Circuit breakers in combination with' motor starters shall be the motor circuit protector type with instantaneous magnetic trip only. Circuit breakers in combination with motor starters shall be industrial type with instantaneous magnetic trip, earth leakage/ground fault protective device and provided with standard operating handle mounded on the panel. The thermal-magnetic time-delay controlled over current protection and instantaneous short circuit protection shall operate a common trip bar which will open all poles in case of overload or short circuit current in any pole.

The earth leakage tripping device/ground fault sensor shall operate and interrupt the circuit if the leakage current exceeds its rated sensitivity. Earth leakage tripping devices shall eliminate erroneous operations due to rush current

produced at the time of starting the motor.

Circuit breaker shall be trip indicating, with tripped position of breaker handle midway between “ON” and “OFF” position.

5.03.17.2 Motor Control Equipment

The motor control assemblies shall be provided for the submersible pumps. The lot shall consist of one Variable Speed Drive motor controls. Adequately size for 20 submersible motor at 460 volts, 3 phase, 60 hz AC. Motor control shall come complete with the following components/features neatly wired in appropriately sized NEMA enclosure:

1) Overload
2) Over under voltage protection
3) By pass contactor
4) Phase failure/phase reversal protection
5) Control circuit breaker
6) Ground fault relay
7) Ammeter
8) Voltmeter
9) Transfer Switches
10) Liquid level controls and relays
11) Run hour timer
12) Time clock
13) Indicator lights (for pump run, pump tripped, low water level, ground fault, power on)
14) Stop/start push buttons
15) HOA selector switch

5.03.17.3 Components

Miscellaneous components shall be as follows:

5.03.17.4 Selector Switch

Select to switch shall be rated IO-amperes at 600-volts, shall be heavy-duty and oil-tight.

5.03.17.5 Indicating Lights

Indicating light shall be full voltage, push-to-test type, and shall be heavy-duty, oil-tight as specified above for selector switches. Each shall be nickel-plated with screwed-on glass prismatic lens approximately one-inch in diameter. All lights shall be the products of the same manufacturer as selector switches. Lamps shall be long life type.

5.03.17.6 Control Relays

Control relays shall be machine tool type with field-convertible contacts without additional parts rated IO-amps at 300-volts.

5.03.17.7 Time Delay Relay

Time delay relay shall be pneumatic on delay with time range dial adjustable, and shall be Square-D, Type G, or approved equivalent.

5.03.17.8 Terminal Blocks

Terminal blocks for control wiring shall be molded type with barriers, rated not less than 600-volts. Crimped eyelets or approved equal shall be used on all stranded control wire wherever wires are terminated on screw terminals. White or other light-colored marking strips, fastened by screws to the molded sections each block shall have the circuit designation. Each connected terminal of each block shall have the circuit designation or wire number placed on the marking strip with permanent marking fluid. Foreign circuits in all compartments and panel shall be connected to pull-apart terminal blocks or plunger-type door interlocks.

5.03.17.9 Control Circuit Wiring

Control circuit conductors shall be flexible stranded machine tool wire not smaller than 2.0 mm, shall be UL listed Type MTW and shall be rated 600-volts. Insulation for all conductors in a circuit shall be red, except that the grounded control circuit conductors uniformly shall be white. The intertwining from devices mounted on a door to those mounted inside the compartment shall be made together to form a laced and flexible bundle of wires which shall be secured to the door and to the fixed structure to prevent flexing of wires at their terminals. All control circuit wires shall be continuous from terminal to terminal without splices for any purpose. Every conductor in each control circuit shall be designated by a unique number which shall be shown on all shop drawings.

5.03.17.10 Name Plates

Various assemblies and devices shall be provided with an engraved plastic nameplate for identification for operation and maintenance. These shall be fabricated from white-center, black-face laminated plastic engraving stock, formica type E3-1, or approved equal. Each shall be fastened securely using fasteners of brass, cadmium plate, or stainless steel, screwed into inserts or tapped holes as required. Engraved characters shall be block style of adequate size to be read easily at a distance of 1.8 m (6 ft) with no characters smaller than 3 mm (1/8-inch) high. Abbreviations shall be a minimum.

5.03.17.11 Tests Inspections, Clean-up and Spares

The Proponent shall furnish the labor and equipment to perform the testing described herein; testing shall be accomplished in the presence of the Project Manager and shall encompass the following:

a) Rotation of all motors.
b) Resistance to ground of service neutral and transformer neutrals and switchgear ground bus.

The project shall be subject to continual inspection during construction but particular attention shall be placed on wire terminations, identification, setting of overload devices, clean-up and "as-built" drawings. Interior and exterior surfaces shall be cleaned of oil, grease, dirt, plaster, concrete, etc., surface scratches shall be repaired to match factory finishes. Switchboard, panel board and starter interiors shall be vacuumed cleaned. Pull boxes interiors shall be free of all dirt and debris. Cleaning referred to herein describe are condition of equipment at the time of final inspection.

5.03.17.12 Guarantees

The Proponent shall guarantee that the electrical systems are free from all defective workmanship and materials and shall remain so far a period of one year from the date of provisional acceptance of the work. Any defect appearing within the aforesaid period shall be remedied by the Proponent at his own expense in a manner satisfactory to the Water District.

5.04. Flowmeter

Main Meters - The Proponent shall provide and install one (1) main electromagnetic flow meter at the pump station facility as shown on the construction drawings as approved by the Project Engineer. The meter shall be of the magnetic drive, propeller type and shall be furnished with an integral cast body of close grain high tensile cast iron, faced and drilled ANSI flanged ends, and shall be designed for 10.56 kg/cm (150 psi) normal working pressure and water temperature range of O to 30 degrees Centigrade. The meter body shall have the same nominal inside diameter throughout its length and shall be furnished with non-corrosive, non-toxic liners which shall have strengthening vanes. Meters shall be suitable for normal flows (in lps) as indicated in the Feasibility Study Report and shall register within 1.5 °/o (one and half percent) of true flows at all flows within the rated range. The register drives shall be completely isolated from water pressure by an O-ring sealed bronze housing. The propellers shall be magnetically coupled to the register drive by the use of permanent type ceramic magnets. The propeller shall be fabricated of thermoplastic materials resistant to normal water corrosion. The meter shall be furnished with a flow indicator and a totalizer. The indicator shall be calibrated in liters per second while the totalizer shall be six digits straight reading type in cubic meters. The meter shall be Rockwell Model 102 or approved equal.

5.05. Fire Extinguisher

The Proponent shall furnish and install one (1) fire extinguisher pump house at the most accessible place as determined by the Project Manager. The fire extinguisher shall be of type ABC capable of extinguishing fire caused by ordinary combustible flammable liquid and electric equipment. It shall have a discharging range of 20 ft.

5.06. Generator

1. The Proponent shall deliver and install one (1) unit emergency generating with all accessories and spare parts in accordance with the following requirements or equivalent. The generator set shall be of a brand-new diesel electric generating set of 40 KVA, 230/460V, 3 Ph, 60hz., 0.8 power factor, 1800 rpm, powered by industrial diesel engine, water cooled diesel engine and directly coupled to brushless alternators built to the following standards.

a. The generator shall a fully equipped self-contained unit. It shall be a resolving field protection type synchronous generator, delivering 40 KVA at a frequency of 60 hz., under continuous duty. The units shall be capable of working to an altitude of 500 m above sea level.

b. The generator must be drive by an industrial water cooled, direct injection type, turbo charged four strokes, minimum 4 cylinders direct engine.

c. The output rating shall be accordance to ISO Standard 3046/1-1981 in HP or KW.

d. The alternator should be of the brushless type (with automatic voltage regulation and cross current compensation). The voltage regulation from no load to rated power factor shall be with ± 15% of the rated voltage. It is a 3-phase unit star winding connection. Insulation class shall be F for both armature and field winding.

2. An overload relay shall protect the generator against short circuits and overload. In case of too high engine cooling water temperature or too low engine oil pressure, the unit shall be automatically stopped by fuel shutoff solenoid. A 24 volts negative earth electrical system shall be used to operate the engine starting motor and the safety shutdown system.

3. The unit should be provided with 3-phase protected output terminals and one single phase socket. The fuel tank capacity shall be of 100 liters enough for at least one shift continuous full load operation.

4. The unit should also include:

   a. Heavy duty fabricated steel skid base frame with anti-vibration mounting pads.
   b. Unit mounted tropical radiator with engine driven blower type fan.

c. Electric starting system with heavy duty acid type starting battery.
d. High capacity air, fuel and lubrication oil filters.
e. Eight (8) hour capacity fuel tank or more.
f. Exhaust silencer (loose type).

TECHNICAL SPECIFICATION
DIVISION 6 – INFILTRATION WELL

6.01 GENERAL

6.01.01 Scope of Works

The work to be done hereunder includes the furnishing of all labor materials, illumination, transportation, tools, supplies, plant, equipment and appurtenances, unless hereinafter specifically excluded, necessary for the complete and satisfactory construction, development, testing and disinfection of proposed water well. The essential equipment to be made available for the contract by the successful bidder shall be:

a) Rotary type drilling machine truck mounted

b) Rotary mud pump with a capacity of up to 300 meters depth. .

6.01.02 Permits, Certificates, Laws and Ordinances

The Proponent shall, at his own expense, procure all permits, certificates and licenses required by law for the execution of his work excluded the permit to drill to be secure by Water District to NWRB prior to start of drilling of the well. He shall comply with all national or local laws, ordinances or rules and regulations relating to the performance of the work.

6.01.03 Local Conditions

The Proponent shall satisfy himself regarding all local conditions affecting his work by personal investigation and neither the information contained in this section nor that derived from maps or plans, or from the Water District or authorized representatives shall act to relieve the Proponent from any responsibility hereunder or from fulfilling any and all the terms and requirements of his contract.

6.01.04 Quantities and Dimensions

The contract documents indicating the design of the portions of the work below the surface are approximate and are based on available data and judge of the Project Manager. The quantities, dimensions and classes of work shown in the contract documents are agreed upon by the parties as embodying the assumptions from which the contract price was determined.

6.01.05 Proposed Modification

If the actual conditions differ substantially from those which were assumed, then as the various portions of the sub-surface are penetrated the Proponent shall verbally and in writing promptly notify the Project Manager. The Project Manager shall promptly submit the Water District and the Proponent a plan or description of modifications that the proposes to make in the contract documents. If any such modifications are not included as additive or deductive bid items in the bidding schedule, the resulting increase or decrease in the contract price and/or the time allowed for the completion of the contract shall be estimated by the Proponent and submitted in writing to the Project Manager in the form of a proposal. Upon the Project Manager's recommendation, the contract price and the time of completion shall be adjusted by the issuance of a duly approved change order by the Water District in accordance with the other provisions of the contract.

6.01.06 Drilling Water Supply and Power Requirements

All drilling water, lighting and motive power, including necessary water pumps, connections and installations, required for the proper execution of this Contract shall be to the account of the Proponent.

6.01.07 Boundaries of Work

The Water District shall provide land or rights-of-way for the work specified in this Contract and made suitable provisions for ingress and egress, and the Contractor shall not enter or occupy with men, tools, equipment or material, any ground outside the property of the Water District without the written consent of the Water District of such property. Other Proponent and employees may for all necessary purposes enter upon the work and premises used by the Contract, and the Proponent shall conduct his work so as not to impede unnecessarily work being done by others on adjacent to the site.

6.01.08 Access Roadway

Construction or improvement of access roads to the wells site shall done by the Water District. The access road shall be kept in proper condition during the entire construction period.

6.01.09 Protection of Site and Security of Drilling Equipment

Expecting as otherwise provided herein, the Proponent shall protect all structures, walks, pipelines, trees, shrubbery's lawns, etc., during the progress of his work, shall remove from the site all drill cuttings, debris, and unused materials, and shall upon the completion of the work restore the site as nearly as possible to its original condition, including removal of access tracks and the replacement, at the Proponent's sole expense, of any facility or landscaping which has been damaged beyond restoration to the original condition all to the satisfaction of the Project Manager. Water pumped from the well shall be conducted to a place approved by the Project Manager where it will be possible to dispose the water without damage to property or creation of a nuisance. The Proponent shall be responsible for the security of his own tools and equipment at the Jobsite.

6.01.10 Competent Workmen

The Proponent shall employ only competent workmen for the execution of his work and all such work shall be performed under the continuous direct supervision of an experience Well Driller satisfactory to the Project Manager.

6.01.11 Liquidated Damages (Sample, Pipes)

The failure on the part of the Proponent to obtain, preserve and deliver such samples or records, satisfactory of the Project Manager, shall be considered as actual damage to the Water District. Such a failure shall authorize the Water District to retain from money due or to become due the Proponent the sum of ONE HUNDRED PESOS (P100.00) as liquidated damages for each sample that the Proponent shall fail to obtain, preserve or deliver, or for each length of pipe not properly measured and recorded in the order in which it was placed in the well. In the event that, in the opinion of the Project Manager, the failure of the Proponent may be required to perform such work as the Project Manager deems necessary to remedy such failure at no cost to the Water District. It is understood that the liquidated damages herein provided are fixed, agreed and not by way of penalty; and that to be entitled to such damages, the Water District shall not be required to prove that he has incurred actual damages.

6.02 Samples and Records

6.02.01 Sampling of Formation

For any method used for borehole drilling the sampling procedure must provide that all the fractions of penetrated strata are present in the sample. The drilling rate expressed in meters penetrated per actual drilling time shall be recorded throughout the drilling operation. Actual drilling time being time with active drilling operation i.e. excluding time for replacement of drilling rods and bits, breakdown of drilling equipment and similar non-active drilling operations. Formation samples or cutting shall be taken at one meter intervals or more frequent of the formation penetrated changes, and samples shall be dried and placed in plastic or other appropriate bags on which the sampling depth and data is written in such a manner that it may permanently be readable. Each sample shall be place in wooden boxes in which space is provided for storage of each sample in separate partitions. Sampling depth shall be written on the box.

6.02.02 Well Logging

If required by the Project Manager, the Proponent shall perform well logging by using special approved equipment, such as the electric resistivity, spontaneous potential, flow, neutron gamma and gamma-gamma logging equipment.

6.02.03 Record of Casing Pipe

The Proponent shall keep an accurate record (assembled) of the order, number, type, size and length of the individual pieces of pipe, screens and liners installed in the well.

6.02.04 Daily Reports

The Proponent shall prepare a daily report describing the nature of penetrated strata encountered, the work done during each day, including the items of work accomplished, such as depth drilled, casing set, loss in drilling mud, weight, mud viscosity, the water level in the well at the beginning and end of each shift, and other such pertinent data as he is requested by the Project Manager to record. He shall submit these records once a week or at other time intervals as requested by the Project Manager.

6.03 Water Quality Protection and Drilling Fluid

6.03.01 Precautions to be Taken

The Proponent shall such precautions as necessary or as may be required permanently to prevent water having undesirable bacteriological, physical and chemical characteristics from entering, through the opening made by the Proponent in drilling the well, into the stratum from which the well is to draw its supply. He shall also take all necessary precautions during the construction period to prevent any contaminated water, gasoline, and other deleterious substances from entering the well either through openings or by seepage from the ground surface.

6.03.02 Connective Work

In the event that the well becomes contaminated or that water having undesirable physical or chemical characteristics did enter the well due to the negligence of the Proponent, he shall at his own expense, perform such work or supply casings, seals, sterilizing agents or other materials as may necessary to eliminate the contamination or exclude any undesirable water in the well.

6.03.03 Drilling Fluid

When the Proponent employs drilling fluid, the following rules apply: Only high-grade bentonite or similar with additives, and approved by the Project Manager shall be used in the make-up of the drilling fluid. Bentonite and additives adequate for drilling a well shall be stored on the well site prior to start of drilling of the well. The drilling fluid shall possess such characteristics as required to adequately condition the walls of the hole to prevent caving as drilling progresses and to remove the drill cuttings from the hole. The Proponent shall provide onsite facilities for controlling the density, viscosity and sand content of the drilling fluid. These facilities shall be approved by the Project Manager prior to commencement of the drilling operation and shall be of the same standard as Barriods Mud Lab or similar. Mud control shall be made at the end of each work shift and further after each addition of bentonite or additives and the results shall be recorded. From the moment the drill bit has reached the water bearing formation to the exploited the drilling mud shall be circulated continuously to minimize seepage of drilling mud into the formation. The Proponent shall provide his own mud pump and construct the necessary mud and cuttings shall be filled with clean earth and the ground surface shall be restored to its original condition by the Proponent.

6.04 Casings, Drive Shoes, and Capping

6.04.01 Well Casing

The Proponent will assume responsibility for any casing failure and will correct, as approved by the Project Manager, any casing failure at no cost to the Water District. In the event that the Proponent cannot correct a

casing failure, the Proponent shall replace the casing with material complying with the specifications of this contract, or if necessary, better casing as approved by the Project Manager at no extra cost to the Water District. The joining of the well casing shall be by a method to withstand earth stresses encountered and casing replacement methods, employed. Any failure of joint connections will be the responsibility of the Proponent and will be corrected or replaced at no extra cost for the Water District. All casing materials shall be of new stock. In case the well is abandoned, the proponent shall salvage the screen casing and seal the hole in accordance with the direction of the Project Manager.

6.04.02 Materials for Casing

Unless otherwise specified or approved by the Project Manager, all casings to be used hereunder as part of the permanent well shall be new clean spiral welded pipe, having the following minimum thickness and weight:

Nominal Diameter in inches	8	10	12	14
Minimum wall thickness in inches	0.312	0.312	0.312	0.312
Minimum weight in lb. per foot (plain ends)	27.7	40.48	49.56	54.57

Manufactured weight tolerance is 10 percent over and 3.5 percent under nominal weight. Casing shall have either standard API screwed joints, or beveled ends for welded joints. If rotary drilling is applied an approximately 8-10 in pilot well shall be drilled with subsequent reaming to the final well diameters. Sampling and the required well logging shall be performed in the pilot well prior to reaming.

6.04.03 Temporary Casing

The Proponent shall furnish and install all temporary casings as may be required for construction convenience or expediency. Temporary casings intended for construction purposes only shall be of such weight and design as necessary to prevent entrance of sand and silt, to be reasonably water tight, and to permit its installation without distortion or rupture or the depth and dimension. All temporary casings shall be pulled out and shall remain the property of the Proponent.

6.04.04 Driving Shoes

Use of appropriate drive shoes for driven permanent casings is mandatory. They may not be required for shallow settings of temporary casings in unconsolidated formations. The type and weight of the drive shoe is left the discretion of the Proponent but must receive prior approval by the Project Manager.

6.04.05 Temporary Capping

At all times during the progress of the work, the Proponent shall protect the well in such manner as to effectively prevent either tampering or the entrance of foreign matter into the well, and upon its completion, he shall provide and install a screwed cap satisfactory to the Project Manager.

6.05 Testing for Plumbness and Alignment

6.05.01 Requirement to Test

All holes shall be constructed and casing and liners set around, plumb and true to line as defined herein. To demonstrate the compliance of his work with this requirement, the Proponent shall furnish all labor, tools and equipment and shall perform the tests described below to the satisfaction of the Project manager. Tests for plumbness and alignment must be made after the complete construction of the well and before its acceptance. Additional test, however, may be required by the Project Manager during the performance of the work. No specific payments shall made by the Water District for making these tests.

6.05.02 Description of Test

Plumbness and alignment shall be determined by lowering into the well to the depth of the lowest anticipated pump setting a section of pipe 12 meters long or a dummy of the same length. The outer diameter of the pipe or dummy shall not be more than 1 centimeter smaller than the inside diameter of that part of the casing being tested. If a dummy is used, it shall consist of a rigid spindle with three (3) rings, each ring being 30 centimeters wide. The rings shall be truly cylindrical and shall be spaced one at each end of the dummy and one in the middle thereof. The spindle of the dummy shall be rigid so that it will maintain the alignment of the axes of the rings. The pipe or dummy shall hang in the exact center by suitable cable line. The pipe or dummy is lowered 3 meters at a time and should the cable line move off center of the well casings, the direction and distance is measured and recorded. This procedure is continued until the well has been checked to the desired depth.

6.05.03 Requirements for Plumbness and Alignment

Should the results of the test for plumbness and alignment show that the pipe or dummy fails to move freely throughout the length of the casing or hole to a depth of the lower anticipated pump setting and should the well vary from the vertical in excess of two-thirds the smallest inside diameter or that part if the well being tested or beyond the limitations of this test, the plumbness and alignment of the well shall be corrected by Proponent at his own expense. Should the Proponent fail to correct such faulty alignment or plumbness, the Project Manager may refuse to accept the well. The Project Manager may waive the requirements of this paragraph for plumbness if, in this judgment, (a) the Proponent has exercised all possible care in constructing the well and defect is due to circumstances beyond his control; (b) the utility of the completed well will not be materially affected. In no event shall the provisions of this paragraph with respect to carrying out the rest for alignment be waived.

6.06 Well Screens

6.06.01 Well Screens

The Proponent shall furnish, deliver and install 300 mm diameter stainless steel well screen (10-5/8” O.D. API Pipe Size) of the well.

a. General

   Continuous wire wound stainless steel screen suitable for application for maximum depth of 150 meters.

b. Material

   Wrap wire, support rods and welding rings shall be made of Type 18-8 Grade 304 stainless steel with better anti-corrosion properties.

c. Diameter

   API Pipe Size 10-5/8” O.D. (300 mm diameter)

d. Length

   Three (3) meters long per piece including welded rings

e. Slot Opening

   Aperture shall be 1.5 mm (0.60 in.). An aperture range of 1.4 mm to 1.6 mm shall be acceptable Slot 40.

f. End Fittings

   Welded ring type, beveled ends, to be welded to one another of API Pipe Size

g. Hydrostatic Collapse Pressure

Shall not less than 150 psi

h. Pulling Load

Not less than 27,500 kg

i. Transmission Capacity

Not less than 6.5 liters per second per meter of screen at entrance velocity of 0.03 m/sec.

j. Support Rods

Total cross-sectional area of support rods shall not be less than 550 sq. mm. Total number of support rods shall not be less than 42 pcs. (4.1 mm diameter) or 49 pcs. (3.81 mm diameter)

6.07 Gravel Packing

6.07.01 For Unconsolidated Sediments

f specified, either a single or double gravel pack shall be made. After the casing has been installed to the full depth of the well, and the screen has been placed in its proper position, a wall of grave shall be placed around the screen. The method of gravel packing shall be such that separation and bridging of gravel is avoided. Gravel Packing in drill much-filled bore-holes shall be done by the reverse circulation of drilling fluid.

6.07.02 For Consolidated Sediments

If specified, a gravel stabilizer shall be placed around the screen.

6.07.03 Gravel-Pack-Materials

Gravel-pack-materials if used should be clean, free from sand particles, with well-rounded, water-worn, gravel that are smooth and graded, consisting mostly of siliceous materials and as approved by the Project Manager. Angular chipping or road stone must not be used as gravel pack material. The Proponent shall in the mobilization period submit to the Project Manager sample of gravel pack, stating the source of material, quantities and sizes available, rate of delivery and any other information requested by the Project Manager for his approval. The gravel shall be graded in accordance with the results of the analysis of data collected during drilling and the grading shall be approved by the Project Manager before being placed. Material required to fill cave-ins and over excavation shall be provided at the Proponent's expense.

6.08 Infiltration Well Development

6.08.01 Developing the Infiltration Well

If not otherwise specified by the Project Manager the Proponent shall furnish all necessary pumps, compressors, plungers, bailers, jetting tools, electric generators and other equipment which may be needed. The Proponent shall develop the well to its maximum expected yield by methods as requested and approval by the Project Manager.

6.08.02 Removal of Drilling Fluid

In case drilling fluid has been used, special care must be taken in order to avoid permanent clogging of the aquifer by the drilling fluid. Upon completion of drilling the hole to the desired diameter and depth, installation of the string of casing and screens and gravel packing must commence within six (6) hours, and the installation must take place as one continuous working operation. The installation of gravel pack shall be completed by clear-pumping the well for drill mud and must within six (6) hours be followed by injection and/or jetting through the slotted and screened portion of the well with a polyphosphate solution to delocculate the mud cake formed by the drilling fluid on the walls of the drilled hole. The concentration of the polyphosphate shall be 3.0% by weight of the quantity of the water in the casing and gravel pack. The solution shall stay in the well for totally

24 hours before commencement of further development. The treatment with polyphosphate must be repeated if so required by the Project Manager.

In case Proponent fails to comply with the schedule of operations given above (e.g. due to equipment breakdown), he may at his own discretion either

1. Reconstruct the well by reaming the hole to a two (2) inch bigger diameter, but otherwise to the same specifications as the original well at no extra cost to the Water District.

2. Proceed with the well construction.

If the Proponent decides to proceed according to option 2) above and in case the Project Manager after pump testing the well finds the well loss to be excessive, the Proponent is required, if directed by the Project Manager to recover all materials and reconstruct the well after reaming the hole to a two (2) inch bigger diameter to the entire depth. The recovering of materials, reaming of the hole and reconstruction of the well shall be at no extra cost to the Water District. Should recovery of gravel pack, casing and screens be impossible, a new well shall be constructed to the same specifications at no extra cost to the Water District.

6.08.03 Swabbing

After the well construction is finished, the Proponent shall commence developing the well by swabbing, using previously approved equipment. The swabbing shall be done by approved surge plunger and starter by surging lightly and then increasing the force of the surge as the development proceeds. At regular intervals during and upon completion of this operation, the well shall be cleaned of all accumulation of sediments to the full original depth of the well, this being the bottom of the sump pipe or lower end of permeable strata (rocks). The quantity of the sediments removed after each surging operation, settlement intervals of gravel and the quantity of gravel added shall be recorded in the drillers log. As the gravel settles, more gravel shall be added. Immediately after completing swabbing of the well, the Proponent shall commence further development of the well by using approved equipment to clear the well of all additional accumulation of mud, sand and sediments. The following methods of further development of the well may be required by the Project Manager.

6.08.03 Pumping

Development by pumping shall be performed by a discharge of about 150% of the anticipated production discharge.

6.08.05 Surging with Air

The compressor used should be capable of developing a maximum pressure of 150 psi 105 M.W.C.O. The proper compressor capacity is about 10 cu.m. of free air for each cu.m. of water at the anticipated pumping rate. The quantity of water being pumped at the commencement of the development shall be limited and gradually increased as the water clears. From time to time, the air compressor or pump shall be stopped and the water in the pump column allowed to flow back through the perforations into the aquifer. The well may also be back washed up to the annular space (gravel pack) by back washing with air compressor.

6.08.06 Jetting

The jetting tool with two or more nozzles shall be supplied with water through a high-pressure pump capable of producing a jet velocity of 40-7 meters per second. The development should be carried out by slowly rotating the jetting tool and gradually raising or lowering it in order to cover the entire surface of the screen. At the same time as the high velocity water jetting tool is in action, the well should be pumped with a slightly larger diameter than the discharge from the jetting tool. The development by either of these methods shall be repeated and continued until the well is thoroughly developed to the satisfaction of the Project Manager. The well shall be able to produce continuously a reasonable maximum capacity based on the consideration of the thickness and the nature of the water-bearing formation. If during the development operations, there is any indication of settlement of the gravel envelope, this should be recorded and more gravel shall be added as needed and the developing shall continue until the sand production has been reduced to a value not in excess of that specified below. Upon completion of the development operations, the Proponent shall demonstrate to the satisfaction of the Project Manager that the bottom of the well is clear of all sand, mud and other deleterious materials.

6.08.07 Limits to Sand

The Proponent shall exercise extreme care in the performance of this work in order to prevent the break or caving-in of strata overlying that from which the water is to be drawn. He shall develop, pump or bail the well by such methods as may be approved by the Project Manager until the water pumped from the well is substantially free from sand and until the water pumped from the well does not contain an amount of fine materials in excess of 2 millimeters per cu.m. during final test pumping. The equipment to measure the sand content shall be furnished by Proponent.

6.09 Infiltration Well Development

6.09.01 Grouting Materials

To seal the top of the well, as directed by the Project Manager the annular space between the inner protective casing and the outer casing or hole shall be filled with cement grout. The grouting may not be initiated before the well testing is completed. Grout shall be a proportion of cement and the maximum quantity of water (not over 20 liters per 40 kg bag of cement) required to give a mixture of such consistency that it can be force through the grout pipes. The mixtures, method of mixing and consistency of grout shall be as approved by the Project Manager. All cement required for grouting and other related work shall be provided by the Proponent. Portland Cement shall conform to the “SPECIFICATIONS FOR PORTLAND CEMENT “(ASTM C150-Latest Revision) and shall be Type 1, or as otherwise approved by the Project Manager.

6.09.02 Placement of Grout

Before proceeding with placing of the grout, the Proponent shall secure the Project Manager’s approval of the method he proposes to use. No method shall be approved that does not specify the forcing of grout from the bottom of the space to be grouted towards the surface. A suitable cement retaining packer or plug approved by the Project Manager shall be provided at the bottom of the inner casing so that grout shall not leak through into the bottom of the well. The grouting shall be done continuously, and in such manner as shall ensure the complete filling of the annular space in one operation. No drilling operations or other work in the well shall be permitted within 72 hours after the grouting of casings. If quick setting cement is used, this period may be reduced to 24 hours or as recommended by the cement admixture manufacturer.

6.09.03 Grouting Liners

When required by the Project Engineers, and/or the drawings exterior liners for grouting shall be used. The method to be used and extent of lining shall be detailed by the Proponent for the approval of the Project Manager prior to field implementation.

6.10 Testing from Yield and Drawdown

6.10.01 Time of Test

If required by the Project Engineer the Proponent shall perform preliminary pumping test before and/or when the well is drilled to the final depth in order to ascertain the yield and drawdown of the well. After the well has been completely constructed and cleaned out and the depth of the well accurately measured, the Proponent shall immediately notify the Project Engineer to that effect and shall make the necessary arrangements for conducting pumping tests in order to ascertain the yield and the drawdown of the completed well. Besides these tests the Project Engineer may order the Proponent to make such additional pumping or bailer tests during and after construction as found necessary. All tests shall be run with equipment approved by the Project Engineer and in a like manner to that hereinafter described.

6.10.02 Test Pump

The pump capacity shall be adequate for pumping with the required discharge being a maximum 150% of the expected average or as otherwise agreed by the Project Engineer. The test pump and prime-mover assembly shall be equipped with satisfactory throttling device, so that the test discharge may be reduced to the quantity defined by the Project Engineer. The pumping unit shall be completed with either a gas or diesel engine prime mover of continuous stable power, controls and appurtenances, and shall be capable of being operated without

interruption for a period of approximately 7 days with all fuel on site prior to starting.

6.10.03 Discharge Measurement

Discharges up to 75 l/sec may be measured by drum filling. Discharges in excess of 75 l/sec should be recorded by means of a circular orifice weir or v-notch weir box, supplied by the Proponent and as approved prior to the testing by the Project Engineer.

6.10.03 Auxiliary Equipment

The Proponent shall furnish, install and maintain all auxiliary equipment of approved size and type as required and approved by the Project Engineer. To measure the depth to the water level in the well, there must be left space between riser pipe and the casing so that a 1-1/2" water level sounding pipe can be installed. If required by the Project Engineer the Proponent shall install this pipe to the depth of lowest expected pumping water level and ensure that the electrical probe of 20 mm diameter glides inside the pipe to the water level without obstruction.

6.10.04 Duration of the Test

If not otherwise specified by the Project Engineer, the preliminary test for yield and drawdown should be performed for a minimum of 24 hours and the final pumping test for a minimum of 72 hours. A step-drawdown pumping test with at least 4 steps each with a duration of one hour shall be performed. Except as otherwise agreed, the Proponent shall furnish all labor, pump, motive power, lubricating oil and other necessary material, equipment, labor and supplies as required by the Project Engineer. The Proponent shall during the test pumping operate the pumping unit in such a manner that the discharges required by the Project Manager are obtained. After the pumping tests are completed, the recovery of the water level shall be measured for such periods of time and with such a frequency as directed by the Project Engineer. Accidental interruptions during the pumping test shall render the pumping test obsolete and if so required by the Project Engineer the Proponent must perform a new pumping test lasting for the required period of time at no extra cost to the Water District. This test must not be initiated prior to proper recovery of the water level. After the completion of the final test, the Proponent shall remove by bailing, sand pumping, or other method any sand, stories or other foreign material that may have been deposited in the well. The Project Engineer reserves the right to require the Proponent to extend the duration of the tests, or to make additional tests, these to be paid in unit prices quoted in the Bid Form.

6.11 Disinfection

6.11.01 Time of Disinfection

After the well has been completely constructed and pump tested, it shall be thoroughly cleaned of all foreign substances, including tools, timbers, rope, debris of any kind, cement, oil, grease and scum. The casing pipe shall be thoroughly swabbed, using alkalis if necessary, to remove oil, grease of joint dope. The well shall then be disinfected with a chlorine solution.

6.11.02 Chlorine Solution

The chlorine solution for disinfection the well shall be of such volume and strength that a concentration of at least 50 mg/liter of chlorine shall be obtained in all parts of the well. Chlorine solution shall be prepared and applied in accordance with the directions of and the ratification of the Project Engineer and shall remain in the well for a period of at least two hours.

6.11.03 Requirements for Disinfection of the Test Pump

In the event that the test pump is to be installed after the well has been disinfected, all error parts of the test pump coming in contact with water shall be dubbed with a chlorine solution as directed by the Project Engineer.

6.11.04 Disinfection of Non-flowing Wells

Method B – In lieu of using liquid chlorine solutions, a perforated pipe container capped at both ends, containing a gradual chlorine compound, HTH or Perchloron, may be moved up and down in the well by means of a weighted cable. The amount of compound applied should be such as to provide the standard concentration.

6.11.05 Disinfection of Free-Flowing Wells

For a flowing well discharging at the surface, it is probable that no disinfection shall be required. This should be checked by bacteriological analysis as soon as possible but preferably not until 24 hours after completion of construction. Should the well prove unsafe, a stock of chlorine should be applied for a period of 1 hour so as to provide the standard concentration in the flowing water, the point of application to be at or below the horizon producing the free-flowing condition. Application of the chlorine by means of solution from a pipe container as described for non-flowing may also be used, for disinfecting free-flowing wells.

6.12 Chemical Tests Required

At least one physical and chemical and one bacteriological test in a laboratory acceptable to the Project Manager shall be performed on a sample of water to be taken a few minutes after starting of, and also during the well development stage of construction, and finally on a water sample to be taken towards the end of the Pumping Test for yield and Drawdown. Results of said tests shall be submitted to the Project Manager. The expenses relevant to these tests shall be borne by the Proponent.

6.13 Disinfection

6.13.01 Infiltration Well Clearing

At the termination of well testing the test pump shall be removed from the well and the well shall be bailed clean to the total depth 150 meters.

6.13.02 Pedestal

A concrete pedestal shown on the drawings shall be formed around each well after testing is completed unless otherwise stated.

6.13.03 Infiltration Well Cap

A permanent well cap shall be provided for each well after completion of testing. The well must be provided with a capped 1-1/2” hole on top for water level measurement.

6.13.04 Site Clean Up

After completion of all construction and testing activities the well site, all equipment and residual materials shall be removed from each site. The site shall be then as directed and to the satisfaction of the Project Engineer be restored to condition as nearly as possible to that which existed before well drilling and testing activities commenced. This work shall include, but not be limited to, restoration of fences and structures, removal of drilling cuttings, leveling of the disturbed ground surfaces, and replacement or compensation of destroyed plants and landscaping.

6.13.05 Abandonment of the Well Caused by Fault of the Proponent

In case that the Proponent shall fail to sink the well to the depth specified or to such lesser depth as ordered by the Project Engineer, or should he abandon the well because of loss of tools, failure to withdraw temporary casing or for any other cause due to his fault, he shall if directed by the Project Engineer remove the screen and casing and fill the abandoned hole with clay or clay and concrete. The salvaged material furnished by the Proponent shall remain his property. The payments shall then be made on the accepted well only.

6.14 Submittal of Report and Borehole Data

After completing the well construction and the required tests, and before final payment is made, the Proponent shall submit to the Project Engineer borehole materials and at least three (3) certified copies of the following

reports as specified by the Project Engineer.

6.14.01 Graphical Logs of Infiltration Well

1. The total depth of the well;
2. The description of the strata encountered;
3. The water levels as encountered during drilling;
4. The sizes and the length/specifications of the casing installed;
5. The dates of the start and the completion of the construction of the well;
6. The locations and the description of the casing or the well screen placement, and the recommended setting of the pump and
7. The locations of the gravel, the size of gravel, the grout installed.

6.14.02 Records of Development and Tests for Yield and Drawdown

1. The records such as discharge and drawdown during the development together with the description of the methods of development;
2. The well yield (expressed as the discharge and the drawdown), the dates and the duration of the test(s);
3. The constant rate drawdown and the recovery pumping test data;
4. The methods of measuring the discharge and the drawdown;
5. The specifications of the test pump.

The Proponent shall supply the Project Engineer the actual samples of the penetrated strata/rocks properly packed and labeled in the approved type sample boxes which are also properly labeled.

6.14.03 Shop Drawings and Time Flow Chart

The Proponent shall produce shop drawings showing the technical operations such as test of plumbness and alignment, the method of the screen production if required so, and the installation of the screen, the method of gravel packing and grouting, the arrangement for well testing, the measurements of the water level and discharge and all such shop drawings pertinent to the well drilling and well construction operations as requested by the Project Engineer. The Proponent, shall prior to start of the well construction submit a time flow diagram showing each major operation such as the mobilization, well drilling, sinking of casing/screen, well development, well testing and such other operations as requested by the Engineer.

6.15 List of Equipment

The prospective bidders shall together with the bid submit the list of equipment and machinery such as drilling rigs with generator accessories, compressors, vehicles, etc. The type and age of this equipment must appear in the list in “information required of the Bidder”.

6.16 Warranty

The Proponent has the full responsibility that the proper materials are used and the construction of the well is carried out in compliance with the Technical Specifications. If within one year from the date of completion of the well any malfunctions or failure occur, which can be traced to failure by the Proponent he shall, without any cost to the Water District, make all necessary repairs to make the well construction comply with the technical specifications. If the malfunctions of the well are due to damages of such a character that the Proponent fails to repair the damages a new well shall be constructed to the same specifications at the Proponent’s sole expense.

SPECIAL PROVISIONS FOR INFILTRATION WELL DRILLING AND CONSTRUCTION

Infiltration Well Drilling and Construction

1. Infiltration well shall be drilled for every water supply project with potential groundwater sources based on the Feasibility Study (FS) conducted. The acquired information will be the basis for defining the parameters for the final well design and construction.

2. Only the exploratory well with favorable results (i.e. meeting the project requirements) in terms of water quality and quantity as certified by the authorized Water District representative will be converted to a production well. The well design shall be prepared by the Proponent based on the required documents (listed in No.5 and shall be approved by the Water District representative before proceeding with the production well).

3. The construction of other components of the water system shall begin only when the required well yield and quality have been established based on as certified by the authorized Water District representative.

4. In case, the exploratory well yields unsatisfactory results both in water quality and quantity, the Water District only pay the drilling contractor based on the actual accomplishment which shall be determined by Water District representative.

5. SUBMITTALS

   The following documents shall be submitted by the drilling contractor and shall be the bases for evaluating the exploratory well:

5.1 Well log (indicating the type, depth and thickness of rock/soil information);

5.2 Driller's log (indicating the rate of penetration, level of water, date, time of drilling activity, and other information related to drilling).

5.3 Water quality test result indicating pH, hardness, iron, manganese, chloride and sulfate;

5.4 Pumping test results from step-drawdown and continuous pumping (constant rate); and

5.5 Geophysical logging electric resistivity ® and Self-Potential (SP).

Section VIII. Checklist of Technical and Financial Documents

Notes on the Checklist of Technical and Financial Documents

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

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

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

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

Checklist of Technical and Financial Documents

I. TECHNICAL COMPONENT ENVELOPE

Class "A" Documents

Legal Documents

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

☐ (b) Registration certificate from Securities and Exchange Commission (SEC), Department of Trade and Industry (DTI) for sole proprietorship, or Cooperative Development Authority (CDA) for cooperatives or its equivalent document,
and

☐ (c) Mayor's or Business permit issued by the city or municipality where the principal place of business of the prospective bidder is located, or the equivalent document for Exclusive Economic Zones or Areas;
and

☐ (d) Tax clearance per E.O. No. 398, s. 2005, as finally reviewed and approved by the Bureau of Internal Revenue (BIR).

Technical Documents

☐ (e) 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**

☐ (f) Statement of the bidder's Single Largest Completed Contract (SLCC) similar to the contract to be bid, except under conditions provided for in Sections 23.4.1.3 and 23.4.2.4 of the 2016 revised IRR of RA No. 9184, within the relevant period as provided in the Bidding Documents; **and**

☐ (g) 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**

☐ (h) Conformity with the Technical Specifications, which may include production/delivery schedule, manpower requirements, and/or after-sales/parts, if applicable; **and**

☐ (i) 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

☐ (j) The Supplier's audited financial statements, showing, among others, the Supplier's total and current assets and liabilities, stamped "received" by the BIR or its duly accredited and authorized institutions, for the preceding calendar year which should not be earlier than two (2) years from the date of bid submission;
and

☐ (k) The prospective bidder's computation of Net Financial Contracting Capacity (NFCC);

or

A committed Line of Credit from a Universal or Commercial Bank in lieu of its NFCC computation.

Class "B" Documents

☐ (l) If applicable, a duly signed joint venture agreement (JVA) 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

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

☐ (n) Original of duly signed and accomplished Price Schedule(s).

Other documentary requirements under RA No. 9184 (as applicable)

☐ (o) *[For foreign bidders claiming by reason of their country's extension of reciprocal rights to Filipinos]* Certification from the relevant government office of their country stating that Filipinos are allowed to participate in government procurement activities for the same item or product.

☐ (p) Certification from the DTI if the Bidder claims preference as a Domestic Bidder or Domestic Entity.