PHILIPPINE BIDDING DOCUMENTS

Government of the Republic of the Philippines

PHILIPPINE ECONOMIC ZONE AUTHORITY

PROCUREMENT FOR THE DESIGN AND BUILD OF 300 CMD SEWAGE TREATMENT PLANT FOR PAMPANGA ECONOMIC ZONE

(PEZA-HO-2026-02)

Preface

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

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

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

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

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

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

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

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

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

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

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

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Glossary of Terms, Abbreviations, and Acronyms

ABC – Approved Budget for the Contract.

ARCC – Allowable Range of Contract Cost.

BAC – Bids and Awards Committee.

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

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

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

BIR – Bureau of Internal Revenue.

BSP – Bangko Sentral ng Pilipinas.

CDA – Cooperative Development Authority.

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

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

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

CPI – Consumer Price Index.

DOLE – Department of Labor and Employment.

DTI – Department of Trade and Industry.

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

GFI – Government Financial Institution.

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

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

GOP – Government of the Philippines.

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

LGUs – Local Government Units.

NFCC – Net Financial Contracting Capacity.

NGA – National Government Agency.

PCAB – Philippine Contractors Accreditation Board.

PhilGEPS - Philippine Government Electronic Procurement System.

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

PSA – Philippine Statistics Authority.

SEC – Securities and Exchange Commission.

SLCC – Single Largest Completed Contract.

UN – United Nations.

Section I. Invitation to Bid

Notes on the Invitation to Bid

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

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

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

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

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

d. Any important bid evaluation criteria.

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

Invitation to Bid
Procurement of the Design and Build of 300 CMD Sewage Treatment Plant for Pampanga Economic Zone (PEZA-HO-2026-02)

1. The *Philippine Economic Zone Authority*, through the *Corporate Operating Budget FY 2026,* intends to apply the sum of ***Ninety Million Pesos in Philippine Currency (Php90,000,000.00),*** being the Approved Budget for the Contract (ABC) to payments under the contract for the Procurement of the *Design and Build of the 300 CMD Sewage Treatment Plant for the Pampanga Economic Zone*. Bids received in excess of the ABC shall be automatically rejected at bid opening.

2. The *Philippine Economic Zone Authority* now invites bids for the above Procurement Project. Completion of the Works is required *Two Hundred Forty (240) calendar days upon receipt of the Notice to Proceed*. Bidders should have completed a contract similar to the Project. The description of an eligible bidder is contained in the Bidding Documents, particularly in Section II (Instructions to Bidders).

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

4. Interested bidders may obtain further information from the *Philippine Economic Zone Authority* and inspect the Bidding Documents at the address given below from 8:00 AM to 5:00 PM.

5. A complete set of Bidding Documents may be acquired by interested bidders on ***22 April 2026*** from given address and website/s below *and upon payment of the applicable fee for the Bidding Documents, pursuant to the latest Guidelines issued by the GPPB, in the amount of* ***Fifty Thousand Pesos (PhP50,000.00).*** The Procuring Entity shall allow the bidder to present its proof of payment for the fees *through electronic means.*

6. The *Philippine Economic Zone Authority* will hold a Pre-Bid Conference[1] on ***30 April 2026; 2:00 PM*** at *10th floor, Board Room, DoubleDragon Center West Building, Macapagal Ave., Pasay City*, and/or through videoconferencing/webcasting *MS Teams,* which shall be open to prospective bidders.

7. Bids must be duly received by the BAC Secretariat through manual submission at the office address as indicated below on or before ***13 May 2026; 12:00 NN***. Late bids shall not be accepted.

8. All bids must be accompanied by a bid security in any of the acceptable forms and in the amount stated in **ITB** Clause 16.

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

9. Bid opening shall be on ***13 May 2026; 2:00 PM*** at the given address below and/or through *MS Teams.* Bids will be opened in the presence of the bidders' representatives who choose to attend the activity.

10. The *Philippine Economic Zone Authority* reserves the right to reject any and all bids, declare a failure of bidding, or not award the contract at any time prior to contract award in accordance with Sections 35.6 and 41 of the 2016 revised Implementing Rules and Regulations (IRR) of RA No. 9184, without thereby incurring any liability to the affected bidder or bidders.

11. For further information, please refer to:

    Bids and Awards Committee
    8th Floor, DoubleDragon Center West Bldg., Macapagal Ave., Pasay City
    Tel. No. 8551-3451 loc. 338
    Email: bacsec@peza.gov.ph
    Website: ***www.peza.gov.ph***

12. You may visit the following websites:

    For downloading of Bidding Documents: ***https://www.peza.gov.ph/bid-opportunities***

21 April 2026

(Original Signed)
ROWENA T. NAGUIT
Chairperson, Bids and Awards Committee

Section II. Instructions to Bidders

Notes on the Instructions to Bidders

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

1. Scope of Bid

The Procuring Entity, *Philippine Economic Zone Authority*, invites Bids for the **Procurement of the Design and Build of 300 CMD Sewage Treatment Plant for Pampanga Economic Zone**, with Project Identification Number **PEZA-HO-2026-02**.

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

2. Funding Information

2.1. The GOP through the source of funding as indicated below for *FY 2026* in the amount of *Ninety Million Philippine Pesos (PHP90,000,000.00).*

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 Manual and associated policies, rules and regulations as the primary source thereof, while the herein clauses shall serve as the secondary source thereof.

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

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

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

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

5. Eligible Bidders

5.1. Only Bids of Bidders found to be legally, technically, and financially capable will be evaluated.

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

A contract is considered to be "similar" to the contract to be bid if it has the major categories of work stated in the **BDS**.

5.3. For Foreign-funded Procurement, the Procuring Entity and the foreign government/foreign or international financing institution may agree on another track record requirement, as specified in the Bidding Document prepared for this purpose.

5.4. The Bidders shall comply with the eligibility criteria under Section 23.4.2 of the 2016 IRR of RA No. 9184.

6. Origin of Associated Goods

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

7. Subcontracts

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

The Procuring Entity has prescribed that:

a. Subcontracting is not allowed.

8. Pre-Bid Conference

The Procuring Entity will hold a pre-bid conference for this Project on the specified date and time, either at its physical address *8th-10th Floor, Board Room, DoubleDragon Center West Building, Macapagal Ave., Pasay City* and/or through videoconferencing/webcasting as indicated in paragraph 6 of the **IB.**

9. Clarification and Amendment of Bidding Documents

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

10. Documents Comprising the Bid: Eligibility and Technical Components

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

10.2. If the eligibility requirements or statements, the bids, and all other documents for submission to the BAC are in foreign language other than English, it must be accompanied by a translation in English, which shall be authenticated by the appropriate Philippine foreign service establishment, post, or the equivalent office having jurisdiction over the foreign bidder's affairs in the Philippines. For Contracting Parties to the Apostille Convention, only the translated documents shall be authenticated through an apostille pursuant to GPPB Resolution No. 13-2019 dated 23 May 2019. The English translation shall govern, for purposes of interpretation of the bid.

10.3. A valid special PCAB License in case of Joint Ventures, and registration for the type and cost of the contract for this Project. Any additional type of Contractor license or permit shall be indicated in the **BDS**.

10.4. A List of Contractor's key personnel (e.g., Project Manager, Project Engineers, Materials Engineers, and Foremen) assigned to the contract to be bid, with their complete qualification and experience data shall be provided. These key personnel must meet the required minimum years of experience set in the **BDS**.

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

11. Documents Comprising the Bid: Financial Component

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

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

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

12. Alternative Bids

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

13. Bid Prices

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

14. Bid and Payment Currencies

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

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

a. Philippine Pesos.

15. Bid Security

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

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

16. Sealing and Marking of Bids

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

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

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

17. Deadline for Submission of Bids

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

18. Opening and Preliminary Examination of Bids

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

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

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

19. Detailed Evaluation and Comparison of Bids

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

19.2. If the Project allows partial bids, all Bids and combinations of Bids as indicated in the **BDS** shall be received by the same deadline and opened and evaluated simultaneously so as to determine the Bid or combination of Bids offering the lowest calculated cost to the Procuring Entity. Bid Security as required by **ITB** Clause 15 shall be submitted for each contract (lot) separately.

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

20. Post Qualification

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

21. Signing of the Contract

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

Section III. Bid Data Sheet

Notes on the Bid Data Sheet (BDS)

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

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

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

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

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

Bid Data Sheet

<table>
<tr><th>ITB Clause</th><th></th></tr>
<tr><td>5.2</td><td>For this purpose, contracts similar to the Project refer to contracts which have the same major categories of work, which shall be:

1. The Contractor must have installed and completed at least 5 wastewater/ sewage treatment facilities compliant with Water Quality Guidelines and General Effluent Standards (DAO 2016-08) within the past 5 years.
2. The Contractor must have at least one installation of a similar technology in an industrial or business park catering wastewater from different locations.</td></tr>
<tr><td>7.1</td><td>No further instructions</td></tr>
<tr><td>10.1</td><td>Bidder shall submit all eligibility and technical documents as specified in Section IX. Checklist of Technical and Financial Documents:</td></tr>
<tr><td>10.3</td><td>No further instructions</td></tr>
<tr><td>10.4</td><td>The key personnel must meet the required minimum years of experience set below:</td></tr>
<tr><td></td><td>The minimum work experience requirements for key personnel are the following:

<u>Design Stage</u>

<table>
<tr><th><u>Key Personnel</u></th><th><u>General Experience</u></th><th><u>Relevant Experience</u></th></tr>
<tr><td>Architect</td><td>5 years</td><td>3 years</td></tr>
<tr><td>Civil Engineer</td><td>5 years</td><td>3 years</td></tr>
<tr><td>Sanitary Engineer</td><td>5 years</td><td>3 years</td></tr>
<tr><td>Geodetic Engineer</td><td>5 years</td><td>3 years</td></tr>
<tr><td>Electrical Engineer</td><td>5 years</td><td>3 years</td></tr>
<tr><td>Mechanical Engineer</td><td>5 years</td><td>3 years</td></tr>
<tr><td>Draftsman</td><td>1 year</td><td>1 year</td></tr>
</table>

<u>Construction Stage</u>

<table>
<tr><th><u>Key Personnel</u></th><th><u>General Experience</u></th><th><u>Relevant Experience</u></th></tr>
<tr><td>Project Manager</td><td>5 years</td><td>3 years</td></tr>
<tr><td>Safety Officer</td><td>5 years</td><td>3 years</td></tr>
<tr><td>Quality Controller</td><td>3 years</td><td>1 year</td></tr>
<tr><td>Quantity Surveyor</td><td>3 years</td><td>2 years</td></tr>
</table>
</td></tr>
</table>

<table>
<tr><td></td><td>
<table>
<tr><td>Foreman</td><td>10 years</td><td>5 years</td></tr>
<tr><td>Draftsman</td><td>1 year</td><td>1 year</td></tr>
<tr><td>Skilled Worker</td><td>5 years</td><td>3 years</td></tr>
<tr><td>Helper</td><td>1 year</td><td>1 year</td></tr>
</table>
</td></tr>
<tr><td>10.5</td><td>The minimum major equipment requirements are the following:
<table>
<tr><th>Equipment</th><th>Number of Unit(s)</th></tr>
<tr><td>Service Vehicle</td><td>1</td></tr>
<tr><td>Welding Machine</td><td>1</td></tr>
<tr><td>Backhoe</td><td>1</td></tr>
<tr><td>Dump Truck</td><td>1</td></tr>
<tr><td>Cutting Outfit</td><td>1</td></tr>
<tr><td>Bar Cutter</td><td>1</td></tr>
</table>
</td></tr>
<tr><td>12</td><td>No additional Requirements.</td></tr>
<tr><td>15.1</td><td>The bid security shall be in the form of a Bid Securing Declaration or any of the following forms and amounts:
a. The amount of not less than PhP1,800,000.00 [(2%) of ABC], if bid security is in cash, cashier’s/manager’s check, bank draft/guarantee or irrevocable letter of credit;

b. The amount of not less than PhP4,500,000.00 [(5%) of ABC] if bid security is in Surety Bond.</td></tr>
<tr><td>19.2</td><td>No further instructions</td></tr>
<tr><td>20</td><td>The Contractor must have a valid PCAB license.

The Contractor must own, maintain, and operate with valid certifications for the collection and transport of wastewater.</td></tr>
<tr><td>21</td><td>List additional contract documents relevant to the Project that may be required by existing laws and/or the Procuring Entity, such as construction schedule and S-curve, manpower schedule, construction methods, equipment utilization schedule, construction safety and health program approved by the Department of Labor and Employment, and PERT/CPM or other acceptable tools of project scheduling.

STANDARDS

1. All standards used in this specification are based on American, European, and Philippine Standards. The Contractor may use other standards which are equal to or better than herein specified, The Contractor shall clearly state which standards are implemented for each element of work. Procuring Entity shall then determine if Contractor's proposal is better than Procuring Entity’s standards.</td></tr>
</table>

2. If the Contractor opts to utilize codes or references other than those listed below, one (1) full authorized English copy of alternative codes and references adopted for the works shall be submitted to the Procuring Entity with the final report.

3. The following codes and standards shall apply, as a minimum but not limited to:

a. National Building Code of the Philippines
b. 2010 National Structural Code of the Philippines Volumes 1 & 2 (NSCP)
c. National Plumbing Code of the Philippines
d. American Society for Testing and Materials (ASTM)
e. Philippine Electrical Code
f. Philippine Mechanical Code
g. Fire Code of the Philippines
h. National Fire Protection Association (NFPA)
i. American Water Works Association (AWWA International organization for Standardization (ISO) Standards
j. American Association of State Highway Transportation officials (AASHTO; Edition as referred to 2001 NSCP)

4. Alternatively, other Standards may be employed, subject to approval by the Procuring Entity

5. Where dispute arises in the interpretation of the standards, the more stringent shall prevail.

6. Where other elements of the Works are not specified within these documents, the Contractor will be responsible for the design, construction, operation and maintenance, including, where necessary, the replacement of the works for the duration of the Contract including the operation period, the Contractor is allowed to adopt appropriate design standards and specifications suitable for the design intent subject to review/validation and approval of Procuring Entity to ensure the chosen standards and specifications can provide a safe system of work that can meet the Contract requirements.

7. Unless specified otherwise, all submittals and drawings shall be in metric system.

DETAILED SCOPE OF WORKS

The Contractor shall provide all the necessary industry standard practice of quality materials, necessary equipment and high quality of workmanship, incidental materials, equipment, consumables and ancillary items required for the total completion of the design and build of 300 CMD Sewage Treatment Plant and shall be responsible for all necessary permits and clearances as required.

A. Pre-Planning Phase

1. These shall include, among others, information on existing site conditions that shall be used to define project design criteria, to set the basis for any change in conditions and establish preliminary project cost estimates.

2. The Influent Characteristics data and Base Plan is to be provided by the Procuring Entity for information only. The Contractor shall be entirely responsible for verifying the accuracy of the information and these documents shall not form part of the proposal

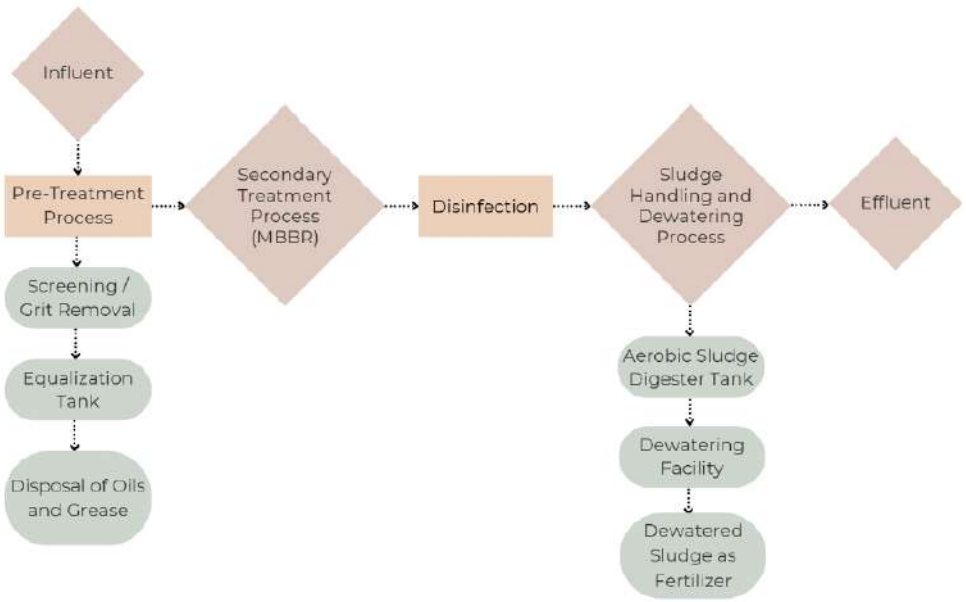
3. The Contractor shall arrange to obtain a copy of the documents from PEZA. The documents will be provided as electronic files (in pdf format) upon the Contractor's request.

4. The Contractor, immediately upon receipt thereof, shall check all such Procuring Entity furnished information and shall promptly notify Procuring Entity of any omissions or discrepancies in such project, drawings or specifications.

5. The Contractor is responsible for the design under this Contract. Drawings furnished by the Contractor accountable for any design failure that will be incurred in the future.

B. Planning / Engineering Design Development Phase

- Conceptual Design



- Surveys and Site Investigation

1. The preliminary survey and mapping shall determine boundaries and provide stationing along control lines to establish feature and design

criteria location, and identify existing and future right-of-way limits and construction easements associated with the conceptual design.

2. The Contractor is expected to conduct actual site survey of the project area to identify preliminary boundaries of the proposed buildings. In the process, they shall be able to familiarize themselves with the existing site conditions and nearby structures.

3. For planning and design analysis of the project, the Contractor is expected to conduct site investigation sufficient to determine the bearing capacity and other data of the soil foundation which is necessary for the overall structural analysis and design of the building, in order to ensure the safety of the structure.

4. The Contractor is expected to identify the location of the nearby utilities within the project site.

- Performance Specifications and Parameters

The Contractor shall propose a design with the following criteria:

1. Arrangement of Units

a. The general arrangement of the STP shall be such that it can be fitted on the available area, be compatible with the existing and proposed landscape and surroundings, and has considered safety of workers during plant operation.
b. The plant process areas as inlet works (screening, equalization) and sludge storage shall be fully enclosed to improve visual impact.
c. Plant components should be arranged for safe and greatest operating and maintenance convenience, flexibility, economy, continuity of maximum effluent quality and ease of installation of future units, if required. Wherever practicable, buildings should be located adjacent to one another.

2. Flow and Loads

a. The average flow of the STP to be used in the design of works is 300 m3/day.
b. The plant shall be capable of treating flows in the range specified above at any time during its operational lifetime, including the peak over flow, under all anticipated wastewater quality standards given in the specification.
c. Provisions of influent and effluent flow meters are required.

d. The process units shall be designated to allow sufficient turn-down of the works throughput during low flows. The control arrangement shall be capable of efficiently treating the full range of the flows.

e. The treated effluent quality targets identified in the table below are required to be met for effluent discharged to the environment under all operational conditions at all time:

Effluent Quality Limit

PARAMETER	***UNIT***	***VALUE***
pH	-	*6.0 – 9.5*
BOD	*mg/L*	*< 50*
COD	*mg/L*	*< 60*
TSS	*mg/L*	*< 100*
Surfactants	*mg/L*	*< 15*
Oil and Grease	*mg/L*	*< 5*
Ammonia Nitrogen	*mg/L*	*< 4*
Nitrate	*mg/L*	*< 14*
Phosphate	*mg/L*	*< 4*
Fecal Coliform	*MPN/100ml*	*< 400*
Total Coliform	*MPN/100ml*	*< 10,000*

3. Sewage Treatment Process Requirements

a. Combined Pre-Treatment Process

a. The design shall consider the flow conditions at the completion of the Works. The STP will be handling both domestic waste and pre-treated industrial waste from PEZ locators.

b. Combined pre-treatment unit with degreasing and grit removal process shall perform screening of suspended solids, inert and other floating solids and/or debris; as well as oil and grease removal from the raw sewage. Thickness/sizes shall be minimum. 60 liter/second; output shall be with 2mm mesh which is SS AISI 304 or 316.

Manual bar fine screen thickness/sizes shall be Mesh Steel Wire with 3.6 m3/min with 2 mm slit size, SS AISI 304 or 316. The control system and the hydraulics shall allow for this to reduce solid deposition.

c. The design of the installation must ensure access for maintenance of the equipment and in particular allow for manual cleaning of the screened solids from the screen and for cleaning away solids build up upstream and downstream of the screens.

All equipment shall be shipped in one piece. All wetted parts and screen bars shall be SS AISI 304 or 316 material as a minimum.

d. The cleaning of screened and dewatered solid material is undertaken such that there is no visual fecal matter and that the screenings are in a suitable condition for road transport and ultimate offsite disposal. The collected emulsified oils and grease shall be for proper disposal.

e. The STP shall be able to accommodate all flow conditions, as specified, therefore an equalization tank shall be provided.

f. Influent non-contact Doppler flow meter shall be installed as per flow requirements using SS AISI 304 or 316 material.

g. Transfer Pump with cutter shall be shall be minimum 76.2 mm diameter or as per flow design parameters. Class shall be of Body Cast Iron FC250, Motor Shaft Stainless Steel SUS420J2.

h. The equalization tank shall be continually mixed with air and shall be covered and equipped with an emergency high level channel sensor to

b. Secondary Treatment

a. The secondary treatment process is to treat effluent from primary treatment to remove the residual organics and suspended solids.

b. Pre-treated wastewater will be handled in Moving Bed Biofilm Reactor (MBBR) Process.

c. Pre-treated wastewater will be processed in a pre-anoxic MBBR (Moving Bed Biofilm Reactor). The pre-anoxic configuration applies for Carbon-to-Nitrogen (C/N) greater than 4 which shall be readily biodegradable carbon for high-efficiency total nitrogen (TN) removal.

d. In the Pre-Anoxic Phase (Denitrification), influent wastewater enters a low-oxygen reactor promoting biological denitrification. Nitrate-rich recycle from the downstream aerobic reactor is introduced, and supplemental carbon is dosed. Proper mixing shall be maintained using submersible mixers to prevent settling and ensure uniform conditions. Biofilm carriers may be used to support microbial growth.

e. The aerobic MBBR reactor for nitrification and oxidation of organic matter (BOD removal) phase is equipped with suspended biofilm carriers and fine bubble air diffusers. This phase supports aerobic microorganisms that oxidize ammonium to nitrate and degrade BOD. The system shall ensure optimal dissolved oxygen levels (2–4 mg/L), mixing, and carrier movement to achieve treatment objectives. Biomedia must have a surface area of at least 800 m2/m3.

	f. For air supply requirements, a flow rate of ≤5 Nm³/min, positive displacement blowers shall be used. For other requirements of >5 Nm³/min, centrifugal air-bearing turbo blowers shall be required. *g. Air diffusers shall be fine bubble type (min. 304.8 mm disc), with EPDM membrane and PTFE coating. The system shall include distribution piping, valves, manifolds, and all associated equipment to ensure complete aeration and mixing throughout the tank.* *h. A recirculation line shall return nitrate-rich flow from the aerobic to the anoxic zone to enhance denitrification and maintain adequate biomass in the system.* *i. For phosphorus removal (chemical dosing), the coagulant shall be dosed into the system to remove soluble phosphorus via chemical precipitation. The system shall include chemical storage, preparation, and automatic dosing equipment for consistent and efficient operation.* *j. Chemically treated water shall pass through tube-type lamella clarifiers for the separation of the supernatant from the sediments.* *k. Dissolved Oxygen Meter installed shall comply with International Standard IEC 61298-2 for process measurement and control devices – General methods and procedures for evaluating performance – Part 2 at nominal operating conditions.* *l. The biological treatment process shall be designed and installed such that the treated effluent meets quality required by the DENR AO 2016-08 Class C Water, as summarized under performance specification, and is consistently and robustly met.* *m. Process critical mechanical and electrical items shall be required to have a minimum of one installed standby.* *n. Walkways shall be provided to access all permanent equipment within a tank. This shall include all aeration control valves. Easy access into tanks and brackets to support ladders and/or sufficiently large manways shall be provided.* *o. As part of the initial design requirements, the Contractor shall fully detail the frequency and means of accessing the tank for maintenance. The Contractor shall provide all equipment and fittings needed to facilitate easy and safe maintenance access. They shall also undertake a demonstration of the means of access prior to commissioning and make modifications to the proposal/equipment based on the findings of this demonstration.* *p. The design of aeration systems, inclusive of all pipe works, valves, and headers for the process aeration and mixing requirements, shall be using Fine Bubble Diffusers.*

q. The Contractor shall submit within the bid submission the calculations supporting the design of the aeration system proposed, including all parameter values and other factors assumed in those calculations.

r. Option for flow redirection for cases of tank / equipment / facility maintenance while maintaining continuous and efficient wastewater treatment.

s. The Contractor shall submit their proposed secondary treatment process in detail, specifying the complete list of equipment to be used in the project.

c. Post-Treatment Process

a. The disinfection unit should be utilized and capable of eliminating pathogenic microorganisms in the effluent prior to discharge. The Contractor may use UV Disinfection Process or Chlorination Disinfection Process.

b. For final effluent chlorination, the system shall use sodium hypochlorite. The sodium hypochlorite shall be delivered to the site in liquid form at minimum 7% concentration. The final effluent shall be required to achieve the minimum disinfection standard as indicated by the Coliform levels in Effluent Limits. Residual Chlorine should be 0.3 mg/L minimum.

c. A minimum contact time (CT) for chlorine disinfection shall be 25 to 30 minutes. The Contractor shall be required to confirm the suitability of this CT based on the expected quality of the effluent and decay rates.

d. Plug flow reactor shall be provided for disinfection and mixing the treated water and the disinfectant. The design of the plug flow reactor shall ensure that sufficient mixing is provided at the upstream side of the tank.

e. For UV disinfection, treated effluent will pass through ultraviolet lamps submerged the effluent, instantaneously neutralizing microorganisms.

f. Ultraviolet Sterilizer which shall be minimum 195 m3/h @ 254nm, 1 cm or as per design requirements, SS AISI 304 or 316 or HDPE and Effluent Electro Magnetic Flowmeter which shall be minimum 406.4 nm Dia. or as per design requirements, Carbon Steel ASTM A 105 for housing and Flanges, SS AISI 304 or 316 shall be provided.

g. Provision of catch-basin as water sampling area located after the disinfection unit and before connection to public drainage / sewer line

d. Sludge Handling and Dewatering

a. An aerobic sludge digester (ASD) tank shall be provided for the waste activated sludge (WAS) generated in the aeration tanks. This tank shall have air mixing and a minimum retention time of five (5) days under the full design capacity to stabilize the biomass.

b. The ASD Wide Band Bubble Diffuser shall be with minimum of 24 holes, made of Stainless Steel AISI 304 or 316L.

c. An ASD Non-Clog Submersible Transfer Pump/Screw Press Feed Pump shall be provided following with minimum 76.2 mm diameter bore,cast iron body FC250, and high-carbon martensitic stainless-steel (SUS420J2) motor shaft.

d. An ASD Air Blower shall be provided with superior hardness, corrosion resistance, and high-temperature strength materials, with minimum 26.33 M3/Min or as design requirements, Casing Aluminum AL 365, Impeller AL 7075 Shaft Ti Alloy, Bearing Ni Alloy.

e. The stabilized and digested sludge from the aerobic sludge digester will be pumped to the proposed dewatering facility.

f. The Sludge Dewatering Process shall require the following;

- *Sludge reaction Loop*
- *Volute Screw Press (one duty unit with Minimum 15-20 Kg / Hr Vol Cap. or as per design requirement, of SS AISI 304 or 316 Ti (1.4571) material)*
- *Polymer Dosing Pump (minimum V6, 31.2 L/hr @ 2 Bar or as per design requirement, Body Aluminum Die Cast Molded reinforced by GFRPP)*
- *Polymer Stock Solution Tank (made of Polyethylene material)*
- *Polymer Stock Solution Tank Air Mixing (Min. 304.8 DISC or as pre-design requirement, PTFE Coated Membrane)*

e. Odor Control Process

Odor management will comply with government regulations. The facility will comply with ISO (international) and DIN (German) standards acceptable to even areas in close proximity to residential areas. The principles of odor management shall be:

- *No odor is emitted from operations with natural ventilation;*
- *Malodorous sewage is encapsulated in airtight operations;*

• Reliable equipment and back up are provided.

f. Noise

a. The operational site shall not cause excessive noise disruption to the surrounding community.

b. The Contractor shall perform a noise survey, prior to commencing construction, to determine the current noise level at the site and to demonstrate that the upgraded STP, during construction and at its full operation, has not increased the current noise levels above 3dB.

g. Chemical Dosing and Storage Facilities

a. All storage tanks transfer and dosing pumps shall be located within bund wall. Dedicated bund wall shall be provided for different chemical storage tanks. If the chemicals are compatible and are safe to be mixed, the bund wall can be designed to locate more than two types of chemical storage tanks.

b. Chlorine storage and dosing facilities shall be provided in well ventilated rooms. All chemical storage area shall be properly ventilated. As part of the installation a bund with adequate drainage must be provided to allow safe disposal / drainage of spilt polymer. A secondary containment must be provided for liquid chlorine.

c. The chemical storage tanks shall be fabricated from FRP, MDPE, HDPE or PP, PE. All chemical storage should be located in the area not prone to flooding or flood protected.

4. Piping Works

a. The Contractor shall supply all materials, labor, equipment and consumables for the installation of the mechanical equipment and accessories.

b. The Contractor shall ensure that there will be no instances of backflow once sewage has been deposited to the STP

c. The Works shall include but not be limited to:

i. All associated equipment, agitators, mixers, blowers and pumps;

ii. All required ventilation, odor control, and exhaust systems;

iii. All required pipework, control points and connections;

iv. All required valves or penstocks for manual control, isolation, automatic control including those required to enable the isolation or now control to each individual item of STP

v. All required fittings, support and accessories.

vi. All required plant access walkways and stairways;

d. The material selection shall consider the potentially corrosive environment within which the equipment operates. Refer to the table below:

Pipework

AREA	PIPES			
	Location	Material	Support	Color
Aeration	Above ground	GI Pipe	Mild Steel (epoxy coated)	
	Inside the tank (where submerged)	ABS		
Sewage / Sludge	Above ground	SS 304, ABS	Mild Steel (epoxy coated)	Black
Compressed Air	Dewatering equipment	GI	Mild Steel (epoxy coated)	Light Blue
Chlorine	Chemical Room	HDPE, CPVC	Mild Steel (epoxy coated)	Yellow
Polymer	Polymer System	CPVC, ABS	Mild Steel (epoxy coated)	Yellow

i. All exposed pipes shall be labeled accordingly to identify the fluid that the pipes convey. Pipe labeling shall be either in the form of paint or color bands. Paint and stickers shall be weather proof and not easily scratched or withered.

ii. All exposed metallic pipes shall be painted except stainless steel. Paints shall conform to provide primary corrosion protection for metallic pipes.

iii. All exposed thermoplastic pipes shall be painted with water-based enamel if the color does not conform to the table

5. Electrical Works

	a. The STP site shall be provided with a complete power supply system connected to the nearest power line and electrical sub-station. The Contractor shall be responsible for the early coordination with the service provider and Procuring Entity regarding the construction of distribution line and determine the location of the project's substation/transformer stepdown. The Procuring Entity shall provide the nearest power supply line (feeder line) to the STP. *b. The STP shall be provided with Electrical Power Supply from Solar Panels, or other source of Green Energy, not less than 4,000.00 Watts, 1 Phase, 60Hz, received thru reliable Power Inverter, with Automatic Synchronization to Grid Power. Solar Panels must be properly installed adhering to the best industry standards.* *c. All electrical controls for all processes shall be at the Motor Control Center (MCC) and located in STP building. The MCC rooms shall be well illuminated. All motor control panel (MCC) shall be equipped with lightning arresters & surge suppressors to protect equipment against lightnings, surge and voltage fluctuations.* *d. Electrical distribution boards and control panels shall be installed in locations not prone to flooding and shall be located minimum 0.3 m above the finished grade level of the STP or the highest recorded flood level plus ten percent (10%), whichever is higher.* *e. The Electrical and Instrumentations control system shall include main and branch circuit breakers, starters, contactors, and reset buttons selector switches, push buttons and pilot lights, circuit control items for electrical control or level switches of the various STP components and all necessary wiring and conduits. All electrical / instrumentations controls shall be wired so that the STP equipment can be operated either automatically or manually.* *f. The system shall be equipped with a Programmable Logic Controller (PLC) for automation of the whole process.* *The PLC shall have digital inputs that can interface to relays, relay output for digital outputs, and analog inputs / outputs. Surge suppressor shall also be provided to protect the PLC and instruments from transient voltage. The PLC shall be equipped with an override system to manually operate the whole control system (in case of PLC failure) to achieve the intended proper operation. All languages shall be in English and programming files, including*

copies of development files, programmer notes and as-built programs, shall be provided for Procuring Entity as part of the handover documents.

The software shall be provided with the password submitted to Procuring Entity as a part of the programming files, to enable control and editing.

g. The operation shall be integrated that it can run by itself in Automatic mode of operation, with provisions for accepting several processes set points. The control system shall control the operation of the STP and interface with other components as necessary to form a fully functioning system.

h. The system shall be protected by a lightning arrester, properly sized and selected.

6. Instrumentation / Equipment

a. Online Analyzers, Sensors and Interlocks *- Online Sensors and Analyzers shall continuously monitor key water quality parameters at critical points within the treatment process to ensure compliance with process control and regulatory standards. Each analyzer shall be digital and equipped with automatic calibration, self-diagnostic features, and sample conditioning systems (filtration, temperature control, and flow regulation) to maintain measurement accuracy (up to 4 measuring channels).*

- *Communication Capability: Can connect to digital Fieldbuses, HART, Profibus, Ethernet and Integrated Web Server, (Certificate of Conformance to be submitted); can connect to "True Digital Sensors", automatically recognized and configured.*
- *Capability: With configurable modular concept capability for plug-and-play, with integration into OEM Fieldcare or Equivalent; IIOT capability and web server for asset Management and offsite monitoring; can verify the correct operation of the sensors without process interruption; with user-defined alarm configuration for alarm contact and fault current; shall be complete with configuration transfer, data backup, and software updates via SD card.*
- *Sensor and Process Check shall be expandable with additional channels*
- *Data Retention: With storage of measured and other values in Data Logbook*

• Data Transfer: With Tamper-Proof Data Transmission via Ethernet or SD Card to DENR or government authorities;

• Outputs: Individually galvanically isolated from sensors and other outputs, with expandable 4-20mA outputs and relays; Fieldbus communication upgradeable (HART, Profibus, MODBUS, Ethernet IP, etc.)

• Standards and Protection: With electromagnetic immunity / emission (shall be compliant with EN 61326-1:2006), and overvoltage protection; Protection rating shall be IP66/67, sealing and corrosion resistance per NEMA 4X

b. Flow Meters *- Flow meters shall provide accurate and reliable flow rate measurements for process control, mass balance, and reporting. Selection shall be based on pipe size, fluid characteristics, and accuracy requirements. Features include non-intrusive measurement, low maintenance, and compatibility with wastewater characteristics. Flow meters shall provide output signals either in analog or via digital protocols, for integration with the plant control system. The system shall include a complete system of instrumentation and components, which must be provided and conform to the specifications for each equipment. Product catalogs with complete Technical Specifications must be submitted for verification*

• Electromagnetic flowmeter, microprocessor based, self-checking capability (compact version - sensor with integrated transmitter or remote version - sensor with separate transmitter)

• Operation can be done via local display, operating tool or apps

• Inclusion: Empty Pipe Detection with EPD electrode

• Sensors

a. Rated Pressure: PN 40, PN 16, PN 10

b. Rated Temperature: 0 - 50 degrees Celsius

c. Housing Material: Die-cast aluminum, coated, steel, IP67 / IP68

• Transmitter

a. Indicates actual flows, counters and status

b. Measured error: '+/- 0.5% o.r.; +/- 0.2% o.r. (optional)

c. Housing Material: Polycarbonate; IP67 / IP68

c. Digital Sensors and Cell Holders

• pH Sensor

a. Measuring Principle: Potentiometric principle

b. Characteristics: Digital electrode with dirt-repellent ring junction and built-in temperature sensor
c. Connection: Digital Inductive Technology, contactless
d. Measuring Range; 6.0-9.5 pH, as applicable
e. Process Temperature: 0 - 80 degrees Celsius
f. Process Pressure: 0.8 to 17 bars
g. Temperature Sensor: NTC 30K
h. Ingress Protection: IP68

• Dissolved Oxygen Sensor

a. Characteristic: Digital, optical measurement based on fluorescence quenching
b. Measuring Principle: Optical oxygen measurement
c. Process / Instrument Range: 0 to 20 mg/l
d. Temperature Compensation Sensor: NTC 30K
e. Accuracy: ±2% of reading
f. Repeatability: ±0.5 %
i. Process Temperature: -5 to 60 degrees Celsius
j. Process Pressure: 10 bars
g. Installation: Immersion / Sampling

d. Isolating Valves and Check valves;
e. Interlock accessories for System Protection;
f. Weather Protection Covers
g. Sensors, Analyzers and Transmitters must be of the same brand for perfect compatibility

7. Civil / Structural Works

The Contractor shall supply all materials, labor, equipment, and consumables for the construction of the civil works and structures of the project as per approved battery limit. The civil works for this project must be as follows:

a. All tanks and structures that will complete the whole sewage treatment facility.
b. Internal surfaces of all the tanks shall be water proofed and leak proofed. The water proofing materials shalt be those in accordance with internationally accepted standards and quality.
c. All tank structures shall be provided with stainless steel safety railings, required equipment platforms, and sufficient lightings for repair and maintenance purposes unless existing structures have these features already and in good condition.

d. All tanks shall be constructed with type 2 ready-mix cement conforming to ACI 350.

e. All exterior surfaces of new and existing tank structures that are deemed necessary for repainting shall be coated with three layers of Procuring Entity's approved paints and colors. All tanks must be likewise labeled according to its designated process units.

f. Inside wall of all tanks should be provided with fixed stainless-steel access ladder for inspection, repair and maintenance purposes unless existing structures / tanks have these features already and are in good condition.

g. The Contractor shall also be responsible for site clearance, clean up and demobilization works post completion of the Works.

- Engineering Design

1. The Contractor shall prepare the basic plans and drawings prior to the detailed engineering design. It shall include the following:

a. Horizontal and vertical process flow diagrams that include process mass balance chart

b. Treatment plant hydraulic profile

c. Civil/Structural and Architectural plans, sections and elevations.

d. Mechanical plans

e. Electrical plans

f. Plumbing plans

2. The Detailed Engineering Design shall include the supply of materials, labor, equipment and consumables for the preparation of detailed construction plans and drawings including the preparation of the detailed technical specifications. Detailed engineering shall include the following:

a. Plant layout with profile, section and perspective view

b. Site development plan and sections

3. For the preparation of plans, drawings, specifications and other documents, the Contractor shall submit to the client three (3) sets of blue print copies and one (1) electronic copy of as-built plans and drawings of the STP two (2) weeks after the completion of construction and installation works. Three (3) copies of Operation Manual of the whole STP and Equipment Vendor Data must be

submitted to Procuring Entity after physical completion of Works before biological start up.

C. Construction Phase

General Requirements

1. The work covered under this contract consists of the furnishing all materials, labor, equipment, transportation, incidentals, facilities, and superintendence necessary to complete the project.

2. The Contractor is expected and required to attend the important phases of the bidding process of the said project. All concerns and questions shall be discussed on the Pre-Bid Phase.

3. The Contractor shall be responsible for carefully examining, comparing and verifying the data furnished by the plans and specifications, the Contractor shall submit the matter to PEZA or authorized representative for the proper explanation or necessary correction, before any adjustment shall be made. Any adjustment by the Contractor without such determination shall be at his risk and expense.

4. Omitted or wrongly described details of work, which are manifestly necessary to carry out the true intent of the drawings and specifications, shall be performed as if fully and correctly set forth and described in the drawings and specifications.

5. PEZA may, from time to time, make changes in the specifications and construction drawings. However, if the cost to the Contractor shall be materially increased by such change, the PEZA shall pay the Contractor for the reasonable cost in accordance with the changes.

6. The Contractor shall comply with the laws, City or Municipal Ordinances and all government specifications and regulations in so far as they are binding upon or affecting the portion the work hereto. The Contractor shall obtain all necessary licenses and permits and pay all taxes or fees, which may be encountered in connection with the prosecution of the work. They shall also be responsible for all damages to persons or property that may occur.

7. Unless otherwise specified, all materials shall be new and free from defects and imperfection. The quality of materials shall be of the best grade of their respective kinds for the purpose. The work shall be performed in the best and acceptable manner in strict accordance with the requirements of the plans and specifications. Preference will be given to articles or materials that are locally manufactured, conditions of quality and price being equal.

8. When called for, the Contractor shall furnish, for approval, full information and satisfactory evidence as to the kind and quality of

materials or articles to be incorporate in the work. The Contractor shall furnish, for PEZA's approval, all samples when so directed.

9. The work shall be in accordance with approved samples. Materials and articles installed or used without such approval shall be at the risk of subsequent rejection. Any failure on the part of the Contractor to conform use materials that are not specified herein shall be under subsequent rejection, unless subject for approval.

10. Any alteration or revision of material usage without approval from PEZA shall make the Contractor responsible and liable in terms of guarantee, workmanship and defects.

11. Workmanship shall be in accordance with the best standard practices and all operations required under any and all parts of the Specification shall be undertaken in a neat, workman-like manner. Only skilled personnel with sufficient experience in similar operations shall be allowed to undertake the same.

12. Any alteration or revision on the execution of drawings without approval from PEZA shall be under subsequent rejection and shall make the Contractor responsible and liable for any workmanship and execution defects.

13. Defective workmanship shall be remedied by the Contractor, at their expense. They shall not be entitled to any payment hereunder until defective workmanship has been remedied.

14. The Contractor shall provide and maintain adequate weather-tight facilities with water, light, and toilet facilities and shall keep such places clean. They shall remove all connections and appliances connected there with prior to the completion of the Contract and leave the premises perfectly clean.

15. The Contractor shall furnish all temporary water, lights and power and shall pay all expenses in connection therewith. Furthermore, the Contractor shall provide and pay for all water expenses for building purposes that are required by all trades.

16. The Contractor shall put up safety measures and continuously maintain adequate protection of all his work from damage and shall protect the property. They shall make good any such damage, injury or loss

Site Preparation

1. The Contractor shall furnish equipment and perform labor required to complete demolition of the existing structures, removal of salvaged materials, and disposal of resulting trash, waste, and the like. See drawings for area coverage of work involved.

2. The Contractor shall visit the site of the work and examine the premises to fully understand all existing conditions relative to the

work. No increase in cost or extension of performance time will be considered from failure to verify and know actual site conditions.
3. The Contractor shall secure and pay for all necessary permits needed for the work.
4. The Contractor shall protect adjacent properties, persons, shrubs, trees, lawns, structures, and utilities against harm or damage.
5. All salvageable material shall remain in the property unless disposal is instructed by PEZA.
6. All debris and other materials resulting from demolition work (if applicable) shall be immediately removed from the premises and dumped at sites provided by the Contractor.

Permits and Clearances
1. All necessary permits, licenses and other pertinent documents, required for the construction of the Works shall be secured by the Contractor.
2. The Contractor shall be responsible for application of both temporary and permanent connection for utilities if necessary. The cost of the application, connection and installation shall be paid by the Contractor. The application for permanent connection shall be named after the Procuring Entity.
3. The Contractor shall cover and all expenses necessary and incidental for the project and shall be able to secure the necessary permits for the project. The Contractor shall obtain and pay the corresponding fees for all necessary approvals, permits, certificates and clearances, such as the following, whenever necessary:
a. IEE Checklist and/or Environmental Compliance Certificate (if necessary)
b. Discharge Permit
c. Building Permit and other Ancillary Permits (if necessary)
d. All other permits as may be required for the construction
4. The Contractor shall secure all pertinent permits related to the project especially the Discharge Permit from DENR. As basis of acceptance, the final effluent must undergo effluent analysis from a 3rd party laboratory accredited by the DENR.

Structures and Facilities
1. The Contractor shall design, construct and turn-over an STP Pampanga PEZA office building, among others;
2. The contractor shall construct an office and separate quarters for the Contractor's project team personnel with water, light, telephone and toilet facilities;

3. Temporary bunkhouse/quarters for the Contractor's workforce complete with toilet and bath facilities;
4. Cost of power, water, and other utilities needed for the project shall be shouldered by the Contractor
5. Safety and security for the project implementation shall be enforced by the Contractor and must be in conformity to the respective zones' safety, security, and house rules and regulation.

Mobilization and Construction Proper

1. The Contractor shall mobilize all the required project team personnel, equipment, tools and manpower with the required skills and in sufficient number as may be necessary for his efficient undertaking of the project.
2. All materials and plant equipment should be delivered to site and stored in as secure place, in a manner acceptable to Procuring Entity.
3. Outside storage of materials and equipment subject to degradation by the elements shall be in weather tight enclosures provided by the Contractor.
4. The Contractor shall maintain complete and accurate records available for Procuring Entity 's inspection of all materials and plant equipment received, stored and issued for use in the performance of the Contract.
5. The Contractor shall execute all the works under the contract in strict accord with standard engineering methodology and procedures and shall be responsible for maintaining cleanliness and orderliness in the project area throughout the duration of the contract.

Minimum Requirements for Construction Safety and Health Program

1. The Contractor should fully comply with the specifications of OSHS, Procedural Guidelines D.O. 13 of DOLE during construction and operation of STP. Adequate provision shall be made to effectively protect workers, operators and visitors from hazards. The following shall be provided as a minimum:

a. Handrails and guards around tanks, trenches, pits, stairwells, and other hazardous structures.
b. First aid equipment.
c. Protective clothing and safety equipment, such as air pack, goggles, gloves, hard hats, safety harnesses, safety belt, lanyard, tripod with winch, SCBA, chemical suit and full-face

shield with canister and gas monitor; compliant with PPE-I requirement of Bureau of Working Conditions of the Procedural Guideline D.O.13;

d. Portable blower and sufficient hoses if required;

e. Appropriately placed warning signs for slippery areas, non-potable water fixtures, low head clearance areas, open service manholes, hazardous chemical storage areas, flammable fuel storage areas, no smoking signs in hazardous areas; etc. Where required, the associated operational and health and safety issues resulting from the enclosed treatment process and operational site shall be incorporated into the design, including temperature, noise, lighting, ventilation and confined space requirements. This should comply with specifications of OSHS.

f. Every effort shall be made at the design stage to minimize health and safety issues during the construction, operation and ultimate demolition of the treatment plant, and 'designing-out' hazards wherever reasonably practicable. When handling mechanical equipment, Contractor must comply with EHS Instruction and Guidelines Manual on Handling Tools and Equipment and OSHS Rule 1200 on Machine Guarding.

2. The Contractor shall ensure that all construction activities are undertaken in accordance with the Procedural Guideline D.O. 13 of DOLE. This should apply, but not be limited to provision of the suitable access means SUCH as walkways, stairs, platforms, roads, pathways, signage, lighting, and fire protection and lifting.

3. Fire extinguishers shall be provided for immediate use.

4. Emergency light and photo luminescent exit signs shall be provided in areas where operators will be working. Hose reels shall be provided at accessible locations.

Signage

All signages required for the safe and efficient operation of the Works shall be provided including but not limited to internal signage and labeling of rooms, chemical storage area, and equipment as well as external labeling of buildings, road signage and road marking. This shall also include provision of the signage noting the presence of the new STP, associated traffic routes and pedestrian routes on the public highway. The signage shall follow Procuring Entity corporate branding requirements, signage content and location shall be agreed with Procuring Entity before implementation.

D. Start Up, Testing and Commissioning

Start-Up, Testing and Commissioning

The Contractor shall supply all materials, labor, equipment, and (consumables good for two months) supply for the start-up, commissioning and process proving of the treatment plant. The seed sludge to be used for the commissioning shall be supplied by the Contractor. The Contractor shall conduct the testing and commissioning for two (2) months period.

Preparation of Operation and Maintenance Manual

The Contractor shall prepare and submit one electronic copy each of the draft operation and maintenance manual for review of Procuring Entity. The Contractor shall submit three (3) copies of the final operation and Maintenance Manual to the Procuring Entity prior to commissioning of the Sewage Treatment Plant (STP). The operation and maintenance manual shall include operating and maintenance procedure and program and complete copies (1 original and 2 colored photocopies).

Preparation Training of Sewage Treatment Plant Operators

The Contractor shall provide their own operators for the testing and commissioning of the facility. The Contractor shall conduct a minimum of one-day classroom lecture and one-month hands-on training of operators of the wastewater treatment plant.

- ***PROGRAM OF WORKS***

The Contractor shall proceed to the construction using the detailed plans and specifications as basis which was submitted by the Contractor, duly approved by PEZA and DENR-EMB, if necessary. The following works shall be included, but not limited to:

	ITEM DESCRIPTION	***QTY***	***UNIT***
A	***GENERAL REQUIREMENTS***		
	Mobilization / Demobilization	*1.00*	*lot*
	Occupational Safety and Health Program, PPEs, Billboards, Signages	*1.00*	*lot*
	Provision for Temporary Facilities	*1.00*	*lot*
	Permits and Clearances	*1.00*	*lot*
B	***PLANNING / ENGINEERING DESIGN***		
	Survey and Site Investigation	*1.00*	*lot*
	Design		
	Conceptual Plans	*1.00*	*lot*
	Detailed Engineering Design	*1.00*	*lot*
	As-Built Plans	*1.00*	*lot*
C	***CONSTRUCTION***		
	Earthworks		
	Excavation	*1.00*	*lot*

	Hauling of Excavated Materials and Debris	*1.00*	*lot*
	Civil Works		
	Foundation	*1.00*	*lot*
	Concreting Works	*1.00*	*lot*
	Masonry Works	*1.00*	*lot*
	Roofing Works	*1.00*	*lot*
	Painting Works	*1.00*	*lot*
	Floor Finishing Works	*1.00*	*lot*
	Doors, Windows and Hardware	*1.00*	*lot*
	Electrical Works		
	Roughing-ins	*1.00*	*lot*
	Electrical System	*1.00*	*lot*
	Lighting System	*1.00*	*lot*
	Emergency System	*1.00*	*lot*
	Solar Panel System (including Inverter, Charge Control and Battery Bank)	*1.00*	*lot*
	Sewage Treatment Plant		
	Piping Works	*1.00*	*lot*
	Combined Pre-Treatment Process	*1.00*	*lot*
	Secondary Treatment Process	*1.00*	*lot*
	Post-Treatment Process	*1.00*	*lot*
	Sludge Handling and Dewatering Process	*1.00*	*lot*
	Chemical Dosing and Storage Facilities	*1.00*	*lot*
	Instrumentation / Control Room	*1.00*	*lot*
	Odor and Noise Control	*1.00*	*lot*
D	***TURN OVER***		
	Start Up, Testing and Commissioning	*1.00*	*lot*
	Preparation of Operation and Maintenance Manual	*1.00*	*lot*
	Training of STP Operators	*1.00*	*lot*
	Process Proving	*1.00*	*Lot*

In no circumstances shall the Contractor install / construct any features of the project which is not in conformity with the approved plans, specifications including quantities thereof. All other construction works not mentioned in the proposed plans and / or the above works shall be deemed included and it is the responsibility of the contractor not to exceed their submitted project cost.

PROJECT COST ESTIMATES

The bidders shall submit the quantities and cost of the different types of works to be carried out in accordance with DPWH Department Order No. 197 series of 2016 dated 07 October 2016. In particular, the quantities and cost of each work item shall be calculated and a bill of quantities shall be prepared. The bidders shall draw up a unit price analysis for each of the main pay work items.

A. Construction Cost of the Project

Direct Cost

1. Materials

a. Cost of Materials to be used in doing the work item called for, which shall include the following

b. Cost of source, including processing, crushing, stockpiling, loading, local taxes, construction and/or maintenance of haul roads, etc.

c. Expenses for hauling to project site

d. Handling expenses

e. Storage expenses

f. Allowance for waste and/or losses, not to exceed 5% of materials requirement.

2. Labor

a. Salaries and wages as authorized by the Department of Labor and Employment

b. Fringe benefits, such as vacation and sick leaves, benefits under the Workmen's Compensation Act, GSIS and/or SSS contributions, allowances, 13th month pay, bonuses, etc.

3. Equipment

a. Rental of equipment which shall be based on the prevailing "Associated Construction Equipment Lessors, Inc." For simplicity in computation, the operated rental rates are preferred over the bare rental rates as the former includes operator's wages, fringe benefits, fuel, oil, lubricants and equipment maintenance. The make, model and capacity of the equipment should be indicated in the detailed unit cost analysis.

b. Mobilization and demobilization shall be treated as a separate pay item. It shall be computed based on the equipment requirements of the project stipulated in the proposal and contract booklet. Mobilization and demobilization shall not exceed 1% of the Estimated Direct Cost (EDC) of the civil works items.

4. Permits and Clearances

Indirect Cost

1. Overhead Expenses

a. Engineering and Administrative Supervision.

b. Transportation allowances.

c. Office Expenses, e.g., for office equipment and supplies, power and water consumption, communication and maintenance.

d. Premium on Contractor's All Risk Insurance (CARl).

e. Financing Cost.

i. Premium on Bid Security

ii. Premium on Performance Security

iii. Premium on Surety for Advance Payment

iv. Premium on Warranty Bond (one year)

2. Contingencies - These include expenses for meetings, coordination with other stakeholders, billboards (excluding Project Billboard which is a pay item under the General Requirements), stages during ground breaking, inauguration ceremonies, and other unforeseen events.

3. Miscellaneous Expenses - These include laboratory tests for quality control and plan preparation.

4. Contractor's Profit Margin

5. VAT Component

General Requirements

- The Contractor must have a valid PCAB license.
- The Contractor must have installed and completed at least 5 wastewater / sewage treatment facilities within the past 5 years.
- The Contractor must have at least one installation of the similar technology in an industrial or business park catering wastewater from different locators.
- The Contractor must own, maintain, and operate with valid certifications for the collection and transport of wastewater.
- The Contractor must be at least 5 years in the service and has provided results of laboratory water analysis of at least 5 sewage / wastewater treatment plants that are complying to Water Quality Guidelines and General Effluent Standards (DAO 2016-08)

Staff Requirements

The Contractor shall provide adequate number of qualified professionals, support and administrative staffs to perform the services described herein. The key personnel to be assigned should possess the adequate experience in his/her field of specialization in the completion of this project. The general qualifications of the minimum key personnel are as follows:

Design Stage

Key Personnel	General Experience	Relevant Experience
Architect	5 years	3 years
Civil Engineer	5 years	3 years
Sanitary Engineer	5 years	3 years
Geodetic Engineer	5 years	3 years
Electrical Engineer	5 years	3 years
Mechanical Engineer	5 years	3 years
Draftsman	1 year	1 year

Construction Stage

Key Personnel	General Experience	Relevant Experience
Project Manager	5 years	3 years
Safety Officer	5 years	3 years
Quality Controller	3 years	1 year
Quantity Surveyor	3 years	2 years
Foreman	10 years	5 years
Draftsman	1 year	1 year
Skilled Worker	5 years	3 years
Helper	1 year	1 year

Equipment

The minimum major equipment requirements are the following:

Equipment	Number of Unit(s)
Service Vehicle	1
Welding Machine	1
Backhoe	1
Dump Truck	1
Cutting Outfit	1
Bar Cutter	1

The Contractor is required to complete the Project within **240 calendar days** as shown below, to start upon the contractor's receipt and signing of Notice to Proceed. The time frame for the project is as follows:

	ITEM DESCRIPTION	MONTHS							
		1	2	3	4	5	6	7	8
A	**GENERAL REQUIREMENTS**								
	Mobilization / Demobilization								
	Occupational Safety and Health Program, PPEs, Billboards, Signages								
	Provision for Temporary Facilities								
	Permits and Clearances								
B	**PLANNING / ENGINEERING DESIGN**								
	Survey and Site Investigation								
	Design								
	Conceptual Plans								
	Detailed Engineering Design								
	As-Built Plans								
C	**CONSTRUCTION**								
	Earthworks								
	Excavation								
	Hauling of Excavated Materials and Debris								
	Civil Works								
	Foundation								
	Concreting Works								
	Masonry Works								
	Roofing Works								
	Painting Works								
	Floor Finishing Works								
	Doors, Windows and Hardware								
	Electrical Works								
	Roughing-ins								
	Electrical System								
	Lighting System								
	Emergency System								
	Solar Panel System (including Inverter, Charge Control and Battery Bank)								
	Sewage Treatment Plant								
	Piping Works								
	Combined Pre-Treatment Process								
	Secondary Treatment Process								
	Post-Treatment Process								
	Sludge Handling and Dewatering Process								
	Chemical Dosing and Storage Facilities								
	Instrumentation / Control Room								
	Odor and Noise Control								
D	**TURN OVER**								
	Start Up, Testing and Commissioning								

	Preparation of Operation and Maintenance Manual Training of STP Operators Process Proving								

Submittals

Upon the submission of bids, the Contractor shall provide the following documents as part of the technical requirements to be included in the evaluation of bids:

- Horizontal and vertical process flow diagrams that include mass balance
- Sewage Treatment Plant Hydraulic Profile
  - Flow Diagram
  - Narrative of the Secondary Treatment Process (MBBR)
  - List of STP equipment to be used
- Program of Works (in the same format of "Attachment A – Approved Budget of the Contract" of DPWH Department Order No. 197 series of 2016)
- PERT-CPM

After the award of Notice to Proceed, the Contractor shall provide the following documents necessary for PEZA's approval prior to the preparation of detailed architectural and engineering design, permits and other requirements:

- Perspectives
- Horizontal and vertical process flow diagrams that include mass balance
- Sewage Treatment Plant Hydraulic Profile
  - Flow Diagram
  - Narrative of the Secondary Treatment Process MBBR)
  - List of STP equipment to be used
- Construction Drawings
  - Site Development Plan
  - Architectural Plans
  - Structural Plans
  - Blow up Plans
  - Electrical Plans
  - Mechanical Plans
  - Sanitary / Plumbing Plans
- Revised Program of Works (in the same format of "Attachment A – Approved Budget of the Contract" of DPWH Department Order No. 197 series of 2016) in accordance with the actual site conditions
- Detailed Unit Price Analysis (DUPA)
- Technical Specifications
- Revised PERT-CPM (if necessary)

Section IV. General Conditions of Contract

Notes on the General Conditions of Contract

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

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

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

1. Scope of Contract

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

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

2. Sectional Completion of Works

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

3. Possession of Site

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

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

4. The Contractor's Obligations

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

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

5. Performance Security

5.1. Within ten (10) calendar days from receipt of the Notice of Award from the Procuring Entity but in no case later than the signing of the contract by both parties, the successful Bidder shall furnish the performance security in any of the forms prescribed in Section 39 of the 2016 revised IRR.

5.2. The Contractor, by entering into the Contract with the Procuring Entity, acknowledges the right of the Procuring Entity to institute action pursuant to RA No. 3688 against any subcontractor be they an individual, firm, partnership, corporation, or association supplying the Contractor with labor, materials and/or equipment for the performance of this Contract.

6. Site Investigation Reports

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

7. Warranty

7.1. In case the Contractor fails to undertake the repair works under Section 62.2.2 of the 2016 revised IRR, the Procuring Entity shall forfeit its performance security, subject its property(ies) to attachment or garnishment proceedings, and perpetually disqualify it from participating in any public bidding. All payables of the GOP in his favor shall be offset to recover the costs.

7.2. The warranty against Structural Defects/Failures, except that occasioned-on force majeure, shall cover the period from the date of issuance of the Certificate of Final Acceptance by the Procuring Entity. Specific duration of the warranty is found in the **SCC**.

8. Liability of the Contractor

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

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

9. Termination for Other Causes

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

10. Dayworks

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

11. Program of Work

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

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

12. Instructions, Inspections and Audits

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

13. Advance Payment

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

14. Progress Payments

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

15. Operating and Maintenance Manuals

15.1. If required, the Contractor will provide "as built" Drawings and/or operating and maintenance manuals as specified in the **SCC.**

15.2. If the Contractor does not provide the Drawings and/or manuals by the dates stated above, or they do not receive the Procuring Entity's Representative's approval, the Procuring Entity's Representative may withhold the amount stated in the **SCC** from payments due to the Contractor.

Section V. Special Conditions of Contract

Notes on the Special Conditions of Contract

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

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

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

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

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

Special Conditions of Contract

GCC Clause	
2	*[If different dates are specified for completion of the Works by section, i.e. "sectional completion," these dates should be listed here.]*
4.1	The Contractor is required to complete the Project within **240 calendar days** as shown below, to start upon the contractor's receipt and signing of Notice to Proceed. The time frame for the project is as follows:

	ITEM DESCRIPTION	MONTHS							
		1	2	3	4	5	6	7	8
A	**GENERAL REQUIREMENTS**								
	Mobilization / Demobilization								
	Occupational Safety and Health								
	Program, PPEs, Billboards, Signages								
	Provision for Temporary Facilities								
	Permits and Clearances								
B	**PLANNING / ENGINEERING DESIGN**								
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	Floor Finishing Works								
	Doors, Windows and Hardware								
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	Roughing-ins								
	Electrical System								
	Lighting System								
	Emergency System								

			Solar Panel System (including Inverter, Charge Control and Battery Bank)										
			Sewage Treatment Plant										
			Piping Works										
			Combined Pre-Treatment Process										
			Secondary Treatment Process										
			Post-Treatment Process										
			Sludge Handling and Dewatering Process										
			Chemical Dosing and Storage Facilities										
			Instrumentation / Control Room										
			Odor and Noise Control										
		D	**TURN OVER**										
			Start Up, Testing and Commissioning										
			Preparation of Operation and Maintenance Manual										
			Training of STP Operators										
			Process Proving										

6	The site investigation reports are to be done by the bidder
7.2	*In case of permanent structures, such as buildings of types 4 and 5 as classified under the National Building Code of the Philippines and other structures made of steel, iron, or concrete which comply with relevant structural codes (e.g., DPWH Standard Specifications), such as, but not limited to, steel/concrete bridges, flyovers, aircraft movement areas, ports, dams, tunnels, filtration and treatment plants, sewerage systems, power plants, transmission and communication towers, railway system, and other similar permanent structures:* Fifteen (15) years.
10	Dayworks are applicable at the rate shown in the Contractor's original Bid.
11.1	The Contractor shall submit the Program of Work to the Procuring Entity's Representative within 14 days of delivery of the Notice of Award.
13	The Contractor may request an advanced payment for mobilization, an amount not ***exceeding fifteen percent (15%)*** of the total contract price. The advance payment for mobilization shall be made only upon the submission to and acceptance by the procuring entity of an irrevocable standby letter of credit of equivalent value from a commercial bank, a bank guarantee or a surety bond callable upon demand, issued by a surety

<table>
<tr><td></td><td>or insurance company duly licensed by the Insurance Commission and confirmed by the procuring
entity.</td></tr>
<tr><td>14</td><td>The winning bidder shall be paid through progress payments based on the actual completion accomplishment percentage, subject for verification and recommendation of the Project Management consultant of the Procuring Entity, as evidence by the submission and acceptance of the required deliverables for the following:

<table><tr><td>Advance Payment</td><td>15% of the total contract price (TCP)</td></tr><tr><td>1st progress billing</td><td>upon 25% accomplishment completion, less percentage recoupment of down payment, less retention amount</td></tr><tr><td>2nd progress billing</td><td>upon 50% accomplishment completion, less percentage recoupment of down payment, less retention amount</td></tr><tr><td>3rd progress billing</td><td>upon 75% accomplishment completion, less percentage recoupment of down payment, less retention amount</td></tr><tr><td>4th and final progress billing</td><td>upon 100% accomplishment completion and acceptance</td></tr><tr><td>Retention</td><td>10% of the total contract price (TCP) or for every progress billing</td></tr></table>
Materials and equipment delivered on the site but not completely put in place shall NOT be included for payment.</td></tr>
<tr><td>15.1</td><td>The date by which operating and maintenance manuals are required is upon completion of the project and before issuance of the Certificate of Completion and Final Acceptance.

The date by which “as built” drawings are required is upon completion of the project.

PDF/AutoCAD File of the “as built” plans shall include as attachment to the required hard copy of the same upon completion of the project.</td></tr>
</table>

15.2	The amount to be withheld for failing to produce "as built" drawings and/or operating and maintenance manuals by the date required is ***1% of the Total Contract Price.***
Additional Clause:	
16	NEGATIVE SLIPPAGE The Procuring Entity or the Consultant shall ensure the timely implementation of infrastructure projects by monitoring the performance of the contractors. When the contractor incurs negative slippage during the contract duration, the Procuring Entity shall implement the calibrated measures provided under GPPB Circular No. 03-2019 dated 8 March 2019, entitled "Guidance on Contract Termination Due to Fifteen Percent (15%) Negative Slippage by the Contractor in Infrastructure Projects."

Section VI. Specifications

Notes on Specifications

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

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

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

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

Sample Clause: Equivalency of Standards and Codes

Wherever reference is made in the Contract to specific standards and codes to be met by the goods and materials to be furnished, and work performed or tested, the provisions of the

latest current edition or revision of the relevant standards and codes in effect shall apply, unless otherwise expressly stated in the Contract. Where such standards and codes are national, or relate to a particular country or region, other authoritative standards that ensure a substantially equal or higher quality than the standards and codes specified will be accepted subject to the Procuring Entity's Representative's prior review and written consent. Differences between the standards specified and the proposed alternative standards shall be fully described in writing by the Contractor and submitted to the Procuring Entity's Representative at least twenty-eight (28) days prior to the date when the Contractor desires the Procuring Entity's Representative's consent. In the event the Procuring Entity's Representative determines that such proposed deviations do not ensure substantially equal or higher quality, the Contractor shall comply with the standards specified in the documents.

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

TERMS OF REFERENCE

FOR THE PROPOSED DESIGN AND BUILD OF 300 CMD SEWAGE TREATMENT PLANT FOR PAMPANGA ECONOMIC ZONE

I. PROJECT DESCRIPTION

Project Name	**Proposed Design and Build of the 300 CMD Sewage Treatment Plant for Pampanga Economic Zone**
Location	**Pampanga Economic Zone (PEZ), Pulung Cacutud, Angeles City, Pampanga**
Approved Budget for the Contract (ABC)	**Php 90,000,000.00**
Project Duration	**240 Calendar Days**

II. STATEMENT OF THE PURPOSE

This Terms of Reference (TOR) is for the complete design and construction of the 300 m^3/d sewage volume and the effluent quality of the centralized STP, which shall comply with:

1. DENR AO 2016-08: Water Quality Guidelines and General Effluent Standards of 2016
2. DENR AO 2021-19: Updated Water Quality Guidelines and General Effluent Standards for Selected Parameters

Prior to entering the centralized STP, waste generated from industrial plants of the PEZ locators will be pre-treated to meet the influent standards based on the proposed design of the STP.

The Works shall be designed, constructed, installed, and commissioned to treat the incoming influent to the required effluent quality described in this document, whereas maximizing the ease of operation and maintenance and minimizing operational and maintenance costs.

III. PROJECT BRIEF

The Contractor must, whether or not it is specifically referred to in the Conditions of Contract and/or these TOR, provide all equipment, construction plant, temporary works, labor, materials, tools, works, skills, expertise, services and transport necessary:

1. To perform all of the detailed engineering design, cost estimates, procurement, construction, testing and commissioning of Works; and
2. For the safe, convenient, reliable, efficient and satisfactory completion and operation of the Works in accordance with the Terms of Reference.
3. The Contractor is responsible for the overall functionality of the Works and the coordination of all other interfaces arising from the Works. The Contractor must perform the work in a profession, timely, safe and environmentally responsible manner.
4. All design shall be in accordance with the best modern practice and shall facilitate safe access for the inspection, cleaning, lubrication, maintenance, repair and replacement to ensure satisfactory operation under all service conditions. It shall also take account constructability, potential disturbance to and interfacing with operation of existing facilities, neighboring community and industries, and general operation and maintenance requirements.

5. The design shall result in the lowest possible life cycle cost with due regard to reliability, minimum operating and maintenance cost. The design shall be with appropriate level of automation for the treatment process system.

IV. SCOPE OF SERVICES

The guidelines for the procurement and implementation of contracts for design and build infrastructure projects shall be govern by the Annex "G" of the 2016 Revised Implementing Rules and Regulations of RA 9184 otherwise known as the "Government Procurement Reform Act". The following shall be included in the scope of services:

1. The project covers the design and build of the Pampanga Economic Zone Sewage Treatment Plant.
2. Technical analysis on structural, mechanical, and electrical engineering including actual test or site investigations shall be required.
3. A complete set of Structural, Architectural, Electrical and Mechanical, Plumbing / Sanitary plans in appropriate scales indicating all necessary details in order that the structures can be set out and constructed in accordance with guidelines and standards of NBCP, NSCP, PGBC, FCP, and other Referral Codes, shall be furnished by the Contractor.
4. The Contractor shall be responsible to deliver the expected outputs within the bounds of the approved project design and construction schedule upon receipt of Notice to Proceed.
5. The Contractor shall include in his proposal the related research, surveys, and technical studies and test or site investigation required, to come up with the design.
6. The Lowest Calculated Responsive Bidder shall enter into a contract with the procuring entity that shall be in the nature of a Design and Build Scheme of the project.
7. The Contractor shall then proceed with the construction of the project under the terms and conditions set forth herein.
8. Upon Project Completion and Acceptance in accordance with the terms and conditions set forth herein, the Contractor shall turnover the completed project to the procuring entity for proper disposition.

The Contractor, by submitting their bid, represents that:

1. They have thoroughly read and examined carefully understands fully all the bid documents and their bid will be in accordance therewith.
2. The bid is based upon the conditions and requirements of the bid documents without exception.
3. They had visited and inspected the Site of Works and its surroundings and satisfied themselves as to all matters pertaining to the project, including the location and the nature of the work; climatic conditions; the nature and condition of the site; transportation and communication facilities; the requirement and the availability of materials, labor, water, electric power and roads; the locations and extent of aggregate sources, and other factors that may affect the cost, duration and execution of the work; that he has determined the general characteristics of the project and the conditions indicated above.
4. They are aware that the project shall be 240 calendar days reckoned seven (7) days from the date of the Notice to Proceed.

V. ABBREVIATIONS

1.	DENR	Department of Environment and Natural Resources
2.	ECC	Environmental Compliance Certificate
3.	IEE	Initial Environmental Examination
4.	JCP	Joint Commissioning Plan
5.	PEZ	Pampanga Economic Zone
6.	CMD	Cubic Meters per Day
7.	PLC	Programmable Logic Controller
8.	STP	Sewage Treatment Plant
9.	TOR	Terms of Reference
10.	ACI	American Concrete Institute
11.	AISC	American Institute of Steel Corporation
12.	AISI	American Iron and Steel Institute
13.	ANSI	American National Standard Institute

VI. STANDARDS

1. All standards used in this specification are based on American, European, and Philippine Standards. The Contractor may use other standards which are equal to or better than herein specified, The Contractor shall clearly state which standards are implemented for each element of work. Owner shall then determine if Contractor's proposal is better than owner standards.
2. If the Contractor opts to utilize codes or references other than those listed below, one (1) full authorized English copy of alternative codes and references adopted for the works shall be submitted to the owner with the final report.
3. The following codes and standards shall apply, as a minimum but not limited to:
    a. National Building Code of the Philippines
    b. 2010 National Structural Code of the Philippines Volumes 1 & 2 (NSCP)
    c. National Plumbing Code of the Philippines
    d. American Society for Testing and Materials (ASTM)
    e. Philippine Electrical Code
    f. Philippine Mechanical Code
    g. Fire Code of the Philippines
    h. National Fire Protection Association (NFPA)
    i. American Water Works Association (AWWA International organization for Standardization (ISO) Standards
    j. American Association of State Highway Transportation officials (AASHTO; Edition as referred to 2001 NSCP)
4. Alternatively, other Standards may be employed, subject to approval by the owner
5. Where dispute arises in the interpretation of the standards, the more stringent shall prevail.
6. Where other elements of the Works are not specified within these documents, the Contractor will be responsible for the design, construction, operation and maintenance, including, where necessary, the replacement of the works for the duration of the Contract including the operation period, the Contractor is allowed to adopt appropriate design standards and specifications suitable for the design intent subject to review/validation and approval of owner to ensure the chosen standards and specifications can provide a safe system of work that can meet the Contract requirements.

7. Unless specified otherwise, all submittals and drawings shall be in metric system.

VII. DETAILED SCOPE OF WORKS

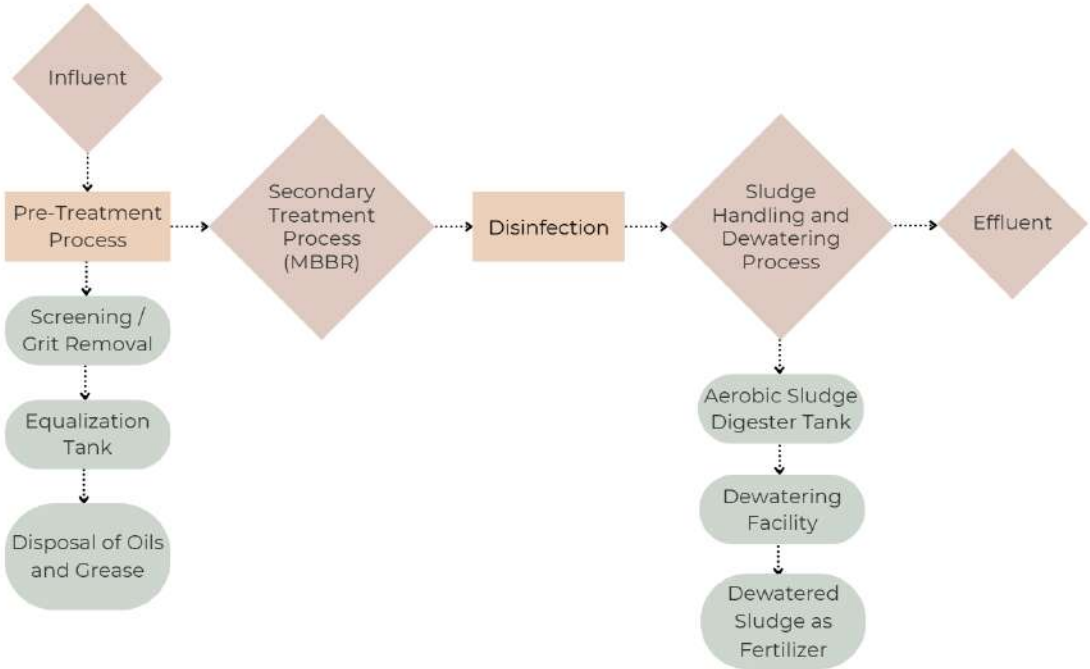
The Contractor shall provide all the necessary industry standard practice of quality materials, necessary equipment and high quality of workmanship, incidental materials, equipment, consumables and ancillary items required for the total completion of the design and build of 300 CMD Sewage Treatment Plant and shall be responsible for all necessary permits and clearances as required.

A. Pre-Planning Phase

1. These shall include, among others, information on existing site conditions that shall be used to define project design criteria, to set the basis for any change in conditions and establish preliminary project cost estimates.
2. The Influent Characteristics data and Base Plan is to be provided by the owner for information only. The Contractor shall be entirely responsible for verifying the accuracy of the information and these documents shall not form part of the proposal
3. The Contractor shall arrange to obtain a copy of the documents from PEZA. The documents will be provided as electronic files (in pdf format) upon the Contractor's request.
4. The Contractor, immediately upon receipt thereof, shall check all such owner furnished information and shall promptly notify owner of any omissions or discrepancies in such project, drawings or specifications.
5. The Contractor is responsible for the design under this Contract. Drawings furnished by the Contractor accountable for any design failure that will be incurred in the future.

B. Planning / Engineering Design Development Phase

Conceptual Design



Surveys and Site Investigation

1. The preliminary survey and mapping shall determine boundaries and provide stationing along control lines to establish feature and design criteria location, and identify existing and future right-of-way limits and construction easements associated with the conceptual design.
2. The Contractor is expected to conduct actual site survey of the project area to identify preliminary boundaries of the proposed buildings. In the process, they shall be able to familiarize themselves with the existing site conditions and nearby structures.
3. For planning and design analysis of the project, the Contractor is expected to conduct site investigation sufficient to determine the bearing capacity and other data of the soil foundation which is necessary for the overall structural analysis and design of the building, in order to ensure the safety of the structure.
4. The Contractor is expected to identify the location of the nearby utilities within the project site.

Performance Specifications and Parameters

The Contractor shall propose a design with the following criteria:

1. Arrangement of Units
    a. The general arrangement of the STP shall be such that it can be fitted on the available area, be compatible with the existing and proposed landscape and surroundings, and has considered safety of workers during plant operation.
    b. The plant process areas as inlet works (screening, equalization) and sludge storage shall be fully enclosed to improve visual impact.
    c. Plant components should be arranged for safe and greatest operating and maintenance convenience, flexibility, economy, continuity of maximum effluent quality and ease of installation of future units, if required. Wherever practicable, buildings should be located adjacent to one another.

2. Flow and Loads
    a. The average flow of the STP to be used in the design of works is 300 m^3/day.
    b. The plant shall be capable of treating flows in the range specified above at any time during its operational lifetime, including the peak over flow, under all anticipated wastewater quality standards given in the specification.
    c. Provisions of influent and effluent flow meters are required.
    d. The process units shall be designated to allow sufficient turn-down of the works throughput during low flows. The control arrangement shall be capable of efficiently treating the full range of the flows.
    e. The treated effluent quality targets identified in the table below are required to be met for effluent discharged to the environment under all operational conditions at all time:

Effluent Quality Limit

PARAMETER	UNIT	VALUE
pH	-	6.0 – 9.5
BOD	mg/L	< 50
COD	mg/L	< 60
TSS	mg/L	< 100
Surfactants	mg/L	< 15
Oil and Grease	mg/L	< 5
Ammonia Nitrogen	mg/L	< 4
Nitrate	mg/L	< 14
Phosphate	mg/L	< 4
Fecal Coliform	MPN/100ml	< 400
Total Coliform	MPN/100ml	< 10,000

3. Sewage Treatment Process Requirements
    a. Combined Pre-Treatment Process
        a. The design shall consider the flow conditions at the completion of the Works. The STP will be handling both domestic waste and pre-treated industrial waste from PEZ locators.
        b. Combined pre-treatment unit with degreasing and grit removal process shall perform screening of suspended solids, inert and other floating solids and/or debris; as well as oil and grease removal from the raw sewage. Thickness/sizes shall be minimum. 60 liter/second; output shall be with 2mm mesh.
        c. The design of the installation must ensure access for maintenance of the equipment and in particular allow for manual cleaning of the screened solids from the screen and for cleaning away solids build up upstream and downstream of the screens.
        d. The cleaning of screened and dewatered solid material is undertaken such that there is no visual fecal matter and that the screenings are in a suitable condition for road transport and ultimate offsite disposal. The collected emulsified oils and grease shall be for proper disposal.
        e. The STP shall be able to accommodate all flow conditions, as specified, therefore an equalization tank shall be provided.
        f. Influent non-contact Doppler flow meter shall be installed as per flow requirements.
        g. Transfer Pump with cutter shall be shall be minimum 76.2 mm diameter or as per flow design parameters.
        h. The equalization tank shall be continually mixed with air and shall be covered and equipped with an emergency high level channel sensor to indicate the water level in tank.
        i. Option for flow redirection for cases of tank / equipment / facility maintenance while maintaining continuous and efficient wastewater treatment.
        j. A provision for the collection and transport of wastewater from the locators not accessible to the sewer network to the STP using vacuum truck units with necessary and valid permits.

b. Secondary Treatment
    a. The secondary treatment process is to treat effluent from primary treatment to remove the residual organics and suspended solids.
    b. Pre-treated wastewater will be handled in Moving Bed Biofilm Reactor (MBBR) Process
    c. Pre-treated wastewater will be processed in a pre-anoxic MBBR (Moving Bed Biofilm Reactor). The pre-anoxic configuration applies for Carbon-to-Nitrogen (C/N) greater than 4 which shall be readily biodegradable carbon for high-efficiency total nitrogen (TN) removal.
    d. In the Pre-Anoxic Phase (Denitrification), influent wastewater enters a low-oxygen reactor promoting biological denitrification. Nitrate-rich recycle from the downstream aerobic reactor is introduced, and supplemental carbon is dosed. Proper mixing shall be maintained using submersible mixers to prevent settling and ensure uniform conditions. Biofilm carriers may be used to support microbial growth.
    e. The aerobic MBBR reactor for nitrification and oxidation of organic matter (BOD removal) phase is equipped with suspended biofilm carriers and fine bubble air diffusers. This phase supports aerobic microorganisms that oxidize ammonium to nitrate and degrade BOD. The system shall ensure optimal dissolved oxygen levels (2–4 mg/L), mixing, and carrier movement to achieve treatment objectives. Biomedia must have a surface area of at least 800 m2/m3.
    f. For air supply requirements, a flow rate of ≤5 Nm^3/min, positive displacement blowers shall be used. For other requirements of >5 Nm^3/min, centrifugal air-bearing turbo blowers shall be required.
    g. Air diffusers shall be fine bubble type (min. 304.8 mm disc), with EPDM membrane and PTFE coating. The system shall include distribution piping, valves, manifolds, and all associated equipment to ensure complete aeration and mixing throughout the tank.
    h. A recirculation line shall return nitrate-rich flow from the aerobic to the anoxic zone to enhance denitrification and maintain adequate biomass in the system.
    i. For phosphorus removal (chemical dosing), the coagulant shall be dosed into the system to remove soluble phosphorus via chemical precipitation. The system shall include chemical storage, preparation, and automatic dosing equipment for consistent and efficient operation.
    j. Chemically treated water shall pass through tube-type lamella clarifiers for the separation of the supernatant from the sediments.
    k. Dissolved Oxygen Meter installed shall comply with IEC 61298-2 Standards.
    l. The biological treatment process shall be designed and installed such that the treated effluent meets quality required by the DENR AO 2016-08 Class C Water, as summarized under performance specification, and is consistently and robustly met.
    m. Process critical mechanical and electrical items shall be required to have a minimum of one installed standby.
    n. Walkways shall be provided to access all permanent equipment within a tank. This shall include all aeration control valves. Easy access into tanks and brackets to support ladders and/or sufficiently large manways shall be provided.

o. As part of the initial design requirements, the Contractor shall fully detail the frequency and means of accessing the tank for maintenance. The Contractor shall provide all equipment and fittings needed to facilitate easy and safe maintenance access. They shall also undertake a demonstration of the means of access prior to commissioning and make modifications to the proposal/equipment based on the findings of this demonstration.
p. The design of aeration systems, inclusive of all pipe works, valves, and headers for the process aeration and mixing requirements, shall be using Fine Bubble Diffusers.
q. The Contractor shall submit within the bid submission the calculations supporting the design of the aeration system proposed, including all parameter values and other factors assumed in those calculations.
r. Option for flow redirection for cases of tank / equipment / facility maintenance while maintaining continuous and efficient wastewater treatment.
s. The Contractor shall submit their proposed secondary treatment process in detail, specifying the complete list of equipment to be used in the project.

c. Post-Treatment Process
i. The disinfection unit should be utilized and capable of eliminating pathogenic microorganisms in the effluent prior to discharge. The Contractor may use UV Disinfection Process or Chlorination Disinfection Process
ii. For final effluent chlorination, the system shall use sodium hypochlorite. The sodium hypochlorite shall be delivered to the site in liquid form at minimum 7% concentration. The final effluent shall be required to achieve the minimum disinfection standard as indicated by the Coliform levels in Effluent Limits.
iii. A minimum contact time (CT) for chlorine disinfection shall be 25 to 30 minutes. The Contractor shall be required to confirm the suitability of this CT based on the expected quality of the effluent and decay rates.
iv. Plug flow reactor shall be provided for disinfection and mixing the treated water and the disinfectant. The design of the plug flow reactor shall ensure that sufficient mixing is provided at the upstream side of the tank.
v. For UV disinfection, treated effluent will pass through ultraviolet lamps submerged the effluent, instantaneously neutralizing microorganisms.
vi. Ultraviolet Sterilizer and Effluent Electro Magnetic Flowmeter shall be provided
vii. Provision of catch-basin as water sampling area located after the disinfection unit and before connection to public drainage / sewer line
viii. Contractor shall ensure that the treated water can be reused / recycled

d. Sludge Handling and Dewatering
a. An aerobic sludge digester (ASD) tank shall be provided for the waste activated sludge (WAS) generated in the aeration tanks. This tank shall have air mixing and a minimum retention time of five (5) days under the full design capacity to stabilize the biomass.

b. The ASD Bubble Diffuser shall be with minimum of 24 holes, made of Stainless Steel AISI 304 or 316L (for corrosion resistance)
c. An ASD Non-Clog Submersible Transfer Pump/Screw Press Feed Pump shall be provided following with minimum 76.2 mm diameter bore, cast iron body, and high-carbon martensitic stainless-steel (SUS420J2) motor shaft.
d. An ASD Air Blower shall be provided with superior hardness, corrosion resistance, and high-temperature strength materials
e. The stabilized and digested sludge from the aerobic sludge digester will be pumped to the proposed dewatering facility.
f. The Sludge Dewatering Process shall require the following;
    - Sludge Reaction Loop
    - Volute Dewatering Press (minimum 15-20 kg/hr volume capacity of SS AISI 304 or 316 Ti material)
    - Polymer Dosing Pump (minimum V6, 31.2 L/hr, 2 Bar or as per design requirement, Body Aluminum Die Cast Molded reinforced by GFRPP)
    - Polymer Stock Solution Tank (Polyethylene material)
    - Polymer Stock Solution Tank Air Mixing (minimum 304.8 DISC or as pre-design requirement, PTFE Coated Membrane)

e. Odor Control Process

Principles of odor management shall be:

- No odor is emitted from operations with natural ventilation;
- Malodorous sewage is encapsulated in airtight operations;
- Reliable equipment and back up are provided.

f. Noise

a. The operational site shall not cause excessive noise disruption to the surrounding community.
b. The Contractor shall perform a noise survey, prior to commencing construction, to determine the current noise level at the site and to demonstrate that the upgraded STP, during construction and at its full operation, has not increased the current noise levels above 3dB.

g. Chemical Dosing and Storage Facilities

a. All storage tanks transfer and dosing pumps shall be located within bund wall. Dedicated bund wall shall be provided for different chemical storage tanks. If the chemicals are compatible and are safe to be mixed, the bund wall can be designed to locate more than two types of chemical storage tanks.
b. Chlorine storage and dosing facilities shall be provided in well ventilated rooms. All chemical storage area shall be properly ventilated. As part of the installation a bund with adequate drainage must be provided to allow safe disposal / drainage of spilt polymer. A secondary containment must be provided for liquid chlorine.
c. The chemical storage tanks shall be fabricated from FRP, MDPE, HDPE or PP, PE. All chemical storage should be located in the area not prone to flooding or flood protected.

4. Piping Works
    a. The Contractor shall supply all materials, labor, equipment and consumables for the installation of the mechanical equipment and accessories.
    b. The Contractor shall ensure that there will be no instances of backflow once sewage has been deposited to the STP
    c. The Works shall include but not be limited to:
        i. All associated equipment, agitators, mixers, blowers and pumps;
        ii. All required ventilation, odor control, and exhaust systems;
        iii. All required pipework, control points and connections;
        iv. All required valves or penstocks for manual control, isolation, automatic control including those required to enable the isolation or now control to each individual item of STP
        v. All required fittings, support and accessories.
        vi. All required plant access walkways and stairways;
    d. The material selection shall consider the potentially corrosive environment within which the equipment operates. Refer to the table below:

Pipework

AREA	PIPES			
	Location	Material	Support	Color
Aeration	Above ground	GI Pipe	Mild Steel (epoxy coated)	
	Inside the tank (where submerged)	ABS		
Sewage / Sludge	Above ground	SS 304, ABS	Mild Steel (epoxy coated)	Black
Compressed Air	Dewatering equipment	GI	Mild Steel (epoxy coated)	Light Blue
Chlorine	Chemical Room	HDPE, CPVC	Mild Steel (epoxy coated)	Yellow
Polymer	Polymer System	CPVC, ABS	Mild Steel (epoxy coated)	Yellow

    i. All exposed pipes shall be labeled accordingly to identify the fluid that the pipes convey. Pipe labeling shall be either in the form of paint or color bands. Paint and stickers shall be weather proof and not easily scratched or withered.
    ii. All exposed metallic pipes shall be painted except stainless steel. Paints shall conform to provide primary corrosion protection for metallic pipes.
    iii. All exposed thermoplastic pipes shall be painted with water-based enamel if the color does not conform to the table.

5. Electrical Works
    a. The STP site shall be provided with a complete power supply system connected to the nearest power line and electrical sub-station. The Contractor shall be responsible for the early coordination with the service provider and owner regarding the construction of distribution line and determine the location of the project's substation/transformer stepdown. The Owner shall provide the nearest power supply line (feeder line) to the STP.
    b. The STP shall be provided with Electrical Power Supply from Solar Panels, or other source of Green Energy, not less than 4,000.00 Watts, 1 Phase, 60Hz, received thru reliable Power Inverter, with Automatic Synchronization to Grid Power. Solar Panels must be properly installed adhering to the best industry standards.
    c. All electrical controls for all processes shall be at the Motor Control Center (MCC) and located in STP building. The MCC rooms shall be well illuminated. All motor control panel (MCC) shall be equipped with lightning arresters & surge suppressors to protect equipment against lightnings, surge and voltage fluctuations.
    d. Electrical distribution boards and control panels shall be installed in locations not prone to flooding and shall be located minimum 0.3 m above the finished grade level of the STP or the highest recorded flood level plus ten percent (10%), whichever is higher.
    e. The Electrical and Instrumentations control system shall include main and branch circuit breakers, starters, contactors, and reset buttons selector switches, push buttons and pilot lights, circuit control items for electrical control or level switches of the various STP components and all necessary wiring and conduits. All electrical / instrumentations controls shall be wired so that the STP equipment can be operated either automatically or manually.
    f. The system shall be equipped with a Programmable Logic Controller (PLC) for automation of the whole process. The PLC shall have digital inputs that can interface to relays, relay output for digital outputs, and analog inputs / outputs. Surge suppressor shall also be provided to protect the PLC and instruments from transient voltage. The PLC shall be equipped with an override system to manually operate the whole control system (in case of PLC failure) to achieve the intended proper operation. All languages shall be in English and programming files, including copies of development files, programmer notes and as-built programs, shall be provided for owner as part of the handover documents. The software shall be provided with the password submitted to owner as a part of the programming files, to enable editing.
    g. The operation shall be integrated that it can run by itself in Automatic mode of operation, with provisions for accepting several processes set points. The control system shall control the operation of the STP and interface with other components as necessary to form a fully functioning system.
    h. The system shall be protected by a lightning arrester, properly sized and selected.

6. Instrumentation / Equipment
    a. Online Analyzers, Sensors and Interlocks - Online Sensors and Analyzers shall continuously monitor key water quality parameters at critical points within the treatment process to ensure compliance with process control and regulatory standards. Each analyzer shall be digital and equipped with automatic

calibration, self-diagnostic features, and sample conditioning systems (filtration, temperature control, and flow regulation) to maintain measurement accuracy (up to 4 measuring channels).

- Communication Capability: Can connect to digital Fieldbuses, HART, Profibus, Ethernet and Integrated Web Server, (Certificate of Conformance to be submitted); can connect to "True Digital Sensors", automatically recognized and configured.
- Capability: With configurable modular concept capability for plug-and-play, with integration into OEM Fieldcare or Equivalent; IIOT capability and web server for asset Management and offsite monitoring; can verify the correct operation of the sensors without process interruption; with user-defined alarm configuration for alarm contact and fault current; shall be complete with configuration transfer, data backup, and software updates via SD card
- Sensor and Process Check shall be expandable with additional channels
- Data Retention: With storage of measured and other values in Data Logbook
- Data Transfer: With Tamper-Proof Data Transmission via Ethernet or SD Card to DENR or government authorities;
- Outputs: Individually galvanically isolated from sensors and other outputs, with expandable 4-20mA outputs and relays; Fieldbus communication upgradeable (HART, Profibus, MODBUS, Ethernet IP, etc.)
- Standards and Protection: With electromagnetic immunity / emission (shall be compliant with EN 61326-1:2006), and overvoltage protection; Protection rating shall be IP66/67, sealing and corrosion resistance per NEMA 4X

b. Flow Meters - Flow meters shall provide accurate and reliable flow rate measurements for process control, mass balance, and reporting. Selection shall be based on pipe size, fluid characteristics, and accuracy requirements. Features include non-intrusive measurement, low maintenance, and compatibility with wastewater characteristics. Flow meters shall provide output signals either in analog or via digital protocols, for integration with the plant control system. The system shall include a complete system of instrumentation and components, which must be provided and conform to the specifications for each equipment. Product catalogs with complete Technical Specifications must be submitted for verification;

- Electromagnetic flowmeter, microprocessor based, self-checking capability (compact version - sensor with integrated transmitter or remote version - sensor with separate transmitter)
- Operation can be done via local display, operating tool or apps
- Inclusion: Empty Pipe Detection with EPD electrode
- Sensors
    a. Rated Pressure: PN 40, PN 16, PN 10
    b. Rated Temperature: 0 - 50 degrees Celsius
    c. Housing Material: Die-cast aluminum, coated, steel, IP67 / IP68
- Transmitter
    a. Indicates actual flows, counters and status
    b. Measured error: '+/- 0.5% o.r.; +/- 0.2% o.r. (optional)
    c. Housing Material: Polycarbonate; IP67 / IP68

c. Digital Sensors and Cell Holders,
    - pH Sensor
        a. Measuring Principle: Potentiometric principle
        b. Characteristics: Digital electrode with dirt-repellent ring junction and built-in temperature sensor
        c. Connection: Digital Inductive Technology, contactless
        d. Measuring Range; 6.0-9.5 pH, as applicable
        e. Process Temperature: 0 - 80 degrees Celsius
        f. Process Pressure: 0.8 to 17 bars
        g. Temperature Sensor: NTC 30K
        h. Ingress Protection: IP68
    - Dissolved Oxygen Sensor
        a. Characteristic: Digital, optical measurement based on fluorescence quenching
        b. Measuring Principle: Optical oxygen measurement
        c. Process / Instrument Range: 0 to 20 mg/l
        d. Temperature Compensation Sensor: NTC 30K
        e. Accuracy: ±2% of reading
        f. Repeatability: ±0.5 %
        i. Process Temperature: -5 to 60 degrees Celsius
        j. Process Pressure: 10 bars
        g. Installation: Immersion / Sampling

d. Isolating Valves and Check valves;
e. Interlock accessories for System Protection;
f. Weather Protection Covers.
g. Sensors, Analyzers and Transmitters must be of the same brand for perfect compatibility

7. Civil / Structural Works

The Contractor shall supply all materials, labor, equipment, and consumables for the construction of the civil works and structures of the project as per approved battery limit. The civil works for this project must be as follows:

a. All tanks and structures that will complete the whole sewage treatment facility.
b. Internal surfaces of all the tanks shall be water proofed and leak proofed. The water proofing materials shalt be those in accordance with internationally accepted standards and quality.
c. All tank structures shall be provided with stainless steel safety railings, required equipment platforms, and sufficient lightings for repair and maintenance purposes unless existing structures have these features already and in good condition.
d. All tanks shall be constructed with type 2 ready-mix cement conforming to ACI 350.
e. All exterior surfaces of new and existing tank structures that are deemed necessary for repainting shall be coated with three layers of owner's approved paints and colors. All tanks must be likewise labeled according to its designated process units.
f. Inside wall of all tanks should be provided with fixed stainless-steel access ladder for inspection, repair and maintenance purposes unless existing structures / tanks have these features already and are in good condition.

g. The Contractor shall also be responsible for site clearance, clean up and demobilization works post completion of the Works.

Engineering Design

1. The Contractor shall prepare the basic plans and drawings prior to the detailed engineering design. It shall include the following:
    a. Horizontal and vertical process flow diagrams that include process mass balance chart
    b. Treatment plant hydraulic profile
    c. Civil/Structural and Architectural plans, sections and elevations.
    d. Mechanical plans
    e. Electrical plans
    f. Plumbing plans
2. The Detailed Engineering Design shall include the supply of materials, labor, equipment and consumables for the preparation of detailed construction plans and drawings including the preparation of the detailed technical specifications. Detailed engineering shall include the following:
    a. Plant layout with profile, section and perspective view
    b. Site development plan and sections
3. For the preparation of plans, drawings, specifications and other documents, the Contractor shall submit to the client three (3) sets of blue print copies and one (1) electronic copy of as-built plans and drawings of the STP two (2) weeks after the completion of construction and installation works. Three (3) copies of Operation Manual of the whole STP and Equipment Vendor Data must be submitted to owner after physical completion of Works before biological start up.

C. Construction Phase

General Requirements

1. The work covered under this contract consists of the furnishing all materials, labor, equipment, transportation, incidentals, facilities, and superintendence necessary to complete the project.
2. The Contractor is expected and required to attend the important phases of the bidding process of the said project. All concerns and questions shall be discussed on the Pre-Bid Phase.
3. The Contractor shall be responsible for carefully examining, comparing and verifying the data furnished by the plans and specifications, the Contractor shall submit the matter to PEZA or authorized representative for the proper explanation or necessary correction, before any adjustment shall be made. Any adjustment by the Contractor without such determination shall be at his risk and expense.
4. Omitted or wrongly described details of work, which are manifestly necessary to carry out the true intent of the drawings and specifications, shall be performed as if fully and correctly set forth and described in the drawings and specifications.
5. PEZA may, from time to time, make changes in the specifications and construction drawings. However, if the cost to the Contractor shall be materially increased by such change, the PEZA shall pay the Contractor for the reasonable cost in accordance with the changes.

6. The Contractor shall comply with the laws, City or Municipal Ordinances and all government specifications and regulations in so far as they are binding upon or affecting the portion the work hereto. The Contractor shall obtain all necessary licenses and permits and pay all taxes or fees, which may be encountered in connection with the prosecution of the work. They shall also be responsible for all damages to persons or property that may occur.
7. Unless otherwise specified, all materials shall be new and free from defects and imperfection. The quality of materials shall be of the best grade of their respective kinds for the purpose. The work shall be performed in the best and acceptable manner in strict accordance with the requirements of the plans and specifications. Preference will be given to articles or materials that are locally manufactured, conditions of quality and price being equal.
8. When called for, the Contractor shall furnish, for approval, full information and satisfactory evidence as to the kind and quality of materials or articles to be incorporate in the work. The Contractor shall furnish, for PEZA's approval, all samples when so directed.
9. The work shall be in accordance with approved samples. Materials and articles installed or used without such approval shall be at the risk of subsequent rejection. Any failure on the part of the Contractor to conform use materials that are not specified herein shall be under subsequent rejection, unless subject for approval.
10. Any alteration or revision of material usage without approval from PEZA shall make the Contractor responsible and liable in terms of guarantee, workmanship and defects.
11. Workmanship shall be in accordance with the best standard practices and all operations required under any and all parts of the Specification shall be undertaken in a neat, workman-like manner. Only skilled personnel with sufficient experience in similar operations shall be allowed to undertake the same.
12. Any alteration or revision on the execution of drawings without approval from PEZA shall be under subsequent rejection and shall make the Contractor responsible and liable for any workmanship and execution defects.
13. Defective workmanship shall be remedied by the Contractor, at their expense. They shall not be entitled to any payment hereunder until defective workmanship has been remedied.
14. The Contractor shall provide and maintain adequate weather-tight facilities with water, light, and toilet facilities and shall keep such places clean. They shall remove all connections and appliances connected there with prior to the completion of the Contract and leave the premises perfectly clean.
15. The Contractor shall furnish all temporary water, lights and power and shall pay all expenses in connection therewith. Furthermore, the Contractor shall provide and pay for all water expenses for building purposes that are required by all trades.
16. The Contractor shall put up safety measures and continuously maintain adequate protection of all his work from damage and shall protect the property. They shall make good any such damage, injury or loss

Site Preparation

1. The Contractor shall furnish equipment and perform labor required to complete demolition of the existing structures, removal of salvaged materials, and disposal of resulting trash, waste, and the like. See drawings for area coverage of work involved.
2. The Contractor shall visit the site of the work and examine the premises to fully understand all existing conditions relative to the work. No increase in cost or extension

of performance time will be considered from failure to verify and know actual site conditions.

3. The Contractor shall secure and pay for all necessary permits needed for the work.
4. The Contractor shall protect adjacent properties, persons, shrubs, trees, lawns, structures, and utilities against harm or damage.
5. All salvageable material shall remain in the property unless disposal is instructed by PEZA.
6. All debris and other materials resulting from demolition work (if applicable) shall be immediately removed from the premises and dumped at sites provided by the Contractor.

Permits and Clearances

1. All necessary permits, licenses and other pertinent documents, required for the construction of the Works shall be secured by the Contractor.
2. The Contractor shall be responsible for application of both temporary and permanent connection for utilities if necessary. The cost of the application, connection and installation shall be paid by the Contractor. The application for permanent connection shall be named after the owner.
3. The Contractor shall cover and all expenses necessary and incidental for the project and shall be able to secure the necessary permits for the project. The Contractor shall obtain and pay the corresponding fees for all necessary approvals, permits, certificates and clearances, such as the following, whenever necessary:
    a. IEE Checklist and/or Environmental Compliance Certificate (if necessary)
    b. Discharge Permit
    c. Building Permit and other Ancillary Permits (if necessary)
    d. All other permits as may be required for the construction
4. The Contractor shall secure all pertinent permits related to the project especially the Discharge Permit from DENR. As basis of acceptance, the final effluent must undergo effluent analysis from a 3rd party laboratory accredited by the DENR.

Structures and Facilities

1. The Contractor shall design, construct and turn-over an STP Pampanga PEZA office building, among others;
2. The contractor shall construct an office and separate quarters for the Contractor's project team personnel with water, light, telephone and toilet facilities;
3. Temporary bunkhouse/quarters for the Contractor's workforce complete with toilet and bath facilities;
4. Cost of power, water, and other utilities needed for the project shall be shouldered by the Contractor
5. Safety and security for the project implementation shall be enforced by the Contractor and must be in conformity to the respective zones' safety, security, and house rules and regulation.

Mobilization and Construction Proper

1. The Contractor shall mobilize all the required project team personnel, equipment, tools and manpower with the required skills and in sufficient number as may be necessary for his efficient undertaking of the project.

2. All materials and plant equipment should be delivered to site and stored in as secure place, in a manner acceptable to owner.
3. Outside storage of materials and equipment subject to degradation by the elements shall be in weather tight enclosures provided by the Contractor.
4. The Contractor shall maintain complete and accurate records available for owner's inspection of all materials and plant equipment received, stored and issued for use in the performance of the Contract.
5. The Contractor shall execute all the works under the contract in strict accord with standard engineering methodology and procedures and shall be responsible for maintaining cleanliness and orderliness in the project area throughout the duration of the contract.

Minimum Requirements for Construction Safety and Health Program

1. The Contractor should fully comply with the specifications of OSHS, Procedural Guidelines D.O. 13 of DOLE during construction and operation of STP. Adequate provision shall be made to effectively protect workers, operators and visitors from hazards. The following shall be provided as a minimum:
    a. Handrails and guards around tanks, trenches, pits, stairwells, and other hazardous structures.
    b. First aid equipment.
    c. Protective clothing and safety equipment, such as air pack, goggles, gloves, hard hats, safety harnesses, safety belt, lanyard, tripod with winch, SCBA, chemical suit and full-face shield with canister and gas monitor; compliant with PPE-I requirement of Bureau of Working Conditions of the Procedural Guideline D.O.13;
    d. Portable blower and sufficient hoses if required;
    e. Appropriately placed warning signs for slippery areas, non-potable water fixtures, low head clearance areas, open service manholes, hazardous chemical storage areas, flammable fuel storage areas, no smoking signs in hazardous areas; etc. Where required, the associated operational and health and safety issues resulting from the enclosed treatment process and operational site shall be incorporated into the design, including temperature, noise, lighting, ventilation and confined space requirements. This should comply with specifications of OSHS.
    f. Every effort shall be made at the design stage to minimize health and safety issues during the construction, operation and ultimate demolition of the treatment plant, and 'designing-out' hazards wherever reasonably practicable. When handling mechanical equipment, Contractor must comply with EHS Instruction and Guidelines Manual on Handling Tools and Equipment and OSHS Rule 1200 on Machine Guarding.
2. The Contractor shall ensure that all construction activities are undertaken in accordance with the Procedural Guideline D.O. 13 of DOLE. This should apply, but not be limited to provision of the suitable access means SUCH as walkways, stairs, platforms, roads, pathways, signage, lighting, and fire protection and lifting.
3. Fire extinguishers shall be provided for immediate use.
4. Emergency light and photo luminescent exit signs shall be provided in areas where operators will be working. Hose reels shall be provided at accessible locations.

Signage

All signages required for the safe and efficient operation of the Works shall be provided including but not limited to internal signage and labeling of rooms, chemical storage area, and equipment as well as external labeling of buildings, road signage and road marking. This shall also include provision of the signage noting the presence of the new STP, associated traffic routes and pedestrian routes on the public highway. The signage shall follow owner corporate branding requirements, signage content and location shall be agreed with owner before implementation.

D. Start Up, Testing and Commissioning

The Contractor shall supply all materials, labor, equipment, and (consumables good for two months) supply for the start-up, commissioning and process proving of the treatment plant. The seed sludge to be used for the commissioning shall be supplied by the Contractor. The Contractor shall conduct the testing and commissioning for two (2) months period.

Preparation of Operation and Maintenance Manual

The Contractor shall prepare and submit one electronic copy each of the draft operation and maintenance manual for review of owner. The Contractor shall submit three (3) copies of the final operation and Maintenance Manual to the owner prior to commissioning of the Sewage Treatment Plant (STP). The operation and maintenance manual shall include operating and maintenance procedure and program and complete copies (1 original and 2 colored photocopies).

Preparation Training of Sewage Treatment Plant Operators

The Contractor shall provide their own operators for the testing and commissioning of the facility. The Contractor shall conduct a minimum of one-day classroom lecture and one-month hands-on training of operators of the wastewater treatment plant.

VIII. PROGRAM OF WORKS

The Contractor shall proceed to the construction using the detailed plans and specifications as basis which was submitted by the Contractor, duly approved by PEZA and DENR-EMB, if necessary. The following works shall be included, but not limited to:

	ITEM DESCRIPTION	QTY	UNIT
A	**GENERAL REQUIREMENTS**		
	Mobilization / Demobilization	1.00	lot
	Occupational Safety and Health Program, PPEs, Billboards, Signages	1.00	lot
	Provision for Temporary Facilities	1.00	lot
	Permits and Clearances	1.00	lot
B	**PLANNING / ENGINEERING DESIGN**		
	Survey and Site Investigation	1.00	lot
	Design		
	Conceptual Plans	1.00	lot

	ITEM DESCRIPTION	QTY	UNIT
	Detailed Engineering Design	1.00	lot
	As-Built Plans	1.00	lot
C	**CONSTRUCTION**		
	Earthworks		
	Excavation	1.00	lot
	Hauling of Excavated Materials and Debris	1.00	lot
	Civil Works		
	Foundation	1.00	lot
	Concreting Works	1.00	lot
	Masonry Works	1.00	lot
	Roofing Works	1.00	lot
	Painting Works	1.00	lot
	Floor Finishing Works	1.00	lot
	Doors, Windows and Hardware	1.00	lot
	Electrical Works		
	Roughing-ins	1.00	lot
	Electrical System	1.00	lot
	Lighting System	1.00	lot
	Emergency System	1.00	lot
	Solar Panel System (including Inverter, Charge Control and Battery Bank)	1.00	lot
	Sewage Treatment Plant		
	Piping Works	1.00	lot
	Combined Pre-Treatment Process	1.00	lot
	Secondary Treatment Process	1.00	lot
	Post-Treatment Process	1.00	lot
	Sludge Handling and Dewatering Process	1.00	lot
	Chemical Dosing and Storage Facilities	1.00	lot
	Instrumentation / Control Room	1.00	lot
	Odor and Noise Control	1.00	lot
D	**TURN OVER**		
	Start Up, Testing and Commissioning	1.00	lot
	Preparation of Operation and Maintenance Manual	1.00	lot
	Training of STP Operators	1.00	lot
	Process Proving	1.00	Lot

In no circumstances shall the Contractor install / construct any features of the project which is not in conformity with the approved plans, specifications including quantities thereof. All other construction works not mentioned in the proposed plans and / or the above works shall be deemed included and it is the responsibility of the contractor not to exceed their submitted project cost.

IX. PROJECT COST ESTIMATES

The bidders shall submit the quantities and cost of the different types of works to be carried out in accordance with DPWH Department Order No. 197 series of 2016 dated 07 October 2016. In particular, the quantities and cost of each work item shall be calculated and a bill of quantities shall be prepared. The bidders shall draw up a unit price analysis for each of the main pay work items.

A. Construction Cost of the Project

Direct Cost

1. Materials
    a. Cost of Materials to be used in doing the work item called for, which shall include the following
    b. Cost of source, including processing, crushing, stockpiling, loading, local taxes, construction and/or maintenance of haul roads, etc.
    c. Expenses for hauling to project site
    d. Handling expenses
    e. Storage expenses
    f. Allowance for waste and/or losses, not to exceed 5% of materials requirement.
2. Labor
    a. Salaries and wages as authorized by the Department of Labor and Employment
    b. Fringe benefits, such as vacation and sick leaves, benefits under the Workmen's Compensation Act, GSIS and/or SSS contributions, allowances, 13th month pay, bonuses, etc.
3. Equipment
    a. Rental of equipment which shall be based on the prevailing "Associated Construction Equipment Lessors, Inc." For simplicity in computation, the operated rental rates are preferred over the bare rental rates as the former includes operator's wages, fringe benefits, fuel, oil, lubricants and equipment maintenance. The make, model and capacity of the equipment should be indicated in the detailed unit cost analysis.
    b. Mobilization and demobilization shall be treated as a separate pay item. It shall be computed based on the equipment requirements of the project stipulated in the proposal and contract booklet. Mobilization and demobilization shall not exceed 1% of the Estimated Direct Cost (EDC) of the civil works items.
4. Permits and Clearances

Indirect Cost

1. Overhead Expenses
    a. Engineering and Administrative Supervision.
    b. Transportation allowances.
    c. Office Expenses, e.g., for office equipment and supplies, power and water consumption, communication and maintenance.
    d. Premium on Contractor's All Risk Insurance (CARI).
    e. Financing Cost.
        i. Premium on Bid Security
        ii. Premium on Performance Security

iii. Premium on Surety for Advance Payment
iv. Premium on Warranty Bond (one year)

2. Contingencies - These include expenses for meetings, coordination with other stakeholders, billboards (excluding Project Billboard which is a pay item under the General Requirements), stages during ground breaking, inauguration ceremonies, and other unforeseen events.
3. Miscellaneous Expenses - These include laboratory tests for quality control and plan preparation.
4. Contractor's Profit Margin
5. VAT Component

B. Approved Budget for the Contract

The Contractor shall ensure that the required works do not exceed the Approved Budget for the Contract (ABC). The estimated ABC is **Ninety Million Pesos (Php 90,000,000.00),** inclusive of VAT. All other incidental works that might arise are deemed included and to the account of the Contractor. The project should be completed within **240 calendar days**, including the application of necessary permits.

X. PROJECT REQUIREMENTS

A. Eligibility Requirements

The eligibility requirements for the Design and Build Scheme shall comply with the applicable provisions of Sections 23 and 24 of IRR of RA 9184. A modified set of requirements integrating eligibility documents and criteria for infrastructure projects and consulting services shall be adopted in accordance with Annex “G” – Guidelines for the Procurement and Implementation of Contracts for Design and Build Infrastructure Projects Annex “G” of IRR of RA 9184.

B. General Requirements

1. The Contractor must have a valid PCAB license.
2. The Contractor must have installed and completed at least 5 wastewater / sewage treatment facilities within the past 5 years.
3. The Contractor must have at least one installation of the similar technology in an industrial or business park catering wastewater from different locators.
4. The Contractor must own, maintain, and operate with valid certifications for the collection and transport of wastewater.
5. The Contractor must be at least 5 years in the service and has provided results of laboratory water analysis of at least 5 sewage / wastewater treatment plants that are complying to Water Quality Guidelines and General Effluent Standards (DAO 2016-08)

C. Staff Requirements

The Contractor shall provide adequate number of qualified professionals, support and administrative staffs to perform the services described herein. The key personnel to be assigned should possess the adequate experience in his/her field of specialization in the completion of this project. The general qualifications of the minimum key personnel are as follows:

Design Stage

Key Personnel	General Experience	Relevant Experience
Architect	5 years	3 years
Civil Engineer	5 years	3 years
Master Plumber / Sanitary Engineer	5 years	3 years
Electrical Engineer	5 years	3 years
Mechanical Engineer	5 years	3 years
Draftsman	1 year	1 year

Construction Stage

Key Personnel	General Experience	Relevant Experience
Project Manager	5 years	3 years
Safety Officer	5 years	3 years
Quality Controller	3 years	1 year
Quantity Surveyor / Cost Analyst	3 years	2 years
Foreman	10 years	5 years
Draftsman	1 year	1 year
Skilled Worker	5 years	3 years
Helper	1 year	1 year

D. Equipment

The minimum major equipment requirements are the following:

Equipment	Number of Unit(s)
Service Vehicle	1
Welding Machine	1
Backhoe	1
Dump Truck	1
Cutting Outfit	1
Bar Cutter	1

E. Proposed Design and Construction Schedule

The Contractor is required to complete the Project within **240 calendar days** as shown below, to start upon the contractor's receipt and signing of Notice to Proceed. The time frame for the project is as follows:

	ITEM DESCRIPTION	MONTHS							
		1	2	3	4	5	6	7	8
A	**GENERAL REQUIREMENTS**								
	Mobilization / Demobilization								
	Occupational Safety and Health Program, PPEs, Billboards, Signages								
	Provision for Temporary Facilities								
	Permits and Clearances								

B	**PLANNING / ENGINEERING DESIGN**	
	Survey and Site Investigation	
	Design	
	Conceptual Plans	
	Detailed Engineering Design	
	As-Built Plans	
C	**CONSTRUCTION**	
	Earthworks	
	Excavation	
	Hauling of Excavated Materials and Debris	
	Civil Works	
	Foundation	
	Concreting Works	
	Masonry Works	
	Roofing Works	
	Painting Works	
	Floor Finishing Works	
	Doors, Windows and Hardware	
	Electrical Works	
	Roughing-ins	
	Electrical System	
	Lighting System	
	Emergency System	
	Solar Panel System (including Inverter, Charge Control and Battery Bank)	
	Sewage Treatment Plant	
	Piping Works	
	Combined Pre-Treatment Process	
	Secondary Treatment Process	
	Post-Treatment Process	
	Sludge Handling and Dewatering Process	
	Chemical Dosing and Storage Facilities	
	Instrumentation / Control Room	
	Odor and Noise Control	
D	**TURN OVER**	
	Start Up, Testing and Commissioning	
	Preparation of Operation and Maintenance Manual	
	Training of STP Operators	
	Process Proving	

XI. SUBMITTALS

1. Upon the submission of bids, the Contractor shall provide the following documents as part of the technical requirements to be included in the evaluation of bids:
    a. Horizontal and vertical process flow diagrams that include mass balance
    b. Sewage Treatment Plant Hydraulic Profile
        i. Flow Diagram

ii. Narrative of the Secondary Treatment Process (MBBR)
iii. List of STP equipment to be used

c. Program of Works (in the same format of “Attachment A – Approved Budget of the Contract” of DPWH Department Order No. 197 series of 2016)
d. PERT-CPM

2. After the award of Notice to Proceed, the Contractor shall provide the following documents necessary for PEZA’s approval prior to the preparation of detailed architectural and engineering design, permits and other requirements:
    a. Perspectives
    b. Horizontal and vertical process flow diagrams that include mass balance
    c. Sewage Treatment Plant Hydraulic Profile
        i. Flow Diagram
        ii. Narrative of the Secondary Treatment Process (MBBR)
        iii. List of STP equipment to be used
    d. Construction Drawings
        i. Site Development Plan
        ii. Architectural Plans
        iii. Structural Plans
        iv. Blow up Plans
        v. Electrical Plans
        vi. Mechanical Plans
        vii. Sanitary / Plumbing Plans
    e. Revised Program of Works (in the same format of “Attachment A – Approved Budget of the Contract” of DPWH Department Order No. 197 series of 2016) in accordance with the actual site conditions
    f. Detailed Unit Price Analysis (DUPA)
    g. Technical Specifications
    h. Revised PERT-CPM (if necessary)

ANNEX 1

PEZ LOCATORS' ACTIVITIES

LOCATOR 1	Facility for warehousing/logistics operation
LOCATOR 2	Manufacturing of decorative lighting fixtures (such as chandeliers), accent furniture (such as coffee table), and accessories (such as home decorations)
LOCATOR 3	Manufacturing of wire harness
LOCATOR 4	Establish, operate, and maintain factory/warehouse buildings
LOCATOR 5	Electronic manufacturing services such as Printed Circuit Board Assemblies (PCBAs), component placement, and (SMT) test and box assembly
LOCATOR 6	Manufacturing of household furniture and decorative items, including beds, tables, cabinets, sofas and chairs
LOCATOR 7	Production of all types of metals and metal-inclusive powders, granules, nuggets, ingots, billets, tubes and plates, through reclaimed and repurposed copper, aluminum and other ferrous and non-ferrous metals and alloy
LOCATOR 8	Warehousing and logistics requirement of its PEZA-registered export enterprise-client
LOCATOR 9	Design, manufacture and export of decorative items, props, and other similar materials as well as all kinds and types of handicraft articles, merchandise and products for use by amusement, theme parks, and other similar establishments made of fiber glass
LOCATOR 10	Manufacturing of Lycra-based women's swimwear, lingerie and outerwear
LOCATOR 11	Repair of semiconductor equipment and parts and maintenance services
LOCATOR 12	Manufacturing of maritime and aviation models
LOCATOR 13	Assembly of lighting products, including, but not limited to, chandeliers, ceiling lights and wall lights
LOCATOR 14	Warehousing operations particularly establishment of a warehouse facility for the storage, deposit, and safekeeping of goods for subsequent transfer directly to the ecozone plant of PEZA-registered clients; and (ii) to import or procure from local sources and/or from other PEZA-registered enterprises of goods / products or resale, or for packing/covering which also includes the marking and labeling, cutting or altering according to client's or customer's specification
LOCATOR 15	Development and manufacture of organic related products such as organic fertilizer and other organic materials
LOCATOR 16	Rebuilding of used core automotive/automobile parts/body parts and components
LOCATOR 17	Manufacturing and storage of bakery products
LOCATOR 18	Automobile shop station

LOCATOR 19	Processing and storage of meat products
LOCATOR 20	Manufacturing of permanent building access equipment used for glass cleaning and building maintenance
LOCATOR 21	Manufacturing and storage of ice cream products

ANNEX 2

BILL OF QUANTITIES

	ITEM DESCRIPTION	QTY	UNIT
A	**GENERAL REQUIREMENTS**		
	Mobilization / Demobilization	1.00	lot
	Occupational Safety and Health Program, PPEs, Billboards, Signages	1.00	lot
	Provision for Temporary Facilities	1.00	lot
	Permits and Clearances	1.00	lot
B	**PLANNING / ENGINEERING DESIGN**		
	Survey and Site Investigation	1.00	lot
	Design		
	Conceptual Plans	1.00	lot
	Detailed Engineering Design	1.00	lot
	As-Built Plans	1.00	lot
C	**CONSTRUCTION**		
	Earthworks		
	Excavation	1.00	lot
	Hauling of Excavated Materials and Debris	1.00	lot
	Civil Works		
	Foundation	1.00	lot
	Concreting Works	1.00	lot
	Masonry Works	1.00	lot
	Roofing Works	1.00	lot
	Painting Works	1.00	lot
	Floor Finishing Works	1.00	lot
	Doors, Windows and Hardware	1.00	lot
	Electrical Works		
	Roughing-ins	1.00	lot
	Electrical System	1.00	lot
	Lighting System	1.00	lot
	Emergency System	1.00	lot
	Solar Panel System (including Inverter, Charge Control and Battery Bank)	1.00	lot
	Sewage Treatment Plant		
	Piping Works	1.00	lot
	Combined Pre-Treatment Process	1.00	lot
	Secondary Treatment Process	1.00	lot
	Post-Treatment Process	1.00	lot
	Sludge Handling and Dewatering Process	1.00	lot
	Chemical Dosing and Storage Facilities	1.00	lot

	ITEM DESCRIPTION	QTY	UNIT
	Instrumentation / Control Room	1.00	lot
	Odor and Noise Control	1.00	lot
D	**TURN OVER**		
	Start Up, Testing and Commissioning	1.00	lot
	Preparation of Operation and Maintenance Manual	1.00	lot
	Training of STP Operators	1.00	lot
	Process Proving	1.00	lot

ANNEX 3

TECHNICAL SPECIFICATIONS

Item No.	Equipment	Technical Description	Bid Offer	Remarks (T.E. by End-User)
1.000	**Analyzers / Transmitter**			
1.001	Description:	MultiParameter Analyzer / Transmitter - Up to 4 Measuring Channels,		
1.0021	Communication Capability	Can Connect to Digital Fieldbuses, Hart, Profibus, Ethernet and Integrated Web Server, (Cert of Conformance to be submitted)		
1.0022	Communication Capability	Can connect to "True Digital Sensors", automatically recognized and configured.		
1.003	Configuration:	Factory Pre-Configured for fast Commissioning		
1.004	Capability Descriptions:	With Configurable Modular Concept capability for Plug-&-Play		
1.0041		With integration into OEM Fieldcare or Equivalent, or IIOT Capability and Web Server for Asset Management & HQ / Offsite Monitoring		
1.0042		Can Verify the correct operation of the sensors without interruption of the process		
1.0043		User-defined alarm configuration for alarm contact and fault current		
1.0044		Complete configuration transfer, data backup, and software updates via SD card		
1.005	Sensor & Process Check:	Expandable with additional Channels		
1.200	**Data Retention:**	With Storage of Measured and other Values in Data Logbook		

1.201	Data Transfer	With Tamper-Proof Data Transmission via Ethernet or SD Card to DENR or Government Authorities;		
1.300	**Outputs**	Individually Galvanically isolated from sensors and other outputs		
1.3001		Expandable 4-20mA outputs and relays		
1.3002		Fieldbus communication upgradeable (HART, Profibus, MODBUS, Ethernet IP, etc)		
1.3003		Fieldbus communication upgradeable (HART, Profibus, MODBUS, Ethernet IP, etc)		
1.400	**Standards & Protection**			
1.401	Electromagnetic immunity/emission:	Compliant with EN 61326-1:2006		
1.402	Overvoltage protection:	According to EN 61000-4-5		
1.500	Power Supply:	100 … 230 VAC ± 15%, 50/60 Hz		
1.600	Protection rating:	IP66/67, sealing and corrosion resistance per NEMA 4X		
1.700	Brand:	Bidder to Indicate		
1.800	Model:	Bidder to Indicate		

Equipment:	**Flowmeter**			
Item No.	Equipment	Technical Description	Bid Offer	Remarks (T.E. by End-User)
2.0000	Flowmeter			
2.0010	Description:	Electromagnetic flowmeter, microprocessor based and self checking, compact version		
2.0020	**Operation**			
2.0021	Operation:	Via Local Display		

2.0022	Operation:	Via Operating Tool or Phone Apps		
2.0030	**Inclusion:**	Empty Pipe Detection with EPD electrode		
2.0040	Inclusion:	reference electrode		
2.1000	Design	Compact version (sensor with integrated transmitter) or remote version (sensor with separate transmitter)		
2.2000	**Sensor**			
2.2001	Rated Pressure:	PN40, PN 16, PN 10		
2.2002	Rated Temperature:	0 - 50 deg C		
2.2003	Housing:	Die-cast aluminum, coated, steel		
2.2004	Electrodes Material:	Alloy C, Bullet Head		
2.2005	Enclosure Protection:	IP 67 / IP68		
2.3000	Transmitter			
2.3010	Design	Backlit, 4-line, 3 optical keys (Touch control)		
2.3020	Indications:	Indicates - actual Flow, - Counters & - Status		
2.3030	Measured error:	+/- 0.5% o.r. +/- 0.2% o.r.(Optional)		
2.3040	Material:	Housing made of polycarbonate		
2.4000	Outputs/Inputs			
2.4010	Current output	-Current output (0/4-20 mA HART)		
2.4020	Switch Output	-2x pulse/frequency/switch output		
2.4030	Input:	-status input		
2.5000	Power supply	AC 90…264 V (47…63Hz)		
2.6000	Degree of Protection	IP 66 / 67		
2.7000	Bid Offer			
2.7001	Brand:	Bidder to Indicate		

2.7002	Model:	Bidder to Indicate		

Equipment:		**pH Sensors**		
Item No.	Equipment	Technical Description	Bid Offer	Remarks (T.E. by End-User)
3.00	**Parameter:**	pH		
3.001	Measuring Principle	Potentiometric (bidder to Indicate)		
3.002	Characteristics	Digital Electrode with Dirt-Repellent Ring Junction and Built-In Temp Sensor		
3.003	Connection	Digital Inductive Technology, Contactless		
3.004	Measuring Range	6.0-9.5 Ph, as applicable		
3.005	Process Temp	0- 80 deg C		
3.006	Process Pressure	0.8 to 17 bars		
3.007	Temperature Sensor	NTC 30K		
3.008	Ingress Protection	IP 68		
3.009	**Material**			
3.0091	Sensor Shaft	Glass		
3.0092	Metal Lead	Ag/ AgCl		
3.01	Brand:	Bidder to Indicate		
3.02	Model:	Bidder to Indicate		

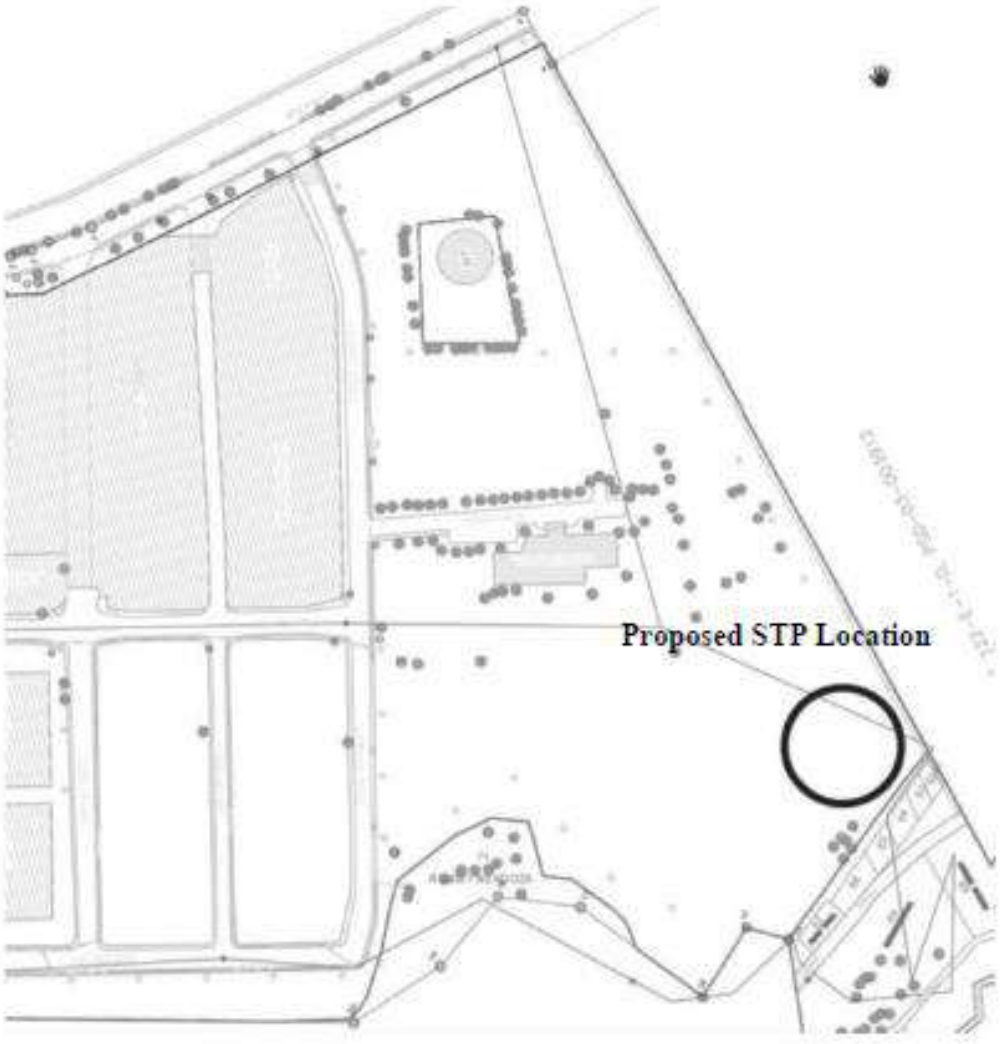
Item No.	Description	Technical Requirement	Offer	Remarks (T.E. by End-User)
4.000	Equipment:	Dissolved Oxygen Sensor		
4.001	Parameter	Dissolved Oxygen		
4.002	Characteristics	Digital, Optical Measurement based on fluorescence quenching		
4.003	Measuring Principle	Optical oxygen measurement		
4.004	Process Range	0 to 20 mg/l		
4.005	Instrument Range	0 to 20 mg/l		
4.006	Temeprature Compensation Sensor	NTC 30K		
4.007	Sensor Connection	Fixed Cable		
4.008	Accuracy	±2% of reading		
4.009	Repeatability	±0.5 %		

4.010	Process Temperature	–5 to +60 ˚C		
4.011	Process Pressure	10 bar		
4.012	Ingress Protection	IP 68		
4.013	Sensor Material	Stainless Steel		
4.014	Sensor Output	Digital Output		
4.015	Installation	Immersion / Sampling		
4.016	Model	Bidder to Indicate		
4.017	Brand	Bidder to Indicate		

Item No.	Item/ Description	Technical Description	Bid Offer	Remarks (T.E. by End-User)
4.01	Equipment:	**Solar Panels**		
4.02	Size:	Bidder to Indicate		
4.03	Maximum Power:	per Panel - 260 W		
4.04	Total Power:	2,000 W		
4.05	Open Circuit Voltage:	38.82 V		
4.06	Short Circuit Current:	8.99 A		
4.07	Maximum Power Voltage:	31.2 V		
4.08	Maximum Power Current:	8.34 A		
4.09	Maximum System Voltage:	1000 VDC		
4.10	Minimum Efficiency	0.8		
4.11	Brand:	Bidder to Indicate		
4.12	Model:	Bidder to Indicate		
Item No.	Item	Technical Description	Bid Offer	Remarks (T.E. by End-User)
4.20	Equipment:	**Inverter**		
4.21	V DC Max:	550 V		
4.22	I DC Max:	15A		
4.23	V DC Range:	70 V - 550 V		
4.24	V AC Norm	230 V		
4.25	f AC Norm	50/60 Hz		
4.26	S AC Norm	5000 VA		
4.27	I AC Norm	21.8 A		
4.28	pf	0.95 lead-0.95 lag		
4.29	Protection Degree	IP65		
4.30	Ambient Temp	-25 to 60 deg Cel		
4.31	Brand:	Bidder to Indicate		
4.32	Model:	Bidder to Indicate		

Section VII. Drawings

PROJECT LOCATION



ALIGNMENT – 1
Proposed STP Location

Section VIII. Bill of Quantities

Notes on the Bill of Quantities

Objectives

The objectives of the Bill of Quantities are:

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

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

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

Daywork Schedule

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

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

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

Provisional Sums

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

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

Signature Box

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

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

Section IX. Checklist of Technical and Financial Documents

Notes on the Checklist of Technical and Financial Documents

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

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

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

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

Checklist of Technical and Financial Documents

I. TECHNICAL COMPONENT ENVELOPE

Class "A" Documents

Legal Documents

☐ (a) Valid PhilGEPS Registration Certificate (Platinum Membership) (all pages) in accordance with Section 8.5.2 of the IRR;

Technical Documents

☐ (b) Statement of the prospective bidder of all its ongoing government and private contracts, including contracts awarded but not yet started, if any, whether similar or not similar in nature and complexity to the contract to be bid; **and**

☐ (c) Statement of the bidder's Single Largest Completed Contract (SLCC) similar to the contract to be bid, except under conditions provided under the rules; **and**

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

☐ (e) Original copy of Bid Security. If in the form of a Surety Bond, submit also a certification issued by the Insurance Commission **or** original copy of Notarized Bid Securing Declaration; **and**

(f) Project Requirements, which shall include the following:

☐ a. Organizational chart for the contract to be bid;

☐ b. List of contractor's key personnel (*e.g.*, Project Manager, Project Engineers, Materials Engineers, and Foremen), to be assigned to the contract to be bid, with their complete qualification and experience data;

☐ c. List of contractor's major equipment units, which are owned, leased, and/or under purchase agreements, supported by proof of ownership or certification of availability of equipment from the equipment lessor/vendor for the duration of the project, as the case may be; **and**

d. Horizontal and vertical process flow diagrams that include mass balance

e. Sewage Treatment Plant Hydraulic Profile

f. Flow Diagram

g. Narrative of the Secondary Treatment Process (MBBR)

h. List of STP equipment to be used

i. Program of Works (in the same format of "Attachment A – Approved Budget of the Contract" of DPWH Department Order No. 197 series of 2016)

j. PERT-CPM

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

Financial Documents

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

Class "B" Documents

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

II. FINANCIAL COMPONENT ENVELOPE

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

Other documentary requirements under RA No. 9184

☐ (k) Original of duly signed Bid Prices in the Bill of Quantities; **and**

☐ (l) Duly accomplished Detailed Estimates Form, including a summary shee indicating the unit prices of construction materials, labor rates, and equipmen rentals used in coming up with the Bid; **and**

☐ (m) Cash Flow by Quarter.

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