



ORISSA WATER SUPPLY AND SEWERAGE BOARD

BID DOCUMENT

TECHNICAL BID

COVER- I

- NAME OF WORK:** “Construction, testing, commissioning and trial run of 4 nos. of Septage Treatment Facilities in following towns of Odisha:
- i. Jharsuguda town of Jharsuguda District (40 KLD)
 - ii. Brajrajnagar Town of Jharsuguda District (30 KLD)
 - iii. Sundargarh Town of Sundargarh District (20KLD)
 - iv. Belpahar Town of Jharsuguda District (10 KLD)” on lump sum contract

Bid ID No.: 01/ OWSSB OF 2019-20

VALUE PUT TO TENDER: Rs.11.81 Crore

Last date of submission: Dt. 06.08.2019 up to 17.00 hrs

CHECK LIST TO BE ENCLOSED BY THE BIDDER (along with Bid Documents)

The check list is only indicative to assist the bidder in satisfactorily enclosing all required major documents for Technical Qualification. The list is not exhaustive and the bidder should read all clauses of the bid document so as to enclose all documents as required:

A. BID SECURITY

- i) The Bid security for a value of **Rs. 11.81 Lakhs** to be furnished for Package 5.
- ii) The bidder may bid for one, two or maximum three packages, if eligible
- iii) Furnish the details of Bid Security as under

Sl. No.	Name of the Bidder	Amount and type of security	Issued by

B. ELIGIBILITY/QUALIFICATION CRITERIA

Sl. No.	Description	Requirement as per Bid document	Particulars as furnished by the bidder	Page No. with Ref. no., if any, where the particulars are furnished by bidder.
Financial Turnover & Cash flow.				
1.	Average Annual Turnover of the last five financial years Rs. in Lakhs (2014-15, 2015-16, 2016-17, 2017-18, & 2018-19) @ twice of the estimated cost put to tender.	Rs. 23.62 Crore		
2.	Minimum cash flow required	Rs. 1.18 Crore		
Work Experience				
3.	The bidder should have satisfactorily completed at least one civil work of water storage tank of minimum 200 cum capacity (Rs.in lakh) in a single contract in the last five financial years i.e. 2014-15, 2015-16 2016-17, 2017-18, 2018-19. The work should be for water retaining structure or sewage /septage treatment plant executed with government or a public sector unit.	Rs 5.91 Crore		

C. ANNEXURES AND CERTIFICATES

1. Documents and other related information.

- | | | |
|------|--|------------------------|
| 1.a. | Signature of the proprietor or proprietress attested | Copy to be uploaded |
| 1.b. | Signature of all the partners/power of attorney attested | Copy to be uploaded |
| 1.c. | Registration of the firm | Copy to be uploaded |
| 2.a. | power of attorney | Copy to be uploaded |
| 2.b. | Audited Balance sheets | Copy to be uploaded |
| 2.c. | Income Tax clearance certificate | Copy to be uploaded |
| 3. | Experience Certificate | Copy to be uploaded |
| 4 | Annexures I to XIV | Formats to be uploaded |

BID DOCUMENT

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I. Invitation for Bids



ORISSA WATER SUPPLY AND SEWERAGE BOARD
SATYANAGAR, BHUBANESWAR, ODISHA
E-mail: msowssb@gmail.com

NATIONAL COMPETITIVE BIDDING THROUGH e-PROCUREMENT

Bid Identification No: 01/OWSSB OF 2019-20

FORM OF CONTRACT: LUMP SUM (TWO COVER SYSTEM)

1. For and on behalf of Orissa Water Supply and Sewerage Board, bids (in Two-cover System) under lump sum contract are invited by the Member Secretary, OWSSB, Bhubaneswar as detailed below.
2. Bidding documents may be downloaded by interested bidders from the e-procurement website www.tendersorissa.gov.in of Government of Odisha.
3. Cost of tender document is Rs.10,000/- in shape of Bank Demand Draft in favour of the Member Secretary, OWSSB, Bhubaneswar.
4. Period of contract is as furnished below in respect of different works.
5. Pre Bid Meeting: To be held **on Dt. 22/07/2019 at 11:30** am in the Office of the Member Secretary, OWSSB at Satyanagar, Bhubaneswar.

Package No.	Name of the Work	Value put to Tender	Contract Period	Eligible Class of Contractor	Last Date of Submission of Bids	Ernest Money Deposit
1	2	3	4	5	6	7
1.	Construction, testing, commissioning and trial run of 6 nos. of Septage Treatment Facilities in following towns of Odisha: i. Balangir Town in Balangir District (30 KLD) ii. Bhawanipatna Town in Kalahandi District (20 KLD) iii. Kantabanji Town in Balangir District (10 KLD) iv. Kesinga Town in Kalahandi District (10 KLD) v. Khariar Town in Nuapada District (10 KLD) vi. Titlagarh Town in Balangir District (10 KLD)	Rs.15.84 Crore.	Twelve Months (Construction) + One Month (Trial Run & O&M)	Super Class	06.08.2019 up to 17.00 hrs.	Rs. 15.84 Lakh

2.	Construction, testing, commissioning and trial run of 3 nos. of Septage Treatment Facilities in following towns of Odisha: i. Barbil Town in Kendujhar District (20 KLD) ii. Joda Town in Kendujhar District (20 KLD) iii. Kamakshyanagar Town in Dhenkanal District (10 KLD)	Rs. 7.96 Crore	Twelve Months (Construction) + One Month (Trial Run & O&M)	Special Class and above	06.08.2019 up to 17.00 hrs.	Rs. 7.96 Lakh
3.	Construction, testing, commissioning and trial run of 4 nos. of Septage Treatment Facilities in following towns of Odisha: i. Asika Town in Ganjam District (10 KLD) ii. Hinjlicut Town in Ganjam District (10 KLD) iii. Polasara Town in Ganjam District (10 KLD) iv. Surada Town in Ganjam District (10 KLD)	Rs. 10.13 Crore	Twelve Months (Construction) + One Month (Trial Run & O&M)	Special Class and above	06.08.2019 up to 17.00 hrs.	Rs. 10.13 Lakh
4.	Construction, testing, commissioning and trial run of 6 nos. of Septage Treatment Facilities in following towns of Odisha: i. Jatani Town in Khorda District (20 KLD) ii. Khorda Town in Khorda District (20 KLD) iii. Paradeep town in Jagatsinghpur District (20 KLD) iv. Banki Town in Cuttack District (10 KLD) v. Nayagarh town in Nayagarh District (10 KLD) vi. Nimapda town in Puri District (10 KLD)	Rs. 15.29 Crore	Twelve Months (Construction) + One Month (Trial Run & O&M)	Super Class	06.08.2019 up to 17.00 hrs.	Rs. 15.29 Lakh

5.	Construction, testing, commissioning and trial run of 4 nos. of Septage Treatment Facilities in following towns of Odisha: i. Jharsuguda town of Jharsuguda District (40 KLD) ii. Brajrajnagar Town of Jharsuguda District (30 KLD) iii. Sundargarh Town of Sundargarh District (20KLD) iv. Belpahar Town of Jharsuguda District (10 KLD)	Rs. 11.81 Crore	Twelve Months (Construction) + One Month (Trial Run & O&M)	Special Class and above	06.08.2019 up to 17.00 hrs.	Rs. 11.81 Lakh
6.	Construction, testing, commissioning and trial run of 3 nos. of Septage Treatment Facilities in following towns of Odisha: i. Anandpur Town in Kendujhar District (10 KLD) ii. Basudebpur Town in Bhadrak District (10 KLD) iii. Nilagiri Town in Balasore District (10 KLD)	Rs. 7.56 Crore	Twelve Months (Construction) + One Month (Trial Run & O&M)	Special Class and above	06.08.2019 up to 17.00 hrs.	Rs. 7.56 Lakh

6. The bidder can bid for one or two or a maximum of three packages depending upon their eligibility criteria as per conditions of DTCN.
7. Earnest Money is to be deposited in shape of NSC / Term Deposit / Fixed Deposit/ Post Office Time Deposit/ KVP pledged **in favour of the Member Secretary, OWSSB, Bhubaneswar**. The bidder can also provide Bank Guarantee from a nationalized bank/scheduled bank in Odisha acceptable to the client and the validity period for the BG shall not be less than 180 days from the bid due date inclusive of a claim period of 60 days. In case of BG from a bank outside the State, it shall be counter guaranteed by its branch at Bhubaneswar.
8. Portal Enrollment: The bidder should have the necessary Portal Enrolment (with their own Digital Signature Certificates). The registered bidders from outside Odisha can also participate in this process, after necessary Portal Enrolment, but shall have to subsequently undergo registration with the appropriate authority of the State Government before signing the agreement. The bidders desirous to participate in bidding must possess compatible Digital Signature Certificate of Class-II or Class-III and should follow the changes / modifications / addendum to DTCN, if any.
9. Scanned copies of Registration Certificate, PAN, GST Registration, Affidavits, EMD & Tender Paper Cost including all required paper uploaded through website should be produced in original to the Member Secretary, OWSSB, Bhubaneswar for verification within the specified time before opening of Bid. Otherwise the tender will be summarily rejected.
10. The bid for the work shall remain open for acceptance for a period of **120 (One Hundred Twenty) days** from the date of opening of price bids. If any Bidder withdraws his bid before the said period or makes any modifications in the terms and conditions of the bid, the said earnest money shall stand forfeited.
11. Date and time of opening of technical bid is on Dt. **13.08.2019 at 12.00 Hrs.**

12. Further details about the works can be seen in the bidding documents which can be downloaded from the e-procurement website: www.tendersodisha.gov.in of Government of Odisha.

The undersigned reserves the right to reject any or all the bid documents without assigning any reasons thereof.

Member Secretary

II. Letter of Application

(Letter head paper of the Applicant, including full postal address, telephone no., fax no., cable address, and e-mail)

Dated

To

**The Member Secretary,
OWSSB, Satyanagar,
Bhubaneswar**

Dear Sir,

Being duly authorized to represent and set on behalf of.....

..... (hereinafter "the Applicant"),

and having reviewed and fully understood all the information provided, the undersigned hereby apply for consideration as a bidder for the following

BID IDENTIFICATION NO. 01/OWSSB OF 2019-20

Construction, testing, commissioning and trial run of 3 nos. of Septage Treatment Facilities in following towns of Odisha:

- i. Jharsuguda town of Jharsuguda District (40 KLD)
- ii. Brajrajnagar Town of Jharsuguda District (30 KLD)
- iii. Sundargarh Town of Sundargarh District (20KLD)
- iv. Belpahar Town of Jharsuguda District (10 KLD)

Attached to this letter please find copies of original documents defining

- the Applicant's legal status
- the principal place of business and
- the place of incorporation (for applicants who are corporation) or the place of registration and the nationality of the owners (for applicants who are partnerships or individually owned firms)

Your Agency and its authorized representatives are hereby authorized to conduct any inquiries or investigations to verify the statements, documents and information submitted in connection with this application, and to seek clarification from the bankers and clients regarding any financial and technical aspects. This 'Letter of Application' will also serve as authorization to any individual or authorized representative of any institution referred to in the supporting information, to provide such information deemed necessary and requested by yourselves to verify the statements and information provided in this application, or with regard to the resources, experience and competence of the Applicant.

This application is made in the full understanding that:

- Bids by the applicants will be subject to verification of all information submitted for consideration, at the time of bidding.

Your Agency reserves the right to:

- amend the scope and value of any contract bid under this project
- and reject or accept any application, to cancel the entire bidding process and reject all the applications and
- Your Agency shall not be liable for any such action and shall be under no obligation to inform the Applicants of the grounds for them

It is hereby certified that the unit rates and price for all the items covered in the Bill of Quantities set out in

the Price Schedule have been furnished clearly in figures and words and it is hereby agreed to execute the works at the rates and prices mentioned therein and to receive the payments on measured quantities as per the Conditions of the Contract.

It is hereby distinctly and expressly declared and acknowledged that before the submission of the bid, the instructions therein have been carefully followed and the conditions of the Contract and other terms and conditions have been read. It is also declared and acknowledged that careful examination of the bid documents has been carried out with reference to the specifications, quantities, location where the said work is to be done, investigation of the works to be done, materials required for this contract and their source and other requirements, covenants, stipulations and restrictions. It is distinctly agreed that no claim or demand will be made on OWSSB by the applicant, arising out of any misunderstanding or misconception or mistake of the said requirements, covenants, stipulations, restrictions, conditions etc. on the part of the applicant.

The Income Tax Clearance Certificate uploaded as enclosures.

Copy of the Bid Security of **Rs. 11.81 Lakh. (Rupees Eleven Lakh and Eighty One Thousand only)** is uploaded along with this application. The original bid security shall be submitted separately as prescribed in the bid document elsewhere.

*(Enter the form and other details of the bid security drawn in favour of the **Member Secretary, OWSSB, Bhubaneswar***

It is hereby agreed that in case the bid is accepted, the Performance Security to the value and in the manner/form prescribed by the Employer will be submitted and agreement entered into within the time frame stipulated for the due fulfillment of the contract. It is agreed that in the event of non-remittance of the required Performance Security and execution of the Agreement within the stipulated time frame, the Bid Security deposited with the bid will be forfeited. In the event of non-acceptance of the bid offered by the Applicant, the Employer shall intimate the applicant of the rejection of his bid, upon which the applicant can get his Bid Security refunded on an application for the same. Any notice required to be served on the applicant shall be deemed to have been sufficient if delivered personally, e-mailed or left at the address given herein or sent by post either by registered mail or ordinary. Such notice shall, if sent by post shall be deemed to have been served on the applicant at the time when in due course by post it would be delivered at the address to which it is sent. For all purposes, the address given herein will serve as permanent address and any change therein will be promptly intimated then and there.

It is fully understood and agreed that on receipt of communication of acceptance of the bid from the accepting authority, there emerges a valid contract between the Applicant and OWSSB represented by the officer accepting the bid and is expressly agreed that the bid documents with the schedules, conditions of the contract, negotiation communications and other correspondence connected to this contract will all constitute the contract for this purpose and be the foundation of rights on both the parties.

It is agreed that time shall be considered as the essence of this contract and the work will be commenced immediately on getting information of the acceptance of the bid and any slow progress will be subjected to the relevant penal clauses contained in the Conditions of the Contract

It is hereby agreed that the professionally qualified personnel to execute and supervise the works shall be deployed as required in clause 10 of General Conditions of Contract.

The Applicant hereby agrees to undertake full responsibility for the stability and soundness of the works executed.

The Applicant hereby agrees that the bid will not be withdrawn during the period of validity as indicated in the bid documents and also during such extended periods agreed to by the applicant. The Applicant agrees that in the event of withdrawal of the bid during the validity period or extended period, the Bid Security is liable to be forfeited by Employer.

It is explicitly understood that the Employer is not bound to accept the lowest or any bid the Board may receive. It is hereby agreed that the Employer reserves the rights to reject any or all the bids without

assigning any reasons thereof.

Dated this day of
Month of

Signature of the bidder.
(To be signed by the authorized
signatory with seal)

Note: Scanned copy of the LOA shall be uploaded along with annexures and certificates in pdf format. Only the certificates and formats prescribed in annexures are to be uploaded. Original are to be submitted as prescribed in the bid document for verification and record.

III. INSTRUCTIONS TO BIDDERS

A. GENERAL

1. Scope of Bid

1.1 The Member Secretary, OWSSB, Bhubaneswar (here inafter referred as “**Employer**” in these documents) invites bids for the construction of works (as defined in these documents and referred as “the works”) as detailed in the bill of quantities. The bidder should offer their/his price for all the items of the works detailed in the Bill of Quantities.

1.2 The successful bidder will be expected to complete the works within the period stipulated for completion in the programme schedule.

1.3 In these bidding documents, the terms bid and tender and their derivatives (bidder/ Bidder, bid/tender, bidding/tendering etc.) are synonymous.

1.4 Downloading the documents from web site.

The documents can be downloaded from the web site: www.tenderodisha.gov.in by the Bidder. The bidder shall submit his offer on-line digitally signed with DSC. The on-line bidder shall digitally sign on all statements, documents, certificates, uploaded by him, owning responsibility for their correctness / authenticity as per IT Act'2000. If any of the information furnished by the bidder is found to be false / fabricated / bogus, his EMD / Bid security shall stand forfeited and the bidder is liable to be blacklisted.

a) No alteration made by the tenderer in the contract form, the conditions of the contract, statements / formats accompanying the tender shall be recognized and in case of any alterations made by the tenderer, the tender will be void.

b) Cost towards bid document shall be required to be paid by the bidder as prescribed.

The bidder shall submit the tender on-line to the tender inviting authority as prescribed in the NIB.

2. Method of Bidding:

2.1 If the tender is made by an individual, it shall be signed with his own Digital Signature Certificate (DSC).

2.2 If the bid is made by a proprietary concern, the bid documents shall be signed by the proprietor with his full names as well as the name of the firm and full address. In the case of an authorized person holding power of attorney signing the bid documents, a certified copy of the registered power of attorney should accompany the bid documents. The signature of the proprietor shall be attested by a notary public and enclosed as documentary evidence.

2.3 If the bid is made by a partnership firm, the bid documents shall be signed by all the partners of the firm along with their full names and current address with specific mention on the registered address of the firm. In the case of a partner holding power of attorney signing the bid documents, a certified copy of the registered power of attorney should be uploaded with the bid. It is also mandatory to furnish a certified copy of the registered partnership deed, current address of the partners, registered address of the firm along with the bid. The signature of all the partners/ power of attorney shall be attested by a notary public and enclosed as a documentary evidence.

2.4 If the bid is made by a limited company or a limited corporation, it shall be signed by a duly authorized person holding power of attorney for signing the bid documents in which case a certified copy of the registered power of attorney shall accompany the bid. Such limited company or corporation may be required to enclose satisfactory evidence of its existence along with the bid.

2.5 The bids from the contractors / firms shall be accompanied by an attested copy of the Income Tax Clearance Certificate as the case may be, relating to the year prior to the previous financial year.

2.6 All connected documents required to be uploaded for the above along with others as prescribed elsewhere in this bid document shall be digitally signed by the bidder.

3. One bid per bidder:

3.1 No Bidder shall submit more than one bid for the Package. A Bidder bidding individually or as a member of a Joint Venture shall not be entitled to submit another bid either individually or as a member of any Joint Venture, as the case may be.

4. Cost of bidding

The bidder shall bear all the costs associated with the preparation and submission of his bid. The Employer will in no case be responsible for those costs, regardless of the conduct or the outcome of the bidding process.

5. Site Visit:

5.1. The bidder, at the Bidder's own responsibility and risk is advised to visit and examine the site of works and its surroundings and obtain on his own all information that may be necessary for preparing the bid and entering into contract for the construction of the works. The costs of visiting the site and its surroundings shall be at the bidder's expense. Site levels, Soil data made available are only for the information of bidder and the employer is not responsible for their correctness.

5.2 The bidder and any of his personnel or agents will be granted permission by the Employer to enter upon its premises and lands for the purpose of such visit, but only upon the express condition that the bidder, his personnel or agents, will release and indemnify the Employer and his personnel or agents from and against all liability in respect thereof, and will be responsible for death or personal injury, loss of or damage to property, and any other loss, damage, costs and expenses incurred as a result of the inspection.

5.3 The bidder should carefully inspect the site to assess the prevalence of differing soil classifications and quote the rate for trench excavation for laying pipeline taken into account of all soil classifications that are likely to be encountered and no extra rate will be paid for excavation of trench on account of any variation in the classification of soil met with during actual execution.

6. Critical dates of bidding:

6.1	Invitation of bid:	08.07.2019
6.2	Commencement of download of bid:	11.07.2019
6.3	Last date & time of submission of queries:	18.07.2019
6.4	Pre-bid meeting:	22.07.2019
6.5	Start date of bid submission:	29.07.2019
6.6	Bid submission end date:	06.08.2019
6.7	Date for physical submission of documents:	09.08.2019
6.8	Bid opening date:	13.08.2019

6.9 Date for opening of price bid:

Date to be notified

B. Eligibility / Qualification Criteria

7. Eligible Bidders

- 7.1 The Invitation to Bid is open to any bidder meeting the following requirements:
- 7.2 A bidder shall not be associated nor has been associated in the past, directly or; indirectly, with the Consultant or any other entity that has prepared the design, specifications and other documents for the project.
- 7.3 A bidder shall not be associated directly or indirectly with the firm engaged by the Board for providing consultancy services for the preparation and supervision of the works and any of its affiliates.
- 7.4 Bidders shall provide such evidence of their continued eligibility satisfactory to the Employer as the Employer shall reasonably request.
- 7.5 Joint Venture will not be accepted.

8. Qualification of the Bidder- Documents to be submitted with the bid

8.1 General

- 8.1.1** Bidders shall provide the following as part of their bid in the prescribed formats.
- 8.1.2** A registered power of attorney authorizing the signatory of the bid to commit on behalf of the bidder should be enclosed.
- 8.1.3** Proof of registration of the firm/company under companies Act should be enclosed.
- 8.1.4** Total monetary value of Civil Engineering works performed during each of the last five financial years should be furnished in Annexure – I.
- 8.1.5** The Audited balance sheet for the last five financial years duly certified by a registered Chartered Accountant with the official seal affixed with registration number should be enclosed for calculation of Annual turnover (Civil Engineering Works) in the last five financial years to ascertain the eligibility criteria should be furnished in Annexure – II.
The contract receipt / contract income of the audit profit and loss account or audited income and expenditure account shall only be considered for the purpose of annual Turnover (Civil Engineering Works) for the past five financial years.
- 8.1.6** Experience in works during each of the previous five financial years, the details of works on hand and works for which bid already submitted should be furnished in the Annexure – III, Annexure – IV and Annexure V, respectively.
- 8.1.7** List of equipment available with the bidder for deployment in the project should be furnished in Annexure – VI.
- 8.1.8** Technical, administrative and managerial personnel proposed to be employed for key site management in this work with their qualification details should be furnished in Annexure – VII.
- 8.1.9** Litigation details of the bidder with the details of the parties concerned and the amount involved should be furnished in Annexure – VIII.
- 8.1.10** The bidder should declare clearly whether the bidder has been black listed, banned or debarred in Central or any other State Government / Union Territory / Public Sector undertaking (State/Central) organization in Annexure – IX.
- 8.1.11** Income Tax Clearance Certificate in currency as proof of having remitted the income tax for the year prior to the previous financial year (with reference to the year in which the bid is opened) in Annexure – X.

9. Special Attention to Bidders: Conditions to be satisfied:

9.1 Performance Eligibility:

a) Financial & Physical capacity:

Sl. No.	DESCRIPTION	CRITERIA
	Financial Turn over and Cash Flow	in Rs.
1.	Average Annual Turnover for the last five financial years Rs. in Lakhs (2014-15, 2015-16, 2016-17, 2017-18, & 2018-19)– twice of estimated cost put to tender	23.62 Crore
2.	Minimum cash flow required in Rs. in Lakhs(10% of BOQ value)	1.18 Crore
3.	Work experience	
	The bidder should have satisfactorily completed at least one civil work of water storage tank of minimum 200 cum capacity (Rs.in lakh) in a single contract in the last five financial years i.e. 2014-15, 2015-16 2016-17, 2017-18, 2018-19. The work should be for water retaining structure or sewage /septage treatment plant executed with government or a public sector unit.	5.91 Crore

Note: In addition to the above requirements the following criteria also to be satisfied.

Note:

- i. The performance eligibility shall pertain to the works executed by the tenderer in any of the Central/State Government Departments/Quasi Government Organizations and Government Undertakings, The performance experience for Central/State Government Department/Undertaking/Quasi Government Organization should be supported by performance certificates issued by the concerned organization by an officer not less than the rank of Executive Engineer. **The experience certificates issued by an officer below the rank of Executive Engineer or on behalf of Executive Engineer will not be considered.**
- ii. For the experience certificates furnished by the bidders which are obtained from the Departments outside the State, clarification will be obtained by the Employer from the concerned Department whenever felt necessary as to whether the details furnished in the certificates are genuine, before finalization of evaluation.
- iii. The bills / claims should be prepared by the contractor as per Agreement and in accordance with the agreement executed and submitted to the Department
- iv. Sub contractors' experience for the particular works to be sublet **shall not be taken into account for arriving at the eligibility of the contractor / firm.**

9.2. Disqualification:

Even though the bidders meet the above qualifying criteria, they are subject to be disqualified at any point of time if they have

- i) made misleading or false representation in the form statements and attachments submitted and/or
- ii) Record of poor performance during the last 5 years as on the date of application such as abandoning the work, rescinding of contract for which the reasons are attributable to the non-performance of the Contractor, inordinate delays in completion, consistent history of litigation awarded against the applicant or any of its constituents or financial failure due to bankruptcy etc.
- iii) Debarred / blacklisted as on the date of application by any Central/State Government Department/Undertaking/Organization and their bid will not be taken up for evaluation.

Signature of Officer with Seal

C. BID DOCUMENTS

10. Contents of Bid Documents

10.1 The Bid Documents will comprise the following documents and addenda issued in accordance with clause 10 below:

Invitation for Bids Instruction to Bidders
Eligibility/Qualification Criteria Forms of Bid
Programme Schedule and financial mile stone.
Payment Schedule
General Conditions of the Contract Special Conditions of
Contract Forms of Agreement
Indemnity Bond
Forms of performance Bank Guarantee (Unconditional).
Forms of Bid security (Bank Guarantee)
Technical Specifications.
Bill of Quantities
Drawings

11 . Clarification of Bid Documents.

The Contractor shall carefully examine the tender documents and be fully informed of all the conditions and matters, which may in any way affect the work or the cost thereof. Should a Contractor find any discrepancy in or omission from the specification or any other part of the tender documents or should he be in doubt as to their meaning, he should immediately address a clarification on-line as per the critical dates mentioned in the DTCN.

12 Amendment to Bid Documents

12.1 At any time prior to 48 hours to the deadline for submission of bids, the Employer may amend the bid documents by issuing an addendum or corrigendum which shall be binding upon all bidders.

12.2 Any Addendum thus issued shall be part of the bid documents and shall be uploaded in the e-procurement site as specified earlier. Prospective bidders are advised to keep a watch on the proceedings through their DSC on critical dates as per the DTCN.

12.3 To give prospective bidders reasonable time in which to take an addendum / corrigendum into account in preparing their bids, the Employer may extend as necessary the deadline for submission of bids, in accordance with **Clause 23** of "Submission of Bids".

D. PREPARATION OF BIDS

13. Language of the Bid

13.1 The bid, and all correspondences and supporting documents related to the bid exchanged by the bidder and the Employer shall be written in English. Supporting documents and printed literature furnished by the bidder may be in other language provided they are accompanied by an accurate translation of the relevant passages in English language, in which case, for the purpose of interpretation of the bid, the translation shall prevail.

14. Documents comprising the Bid

14.1 The bid submitted by the bidder shall comprise the following:

Cover – 1 (Technical Bid)

- i. The Bid Documents duly filled and signed.
- ii. List of Annexures
 - a) Performance of the Bidder showing value of Civil Engineering work for the past Five financial years – (8.1.4) **Annexure - I**
 - b) Average Annual Turnover (Civil engineering work) for the last Five financial years– (8.1.5) **Annexure - II**
 - c) Experience in works within a period of last 5 financial years – (8.1.6) **Annexure - III**
 - d) Commitment of works on hand – (8.1.6) **Annexure - IV**
 - e) Works for which Bid are already submitted – (8.1.6) **Annexure - V**
 - f) List of Equipment available with Bidder – (8.1.7) **Annexure - VI**
 - g) Qualification/Experience of key personnel proposed for technical and administrative functions under this contract – (8.1.8) **Annexure - VII**
 - h) Details of Litigation – (8.1.9) **Annexure – VIII**
 - i) Declaration by the bidder – (8.1.10) **Annexure - IX**
 - j) Details of components proposed to be sublet and sub-contractors involved – (8.1.11) **Annexure - X**
 - k) Technical staff to be employed (Para 10 of General Conditions) **Annexure - XI**

l) List of laboratory equipment and chemicals (Y.i. of Scope of Work) **Annexure - XII**

m) List of office furniture (Y.iv. of Scope of Work) **Annexure- XIII**

n) List of personnel during Operation and Maintenance (AA.iv. of Scope of Work) **Annexure - XIV**

iii. List of Certificates.

a) Signature of the proprietor or proprietress attested by the Notary Public (2.2)

b) Signature of all the partners/power of attorney attested by the Notary Public – (2.3)

c) Registration of the firm, signature of the authorized person attested by the Notary Public – (2.4)

d) A copy of the listed power of attorney authorizing the signatory of the bidder – (7.1.2)

e) Proof of registration of firm/Company (8.1.3)

f) Audited Balance Sheets – (8.1.5)

g) Income Tax Clearance Certificate – (8.1.11)

h) Certificate of performance issued by not less than the rank of Executive Engineer of the organization concerned. – (8.3)

iv) Bid Security

v) Any other material required to be completed and submitted by the bidders in accordance with these instructions.

Cover – II (Price Bid)

14.2 Priced Bill of Quantity uploaded on-line in approved template in xls format.

14.3 The bidder shall only submit single copy of the document. He is required to check the documents uploaded with the requirement asked for in the bid. Only after satisfying that all the documents have been uploaded, he should activate submit button. His bids shall not be considered responsive and action as per relevant clause shall be taken if he does not provide the required documents or provided illegible document. Clarity of the document may be ensured by taking out a sample printing. Late bids are automatically rejected by the system.

14.4 Conditional tenders are liable for rejection.

15. Bid Prices

15.1 The contract shall be for the whole works as described in sub clause (1.1), based on the priced bill quantities submitted by the bidder.

15.2 Bill of Quantity in Microsoft Excel format shall be made available to the bidder. The bidder shall download that Excel sheet and fill in rates in figures at the appropriate location. The bidder will only fill in the designated cell. **The bidder is not supposed to change or modify the format of the excel sheet in any form.**

15.3 All duties, taxes and other levies payable by the contractor, under the contract or for any other cause shall be included in the rates, prices and total bid price submitted by the bidder.

16.Currencies of Bid and Payment

16.1The unit rates and the prices are only available as Indian Rupees in the BoQ format made available by the client in the e-procurement portal.

17.Bid Validity

17.1Bids shall remain valid for a period not less than **one hundred and twenty days** from the date of opening of Price Bid. A bid valid for a shorter period shall be rejected by the Employer as non-responsive.

17.2In exceptional circumstances, prior to expiry of the original time limit, the Employer may request the bidders to extend the period of validity for a specific additional period. The request and the bidders' response shall be made in writing or by e-mail or facsimile. A bidder may refuse the request without forfeiting his bid security. A bidder agreeing to the request will not be required or permitted to modify his bid, but will be required to extend his bid security for; the period of extension.

18.Bid Security

18.1The bidder shall furnish, as part of his bid, as bid security of **Rs.11.81 Lakh (Rupees Eleven Lakh and Eighty One only)**, duly pledged in favour of the **Member Secretary, OWSSB** in any one of the following forms Demand draft / Deposit call receipt / Fixed deposit receipt/ Bank guarantee issued by any Nationalized Bank/ Scheduled Bank located in Odisha, Unconditional Bank Guarantee in the prescribed format for the bid security issued by a Nationalized Bank/Scheduled Bank located out side Odisha to be counter guaranteed by its branch at Bhubaneswar & valid for 60 days after the end of the validity period of the bid.

FDR and deposits at call receipts should contain lien certificate issued by the Bank for encashment by department. The FDR furnished by the firm should also bear the signature of the authorized signatory on a revenue stamp at the back of the FDR.

18.2Any bid not accompanied by bid security in stipulated form shall be rejected by the Employer as non-responsive.

18.3The bid security of the unsuccessful bidders will be returned as promptly as possible, but not later than 30 days either after the expiration of the period of bid validity or after finalization of the bid whichever is later.

18.4The bid security of the successful bidder will be returned after the bidder has furnished the required performance security and signed the agreement. No interest is payable on Bid security by the Employer.

18.5The bid security shall be forfeited.

18.6In the case of bidder withdrawing or modifying his bid during the period of bid validity

18.7If the bidder does not accept the corrections of the bid price, pursuant to clause 28 of "Bid Opening and Evaluation"

18.8In the case of a successful bidder failing to furnish the performance security in the specified form within the stipulated time.

18.9In the case of successful bidder failing to enter into agreement within the stipulated time.

18.10In the case of the bidder severing the conditions after intimation of the acceptance of the bid.

19.Compliance to Technical Design and Specifications.

19.1Bidders shall submit their offers that comply with the requirements of the bidding documents including the basic technical design as indicated in the drawing and specifications.

20.Format and Signing of Bid

20.1The technical and price bids (BOQ) as issued by the Employer should be submitted digitally signed and uploaded at the e-procurement portal. Any deficiency shall make the bid automatically rejected.

21.Pre-Bid Meeting:

- 21.1A pre-bid meeting is scheduled to be held on **22.07.2019** at 11:30 hrs. in the O/o **the Member Secretary, OWSSB, Bhubaneswar**
- 21.2The purpose of the meeting will be to clarify issues and to answer questions on any matter than may be raised at that stage.
- 21.3The bidder is requested, as far as possible, to submit the questions in writing or by e-mail, to reach the Employer not later than one week before the meeting. It may not be practicable at the meeting to answer questions received late.
- 21.4Minutes of the meeting, including the text of the questions (without Identifying the source of enquiry) and the responses given together with any responses prepared after the meeting, will be uploaded for reference by all bidders. Any modification of the bidding documents listed in clause 23.1 of “Submission of Bids”, which may become necessary as a result of the pre-bid meeting shall be made by the Employer exclusively through the issue of an addendum pursuant to clause 10 of the “Bid Document” and not through the minutes of the pre bid meeting. This will be hosted on www.tendersodisha.gov.in
- 21.5Attendance at the pre bid meeting is not mandatory and non-attendance will not be a cause for disqualification of the bidder.

E. SUBMISSION OF BIDS

22. Sealing and Marking for Bids Procedure:

- 22.1 Two cover system shall be adopted for submission of bids.
- 22.2 The first cover shall contain the technical bid documents, supporting material relating to the eligibility criteria, Bid Security in the proper form and other connected Certificates all in pdf format uploaded in the e-procurement portal.
- 22.3 No indication direct or indirect, implicit or explicit regarding the rates and prices should be made in the technical bid or any other documents submitted in the first cover.
- 22.4 The second cover shall contain the Price Bid (BoQ) in .xls format alone as per the e-procurement procedure.
- 22.5 The bids should be uploaded as prescribed by the Employer.
- 22.6 The bidder shall only submit single copy of the document. He is required to check the documents uploaded with the requirement asked for in the bid. Only after satisfying that all the documents have been uploaded, he should activate submit button. His bids shall not be considered responsive and action as per relevant clause shall be taken if he does not provide the required documents or provided illegible document. Clarity of the document may be ensured by taking out a sample printing.

23. Deadline for Submission of the Bids

- 23.1 Bids are to be submitted / uploaded in accordance with the critical date and time provided in the DTCN. The bidder should not take any chance in attempting to upload the bid at the last hour which may result failure due to non-availability of the e-portal, low band width, traffic jam etc. The bidder should be selected a safe time for such uploads.
- 23.2 The Employer may extend the deadline for the submission of bids by making date corrigendum in accordance with clause-10 of "Bid Document" in which case all rights and obligations of the Employer and the bidders previously subject to the original deadline will then be subject to the new deadline.

24. Late Bids

- 24.1 The system shall reject submission of any bid through portal after closure of the receipt time. For all purpose the portal time displayed in the system shall be the time to be followed by the bidder.

25. Modification, Substitution and Withdrawal of Bids

- 25.1 In case of submission of Bids through the e-Procurement Portal, it is allowed to modify the bid. The bidder shall have to log on to the system and resubmit the documents as asked for by the system including the BoQ. In doing so, the bids already submitted by the bidder will be removed automatically from the system and the latest bid only will be admitted. But the bidder should avoid modification of bid at the last moment to avoid system failure or malfunction of internet or traffic jam. If the bidder fails to submit his modified bids with in the designated time of receipt, the bids already in the system shall be taken for evaluation.
- 25.2 In case of submission of Bids through the e-Procurement Portal, withdrawal of bid is allowed. The bidder has to click on the "withdraw" button and record the necessary justification for the same in the space provided. In addition to this, he has to write a letter addressed to the Officer inviting the bid and up load the scanned document to portal in respective bid. The system shall not allow any withdrawal after expiry of the closure time of the bid.
- 25.3 Bids cannot be modified, substituted or withdrawn after the deadline for submission of bids.

F. BID OPENING AND EVALUATION

26. Bid Opening

26.1 In case of submission of Bids through the e-Procurement Portal, the bidders who participated in the online bidding can witness opening of the bid from any system logging on to the portal away from opening place. The bids can only be opened by the pre-designated officials only after the opening time mentioned in the bid.

27. Process to be Confidential

27.1 The bid (cover-I) shall be downloaded by the employer for evaluation. Information relating to the examination, clarification, evaluation and comparison of bids and recommendations for the award of a contract shall not be disclosed to bidders or any other person not officially concerned with such process until the award to the successful Bidder has been announced. **Any effort by a bidder to influence the Employer's processing of Bids or award decisions may result in the rejection of his bid.**

28. Clarification of Bids.

28.1 To assist in the examination, evaluation and comparison of bids, the Employer may, at his discretion, ask any Bidder for clarification of his bid, including breakdown of unit rates. The request for clarification and the response shall be in writing or by e-mail, but no change in the price or substance of the Bid shall be sought, offered, or permitted except as required to confirm the correction of arithmetic errors discovered by the Employer in the evaluation of the Bids in accordance with Clause 29 of "Evaluation and comparison of Bids".

29. Examination of Bids and Determination of Responsiveness

29.1 Prior to detailed evaluation of Bids, the Employer / Client will determine whether each Bid

- (a) meets the eligibility criteria set out in clause (7),
- (b) has been properly signed,
- (c) is accompanied by the required securities and
- (d) is substantially responsive to the requirements of the Bid Documents,

29.2 A substantially responsive Bid is one which conforms to all the terms, conditions and specifications of the Bid Documents, without material deviation or reservation. A material deviation or reservation is one (a) which affects in any substantial way the scope, quality or performance of the works. (b) which limits in any substantial way, inconsistent with the Bid Documents, the Employer's rights to the Bidder's obligations under the contract, or (c) whose rectification would affect unfairly the competitive position of other bidders presenting substantially responsive Bids.

29.3 If a Bid is not substantially responsive, it will be rejected by the Employer, and may not subsequently be made responsive by correction or withdrawal of the non-conforming deviation or reservation. The decision of the Employer on the issue whether the bid is responsive or not" will be final and binding on the bidders. The Employer is not bound to disclose the reason in case a bid is determined by him as non-responsive.

30. Correction of Errors

30.1 The BoQ designed for e-procurement is normally immune to any computational error and therefore, bids determined to be substantially responsive may not have any error in terms of its arithmetic value. However, in exceptional cases if errors are noticed then the same will be corrected by the Employer as

follows:

- If any variation in the rates in words and figures, the lesser of the two will only be taken into consideration.
- Where there is a discrepancy between the unit rate and line item total resulting from multiplying the unit rate by the quantity, the unit rate as quoted will govern.

30.2 The amount stated in the Bid will be adjusted by the Employer in accordance with the above procedure for the correction of errors and shall be considered as binding upon the Bidder. If the Bidder does not accept the corrected amount of the Bid, his bid will be rejected and his bid security may be forfeited in accordance with Clause 16.5 of "Preparation of Bids".

31. Evaluation and Comparison of Bids.

31.1 The Employer will evaluate and compare only the Bids determined to be substantially responsive in accordance with Clause 27 of "Examination of Bids and Determination of Responsiveness".

31.2 In evaluating the Bids, the Employer will determine for each Bid the evaluated Bid Price by adjusting the Bid price as follows:

31.2.1 making any correction for errors pursuant to Clause 28 of "Bid Opening and Evaluation". or

31.2.2 making appropriate adjustments to reflect discounts or other price modifications offered in accordance with Clause 23 of 'Submission of Bids'.

31.3 The Employer reserves the right to accept or reject any variation/deviation.

31.4 If the Bid of a successful Bidder is seriously unbalanced in relation to the Engineer's estimate of the cost of work to be performed under the contract, the Employer may require the Bidder to produce detailed price analysis for any or all items of the Bill of Quantities to demonstrate the internal consistency of those prices with the construction methods and schedule proposed.

After evaluation of the price analysis, the Employer may require that the amount of the Performance Security set forth in Clause 34 of; "Award of Contract" be increased at the expense of the successful Bidder to a level sufficient to protect the Employer against financial loss in the event of default of the successful Bidder under the Contract.

Additional Performance Security shall be obtained from the bidder when the bid amount is less than estimated cost put to tender. In such an event, only the successful bidder who has quoted less bid price/rates than the estimated cost put to tender shall have to furnish the exact amount of differential cost, i.e. estimated cost put to tender minus the quoted amount as Additional Performance Security (APS) in shape of Term Deposit Receipt pledged in favour of Divisional Officer/Bank Guarantee in favour of Divisional Officer from any Nationalized /Scheduled Bank in India counter guaranteed by its local branch at Bhubaneswar within seven days of issue of Letter of Acceptance (LoA) by the Divisional Officer (by e-mail) to the successful bidder otherwise the bid of the successful bidder shall be cancelled and the Earnest Money Deposit/Bid Security shall be forfeited. Further proceeding for blacklisting shall be initiated against the bidder.

N.B. The Corrigendum I is made as per office memorandum no. 14459 dt. 20.09.2018 of Govt. of Odisha, Work Department addressed to all Departments

32. Negotiations:

Negotiations will be held if required with the lowest valid tenderer. In the event of the L₁ tenderer has furnished any condition which grossly affects the tender value / contains such conditions which make the value of the offer indefinite, he may be given an opportunity to withdraw such condition(s) to make the tender definite. Failure to withdraw such condition(s) may lead to rejection of the tender as in consistent / non responsive. In such case the employer may explore the possibility of considering the next valid tender as L₁.

If L1 bidder does not turn up for agreement after finalisation of the tender, then he shall be debarred from participation in bidding for three years and action will be taken to black list the contractor. In case, the L2 bidder, if fulfils, other required criteria would be called for drawing agreement for execution of work subject to condition that L2 bidder negotiates at par with the rate quoted by the L1 bidder of bids. otherwise the tender will be cancelled. **(As per the Government of Odisha, Works Department Office Memorandum No.12366 dated 08.11.2013 on amendment to Para No. 3.5.14, Note-I of OPWD Code Vol-I, by inclusion.)**

G. AWARD OF CONTRACT

33. Award Criteria

33.1 Subject to Clause 29 of "Evaluation and Comparison of bids", the Employer will award the contract to the Bidder, whose Bid has been determined to be substantially responsive to the Bid Documents and who has offered the lowest evaluated Bid Price, provided that such Bidder has been determined to be (a) eligible in accordance with the provision of clause 6 of "Eligibility / Qualification Criteria" and (b) qualified in accordance with the provisions of Clause 7 of "Eligibility / Qualification Criteria".

34. Employer's Right to Accept any Bid and to Reject any or all Bids:

34.1 The Employer reserves the right to accept or reject any bid, and to annul the bidding process and reject all bids, at any time prior to award of contract, without thereby incurring any liability to the affected bidder or bidders or any obligation to inform the affected bidder or bidders of the grounds for the Employer's action.

35. Notification of Award:

35.1 The Bidder whose Bid has been accepted will be notified of the award by the Employer prior to expiration of the Bid validity period by e-mail or facsimile confirmed by registered letter. This letter (hereinafter and in the Conditions of Contract called the "Letter of Acceptance"), will state the sum that the Employer will pay to the contractor in consideration of the execution, completion and maintenance of the works by the Contractor as prescribed by the Contract (hereinafter and in the conditions of Contract called the "Contract Price") The issue of the letter of acceptance shall be treated as closure of the Bid process and commencement of the contract.

The notification of award will constitute the formation of the Contract.

36. Registration in Govt. of Odisha

36.1 The successful contractor/firm, if not a registered contractor in Odisha, he / they shall get himself / themselves registered in Odisha before execution of the contract.

37. Performance Security:

37.1A) Within 15 days from the date of the Letter of Acceptance, the successful bidder shall deliver to the Employer a Performance Security

- i) in the form of National Savings Certificate / Post Office Savings Deposit account purchased within the State of Odisha and pledged in favour of the **Member Secretary, OWSSB, Bhubaneswar**
(OR)
- ii) Unconditional and irrevocable bank guarantee issued by any one of the branches of Nationalized Bank or scheduled Bank within the State of Odisha, provided they are in prescribed format (enclosed in this Document) for an amount equivalent to 5% of the total value of the contract in favour of the **Member Secretary, OWSSB, Bhubaneswar**. The BG issued by Nationalised / scheduled bank out side Odisha to be counter guaranteed by its branch at Bhubaneswar.

37.2 The bidder along with the performance security shall deliver a non-judicial stamp paper for Rs.100/- (Rupees hundred only) at his cost for executing the agreement.

38. Signing of Agreement:

38.1 The Employer on receipt of the performance security and non-judicial stamp paper, will furnish to the bidder the Agreement in the form prescribed, incorporating all terms and conditions between the Employer and the successful bidder.

38.2 The Bidder should remit the performance security prescribed by the Employer in the form as in Clause 34

above and sign the agreement in the presence of the Employer within 15 days from the date of Letter of Acceptance notifying the award of contract.

38.3 Upon furnishing the performance security by the successful bidder, the Employer will promptly notify the other bidders that their bids have been unsuccessful. The contractor after furnishing the required acceptable performance security and additional performance security, "Letter to Proceed" or "Work Order" shall be issued by the Engineer-in-charge with copy thereof to the procurement Officer-Publisher. The Procurement Officer- Publisher shall upload the summary and declare the process as complete.

38.4 Failure of the successful bidder to comply with the requirements of Clause 34 & 35 and 35.2 of "Award of Contract" shall constitute a breach of contract, cause for annulment of the award, forfeiture of the bid security and any such other remedy the Employer may take under the contract

39. Amendment to Agreement

39.1 Any amendment shall be issued by mutual consent between the Employer and the contractor only without any contrary to the bid conditions.

40. Mobilization Advance:

Mobilization advance not allowed.

41. Forfeiture of Performance Security:

41.1 The performance security is liable to be forfeited in cases where the firm/contractor fails to carry out the work in accordance with the time line, the specifications, terms and conditions of the contract leading to termination of the contract.

IV- PROGRAMME SCHEDULE

42. Project completion and Financial Milestone:

42.1 The fifteenth day from the date of issue of work order shall be reckoned as the start date of the contract period.

42.2 Entire project must be completed in all respects within **Twelve months** for construction work and One month for trial run and operation and maintenance, successful commissioning & proof of guaranteed performance.

42.3 The milestone for each component would be as under:

Sl. No.	Description	% of achievement (Financial)	Cumulative % of Achievement (Financial)
1.	Up to I trimester (4 Months)	30 %	30 %
2.	Up to II trimester (8 months)	40 %	70 %
3.	Up to III trimester (12 months)	30 %	90%
4.	After completion of construction work – One Month	10%	100%

43. Programme Schedule / Rate of Progress / Milestone:

43.1 The Contractor, within seven days from the date of signing of the agreement shall submit to the Engineer for approval an **Activity Chart showing the general methods, arrangements, order and timing for all the activities in the Works.**

43.2 An update of the Activity Chart shall be a Programme showing the actual physical progress achieved on each activity and the progress to be achieved on the remaining work including any changes to the sequence of activities. The Contractor shall submit to the Engineer in charge, for approval, an updated Activity Chart. The Employer reserves the right to approve or reject the updated Activity Chart without prejudice to levying of liquidated damages for slow progress.

44. Penalty for Defective Construction:

If any defect is noticed by the Employer in the construction of any portion of work/component, the Employer shall levy penalty up to 10% of the total value of the defective work as assessed by the Engineer-in-charge, in addition to rectification of defective works at his cost.

45. Liquidated damages:

The contractor is to commence work comprised in this tender immediately on receipt of order to commence from the Project Engineer. The whole work, including all such additions and variations as aforesaid (but excluding such, if any, as may have been postponed by an order from the Project Engineer), shall be completed in every respect within stipulated time from the date of the aforesaid orders to commence and if from any cause whatever other than willful obstruction or default on the part of the Project Engineer or his staff except as hereinafter provided, the whole of such work shall not be finished to the satisfaction of the Project Engineer within the said period, the contractor shall forfeit and pay to OWSSB by way of ascertained and liquidated damages for each default and not by

way of penalty the sum of ½% of accepted tender value per day for every complete day of such default and the amount of such damage, if any, may be deducted by way of set-off from any unpaid portion of the amount due to the contractor otherwise recovered from the contractor and shall be brought in to account by the Project Engineer when settling the contractor's accounts for his final certificate hereinafter provided for. And further, to ensure progress during the execution of the works, the contractor shall be bound in all cases in which the time allowed for any works exceeds one month, to complete one-fourth of the whole of the works before one-fourth of the whole time allowed under the contractor has elapsed; one-half of the works, before one-half of the whole time has elapsed and three-fourths of the works, before three-fourth of such time has elapsed in the event of the contractor failing to comply with this condition he shall be liable to pay the damages of as aforesaid of ½% of accepted tender value per day for every complete day of such default and amount of such damages may be deducted in the way as stated above. Provided nevertheless thus if in the opinion of the Project Engineer that the contractor is entitled to any extension of time on account of the works being altered, varied or added to or on account of any delay by reason of any inclement weather or causes not under the control of the contractor it shall be competent for the Project Engineer by an order in writing to extend the aforesaid period or periods for final completion of the whole work or of portions of the work as aforesaid by such periods as he shall deem reasonable and the contractor is to be complete the work within such extended period or periods as aforesaid provided that the contractor shall not be entitled to any extension of time unless he shall within three day after the happening of the event in respect of which shall consider himself entitled to any extension, give to the Project Engineer written notice of such claim to extension of time and of the ground or grounds and of the amount there of unless the Project Engineer shall in his discretion dispense with such notice and certify for an extension of time. Nevertheless, and in case of any extension of time, the aforesaid provisions and amount for damages in default of due completion shall apply in case of non-completion of the works within extended time. The maximum amount of liquidated damages for the whole of the works is **10 (ten)** percent of value of agreement.

46. Foreclosure of Works:

The Employer shall have the right to issue notice to the firm/contractor, for any reason whatsoever does not require the whole or part of the works to be carried out after the award of the contract. The contractor shall not have any claim towards compensation or whatsoever, on account of any profit or advantage, which he might have derived from the execution of such works. For the works executed which could not be utilized in view of the foreclosure, the firm/contractor shall be paid a eligible amount as certified by the Engineer in charge.

V. PAYMENT AND RECOVERIES:

48. Payment Schedule

48.1 The tables for payment breakup and recoveries for each component of a SeTP are as below:

Sl. No.	Component	Percentage (%)
A	Capital Works	
1	Construction of RCC Ramp	1.37
A	Construction of foundation, including excavation, sand filling, PCC (1:3:6) and RCC (M25) footings	0.34
B	Construction of first lift (1.5m) super structure, including columns, beams and concreting with supply and erection of HYSD reinforcements and shuttering and centring works, co	0.34
C	Construction of second lift (1.5m – 3.0m) super structure, including columns, tie beams, & slabs, brickwork and concreting with supply and erection of HYSD reinforcements ,sand filling and compacting, construction of parapet walls.	0.34
D	All finishing works, including plastering & punning with correction of honeycombs and painting with one coat primer and two coats of weather coat paint	0.35
2	Sludge Receiving Chamber	0.35
A	Construction of foundation, including excavation, sand filling, PCC (1:3:6) and RCC (M25) footings	0.11
B	Construction of RCC M-25 super structure, including columns, tie beams, walls, floor slab and concreting with supply and erection of HYSD reinforcements and shuttering and centring works	0.12
C	All finishing works, including plastering & punning with correction of honeycombs and painting with one coat primer and two coats of weather coat paint and one coat of anti – alkali and anti – acid paint on inner surfaces, supply & fitting of screen basket.	0.12
3	Screen Channel	0.27
A	Construction of foundation, including excavation, sand filling, PCC (1:3:6) and RCC (M25) footing	0.09
B	Construction of RCC M-25 super structure, including columns, tie beams, walls and floor slabs, inlet channel, RCC stairs, concreting with supply and erection of HYSD reinforcements and shuttering and centring works	0.09
C	All finishing works, including plastering & punning with correction of honeycombs and painting with one coat primer and two coats of weather coat paint one coat of anti – alkali and anti – acid paint on inner surfaces, pumping works including supply and fitting of valves, supply & fixing of SS screens & inlets to the settling-cum-thickening tanks.	0.09
4	Settling-cum-Thickening Tank & Sludge Wet Well	5.41
A	Construction of foundation, including excavation, sand filling, PCC (1:3:6) and RCC (M25) footing	1.35
B	Construction of RCC M-25 super structure, including columns, tie beams, walls, baffle walls, outlet channel to ABR, floor slabs, RCC staircase and concreting with supply and erection of HYSD reinforcements and shuttering and centring works	1.35
C	All finishing works, including plastering & punning with correction of honeycombs and painting with one coat primer and two coats of weather coat paint, one coat of anti – alkali and anti – acid paint on inner surfaces, plumbing and electrical works including supply and fitting of valves, PVC coated footsteps, SS 304 steps/staircase and handrail and grating, supply & fixing of chequered tiles etc.	1.35
D	Civil Works- Construction of sludge wet well, including all construction with	0.68

	excavation, sand filling, PCC (1:3:6), RCC work, RCC walls, RCC slabs, reinforcements, rungs.	
E	Electro-Mechanical Works- plumbing and supply and erection of two submersible pumps and plumbing works and electrical works including supply and fitting of valves, supply and fitting of submersible pumps and all fit and finish, pipeline from settler to sludge wet well, pumping pipeline from wet well to sludge drying bed and all distribution piping works in drying bed with fixing of valves.	0.68
5	Hybrid ABR+AF	6.31
A	Construction of foundation, including excavation, sand filling, PCC (1:3:6) and RCC (M25) footing	2.10
B	Construction of RCC M-25 super structure, including columns, tie beams, walls, baffle walls, slabs, roofing & grading concrete on roof slab and concreting with supply and erection of HYSR reinforcements and shuttering and centring works	2.11
C	All finishing works, including plastering with punning with correction of honeycombs and painting with one coat primer and two coats of weather coat paint outside, one coat of anti – alkali and anti – acid paint on inner surfaces, supply & fitting of SS ladder, plumbing works, vent pipes with cowl, supply and fitting of filter media (cinder) with the carry bags, supply and fitting of RCPC Manhole frame/rings with cover, piping work up to inlet channel of PGF with supply & fixing of valves.	2.10
6	Planted Horizontal Gravel Filter	16.49
A	Construction of foundation, including excavation, sand filling, PCC (1:3:6) and RCC (M25) footing	5.49
B	Construction of super structure, including walls, slab, outlet chambers, and concreting with supply and erection of HYSR reinforcements and shuttering and centring works, making required openings in walls & channels.	5.49
C	All finish works, including plastering with correction of honeycombs and painting with one coat primer and two coats of weather coat paint, plumbing works, supply & fitting vent pipes with cowl, supply & fixing of valves, supply and laying of filter media (aggregates, pebbles and sand) and plantation, inlet & outlet structures with all piping work up to polishing pond, supply & fitting of movable pipe with all fittings & fixings etc.	5.51
7	Unplanted Drying Bed & Shedding with Leachate Sump & Pumping System	9.83
A	Construction of foundation, including excavation, sand filling, PCC (1:3:6) and RCC (M25) footing and walls	2.45
B	Construction of super structure, including columns, tie beams, walls, outlet chambers, slabs and concreting with supply and erection of HYSR reinforcements, construction of under drains, lateral drains, chambers, perforated cover slabs over under drains, all piping/gravity pipes up to leachate sump.	2.46
C	All finishing works, including plaster & punning with correction of honeycombs and painting with one coat primer and two coats of weather coat paint, plumbing works, supply and placing of filter media (aggregates and sand), MS splash plates, PVC screens, hexagonal wire mesh etc.	2.45
D	Construction of shedding including fabrication and erection of GCI sheets with MS rails, MS steel truss structure on wheels, painting with one coat primer of iron oxide and two coats of enamel paint, construction of separate leachate sump, fitting & fixing of PVC encapsulated rungs, supply and erection of submersible pumps with all electrical and plumbing system, HDPE pumping pipeline up to ABR inlet and to storm water drain, supply & fitting of all electrical works, power cables, underground with encasing pipe up to control room panel.	2.47
8	Polishing Pond, Aeration, Reuse & Storm Water Pumping System	1.35
A	Construction of foundation, including excavation, sand filling, PCC (1:3:6)	0.45

	and RCC (M25) footing	
B	Construction of super structure, including columns, tie beams, walls and concreting with supply and erection of HYSD reinforcements, RCC cascading structure with centring & shuttering works	0.45
C	All finish works, including plaster with correction of honeycombs and plumbing and electrical works with supply and erection of submersible pumps for aeration & discharge, PVC encapsulated rungs, supply and erection of SS 304 handrail, paver blocks, mosaic tiles and ceramic wall tiles, sand filling, provision & fitting of piping works, pipe line, vales & panel board	0.45
9	Sludge Storage Shed with Roof Structure	3.48
A	Construction of foundation, including excavation, sand filling, PCC (1:3:6) and RCC (M25) footing	0.87
B	Construction of super structure, including columns, tie beams, walls, brick work and concreting with supply and erection of HYSD reinforcements, flooring work etc.	0.87
C	All finishing works, including plaster with correction of honeycombs, painting with one coat primer and two coats of weather coat paint for civil works	0.87
D	Construction of shedding including fabrication and erection of GCI sheets with MS truss structure and painting with one coat red oxide primer and two coats of enamel paint for iron works	0.87
B	Buildings	
1	Guard Room	0.67
A	Construction of foundation, including excavation, sand filling, PCC (1:3:6) and RCC (M25) footing	0.16
B	Construction of first lift (up to 1.5 m) super structure, including columns, tie beams, walls, brick work and concreting with supply and erection of HYSD reinforcements	0.17
C	Construction of first lift (1.5 m to 3 m) super structure, including columns, tie beams, walls, roofing, flooring, brick work and concreting with supply and erection of HYSD reinforcements	0.17
D	All finishing works, including plastering with correction of honeycombs and painting with one coat primer and two coats of weather coat paint, two coats of enamel paints, two coats of plastic emulsion paint, cement putty, OEL anodized doors and aluminium sliding windows, iron grill works and vitrified floor tiles, all electrical and plumbing works with supply & fixing of ceiling fans, exhaust fans, bulbs, tube-lights, electrical boards etc.	0.17
2	Admin, Lab, Equipment & Panel Rooms	4.74
A	Construction of foundation, including excavation, sand filling, PCC (1:3:6) and RCC (M25) footing	0.94
B	Construction of first lift (up to 1.5 m) super structure, including columns, tie beams, walls, chajja, slab, brick work and concreting with supply and erection of HYSD reinforcements	0.95
C	Construction of first lift (1.5 m to 3 m) super structure, including columns, tie beams, walls, roofing, flooring, brick work and concreting with supply and erection of HYSD reinforcements	0.95
D	All finishing works, including plastering with correction of honeycombs and painting with one coat primer and two coats of weather coat paint, two coats of enamel paints, two coats of plastic emulsion, cement putty, OEL anodized doors and aluminium sliding windows, iron grill works and vitrified floor tiles, anti-skid tiles in toilet & bathrooms, plumbing and electrical works with supply & fixing of ceiling fans, exhaust fans, bulbs, tube-lights, electrical boards etc. , supply & fixing of sanitary fixtures in bathroom & toilet etc.	0.95
E	Construction of RCC portico and paver blocks/floor tiles in all fitting and	0.95

	finishing	
3	Overhead Tank, Production Well & Sprinkler System	1.26
A	200 m bore of 100 metre dia. with piping	0.31
B	Plumping and electrical works and submersible pumps	0.32
C	Construction of roof top overhead tank with staging	0.32
D	Sprinkler system with garden pipes with all accessories	0.31
C	Power Supply & Lighting	
1	Electrical Sub-Station (25KVA), cabling to panel room, supply & fixing of control panels for pipes, valves, motors, pumps, lighting system etc.	1.31
2	Yard Lighting with main lighting and associated works	1.15
3	Supply & fixing of Caution, Glow, Flex, Component Sign Boards etc.	0.27
4	Solar Panel & On-Grid Connection with net metering	2.25
5	(11 KVA) Electrical Overhead Line up to SeTP site and connection to 25 KVA transformer	1.67
6	3 Phase 10 KVA diesel generator with operations panel	0.63
D	Other Structures	
1	Internal Road	6.90
A	Earthwork	1.72
B	Sand filling	1.73
C	PCC (1:3:6) work	1.73
D	RCC (M25) work	1.72
2	Storm Water Drains	4.31
A	For first 1/3 of the length of the drain - foundation works including earthwork, sand filing, PCC (1:3:6) and RCC (M25) walls & drain floor, supply and erection of HYSD reinforcements, 6mm cement plaster (1:4) with cover slab wherever required	1.44
B	For second 1/3 of the length of the drain - foundation works including earthwork, sand filing, PCC (1:3:6) and RCC (M25) walls & drain floor, supply and erection of HYSD reinforcements, 6mm cement plaster (1:4) with cover slab wherever required	1.43
C	For final 1/3 of the length of the drain - foundation works including earthwork, sand filing, PCC (1:3:6) and RCC (M25) walls & drain floor, supply and erection of HYSD reinforcements, 6mm cement plaster (1:4) with cover slab wherever required	1.44
3	Washing Platform	0.44
A	Foundation works including earthwork, sand filing, PCC (1:3:6) and RCC (M25) footing	0.15
B	Construction of super structure including RCC (M25) for slabs, walls & brickwork and supply and erection of HYSD reinforcements	0.15
C	Sand filling & 12 mm Plastering (1:6), one coat plastic emulsion paint and one coat primer & all piping works	0.14
4	Compound Wall with MS Gate and MS Iron Spikes	10.17
A	For first ¼ of the length of the compound wall oundation works including earthwork, sand filing, PCC (1:3:6) and RCC (M25) footing, construction of super structure including RCC (M25) for columns, tie beams etc., brickwork and supply and erection of HYSD reinforcements, 12 mm Plastering (1:6), one coat primer and two coats weather coat paint, supply and installation of MS spikes with all fit and finish	2.54
B	For second ¼ of the length of the compound wall oundation works including earthwork, sand filing, PCC (1:3:6) and RCC (M25) footing, construction of super structure including RCC (M25) for columns, tie beams etc., brickwork and supply and erection of HYSD reinforcements, 12 mm Plastering (1:6), one coat primer and two coats weather coat paint, supply and installation of MS spikes with all fit and finish	2.54
C	For third ¼ of the length of the compound wall oundation works including earthwork, sand filing, PCC (1:3:6) and RCC (M25) footing, construction of	2.54

	super structure including RCC (M25) for columns, tie beams etc., brickwork and supply and erection of HYSD reinforcements, 12 mm Plastering (1:6), one coat primer and two coats weather coat paint, supply and installation of MS spikes with all fit and finish	
D	For final ¼ of the length of the compound wall foundation works including earthwork, sand filling, PCC (1:3:6) and RCC (M25) footing, construction of super structure including RCC (M25) for columns, tie beams etc., brickwork and supply and erection of HYSD reinforcements, 12 mm Plastering (1:6), one coat primer and two coats weather coat paint, supply and installation of MS spikes and MS gate with one coat of red oxide primer and two coats of synthetic enamel paint with all fit and finish	2.55
E	Site Development and Landscaping Works (4000 Sqm), Lab Equipment & Office Accessories	9.37
A	Site development, plantations and landscaping including levelling of land, digging holes, supply of good earth, procurement & planting of trees as specified, supply & planting of grass turf, supplying & application of manure, supply & spraying of insecticide etc.	6.24
B	Supply and fitting of laboratory equipment, chemicals, office furniture and desktop computer with all accessories	3.13
F	Testing ,Commissioning and Operation & Maintenance with Trial run (1 Month)	10.00
	Total	100.00

N.B.: Further sub-break up of payment may be allowed with due approval of Member Secretary, OWSSB if required in the interest of projects.

Note:

- The percentage of payment mentioned above are with reference to the total value of each component as per the agreement entered into by the firm/contractor.
- The payment shall be made for each component as per the actual measurement, upto the percentages mentioned above for the stage of progress of each component. In the case of actual value of works carried out becoming lesser than the percentage limits prescribed for the stages, the payments shall be restricted to the actuals.
- 5% of the value of every running bill shall be retained by the Employer as additional performance security.
- Payments shall become eligible only for finished items of works in all respects.

48.2Preparation of bills:

The Contractors will submit their bills every month in the M.Book format for the Quantity only of the relevant running bill duly signed. This will be treated as claim of the Contractor to consider payment every month.

The Contractor shall submit their bills to the Executive Engineer or any of his subordinate officer under his control as directed by the Executive Engineer. The Executive Engineer shall be responsible to scrutinize and make payment to the Contractor within 15 days from the date of submission of bills by the Contractor concerned.

49. Release of Performance Security & Retention Amount:

49.1The security deposit of 5% as the retention amount made in every running bill shall be released after the works are completed in all respects and after completion of defect liability period.

50.Recovery of money payable to OWSSB:

All losses, costs, damages and expenses and other money payable to the Board by the contractor

under any stipulation in the contract, may be retained out of any money due or which may subsequently become due from the Board to the contractor under any contract or otherwise whatsoever and in case such money then due or to become due to the contractor by the Board shall be insufficient to pay such losses, costs, damages, and other money payable to the Board by the contractor, it shall be lawful for the Engineer in charge without any further consent on the part of the contractor to sell notes for the securities deposited in the Board by the contractor as aforesaid and with and out of the proceeds of such sale, after payment of all expenses connected therewith or reimburse and pay to the Board all such losses, cost, damages and expenses and other money payable to the contractor. And in case such proceeds of sale of the said securities shall be insufficient for such purpose then and in that case it shall be lawful for the Board to recover the residue thereof, if necessary by legal proceedings and or by resorting to revenue recovery act against the contractor.

51. Income Tax

51.1 During the course of the contract period, deduction of income tax shall be made at the prevailing rates from every payment as may be specified by the Income Tax Department and as amended from time to time.

52. Good & Services Tax

52.1. From every payment made to the firm/ contractor, deduction at source towards GST shall be made for civil works contract as applicable subject to issue of Govt. instruction in this effect by Odisha Commercial Tax Department.

52.2. Presently as there is no to Govt. decision for the rate of GST to be deducted from the works bill at sources, the contractor is to give an undertaking that he will pay the gst as applicable to be deducted from the works bill as per the decision of the Govt. from time to time. This undertaking will be the part of the agreement.

52.3. The value put to tender in invitation for bids does not include any taxes.

53. BUILDING AND CONSTRUCTION WORKERS WELFARE CESS

Towards contribution of fund for the benefit of manual workers employed in the construction works an amount equivalent to (1%) one percent of total estimated cost of the construction work proposed will be paid by the Employer by way of deducting the amount from each running bill and deposited to the respective welfare Board, subject to issue of amendments from time to time by the respective department of Government of Odisha.

(Provision for this contribution has been appropriately made in the Estimates sanctioned for the schemes and the amount would be remitted at the end of the financial year to the labour welfare Deptt.)

54. Price Adjustment

There will no price adjustment since the project duration is one year.

VI – List of Annexures and Certificates

List of Annexures		
No.	Description	Para No.
I	Performance of the Bidder showing value of Civil Engineering work for the past five financial years	8.1.4
II	Average Annual Turnover	8.1.5
III	Experience in works of a period of last five financial years.	8.1.6

IV	Commitment of works on hand	8.1.6
V	Works for which Bid already submitted	8.1.6
VI	List of Equipment available with Bidder	8.1.7
VII	Qualification/Experience of key personnel proposed for technical and administrative functions under this contract	8.1.8
VIII	Details of Litigation	8.1.10
IX	Declaration by the bidder	8.1.11
X	Details of components proposed to be sublet and Sub-contractors involved	8.1.12
XI	Staff to be employed	Para 10 of General Conditions
XII	List of laboratory equipment and chemicals	Y.i. of Scope of Work
XIII	List of office furniture	Y.IV. of Scope of Work
XIV	List of personnel for operation and maintenance	AA.vi. of Scope of Work

List of Certificates		
Sl. No.	Description of Certificate	Para No.
1	Signature of the proprietor or proprietress attested by the Notary Public	2.2
2	Signature of all the partners/power of attorney attested by the Notary Public	2.3
3	Registration of the firm, signature of the authorized person attested by the Notary Public	2.4
4	A copy of the registered power of attorney authorizing the signatory of the bidder	8.1.2
5	Proof of registration of firm/Company	8.1.3
6	Audited Balance Sheets	8.1.5

7	Income Tax Clearance Certificate	8.1.11
8	Certificate of performance issued by not less than the rank of Executive Engineer of concerned deptt.	8.3

ANNEXURE I

PERFORMANCE OF THE BIDDER SHOWING TOTAL MONETARY VALUE OF CIVIL ENGINEERING WORKS IN THE LAST FIVE FINANCIAL YEARS

Year	Monetary Value of Civil Engineering works(Rs. In lakhs)
2014 -15	
2015 – 16	
2016 – 17.	
2017 – 18.	
2018 – 19	

Seal of the Firm

Signature of the bidder with date

ANNEXURE II

ANNUAL TURNOVER

Each Bidder must fill in this form

Annual Turnover Data (Civil Engineering Works) in the last five Financial Years.		
Sl. No.	Year	Amount Currency (INR)
1	2014-15	
2	2015-16	
3	2014-16	
4	2017-18	
5	2018-19	
Average Annual Turnover		

The information supplied should be the Annual Turnover of the Bidder in terms of the amounts billed to clients for each year for work in progress or completed.

Seal

.....
.....

(Signature of the Bidder)

ANNEXURE III

EXPERIENCE IN WORKS WITH IN A PERIOD OF last 5 financial YEARS.

(2014-15 to 2018-19)

Sl. No	Contract No. and Name of the Project	Description of the work	Name of the employer with full address	Value of the contract (Rs. In lakhs)	Date of Issue of work order and stipulated period of completion	Actual date of completion	Reason for the delay if any in completing the project

Seal of the firm

Signature of the bidder with date

ANNEXURE IV

COMMITMENTS OF WORKS ON HAND

Sl. No	Contract No and Name of the Project	Description of the work	Name of the employer with full address	Value of the contract (Rs. In lakhs)	Date of Issue of work order and stipulated period of completion	Value of works remaining to be completed (Rs. In lakhs)	Anticipated date of completion

Seal of the firm

Signature of the bidder with date

ANNEXURE V

WORKS FOR WHICH BID ARE ALREADY SUBMITTED

Sl. No.	Contract No and Name of the Project	Description of the work	Name of the employer with full address	Value of the contract (Rs. In lakhs)	Stipulated period of completion	Date when decision is expected	Remarks if any

Seal of the firm

Signature of the bidder with date

ANNEXURE VI

LIST OF EQUIPMENT AVAILABLE WITH BIDDER

Sl. No	Equipment Name	Requirement for the project		Availability Status			Remarks
		Nos	Capacity	owned/ leased/ To be procured	Nos and capacity	Age/ condition	

Seal of the firm

Signature of the bidder with date

ANNEXURE VII

**QUALIFICATION/EXPERIENCE OF KEY PERSONNEL PROPOSED FOR TECHNICAL
AND ADMINISTRATIVE FUNCTIONS UNDER THIS CONTRACT**

Sl. No	Name of the person	Position for which proposed	Qualification	Total Years of experience	Years of experience in the proposed position	Remarks

Seal of the firm

Signature of the bidder with date

ANNEXURE VIII

DETAILS OF LITIGATION, IF ANY

Sl. No	Name of the Govt. Dept. / Private Organization (Other party)	Cause of the litigation	Amount involved (Rs. In lakhs)	Award for (or) against bidder	Remarks / present stage

Note: Should be attested by the Notary Public.

Seal of the firm

Signature of the bidder with date

ANNEXURE IX

DECLARATION BY THE BIDDER:

It is to certify that our firm
.....has **not** been black listed / banned / debarred by any Central /
State, Union Territory Government Department or undertaking / Organization.

Seal

.....
.....

(Signature of the Bidder)

ANNEXURE X

TECHNICAL STAFF TO BE EMPLOYED

I/We shall/Will employ the following technical staff as per the prescribed rules

Sl. No.	Name of the staff to be Employed	Designation	Qualification

Seal of the firm

Signature of the bidder with date

ANNEXURE XI
List of Laboratory Equipment and Chemicals

Equipment and chemicals list to be supplied for laboratory

SL NO.	Name of the Items	Unit	Quantity
<u>A) Equipment</u>			
<u>Weighing Balance-Electronic</u>			
1	Automatic external calibration		
	Capacity	Sensitivity	
	220 gm	0.001 mg	No.s 1
<u>All Glass Distillation Unit (Double)</u>			
2	With Borosilicate boiler & Condenser. With quartz heater, horizontal type. Double distillation unit. With power supply unit capacity: 2.5ltr/hr		
<u>COD Digester or equivalent</u>			
3	With aluminium dry heating block. With 15 nos. cavities to accommodate 40mm dia tube temp. up 200C, controlled by digital temp. controller cum indicator fitted with timer. Supplied with 15 set of glass reaction vessel & air condenser with standard joint fitting		
<u>Dissolved Oxygen Meter (D.O Meter)-</u>			
4	Portable with memory of 50 results	No.s	1
<u>TDS Meter</u> Micro controller based.			
5	Conductive range: 0.1us to 200ms (6 decades)TDS range: 0.1 PPM to 200PPT (6 decades) temperature range: 0C to 100C (Auto temp. Compensation) Complete with standard accessories		
<u>PH Meter -Micro controller</u>			
6	PH Range:0-14.Accuracy 0.001PH Temp: Auto comp: 0-100C with 2 point calibration		
<u>BOD Incubator</u>			
7	Temp range: 5C to 50C, +/-0.5C.Inner chamber high polished stainless steel sheet. Door operated illumination, forced air circulation with best quality motor blower with air ducting system for positive air flow for consent room. PUF Insulation, fitted hermetical sealed compressor with relay guard, heat exchanger with Eco-friendly SFC free refrigerant. Provided with 2 door, inner transparent, auto temp by digital temp. controller cum indicator Inner Size: 505*415*830mm		
8	Desiccator-with porcelain plate Borosil make or equivalent		
	150mm dia		
	200mm dia		
	250mm dia		
	300mm dia	Nos	1

Muffale Furnance

Outer casing is mild steel powder coated, kanthal A-1 heating elements are provided by high temp.ceramic wool. Temp range:max temp 1000C Operating temp: 950C controlled by digital temp controller-cum-indicator,complete set. Inner

9 size:150*150*300mm

Hot Plate

Made of mild steel with cast iron top Temp. controlled by energy regular-30*45cm

10

Laboratory Table

Size:5'*4' With reagent rack

& one sink, coated on topwith Acid proof & non-flammable coating with drawer-superior sal woden base with fitting or for gas line in the table

11

Nos

1

Hot Air Oven-

Double walled, inner stainless steel, fitted with high grade mineral wool insulation, fitted with Air circulation fan with two ventilators, Gasket made of Neoprene, Adjustable shelves, Elements are placed in Ribs. Force convention system Temp.range-50C to 250C+/-2C- Temp. controller: Through digital temp. indicator cum controller, operated 220/230 Volt AC

12 Inner size:605*605*605 mm

Water Bath-Rectangular- Inner Chamber & outer body made of stainless steel concrete rings are made of SS Temp range:

Ambient+5C to 95C +/-0.5C Controlled by

13 digital

size: 300*250*100mm-6 holes

Thermometer

Range:0-100C/0-250C/0-360C

14 (any one)

Nos

1

B. APPARATUS (Glass ware)

1 Beaker-

Capacity

1000ml

Nos

4

500ml

Nos

4

250ml

Nos

6

100ml

Nos

6

2 Measurement Cylinder-

Capacity

10ml

Nos

2

25ml

Nos

2

50ml

Nos

2

100ml

Nos

4

250ml

Nos

2

3 Test tube-

Capacity

10ml

Nos

5

20ml

Nos

5

4 Volumetric flask-

Capacity

100ml

Nos

4

250ml

Nos

2

500ml

Nos

4

1000ml

Nos

4

5 Pipette Graduated-

Capacity

1ml

Nos

4

	2ml	Nos	2
	10ml	Nos	4
6 BOD Bottles- Capacity	300ml	Nos	6
7 Conical flask- Capacity	100ml	Nos	2
	250ml	Nos	4
	500ml	Nos	1
8 Burette- 50ml		Nos	4
9 Funnel-	75mm	Nos	4
	100mm	Nos	2
10 Glass Dropper		Nos	2
11 Glass Rod-4"		Nos	2
Glass Rod-6"		Nos	2
12 Petridish-80mm-		Nos	2

OTHER APPARATUS

1 Metal spatula-S.S- 8"		Nos	2
2 Porcelain crucible-15ml		Nos	2
30ml		Nos	2
3 Silica Crucible 50ml		Nos	2
4 Filter paper-whatman No.41-11cm-pkt		Nos	1
5 Pair of tongue S.S 8"		Nos	1
12"		Nos	2
6 Burette stand- Tarson make or equivalent		Nos	2
7 Pipett stand- Tarson- vertical or equivalent		Nos	1
8 Test tube stand-Tarson or equivalent		Nos	1
9 Test tube holder		Nos	2
10 Pipette pump-Pkt of 4nos		Nos	2
11 Plastic wash bottle -500ml		Nos	2
12 Tripod stand-Iron-8'*5"		Nos	1
13 Imhoff cone with stand		Nos	2
14 Glass beads-2mm-500gm		gm	500
15 Reagent Bottle plastic			
250ml			6
1000ml			4
16 sample collection bottle-1000ml			4
17 Chemical Gloves-pair		packet	1
18 Nose masks-Pkt of 20		packet	1
19 Apron-Cloth		Nos	2

D. CHEMICALS

1 Sulfate (FAS) Ammo Ferrous sulphate		gm	500
2 Potassium Dichromate		gm	500
3 Mercuric sulfate		gm	250
4 Silver Sulfate		gm	25
5 Ferroin indicator		ml	100
6 Manganese sulfate		gm	500
7 Sodium Azide		gm	500
8 Sodium Iodide		gm	250

9	Starch indicator	gm	500
10	Sodium thiosulfate	gm	500
11	Potassium Iodide	gm	100
12	Sodium hydroxide	gm	500
13	Potassium chloride	gm	500
14	Buffer PH 4	ml	500

E. ACIDS

1	Sulfuric Acid	ml	500
2	Hydrochloric acid	ml	500

Annexure XII
List of office furniture

SL. No	Name of Items	Unit	Quantity
1	Almirah	Nos	2
2	Officier table	Nos	1
3	Office table	Nos	2
4	Computer table	Nos	1
5	Office Chair	Nos	6
6	Plastic chair	Nos	10
7	Desktop-computer with accessories	Set	1
8	Printer with cartridg	Nos	1
9	Office dustbin(small)	Nos	2

Annexure XIII
Personnel for Operation and Maintenance

SL. No	Name of items	Unit	Quantity
1	Security	Nos	4
2	Chemist-cum plant manager	Nos	1
3	Pump operator	Nos	1
4	Sweeper	Nos	2

VII- GENERAL CONDITIONS OF CONTRACT

1. DEFINITIONS

In the Contract (as hereinafter defined) the following words and expressions shall have its meanings hereby assigned to them, except where the context otherwise requires.

“Board” means Orissa Water Supply and sewerage Board, a statutory body constituted under OWSSB Act 1991 having its office at Satyanagar, Bhubaneswar 751 007 and any officer authorized to act on its behalf

“Employer” means the Orissa Water Supply and sewerage Board and shall include the officers duly authorised to act on its behalf

“Contractor” means the person or persons, firm or company whose tender has been accepted by the Employer and includes the authorised representatives, successors, heirs, executors, administrators

“Subcontractor” means any person or persons, firm or company named in the Contract as a Subcontractor for a part of the Works or any person or persons, firm or company to whom a part of the Works has been subcontracted with the consent of the Engineer and includes the authorised representatives, successors, heirs, executors, administrators of such Subcontractors

“Engineer” means the Project Engineer or any other Engineer appointed from time to time by the Employer to act as Engineer for the purposes of the works brought under this contract

“Engineer in charges” means the Executive Engineer or any other Engineer authorised by him.

“Engineer’s representative” means any Resident Engineer or assistant of the Engineer or any clerk of works appointed from time to time by the Employer or/the Engineer to perform the duties set forth in respect of this Contract.

“Contract” means the Invitation for Bids and amendment made thereof, Letter of Acceptance, the formal Agreement executed between the Employer and the Contractor together with the documents referred to therein, General Conditions of the Contract, Special Conditions, Specifications, Minutes of the pre Bid conference, Design, Drawings, Schedule of Rates and Prices, Bill of quantities, Rate of Progress etc., All these documents taken together shall be deemed to form one contract and shall be complementary to one another

The quality parameters laid down in relevant BIS, CPHEEO, Bid Documents etc., are to be followed and it is stipulated to complete the entire works in all respects satisfactorily and commission within the stipulated period and maintain the scheme for the specified period.

“Contract Price” means the sum stated in the Letter of Acceptance as payable to the contractor for the execution, completion and maintenance of the works, subject to such additions thereto or deductions there from as may be provided under this Contract and the remedying of any defects therein in accordance with the provisions of the contract.

“Client” means the employer i.e. OWSSB or its authorized officer to act on its behalf.

“Letter of Acceptance” means the formal acceptance by the Employer of the Tender

“Contractor Agreement” means the contract agreement referred to in clause(..)

“Appendix to Tender” means the appendix comprised in the form of Tender annexed in these conditions.

“Commencement Date” means the date of signing the agreement or the date of handing over the site to the successful firm/contractor, whichever is earlier and this shall be reckoned as the start date of the project.

“Time of Completion” means the time for completing the execution of and passing the Tests on Completion of the Works of any section or part thereof as stated in the Contract (or as extended under Clause...) calculated from the Commencement Date

“Trial run” means the successful Trial run of the completed and commissioned project as a whole or in parts as the case may be for the stipulated period

2. Interpretation

In interpretation of these Conditions of Contract, headings shall not be deemed part thereof or be taken into consideration. Words importing persons or parties shall include firms and corporations and any organization having legal capacity. Words importing the singular only also include plural and vice versa where the context requires.

The Employer will provide instructions clarifying the queries about the contract

3. Authority of Engineer in Charge

It shall be accepted that the authority of the Engineer in charge shall be an integral part of the contract in all matters regarding the quality of materials, workmanship, removal of improper work, interpretation of the contract drawings and specifications, mode and procedure of carrying out the works where the decision of the Engineer in charge shall be final and binding on the contractor. The Engineer in charge shall have absolute authority on all technical matters and payment considerations.

4. Sufficiency of Bid

The Contractor shall be deemed to have satisfied himself as to the correctness and sufficiency of the bid and of the rates and prices stated in the Bill of Quantities, all of which shall, except insofar as it is otherwise provided in the contract, cover all his obligations under the Contract (including those in respect of the supply of goods, materials, Plant or services or of contingencies for which there is a Provisional Sum) and all matters and things necessary for the proper execution and completion of the Works and the remedying of any defects therein.

5. Priority of Contract Documents

The several, documents forming the Contract are to be taken as mutually explanatory of one another, but in case of ambiguities or discrepancies the same shall be explained and adjusted by the Engineer who shall thereupon issue to the Contractor instructions thereon and in such event, unless otherwise provided in the Contract. The priority of the documents forming the Contract shall be as follows:

“Constructional Plant” means all appliances or things of whatsoever nature required in or about the execution, completion or maintenance of the works but does not include materials or other things included to form or forming part of the permanent works.

“Works” shall include both permanent works and temporary works. “Permanent works” means the works of permanent nature to be executed, completed and maintained (including Plant) in accordance with the contract. “Temporary works” means all temporary works of every kind required in or about the execution, completion or maintenance of the works and remedying of the defects therein

“Specification” means the schedules, detailed designs, technical data, performance Characteristics and all such particulars referred to in the bid/contract and any modification thereof or addition thereto as may from time to time be furnished or approved by the Employer.

Drawings” means the drawings, calculations and technical information referred to in specification and any modification of such drawings approved in writing by the Engineer and such other drawings, calculations and technical information as may to time be furnished or approved in writing by the Engineer.

“Site” means the land and other places on, under, in or through which the Permanent works and/or Temporary Works are to be executed and any other lands and places provided by the Employer for working space or any other purpose as may be specifically designated in the Contract as forming part of the site.

Approved means approval in writing including subsequent written confirmation of previous verbal approval

“Test” means such test or tests as are prescribed in the specifications or considered necessary by the Engineer

“ISS” means Indian Standard Specifications

“BIS” means Bureau of Indian Standards

“Day” means a Calendar day from midnight to midnight

“Week” means seven consecutive days.

“Month” means from the beginning date of a given date of a calendar month to the end the preceding date of the next calendar month

“Quarter” means a period of three months reckoning from the 1st date of January April, July and October and counted to the last date of March, June, September and December respectively.

Rupees means Rupees in Indian Currency

“Bill of Quantities” means the priced and completed bill of quantities forming part of the tender

“Tender” means the Contractor’s priced offer to the Employer for the execution, completion and maintenance of the Works and the remedying of any defects therein in accordance with the provisions of the Contract, as accepted by the Letter of acceptance

- The Contract Agreement
- The Letter of Acceptance
- The Tender
- Conditions of the Contract
- Technical specifications
- Any other document forming part of the Contract

6. Secrecy of the contract document

The Contractor shall treat all documents, correspondence, direction and orders concerning the contract as confidential and restricted in nature by the contractor and shall not divulge or allow access to these matters to any unauthorized person.

7. Instruction in Writing

Instructions given by the Engineer or Engineer’s Representative shall be in writing, provided that if for any reason, the Engineer or the Engineer’s Representative considers it necessary to give any such instruction orally, the Contractor shall comply with such instruction. Confirmation in writing of such oral instruction given by the Engineer or Engineer’s Representative, whether before or after the carrying out of the instructions given by the Engineer or Engineer’s Representative, shall be deemed to be an instruction.

8. Commencement of Works

The Contractor shall commence preliminary works after the receipt by him of the LOA to this effect from the Engineer in charge. Thereafter, the contractor shall proceed with the Works with due expedition and without delay and in accordance with the programme schedule set out in the Contract.

9. Reference Marks

The basic center lines, reference points and bench marks shall be fixed by the Engineer in charge of the works. The contractor shall establish additional reference points and bench marks as may be necessary at his cost. The contractor shall remain responsible for the accuracy and sufficiency of the reference and bench marks. The contractor shall take proper precautionary steps to ensure that the reference lines and bench marks established for the works are not disturbed and shall make good any damages caused.

10. Supervision

The Contractor shall provide all necessary superintendence during the execution of the works and thereafter as may be necessary for the proper fulfillment of the obligations under this contract. The contractor shall arrange for the deployment of proper qualified personnel at the site of work constantly, such supervising staff, apart from those separately set out as the requirements of the contract, shall be skilled and experienced technical assistants, foremen and others competent enough to produce proper supervision.

In the event of any staff of the contractor being non co-operative, negligent, incompetent or misconduct, the Engineer-in-charge shall have the liberty to object to the placement of such staff at the site or other place of works and will promptly issue notice in writing to the contractor for the removal of such staff members. It will be obligatory on the part of the contractor to remove/change such persons in the larger interests of the works.

11. Subletting of Contract

Assignment of the contract is not permissible

Transfer of the contract is not permissible on any grounds

The contractor shall sublet any portion of the contract only with the written consent of the Engineer-in-charge. It should be clearly understood that any subletting shall in no way absolve the contractor of his responsibilities and obligations under this contract

12. Specifications and Checks

Stated dimensions in the drawings are to be taken for consideration and no measurements based on scaling of the drawings shall be considered. In case of discrepancy between the description of items in the schedule of quantities and the specifications, the later shall prevail. In case of the description, any work having not fully described or doubts prevail, the contractor shall forthwith write to the Engineer in charge and clarify himself before executing that portion of the work. However, this cannot be a cause for any delay in the progress and the contractor should take advance action in this regard ensuring timely completion of the works. Before commencement of the work, it will be obligatory on the part of the contractor to furnish a detailed plan of action along with layouts showing the position of the construction plants and other facilities required and proposed to be provided for this contract.

The contractor shall execute the works true to alignment, grade and levels as set out in the drawings and as directed by the Engineer-in-charge from time to time. The Engineer-in-charge or his representative is at liberty to check the correctness of the works, the suitability of the materials used, design mix etc., The contractor will raise no objections for such checks and shall provide necessary labour and instruments to carry out such check to the Engineer-in-charge as well as his representative and co-operate in the checks. However, such checks will not absolve the contractor of his responsibility of maintaining the accuracy of the work.

13.Custody and Supply of Drawings and documents:

The drawings shall remain in the sole custody of the Engineer in charge, but two copies thereof shall be provided to the contractor free of charge. The contractor shall make at his own cost any further copies required by him. Unless it is strictly necessary for the purposes of the contract, the drawings specifications and other documents provided by the Employer or the Engineer in charge shall not, without the consent of the Engineer in charge, be used or communicated to a third party by the contractor. One copy of the Drawings, provided to or supplied to the Contractor as aforesaid, shall be kept by the Contractor at the site and the same shall be made available for inspection and use by the Engineer and by any other person authorized by the Engineer. As built drawing of all the components, lay-out plan, cross sectional, top view and front view drawing showing structural details and any other drawing as required by OWSSB shall be submitted by the agency/contractor after successful completion of the project.

14.Bill of Quantities:

The Bill of quantities shall contain items for the construction, installation, testing, commissioning and Trial run of the Works to be carried out by the Contractor. The Bill of Quantities will be used to calculate the Contract Price. The contractor shall be paid for the quantum of work done at the rate mentioned for each item in the Bill of quantities

15.Change in the Quantities

If the final quantity of the work done differs from the quantity in the Bill of Quantities for the particular item/items, the rates as in the agreement for the relevant items shall be paid as per the actual quantity.

16.Additional items

If additional items that are not contemplated in the contract are to be executed, the Engineer-in-charge will execute the works either through the main contractor/firm or through any other agency. Payment for such works shall be made based on the rates derived by the Engineer-in-charge as per rules in force.

17.Order Book

An order book will be kept by the Officer in charge of the site (APE/DPE) of the particular component of the works. Orders entered in this book by the Engineer in charge or any higher authority shall be held to have been formally communicated to the contractor/firm. The Officer in charge of the site will sign each order as it is entered and will hand over the duplicate to the contractor/firm or his agent, who shall sign the original in acknowledgement of having received the order.

18.Independent Inspection

The Engineer may delegate inspection and testing of materials or Plant to an independent inspector/Agency. Any such delegation shall be considered as prerogative of the Engineer. In addition to third party inspection, wherever felt necessary, the engineer shall be empowered to test the PVC Pipes for its quality such as specific gravity, diameter, thickness etc. in appropriate laboratory. The cost of the third party quality check pipes, valves and pumpsets shall be borne by the employer.

19.Covering and Opening of Works.

No work shall be covered or put out of view without the approval of the Engineer-in-charge. The contractor shall give due notice to the Engineer in charge whenever such works are ready for examination and the Engineer in charge within a reasonable period, arrange for the inspection and measuring of the work as may be necessary. No portions of the work shall be covered up without the consent of the Engineer in charge. The cost of opening any portion of the works that was covered without the consent of

the Engineer-in-charge and the cost of covering thereafter shall be borne by the contractor. The contractor shall open the covered portion of the works for inspection by the Engineer- in-charge on a request and the inspection or examination shall be carried out promptly by the Engineer- in-charge. In the case of defects notified by the Engineer-in-charge, the contractor shall rectify the same as may be instructed by the Engineer-in-charge. All costs of opening, covering and rectification shall be on to the account of the contractor. Should the contractor refuse to open such portions of works the Engineer-in-charge shall open such portions with other persons and inspect the part of the works as he may feel necessary. On inspection, the works being not in accordance with the requirements of the contract documents, the Engineer-in-charge shall carry out necessary rectification and the entire cost of opening, rectification and closing shall be on to the contractor's account.

20. Temporary Diversion of Roads and Commencement of Work:

During execution of the works, the contractor/firm shall make at his cost all necessary provision for the temporary diversion of roads, car tracks, footpaths, drains, water courses, channels etc., Should the contractor/firm fail to do these arrangements, the same shall be done by the Engineer-in-charge and the cost thereof shall be recovered from the contractor/firm.

21. Notice to Telephone, Railway and Electric Supply Undertaking:

The Contractor/firm shall give all notices required by any law or custom or as directed by the Engineer- in-charge and irrespective of whether notice be so required so directed or not, shall in all cases give due and sufficient notices to all persons and authorities having charge of the telegraph, water and other pipes, sewers, culverts drains, water courses, railway, telephone, highways, roads, streets, foot and carriage highways, payment and other works, prior to commencements and at the completion of any work under this contract in order to enable the proper bodies or persons in respect of the matters aforesaid to attend and see the works within their jurisdiction and all matters and things incidental and pertaining thereto are secured, re-laid or reinstated in a proper and satisfactory manner. The notices by the contractor/firm shall also serve the purpose of enabling such bodies and persons to attend and secure, shore up, alter the position or remove, relay and reinstate the works and things belonging to them notwithstanding the notices given as aforesaid the Contractor/firm shall be chargeable and responsible for the proper protection and restoration of all matters and things herein referred to.

22. Watching and Lighting:

The Contractor/firm shall at his expense shall provide at the site of works sufficient fencing, barricading, watching and lighting during day and night. The contractor/firm shall in every respect conform to the police regulations in these matters and shall free and relieve the Board on all such matters. Should the contractor/firm fail/neglect to do these arrangements, the same shall be carried out by the Engineer in charge and the costs thereof shall be recovered from the contractor/firm.

23. Measurement of Work:

The work will be measured by the site engineer (APE/DPE) and recorded in the measurement book. The contractor/firm will be at liberty to accompany the site engineer in order that they may agree on the measurements but should they neglect to do so, the measurements as recorded by the site engineer shall be taken as final and conclusive. The measurements of works will be recorded as prescribed in the PW specification and as amended from time to time.

24. Tools and Plants:

All tools, plants and equipment required for this contract will be arranged by the Contractor at his own expense. The Contractor shall erect necessary construction plant as may be necessary and shall use such methods and appliances for the proper performance of all the operations connected with the work brought under the contract ensuring satisfactory quality of work and maintenance of the programme schedule. The non-availability of any tool, plant or equipment shall not be relied upon as a reason for non-functioning or slow progress.

25.Information and Data:

The information and data made available to the contractor in respect of the works and site conditions are only general and the contractor is advised to get himself fully acquainted with the nature of the location of the works and the surroundings, quarries, local conditions and such other aspects that are relevant to the works.

26.Coexistence with other Contractors:

Where two or more contractors are engaged on work in the same vicinity, they shall work together harmoniously with the spirit of cooperation and accommodation. The contractor shall not disrupt or disturb the works or labour arrangements of the neighboring contractors. In case of disputes and difficulties arising between the contractors in the execution of the respective works, the Engineer-in-charge shall interfere and give directions for the smooth functioning of the entire works and it shall be the bounden duty of the contractors to abide by these instructions.

27.General Responsibilities and Obligations of the Contractor:

The contractor shall, subject to the provisions of the contract, execute and maintain the works with proper care and diligence and provide all labour including the supervision thereof, materials, constructional plant and all other things, whether of a temporary or permanent nature required for such execution and maintenance.

The contractor shall take full responsibility for the adequacy, stability and safety of all site operation and methods of construction.

The contractor shall promptly inform the Employer and the Engineer-in-charge if any error omission, fault and other defects in the specification or design of the works which are identified at the time of reviewing the contract documents or during the execution for proper rectification thereof.

All notices, certificates connected with the work served by the employer relating to the contract shall be sent by post or by hand to the contractor' principal place of business as mentioned in the document or at other places as may nominated by the contractor in writing for this purpose. Any change in the address of the contractor should be promptly intimated to the Employer in writing then and there.

The contractor shall visit the spots of work and ascertain the site conditions. The contractor shall satisfy himself of the conditions prevailing in the spots where the work is actually to be executed and its environs and the precise offered by him shall be treated as those which were worked out taking fully into consideration the prevailing site conditions, hydrological conditions, extent and nature of work to be executed, the material availability, etc., Any claim on this ground at a later date shall be summarily rejected.

However, during the execution of the works, if the contractor has to encounter artificial obstructions, which in his opinion could not have been reasonably foreseen, then the contractor shall write forthwith to the Engineer in charge of such obstruction and remedial measures needed. The Engineer in charge, if opined that the conditions cannot be possibly foreseen by an experienced contractor, he shall extend possible assistance to the contractor to overcome such obstructions. The opinion of the Engineer in charge shall be final and binding and the contractor is not entitled to advance these as reasons for any delay that may be caused to the completion of the project.

The contractor shall execute and maintain all works in accordance with the specification and to the satisfaction of the Employer. The contractor shall strictly adhere to the instructions and directions of the engineer in charge, whether included in the contract agreement or not but concerning the safe and proper execution of the works.

28.Labour

The contractor shall not employ any person who has not completed eighteen years of age in connection

with the works under this contract.

The contractor shall furnish the information on various categories of labour employed by him to the Engineer-in-charge in the form prescribed for this purpose

The contractor shall in respect of labour employed by him comply with or cause to be complied with the provisions of various labour laws, rules and regulations as applicable to them in regard to all matters provided therein and shall indemnify the Employer in respect of all claims that may be made against the Employer for non-compliance thereof by the contractor.

Now withstanding anything contained herein, the Employer reserves the right to take such action as may be deemed fit and proper for the compliance of various labour laws and recover the costs thereof from the contractor.

29. Restriction of Working Hours:

Subject to any provisions contained in the Contract, none of the works shall, save as hereinafter provided, be carried on during the night or on locally recognized days of rest without the consent of the Engineer, except when work is unavoidable or absolutely necessary for the saving of life or property or for the safety of the Works, in which case the Contractor shall immediately advise the Engineer, provided that the provisions of this clause shall not be applicable in the case of any work which is customary to carry out by multiple shifts.

30. Right of Way and Facilities:

The Contractor shall bear all costs and charges for special or temporary rights of way required by him in connection with access to site. The Contractor shall also provide at his own cost any additional facilities outside the Site required by him for the purposes of the Works.

31. Removal of Improper Work, Material and Plant:

The contractor shall make his own arrangements for the procurement, supply and use of the construction materials and shall ensure that the materials either procured within the country or abroad conform to the relevant specifications set out in the bid documents. In case of alternatives being used, they should be of equal or higher quality than those specified subject to the review and written approval of the Engineer-in-charge. Differences between the standards specified and the proposed alternatives must be described in writing to the Engineer-in-charge at least 30 days in advance from the date on which the approval of the Engineer-in-charge is needed. The disapproval of the proposal by the Engineer-in-charge shall result in the contractor confining to the standards set forth in the contract documents. The contractor shall arrange for the inspection of the material at the manufacturing place or other places by the department personnel.

All materials and workmanship shall be in accordance with the specifications set out in the contract document and as directed by the Engineer-in-charge and shall be subjected to tests by the Engineer-in-charge or his representative at the place of manufacture or at the site of work or places wherever felt necessary. The contractor shall provide all the assistance necessary including instruments, machines and materials that are normally required for carrying out the testing/measuring the quality/quantity of the materials and workmanship. Any material rejected after testing by the Engineer-in-charge or his representative will not be used on the works. The contractor shall without claiming any extra cost, shall arrange for the testing of materials and supervision of the works. The Engineer-in-charge or his authorized representative will have access at all times to the places of manufacture, storage to ascertain as to whether the manufacturing process wherever mentioned is in accordance with the drawings and specifications.

The Engineer in charge shall have the right to order the removal of such materials which in his opinion are substandard stipulating a time limit for the removal of the same and replacement with quality material.

Notwithstanding the previous tests of the materials by the Engineer-in-charge or his representative, if any portion of the work, in the opinion of the Engineer-in-charge is not in order, the contractor shall redo such work to the satisfaction of the Employer at no extra cost. In case of default on the part of the contractor in carrying out such orders, then the Employer shall have the right to carry out such works through some

other persons and the expenses thereon or incidental thereto shall be recoverable from the contractor.

32.Default of Contractor in Compliance:

In case of default on the part of the Contractor in carrying out such instruction within the time specified therein, if none, within a reasonable time, the Employer shall be entitled to employ and pay other persons to carry out the same and all costs consequent thereon or incidental thereto shall after due consultation with the Employer and the Contractor, be determined by the Engineer and shall be recoverable from the Contractor by the Employer, and shall be deducted by the Employer from any monies due or to become due to the Contractor and the Engineer shall notify the Contractor accordingly, with a copy to the Employer

33.Default by Contractor:

If the contractor shall become bankrupt or have a receiving order made against him or shall present his petition in bankruptcy or shall make an arrangement with or assignment in favour of his creditors or shall agree to carry out the contract under a committee of inspection of his creditors, or being a corporation shall go into liquidation (other than a voluntary liquidation for the purpose of amalgamation or reconstruction), or if the contractor shall assign the contract, without the consent in writing of the employer first obtained, or shall have an execution levied on his goods, or if the engineer-in-charge shall certify in writing to the employer that in his opinion, the contractor.

- a) Has abandoned the contractor or
- b) Without reasonable excuse has failed to commence the works or has suspended the progress of work for twenty eight days after receiving a written notice from the Engineer-in- charge to proceed or
- c) Has failed to remove materials from the site or to pull down and replace work for twenty eight days after receiving the written notice from the engineer in charge stating that the said materials or work stands condemned and rejected under these conditions, or
- d) Despite previous warnings in writing by the Engineer in charge, not executing the works and achieving the progress as stipulated in the programmed schedule drawn for the contractor is persistently or flagrantly neglecting to carryout the obligations under this contractor
- e) Has, to the detriment of good workmanship, or in defiance of the instructions of the Engineer-in-charge or in contract sublet any part of the contract, then the Employer, may at his option, after giving two weeks' notice in writing to the contractor, enter upon the site and the works and expel the contractor therefrom without thereby voiding.
- f) The contract, or releasing the contractor from any of his obligation or liabilities under this contract, and may himself complete the works or may employ any other contractor to complete the work. The employer or such other contractor may use the construction plant, temporary works and materials which have been deemed to be reserved exclusively for the execution of the works under the provisions of the contract as may be thought fit and proper for the completion of the work. The employer may, at any time, sell any of the said constructional plant, temporary works and materials which have been deemed to be reserved exclusively for the execution of the works under the provisions of the contract as may be thought fit and proper for the completion of the work. The employer may, at any time, sell any of the said constructional plant, temporary works and unused materials and apply the proceeds of sale in or towards the satisfaction of any sums due or which may become due to him from the contractor under this contract.
- g) has carried out the work in a defective manner.
- h) has not made payment of labour dues.

- i) has become eligible for maximum compensation under the "Liquidated damages clause" leading to Termination of the contract.

The Engineer-in-charge shall as soon as may be practicable after any such entry or expulsion by the employer, fix and determine expert or by after reference to the parties, or after such investigation or enquiries as maybe thought fit to make or institute, and shall clarify what amount, if any had at the time of such entry and expulsion been reasonably occurred to the contractor in respect of work then actually done by him under this contract and the value of any of the said unused or partially used materials, any constructional plant and any temporary woks.

If the employer shall enter and expel the contractor under this clause, the employer shall not be liable to pay to the contractor any money on account of the contract until the expiration of the period of maintenance and thereafter until the costs of execution and maintenance, damages for delay in completion, if any and all other expenses incurred by the Employer have been ascertained and the amount thereof certified by the engineer. The contractor shall then be entitled to receive only such sum or sums, if any as the engineer-in-charge may certify would have payable to him upon due completion by him after deducting the said amount. If such amount shall exceed the sum which would have been payable to the contractor on due completion by him, then the contractor shall, upon demand, pay to the employer the amount of such excess and it shall be deemed a debt due by the contractor to the Employer and shall be recoverable accordingly.

If, by reason of any accident, or failure, or other event occurring to or in connection with the work, or any part thereof, either during the execution of the works, or during the period of maintenance, any remedial or other work or repair shall in the opinion of the Engineer-in-charge or his authorized representative, be urgently necessary for the safety of the works and the contractor is unable or unwilling at once to do such work or repair as the Engineer-in-charge or his representative may consider necessary, such works shall be carried out by the Engineer-in-charge. If the work or repair so done, which in the opinion of the Engineer-in-charge, liable to have been done by the contractor at his expense under this contract, all expenses incurred by the Employer in carrying out such works shall be recoverable from the contractor or shall be deducted by the Employer from the money due to the contractor provided always that the Engineer-in-charge or his representative, as the case may be, shall as soon after the occurrence of any such emergency as may be reasonably practicable, notify the contractor thereof in writing.

34.Power to vary work:

The description of the works required to be executed by the contractor/firm are set out in the specifications, schedules and drawings, but the Engineer-in-charge reserves the power to vary, extend or diminish the quantities of work, to alter the line, level or position of any work, to increase, change or decrease the size, quality, description, character or kind of any work, to order the contractor/firm to execute the works or any part thereof, by day or night work, or to add or take from the work included in the contract as he may deem fit and proper without violating the contract and the contractor/firm shall not have any claim upon the Employer for any such variation, extension, diminution, alteration, increase, change or decrease other than for the work actually done, calculated according to the prices tendered and accepted in this contract.

35.Extra for Varied Works:

Any unforeseen additional work that may become necessary and is accordingly carried out under this contract based on proper written orders shall be measured and valued by the Engineer-in-charge at the rates contained in the contractor's/firm's original bill of quantities. If these rates do not apply to the additional works ordered to be carried out, then prior to execution of the additional work, a rate for such work shall ordinarily be agreed upon and entered in a supplemental schedule and signed by both the Engineer in charge and the contractor/firm.

36.Omissions:

In the event of anything reasonably necessary or proper to the due and complete performance of the work (Engineer-in-charge will be the sole judge on these things) being omitted to be shown or described in the drawings, specifications and schedules, the contractor/firm shall notwithstanding execute and provide at

the rates noted in the bill of quantities all such omitted works and things as if they have been severally shown and described and the execution should be according to the directions of the Engineer-in-charge and to his satisfaction.

37. Notices Regarding Shoring etc.:

Wherever shoring or other works for the protection or security of the buildings/structures are necessary, the contractor/firm shall within a reasonable period before the execution of such works, shall serve notices upon the occupiers of the buildings / structures to be shored up or otherwise secured and upon all other parties entitled to notice, apprising them respectively that such works are necessary, that the contractor/ firm about to execute the same and will, at a time to be specified in such notice, enter upon the premises for the purpose of executing such works.

38. Cost of Repairs:

Loss or damage to the Works or materials to be incorporated in the works between the Start Date and the end of the Defects correction periods shall be remedied by the Contractor at the Contractor's cost if the loss or damage arises from the Contractor's acts or omissions.

Contractor shall attend to the defect in the work noticed during defects correction period within 3 days from the date of issue of notice to attend to the defects, failing which the defect will be remedied by engaging other Contractors at any cost and that cost will be recovered from the Contractor's money available with the Employer and balance alone will be paid when it is due.

39. Suspension of Work:

The Contractor shall, on the instructions of the engineer, suspend the progress of the Works or any part thereof for such time and in such manner as the Engineer may consider necessary and shall, during such suspension, properly protect and secure the Works or such part thereof so far as is necessary in the opinion of the Engineer-in-charge.

40. Suspension of Progress:

The contractor/firm shall, without recompense, claim or demand, delay or suspend the progress of works as a whole or any part thereof, if and when or so often as directed by the Engineer-in-charge and for such time or times, as may be in the judgement of the Engineer-in-charge be necessary for the purposes or advantages of the undertaking. Upon all such occasions, whether directed or not, the contractor/firm at his/their expense, properly cover down and secure so much of the work as may be liable to sustain damage from whether or any other cause and shall at all times and forthwith when required properly make good all the damage or injury which such works or any part thereof may give sustained and these should be done to the entire satisfaction of the Engineer-in-charge.

41. Termination:

The Employer may terminate the Contract for any reason that is regarded as breach of the Contract. If the contract is terminated, the contractor shall stop work immediately, make the site safe and secure and leave the site as soon as reasonably possible on termination of the contract, the Engineer shall issue a certificate for the value of work done less payments received upto the date of the issue of certificates, less other recoveries due in terms of the contract, less taxes due to be deducted at source as per applicable law and less the percentage to apply to the work not completed. If the total amount due to the Employer exceeds any payment due to the Contractor the difference shall be treated as debt payable to the Employer and can be recovered from any amount due or may become due to the contractor.

In the case of termination, works that are pending for the proper completion of the project, shall be carried out by the Employer either by themselves or through any other agency. Any additional expenditure over the value finalized in the contract for any component or for the whole project, incurred by the Employer by the Employer due to such termination, shall become recoverable from the contractor/firm whose contract stands terminated, from the money due or may become due to him/them. All materials on the Site, Plant, Equipment, Temporary Works and Works are deemed to be the property of the Employer, if the Contract is terminated because of Contractor's default

42.Plant etc. not to be removed:

The plant, tools and materials provided by the contractor/firm shall, from the time they are brought to the site of the works, during the construction and until the satisfactory completion of the contract, shall become and continue to be the property intended for the proper fulfillment of the contract and the contractor/firm shall not remove the same or part thereof without the consent of the Engineer-in-charge in writing.

43.Contractor not to occupy Land etc.:

In no case shall the contractor/firm continue to use or occupy or allow to be used or occupied any land or property either for the deposit of materials or plant or for any purpose whatever, after written notice from the Engineer-in-charge served on the contractor/ firm to the effect requiring the contractor/firm to remove or cause to be removed all such materials from any such land or property as aforesaid and to give vacant possession of such land or property to the Engineer-in-charge. All such notices shall be served through post office or other modes of delivery to the contractor/firm at his/their usual or last known place of business. It is enough for the Engineer-in-charge to send the notice through any mode of delivery as he may prefer and implement this clause irrespective of the receipt of the notice by the contractor/firm. Should any materials or plant remain upon any such property or land or should any such land or property continue to be occupied or be used after such notice for any purpose whatsoever as aforesaid, then and in every such case and as often as the same shall happen, the contractor/firm shall forfeit and on demand pay to the Employer the charges fixed by the Engineer-in-charge as and for liquidated and ascertained damages for each and every day during which the said lands or property are so used and occupied as aforesaid from the time of such notice shall have been served.

44.Power Supply:

The power supply connection from the NESCO/WESCO/SOUTHCO/CESU has to be obtained by the contractor himself and the charges thereon shall be borne by the contractor. However, necessary vouchers in original for the payment made to the NESCO/WESCO/SOUTHCO/CESU shall be produced to the Employer by the contractor which will be reimbursed by the Employer.

45.Completion and Delivery of the Works:

The completion and delivery of the works shall be deemed to be full, complete and sufficient only when the Engineer-in-charge accepts the same and issues a certificate in writing viz. "Certificate of Completion" under the hand of the Engineer-in-charge to the effect that all the works contracted for and directed to be executed have been completed and are in a sound, water tight, workmanlike and complete and usable condition and the contractor has in the opinion of the Engineer-in-charge reasonably fulfilled and completed his contract and undertaking except so far as it relates to the maintenance of the works as hereinafter provided. Provided always and notwithstanding anything contained in the contract, it shall be lawful for the Employer to undertaker and execute either departmentally or through other parties at any period during the continuance of this contract, any kind of work, matter or thing whatsoever, which they may consider necessary or proper to be performed and executed for the purpose of any in connection with any or all of the works under this contract and that without in any way relieving the contractor/firm from any of his/their liabilities and responsibilities under this contract or in any way violating or voiding this contract.

46.Final Certificate:

When the works covered under this contract are completed in all respects, the contractor / firm shall submit a request to the Engineer-in-charge to make a final measurement of the works and take over the whole of the works on behalf of the Employer and issue a final certificate to enable him/them to submit a final bill for payment. The Engineer-in-charge shall thereupon, unless he records reasons in writing to the contrary, make a final measurement of the works and take them over on behalf of the Employer and sign a certificate purporting to be a last certificate. Nothing in this clause or in the agreement shall prohibit the Employer taking over and using any portion of the works which may be completed prior to the completion

of the whole works of this contract.

47.Completion Certificate:

The Contractor shall request the Engineer to issue a certificate of Completion of the Works and the Engineer shall issue certificate of completion after satisfactory completion of the works in all respects

48.Taking Over:

The Employer shall takeover the Site with the works within thirty days after satisfactory completion of the trial run of the entire project for the stipulated period as contemplated in this contract.

49.Performance Guarantee:

The period of guarantee for the entire works shall be 12 months from the date of completion and commissioning of the project and trial run period to the satisfaction of the Engineer-in-charge of the work. If defects are noticed during the guarantee period, the firm/contractor shall rectify/replace wherever necessary at its/his own cost within 30 days of such intimation. If the contractor/firm fails to carry out rectification within the stipulated time, the rectification works shall be carried out by the Employer at the risk and cost of the contractor/firm and contractor/firm will become ineligible for the payment of the retention amount for the said purpose.

50.Trial run of the project:

The contractor / firm shall successfully maintain the project for the stipulated Trial run period from the successful commissioning of the works in this project.

51.Operating and Maintenance Manual:

“As-built” drawings and operating and maintenance manuals shall be supplied by the contractor/firm at the time of handing over the completed works at his/their cost as instructed by the Engineer incharge.

52.Work on Private Property:

The contractor/firm shall not commence any work in or upon, under, across of through any land, house building, shed, yard, area, roadway, ground, garden or any other place being private property until authorized in writing by the Engineer-in-charge to do so.

53.Protection:

It will be the responsibility of the contractor to take adequate precautions and protect the adjoining sites against structural, decorative and other damages. The contractor shall be responsible for the safety of the public properties wherever the works are executed. Whenever damages are caused to the adjoining structures, roads, bridges etc. due to the execution of this contract, it will be the responsibility of the contractor to restore them to their original level at his cost.

54.Accident or Injury to Workmen:

The Employer shall not be liable for or in respect of any damages or compensation payable to any workman or other person in the employment of the Contractor or any Subcontractor. The Contractor shall

indemnify and keep indemnified the Employer against all such damages and compensation and against all claims, proceedings, damages, costs, charges and expenses whatsoever in respect thereof or in relation thereto.

55.Risk Insurance:

The firm/Contractor shall provide risk insurance at their/his cost against loss or damages to the construction to cover from the start date to the end of the Defects Liability Period, for the following events;

- Loss of or damage to the Works, Plant and Materials
- Loss of or damage to Equipment
- Loss of or damage of property (except the Works, Plant, Materials and Equipment) in connection with the Contract and
- Personal injury or death

Policies and certificates for insurance shall be delivered by the Contractor to the Engineer for the Engineer's approval before the Start Date. All such insurance shall provide for compensation to be payable in the types and proportions of currencies required to rectify the loss or damage incurred. The contractor will not be eligible for any payment on this account.

If the Contractor does not provide any of the policies and certificates required, the Employer shall effect the insurance which the Contractor should have provided and recover the premiums the Employer has paid from payments otherwise due to the Contractor or, if no payment is due, the payment of the premiums shall be a debt due

Alterations to the terms of insurance shall not be made without the approval of the Engineer.

56.Care and Risk:

From the date of commencement to the date of completion of the work and during the period of maintenance, the contractor shall take full responsibility and care thereof for the safety of the installation connected with the works. Any damage or loss are to be made good at the risk and cost of the contractor and shall ensure conformity in every respect with the requirements of the contract. The contractor shall be liable for any damage to the works occasioned by him in the course of any operation carried out by him for the purpose of completing any outstanding work and the damage so occurred shall be rectified at the cost of the contractor.

57.Safety Provisions:

The Contractor shall be responsible for the safety of all activities on the Site.

1) Suitable scaffolds shall be provided for workers for all that cannot safely be done from the ground or from solid construction, except such short period work, as can be done safely from ladders. When a ladder is used, an extra mazdoor shall be engaged for holding the ladder and if the ladder is used for carrying materials as well, suitable footholds and handholds shall be provided on the ladder and the ladder shall be given an inclination no steeper than 1/4 to 1 (1/4 horizontal to 1 vertical). IS code for scaffolding and ladders I.S 3696 Part -I and Part II and its latest revisions is to be followed.

2) Scaffolding or staging more than 3.25 meters above the ground or floor swung or suspended from an overhead support or erection with stationary support, shall have guard rail properly attached bolted, braced and otherwise secured atleast 1 meter above the floor or platform of such scaffolding of staging and extending along the entire length of the outside and ends thereof with only such openings as may be necessary for the delivery of materials. Such scaffolding or staging shall be so fastened as to prevent it

from swaying from the building or the structure.

3) Working platform, gangways and stairways shall be so constructed that they do not sag unduly or unequally, and if height of a platform or gangways or stairway is more than 3.25 metres above ground level, it shall be closely boarded, having adequate width and be suitably fenced, as described in 2 above. Every opening in floor of a building or in a working platform shall be provided with suitable means to prevent fall of persons or materials by providing suitable fencing or railing with a minimum height of 1 meter. Safe means of access shall be provided to all working platforms and other working places. Every ladder shall be securely fixed. No portable single ladder shall be over 7 metres in length. Width between side rails in a rung ladder shall in no case be less than 30 cm, for ladders, this width shall be increased by at least 6mm for each additional 30cm length. Uniform steps spacing shall not exceed 30cm.

4) Adequate precautions shall be taken to prevent danger from electrical equipment. No material on any of the sites shall be so stocked or placed as to cause danger or inconvenience to any person or to the public. The Contractor shall provide all necessary fencing and lights to protect public from accidents and shall be bound to bear expenses of defence of every suit, action or proceedings at law that may be brought by any person for injury sustaining, owing to neglect of the above precautions and to any such suit, action or proceedings to any such person or which may with the consent of the Contractor be paid to compromise any claim by any such person.

5) All necessary personal safety equipment as considered adequate by the Engineer shall be available for use of persons employed on the site and maintained in a condition suitable for immediate use and the Contractor shall take adequate steps to ensure proper use of equipment by those concerned.

a) Workers employed on mixing asphalt materials, cement and lime mortars /concrete shall be provided with protective footwear, hand gloves and goggles.

b) Those engaged in handling any materials, which is injurious to eyes, shall be provided with protective goggles.

c) Stone breakers shall be provided with protective goggles and protective clothing.

d) When workers are employed in sewers and manholes, which are in use, the Contractor shall ensure that manhole covers are opened and manholes are ventilated at least for an hour before workers are allowed to get into them. Manholes so opened shall be cordoned-off with suitable railing and warning signals or boards provided to prevent accident to public.

e) The Contractor shall not employ men below the age of 15 and women on the work of painting with products containing lead in any form. Whenever men above the age of 18 are employed on the work of lead painting the following precautions shall be taken:

i) No paint containing lead or lead products shall be used except in the form of paste of ready-made paint.

ii) Suitable face masks shall be supplied for use by workers when paint is applied in the form of spray or a surface having lead paint dry rubbed and scraped.

iii) Overalls shall be supplied by the Contractor to workmen and adequate facilities shall be provided to enable working painters to wash during and on cessation of works.

6) When the work is done near any place where there is risk of drowning, all necessary equipment shall be provided and kept ready for use and all necessary steps shall be taken for prompt rescue of any person in danger and adequate provisions shall be made for prompt first aid treatment of all injuries likely to be sustained during the course of the work.

7) Use of hoisting machines and tacks including their attachments, anchorage and supports shall conform to the following:

- a) i) These shall be of good mechanical construction, sound material and adequate strength and free from patent defects and shall be kept in good working order.
 - ii) Every rope used in hoisting or lowering materials or as a means of suspension shall be of durable quality and adequate strength, and free from patent defects.
- b) Every crane driver or hoisting appliance operator shall be properly qualified and no person under the age of 21 years shall be in-charge of a hoisting machine, including any scaffold winch or giving signals to operator.
- c) In case of every hoisting machine and of every chain ring hook, shackle, swivel and pulley block used in hoisting machine or lowering or as means of suspension, safe working load shall be ascertained by adequate means. Every hoisting machine and all gear referred to above shall be plainly marked with safe working load. In case of hoisting machine having a variable safe working load and the conditions under which it is applicable shall be clearly indicated. No part of any machine or of any gear referred to above in this paragraph shall be loaded beyond safe working load except for the purpose of testing.
- d) In case of departmental machine, safe working load shall be notified by the Engineer. As regards Contractor's machine, the Contractor shall notify safe working load of each machine to the Engineer whenever he brings to the site of work and he shall get it verified by the Engineer.
- 8)Motors, gearing, transmission, electrical wiring and other dangerous parts or hoisting appliance shall be provided with such means so as to reduce to minimum risk and accidental descending of load; adequate precautions shall be taken to reduce to the minimum risk of any part of a suspended load becoming accidentally displaced. When workers are employed on electrical installations, which are already energized, insulating mats, wearing apparel such as gloves, sleeves and boots, as may be necessary shall be provided. Workers shall not wear any rings, watches and carry keys or other materials, which are good conductors of electricity.
- 9)All scaffolds, ladders and other safety devices mentioned or described herein shall be maintained in a safe condition and no scaffold ladder or equipment shall be altered or removed, while it is in use. Adequate washing facilities shall be provided at or near place of work.
- 10)The safety provision shall be brought to the notice of all concerned by displaying on a notice board at a prominent place at the work spot, persons responsible for ensuring compliance with the safety provision shall be named therein by the Contractor.
- 11)To ensure effective enforcement of the rules and regulations relating to safety precautions, arrangements made by the Contractor shall be open to inspection by the Engineer or his representative and the inspecting Officer.
- 12)The Contractor shall obtain prior permission of the competent authority such as Chief of Fire services for the site, manner and method of storing explosives near the site of work. All handling of explosives including storage, transport shall be carried out under the rules approved by the "Explosive Department of the Government".
- 13)The Contractor shall at his own cost provide and maintain at the sites of works, standard first aid box as directed and approved by the Engineer, for the use of his own as well as the Employer's staff on site.
- 14)Notwithstanding the above provision 1 to 15, the Contractor is not exempted from the operation of any other Act or rules in force relating to safety provisions.

58.Provision of Health and Sanitary Arrangements:

The contractor/ firm, shall provide at his/their own expenses, first aid appliances and medicines including an adequate supply of sterilized dressing and sterilized cotton wool kept in good order under the charge of a responsible person who shall be readily available during working hours.

Water of good quality fit for drinking purposes shall be provided for the work people on a scale of not less than 15 litres per head per day. Each water supply storage shall be at a distance of not less than 15 metres

from any latrine, drain or other source of pollution. Where water has to be drawn from an existing well which is within such proximity of latrine, drain or other sources of pollution, the well shall be properly chlorinated before water is drawn from it for drinking.

Adequate washing and bathing places shall be provided separately for men and women and such places shall be kept in clean and drained condition. Latrines and urinals shall be provided within the precincts of work place and the accommodation separately for each of them shall be at the rate of 2 seats upto 50 persons, 3 seats above 50 persons but not exceeding 100 persons, and 3 seats for every additional 100 persons. The contractor/firm shall employ adequate number of scavengers and conservancy staff to maintain the latrines and urinals in a clean condition.

Two sheds one for meals and the other for rest shall be provided separately for the use of men and women workers and properly maintained.

All the above amenities shall be provided at the contractor's/firm's own expenses besides providing sheds for his/their workmen.

59. Patent Rights:

The Contractor shall save harmless and indemnify the Employer from and against all claims and proceedings for or on account of infringement of any patent rights, design trademark or name or other protected rights in respect of any Contractor's Equipment, material or Plant used for or in connection with or for incorporation in the Works and from and against all damages, costs, charges and expenses whatsoever in respect thereof or in relation thereto.

60. Royalties:

Except where otherwise stated, the Contractor shall pay all seignorage and other royalties, rent and other payments or compensation, if any, for getting stone, sand, gravel, clay or other materials required for the Works.

61. Old Curiosities:

All old curiosities, relics, coins, minerals and any other item of archeological importance found at the site shall be the property of the Government and shall be handed over to the Engineer in charge for depositing to the Government exchequer. Should any structure be uncovered, the instruction of the Engineer in charge shall be provided before demolition or removal of the structure.

62. Contractor Dying, becoming Insolvent or Insane

In the event of death or insanity of the contractor, the contract may be terminated by notice in writing, pasted at the site and advertised in the issue of the local newspaper. All acceptable works shall thereafter, be paid at appropriate rates after recovering all the contractor's dues to Employer, to the persons entitled to receive and give a discharge for such payments.

In the contractor is imprisoned because insolvent compound with his creditors has a receiving order made against him or carriers on business under receiver for the benefit of the creditors of any of them or being a corporation goes into liquidation or commences to be wound up not being a voluntary winding up for the purpose only of amalgamation or reconstruction, the employer shall be at liberty.

- a) To give such liquidator, receiver or other persons in whom the contract may become vested the option of carrying out the contract or a portion thereof to be determined by the employer, subject to his providing an appropriate guarantee for the performance of such contractor.
- b) To terminate the contract forthwith by notice in writing to the contractor the liquidator, the receiver or person in whom the contract may become vested and take further actions as provided in the clause pertaining to default by contractor, treating as if this termination is ordered under the respective clause.

63. Force Majeure:

The works taken by the contractors under the contract shall be at the contractor's risk until the work is taken over by the Project Engineer. The contractor shall arrange his own insurance against fire, flood, volcanic eruption, earth quake and other convulsions of nature and all other natural calamities, risks arising out of acts of god, Acts of Terrorism, Civil disturbances, Riots during such period and that the OWSSB/Government shall not be liable for any loss or damages occasioned by or arising out of any such acts of God.

Provided however that the contractor shall not be liable for all or any loss or damages occasioned by or arising out of acts of foreign enemies, invasion, hostilities or war like operations (before or after declaration of war) rebellion military or usurped power.

64. Payment out of Public Funds:

The payments to the contractor/firm shall be made out of the funds under the control of the Employer in their public capacity and no member or officer of the Employer shall be personally responsible to the contractor/firm.

65. Bribery and Collusion:

In the event of the contractor offering or giving any official of the employer, any gift or consideration of any kind as an inducement or regard for doing, or for bearing to do, any action in relation to obtaining or in the execution of the contract or any other contract with the employer, or for showing favour to any person in relation to the contract or any other contract with the employer, or if any of the such acts shall have been done by any person employed by the contractor or acting on his behalf, either with the knowledge of the contractor or not which are all grounds for the employer to terminate the contract awarded to the contractor. Similarly, if the contractor colludes with another contractor or number of contractors whereby an agreed quotation or estimate shall be offered as a bid, that will also form the basis for the employer to terminate the contract.

66. Technical audit

It is a term of this contract that department shall have the right to carry out post payment audit and technical Audit by the Engineers of Technical audit cell (or by an approved consultant of repute). The Technical audit officer shall have the powers to inspect the work or supply running account bill, final bill and other vouchers, measurement books, test reports and other documents either during progress of work or after completion of the same and order recoveries from the contractor for recorded reasons even though the contractor might have been paid earlier. These recoveries are enforceable against the contractor from any amount due to him, from performance security or withheld amounts or any amounts due to the contractor or may become due to him from the department in any work or supply.

67. Settlement of dispute

a. Dispute Redressal Committee

In order to ensure a dispute Redressal mechanism, a committee comprising of **1.** Project Director, PMC, Bhubaneswar and **2.** Member Secretary, OWSSB, whose decision shall be final and binding to both the parties.

b. Jurisdiction of Court

In the event of non-settlement of any dispute by the Dispute Redressal Committee arising between the parties hereto in respect of any matter comprised in the contract, the same shall be settled by a competent court having jurisdiction over the place where the contract is awarded and agreement is concluded and by no other court.

68. Reservation of Right

The Employer reserves the right to accept or reject any or all the bids and to annul the entire process of bidding at any time. Under such circumstances, the Employer will neither be under any obligation to inform the bidders of the grounds for the action of the Employer nor the Employer will be responsible for any liability incurred by the bidder on this account.

VIII-SPECIAL CONDITIONS OF CONTRACT

Construction period of the contract – 12 Months

Trial run and O&M of the scheme – One Month

The Contractor shall, except as stated below, be responsible for the provision of all electricity power, water, gas, consumables, chemicals and other services he may require. During Trial run of the Works, the **Contractors shall be responsible for the provision of all water, gas, consumables, chemicals, other services and all spares and tools** not listed in Schedule of Technical Particulars but actually be required for the Works. **The electricity power cost as related to the normal operation and maintenance and trial run of the Works shall be borne by the Contractor.**

Unless otherwise stated in the Conditions of Particular Applications of the Works, monthly progress reports shall be prepared by the Contractor and submitted to the Engineer in six copies. The first report shall cover the period up to the end of the first calendar month following the commencement date of that Section. Reports shall be submitted monthly thereafter, each within 7 days after the last day of the period to which it relates.

Reporting shall continue until the Contractor has completed all works which are known to be minor outstanding at the completion dates stated in each of the Taking-Over Certificate of the Works.

Each report in trial run of the Works shall include:

- (a) Photographs showing status of each equipment, plant, civil structures at all sites of the Works;
- (b) Logs to show the maintenance record to all equipment;
- (c) Logs to show the replacements of damage and defective components of each equipment or the whole equipment of a Plant;
- (d) Logs to show the attendance records of all the operation and Maintenance staff; and
- (e) Comparisons between the recommendations from the Operation and Maintenance Manual with the actual maintenance, defective parts replacement records as described in (c) and (d) above.

1. Contractor's Operations on Site:

Upon the issue of the Taking-Over Certificate of the Works, the Contractor will be handed over the whole Works by the Employer such that the whole Work will be under possession by the Contractor. The Contractor shall be responsible for all works that are required for possession of the whole Works.

2. General Design & Obligations:

The requirements to As-Built Documents of the Works are described in Part A – General Specification of the Contract. The requirements to Operation and Maintenance Manuals of the Works are described in Part A – General Specification of the Contract.

The Contractor shall allocate his operation and maintenance staff at the Works everyday to conduct operation and maintenance work to the Works, in multiple shifts, with details as specified in the Employer's Requirement Facilities for Staff and Labour Save insofar as the Contractor may otherwise provide, the Contractor shall provide and maintain such accommodation and amenities as he may consider necessary for all his staff and labour, employed for the purposes of or in connection with

the Contract, including all fencing, water supply (both for drinking and other purposes), electricity supply, sanitation, cookhouses, fire prevention and firefighting equipment, cookers, refrigerators, furniture and other equipment in connection with such accommodation or amenities. On completion of the Contract, unless otherwise agreed with the Employer, the temporary camps/housing provided by the Contractor shall be removed and the site reinstated to its original condition, all to the approval of the Engineer.

3. Reservation of Right

The Employer reserves the right to accept or reject any or all the bids and to annul the entire process of bidding at any time. Under such circumstances, the Employer will neither be under any obligation to inform the bidders of the grounds for the action of the Employer nor the Employer will be responsible for any liability incurred by the bidder on this account.

LETTER OF NEGOTIATION

In pursuance of negotiation with the Project Engineer/ Project Director / Member Secretary of PMU /
PMC / OWSSB on

I/We agree to reduce the rates for the items in the BoQ as follows.

Sl.No.	Item No. In the BoQ	Reduced rate/unit
--------	---------------------	-------------------

Signature of Contractor

ORISSA WATER SUPPLY AND SEWERAGE BOARD

Forwarding Slip to The Lump sum Agreement No.

1. Name of Work :

Estimate Amount :

Sanctioned in Original Estimate No. :

Revised Estimate No. :

2. Name of Contractor and Address :

3. Original or Supplemental :

4. If Supplemental, Original Agreement No. :

5. Approximate value of work :
to be done under this Agreement :

6. If this is Supplemental, approximate value of works to be done under Original Agreement :

7. If bids have been called for, is the lowest tender accepted? :
If not reasons to be recorded

8. Has the contractor; signed the divisional copy of PW SPECIFICATION and Its addenda volume brought upto date. :

9. Is data furnished for all items of works noted in the Schedule :

10. Are the rates in Agreement within the estimate rates or schedule of rates whichever is less and the Lump sum provision sufficient or likely to be exceeded. :

II. Additional Information

A. Original Agreement

1. Original Agreement amount of tender excess: and percentage over the estimate rate.
2. If concessional rate of EMD & SD have :
been allowed ref. to sanction thereof

B. Supplemental Agreement

1. Whether the approval of the competent :
authority has been obtained for the rates as
required.
2. If entrusted without tenders whether sanction :
is necessary with reference to total value of
work covered by the supplemental agreement
so far accepted.



ORISSA WATER SUPPLY AND SEWERAGE BOARD

Form of Agreement (Lump sum)

Articles of Agreement made this-----

Day of -----

between M/s-----

hereinafter referred to as the contractor which expression shall where the context so admits include his heirs, executors, administrators and legal representatives of the one part and the Orissa Water Supply and Sewerage Board (hereinafter called the Employer) which expression shall where the context so admits include its successors in office and assigns) of the other part. Whereas the contractor delivered to the Employer the bid which was opened on -----

-----whereby the contractor offered and undertook to carryout the works specified under this contract and allied work, i.e. (name of work) -----

In the State of Odisha in India, and provide the works, materials, matters and things described or mentioned in these presents at the prices set forth in the schedule annexed to such bid and the contractor also undertook to do all extra and varied works which might be ordered as part of the contract on the terms provided for in the conditions and specifications hereto annexed and the Employer accepted such tender in pursuance where of the parties hereto have entered into this contract.

And whereas the contractor in accordance with the terms of the said Bid has deposited in the Office of the Member Secretary, OWSSB ----- as performance security for the due and faithful performance by the contractor of this contract, the sum of Rs. ----- (Rupees -----
-----)

And whereas the contractor fully understands that on receipt of communication of acceptance of bid from the accepting authority, there emerges a valid contract between the contractor and the Employer represented by the Officer accepting the agreement and the bid documents, i.e. invitation for bids, letter of application, bill of quantities and other schedules, general conditions of the contract, technical specifications of the bid, negotiation letter, communications of acceptance of bid, shall constitute the contract for this purpose and be the foundation off rights of both the parties, as defined in clause 8.1 of "Bid Documents "Now hereby agreed that in consideration of payment of the said sum of Rs. (Rupees) or such other sum as may be arrived at under the clause of the General conditions of the contract relating to payment by final measurement at unit prices, the contractor shall and well within the time specified in his bid thoroughly and efficiently and in a good workman like manner perform, provide, execute and do all the works, materials matters of things incidental to or necessary for the entire completion of the works specified under this contract and necessary works including all works shown in the drawings hereinafter referred to or described or set forth the said specifications and schedule hereto annexed and in accordance with such further drawings and instructions as the Engineer of the Board or other Engineer duly authorized in that behalf (therein after) and in the annexed documents referred to as the Engineer) shall at any time in accordance with the said schedule (Bill of Quantities) and specifications provide and give together, with any alterations in the works or additions thereto, in the time and manner in such schedule (Bill of Quantities) and specifications stipulated to the entire satisfaction of the Engineer, the Employer for themselves and their successors convenient and agree with the Contractor that during the progress of the works and on the completion of

contract to the satisfaction of the Engineer, the Employer shall and will from time to time on receiving the certificates in writing of the Engineer pay to the contractor according to such certificates and the terms of this contract the price or sum mentioned in such certificates as due to the contractor under the terms of this contract subject nevertheless to deductions or additions thereto or there from which may be lawfully made under terms of his contract. It is hereby mutually agreed and declared as follows.

- a) All certificates or notice or orders for items or for extra varied or altered works which are to be the subject of an extra or varied or altered works charge shall be in writing whether so described in the contract or not and unless in writing shall not be valid or binding or be of any effect whatsoever.
- b) The term contract includes these presents and the invitation for bid, bid documents, bill of quantities and other schedules, general conditions and specifications hereto annexed and the plans drawings herein and hereafter referred to.
- c) If the contractor claims that the decisions or the instructions of the Employer are unjustified and that accordingly, he is entitled to extra payments on account thereof he shall forthwith notify this to the Employer to record his decisions and reasons there for in writing and shall within two weeks state his claims in writing to the Employer thereafter. The Employer shall thereafter within four weeks of the receipt of the claim, reply to the points raised in the claim. Unless resolved by negotiation or discussions immediate thereafter, within further four weeks the question of liability for such payment will be treated as a dispute.
- d) In the contract whenever, there is as discretion or exercise of will, by the Employer during the progress of the work, the mode or manner of the exercise of discretion shall not be a matter for dispute.
- e) The decision of the Employer shall be final conclusive and binding on all, Parties to the Contract upon all questions relating to the meaning of specifications, designs, drawings and instructions, and as to the quality of workmanship or material used on the work or any matter arising out of or relating to the specifications, designs and drawings and instructions concerning the works or the erection of or failure to execute the same arising during the course of works. The above shall not be the subject matter of dispute and in no case shall the work be stopped consequent on such a dispute arising and the work shall also be carried out by the contractor strictly in accordance with the instructions of the Employer.
- f) In case any question, difference or dispute shall arise on, matters other than clauses (d) and (e) above and except any of the "excluded matters" mentioned in bid documents touching the construction of any clause herein contained on the rights, duties and liabilities of the parties hereto or any other way touching or arising out of these presents, the same shall.
- i) In the event of any dispute arising between parties here to in respect of any of the matter comprised in this contract, the same shall be settled by a competent court having jurisdiction

over the place where contract is awarded and agreement is concluded and by no other court.

- iii) Provided always the contractor shall not except with the consent in writing of the Engineer in any way, delay carrying out works in any such matter, question or dispute being referred to court but shall proceed with the works with all the diligence and shall until the decision of the Employer and no award of Competent Civil Court shall relieve the contractor of his obligations to adhere strictly to the instructions of the Engineer with regard to the actual carrying out of the works.

- g) Time shall be considered as essence of the contract and the contractor hereby agree to commence the work immediately after taking over of site or signing the agreement whichever happens earlier, complete the work within -----months and to show progress at the stipulated milestone.

In witness where of the contractor and the Employer on behalf of the Board have caused their common seal to be affixed the day and year first above written Signed, sealed and delivered by the said.

Signature of Contractor
Name and Seal.

Signed by on behalf of OWSSB.

Signature, Name and
Designation of Witness

Signed, Name and
Designation of Witness.

INDEMNITY BOND

This deed of indemnity bond executed at (place) on this Day of (month) year by and between M/s / Sri.(Name)

Widow/Wife/Son/Daughter of Sri / Smt residing at (Full Address) (here in after called "Contractor" which expression unless excluded by or repugnant to the context include his/her heirs, executors administrators and legal representatives) to and in favour of OWSSB (hereinafter called" the Engineer, which expression shall unless excluded by or repugnant to the context include its successor and assigns) represented by the Project Director of Circle/ Project Engineer of PMU shown as follows;

2. Whereas the contractor has submitted the bid for Septage treatment Plant in inDistrict - Septage Treatment Plant in in District, Odisha - Construction of Septage Treatment Plant in in District, Odisha - Construction of RCC Ramp..... , sludge receiving chamber..... screen channel..., Settling-cum-thickening tanks....., sludge wet well....., sludge drying bed with shed structure....., anaerobic battle reactor....., horizontal planted gravity filter...., polishing pond...., sludge storage shed...., leachate sump..., guard room...., lab room...., admin room...., store room...., panel room...., electrical substation.... production well...., overhead tank....., internal CC road....., RCC storm water drain...., piping works..., compound wall..., yard lightening...., electrical overhead line upto SeTP site..., washing platform..., under ground cables...., solar panel and on-grid connections...., side development and landscaping...., supply of lab equipments...., and T & P...., trial run and O & M.... . Sludge storage yard of m² area, shedding of SDB m², compound wall, yard lighting, piping work etc. complete including Trial run for one month (period of completion - 9 months)and such bid has been accepted subject to the relevant conditions to contract appended to Odisha Building Practice and other conditions issued along with bid documents.

3. And where as in pursuance of the terms of contract, that a sum equal to **two and half%** of the total value of work done have been retained with the Employer for a period of two years reckoned from the date of completion of the work in order to enable the departmental officers to watch the effect of all seasons on the work and the structural stability of the work executed by the contractor.

4. And whereas it was decided to refund the said sum equal to **two and half%** of the total value of the work done retained with the Employer on the expiry of two years period reckoned from the date of completion of work provided that the contractor execute an indemnity bond for a period of three years indemnifying the Board against any loss or expenditure incurred to rectify any defect noticed due to the faulty workmanship by the contractor or substandard material used by the contractor during the period of three years.

5. Now this deed of indemnity witness that in consideration of the contract entrusted to the contract or by the Employer, the contractor has agreed to the following terms and conditions and executed this indemnity bond in conformation of all and undertakes to comply with the terms referred to infra.

6. The contractor both hereby indemnify the Employer against any loss or damage that may be caused to the Employer in respect of rectification of any defect noticed due to the faulty workmanship by the contractor, or substandard material so used by other contractor in the execution of work entrusted to the contractor during the period of three years i.e. from up to (dates to be specified)

7. It is hereby confirmed that in all other respects, the agreement conditions will be binding between the parties.

In witness whereof Sri / Smt / Ms

Contractor has signed this deed on this day _____ of month _____ year _____.

Witness:

PERFORMANCE BANK GUARANTEE (UNCONDITIONAL)

To

**The Member Secretary,
OWSSB,
Bhubaneswar.**

----- (Name of Employer)-----
----- (Address of Employer)

WHEREAS----- (name and address of contractor) (hereinafter called" the contractor" has undertaken, in pursuance of contract No.-----Dated ----- to execute----- (name of contract and brief description of works) hereinafter called " the contract*"

AND WHEREAS it has been stipulated by you in the said contract that the contractor shall furnish you with a Bank Guarantee by a recognized bank for the sum specified therein, as security for compliance with his obligations in accordance with the contract.

AND WHEREAS the contractor has requested us to give the Bank Guarantee

AND WHEREAS we have agreed to give the contractor such a Bank Guarantee unconditionally and irrevocably to guarantee as primary obligator and not as mere surety, all the payments to the-----

NOW THEREFORE we hereby affirm that we are the Guarantor and responsible to you, on behalf of the contractor, upto a total of ----- (amount of Guarantee) -----
----- (amount in words such sum being payable in the types and proportion of currencies in Which the contract price is payable, and we undertake to pay you unconditionally and Irrevocably upon your first written demand and without cavil or argument, any sum or Sums within the limit of -----
----- (amount of Guarantee) as aforesaid Without you needing to prove or to show grounds or reasons for your demand for the Sum specified therein.

We hereby waive the necessity of your demanding the said debt from the contractor before presenting us with the demand.

We further agree that no change or addition to or other modification of the terms of the contractor or of the Works to be performed there under or of any of the contract documents which may be made between you and the contractor shall in any way release as from the liability under this guarantee and we hereby waive notice of any such change, addition or modification.

The Bank Guarantee is drawn at _____ branch of _____ bank in _____ Town in Odisha only.

This guarantee shall be valid until 28 days from the date of expiry of the defects liability period.

SIGNATURE AND SEAL OF THE GUARANTOR

Name of Bank _____

Address _____

Date _____

BID SECURITY (BANK GUARANTEE)

WHEREAS, _____ [name of Bidder] (hereinafter called "the Bidder") has submitted his Bid dated _____ [date] for the construction of _____ [name of Contract] (hereinafter called "the Bid").

KNOW ALL PEOPLE by these presents that We _____ [name of bank] of _____ having our registered office at _____ (hereinafter called "the Bank") are bound unto _____ [name of Employer] (hereinafter called "the Employer") in the sum of _____¹ for which payment well and truly to be made to the said Employer the Bank binds itself, his successors and assigns by these presents.

SEALED with the Common Seal of the said Bank this _____ day of _____ 2019.

THE CONDITIONS of this obligation are:

- 1) If after Bid opening the Bidder withdraws his bid during the period of Bid validity specified in the Form of Bid;
- or
- 2) If the Bidder having been notified of the acceptance of his bid by the Employer during the period of Bid validity:
 - (a) fails or refuses to execute the Form of Agreement in accordance with the Instructions to Bidders, if required; or
 - (b) fails or refuses to furnish the Performance Security, in accordance with the Instruction to Bidders; or
 - (c) does not accept the correction of the Bid Price pursuant to Clause 28.2;

we undertake to pay to the Employer up to the above amount upon receipt of his first written demand, without the Employer having to substantiate his demand, provided that in his demand the Employer will note that the amount claimed by him is due to him owing to the occurrence of one or any of the three conditions, specifying the occurred condition or conditions.

This Guarantee will remain in force up to and including the date _____² days after the deadline for submission of Bids as such deadline is stated in the Instructions to Bidders or as it may be extended by the Employer, notice of which extension(s) to the Bank is hereby waived. Any demand in respect of this guarantee should reach the Bank not later than the above date.

DATE _____

SIGNATURE OF THE BANK

WITNESS _____

SEAL _____

[signature, name, and address]

- 1 The Bidder should insert the amount of the guarantee in words and figures denominated in Indian Rupees. This figure should be the same as shown in Clause 16.1 of the Instructions to Bidders.
- 2 45 days after the end of the validity period of the Bid.

IX-SCOPE OF THE WORK

SCOPE OF THE WORK FOR PACKAGE-5

1. Detailed Scope of the Bid:

This is a “Procurement and Construction Contract” in which the contractor is responsible for the execution of the work including the supply and installation of all materials, machineries, equipment etc. in accordance with the specifications stipulated in the Bid Document and in conformity with the Quality Parameters laid down in the relevant BIS, CPHEEO, Bid Document etc. and completing the entire work in all respect satisfactorily and commissioning within the stipulated time period.

The detailed engineering in respect of major works have been done by Orissa water Supply & Sewerage Board (OWSSB) and the contractor is responsible for engineering of shed over the sludge drying beds, sludge temporary storage shed and other minor piping details along with execution of the work including the supply and installation of all materials, machineries, equipment etc. The agreement shall be drawn under Lump Sum contract.

Since the civil components are to be utilized for biological treatment processes, it is necessary that all the components are constructed meticulously as per design, drawings and specifications to avoid process failure due to insufficient provisions & improper construction.

The agency is advised to carefully study the detailed scope of the work along with the available drawing and design and proceed as per the direction of the Engineer-in-charge. The bidder must visit existing SeTP functioning in the state especially the 75 KLD capacity SeTP at Basuaghai, Bhubaneswar to familiarise with the nature & type of work. The general technical specifications have been provided in the bid document. In case of confusion, lack of clarity or insufficiency in the technical documentation as provided, it shall be decided by the Engineer-in-charge, who shall refer the matter to Member Secretary, OWSSB before taking any decision.

The scope involves construction of SeTPs in the following towns in Package-V:

1. Jharsuguda town of Jharsuguda District for 40 KLD capacity
2. Brajrajnagar Town of Jharsuguda District for 30 KLD capacity
3. Sundargarh Town of Sundargarh District for 20 KLD capacity
4. Belpahar Town of Jharsuguda District for 10 KLD capacity

2. General Scope :

- i. The successful bidder will prepare the layout plan and structural drawings for construction which will be approved by the OWSSB before execution begins at site.
- ii. The executing agency will carry out site investigation such as soil exploration by SPT and determine bearing capacity of soil for foundation design.
- iii. The foundation type, depth and site provided in the scope is tentative. It will be finalized only after soil bearing capacity (SBC) is determined. Required foundation as per site condition shall be designed and provided.
- iv. There is no extra cost for preparation of structural designs & drawings. There will be no extra cost if foundation design as per site is different from the one given in the scope of the bid documents,
- v. The agency will carry out the design of steel structural truss and support structures for sludge drying bed shed and sludge storage shed.
- vi. There is no extra cost towards site survey and inspection.
- vii. GA Drawings

3. Detailed Scope:

The detailed scope of work for each components of the SeTP are described below:

Table No.-1: Dimensions of Components of SeTP are given in the table below

SI No.	Component	40 KLD	30 KLD	20 KLD	10 KLD
1	RCC Ramp	1 no.*30.0m*3.5m	1 no.*30.0m*3.5m	1 no.*30.0m*3.5m	1 no.*30.0m*3.5m
2	Sludge Receiving Chamber	1 no.*1.50m*1.50m*1.50m	1 no.*1.50m*1.50m*1.50m	1 no.*1.50m*1.50m*1.50m	1 no.*1.50m*1.50m*1.50m
3	Screen Channel	2 nos.*1.5m*0.6m*0.6m	2 nos.*1.5m*0.6m*0.6m	2 nos.*1.5m*0.6m*0.6m	2 nos.*1.5m*0.6m*0.6m
4	Settler cum Thickener	2*10.2m*2.0m*2.15m	2*8.4m*1.8m*2.05m	2*7.2m*1.5m*1.7m	2*4.80m*1.20*1.7m
5	Sludge Wet Well	1 no*2.0m (dia.)	1 no*2.0m (dia.)	1 no*2.0m (dia.)	1 no*2.0m(dia.)
6	Sludge Drying Bed	8 nos.*10m*4.0m	8 nos.*10.0m*3.0m	8 nos.*6.0m*4.0m	4 nos.*6.0m*4.0m
7	Anaerobic Baffle Reactor(ABR)				
7(a)	Settler	2 nos.*2.2m*4.0*2.0m	1 no.*2.7m*3.0m*2.0m	1 no.*2.5m*2.5m*1.75m	1 no.*1.6m*2.0m*1.75m
7(b)	ABR	5 nos.*1.10m*4.0m*2.0m	4 nos.*1.10m*3.0m*2.0m	5 nos.*0.9m*2.5m*1.75m	4 nos.*0.9m*2.0m*1.75m
7(c)	Anaerobic Filters	2 nos.*2.0m*4.0m*2.0m	2 nos.*2.0m*3.0m*2.0m	2 nos.*2.5m*2.5m*1.75m	2 nos.*2.0m*2.0m*1.75m
8	Planted Gravel Filter (PGF)	1 no.*3.0m*3.0m	2 nos.*21.0m*13.5m	2 nos.*20.0m*9.0m	2 nos.*20.0m*4.5m
9	Polishing Pond	1 no.*6.0m*4.0m	1 no.*6.0m*6.0m	1 no.*5.0m*5.0m	1 no.*4.0m*3.0m
10	Sludge Storage Shed	1 no.*6.0m*4.0m	1 no.*30 m x 7 m	1 no.*30 m x 7 m	1 no.*30 m x 7 m
11	Leachate Sump	1 no.*3.0m(dia.)*4.0m(depth)	1 no.*3.0m(dia.)*4.0m(depth)	1 no.*3.0m(dia.)*4.0m(depth)	1 no.*3.0m(dia.)*4.0m(depth)
12	Guard Room	1 no.*3.0m*4.0m	1 no.*3.0m*3.0m	1 no.*3.0m*3.0m	1 no.*3.0m*3.0m
13	Lab Room	1 no.*3.0m*3.0m	1 no.*6.0m*4.0m	1 no.*6.0m*4.0m	1 no.*6.0m*4.0m
14	Admin Room	1 no.*6.0m*4.0m	1 no.*6.0m*4.0m	1 no.*6.0m*4.0m	1 no.*6.0m*4.0m
15	Store Room	1 no.*6.0m*4.0m	1 no.*4.0m*4.0m	1 no.*4.0m*4.0m	1 no.*4.0m*4.0m
16	Panel Room	1 no.*4.0m*4.0m	1 no.*3.0m*4.0m	1 no.*3.0m*4.0m	1 no.*3.0m*4.0m
17	Electrical Substation	1 no.*3.0m*4.0m	25KVA	25KVA	25KVA
18	Production Well (Depth)	1 no.*100m	1 no.*100m	1 no.*100m	1 no.*100m
19	Overhead Tank (Capacity)	1 no.*5000 litre	1 no.*5000 litre	1 no.*5000 litre	1 no.*5000 litre
20	Internal Road	600 m	600 m	500 m	500 m
21	Compound Wall	Table 2	Table 2	Table 2	Table 2
22	Provision of 11 KV Overhead Line upto SeTP Sub-Station	Table-4	Table-4	Table-4	Table-4
23	Storm Water Drain	400 m	400 m	300 m	300 m

N.B.:

- For Sl. No. 2 to 11 in table no.-1, all dimensions for length, breadth & depth are internal only.
- Length of compound wall shall vary for each site as per perimeter of land available. See Table No.-2 for length of compound wall of each site of the package.
- Different pump sets with appropriate connect to panel is required at different locations. See Table No.-3 for location, capacity and quantity

Table No.-2: Compound Wall (Ref Sl. No 21 of Table No. -1)

Sl. No.	Name of Town	Length of Compound wall
1.	Jharsuguda	875 m
2.	Brajrajnagar	783 m
3.	Sundargarh	542 m
4.	Belpahar	686 m

Table No.-3: List of Pumps (Submersible Type)

Sl No.	Location of installation	Quantity	Capacity	Remarks
A	Sludge Wet Well	2 nos	1.5 kW	1 active and 1 standby
B	Production Well	1 no	1.5 kW	1 active
C	Leachate Sump	2 nos	1 kW	1 active and 1 standby
D	Polishing Pond			
i	Aeration Pump	1 nos	0.5 kW	1 active
ii	Discharge Pump	2 nos	1.5 kW	1 active and 1 standby

Table No.-4: Provision of 11 KV Overhead Line upto SeTP Sub-Station (Ref Sl. No 22 of Table No. -1)

Sl. No.	Name of Town	Length of 11 KV Overhead Line upto SeTP Sub-Station
1.	Jharsuguda	800 m
2.	Brajrajnagar	100 m
3.	Sundargarh	700 m
4.	Belpahar	100 m

A. RCC RAMP:

- Depending on the ground profile, a ramp of approved size of RCC M-25 shall be constructed to a height so that delivery of septage from the cesspool vehicles to the sludge receiving inlet chamber can be done by gravity.
- The ramp should be located by one the side of the sludge receiving chamber along the direction of flow.
- The ramp shall be built of RCC M-25 grade of concrete consisting of RCC slab of 0.15 m thickness supported by RCC walls of 0.20m thickness with footings as required. Depth of the foundation for walls is 1.0 m below GL.
- The approach slope shall be 1:7 along the ramp axis on both sides.
- The length of the flat portion of the ramp should be at least 8.0 metres and total length including slope on both sides shall not be less than 30 metres.
- The height of ramp shall be minimum 1.6 m from finished ground level so that cesspool vehicles can discharge by gravity to the sludge receiving chamber. The width of the ramp shall be at least 3.5 metres.
- Parapet walls shall be provided on both sides of the ramp for safety purposes to a height of 1.0 m.
- The inside of ramp shall be filled and compacted properly with sand to prevent settlement under loading. The flat portion of ramp shall be supported at both ends and also at the mid span by RCC walls of 0.2m thickness.

B. SLUDGE RECEIVING CHAMBER & SCREEN CHANNEL:

- The screen channel shall be preceded by one septage receiving chamber of RCC M-25 grade.

- ii. The floor of sludge receiving chamber will be approx. 1.2 m from the finished ground level (depending on site requirement) in order to provide required hydraulic head for flow to the settling cum thickening tank, anaerobic baffle reactor & polishing pond by gravity.
- iii. The sludge receiving chamber along with the screen channel shall be supported by columns of appropriate dimension as per the approved drawing.
- iv. In the column foundation, sand filling of 0.15 m thickness and PCC (1:3:6) of 0.1 m thickness shall be provided. A RCC raft of 0.3 m thickness shall also form the foundation for the columns supporting sludge receiving chamber & screen channel.
- v. The sludge receiving chamber shall be neatly plastered both outside & inside over the RCC work with punning inside. The plaster shall be 6 mm thick cement plaster (1:4) to RCC surfaces finished smooth and applied over the RCC surface after filling up any honeycomb that might exist.
- vi. The inside surface of sludge receiving chamber shall be painted with epoxy paint to minimise seepage of water and prevent corrosion of the reinforcement.
- vii. Two coats of wall painting with weather coat of approved shade on outside portion with primer one coat of approved make/brand or as per the directions of engineer-in-charge shall be applied.
- viii. The sludge receiving chamber shall contain a flexible pipe with coupling of HDPE material or any other durable material cast at 1.0 m above the sludge receiving chamber floor for a length of about 4 m suitable for coupling with the cesspool emptier discharge pipe at the time of delivery of septage into the chamber.
- ix. The septage receiving chamber shall be provided with a MS/GI screen basket of removable type.
- x. One screen channel of same depth as that of the sludge receiving chamber with open top shall be constructed of appropriate length (minimum length is 3.0 m which may vary upto 4.5 m) depending upon the location of the settler-cum-thickener and receiving chamber in the plant layout plan.
- xi. Walkway of 1.0 m wide in RCC M-25 shall be provided on both sides of screen channel and receiving chamber with chequered tiles over the surface.
- xii. The screen channel shall run up to the settling-cum-thickening tank and will be bifurcated into two header channels along the width of the tank.
- xiii. The screen channel shall be neatly plastered both outside & inside over the RCC work with punning on all surfaces. The plaster shall be 6 mm thick cement plaster (1:4) to RCC surfaces finished smooth and applied over the RCC surface after filling up any honeycomb that might exist after casting.
- xiv. The inside portion of screen channel shall be painted with epoxy painting.
- xv. Wall painting 2 coats with weather coat of approved shade on outside portion with priming one coat of approved make/brand or as per the directions of engineer-in-charge shall be applied.
- xvi. The screen channel shall be provided with two nos. of 25 mm bar screen, vertically placed inside the channel having sufficient recess on the side walls for placement and removal of the screen.
- xvii. The screens shall be of removable type and shall be **made of SS 304**.
- xviii. The height and width of the screen shall be 1.00 m and 0.60 m respectively. The width of the screen channel is 0.60m.
- xix. The thickness of the bar shall not be less than 10 mm built into a SS frame of 1.00 m height and 0.75 m width +25 mm. Two such screens shall be provided.
- xx. The required T&P shall be supplied by the agency for removal of solid waste from the septage receiving chamber along with wheel barrow for its transport to stowage before final disposal during one month of O&M and trial run. These T&Ps will not be returned to the Agency.
- xxi. Stainless steel of 304 grade hand railing using 50mm dia. of 2mm thick circular pipe with Balustrade of size 32mm x 32mm x 2mm @ 0.90mtr. C/C and stainless square pipe bracing of size 32 mm x 32 mm x 2 mm in 3 rows shall be provided as per the requirement at site on the perimeter of the 1 m wide walkway on the sides of screen channel.
- xxii. Any other minor items (pipes, valves, sundry items) that are essentially required shall be taken up by the agency as per the direction of the Engineer-in-charge.

C. SETTLER-CUM-THICKENER:

- a. The settling-cum-thickening tank shall be built as twin semi underground tanks of M25 grade RCC. The tanks shall have a common wall of 0.25 m thickness.
- b. Outer RCC walls shall have 0.25 m average thickness , base of the wall having a thickness of 0.3 m and top with a thickness of 0.2 m. The outside of the wall shall be tapered towards the top.
- c. In the foundation for walls, sand filling of 0.15 m thickness and PCC (1:3:6) of 0.1 m thickness shall be provided. A RCC raft of 0.3 m thickness and 0.6 m wide shall also form the foundation. The foundation shall be built on firm surface not less than 1.0 m below GL.
- d. Each tank shall contain two baffles at specified locations. One baffle is to be provided at the entrance end and other at the outlet end of the tank. The baffle shall be of 0.15 m thickness and 1.0 m depth from the top of the wall. Baffles are to be placed at 1 m from short walls across the flow for scum control.
- e. One sludge pit shall be provided at 1/3rd of the length from the inlet wall of the tank as per drawing. The size of the pit shall be 1.0 m x 1.0 m x 0.60 m. The sludge pit location of the two tanks will be staggered for laying sludge pipe below the tank bottom.
- f. The hopper portion of the tank shall be built underground and the wall shall be built semi underground. The tank bottom shall be sloped towards the pit. The slope shall be steeper at about 2 m from the edge of the pit @ 1:4 from the outlet end.
- g. The tanks shall be provided with an outlet launder / channel of 0.60 m wide, 0.1 m deep and 1 m long (RCC box type). Two RCC channels of 0.4m wide and 0.3 m deep shall be extended up to the inlets of two anaerobic baffled reactor tanks for the supernatant to flow by gravity. It shall be provided with two D.I. knife gate valves/ penstock gates to adjust flow to the ABRs.
- h. The settler tanks shall be provided with 1 m wide walkway along the perimeter of the outer wall towards outside for operation and maintenance purpose. Stainless steel of 304 grade hand railing using 50mm dia of 2mm thick circular pipe with balustrade of size 32mm x 32mm x 2mm @ 0.90mtr. C/C and stainless square pipe bracing of size 32 mm x 32 mm x 2 mm in 3 rows shall be provided. A SS 304 ladder with tread of 0.25 m and rise of 0.15 m shall be provided for access to settling-cum-thickening tank.
- i. Chequered tiles on 25mm. thick bed of CM (1:1) jointed with cement slurry shall be provided on the walkway. The walkway shall be extended from settler to the roof of the ABRs.
- j. Two sludge draw off pipes of 150 mm size and of DI/HDPE make shall be provided at the pit as and laid at the bottom of settling-cum-thickening tanks connecting to sludge wet well. Each pipe shall be fitted with a knife edge valve / sluice valve ahead of wet well with proper fixing of the pipe with the pit wall to avoid displacement and leakage. The sludge wet well is to be constructed on the side of the settling-cum-thickening tank.
- k. Freeboard in Settler cum Thickening tank is 0.4 m.

D. SLUDGE DRYING BEDS WITH SHEDDING STRUCTURE:

1) SLUDGE DRYING BEDS:

- i. The sludge drying beds (SDB) shall be in the form of a battery of required no of beds as per the approved layout plan with common wall in between.
- ii. The foundation work shall be of 0.15 m thickness for sand filling & PCC (1:3:6) of 0.10 m thickness. The depth of foundation is minimum 1.0 m below GL.
- iii. The walls of the SDBs shall be of RCC M25 grade of 0.20 m thickness.
- iv. The under drainage shall be one main drain for each bed and laterals @ 1.0 m interval.
- v. The main drain size is 200 mm (W) x 250 mm (D) minimum in fly ash brick in CM 1:4.
- vi. The lateral drains shall be connected to main longitudinal drain on the floor for leachate collection. The lateral drain size is 100 mm (W) x 100 mm (D).

- vii. The size of RCC connection chambers shall be 1.0 m x 1.0 m. Connection chamber will be provided @ 7.5 m c/c and also at change of direction. They will be connected with 200 mm diameter HDPE pipes up to leachate sump for flow by gravity. The pipe slope is 1 in 100.
- viii. Bed slope of 10% shall be provided in the laterals.
- ix. The slope of main drain shall be 1 in 100.
- x. The floor shall be constructed in fly ash brick on edge flooring in CM (1:8). The brick size is 230mmx110mmx75 mm.
- xi. Perforated slabs of size 1000 mm x 1000 mm x 100 mm shall be provided on top of drains for supporting the gravel layer. The size of perforations is 20-25 mm.
- xii. 12 mm thick cement plaster (1:6) over brick work including cement punning shall be provided.
- xiii. Sand bed of 0.15m thickness with UC less than 4 shall be provided as top layer on the sludge drying bed. Below the sand bed, gravel shall be placed in 2 layers.
- xiv. The bottom most layer shall be gravel of 20-40 mm size and above this, the gravel size shall be 6 to 12 mm. The thickness of two layer of gravel bed at the side wall is 0.3m and increasing towards the center of the bed.
- xv. The beds shall be provided with a plastic wire hexagonal mesh or metal wire mesh coated with plastic of durable type to protect sand bed from being removed with the dried sludge.
- xvi. RCC collection chambers shall be constructed as per site and directions of Engineer in charge. The chambers shall project 0.3m above FGL with RCC cover slab and RCC cover ring.
- xvii. The freeboard above the sand surface shall be at least 0.5 m. The height of sludge drying beds shall be 0.6m above FGL.
- xviii. MS Splash plate of size 1.0 m x 0.6 m shall be fixed to the walls through brackets which can be removed during maintenance. A gate valve provided in the pumping pipe line in each bed shall control of inflow of sludge on the splash plate.
- xix. The splash plate shall be affixed to the wall of the bed and the gap between the valve opening and splash plate shall be 25 mm.
- xx. All piping to the SDB shall be 200 mm size and of HDPE / DI material.
- xxi. All valves shall be of DI make.
- xxii. Wall painting 2 coats with weather coat of approved shade with priming one coat of approved make/brand or as per the directions of engineer-in-charge shall be applied.
- xxiii. Crusher broken hard granite metals may be used if gravel is not available within 15 km of the ULB with approval by Engineer-in-charge.

2) SHED STRUCTURE:

- i. 50% of the sludge drying beds shall be provided with a movable cover with a roof to protect them from rain to avoid rewetting of the drying sludge. The shed should extend at least 0.3 m away from the outer walls to prevent rain water entering the beds.
- ii. The roof structure shall be of MS truss and movable i.e. sliding on wheels over two rails along the lengths of the drying beds. Sliding should be possible by pushing manually. The two rails shall be fixed over the RCC walls. The MS truss, rails and rollers shall be designed by the Agency.
- iii. The truss shall be fixed with GCI sheets (preferably TATA dura shine). The truss shed shall be sloped to both sides of the bed to drain the rain water away from drying beds.
- iv. The MS struss shall be made from angle and channel section duly welded & designed to withstand all loads including wind loads for the area.
- v. Arrangements shall be made for Fitting & Fixing of Ridges & Wind Ties to fix / lock the moving roof over a particular bed during the storm so that they are not displaced by strong winds.
- vi. The painting of truss structure shall be done with painting of two coats of enamel paint over a coat of Primer.

E. HYBRID ANAEROBIC BAFFLED REACTOR:

- i. The baffled tanks shall be constructed with M25 grade RCC. It shall be constructed in two parallel trains with a central wall with RCC top.
- ii. For foundation, sand filling of 0.15 m followed by PCC of 0.1 m shall be constructed with a raft/base slab of RCC of 0.25 m thickness.
- iii. This ABR shall have one settler tank and several baffled tanks followed by two anaerobic filters as per the dimensions given.
- iv. The ABRs are provided with a 1 m x 1 m inlet box at entrance. The depth of the inlet box is 0.2m.
- v. Shafts shall be provided for flow distribution at the floor level from chamber to chamber. The intermediate partition walls shall be of RCC and at least 125 mm thick. The ports shall be of 0.15 m dia. Circular with 0.3 m spacing. The top of the ports shall be 0.30 m below the water surface.
- vi. The baffle wall of the shaft shall be 0.3 m from the partition wall. The bottom clearance of the baffle wall is 0.2 m to allow flow from the preceding chamber to flow up to the next chamber. The thickness of the baffle wall shall be 75 mm.
- vii. The last two chambers are anaerobic filters where RCC perforated bottom slab is placed above 500 mm from the floor of the chamber. The slab is perforated with 25 mm diameter holes. Holes shall be at least 50% of the surface area of the slab. In order to retain the strength of the slab, 25 mm size PVC pipes are inserted during casting of the slab. The slab shall be at least 0.090 m thick with HYSD steel of diameter no less than 8 mm. The slabs shall rest on 0.20 m deep beams laid along the length of the chamber to support the perforated slabs. These slabs shall be of removable type for maintenance.
- viii. The filter material for the anaerobic filter shall be light weight cinder (which is light in weight) or plastic of high surface area. The sizes shall be less than 0.15 m in diameter. The top of the filter medium shall be 0.30 m below the water level in the tank. The cinder / plastic shall be placed inside plastic wire mesh bags with appropriate strength so that it can be lifted easily for cleaning and other maintenance. The settled sludge below the perforated slab is to be cleaned by suction of cesspool truck through the access manholes provided on the roof of the shaft.
- ix. The ABR shall be provided with a 1.0m x 1.0m outlet chamber and 0.2m deep. From the outlet chamber a 200 mm dia. HDPE pipe shall convey the flow to the horizontal planted gravity filter (constructed wetland). Adequate drop of 0.15 m shall be provided from inlet to outlet of the ABR.
- x. Size of manhole: 600 mm x 600 mm. All reactors compartments shall have one manhole each for sludge removal. In case of anaerobic filters, two manholes in each tank shall be provided. A manhole shall also be provided on the shaft of the anaerobic filters for drawing of sludge by suction vehicles.
- xi. Adequate ventilation of all the compartments through piping shall be provided at the top of the roof.
- xii. The freeboard in hybrid ABR is 0.25 m.

F. PLANTED GRAVEL FILTERS (HORIZONTAL):

- i. The PGF shall be in two treatment trains in parallel with a common wall to facilitate alternate loading and unloading of one while the other one is under the maintenance.
- ii. The foundation work shall be of 0.15 m thickness for sand filling & PCC (1:3:6) of 0.10 m thickness.
- iii. The walls of the PGF shall be constructed of RCC M-25 grade.
- iv. The walls will be 150 mm thick.
- v. The floor of the PGF will be of 100mm thick RCC M25 over a layer of 100 mm thick PCC (1:3:6) and 150 mm thick sand well watered and rammed.
- vi. The floor will have a slope 1 in 100 along the flow direction.
- vii. The inlet side of the PGF shall be provided with a channel made of RCC fixed with the side wall of the PGF for the full width.
- viii. The width of the channel shall be 300 mm and depth 0.15 m.

- ix. The channel shall have 25 mm slot opening @0.3m spacing at the channel floor for the entire channel length for even distribution of flow to the wetland.
- x. The slot shall be made perfectly horizontal to have uniform flow.
- xi. The slot shall be between 10 cm above the top surface of the gravel bed.
- xii. A freeboard of 0.25 m above the gravel bed shall be provided. The outer walls of the PGF should be extended 0.25 m above the FGL for preventing storm water entering the planted gravity filter.
- xiii. Each PGF shall be provided with two RCC cross walls with same reinforcement as that provided in the outer walls at the mid-length. The first wall is at mid-length and the second wall is at 1.5m downstream of the 1st wall. These walls shall be for the entire width of the PGF. The height of the 1st wall is same as the side walls. Opening/slots shall be provided on the wall at the floor level. The size of the opening is 100 mm diameter and spacing is 0.6m in one row. The height of the downstream second wall is only 0.3m without any slots/opening at the floor level.
- xiv. The ground outside the PGF shall be levelled and compacted.
- xv. First 1.50 meter and last 1.50 meter along the flow of the planted gravity filter shall be filled up with 40 to 50 mm size gravel for a thickness of average 0.80m.
- xvi. From the end, before the last 1.5 m gravel bed, sand bed shall be provided with 0.1-4 mm coarse sand for a thickness of 0.90 m. The length of the sand bed shall be 3.0m.
- xvii. The 1.5 m wide between the two intermediate walls described above are filled with 40 mm to 50 mm size gravel. The rest of the PGF gap will be filled with 8mm -16 mm gravel.
- xviii. Two outlet chambers, one for each PGF train shall be provided. The size is 1.0 mx1.0 m. The chamber will project 0.3m above FGL.
- xix. In each outlet chamber, a flexible pipe shall be attached to the tee pipe through leak proof connection to adjust the PGF water level and flow in the outlet channel according to the hydraulic conductivity of filter media in planted gravity filter.
- xx. Water level at 100-150 mm below the gravel surface shall be maintained.
- xxi. Perforated pipe of 200 mm diameter HDPE shall be laid at the floor along the entire width of planted gravity filter surrounded by 40-50 mm size gravel at end of planted gravity filter for collection of treated effluent. A TEE pipe of 100 mm dia. connection shall be made up to the outlet box. The perforations shall be slots of 6 mm long and 2 mm wide or round holes, staggered and covering 50% of the pipe surface area.
- xxii. No large trees shall be grown near the wetland as its root may penetrate the wall or the floor and the fallen leaves shall clog the filter bed surface.
- xxiii. For plantation purpose, two bunches of plants or sprouted rhizomes shall be provided during initial stage
- xxiv. The plants like *Phragmites australis*, *typha angustifolia*, and *canna lily* shall be suitable for the purpose.
- xxv. A combination of all these plants shall be done with proper spacing for beautification of the filter bed area.
- xxvi. The two outlet chambers shall be connected by a gravity channel and the common outlet channel shall be laid up to the polishing pond. Flow measurements will be done at the channels. The inlet to the pond will be through a pipe.
- xxvii. In case gravel is not available within 15 km of the ULB, crusher broken hard granite metals may be used with approval by the Engineer-in-Charge.

G. POLISHING POND:

- i. The foundation work shall be of 0.15 m thickness for sand filling & PCC (1:3:6) of 0.10 m thickness.
- ii. The pond shall be of rectangular size as per the dimensions specified in the drawings.
- iii. The pond side wall shall be vertical.
- iv. The pond walls shall be made by RCC M-25 grade of 0.30 m thickness.
- v. The bottom of the pond shall be natural soil, cleaned, weed free and filled with 150 mm sand.
- vi. The depth of the water level in pond shall not exceed 1.0 m.

- vii. The required gradient between the planted gravity filter and the pond shall be created in order to have adequate driving head.
- viii. Adequate slope is to be provided in the outlet channel from the PGF up to the polishing pond. A drop of 0.15 m shall be provided from the PGF outlet to pond inlet.
- ix. An aeration arrangement shall be provided at the center of the pond through a vertical column and cascading steps in RCC M-25.
- x. A series of circular steps of RCC M-25 grade of increasing diameter from top to bottom supported on a RCC column is to be provided as per the following dimensions (minimum no. of steps shall be 4).
 - a. 1st Step – 1.5 m (Diameter) x 0.10 m (Thickness)
 - b. 2nd Step – 1.2 m (Diameter) x 0.075 m (Thickness)
 - c. 3rd Step – 0.9 m (Diameter) x 0.075 m (Thickness)
 - d. 4th Step – 0.6 m (Diameter) x 0.075 m (Thickness)
- xi. An aeration column of RCC M-25 grade of minimum height of 3.0 m (excluding foundation) and 0.3 m diameter shall be fixed for cascading flow and eventual aeration of the effluent. The top aeration step of 0.6 m dia. shall be 0.5 m above FGL.
- xii. The RCC steps and the RCC column shall be fixed with mosaic tiles as per the directions of Engineer-in-charge to provide aesthetic look.
- xiii. Ceramic wall tiles shall be fixed on the wall of the pond of approved brand and colour per directions of Engineer-in-charge.
- xiv. A SS hand rail of Stainless steel of 304 grade in hand railing using 50mm dia of 2mm thick circular pipe with Balustrade of size 32mm x 32mm x 2mm @ 0.90mtr. C/C and stainless square pipe bracing of size 32 mm x 32 mm x 2 mm in 3 rows shall be provided all around the perimeter of the pond for safety purpose. Paver blocks/tiles shall be provided all around the pond perimeter next to hand rail for a width of 0.6 m as per the directions of Engineer-in-Charge for stability & aesthetics.
- xv. The RCC M-25 grade of 0.30 m width wall of the pond shall extend 0.25 m above the FGL.
- xvi. One recirculation Pump Set (0.5 KW) with Pipe Arrangement and Electrical Fixings, Fittings and starter panel all complete shall be provided for cascade in the pond.
- xvii. Two discharge pump sets of 2 .0 KW each (1 Working & 1 Standby) with Pipe Arrangement and Electrical Fixings, Fittings and starter panel all complete shall be provided for discharge of the treated effluent for gardening purposes or as per the instruction of Engineer-in-Charge.
- xviii. The pipe size shall not be less than 100 mm.
- xix. The pump control panel shall be placed in the panel room separately built for the purpose of operation of all pumps installed in septage treatment plant.
- xx. Underground cabling with required electrical specification conforming to the technical specifications as provided in the bid document, shall be provided.
- xxi. The length of cabling shall be decided as per the direction of the engineer-in-charge keeping in mind that the cable routes is not taken in garden area, pavements or in vicinity of structures.
- xxii. Adequate safety measures shall be adopted while of the cables and the cable trenches shall be marked with an over ground marker protruding from the surface indicating the alignment of the cable.

H. LEACHATE SUMP:

- i. One leachate sump of 3.0 m dia. and 4.0 m deep of M-25 RCC with top RCC cover shall be provided along with pumping arrangement to pump out leachate from sludge drying bed to the ABR inlet.
- ii. The foundation work shall be of 0.15 m thickness for sand filling & PCC (1:3:6) of 0.10 m thickness.
- iii. The grade of concrete shall be M25. Minimum reinforcement required as per the design requirement shall be provided. The wall thickness of wet well is 0.3 m. The raft thickness at bottom is minimum 0.3 m.
- iv. The top of the leachate sump shall be 0.3 m above FGL.
- v. The plastering shall be 6 mm thick cement plaster in CM (1:4) with punning to RCC surfaces.
- vi. The sump shall be kept 0.3 m above finished ground level.
- vii. Required rungs / steps with plastic cover shall be provided in the sump wall for access @ 150 mm c/c.

- viii. Two submersible sludge pump sets of 7.5 KW each (one working and one standby) shall be installed with one working & one as standby. Capacity of each pump is 1 HP.
- ix. Delivery pipe shall be 40 mm dia. PVC laid till the inlet of the ABR. A full way valve shall be provided.
- x. The pump control panel shall be placed in the panel room separately built for the purpose of operation of all pumps installed in septage treatment plant.
- xi. Underground cabling with required electrical specification confirming to the technical specifications as provided in the bid document, shall be provided.
- xii. The length of cabling shall be decided as per the direction of the engineer-in-charge keeping in mind that the cable routes is not taken in garden area, pavements or in vicinity of structures.
- xiii. Adequate safety measures shall be adopted while of the cables and the cable trenches shall be marked with an over ground marker protruding from the surface indicating the alignment of the cable

I. SLUDGE WET WELL & SLUDGE PUMPING:

- i. One RCC sludge wet well in M-25 shall be provided adjacent to settling cum thickening tank. Two DI/HDPE pipes from the sludge pits of twin settling cum thickening tank will be connected to the sludge wet well. The two pipes shall each have gate valves fitted for operational purposes.
- ii. The diameter of the wet well is 2.0 m with wall thickness of 0.3 m. Depth of wet well below the invert of the incoming sludge draw off pipe is 2.0 m, height above the FGL is 0.3 m. The bottom RCC raft is 0.3 m thick, provided with access rungs. Top is covered with removable RCC slab.
- iii. Two submersible sludge pump sets of 7.5 KW each (one working and one standby) will be supplied and installed as per duly approved by the directions of Engineer-in-charge.
- iv. A common header/pumping pipe of 150 diameter DI/HDPE pipe shall be laid from the wet well to the sludge drying bed where the distribution pipes shall be laid.
- v. The pipe size shall not be less than 100 mm.
- vi. The pump control panel shall be placed in the panel room separately built for the purpose of operation of all pumps installed in septage treatment plant.
- vii. Underground cabling with required electrical specification confirming to the technical specifications as provided in the bid document, shall be provided.
- viii. The length of cabling shall be decided as per the direction of the engineer-in-charge keeping in mind that the cable routes is not taken in garden area, pavements or in vicinity of structures.
- ix. Adequate safety measures shall be adopted while of the cables and the cable trenches shall be marked with an over ground marker protruding from the surface indicating the alignment of the cable.

J. OPEN SHED FOR SLUDGE STORAGE:

- i. Area requirement for open shed for sludge storage before transfer to compost plant: 210 m².
- ii. The size of the shed should preferably be 7.0 m x 30 m having AS flooring as per PWD specification.
- iii. The maximum height of the shed at the apex shall not be more than 8 meters.
- iv. The roof may be of gable type supported on a column structure.
- v. The columns shall be of RCC M25 grade with minimum lateral dimension of 250 mm x 300 mm or as approved by the Engineer-in-Charge.
- vi. The columns shall be designed with steel beams of appropriate size as bracing at the bearing level.
- vii. The gable roof truss shall be designed as per the standard by the agency and to be approved by the Engineer-in-Charge before execution.
- viii. Non-corrosive metal sheets shall be provided on the roof truss and adequately extended into the soffit for better draining of storm water.
- ix. The spacing between adjacent columns shall not be less than 5 m. only two columns shall be provided on the width of the shed, i.e. the span of the gable truss.
- x. Three sides of the shed, except the entrance side, shall be provided with a 1.2 m height brick wall (250 mm).

- xi. The floor shall be built as A.S flooring with punning built over a well compacted base of 0.15 m sand and 0.1 m P.C.C (1:3:6).
- xii. The floor level shall be kept at least 300 mm above the FGL with gentle sloping outside for ease of vehicle entry etc.
- xiii. The truss and roof shall be painted with protective painting of two coats of anti-corrosive paint over a coat of primer of approved quality by the Engineer-in-charge.
- xiv. The approach to the shed shall be made of concrete pavement of width not less than 3.5 m.
- xv. **The design of truss and supporting columns shall be made by the Agency.**

K. INTERNAL CEMENT CONCRETE ROAD & RCC STORM WATER DRAIN.

- i. Cement concrete road (on cutting & filling as per site condition) inside plant shall be provided.
- ii. Sub base shall be filled with 0.30 m sand, compacted, CC 1:3:6 of 0.15 m thick with metal size 40 mm, wearing coat of CC M25 of 0.10m thickness.
- iii. The minimum width shall be 3.5 m. The length of road shall be as per the actual length as per the approved layout plan. **In the curve portion, width of the road shall be increased to 4.0 m to accomodate plying of cesspool trucks.**
- iv. **RCC M-20 drains shall be constructed on one side of the internal roads with slope for discharge of the storm water at the outlet ppint as per site condition. The width of drain is 0.4 m, depth varying from 0.3 m to 0.9 m towards the outlet. Bed slope is 1 in 500. Wall and bed thickenss is 0.15 m. The length of the drain shall be as per site layout & disposal/outlet point.**

L. CONSTRUCTION OF WATER PRODUCTION WELL:

- i. One 200 mm x 150 mm size (if hard rock strata) or 200mm dia. size through out (if alluvial soil strata) **depending on the ground strata** production well shall be constructed in for a depth of 100 meters in the premises of the SeTP plant.
- ii. The location should be decided by the Engineer-in-charge.
- iii. In soft strata, the entire formation shall be cased with suitable casing pipe designed for higher depths (ASTM standard pipes)along with strainer at aquifer zones.
- iv. The PVC strainer of size equal to that of the casing shall be provided and the bore shall be developed using a compressor.
- v. The well shall be sealed against saline intrusion in saline affected areas along with a sanitary seal extending from ground level up to a depth not less than 5 meters.
- vi. The bore should provide sufficient dischargewhich shall be compressed and developed for period of at least 3 days to ensure a continuous discharge and turbidity below 10 NTU.
- vii. Layer chart shall be approved by the engineer-in-charge before lowering of strainer and casing pipes.The layer chart shall be prepared by the agency which shall be approved by the engineer-in-charge before lowering of the casing / strainer is commenced.
- viii. A 1 m x 1 m size PCC (1:2:4) platform 0.5m above FGL shall be built around the production well.
- ix. Depending upon the discharge, a submersible pump set shall be supplied and fitted along with 25 mm dia. PVC delivery pipe line up to the roof top water tank along PVC fittings, NRV and a full way valve.
- x. A tap/brass stop cock with pipeline for water supply shall be provided outlet connection.
- xi. A submersible pump set of 3 KW capacity shall be installed.
- xii. The pipe size shall not be less than 100 mm.
- xiii. The pump control panel shall be placed in the panel room separately built for the purpose of operation of all pumps installed in septage treatment plant.
- xiv. Underground cabling with required electrical specification confirming to the technical specifications as provided in the bid document, shall be provided.
- xv. The length of cabling shall be decided as per the direction of the engineer-in-chargekeeping in mind that the cable routes is not taken in garden area, pavements or in vicinity of structures.
- xvi. Adequate safety measures shall be adopted while of the cables and the cable trenches shall be marked with an over ground marker protruding from the surface indicating the alignment of the cable

M. ROOF TOP WATER TANK:

- i. Roof top PVC water tank of 5,000 liters capacity shall be provided over the admin building with RCC support and piping arrangements.
- ii. Adequate bracing is to be done to protect the overhead PVC tank from heavy winds.
- iii. All pipes shall be of PVC / other polyethylene types.
- iv. All full way valves shall be of brass/CP type.
- v. The delivery pipe from the roof tank shall be connected to different fixtures inside the Admin building such as laboratory sink, wash basins, lavatories, water closet, taps etc.

N. PIPING WORKS:

- i. All piping works are to be executed in accordance with the technical specifications provided in the bid document.
- ii. The pipe sizes shall vary as per the specific requirement in case of a particular component.
- iii. The length of piping work shall be finalized along with the plant layout plan and approved by the engineer-in-charge.
- iv. Valves of different sizes wherever required as per the design shall be provided.
- v. Butterfly valves/Penstock/gate valves of **DI make only** shall be provided.
- vi. Pipes of HDPE / DI as approved by the Engineer-in-charge shall be provided.

O. CONSTRUCTION OF COMPOUND WALL:

- i. The septage treatment facility shall be protected from trespassing with the provision of a compound wall using fly ash bricks.
- ii. The compound wall is to be constructed with RCC column & beam, brick panels. RCC frame having column (250 x 250 mm) **minimum foundation** depth of 0.90 m below GL, column spaced @ at 3 m c/c with tie beam (300 mm depth). **Fly ash bricks shall be used.**
- iii. The height of wall in all types of construction shall be 1.8 m above the GL.
- iv. CC coping shall be provided on the top of the wall. Minimum thickness of the wall shall be 250 mm in all types and cases.
- v. Expansion joints @ 30 m shall be provided in compound wall.
- vi. 12 mm Cement Plaster in CM 1:6 on both side of the wall shall be provided as approved by the engineer-in-charge.
- vii. 1 no. of M.S Grill gates made out of angle, flat and square bar of 2.0m height suitable for 5.00m opening including two coats of enamel painting over one coat of red oxide primer
- viii. The gate to be fixed to RCC gate pillars of the compound wall.
- ix. M.S. Iron spike made of M.S. Square Bar & M.S. flat and MS grill shall be fitted on the top portion of the compound wall including two coats of enamel painting over one coat of red oxide primer.
- x. The length of the compound wall in this project shall be as per the actual length provided in the approved layout plan.

P. YARD LIGHTING:

- i. The septage treatment facility shall be provided with yard lighting for lighting during night hours.
- ii. Yard lighting using GI, tubular poles single / double arm and energy saving lighting devices i.e. LED units **shall be provided.**
- iii. The height of the pole shall be at least 20 feet (**6.0m**) and diameter not less than 100 mm and shall be of heavyduty type.
- iv. Electric poles @ 15.0 m c/c & double armed shall be provided and in case of specific requirement as decided by the Engineer-in-charge extra poles shall be provided.
- v. The poles shall be provided with S.S. bracket suitable for installation of LED lamp.
- vi. The poles and brackets shall be adequately painted with anti-corrosive paints and enamel paints to help protect against corrosion.

- vii. Adequate and proper arrangements shall be made to make cable connection running inside the poles up to the LED point fixed on the bracket. All cable connections shall be provided with proper sealing against water leakage inside the pole.
- viii. The LED bulb shall not be less than 70 watt per pole and only white LED shall be used.
- ix. The location of LED posts shall be approved by the engineer-in-charge before execution.

Q. ELECTRICAL SUB-STATION:

- i. The agency will access and execute required length of high transmission (HT)/Low transmission (LT) poles for external power supply to Septage treatment plant.
- ii. One 25 kVA capacity transformer with electrical sub-station is to be erected inside Septage treatment plant. OWSSB will obtain necessary permission from CESU/NESCO/WESCO/SOUTHCO before the execution.
- iii. Supply, installation, testing and commissioning of HT/LT/Transformer/Sub-station/Connection to Panel room etc. shall be done by the agency.
- iv. The sub-station shall have a separate enclosure within the boundary of the SeTP as per the requirement of the electrical authorities.
- v. Adequate safety measures shall be taken to avoid any unwarranted hazards.
- vi. One no. of 3 Phase 10 KVA diesel generator shall be supplied by the agency for use in case of power outage. Change over switch and control panel shall be provided. Change over shall be manual.

R. ELECTRICAL OVERHEAD LINE UPTO SeTP SITE

- i. Construction of 3 phase 11 KV Line on 150x150 mm, 11 meter long RS joist using 100 mm square AAAC with double disc insulator at tension point from the nearest electrical supply point to SeTP premises including supply of all material, labour, fees, installation, testing & approval by the Electrical authorities.
- ii. The cost of testing and other fees shall be borne by the agency.
- iii. Necessary permission from CESU/NESCO/WESCO/SOUTHCO shall be taken before for execution **by OWSSB.**
- iv. Adequate safety measures shall be taken to avoid any unwarranted hazards.

S. BUILDINGS:

- i. Following buildings are to be constructed in accordance with the PWD specifications. The building shall be a RCC M-25 frame structure.

The internal dimensions of the buildings are:

- a) **Guard room: (3.0m x 3.0m) to be constructed at the entrance**
(with 1.50 mtr wide verandah and M.S door)
- b) **Admin Building consisting of:**
 - I. Administrative room: (6.0m x 4.0 m)(with 1 no. within the room)
 - II. **Panel Room:** (3.0m x4.0 m)
 - III. **Store/Equipment Room:** (4.0m x4.0 m)
 - IV. Laboratory Room: (6.0m x 4.0m) **with lab table, sink, tap, shelf, & forced vetilation.**

(Common portico of 3.5 width for Admin room, panel room, store room & laboratory room to be provided in RCC)

- ii. The foundation work shall be sand filling of 0.15 m thickness & PCC (1:3:6) of 0.10 m thickness.
- iii. Column, beam, Roof Beam, Chajja, Lintel beam, shelves, slabs etc. shall be constructed of RCC M-25 grade.
- iv. Plinth protection of 1.0 mtr width shall be provided all round the buildings with C.C. (1:2:4) of 100 mm thickness.
- v. Fly Ash bricks masonry in CM (1:4) using fly ash bricks shall be used for brick work.
- vi. The laboratory room shall be provided with RCC self, RCC platform of adequate length for installation of various testing equipment.
- vii. One large sink shall be provided for washing of various apparatus etc. **in the lab room.**
- viii. 6 mm thick cement plaster (1: 4) finished smooth shall be provided on RCC surfaces.

- ix. 12mm thick cement plaster (1:6) shall be provided over brick work.
- x. **Ceramic tiles shall be provided on the walls of toilet room.**
- xi. **Vitrified tiles of size 600 x 600 mm of approved make laid on 20mm thick cement mortar (1:4) shall be provided on the floors of all the five rooms with ceramic anti-skid tiles shall be provided in the bathroom/toilet floors.**
- xii. Chequered tiles shall be provided in portico floor.
- xiii. Aluminium door with OEL anodized Aluminium door with 12mm thick prelaminated NOVAPAN Board of appropriate size shall be provided as per requirement.
- xiv. Window (sliding type) made of Aluminium section as window frame with 5mm thick black glass as panel of appropriate size shall be provided as per requirement.
- xv. M.S. window grill for the windows shall be provided as per requirement.
- xvi. PVC door for bathroom/toilet of appropriate size shall be provided as per requirement.
- xvii. All building shall be provided with PH and electrical connections as per the requirement.
- xxviii. Wall painting for two coats with plastic emulsion paint over a coat of primer of approved make shall be done on the inner portion of the buildings.
- xix. Wall painting for two coats with weather seal coat over a coat of water bound wall primer of approved make shall be done on the outer portion of the buildings.
- xx. Painting two coats with synthetic enamel paint over a coat of primer over iron work for grill and other iron works shall be provided.
- xxi. Adequate numbers of windows along with ceiling fan including LED bulbs shall be provided.
- xxii. LED bulbs of preferably 9 W capacity shall be provided. The make of all electrical items like switch, plug, ceiling fan, exhaust fan, cables / internal wiring etc. to be installed shall be duly approved by the Engineer-in-charge.
- xxiii. One exhaust fan shall be provided in the laboratory room.
- xxiv. All arrangements shall be completed as per the direction of Engineer-in-charge.
- xxv. **Construction of a 10 user septic tank along with external & internal PH works shall be done.**
- xxvi. **A fire extinguisher is to be provided in the Admin building.**

T. WASHING PLATFORM:

- i. For foundation, sand filing of 0.15 m followed by PCC of 0.1 m shall be constructed with a raft/base slab of 0.25 m thickness.
- ii. RCC of M25 grade for slab.
- iii. Fly Ash bricks masonry in CM (1:4) using fly ash bricks shall be used for brick work and brick footings
- iv. Length of 10.5 m with flat portion 6 m and slope of 4.5 m
- v. The width of the platform is 4.5m with a spacing for 0.8m in the centre for ease of vehicular movement.
- vi. Plaster of 12mm (1:6) on brick surface shall be provided.
- vii. Drainage from washing platform will be through open drains/pipes to the sludge drying bed.
- viii. A PVC pipeline of 40 mm dia. with stop cock from the production well shall be provided for supply of water to the washing platform for cleaning of vehicles etc.

U. PANEL ROOM & UNDERGROUND (UG) CABLES:

- i. Underground cable from the transformer to the panel room shall be laid and a panel road is to be supplied and fixed for control of all electrical fixtures such as pump for production well, pumps for sludge pumping, pumps for leachate pumping, pumps for cascade aeration, pumps for pumping out water from polishing pond, yard lighting, internal lighting etc. with required surge protection. The solar power panel shall be installed in the panel room. Armored cables shall be laid underground from the panel board to various installations. Other underground cable shall be laid inside protective PVC pipes. Cables shall be supported on cable trays.

V. SIGN BOARDS:

- i. Sign boards for each component, glow boards at entrance and inside, caution boards shall be provided by the Agency as per the direction of Engineer-in-charge.
- ii. **Layout plan and process description display boards shall be provided inside Admin Room.**
- iii. The two display boards inside the Admin room shall be printed in flex and glass bound in metal frame.

W. SOLAR PANEL & ON-GRID CONNECTION:

- i. A solar panel set of capacity 10 KW shall be supplied and installed by the agency of a reputed brand or as per the direction of Engineer-in-charge.
- ii. The agency shall ensure on-grid connection of the solar system.
- iii. All other ancillary connections, safety inspection, insurance certificates, installation permission shall be borne by the agency.
- iv. The work may be executed through as agency approved by OREDA. All incidental expenses for the work shall be borne by the Agency including permissions and approvals of concerned Authority/Department./Organization.
- v. Agency will contact OREDA or any other relevant Agency to obtain estimates, approvals, meters, deposits, required fees, charges as required to execute the solar power work.

X. SITE DEVELOPMENT & LANDSCAPING:

- i. The approximate area for landscaping in each septage treatment plant is about one acre. This may vary (+-) 10% depending on the plant layout and site condition.
- ii. The agency shall have the provision of digging holes in all kinds of soil and refilling the same with the excavated earth mixed with manure or sludge in the ratio of 2:1 by volume (2 parts of stacked volume of earth after reduction by 20% : 1 part of stacked volume of manure after reduction by 8 %) flooding with water, dressing including removal of rubbish and surplus earth, if any, with all leads and lifts (cost of manure,sludge).
- iii. Spreading of dump manure and /or good earth in required thickness as per direction of office in-charge.
- iv. Mixing earth and manure in the required proportion specified or directed by the officer -in-charge.
- v. Supplying and stacking at site dump manure from approved source, including carriage.
- vi. Planting of following varieties of trees at specific locations as per the directions of Engineer-in-Charge.
 - a)CocosNucifera (Coconut)– (4’0” height)-25 nos.
 - b)Bottle Brush (Yellow) – (6’0” height)-25 nos.
 - c)FoxtmlPlam – (10’0” height)-29 nos.
 - d)Bauhinia Blakeana– (6’0” height)-17 nos.
 - e)Mini Ixora (New)– (1’0” height)-489 nos.
 - f)ManilkaraZaputa(Chiku)– (6’ height)-27 nos.
 - g)Variegated Lilly– (0’9” height)-160 nos.
 - h)Mini Allmanda – (1’0” height)-376 nos.
 - i)Acalypha – (1’0” height)-235 nos.
 - j)Variegated Tager– (1’6” height)-333 nos.
 - k)F. Blaki (Topiary)– (3’0” height)-14 nos.
 - l)F. Prestige (Topiary)– (3’0” height)-01nos.
 - m)F. Starlight– (3’0” height)-02 nos.
 - n)Juniper Africana — (3’0” height)-22 nos.
 - o)Amrapalli Mango — (5’0” height)-05 nos.
 - p)CollismanPolandi – (3’0” height)-47 nos.
 - q)IxoraDafic – (21’0” height)-57 nos.
- vii. Application of Herbicide such as 2-4 D Sodium salt / glyphoctparaquat 5ml per liter of water over vegetation area (wildly grown, unwanted wild bushes) two applications at an interval of 15 days.
- viii. Turfing with grass selection No 1 grass including waterand Maintenance of the lawn for 60 days or more till the grass forms a thick lawn, free form weeds and fit for mowing including supply of good earth of required

quantity as per the site condition and to achieve adequate height for drainage.

- ix. Anti-termite treatment of lawn area through premises 30.50% I P. one liter premise diluted in 499 liters water and applying solution @ 1.00 liter solution per sqm lawn or bed area.(two application) i/c cost of chemical)and as per direction of officer-in-charge.
- x. Required quantity of good earth for the entire landscaping area to achieve adequate elevation for aesthetic as well as drainage purposes shall be brought and spread. Unsuitable earth shall be removed from the site if required.
- xi. **A sprinkler system consisting of water sprinkler set and associated accessories with delivery pipe of length about 40 m shall be provided at regular intervals in the periphery of the landscaping area for proper watering and maintenance of the garden and plants.**
- xii. **Effluent discharge system from the polishing pond shall consist of PVC pipeline of 40 mm & 25 mm dia shall be installed with brass stop cock . The openings for the fixing of taps for discharge shall be 20 metre c/c.**

Y. SUPPLY OF LAB EQUIPMENT, OFFICE FURNITURE AND T&P AT ADMIN BUILDING:

- i. The lab equipments shall be supplied by the agency as per the details and specifications as given in the annexure in this document.
- ii. The agency shall ensure proper handling and logistics along with installation of the equipments. Any cost incurred due to breakage and mishandling shall be borne by the agency.
- iii. Office furniture, tool & plants, a desktop computer printer etc. and all accessories shall be supplied by the Agency. The agency shall ensure proper handling and logistics along with installation of the equipments. Any cost incurred due to breakage and mishandling shall be borne by the agency.
- iv. The details of the office furniture and T&P are provided in the Annexure along with the lab equipment.

Z. FLOW MEASUREMENT:

90° V-Notch made out of 2 mm thick SS plate shall be fixed at the following places for measurement of flow

1. Outlet of Settling-cum-Thickening Tank
2. Outlet of Anaerobic Baffled Reactor
3. Outlet of Planted Gravity Filter

AA. TRIAL RUN, OPERATION & MAINTENANCE:

- i. The trial run & operation & maintenance shall be for a duration of one month after successful completion of all works and commissioning of the SeTP.
- ii. The agency shall provide required manpower as directed by the Engineer-in-charge for operation of the facility for a period of one month from date of completion of the project (written confirmation to be issued by the Engineer-in-charge) the cost of which shall be borne by the agency.
- iii. The cost of electrical energy during the trial run period shall be borne by OWSSB.
- iv. Warranty of equipments, electrical parts and all such items procured as finished items, shall have the manufacturer's warranty and in absence of the same, the agency shall take the responsibility of its repair / replacement within the period of defect liability described elsewhere in the bid document.
- v. All the watch and ward round the clock shall be provided by the Agency till completion of project including trial run and operation and maintenance for period of one month in the septage treatment plant.
- vi. The list of personnel to be provided during trial run & operation and maintenance is given in Annexure of this document.

Note: The scope of work, if described elsewhere in the bid document is different or contradicts what has been described in this scope of work, the details provided in this scope of work shall supersede all such descriptions. However, if such descriptions are additive in nature and supplements the description provided in this scope of work, the same shall prevail along with this scope of work.

COVER - 2

BILL OF QUANTITIES

(To be furnished separately as Price Bid)

The Bill of Quantities shall contain items for the construction, installation, testing, commissioning and maintenance of the Works to be carried out by the Contractor. **The BoQ shall be uploaded by the employer in the e-portal and the bidder cannot alter the configuration of the BoQ in .xls format. The bidder will quote the price under the appropriate column provided for bidding.**

The Bill of Quantities will be used to calculate the Contract Price. The contractor shall be paid for the quantum of work done at the rate quoted for each item in the Bill of Quantities.

The rates quoted in the BOQ shall be for carrying out the work in conformity to the BIS, PW SPECIFICATION and Technical Specifications and other Terms and Conditions set out in the Bid Document

Sl. No.	Description of item of work	Qty.	Estimated cost	Rates in Rs.		Amount in figures and words
				Figures	Words	
1.	Construction, testing, commissioning and trial run of 6 nos. of Septage Treatment Facilities in following towns of Odisha: i. Jharsuguda town of Jharsuguda District (40 KLD) ii. Brajrajnagar Town of Jharsuguda District (30 KLD) iii. Sundargarh Town of Sundargarh District (20KLD) iv. Belpahar Town of Jharsuguda District (10 KLD)	01 no.	Rs. 11.81 Crore			

Note: The BoQ in .xls format shall contain pre-design format which in essence will contain the above information.

(Total: 106 pages)