

NAGAR PANCHAYAT, PANDATARAI

Design, Construction, Testing, Commissioning of all the Components of Interception and Diversion Based Sewage Treatment Plant (STP) work Including 05 Years of Operation and Maintenance of the Entire System In NAGAR PANCHAYAT, PANDATARAI under SBM 2.0

TENDER DOCUMENTS

**Form "F"
(Lump-sum Contract)**

E-Procurement Tender Notice

Portal: <http://eproc.cgstate.gov.in>

PAC Amount: Rs 245.69 Lakhs

COST OF TENDER DOCUMENT & BID PROCESSING FEE – Rs. 10,000.00

**OFFICE OF THE CHIEF MUNICIPAL OFFICER
NAGAR PANCHAYAT PANDATARAI
DISTRICT : KABIRDHAM
CHHATTISGARH**

Web site: <http://uad.cg.gov.in>

E-mail ID: cmopandatarai@gmail.com

Contact: 9770874045

**OFFICE OF THE NAGAR PANCHAYAT,PANDATARAI
DISTRICT KABIRDHAM, CHHATTISGARH**

NOTICE INVITING TENDER

Main Portal: <https://eproc.cgstate.gov.in>

SYSTEM TENDER NO.: --193627---NIT NO.: -----Dated--17--/-06---/2026

Online tender are invited by the Chief Municipal Officer, **NAGAR PANCHAYAT, PANDATARAI** for the following work in Form “F” for lump Sum contract from the contractors registered with Unified Registration System (Single Window) on GoCG PWD & e-Procurement System Portal (<https://eproc.cgstate.gov.in>) as per the 'key Dates' mentioned below. All other conditions for submission of tenders and criteria for prequalification etc. have been mentioned in the tender documents.

1.	Name of Work	Design, Construction, Testing, Commissioning of All The Components of Interception and Diversion Based Sewage Treatment Plant (STP) Work Including 05 Years of Operation and Maintenance of The Entire System in NAGAR PANCHAYAT, PANDATARAI under SBM 2.0
2.	Probable Amount of Contract	INR 245.69Lakh
3.	Method of Selection	Least cost based method will be used : The Contractor with least cost based on financial offer will be declared as successful Bidder.
4.	Earnest Money(EMD)	INR 1.50Lakh(RupeesOneLakhFifty Thousand only) TDR/FDR in favour of Chief Municipal Officer, NAGAR PANCHAYAT, PANDATARAI Note: - 1. The EMD should be valid for at least 12 months from the Bid due Date & shall be in auto-renewal mode. EMD will be returned to unsuccessful bidders after the award of contract. 2. For the successful bidder, the EMD shall only be released upon submission of Performance Guarantee as per Contract Agreement.
5.	Time allowed for completion (including rainyseason)	<ul style="list-style-type: none"> • Construction Period – 15 months (including rainy season)+ 03 (three) months of trial run from the date of issuing of work order. • O&M Period – 05 years (from the date of issuing of Completion Certificate)
6.	Cost of Tender document fee	Rs. 10000/- (Rupees Ten Thousand only) in the form of DD in favour of Chief Municipal Officer, NAGAR PANCHAYAT, PANDATARAI.
7.	Validity of offer	120 days from the last date of submission of financial offer.
8.	Class of Contractor	In Class 'B' or above registered with Unified Registration System (Single Window) on GoCG PWD.
9.	Pre Bid Meeting	A Prebid meeting in context of this project shall be held in the office of Chief Municipal Officer, NAGAR PANCHAYAT, PANDATARAI(as per tender Notice)

10.	Bid Physical copy Submission Address (Address where Bidders must send proposal) Through Speed post/registered post only. Note: - No Drop Box Facility available	Office of Chief Municipal Officer NAGAR PANCHAYATOffice, PANDATARAI District - KABIRDHAM Chhattisgarh Pin 491559
-----	--	--

For further clarifications regarding Digital signature, The Bidders may contact **M/s Mjunction Service Ltd.**, on helpdesk Toll free number **1800 419 9140** or through Email ID pro-chips@gov.in they may contact to **Mr. Shailesh Kumar Soni, Sr. Manager, Chhattisgarh Infotech Promotion Society (CHIPS) on Tel. No. 0771-4014158.**

The tender documents containing detailed terms & conditions are available for free download on GoCG e-Procurement portal <http://eproc.cgstate.gov.in> through sub portal of Urban Administration & Development Department <http://uad.cg.gov.in> Bidders have to quote online their prices along with Technical and Commercial bids in prescribed formats on the above mentioned portal only.

The Bidders intending to participate in this Tender are required to get enrolled on the above-mentioned website and get empanelled on the Sub-Portal of Urban Administration & Development Department. Enrolment on the above-mentioned Portal is mandatory. As the online Bids are required to be digitally signed, Bidders are required to obtain Class – II Digital Signature Certificates (DSCs).

The Bidders are also invited to get themselves trained on the operations of the e-Procurement System. Bidders may get in touch with the Service Provider of the e-Procurement System for confirming the time and date for their training session.

**CHIEF MUNICIPAL OFFICER,
NAGAR PANCHAYAT, PANDATARAI**

Copy Forwarded to

1.
2.
3. **Notice Board**

**CHIEF MUNICIPAL OFFICER,
NAGAR PANCHAYAT, PANDATARAI**

INDEX

S.No.	CONTENTS	Page No.
1.	Detailed Notice Inviting Tender (In English)	2
2.	Prequalification Document (Technical & Financial)	7
3.	Instruction for Bidders	10
4.	Opening and acceptance of Tender	13
5.	Specifications	15
6.	Supply of materials	18
7.	Miscellaneous conditions	18
8.	Special Conditions	27
9.	Bid opening and Evaluation	28
10.	Special Conditions	32
	Appendix 1: Qualification Information	42
	Appendix 2: Information regarding minimum one similar work	43
	Appendix 3: Work performed on all classes of Construction Works	44
	Appendix 4: Existing commitments and ongoing all classes of Civil Engineering construction works	45
	Appendix 5: Availability of major items of Contractor's Equipment proposed to carry out the works	46
	Appendix 6: Qualifications of consultants / design expert proposed for the Contract	47
	Appendix 7: Financial reports for the immediate previous 05 years	48
	Appendix 8: Information on current claims, Arbitration, Litigation in which Bidder is involved.	49
	Appendix 9: List of key plants and Equipment to be deployed on Contract Work	50
	Appendix 10: List of key Plants and equipment to be deployed on Contract Work	51
	Appendix-11: List of Technical persons to be deployed on the Contract Work	52
	Appendix-12: Contact Persons	53
	Appendix-13: Affidavit	54
	Appendix-14: Declaration of Conflict of Interest	55
	Appendix-15: Declaration of understanding of assignment	56
	Appendix-16: Form- "F": Tender for a Lump-Sum Contract	57
11.	Conditions of Contract	58
12.	List of Annexures	66
13.	Annexure - "A"- Model Rules relating to labour, water supply and sanitation etc.	67
14.	Annexure - "B"- Contractor's Labour Regulations	69
15.	Annexure "C" - Form of Drawings enclosed with NIT	70
16.	Annexure "D" - Statement showing lead of materials	71

S.No.	CONTENTS	Page No.
17.	Annexure - “E-” Technical Specifications	72
	Salient Features and scope of the proposed project	72
	Annexure - E-I :Design and Construction of Intercepting Sewer Network	76
	Annexure - E-II :Design and Construction of Chambers	79
	Annexure - E-III :Constructing Wet Well with overhead pump house near STP	82
	Annexure - E-IV :Specifications for Raw Sewage Pumping Machinery (Pumps and Motors) on Wet Well	84
	Annexure - E-V :Specifications for Raw Sewer Pumping Main from Wet Well to STP	88
	Annexure-E-VI :Specifications for Sewage Treatment Plant	89
	Annexure-E-VII :Specification for Co-Treatment of Faecal Sludge with Planted Drying Bed	103
	Annexure-E-VIII : List of Laboratory Equipment's	105
	Annexure-E-IX : Specifications for Operation and Maintenance	107
18.	Detailed specifications applicable for all sub works wherever and whenever appears in this NIT other than respective specifications appeared under respective sub works Chapter 1- 6	108
	Chapter 1: Referral Codes and Specifications	109
	Chapter 2: Submittals	118
	Chapter 3: Site Preparation	119
	Chapter 4: Earthwork	122
	Chapter 5: Civil Work	125
	Chapter 6: Electrical Works	143
19.	Appendices	
	Appendix#1 - O&M Schedule, Electrical & Instrumentation installation details	146
	Appendix#2 - Reporting Schedule	148
	Appendix#3 - Operator Staff Requirement	149
20.	Schedule I – VI	150-155
21.	Sample forms and formats	156
	Bid form (without price)	157
	Format of contract agreement	159
	Format of mobilisation advance security (Bank Guarantee)	160
	Format of Security Deposit– Bank Guarantee	161
22.	Section 9: Bill of Quantities	162
23.	Annexure “F-” – Schedule of quantity	
	Annexure - F-I : Breakup of Payment for STP and allied structures	163
	Annexure - F-II : Main breakup of payment schedule of 05 years O&M of whole scheme	164
24.	Important note	165

S.No.	CONTENTS	Page No.
25.	Annexure “G-I” – Deleted	166
26.	Annexure “G-II” – Deleted	167
27.	Annexure “H” – Special Conditions of NIT	168
28.	Annexure “I” – Information & instructions to the bidders for online electronic government procurement system (e-GPS).	172
29.	Annexure – ‘J’ Pre contract Integrity Pact	175
30.	Annexure – ‘K’ - DELETED	182
31.	Annexure – ‘L’ Features of Major Labour Law	183
32.	Annexure – ‘M’ – Demotion of Contractors	185
33.	Annexure – ‘N’ – Approved Makes	196
34.	Performance Bank Guarantee for Works Contract Period	204
35.	Performance Bank Guarantee for O&M Contract Period	205

SYSTEM TENDER No. _193627_

NIT No.: xxxx / SBM-U 2.0 / 2026-27NAGAR PANCHAYAT, PANDATARAI, Dated 17/06/2026

Key Dates

Task	Date	Time
Bid Start Date	17/06/2026	17:00
Last date for sending of prebid queries on Email: cmopandatarai@gmail.com	23/06/2026	17:00
Prebid Meeting (Online) Meeting Link: Prebid Meeting (STP PRI BID MEETING PANDATARAI) Wednesday, June 24 · 2:00 – 4:00pm Time zone: Asia/Kolkata Google Meet joining info Video call link: https://meet.google.com/yis-vzum-fjq	24/06/2026	14:00
Bid Due Date	07/07/2026	17:00
Physical Doc Submission End Date	09/07/2026	16:00
Bid Open Date (Scheduled)	09/07/2026	17:00

**CHIEF MUNICIPAL OFFICER,
NAGAR PANCHAYAT, PANDATARAI**

**OFFICE OF THE NAGAR PANCHAYAT, PANDATARAI
DISTRICT KABIRDHAM, CHHATTISGARH**

DETAILED NOTICE INVITING TENDER

SYSTEM TENDER NO.: 193627 NIT NO.: -----Dated--17--/06--/2026

Online tender are invited by the Chief Municipal Officer, **NAGAR PANCHAYAT, PANDATARAI** for the following work in Form "F" for lump Sum contract from the contractors registered with Unified Registration System (Single Window) on GoCG PWD & e-Procurement System Portal (<https://eproc.cgstate.gov.in>) as per the 'key Dates' mentioned below. All other conditions for submission of tenders and criteria for prequalification etc. have been mentioned in the tender documents.

Name of work	Probable amount of contract (Rs. in Lakh)	Earnest money (EMD) (Rs. in Lakh)	Time allowed for completion	Cost of Tender Document (in Rupees)	Validity of the Offer (After opening of financial bid)	Class of the Contractor
<p>Design, Construction, Testing, Commissioning of all the Components of Interception and Diversion Based Sewage Treatment Plant (STP) work including 05 Years of Operation and Maintenance of the Entire System in NAGAR PANCHAYAT, PANDATARAI under SBM 2.0.</p> <ul style="list-style-type: none"> Survey, Investigation, Design and Construction of Interceptor pipeline with arrangement of Waste Water for Road crossing DW/HDPE Pipe (Zone-I) 200mm dia. X 1682.2M, 250mm dia. X 360.10M, 300MM dia. X 300.7M (length), Total = 2343.40 M length. Survey, Investigation, Design and Construction of (Zone-I) Receiving, Coarse, Fine, Grit Chambers of various sizes as detailed in scope of work. Design and Construction of (Zone-I) 1 No. Wet Well with overhead Pump House as per the technical specification. Survey, Investigation, Design, Supply, Laying, Jointing and construction of Rising Main (DI-K9 Pipe) of Zone-I-inner dia. 	INR 245.69 Lakh	INR 1.50 Lakh (Rupees One Lakh Fifty Thousand and only)	<ul style="list-style-type: none"> Construction Period – 15 months (including rainy season) + 03 (three) months of trial run from the date of issuing of work order. O&M Period – 05 years (from the date of issuing of Completion Certificate) 	10000.00 (Rupees Ten Thousand only)	120 days	In Class 'B' or above registered with Unified Registration System (Single Window) on GoCG PWD.

Name of work	Probable amount of contract (Rs. in Lakh)	Earnest money (EMD) (Rs. in Lakh)	Time allowed for completion	Cost of Tender Document (in Rupees)	Validity of the Offer (After opening of financial bid)	Class of the Contractor
<p>100mm for Rising main-15M.</p> <ul style="list-style-type: none"> STP - Designing (aesthetically), providing, and constructing and giving satisfactory trials of Sewage Treatment Plant consisting of receiving chamber, screen chamber, grit chamber, measuring flume, distribution chamber with primary and secondary treatment, etc. as per the technical specification of Zone-I capacity 1.0 MLD of Aerated Lagoon Process Conventional Technology including allied units for waste disposal with all civil and mechanical, electrical works involved including Administration cum Laboratory Building of minimum carpet area of 800 sqft. complete with all electrical works. Design and Construction of Planted Drying Bed -1 No.s Zone-I (Size-6.60 x 3.30 x 2.60m) Inlet Chamber-3.30x0.70x0.70 (+0.30 FB) m, Sludge Holding Tank 1.0 x 3.30 x 1.3m Boundary wall around entire STP area Zone-I (L-352.93m x H-1.80m). Operation and maintenance (O&M) for the proposed works / entire sewerage system (Proposed) for a period of 5 years after successful completion of trial run period or handing over whichever is later. 						

1.1 NOTES

- Registration and subsequent empanelment for e-tendering website (Sub-portal) <https://eproc.cgstate.gov.in> and department's sub-portal is mandatory.
- The tender documents containing detailed terms & conditions are available for free download on GoCG e-Procurement portal (<http://eproc.cgstate.gov.in>) Bidders have to quote online their prices along with Key Submission and Technical bid (as per PQ criteria) in prescribed formats on the above mentioned portal as per the details mentioned in the tender document.

3. The Bidders intending to participate in this Tender are required to get enrolled on the above mentioned website. Enrolment on the above mentioned Portal is mandatory. As the online Bids are required to be digitally signed, Bidders are required to obtain Class – II Digital Signature Certificates (DSCs). The Bidders may contact **M/s Mjunction Service Ltd.**, on helpdesk Toll free number **1800 419 9140** or through Email ID – pro-chips@gov.in or they may contact to **Mr. Shailesh Kumar Soni, Sr. Manager, Chhattisgarh Infotech Promotion Society (CHIPS) on Tel. No. 0771-4014158.**
4. The Bidders have to digitally sign their bids before submitting the bids hashes online. Thus, the Bidders are advised to obtain Digital Certificates. The registered contractors may obtain information required for issuance of a Class II Digital Signature Certificate from the Controller of Certifying Authorities(www.cca.gov.in) or the Service Provider of eProcurement System for Government of Chhattisgarh.
5. Validity of offer - 120 days from the last date of submission of the financial offer
6. The Technical offer shall be opened in presence of the Bidders or their authorized representatives, who may choose to be present. The date and place of opening of financial offer will be intimated to the Qualified Bidders subsequently after opening of technical offer.
7. The department reserves the right to change the key dates of the tender process.
8. Sufficient hindrance free space is available for construction.
9. Bidders are advised to visit the site sufficiently in advance of the date fixed for the submission of the tender at their cost. The Tenderer shall be deemed to have full knowledge of all relevant documents and site conditions, assessment of work etc. whether the bidder inspects it or not.
10. A Prebid meeting in context of this project shall be held as stated above in NIT. The contractors shall give their suggestions and conditions in writing based on which Corrigendum/Amendments/clarifications shall be framed and uploaded on the website which will supercede the original NIT Conditions unless otherwise specified.
11. Cess @ 1 % (one percent) or latest shall be deducted at source from every bill of contractor under “Building and other Construction for workers welfare, Cess Act, 1996.
12. The **NAGAR PANCHAYAT, PANDATARAI** reserves the right to reject any part of/whole tender without assigning any reason and to restrict the list of pre-qualified bidders to any number deemed fit by it.
13. If any pre-qualified bidder withdraws his offer before the validity period or makes/proposes any modifications in the terms and conditions of the tender, the earnest money of said bidder shall stand forfeited.
14. Before the deadline for submission of tender, the CHIEF MUNICIPAL OFFICER, **NAGAR PANCHAYAT, PANDATARAI** can modify tender document by issuing amendment.
15. NIT Details, Prebid meeting minutes and Any amendment thus issued shall be part of the tender document and shall be published on website.
16. The bidders are required to submit Envelope “A” physically and online as per dates Indicated in Key Dates. The Physical Envelope should contain the following: -

- a) **Envelop 'A'** (Key Submission - Submit physically & online)- All the required document submission are mandatory for opening of Technical Bid.
- i. The Earnest Money Deposit (EMD) in the form of FDR/TDR of a Nationalised /Scheduled bank of India in favour of the **“Chief Municipal Officer, NAGAR PANCHAYAT, PANDATARAI”** payable at ‘PANDATARAI’ which will be returned to the unsuccessful Bidders after the award of contract. The Earnest Money of the successful Bidders will be retained as part of the Security Deposit. The EMD as mentioned in NIT should be submitted in Original with Physical Envelope “A” and Scan copy (Online).
 - ii. The tender fee as mentioned in NIT in original with physical Envelope “A” and scan copy (online). It is non-refundable.
 - iii. Attested copy of Valid Registration Certificates(**Class ‘B’ or above**). CG PWD and (Partnership Deed, registration amendment certificate as the case may be) **with Physical Envelope “A” and Scan Copy Online.**
 - iv. Attested copy of PAN card issued by I.T. Department **with Physical Envelope “A” and Scan Copy Online..**
 - v. Attested copy of Valid GST/ CGST Registration must be valid up to Bid due date as per key dates otherwise tender will be disqualified while opening **with Physical Envelope “A” and Scan Copy Online..**
 - vi. Valid Bank Solvency certificate(**INR 36.85 Lakhs**) in Bank Letter Head. (Not Older than 12 Months from Bid due date) Mention the Bank Dispatch No. or Ref. No. or Verifiable unique number or Date otherwise tender will be disqualified while opening) **with Physical Envelope “A” and Scan Copy Online.**
 - vii. Power of Attorney/Letter of authorization to sign the bid in original with physical Envelope A and scan copy (online)
 - viii. Non Blacklisting Appendix – 13 Affidavit on Non-Judicial stamp of Rs. 100 in original with physical Envelope A and scan copy (online)
 - ix. Appendix 14 Certificate for undertaking for No Conflict of Interest in original with physical Envelope A and scan copy (online)
 - x. Appendix – 15 Declaration of understanding of assignment (on non-judicial stamp of Rs. 500) in original with physical Envelope A and scan copy (online)
 - xi. Bid Form (With Out Price) in original with physical Envelope A and scan copy (online)
 - xii. Pre contract Integrity Pact (as per format at Annexure J) in original with physical Envelope A and scan copy (online)
 - xiii. Deleted.

Note: The scanned copy of all the documents mentioned above shall also be submitted online. However, in case of any discrepancy the documents submitted physically shall prevail over the online submitted documents

b) Envelop- 'B'(Technical Bid - Submit online). In all cases the submission which is online shall prevail.

- i. Partnership deed /MOA of company
- ii. Technical & Financial prequalification documents
- iii. BID CAPACITY
- iv. Affidavit regarding Balance amount of work in hand
- v. ITR of last five years (up to 31.03.25)
- vi. The bidder should have a positive net worth. The certificate from C.A. shall be attached.
- vii. Affidavit regarding not being declared CDR by any bank.
- viii. As per Pre-Qualification Criteria mentioned in PQ document. (Appendix-1 to 12)
- ix. Schedule I-VI

c) Envelop- "C" - (Financial Bid - Submit Online only)

Total Lump sum offer (Cost of works + cost of 05 yrs. O&M) (including GST, other taxes etc.) shall be submitted online only.

Note:

- i. Any of the Bidder who was blacklisted will not be allowed to bid for this tender. The tenderer shall submit an Affidavit in this regard.
- ii. Bidder has to submit Certificate of Turnover of last 5 years clearly highlighting year wise Construction Turnover, duly signed by a Practicing Chartered Accountant along with seal and UDIN of CA issuing the certificate. (For Calculation of Component A in case of Bidding Capacity). In the absence of above requirements, bids shall be rejected.
- iii. In the event of withdrawing his/her offer before the expiry of the period of validity of offer or failing to execute the agreement as required by conditions of the Notice Inviting Tender (N.I.T.) he/she will not be entitled to tender for this work in case of recall of tenders. In addition to forfeiture of his/her earnest money as per provisions of tender condition as may be applicable for the work, the **Chief Municipal Officer, NAGAR PANCHAYAT, PANDATARAI** will restrict the contractor/firm for a period of one year in participation of all tenders. If the Bidder has committed a similar default after restriction period on earlier occasion(s) as

well, then CHIEFMUNICIPAL OFFICER will recommend for demotion in registration to the committee of 'Unified Registration System' (e-Registration) with Chhattisgarh P.W.D. State Governments will be permanently. This special condition will supersede anything contrary to it in the tender document.

- iv. Bidders are advised to go through the Notice Inviting Tenders & the complete tender document /P.Q./Bid Capacity document thoroughly and all Certificates, appendices, enclosures as mentioned in the document will have to be submitted by the bidders strictly in the prescribed format, at the time of submission of Technical bid, failing which the bidder shall be disqualified for the work & financial offer of the bidder shall not be opened and no representation, appeal or objection, what so ever in this regard shall be entertained by the department.

1.2 SPECIAL CONDITION

“Additional performance security shall be deposited by the successful bidder at the time of signing of agreement when the bid amount is seriously unbalanced. i.e. less than the estimated cost by more than 10% in such an event the successful bidder will deposit the additional performance bank guarantee to the extent of differential cost of bid amount and 90% of the estimated cost in shape of Bank Guarantee issued by scheduled Bank for agreement period in favour of Chief Municipal **NAGAR PANCHAYAT, PANDATARAI** in addition to Performance bank guarantee failing which the tender in this favour shall be liable for Rejection.”

1.3 PRE-QUALIFICATION DOCUMENT

A. Technical Pre-qualification Criteria

The minimum eligibility criteria in respect of particular experience to be fulfilled by the bidder are as follows :

S.No.	Technical PQ Criteria for SBM-U2.0
The bidders should have executed/completed Procurement Construction / Design-Build /Design-Build Operate contract including design, installation, supply, construction, testing and commissioning successfully of following works within last Seven years: -	
1	Construction of at least 01 Sewage Treatment Plant based on Any technology of capacity not less than 50% (i.e. 0.5 MLD) of the highest capacity of STP mentioned in the NIT in a single contract.
2	Consolidated capacity of Sewage Treatment Plants not less than 50% (i.e. 0.5 MLD) of the required capacity as mentioned in the NIT in a single or Multiple contract.
3	Must have experience of Operation & Maintenance of half of the highest capacity (i.e. 0.5MLD) of Sewage Treatment plant as mentioned in the NIT for the duration of not less than 1 years under single contract.
4	Experience of providing, jointing laying, testing and successful completion of diversion works including laying of intercepting sewer line/water supply network of half the diameter of highest diameter mentioned in the NIT (i.e. 150mm Dia.) and for a minimum Half the length of its quantity mentioned in the NIT (i.e. 1179.2m) in a single contract.

5	Joint Venture –Not Allowed
Note: - 1. Bidder should not be blacklisted/debarred from any of the department/ULBs/PSUs. 2. "Construction of Sewage Treatment Plant (STP)" means: successfully completed Sewage Treatment Plant (STP) projects or STP with sewer network based on any proven Technology as brought out in the manual of sewerage and sewage treatment systems by CPHEEO, 2013.	

Note:- The experience certificate of work executed in Govt./Semi Govt./Public Sector undertaking/Urban Local Body, issued by an officer not below the rank of Executive Engineer shall be acceptable. The Experience certificate of successful completion of work in contractor's/firm's/company's own name indicating name of work, Agreement no. work order no. and date, amount of contract, stipulated period of completion, actual period of completion during last seven years i.e 2019-20 to 2025-26 shall be acceptable.

Any subcontracting work done anywhere in India, during last seven years, with prior approval of competent Authority (Govt/Semi Govt/ULBs), such sub-contractor will also get the credit for work towards his experience.

Experience of work done by way of subletting directly from Prime contractor without prior approval of competent authority will not be considered.

B. Financial Pre-qualification Criteria

To qualify in the Tender bidder must have financial experience in last Five years.

S. No.	Financial PQ Criteria for SBM-U 2.0	Value of work (Qualifying Value)	PAC Value INR 245.69Lakh
1.1	Experience for Last 5 years will be considered		
1.2	Achieved in "any one financial year" a financial turnover (in all classes of Construction Works (Civil)) value of construction work of at least 60% (Sixty percent) the amount equal to the probable amount of contract for which bid has been invited.	INR 147.41 Lakhs	60%
	And Satisfactorily completed at least one similar work equal in value 50% (fifty percent) of the Probable amount of contract as on date of submission of financial offer.	INR 122.85 Lakhs	50%
	Or Satisfactorily completed at least two similar works each costing minimum 40% (forty percent) of the probable amount of contract for which the tender is invited as on date of submission of financial offer.	INR 98.28 Lakhs	40%

	Or Satisfactorily executing at least one similar work having received payment of value not less than 60% (Sixty percent) of the value of probable amount of contract as on date of submission of financial offer.	INR 147.41Lakhs	60%
2	Bid Capacity = (2.5 x A x N) - B Where A= Maximum value of works executed in any one financial year during the last 5 years (with 10% compounded rate per year). Where N = Period of completion in years (shown in NIT) Where B = Value of works in hand The bid capacity of contractor/firm/company should be equal or more than the PAC shown in NIT.		
3	Joint Venture– Not Allowed		
Note: - 1. "Similar work" means: successfully completed Sewage Treatment Plant (STP) projects or STP with sewer network based on any proven Technology as brought out in the manual of sewerage and sewage treatment systems by CPHEEO, 2013. 2. Contractor has to submit Certificate of Turnover of last 5 years clearly highlighting year wise Construction Turnover, duly signed by a Practicing Chartered Accountant along with seal and UDIN of CA issuing the certificate (For Calculation of Component A in case of Bidding Capacity). In the absence of above requirements, bids shall be rejected. 3. The turn over shall be indexed at the compounded rate of 10% (ten percent) for each earlier year. The value of completed work shall be updated to the values of current financial year @compounded rate of 10% (Ten percent) per year from completion year of work. The completion year shall be taken as base year.			

Even though the tenderer meets the above qualifying criteria, they are subject to be disqualified if they have:

- (i) Made misleading, incorrect or false representations in the forms, statements, affidavits and attachments submitted in proof of the qualification requirements.

Other condition including qualification and details of work can be seen in the office of the undersigned during office hours and downloaded online directly from the portal <http://eproc.cgstate.gov.in> and shall be submitted online on or before date mentioned above. This NIT shall also form the part of agreement. The details can be viewed on the website <http://eproc.cgstate.gov.in>.

**CHIEF MUNICIPAL OFFICER,
NAGAR PANCHAYAT, PANDATARAI**

2.0 Deleted

2.1 Deleted

2.2 Deleted

2.3 Deleted

2.4 LEAD AND LIFT FOR WATER

The contractor shall make his own arrangement for supply of water for construction, testing and other purposes. No lead and lift for water will be paid.

2.5 LEAD AND LIFT OF MATERIALS

No lead and lift for any material will be paid. The tendered amount should be inclusive of all lead and lift for the materials. The contractor should himself verify the lead of different materials before submitting his tender.

The contractor will have to arrange for the temporary electric connection at site of work at his own cost for dewatering, curing, vibrator, testing and internal and outside electric fittings, etc.

3.0 INSTRUCTIONS FOR BIDDERS

3.1 SUBMISSION OF TENDERS

The Bidders shall Also, have to submit Bids online (decrypt the bids using their Digital Certificate and encrypt the bids) as per mentioned key dates. There shall be three separate Online envelopes as under:-

1) ENVELOPE - A (Submit physically & online)

The first online envelope shall contain the details of Earnest Money, scanned copy of the Physical Earnest Money. The envelope shall contain documents as mentioned in detailed NIT. (clause 16.a). The physical bid will be sealed in an outer envelop which will bear the address of the ULB, RFP Notice No. and name as indicated in detailed NIT. It should also include address of the bidder. If the envelop is not sealed and marked as instructed above the ULB assumes no responsibility for the misplacement or premature opening of the contents of the bid submitted and consequent losses, if any, suffered by the bidder.

The Physical Earnest Money which is to be submitted manually in Physical **Envelope –A** where it should be clearly written on the envelope as under

ENVELOPE - A

EARNEST MONEY

From - (... Name of Contractor...)

and should reach Chief Municipal Officer, **NAGAR PANCHAYAT, PANDATARAI** as per date and time mentioned in the key dates.

2) ENVELOPE –B(To be submitted online only)

The Second Online envelope shall contain terms and conditions and all the technical details and specifications of the proposed work and documents as mentioned in detailed NIT. The Scanned copy of terms and conditions, along with technical specifications and drawings etc. The following supporting documents to be submitted for ascertaining the criteria specified under clause 16.b.

- i. Experience certificate of successful completion of work of same nature in contractor's/firm's/company's own name indicating agreement no., work order no. and date, amount of contract, stipulated period of completion, actual period of completion during last Seven years. The certificate should be issued by an officer not below the rank of Executive Engineer and shall be countersigned by the officer not below the rank of Executive Engineer or equivalent. The experience of Sublated works shall not be considered.
- ii. The details of works in hand indicating name of work, Agreement no., work order no., and date, amount of similar contract, period of completion, value of work and balance work in hand with details of work on the date of submission of Tender.
- iii. Deleted.
- iv. Financial turnover of similar works during last five financial years i.e. 2020-2021 to 2024-2025 and prequalification documents in footstool be submitted online in Envelope "B".

3) ENVELOPE - C (Submit online only)

This Envelope shall contain only the Lump-sum offer. The tenderer shall have to duly fill their Lump-sum offer in appropriate online form meant for it.

3.2 EARNEST MONEY

Tenderer will submit with the Earnest Money, **INR 1.50 Lakh (RupeesOne Lakh Fifty Thousand only)** in the form of Fixed Deposit Receipt/Term Deposit Receipt in favour of the "Chief Municipal Officer, **NAGAR PANCHAYAT, PANDATARAI**" payable at "**PANDATARAI**". This will be returned to the unsuccessful tenderer. The Earnest Money of the successful tenderer will be retained as part of the Security Deposit.

3.3 FORM OF EARNEST MONEY

In shape of FDR/TDR from Nationalised bank or scheduled bank drawn in the favour of **“Chief Municipal Officer, NAGAR PANCHAYAT, PANDATARAI”** payable at **“PANDATARAI”** will be submitted by the bidder. The validity of Earnest Money should be for 12 months from the Bid Due Date.

3.4 EARNEST MONEY IN SEPARATE COVERS

The Earnest Money, in any one of the prescribed form should be deposited as mentioned under respective para of NIT. If the Earnest Money is not found in accordance with the prescribed mode, the tender of the tenderer shall not be opened.

3.5 ADJUSTMENT OF EARNEST MONEY- DELETED

3.5.1 REFUND OF EARNEST MONEY

- (i) If it is decided on the same day to reject all the tenders, the earnest money of all tenderers shall be refunded immediately after taking decision by the competent authority.
- (ii) The earnest money of tenderers whose tenders are rejected shall be refunded. Also, in case of the tenderer whose tender is accepted, and /or conveyed after expiry of the validity period, Earnest money shall be refundable unless validity period extended by the tenderer.

3.6 SECURITY DEPOSIT

- (i) The Security Deposit to be taken for the due performance of the contract under the terms and conditions printed on the tender form will be the earnest money plus an amount to make it equal to 5% (five percent) of the accepted cost of the work (Construction + O&M), as per clause 1 of condition of contract of form “F”. The security deposit shall be recovered from the running bills @ 5 percent as per clause-1 Conditions of the Contract.
- (ii) 5% security deposit shall be deducted from each running bill. One moiety of security deposit shall be refunded on completion of work as certified by the Engineer-in-Charge. The balance 50% amount shall be refunded on completion of defect liability period or settlement of final bill, whichever is later.
- (iii) The Security Deposit for O&M period shall be returned after the 05 years period is over and the property has been taken over by **PANDATARAI NAGAR PANCHAYAT**.
- (iv) The amount of the E.M.D. shall not be adjusted when value of work done reaches the limit of the amount of contract or exceeds the probable amount of contract.

3.7 IMPLICATION OF SUBMISSION OF TENDERS

Bidders are advised to visit the site sufficiently in advance of the date fixed for the submission of the tender. The Tenderer shall be deemed to have full knowledge of all relevant documents and site conditions etc. whether the bidder inspects it or not.

- 3.8** The submission of a tender by the bidder implies that he has read the notice, conditions of the tender and all the contract documents and has made himself fully aware of all the standards and specifications in this respect laid down in the relevant IS specifications, IRC specifications, CPHEEO manual on Sewerage and Sewage Treatment and Annexure-E having the scope and the specification of the work to be done. The contractor will be deemed to have seen the site of works.

The bidder shall make their own arrangement for supply of water for construction purposes. No lead and lift for any material including water will be paid. The tender offer should be inclusive of all leads and lifts for the materials. The contractor should himself verify the leads & Royalty Charges of different materials before submitting the tender.

3.9 INCOME TAX CERTIFICATE – CLAUSE DELETED

3.10 ESCALATION

The scope of work includes all costs, and no escalation will be paid on the financial bid quoted by the Successful Bidder.

3.11 LIST OF WORKS IN PROGRESS

Tenders must be accompanied by a list of Contracts already held by the tenderer at the time of submitting the tender, in the Department and elsewhere showing therein. The amount of each contract balance of work remaining to be done and the amount of solvency-certificate produced by the bidder at the time of enrolment in the department.

3.12 RELATIONSHIP

The bidder shall not be permitted to tender for works in the **NAGAR PANCHAYAT, PANDATARAI**, (responsible for award and execution of contract) in which his near relative is posted. He shall intimate the names of his near relative working in Chhattisgarh. State and **NAGAR PANCHAYAT, PANDATARAI**. He shall also, intimate the name of person working with him in any capacity or subsequently employed by him and who are near relatives to any Gazetted Officer in the Chhattisgarh. Any breach of this condition by the bidder would render himself liable to be removed from the approved list of contractors .

NOTE: - By the term “near relative” is meant wife, husband, parents and son, Grandson, brothers, sisters, brothers in laws, father in law and mother in law.

4.0 OPENING AND ACCEPTANCE OF TENDERS

4.1 PLACE AND TIME OF OPENING

The tenders shall be opened at time and place stated in detailed NIT. In the first instance, the Physical envelope containing the earnest money shall be opened. If the earnest money is found proper, the online envelope-A containing the Earnest Money details, its scanned copy and scan copy of documents required as minimum qualification to bid shall be opened. If the tenderer found qualified as per minimum qualification, the online Envelope B containing the terms and conditions minutes of Prebid meeting (amendments/corrigendum/clarifications) will be opened in the presence of such contractors, who choose to be present.

The tenders shall be opened at time and place stated in detailed NIT. In the first instance, documents required as minimum qualification to bid shall be opened. If the tenderer found qualified as per minimum qualification, the online Envelope B will be opened in the presence of such contractors, who choose to be present.

After short listing of prequalified contractors, their online financial offers shall be opened. The contractor having quoted lump sum offer in prescribed online proforma and arrived at a minimum cost shall be declared as the lowest bidder (L1 Bidder).

4.2 POWER OF THE CHIEF MUNICIPAL OFFICER

The CHIEF MUNICIPAL OFFICER, PANDATARA does not bind himself to accept or recommend for acceptance to the higher authority, the lowest or any tender or to give any reasons for his decision.

4.3 CONDITIONAL TENDER

Conditional tenders are liable to be rejected.

4.4 CANVASSING

Canvassing for support in any form for the acceptance of any tender is strictly prohibited. Any tenderer doing so will render himself liable to penalties which may include removal of his name from the Register of approved contractors of penal action under section 8 of C.G. Vinirdishta Bhrashtachar Acharan Nivaran Vidheyak, 1982.

4.5 SUBMISSION OF TENDER

Sealed envelope of EMD and other sealed envelope stipulated in the NIT after received before the stipulated date shall only be opened.

4.6 AUTHORITY OF ENGINEER-in-Charge

The authority competent to accept a tender, reserves the right for accepting the tender for the whole work or for a distinct part of it, or distributing the work between two or more

Bidders.

All works to be executed under this contract shall be executed under the direction and subject to the approval in all respects, of concerning Engineer-in-charge of the **NAGAR PANCHAYAT, PANDATARAI** under which the work is being executed, he shall be entitled to direct at what point or points and in what manner works are to be commenced and from time to time carried out.

4.7 VALIDITY OF OFFER

Tender shall remain valid up to 120 days from the last date of submission of financial offer and in the event of the Bidders withdrawing the offer before the aforesaid date for any reason whatsoever, Earnest Money Deposited with the tender shall be forfeited to the Government.

In the event withdrawing their offer before the expiry of the period of validity of offer or failing to execute the agreement as required in notice inviting tender (N.I.T.), the bidder will not be entitled to tender for this work. In case of recall of tenders, in addition to forfeiture of their earnest money as per provisions of condition of the N.I.T., as may be applicable for the work, if the bidder has committed a similar default on earlier occasion(s) as well, then their registration in the department may be suspended temporarily for a period of 2 (two) years, from such date as may be ordered by the authority who had registered the bidder

5.0 SPECIFICATIONS

5.1 The detailed specifications for the work have been given in the enclosed Annexure-E. However, the following order of priority regarding specifications shall be followed by the contractor. Specifications given in the Annexure-E enclosed.

5.2 Specifications for pipes, valves, specials, rubber, gaskets, RCC and other civil works and materials shall be governed by the relevant latest IS codes, CPHEEO Manual and National Building code of India (latest revision). Manual on Sewerage & Sewage Treatment (latest edition) published by CPHEEO, New Delhi. Any other specifications, not covered under the above said standards, as shall be decided by the Engineer-in-Charge.

5.3 Workmanship

- (i) The Contractor shall ensure that the Materials and workmanship are in accordance with the requirements specified in this Agreement, Specifications and Standards and Sound Engineering practice. The work shall be of the specified quality and standard, both in respect of ingredients as well as the intended functions it is supposed to perform for service life.
- (ii) The Contract warrants that all Materials shall be new, unused, not reconditioned, unless otherwise allowed as per contract or by Engineer-in-Charge, and in conformity with Specification and Standards, Applicable Laws and Sound Engineering Practice,

and that the Contractor shall not use any materials which are generally recognized as being deleterious under Sound Engineering Practice.

5.4 Quality Assurance System The Contractor shall devise a quality assurance mechanism to ensure compliance with the provisions of this Agreement (the "Quality Assurance Plan" or "QAP").

- (i) The Contractor shall, submit to the Engineer-in-Charge, its Quality Assurance Plan 15(fifteen) days in advance of start of the execution stage specified in the NIT. The Engineer-in-Charge shall convey its comments to the Contractor within a period of 7 (seven) days of receipt of the QAP stating the modifications, if any, required and the Contractor shall incorporate those in the QAP conforming with the provisions of this clause. The QAP shall include the following:
 - a. Contractor's Organization & structure, duties and responsibilities of individual key personnel, quality policy of contractor, procedure for control of non-conformities and corrective action, inspections and documentation.
 - b. Internal quality audit system

5.5 Specification for building work (including water supply and sanitary fittings)

The contractor shall execute the work in conformity with the standards and procedure laid down latest CPWD specifications/ISI codes for buildings or special specification whenever enclosed separately and in accordance with the approved drawings.

5.5.1 Concrete

All concrete shall be Mixed in concrete mixer and compacted by mechanical vibrators. Slump test shall be carried out during concreting and sample test cubes prepared and tested for strength in accordance with the code. The Department will carry out the testing at the cost of contractor.

The results of the tests shall conform with the required standard and if the Engineer-in-charge considers that a structural test is necessary, the same shall be carried out as instructed by the Engineer-in-charge at the contractor's expense and should the result of this be unsatisfactory the contractor will be bound to take down and re-construct the particular portion of which has given unsatisfactory test results.

5.5.2 Bricks

The contractor should use the bricks manufactured on the metric system, as far as possible.

5.5.3 Timber

All timber used in the wood work for works must be properly seasoned. In case of important buildings mechanical seasoning should be done in good seasoning plant.

In case the contractor does not procure good seasoned wood, he may be asked to get it in seasoned in plant at his own expense.

Maintenance of roofs. Subject to the provision in the agreements, it will be the responsibility of the contractor to see that the roof does not leak, during the period of the first rainy season in respect of tile and sheet roofing and two consecutive rainy seasons in respect of lime concrete and cement concrete terraced roof, after its completion. He will make good and replace all the defective work on this account at his own cost.

5.6 Specification of Electrical works:-

- 5.6.1 The work will be carried out as per the approved drawing and as directed by the Engineer-in-Charge. The work will be governed by "General specifications" for the Electrical works in Government buildings in Madhya Pradesh in force from 1972. All electrical materials must bear the "I.S.I." mark.
- 5.6.2 All samples of electrical accessories should be got approved from the Engineer-in-charge prior to their use in work. The contractor will have to arrange and afford all facilities for their inspection and rectify the defects pointed out by them. The item involved in the Electrical work is enclosed in Annexure-E.
- 5.6.3 The period of testing and refund of the deposit will be 6 months after completion of work.
- 5.6.4 In case of supply of ceiling fan, table fan, exhaust fan, cabin fan, tube light fixtures will be made by the Department as mentioned in the S.O.R. As such, labour rates only as per S.O.R. will be paid for fitting of such items in position as per S.O.R.
- 5.6.5 The contractor should submit an "as-built" detailed wiring diagram in PDF, .dwg file and hard copy showing the point position of switch length of point, position of D.B., and main switch circuit No. in which points fall at the time of the final bill. Otherwise, a deduction of 1/2 percent (Half percent) will be made from the contract sum of all electrical items.

5.7 Specifications for road/bridge/culvert works

The road/bridge/culvert works shall be carried out according to MoRTH specifications for road & bridge works / Specifications for Rural roads, its manual / specification in force and/or special specification or the relevant specifications published by the Indian Road Congress.

5.8 CONTRADICTIONS OR AMENDMENTS

In the event of contradiction between the stipulations of the Schedule of rates (schedule of rate relevant to this NIT) and aforesaid specification (vide Para 5.1 to 5.6 above) the stipulations of the schedule of rates shall gain precedence.

In the event of contradictions, if any, between different specifications and or codes of practice, referred to above the decision of Engineer-in-Chief shall be final.

5.9 BLASTING

In case limited/suppressed blasting resorted to by the contractor in excavation of trenches, it will be the responsibility of the contractor to observe all rules and regulations permission

licence, procurement, preservation and storage of Explosive material etc.

5.10 CHANGE IN SPECIFICATIONS

Nothing in earlier clause shall, However, curtail the right of the Engineer-in-Charge to alter the specifications for any part or whole of the work if he considers it necessary in the interest of work. On all matters where there is difference of opinion, between the contractor and the Engineer-in-Charge, the matter will be decided by the "CHIEF MUNICIPAL OFFICER", **NAGAR PANCHAYAT, PANDATARAI**, which shall be binding to the bidders.

6. Supply of Materials

CEMENT

The Contractor shall procure minimum 43 grade, unless otherwise stated separately confirming to BIS Specifications, ordinary Portland cement, as required in the work only, from reputed manufacturers of cement having a production capacity of one million tons per annum or more, and as approved by Employer, Ministry of Industry, Government of India and holding license to use BIS certification mark for their product, whose name shall be got approved from Engineer-in-Charge. Supply of cement shall be taken either in silos or in 50 kg. bags bearing manufacturer's name and BIS marking. Samples of cement arranged by the Contractor shall be taken by the Engineer-in-Charge and got tested in accordance with provisions of relevant BIS codes. Cost of such tests shall be borne by the contractor. In case test results indicate that the cement arranged by contractor does not conform to be relevant BIS codes the same stand rejected and shall be removed from the site by the Contractor at his own cost within one week time of written order from the Engineer-in-charge.

The cement shall be brought at site in bulk supply of approximately 10 tons from the manufacturer direct, or as decided and approved by the Engineer-in-charge, as the case may be.

The cement godown of the sufficient capacity should be constructed by the contractor and at all time it should have a stock of minimum of 500 bags. The contractor shall facilitate the inspection of the cement godown by the Engineer-in-Charge at any time. Storage of cement shall be as per CPWD specification.

CEMENT BROUGHT AT SITE AND CEMENT REMAINING UNUSED AFTER COMPLETION OF WORK SHALL NOT BE REMOVED FROM SITE WITHOUT WRITTEN PERMISSION OF THE ENGINEER-IN-CHARGE.

7. MISCELLANEOUS CONDITIONS

7.1. SUBLETTING WORK

The contractor shall not without the prior approval of the authority who has accepted the tender in writing, sublet or assign to any other party or parties, any portion of the work under the contract. Where such approval is granted, the contractor shall not be relieved of any obligation or duty or responsibility, which he undertakes under the contract. However, such

subletting in no case be more than 25% of contract value. But if required can be increased up to 50(fifty)% with the prior permission of the next higher authority accepting the tender or the Government as the case may be.

7.2 TAXES

7.2.1

- (i) GST, Building and other Construction Workers Welfare Cess or any other tax, levy or Cess in respect of input for or output by this contract shall be payable by the contractor and **NAGAR PANCHAYAT, PANDATARA** shall not entertain any claim whatsoever in this respect except as provided under Clause 7.2.2.
- (ii) The contractor shall deposit royalty and obtain necessary permit for supply of the red bajri, stone, kankar, stone aggregate, earth, sand etc. from local authorities.
- (iii) If pursuant to or under any law, notification or order any royalty, cess or the like becomes payable by the Government of India and does not any time become payable by the contractor to the State Government, Local authorities in respect of any material used by the contractor in the works, then in such a case, it shall be lawful to the Government of India and it will have the right and be entitled to recover the amount paid in the circumstances as aforesaid from dues of the contractor.

7.2.2

- (i) All tendered rates shall be inclusive of any tax, levy or cess applicable on last stipulated date of receipt of tender including extension if any. No adjustment i.e. increase or decrease shall be made for any variation in the rate of GST, Building and Other Construction Workers Welfare Cess or any tax, levy or cess applicable on inputs. However, effect of variation in rates of GST or Building and Other Construction Workers Welfare Cess or imposition or repeal of any other tax, levy or cess applicable on output of the works contract shall be adjusted on either side, increase or decrease. Provided further that such increase including GST shall not be made in the extended period of contract for which the contractor alone is responsible for delay as determined by authority for extension of time under Clause 5 in Schedule F.
- (ii) The contractor shall keep necessary books of accounts and other documents for the purpose of this condition as may be necessary and shall allow inspection of the same by a duly authorized representative of the Government and/or the Engineer-in-charge and shall also furnish such other information/document as the Engineer-in-Charge may require from time to time.
- (iii) The contractor shall, within a period of 30 days of the imposition of any such further tax or levy or cess, or variation or repeal of such tax or levy or cess give a written notice thereof to the Engineer-in-charge that the same is given pursuant to this condition, together with all necessary information relating thereto.

7.3 ROYALTY

Minerals extracted for works carried out on behalf of the government, from the quarries in

possession of and controlled by the State Government or otherwise is subject to payment of Royalty by the contractor to whom it shall not be refundable.

7.4 MODEL RULES RELATED TO LABOUR, WATER SUPPLY AND SANITATION IN

7.4.1 LABOUR CAMPS

The contractor will be bound to follow the Model Rules, relating to layout Water Supply and sanitation in labour camps, as per Annexure - A and the provisions of the National Building Code of India, in regard to construction and safety.

7.5 FAIR WAGES

The contractor(s) shall pay not less than the fair wages to labour engaged by him on the work (copy of the Rules enclosed as Annexure - "A")

7.6 WORKS IN THE VICINITY

The CHIEF MUNICIPAL OFFICER, reserves the right to take up Departmental work or to award works on the contract in the vicinity without prejudice to the terms of contract.

7.7 BEST QUALITY OF QUARRIED MATERIALS

If the quarry material of more than one quality is found, the material approved by the Engineer-in-Charge will only be used by the contractor. If the materials of required Specification is not available in the nearby area/quarry, the contractor shall have to arrange the same from the place where it is available.

7.8. REMOVAL OF UNDESIRABLE PERSONS

The contractor shall on receipt of the requisition from the Engineer-in-Charge, at once remove any person employed by him on the work who in the opinion of the Engineer-in-Charge is unsuitable or undesirable.

7.9 AMOUNT DUE FROM CONTRACTOR

Any amount due to Government from the Contractor on any account of concerning work may be recovered from him as decided and approved by the Executive Engineer.

7.10 TOOLS & PLANTS

The contractor shall arrange at his own cost all Tools and Plants required for proper execution of work.

7.11 RIGHT TO INCREASE OR DECREASE OF WORK

The competent authority reserves the right to increase or decrease any item of work during the execution of the contract and the contractor will be bound to comply with the order of the competent authority without any claim for compensation or higher rates for additions and alterations.

7.12 TIME SCHEDULE

The work shall be done by the contractor according to the schedule fixed in consultation with the competent authority. BAR/PERT/CPM chart showing detailed programme shall have to be submitted and adhered to by the contractor.

7.13 TIME OF COMPLETION

The time allowed for carrying out the work i.e. **15 months (including rainy season) + 03 (three) months of trial run** shall be strictly observed and shall be reckoned from the date of issue of written order to commence the work. Delay beyond the specified time limit will be subject to liquidated damages according to clause 13 of Form "F" of Lump sum contract.

7.14 PAYMENTS BY CHEQUES/ ONLINE ACCOUNTING SYSTEM

The running payments shall be made in accordance with the Break up schedule of payment as per "Annexure F" (form "F")

7.15 TRANSPORT OF MATERIALS

The contractor shall make his own arrangements for transport of all materials. The Engineer-in-Charge is not bound to arrange for priority in getting wagons or any other materials though all possible assistance by way of recommendation will be given if it is found necessary in his opinion, if the recommendation proves to be in-effective, the contractor shall have no claim for any compensation on that account.

The methodology and equipment, material, labour, transport to be used on the project shall be furnished by the contractor to the Engineer-in-charge well in advance of commencement of work and approval of the Engineer-in-charge obtained prior to its adoption and use.

The contractor shall give a trial run of the equipment for establishing its capability to achieve the laid down specifications and tolerance to the satisfaction of the Engineer-in-charge before commencement of work, if so desired by the Engineer-in-charge.

All equipment provided shall be of proven efficiency and shall be operated and maintained at all time in a manner acceptable to the Engineer-in-charge.

No equipment or personnel will be removed from site without permission of the Engineer-in-charge.

7.16 PROGRAMME OF WORK

The works to be carried out under this Contract form an important part of the execution of this Project, Satisfactory progress of the entire project as a whole depends upon the timely completion of these works. For this reason, great importance needs to be attached for proper programming for the works with adequate provision for guarding against all the delays normally encountered in execution of various activities.

The contractor shall include with his tender a critical path network diagram which commences from the date of issue of Order of Commencement and includes inter alia the various activities as per the programme of works, furnished as specified in Schedule.

- 1) Activity duration in months and event times should be in months from the first event on the network and event numbers;
- 2) A tabulation of months from the starting date of the network to enable earliest and latest event dates to be read off; duration in months to be the last day of the month and the monsoon months of 15th June to 15th October to be specially indicated in the table;
- 3) The timing of events shown in the programme of work to be adhered to and shown in the network;
- 4) The erection programme shall be shown in detail (with not more than 15 activities) with durations in weeks shown in brackets behind the duration in months on the network diagram wherever considered necessary;
- 5) The programme for setting-up, treating, delivery, storage (if necessary) and installation of the Plant.
- 6) Placing being a part of the erection programme.
- 7) Programme for submission of Instruction Manuals and Record Drawings;

As soon as practicable, and in any case not later than four weeks, after acceptance of his tender the Contractor shall submit to the Engineer-in-Charge for his approval a programme showing the order of procedure in which he proposes to carry out the works.

Particulars to be shown on the programme shall include:

- 1) Submission of drawings;
- 2) Placing of work orders;
- 3) Stages of manufacture;
- 4) Tests at place(s) of manufacture;
- 5) Deliveries to Site;
- 6) Construction of Civil works ready for erection of Plant;
- 7) Mechanical completion of erection at site;
- 8) Tests at site;
- 9) Finishing and completion of civil and electrical works.

Any approval of or consent to the Contractor's programme by the Engineer-in-Charge shall not relieve the Contractor of his duties and responsibilities under the Contract.

7.17 REVISED PROGRAMME OF WORK IN CASE OF SLIPPAGE

In case of slippage from the approved work programme at any stage, the contractor shall furnish revised programme to make up the slippage within the stipulated time schedule and obtain the approval of the Engineer-in-Charge to the revised programme. Such progress report shall be submitted monthly (by 5th of each month) in the prescribed format in the tender documents.

7.17.1 PROGRESS

The Contractor shall submit to the Engineer-in-Charge during the first week of each month a "Monthly Progress Report" with weighted activities all in an approved format so that actual progress at the end of the preceding month may be compared with the Contractor's programme.

The progress report shall also, include status report on the following approved individual formats:

- 1) Drawings;
- 2) Supplies of Plant Items;
- 3) Construction programme;
- 4) Construction Progress;
- 5) Overall Progress Curve;

From time to time the CHIEF MUNICIPAL OFFICER, **NAGAR PANCHAYAT, PANDATARAI** or Engineer-in-Charge will call meetings in their office or at the Engineer's Site Office, as they deem necessary for the purpose of control of the Contract, a responsible representative of the Contractor shall attend such meetings.

The Contractor shall regularly review his programme in the light of the progress actually achieved and shall submit for approval updated PERT/CPM network and bar charts at intervals to be agreed with the Engineer-in-Charge. If progress falls behind that needed to ensure timely completion of the various parts of the works, the Contractor shall submit proposals for improving his methods and pace of working to the satisfaction of the Engineer-in-Charge shall carry out such measures as are needed to ensure that the works are completed on time.

7.18 PRODUCTION, SUBMISSION AND APPROVAL OF ENGINEERING DOCUMENTS

The production, submission and approval procedure for design & drawings and documents shall comply with the following requirements.

7.18.1 Meaning

The following meanings shall apply:

"Preliminary drawings" means drawings which the Contractor submits to the Engineer-in-Charge through PMC for approval and any drawings returned by the Engineer-in-Charge marked "Preliminary" or not marked "Approved".

"Approved Drawings" means drawings which the Engineer-in-Charge has marked.

"Approved" and returned to the Contractor. Approval in this context means that the work described thereon may proceed.

"Preliminary" and "Approved" as applied to designs and documents shall have the same meanings as applied above to drawings. A drawing which forms part of an approved design or document shall not be considered as approved drawing unless it has been marked "Approved".

7.18.2 Numbering and Titling

The Contractor shall institute a reference numbering system for designs, drawings and documents so that each number used is unique. The numbering and title information on designs, drawings and documents shall be designed so that management, transmittal and communication therewith can be carried out expeditiously.

7.18.3 Submission Procedure

Every drawing submitted by the Contractor to the Engineer-in-Charge through Project Development and Management Consultants for checking and approval shall be based on previously approved designs or documents. Interrelated drawings shall be submitted at the same time in a complete and self-sufficient set.

In the case of first submissions by the Contractor to the Engineer-in-charge for approval, each design, drawing and document shall reach the Engineer's review office in time to allow 30 working days (excluding weekends and national holidays) for checking by the Engineer-in-Charge before return to the Contractor. Contractor has to carry out the required changes for the queries raised during the vetting without any extra charge.

7.18.4 Manufacturer's and Contractor's Certificate

Where certificates are required by the Specification or relevant Reference Standard, the original and one copy of each such certificate shall be provided by the Contractor.

Certificates shall be clearly identified by serial or reference number where ever possible to the material being certified and shall include information required by the relevant Reference Standard or Specification Clause.

The instruction manuals shall describe the installation as a whole and shall give a step-by-step procedure for any operation likely to be carried out during the life of such item of Plant, including the erection, commissioning, testing, operation, maintenance, dismantling and repair.

Maintenance instructions shall include charts showing lubrication, checking, testing and replacement procedures to be carried out daily, weekly, monthly and at longer intervals to ensure trouble-free operation. Where applicable, fault location charts shall be included to facilitate tracing the cause of malfunction or breakdown.

A section dealing with procedures for ordering spares shall Also, be included in the instruction.

Three draft copies of the manual shall be submitted to the Engineer's Representative prior to commissioning the works. Five final copies of the amended and corrected manuals and drawings shall be provided at the commencement of the period of Maintenance.

All the electrical and mechanical equipments shall be subjected to approved third party inspection at place of manufacture, at contractor's cost.

Transit insurance of all equipments shall be the contractor's responsibility.

Contractor shall have to take the certificate from the Electrical Inspector for regarding all electrical equipments before commissioning of plant.

Important instructions charts shall be framed and fixed at appropriate and prominent places.

7.18.5 Maintenance Instructions

A maintenance manual shall be provided as supporting documents to the equipment manufacturer's instructions.

(i) Maintenance Manual

Checking, testing and replacement procedures to be carried out on all mechanical and electrical plant items on a daily, weekly and monthly basis or at longer intervals to ensure trouble free operations.

Fault location and remedy charts to facilitate tracing the cause of malfunctions or breakdown and correcting faults.

A complete list of recommended lubricants, oils and their charts.

A spares schedule, which shall consist of a complete list of item wise spares for all electrical and mechanical plant items with ordering references and part numbers.

A complete list of manufacturer's instructions for operation and maintenance of all bought-out equipment. The list shall be tabulated in alphabetical order giving the name of the Supplier/Manufacturer, identification of the plant item giving the model number and the literature provided including instruction leaflets and drawing numbers.

Preventive maintenance details.

7.18.6 Record Drawings

The Contractor shall provide record drawings including those drawings submitted by the Contractor to show the whole of the plant as installed and all civil works as built. These shall include all such drawings, diagrams and schedules as are necessary for a complete understanding of the works. Information given on record drawings shall include tolerance, clearances, loadings, finishes, materials and ratings of Plant and associated civil works. The Contractor shall ensure that the approved and completion drawings are marked up, to show the condition of plant as installed and associated Civil Works, as built and two copies of such marked up prints shall be submitted to the Engineer-in-Charge for approval prior to the preparation of Record Drawings. Submission to and approval by the Engineer-in-Charge or Record Drawings shall be pre-requisite for the last taking over certificate. All the Record Drawings shall be of A2 size, in five copies, out of which 3 sets shall be plastic, laminated for long-life. In addition, one set of Microfilm of all the Record Drawings Also, shall be furnished. The text of all the reports shall be prepared on a widely used IBM compatible MS Word / MS Excel, and all the Drawings shall be prepared using AutoCAD Software and in .pdf form. When reports, drawings are furnished to **NAGAR PANCHAYAT, PANDATARAI**, two copies of the processor files together with 2 copies of a descriptive memorandum linking these files to the text, drawings etc., shall Also, be provided to the **NAGAR PANCHAYAT, PANDATARAI** on CDs, Pen drive, data base preferable on MS office and AutoCAD latest versions and in .pdf form. The contractor shall have to provide a ruled duplicate register at site named "Site orderbook". It shall be in the custody of departmental supervisory staff. The Engineer-in-Charge or his authorized representative shall record their instructions in this book, which shall be noted by the contractor or his authorized representative for compliance.

7.19 If any item of work is found to be substandard but the Engineer-in-Charge is of

the opinion that the same is structurally adequate and can be accepted at the reduced rate, then in such cases, the Engineer-in-Charge shall have to submit proposals for appropriate reduction of rates supported by an analysis, in justification thereof, through a D.O. letter to the Superintending Engineer concerned and obtain his approval expeditiously (ordinarily within 15 days). The approved analysis along with orders of the Superintending Engineer shall have to be appended IN the bills of the contractor.

8.0 SPECIAL CONDITIONS

8.1 AGREEMENT

The Notes and specifications given in the detailed notice inviting tenders and its annexure are to be read in conjunction with conditions given in the short notice inviting tenders and the conditions of Contract. These have been intended to supplement the provisions, in the NIT and the conditions of the Contract. All these will be binding on the contractor and shall form part of the agreement. However, in case of any contradiction between Corrigendum/Clarifications /Amendments and the NIT, the CORRIGENDUM/CLARIFICATIONS/AMENDMENTS will supersede.

8.1.1 EXECUTION OF AGREEMENT

The Tenderer whose tender has been accepted shall have to execute the agreement within a fortnight of the communication of the acceptance of his tender by the competent authority. Failure to do so will result in the Earnest Money being forfeited to **NAGAR PANCHAYAT, PANDATARAI** and tender being cancelled.

8.1.2 TECHNICAL SUPERVISION :-

- (a) The contractor shall employ the following Technical Staff during the execution of work.
- (b) One graduate engineer when the work to be executed is more than Rs. 25 Lakh.
- (c) One diploma engineer when the cost of work to be executed is from Rs. 5 Lakh to 25 Lakh.
- (d) The Technical Staff should be available at the site and take instructions from the Engineer-in-Charge or other supervisory staff.
- (e) In case the contractor fails to employ the technical staff as aforesaid, the E.E. shall have the right to take suitable remedial measures.
- (f) The contractor shall give the names and other details of the graduate engineer/diploma engineer whom he intends to employ or who is under employment with him, at the time of the agreement and also give his curriculum vitae.
- (g) The contractor shall give a certificate to the effect that the graduate engineer/diploma engineer is exclusively in his employment.
- (h) A graduate engineer or diploma engineer may look after more than one work in the same locality, but the total value of such works under him shall not exceed Rs. 100 Lakh in the case of a graduate engineer and Rs. 50 Lakh in the case of a diploma

engineer.

- (i) It shall not be necessary for the firm/company whose one of the partners is a graduate engineer/diploma engineer to employ another graduate engineer/diploma engineer subject to the conditions provided under 8.1.2(a), (b), and (f).
- (j) The Retired Assistant Engineer who is holding a diploma may be treated at par with a Graduate for the operation of the above clause.

Note: Such Degree or Diploma engineer must be always available on the work site on a day-to-day basis and actively supervise, instruct, and guide the contractor's workforce and also receive instructions from the Departmental Engineers/Sub Engineers.

In case the contractor fails to employ the above technical staff or fails to employ technical staff/personnel as submitted by the contractor in Prequalification documents if prequalification is called and/or the technical staff/personnel so employed are generally not available on the work site and/or do not receive or comply with the instructions of the Department Engineers, the Engineer-in-Charge shall recover/deduct from his bills. In case of the contractor fails to employ the technical staff as aforesaid he shall be liable to pay to the government a sum of **Rs. 20,000/- (Rupees Twenty Thousand) for each month of default**. If the default continues for more than 2 months, then such default can be treated as a "Fundamental Breach of Contract" and the contract can be terminated, and action shall be taken.

8.1.3 ANNEXURE

Other than form 'F' and condition of contract documents appended as annexures with this N.I.T. and these shall be part of Contract Agreement.

8.2 Conditions applicable for contract

All the conditions of the tender notice will be binding on the contractors in addition to the conditions of the contract in the prescribed form :

Following documents annexed with this N.I.T shall form an integral part of the contract document.

Annexure- "A" : Model Rules relating to labour, water supply and sanitation etc.

Annexure-"B" : Contractor's labour regulations.

Annexure-"C": Drawings – As per Enclosure-1

Annexure D : Statement showing the lead of materials

Annexure E : Specifications of Entire Work

Annexure F : Breakup schedule of Payments

9.0 BID OPENING AND EVALUATION

9.1 Bid Opening

- 1) The **NAGAR PANCHAYAT, PANDATARA** will open the bids received (except those received late). In the event of the specified date for the submission of bids

being declared a holiday for **NAGAR PANCHAYAT, PANDATARAI**, the Bids will be opened at the appointed time and location on the next working day.

- 2) The envelope containing the technical bid shall be opened. The document marked "cost of bidding document" will be opened first and if the cost of the bidding documents is not there, or incomplete, the remaining bid documents will not be opened, and bid will be rejected.

In all other cases, the amount of Earnest Money, forms and validity shall be announced. Thereafter, the bidders' names and such other details as the **NAGAR PANCHAYAT, PANDATARAI** may consider appropriate, will be announced by the **NAGAR PANCHAYAT, PANDATARAI** at the opening.

- 3) The **NAGAR PANCHAYAT, PANDATARAI** will prepare minutes of the Bid opening, including the information disclosed to those present in accordance with relevant Clause of ITB.
- 4) Evaluation of the technical bids with respect to bid security, qualification information and other information furnished in Part-I of the bid in pursuant to relevant Clause of ITB, shall be taken up and completed and a list will be drawn up of the responsive bids whose financial bids are eligible for consideration.
- 5) The **NAGAR PANCHAYAT, PANDATARAI** shall inform, by email, telegram or fax, the bidders, whose technical bids are found responsive, date, time and place of opening as stated in the Notice Inviting Bid.
- 6) At the time of the opening of the 'Financial Bid', (Envelope 'C') the names of the bidders whose bids were found responsive in accordance with relevant clause of ITB will be announced. The financial bids of only these bidders will be opened. The responsive bidders' names, the Bid prices, the total amount of each bid, and such other details as the **NAGAR PANCHAYAT, PANDATARAI** may consider appropriate will be announced by the **NAGAR PANCHAYAT, PANDATARAI** at the time of bid opening.
- 7) Process to be Confidential (a) 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 persons not officially concerned with such process until the award to the successful Bidder has been announced. Any attempt by a Bidder to influence the **NAGAR PANCHAYAT, PANDATARAI**'s processing of bids or award decisions may result in the rejection of his Bid
- 8) Clarification of Bids and Contacting the **NAGAR PANCHAYAT, PANDATARAI**- If required **NAGAR PANCHAYAT, PANDATARAI** may ask clarifications from Bidders during evaluations of bids.
- 9) No Bidder shall contact the **NAGAR PANCHAYAT, PANDATARAI** on any matter relating to its bid from the time of the bid opening to the time the contract is awarded.
- 10) Any attempt by the bidder to influence the **NAGAR PANCHAYAT, PANDATARAI** bid evaluation, by any means, bid evaluation, bid comparison or contract award decision may result in the rejection of his bid.

9.2 Examination of Bids and Determination of Responsiveness

- 1) During the detailed evaluation of "Technical Bids"(Envelope 'B'), the **NAGAR PANCHAYAT, PANDATARAI** will determine whether each Bid

- (a) Meets the eligibility criteria as defined in relevant Clauses.
- (b) Has been properly signed;
- (c) Is accompanied by the required securities; and
- (d) Is substantially responsive to the requirements of the bidding documents.

During the detailed evaluation of the "Financial Bids"(Envelope 'C'), the responsiveness of the bids will be further determined with respect to the remaining bid conditions, i.e., priced bill of quantities, technical specifications and drawings.

- 2) A substantially responsive "Financial Bid" is one, which conforms to all the terms, conditions, and specifications of the bidding 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 bidding documents, the **NAGAR PANCHAYAT, PANDATARAI**'s rights or the Bidder's obligations under the Contract; or
 - c. Whose rectification would affect unfairly the competitive position of other bidders presenting substantially responsive bids.

9.3 Corrections of Errors

- 1) Bids determined to be substantially responsive, will be checked by the **NAGAR PANCHAYAT, PANDATARAI** for any arithmetic errors. Errors will be corrected by the **NAGAR PANCHAYAT, PANDATARAI** as follows:
 - a) Where there is a discrepancy between the rates in figures and in words, the rate in words will govern; and
 - b) Where there is a discrepancy between the unit rate and the line item total resulting from multiplying the unit rate by the quantity, the unit rate as quoted will govern.
- 2) The amount stated in the Bid will be adjusted by the **NAGAR PANCHAYAT, PANDATARAI** 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, the Bid will be rejected, and the Earnest money shall be forfeited in accordance with relevant Clause of ITB.

9.4 Evaluation and Comparison of Bids

- 1) The **NAGAR PANCHAYAT, PANDATARAI** will evaluate and compare only the bids determined to be substantially responsive in accordance with relevant Clause of ITB.

- 2) In evaluating the bids, the **NAGAR PANCHAYAT, PANDATARAI** will determine for each Bid the evaluated Bid price by adjusting the Bid price by making correction, if any, for errors pursuant to relevant Clause of ITB.
- 3) If the Bid of the successful Bidder is seriously unbalanced in relation to the Engineer's estimate/PAC of the cost of work to be performed under the contract, the **NAGAR PANCHAYAT, PANDATARAI** 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 **NAGAR PANCHAYAT, PANDATARAI** may require that the amount of the performance bank guarantee set forth in relevant Clause of ITB be increased as described in relevant clause.

**CHIEF MUNICIPAL OFFICER,
NAGAR PANCHAYAT, PANDATARAI**

10 SPECIAL CONDITIONS

1. Project Management Consultants (PMC) engaged by **NAGAR PANCHAYAT, PANDATARAI**, will carry out complete supervision, quality control of activities carried out by contractor including checking measurement, designs, drawings, contractors bill, all deliverables till completion of the contract & rectification of deliverables.

2. APPROVAL OF DESIGNS & DRAWINGS

All design calculations & detailed drawings of all components (Electrical, Mechanical & Structural) of the project shall be prepared by contractor and the contractor shall get it approved from relevant department of Indian Institute of Technology (IIT)/ National Institute of Technology (NIT) / State Govt. Engineering Colleges (SGEC) at the cost of contractor and then submitted to **NAGAR PANCHAYAT, PANDATARAI** for approval. It will be mandatory on the part of the contractor to prepare the detailed designs and the Basic Engineering Package (BEP) from the same institute.

- (a) The successful bidder shall carry out detailed topographical survey of all the components of the work and shall first submit General Arrangement drawing accommodating all the proposed units & submit the same for approval through PMC. All costs shall be borne by the contractor.
- (b) Contractor shall also, prepare, submit hydraulic designs, process designs including structural design & architectural drawings and get them approved from relevant department of IIT / NIT / SGEC and finally submit them for approval of Engineer-in-charge through PMC. All costs shall be borne by the contractor. No extra charges shall be paid for the revision in designs to be carried out for complying the queries raised during the scrutiny.
- (c) PMC deployed by the Engineer-in-charge shall act as the representative of the Engineer-in-charge to the Contractor. Unless specified otherwise, the PMC shall be involved in testing of materials, supervision of works to ensure quality as per required (IS / Technical specifications) standards. Contractor shall provide support and assistance in all field works, checking of measurements, bills, work done (temporary / permanent) in the field, including all works to be carried out by the Engineer-in-charge. However, written approval of designs, drawings, additions, alterations, omissions, substitutions, approval for non-schedule items / rates as required shall be obtained from competent Authority of **NAGAR PANCHAYAT, PANDATARAI**

3. **THIRD PARTY INSPECTION** of all items before procurement shall be carried out by **any Agency nominated by Central Govt. / State Govt.** based on Datasheets, Quality Assurance Plan & complete specifications as submitted by the Contractor to Engineer-in-charge. Third Party Inspection charges will be borne by the Contractor.

Third Party Inspection (TPI) of all pipes, fittings and all kinds of valves, Electro-mechanical equipment shall be carried out based on the Quality Assurance Plan duly prepared and submitted by the contractor. These TPI charges will be borne by the contractor. Further for witnessing the tests at works of the manufacturer by 2 No. officials

of the **NAGAR PANCHAYAT, PANDATARAI**, the contractor shall arrange the same and bear the entire cost.

4. PERFORMANCE BANK GUARANTEE

(i) The contractor shall submit an irrevocable Performance Guarantee at specified percentage of the tendered amount in addition to other deposits mentioned elsewhere in the contract for his proper performance of the contract agreement, (not withstanding and/or without prejudice to any other provisions in the contract) within 15 Days from the date of issue of letter of acceptance. This period can be further extended by the Engineer-in-charge up to a maximum period with 0.1% per day delay charges on written request of the contractor stating the reason for delays in submitting the Performance Guarantee, to the satisfaction of the Engineer-in-Charge. This Guarantee shall be in the form of Bank Guarantee from any of the Commercial Banks.

(ii) The Performance Guarantee shall be submitted by the contractor on format as per NIT and shall be initially valid up to 3 months after the defect liability period. In case the time for completion of work gets enlarged, the contractor shall get the validity of Performance Guarantee extended to cover such enlarged time for completion of work. After recording of the completion certificate for the work by the competent authority, the performance guarantee shall be returned to the contractor, without any interest as mentioned below.

(iii) The Engineer-in-Charge shall not make a claim under the performance guarantee except for amounts to which the **NAGAR PANCHAYAT, PANDATARAI** is entitled under the contract (not withstanding and/or without prejudice to any other provisions in the contract agreement) in the event of:

(a) Failure by the contractor to extend the validity of the Performance Guarantee as described herein above, in which event the Engineer-in-Charge may claim the full amount of the Performance Guarantee.

(b) Failure by the contractor to pay **NAGAR PANCHAYAT, PANDATARAI** any amount due, either as agreed by the contractor or determined under any of the Clauses/Conditions of the agreement, within 30 days of the service of notice to this effect to the contractor by Engineer-in-Charge.

(iv) In the event of the contract being determined or rescinded under provision of any of the Clause/Condition of the agreement, the performance guarantee shall stand forfeited in full and shall be absolutely at the disposal of the **NAGAR PANCHAYAT, PANDATARAI**.

(v) As per requirement of the client or otherwise specified in the contract, part completion certificate may be issued for the project for the part(s) which have been completed in all respect and are ready for use. However, statutory approvals, Completion drawing of various services, wherever required, shall be obtained before handing over of the project. Scope of the completed part(s) shall be mentioned in such part completion certificate.

The part completion certificate shall include outstanding balance work that need to be completed in accordance with the provisions of the contract. This part completion certificate shall be recorded by the authority as per contract value of work.

For Construction Works

The Performance Bank Guarantee shall be 5% of the of the Contract value (Construction works) in the form of Bank Guarantee valid for 3 months after completion of defect liability period.

Operation and Maintenance Work

In the case of Bank Guarantee for O&M period, the Performance Bank Guarantee will be 5% of the amount of the offer quoted for 05 years in the form of Bank Guarantee O&M and will have to be furnished after the construction is over and completion certificate has been issued. The validity of the performance security for O&M works shall be for 05 years of O&M + 3 months.

5. REFUND OF SECURITY DEPOSIT

Refer Clause 3.6 of Instruction for Bidders, for Details.

6. RECEIPT FOR PAYMENT BY PERSON HAVING POWER OF ATTORNEY

All correspondence with the Employer and receipts for payments made on account of a work when executed by a firm must be signed by the Authorised Signatory Only.

7. MOBILISATION ADVANCE

Mobilization advance up to 5% (Five percent) of the contract value shall be given if requested by the contractor within one month of the date of order to commence the work. In such a case the contractor shall furnish Bank Guarantee from schedule bank for the equal amount in favour of the CHIEF MUNICIPAL OFFICER before sanction and release of the advance. The advance shall be Interest free. The 5% (Five percent) advance shall be given in two stages.

Stage-1: 2% (Two percent) of the contract value payable after signing of the agreement.

Stage-2: 3% (Three percent) of the contract value payable on receipt of the certificate from the contractor that he has established complete testing laboratories and has engaged workers/technicians and have brought requisite plants and machineries at work site, and also, that the work is physically started and only after construction programme is submitted by the contractor and is duly approved by the Engineer-in-Charge.

8. RECOVERY OF ADVANCE

The recovery of above advances (mobilizations, plants and machineries) shall be recovered in equal monthly installments on pro-rata basis (after 15% (Fifteen percent) of contract work is executed) from each of the further running bills. However, all these advances shall be fully recovered when 80% (Eighty percent) contract sum is complete or when 75% (Seventy Five percent) of stipulated or validity extended period is over – which ever event is earlier.

9. USE OF DI FITTINGS

Provision of laying & jointing of DI fittings P.N. 1.6 conforming to IS: 9523:2000 duly inspected and approved by any Agency nominated by Central Govt. / State Govt. DI specials shall be manufactured as per IS: 9523 and shall be ISI marked. In case of flanged joints, the flanges shall be at right angles to the axis of the pipe machined on the face. The bolt-hole circle shall be concentric with the bore and bolt holes shall be located off the centre lines as per IS: 9523. Fittings shall be tested as per IS: 9523.

10. HINDRANCE FREE ALIGNMENT OF PIPELINE ETC

NAGAR PANCHAYAT, PANDATARAI will provide hindrance free alignment. The bidders should inspect the whole alignment but the tenderer should make himself conversant with site conditions, strata, nala crossings, road crossings, railway crossings, canal crossings etc completely. All permissions from Government/ Semi Government Authorities shall be taken by **NAGAR PANCHAYAT, PANDATARAI** for above works in assistance with the contractor. Contractor has to bring to the notice of **NAGAR PANCHAYAT, PANDATARAI** in advance regarding shifting of utilities required to be carried out. Contractor has to carry out the required shifting following all safety norms and time constraints if any. Shifting schedule has to be got approved by **NAGAR PANCHAYAT, PANDATARAI**.

11. DEPTH OF EXCAVATION FOR LAYING OF PIPELINE

The crown of the pipeline will be kept minimum 1.0 m below the firm GL and as per the actual requirement of site and design & planning as approved.

12. ORDER OF PRIORITY

Order of priority as given below shall prevail: -

- Specifications as per NIT.
- Specifications of the SOR (Latest).
- Specifications mentioned in CPHEEO Manual (Latest Edition) for various Sewage collection, conveyance and treatment components.
- Relevant IS Codes (Latest).

13. STATUS OF ENVIRONMENTAL CLEARANCE

Since this being a Sewage Treatment Project involves neither displacement /rehabilitation of people nor any pollution of water body, hence no Environmental Clearance is required.

Consent to Establish: Shall be taken by **NAGAR PANCHAYAT, PANDATARAI**, however all the relevant data and checklists shall be filled by the Contractor.

Consent to Operate: Shall be taken by the contractor as and when required, however the fees to be paid to Chhattisgarh Environment Conservation Board (CECB) shall be Borne by the **NAGAR PANCHAYAT, PANDATARAI**

14. VALVES WITH ACTUATORS

The valves should be provided with actuators wherever applicable.

15. LAYOUT PLAN OF INTERCEPTOR SEWER PIPE LINE / DRAIN

Location of Interceptor Sewer pipes / Drains with all the appurtenances, invert of pipe / drain and all the land marks with geo-coordinates marked on the L-section will be prepared by the contractor for the approval of Engineer-in-Charge as mentioned in ANNEXURE-E.

16. DELETED

17. PROCUREMENT OF PIPES & VALVES

Contractor shall take written procurement clearance for the specified quantities of pipes, valves, specials etc from Engineer-in-Charge before taking procurement action.

(a) Road breaking and its reinstatement will be carried by the contractor as per tender.

18. INTERCONNECTIONS OF RISING MAINS

The contractor is expected to visit the site of work and make his own assessment of quantum of work required to be carried out, Further before actual **implementation** of work the drawing of interconnections will have to be got approved from the Engineer-in-Charge. The interconnections of rising mains of all STPs with the wet well is included in the scope of work of this Contract.

19. STP's EFFLUENT DISCHARGE ARRANGEMENT

The discharge of the STP's has to be taken as mentioned in ANNEXURE-E. However, the contractor has to make drainage arrangement for entire treated effluent of STPs in to the nearby river/ Nala as per discharge standard mentioned ANNEXURE-E through gravity. The invert level of the outlet of the STPs should therefore be fixed considering H.F.L. of nala /natural drain so that drainage by gravity even during flood can be possible.

20. 3MONTHS TRIAL RUN OF COMPLETE WORK AFTER COMPLETION OF WORK

(a) The tender must be inclusive of operation of the plant for the 03 months trial run period free of charge by contractor's trained and qualified Engineers who should be completely familiar with the equipment supplied and erected and they shall train the Departmental Staff in operation & maintenance of the plant within that period. Detailed operation manual as well as the drawings of equipment supplied, should also, be supplied by the contractor free of cost. The cost of electrical energy and pay to departmental staff if any deployed for training of operation of the plant, will be paid by the Department during this period. Cost of chemical etc. including complete O&M shall be borne by the contractor including replacement and warranty of any item component/spares. Critical Design Parameters must be demonstrated within the test run for this period of three months." (ULB shall deduct the Electricity Charges as per CSPDCL Bills from contractor's O&M Bill/ any other payable amount)

(b) Period of construction shall be reckoned from date of issue of work order to time of completion. Defect liabilities, tests, guarantee and trial run will be as per NIT.

After satisfactory completion of the complete work including testing, installation, commissioning, the Engineer-in-charge will issue the Completion Certificate. After which 3 months of trial run at actual work will be carried out. Any non-compliance in terms of running, delivery and performance of each component of the complete WORK will be maintained and recorded by the Engineer-in-Charge. Record of the incoming raw sewage quality (physical, chemical and biological parameters) and that of the treated sewage rendered from the proposed STPs shall be maintained.

Each day/part of the day when raw sewage Intake structure or the Sewage treatment Plant does not deliver as per the norms of Contract Agreement and CPHEEO Manual means that the trial run will be extended by that many days without any extra cost to **NAGAR PANCHAYAT, PANDATARAI**.

21. LIST OF SPARES TO BE MAINTAINED DURING O&M PERIOD OF STPs:

The contractor shall operate and maintain the sewage treatment plant including all the civil structures, electro-mechanical equipment, pipes, pipe specials, instrumentation provided by the contractor in the Sewage Treatment Plants. The Contractor shall maintain spares with stores for the proper upkeep of the STPs. List of spares is given in O&M schedules.

For repairs and proper upkeep of the STPs in case any repair to any equipment is required, no extra payment will be paid to the contractor.

For non-compliance of the effluent quality parameter a penalty of Rs. 5000/- for one event in a day shall be levied.

22. TESTING OF RAW AND TREATED SEWAGE DURING 05 YEARS O&M BY THE CONTRACTOR

"Daily the contractor has to get the raw and treated sewage tested at least three times at 8 hour interval for the parameters viz., BOD, COD, TKN, color, pH, TDS, Chlorides and coliform for all Sewage Treatment Plants.

23. GENERAL REQUIREMENTS FOR BUILDING WORKS

Unless otherwise specified, all the building works shall generally comply with the following Employer's Requirements:

- a. All buildings shall have reinforced concrete framework.
- b. 75 mm thick PCC Damp Proofing Course in M20 shall be provided to all building walls at plinth level with anti-termite treatment in foundation & plinth.
- c. The plinth level of the Structures such as admin building and pumphouse shall be minimum 0.6M above the finished ground level.

24. TOPOGRAPHIC SURVEY

The contractor will carry out the Topographic survey work by using Total station/ DGPS of the entire site where the components of the project are required to be constructed/laid. This is mandatory to confirm the levels and the lengths. Only after this exercise is carried out, contractor should prepare the detailed designs drawings, L-sections based on the design etc. The cost of all the necessary survey and investigation regarding the HFL study, design etc. shall be deemed to be included in the contractors offer. The drawings attached with the NIT are for tender purpose only, no claim shall be entertained for any values/ Levels mentioned on the tender drawings. The contractor has to prepare their designs and drawings as per the conditions of NIT and shall submit for approval to **NAGAR PANCHAYAT, PANDATARAI**.

25. The flows of nala(s) mentioned in the scope of work have been assessed/measured at the time of proposal, However, the contractor shall re-ascertain (remeasure) the flows and accordingly prepare all the designs of pumps and other components. The cost of such variations if any shall be deemed to be included in the contractors lumpsum offer. During survey if the contractor observes any additional nala or stream which is necessary to be intercepted then the same shall be considered in the design and payment for the additional

necessary pipeline and chambers etc. shall be made as per the conditions of the contract.

The contractor must procure and install informatory board's displaying Name of work at the location given by **NAGAR PANCHAYAT, PANDATARA** at his own cost.

26. DELETED

27. TESTING LABORATORY AT CONSTRUCTION SITE

The contractor shall arrange a testing laboratory with all testing equipment and trained staff required for proper testing of construction material likely to be used in execution of work. at his own cost.

28. SITE OFFICE

The contractor shall provide at least one site office at project site consisting two rooms with AC, Furniture and other equipments along with one attendant for **NAGAR PANCHAYAT, PANDATARA** field Engineers.

29. OFFICE EQUIPMENT ON SITE OFFICE

The contractor shall provide minimum one number desktop with latest configuration including one number printer to **NAGAR PANCHAYAT, PANDATARA** for monitoring of execution and maintenance work.

30. ACCESS ROAD TO SITE OF WORK

Access Road has to be provided by the contractor at his own cost for transportation of construction material and equipment and manpower.

31. LABOUR REPORT

Contractor will submit a report of daily labours engaged and copy of the same be attached with the running account bill, failing which no payment will be made to the contractor.

The Contractors shall make his own arrangement at his own cost for housing his staff and stores for the work and prevalent State Rules relating to layout, water supply and sanitation shall be followed.

Observance of Law - The contractor shall conform to the regulations and by-laws of any local authority and/or of any water or power (electricity) companies, with whose system the structure is proposed to be connected from work site, except with the written permission of the Engineer-in-Charge.

Contractor will submit a report on labour engaged to local employment office and copy of same may be attached with the running account bill, failing which Rs.50/- will be deducted from each running bill. Total recovery on this account may be effected on the final bill.

32. LABOUR LICENCE

Every contractor who employs on any day of the preceding 12 months, twenty or more workers on contract is required to obtain license from the Licensing Officer or the Contract as per provision contained under Sub-section 4 (b) of section 2 of the Contract Labour (Regulation and Abolition) Act 1970 as per provision contained in Section 12 of Act. No,

contractor shall execute any work without obtaining licence, contravention of above is punishable and contractor is liable to be prosecuted. The successful tenderer is liable to produce licence as and when demanded by the Engineer-in-Charge, obtained from labour Department as laid down in chapter 4 of Contract labour (Regulation and abolition) Act 1970. The labour license shall be insisted upon to be obtained by the Contractor after the award of contract.

33. NOTICE TO BE GIVEN BEFORE WORK IS COVERED UP

The contractor shall give not less than five day's notice in writing to the Engineer-in-Charge or his subordinate in charge of the work before covering up or otherwise placing beyond the reach of measurement any work in order that the same may be measured and correct dimensions thereof be taken before the same is so covered up or placed beyond the reach of measurement and shall not cover up or place beyond the reach of measurement any work without the consent in writing of the Engineer-in-Charge or subordinate-in-charge of the work, and if any work shall be covered or placed beyond the reach of measurement without such notice having been given or consent obtained the same shall be uncovered at the contractor's expense or in default thereof no payment or allowance shall be made for such work or materials with which the same was executed.

34. SITE ORDER BOOK

An order book, to be called, as site order book shall be kept at the Site office of **NAGAR PANCHAYAT, PANDATARAI**. As far as possible, all orders regarding the work are to be entered in this book. All entries shall be signed and dated by **NAGAR PANCHAYAT, PANDATARAI** officers in direct charge of the work and noted by the contractor or his accredited representative. The site order book shall not be removed from work site, except with the written permission of the Engineer-in-Charge.

35. CONTRACTORS PROJECT MANAGER AND CONTRACTORS STAFF

The contractor shall, in his own absence keep constantly on the works a competent and well qualified and experienced Project Manager, and any direction or explanations given by the Superintending Engineer or his staff to Contractor's Project Manager shall be held to have been given to the contractor. The contractor shall further provide all staff that is necessary for the supervision, execution and measurement of the work to ensure full compliance with the terms of contract.

36. INSURANCE

The Contractor shall take such insurance in connection with the work in accordance with the tender condition as acceptable to the Chief Municipal Officer, **NAGAR PANCHAYAT, PANDATARAI** & Submit the copy of the Insurance within two weeks of issue of work order without which no payments shall be made to contractor. It will be the responsibility of the contractor to renew the insurance timely and submit the policy to **NAGAR PANCHAYAT, PANDATARAI** till the finalization of the work.

The cost of the insurance premium shall be paid by the Contractor.

The cost of the insurance premium shall be paid by the Contractor.

The risk insurance coverage shall be as follows :

- Third party vehicle liability insurance as required under India's Motor Vehicle Act, 1988 by the Contractor or its personnel Sub Contractor or their personnel for the

period of contract.

- Third Party liabilities insurance, with a minimum contract of equal to amount of contract.
- Professional liabilities insurance with a minimum coverage equal to amount of contract.
- Employer's liabilities & workers compensation insurance in respect of the Personnel of the Contractor, in accordance with the relevant provisions of the Applicable Laws of India, as well as with respect to such personnel any such life, health, accident, travel or other insurance as may be applicable
- Any other laws / rule applicable in India.

37. LEGAL JURISDICTION

All the disputes regarding this contract will be subjected to the Chhattisgarh High Court Jurisdiction.

38. DEWATERING

The lump-sum offer shall include dewatering, bailing out water in foundation, river water and rain water if any (Unless & otherwise specified in the schedule), which shall be required to be done by the contractor at his own cost and for which no payment will be admissible under any circumstances. The tenderer shall assess the work of dewatering that may be required for execution of work and include in his lump-sum offer. No dewatering shall be payable separately under any circumstances whether natural, artificial or man-made.

39. ACCIDENT -HOARDINGS - LIGHTING OBSERVATIONS

When there is any Likelihood of accidents, the contractor shall comply with any requirements of law on the subject, and shall provide suitable hoarding, lighting and watchman as necessary or directed by Engineer-in-Charge.

It shall be contractor's sole responsibility to protect - the public and his employees against accident from any cause and he shall indemnify **NAGAR PANCHAYAT, PANDATARAI**, against any claims for damages for injury to person or property, resulting, from any such accidents; and shall where the provision of the workmen's compensation Act apply, take steps to properly insure against any claims there under.

On the occurrence of an accident which results in the death of any of the workman employed by the contractor or which is so serious as to be likely to result in the death of any such workman, the contractor shall, within 24 hours of the happening of such accident, intimate in writing to the **NAGAR PANCHAYAT, PANDATARAI**/Police The Facts Of Such Accident. The Contractor Shall Indemnity **NAGAR PANCHAYAT, PANDATARAI** against All Loses Or Damage Sustained By **NAGAR PANCHAYAT, PANDATARAI** resulting Directly Or Indirectly From His Failure To Give Intimation In The Manner Aforesaid Including The Penalties Or Fines If Any Payable By **NAGAR PANCHAYAT, PANDATARAI** as consequence of failure to give notice under the Workmen's Compensation Act.

In the event of an accident in respect of which compensation may become payable under the workman's compensation act VIII of 1923 whether by the contractor or by the Government as principal it shall be lawful for the Engineer-in-Charge to entertain out of monies due and payable to the contractor such sum or sums of money as may in the opinion of the said Engineer-in-Charge be sufficient to meet such liability. The opinion of Chief Municipal Officer

NAGAR PANCHAYAT, PANDATARAI shall be final in regard to all matters under this clause.

40. NAGAR PANCHAYAT, PANDATARAI may ask contractor to carry out the work, part of work or additional work anywhere in Project Area under the provisions in schedule for which payment shall be proposed on measure and paid basis.

41. Concrete Design Mix to be used shall be got designed by IIT / NIT / SGEC, keeping in mind the Target Mean Strength as per clause 9.2 of IS-456/2000]

Clause 9.2.2 of IS-456[2000]: The mix shall be designed to produce grade of concrete having the required workability & a characteristic strength not less than appropriate values given in Table-2. The Target Mean Strength of Concrete Mix should be equal to characteristic strength plus 1.65 times the Standard Deviation.

Ready Mixed Concrete The contractor shall use Ready Mixed Concrete prepared at established Concrete Batching & Mixing Plant Batching and Mixing Plant with a minimum 5 cum/hour capacity shall be used to comply with the compressive strength criterion given in clause 16 of IS-456[2000].

Clause 16 ACCEPTANCE CRITERIA of IS-456[2000]

42. Compressive Strength

The concrete shall be deemed to comply with the strength requirements when both the following condition are met:

- a. The mean strength determined from any group of four consecutive test results complies with the appropriate limits in col 2 of Table 11 of IS-456-2000.
- b. Any individual test result complies with the appropriate limits in col 3 of Table 1 of IS-456-2000).

The contractor can use RMC OR mixing of concrete can be done in a mechanical mixer (proportioning of aggregates to be used shall be done using a weigh batcher at site) as per the site conditions on prior approval of Engineer-in-charge.

Appendix-1

Qualification Information

1.1	Constitution or legal status of Bidder/attach copy]			
	Place of registration of Firm/ Company (in case of other than individuals)			
	Principal place of business:			
	Name of Power of attorney holder of signatory of Bid (bidder)/attachcopy]			
1.2	Total annual volume of civil engineering construction work executed and payments received each year in the immediate fiveyears preceding the year in which tenders are invited. (Attach certificate from Chartered Accountant)- indexed @ 10% (tenpercent) compounded per year	Financial Year	(Rs. in crores)	
			"Civil engineering construction work" Turn over in the year	Add for indexing
		2020-21		
		2021-22		
		2022-23		
		2023-24		
		2024-25		

Note :

- 1.1** Proprietary firm, partnership firm with the certificate of registration by register/article and Memorandum of Association with Certificate of Incorporation.
- 1.2** Mention and highlights the year, which the tenderer considers for evaluation for the Committee

APPENDIX - 2

Information regarding minimum one similar work

- (i) One Work completed as similar work during last seven years
(ii) Or being executing one such similar work

Sno	Project	Name of Employer	Value of Contract	Contract No.	Date of Issue of Work Order	Stipulated Date of Completion	Actual Date Of Completion	Value of Work Done	Remarks Explaining reasons for Delay,if any and the amount of Deductions due to delayAlso, mention if anyClaim or dispute isPending in any forum.
1	2	3	4	5	6	7	8	9	10

Note :-

- (i) Attach certificates from the Engineer-in-Charge not below the rank of Executive Engineer of Govt. Department/Under Taking Govt. Department or equivalent.
- (ii) Tendered may attach certified copies of work order and completion certificate issued by Engineer-in-Charge not below the rank of Executive Engineer of Govt. Department/Under Taking Govt. Department or equivalent.

Appendix - 3

Work Performed on all classes of Civil Engineering Construction Works over the last seven years

Sn o	Project Name	Nam e of Empl oyer	Descrip t ion of Work	Value of Contr act	Contr act No.	Date Of Issu e Wor k Orde r	Stip ulate d Date of Com pleti on	Actual Date Of Comple tion	Year wise value of work done as per certificate of employer Rs. In Lakh						Remarks explaining Reas ons for Delay if Any and the amount Of deduc tions due to Delay. Also, mention if Any claim or dispute is pending in any Forum.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

Note :-

- (iii) Attach certificates from the Engineer-in-Charge not below the rank of Executive Engineer of Govt. Department/Under Taking Govt. Department or equivalent.
- (iv) Tenderer may attach certified copies of work order and completion certificate issued by Engineer-in-Charge not below the rank of Executive Engineer of Govt. Department/Under Taking Govt. Department or equivalent.

Appendix - 4

Existing commitments and on-going all classes of civil engineering construction works.

S no	Project Name	Description of Work	Contract No & Year	Name & Adders Of the Employer	Value of Contract (Rs. Lakh.)	Date of Issue of Work Order	Stipulated Date of Completion	Stipulated period of Completion in Months	Anticipate A date of Completion	Value of Work done Up to date of issue Of N.I.T (Rs. Lakh)**	Probable value of Works Remaining To be Completion (Rs. Lakh) **	Anticipate Months Required Completion Of balance works	Value of Claims Or Dispute If Any pending
1	2	3	4	5	6	7	8	9	10	11	12	13	14

Note –

- ** Enclose certificates from Engineer-in-Charge (Not below the rank of Executive Engineer or equivalent) for value of work remaining to be completed, value of work done, anticipated date of completion.
- Tendered may attach certified copies of work order issued by Engineer-in-Charge not below the rank of Executive Engineer.

Appendix - 5

Availability of Major items of Contractor's Equipment proposed for carrying out the Works. List all information requested below.

Item of equipment	Total number available	Description n, make, and age (Years), and capacity	Condition (new, good, poor) and number available	Nos. (i)Owned, (ii) leased, or (iii) to be purchased	If these are in use in some work, mention the details.	No. of equipments proposed to be utilized <i>in this work</i> (Out of total Nos.)
1	2	3	4	5	6	7

Appendix – 6

Qualifications of consultants / design expert proposed for the Contract.

Position	Name	Qualify action	Date from which they are working in the bidder's organization	Years of experience				Remark
				Sewer Laying	Construction of STPs	Building Works	E&M works	
1	2	3	4	5(a)	5(b)	5(c)	5(d)	6

Note :

- I. If any personal is proposed to be engaged, furnish details here under:- (if necessary, use separate sheet for each -for C. V.) (Enclose certificates)
- II. If any technical persons are to be changed during the construction periods, then it can be changed with prior intimation to the Engineer-in-Charge.

Appendix – 7

Financial reports for the immediate previous five years: balance sheets, profit and loss statements, audited auditors' reports, etc., list below and attach copies shall be signed by statutory Auditor, chartered Accountant.

Year	Income Tax Clearance Certificate (optional)	Balance Sheet	Profit & loss statement	Reserve brought forward in any	NetcreditBalanceif any[for debitshow (-)]	Auditors Report	Otherinformation, if thebidderwishesto submit
1	2	3	4	5	6	7	8
2020-21							
2021-22							
2022-23							
2023-24							
2024-25							

UDIN No. _____

Appendix – 8

Information on current claims, arbitration, litigation in which the Bidder is involved.

Sl. no.	Name of Other party(s)	Agt. No. date year and Deptt.	Brief of cause of claims, arbitration /dispute (give reference of contract details)	Where Litigation pending (in the department/Court/a arbitration) (mention Deptt./Court /Arbitration)	Amount Involved/ claimed

Can use separate sheets for each agreement if necessary.

Appendix – 9

List of key plant & Equipment available with the contractor to be filled by the Contractors

S. No.	Type of Equipment	Maximum age as on Tender Invitation Date (years)	Contract Package Size
			From Rs. 2 Crores, above
1	2	3	4
	Total		

Appendix – 10

List of key plant & Equipment to be deployed on Contract Work

S. No.	Type of Equipment	Maximum age as on 01.10.2025 (years)
1	2	3
	Total	

Note: - The list & other Details of the equipment and plants as mentioned above are tentative. Engineer-in-Charge of the **NAGAR PANCHAYAT, PANDATARAI** can modify the above list of the plant and equipment as per their requirements.

Appendix – 11

List of Technical person to be deployed on Contract work

Sl.	Personnel	Qualification	Nos.
1	2	3	4
1	Project Manager	Graduation in Civil Engineering having 5 years of experience in Sewerage & STP works	1
2	Site Engineer	Graduation in Civil Engineering with 3 years of experience in Sewerage / Water Supply Works	1
3	Quantity Surveyor	Graduation in Civil Engineering with 3 years of experience in Sewerage / Water Supply Works	1
4	Survey Engineer	Diploma in Civil Engineering with 5 years of experience in DGPS/TS Survey for construction Civil Works	1
		Total	4 nos.

Note' - The list of the technical persons Qualification & Experience as mentioned above are tentative. Engineer-in-Charge of the **NAGAR PANCHAYAT, PANDATARA** can modify the above list as per their requirements.

Appendix – 12

CONTACT PERSON UNDER WHOM WORK HAS BEEN EXECUTED BY THE CONTRACTOR

S. No.	Name of Engineer-in-Charge of the Division	Divisional Head Quarter	Official Mail ID	Phone No. Office/ Mobile No.	Name District
1	2	3	4	5	6

Appendix – 13

Affidavit on Non-Judicial stamp of Rs. 100

I..... S/o.....

Aged..... years 2026resident..... of.....

.....(address.....)

(For and on behalf of.....), do

hereby and herewith solemnly affirm / state on oath that: -

1. All documents and Information's furnished are correct in all respects to the best of my knowledge and belief.
2. I have not suppressed or omitted any information as is required.
3. **I am/ We are neither black listed nor debarred by Govt. of India / Other State Govt. Departments/ Chhattisgarh State Govt. Departments/Urban Local Body.**
4. Not Being CDR by any bank.
5. I hereby authorize the **NAGAR PANCHAYAT, PANDATARAI** Officials to get all the documents verified from appropriate source(s) and in case of any ambiguity found in any of the information provided or documents submitted at any stage during the currency of project, department is at liberty to take any action, either by penalizing or blacklisting for next at least 3 years, in exercise of above action the department can engage other contractor/agency to complete the balance works at my Risk & Cost and the costs and the charges incurred in any way in carrying on and completing the balance work are to be paid to the department by me.

Deponent

(.....)

Authorized signatory / for and on behalf of

.....

(Affix Seal)

Verification

I..... S/o..... do here by affirm that the contents stated in Para 1 to 5 above are true to the best of my knowledge and believe and are based on my / our record.

Verified that this date of 2026... at (Place).....

Deponent

Seal of attestation by a Public

Notary with date Authorized signature / for and on behalf of.....

Appendix – 14

Declaration of No Conflict of Interest

Certificate for undertaking for No Conflict of Interest

<<To be submitted on Company's/Firm's letter head. To be submitted Bidder>>

Certificate for undertaking for No Conflict of Interest

Tender No.....

We hereby confirm that our company **<insert name of the company/Firm>** is not involved in any conflict of interest situation with one or more parties in this bidding process, including but not limited to –

- Receive or have received any direct or indirect subsidy from any of them; or
- Have common controlling shareholders; or
- Have the same legal representative for purposes of this Bid; or
- Have a relationship with each other, directly or through common third parties, that puts them in a position to have access to information about or influence on the Bid of another Bidder, or
- Influence the decisions of State Urban Development Agency/Urban Local Body regarding this bidding process; or
- Participation in more than one bid in this bidding process. Participation in more than one Bid will result in the disqualification of all Bids. However, this does not limit the inclusion of the same product (aerators, pumps, pipes, chemicals etc manufactured or produced by the firm), as well as purely incidental services such as installation, configuration, routine training and ongoing maintenance/support, in more than one bid; or
- Participation as a consultant in the preparation of the design or technical specifications of the goods and services that are the subject of the bid.
- Association as Consultant / Advisor / Third party independent evaluating agency with any of the agencies taking part in the bid process.

Yours sincerely,

(Authorized Signatory)

(Name, Designation, Address, Contact Details, Seal, Date)

Appendix – 15

Declaration of understanding of assignment (on non-judicial stamp of Rs. 500)

Affidavit

I, the undersigned, do hereby declare /solemnly affirm / state on oath that on the behalf of M/s..... that I/We have visited and inspected the site (project name and System tender no) carefully and have acquainted myself/ourselves with full and complete knowledge and understanding of the Project/site, prevailing conditions, complete scope of work and other Employer's requirements. I/We, hereby also affirm that if any items/components which may not be mentioned in the tender, but are necessarily required for successful commissioning of the Plant/system/scheme with desired outputs and complete functions in all respects are inclusive in our quoted Price and no further extra charges consequent on misunderstanding or otherwise will be claimed.

Deponent (.....)

Authorized signatory for and on behalf of

.....

(Affix Seal)

Verification

I..... S/o..... do here by affirm that the contents stated above are true to the best of my knowledge and believe and are based on my/our record.

Verified that thisdate of2026 at (Place).....

Deponent

Seal of attestation by a Public Notary with date Authorized signature/for and on behalf of.....

Appendix – 16

NAGAR PANCHAYAT, PANDATARAI

Tender for a Lump - Sum Contract FORM – F (To be submitted online only in envelope C)

"We do hereby tender to execute the whole of the work described in the Drawing Nos.-----
-- and according to the annexed specifications signed by ----- and
dated ----- for the sum of Rs. ----- (Rupees -----
-----) as given below:

(To be submitted online in Envelope-C on Bidder's Letter head with seal and signature)

S. No.	Particulars	Lump – Sum Cost
A	Lump Sum offer for Design, Construction, Testing, Commissioning of all the Components of Interception and Diversion Based Sewage Treatment Plant (STP) work including 05 Years of Operation and Maintenance of The Entire System at NAGAR PANCHAYAT, PANDATARAI	INR

(Rupees.....)

Note:

- Offer is inclusive of GST and all other applicable taxes etc.
- Total Lump-sum offer quoted by the bidder as per 'A' includes 05 years of Operation and Maintenance. The quoted rate shall be deemed bifurcated between construction and O&M as below:

S.No.	Particulars	Bifurcation
1.	Design, Construction, Testing, Commissioning of all the Components of Interception and Diversion Based Sewage Treatment Plant (STP) work	88.02percentage of quoted rate 'A'
2.	05 Years of Operation and Maintenance of The Entire System	11.98percentage of quoted rate 'A'

- Online offer shall be considered only

"We do hereby tender to execute the whole of the work described in the Scope of work and according to the annexed specifications for the sum of Rs. ----- (Rupees -----) as per breakup given above:

and should this tender be accepted I/We do hereby agree and bind myself/ourselves to abide by and fulfil all the conditions annexed to the said specification or in default thereof to forfeit and pay to the Urban Local Body _____, the penalties of sums of money mentioned in the said conditions, viz.

Dated:

Tenderer's Signature

Witness:

Address:

Address:

The above tender is hereby accepted by me on behalf of the **NAGAR PANCHAYAT, PANDATARAI**

The _____/2026

Signature of the authority by whom the tender has been accepted."

11. CONDITIONS OF CONTRACT

11.1. Definitions

- i. The contract means the documents, forming the notice inviting tenders and tender documents submitted by the tenderer and the acceptance thereof including the formal agreement executed between the **Chief Municipal Officer, NAGAR PANCHAYAT, PANDATARAI** and the **Contractor**.
- ii. In the contract the following expressions shall unless otherwise required by the context have the meanings hereby respectively assigned to them: -
 - (a) The expression “works” or “work” shall unless thereby mean something either in the subject or context repugnant to such construction be construed and taken to mean the works or by virtue of the contract contracted to be executed whether temporary or permanent and whether original, altered, substituted or additional.
 - (b) The “site” shall mean the land and/or other places on, into or through which work is to be executed under the contract or any adjacent land path or street through which work is to be executed under the contract or any adjacent land, path, or street which may be allotted or used for the purpose of carrying out the contract.
 - (c) The “CHIEF MUNICIPAL OFFICER” means CHIEF MUNICIPAL OFFICER of **NAGAR PANCHAYAT, PANDATARAI**.
 - (d) The “Engineer-in-Charge” means the Assistant Engineer/ Sub-Engineer posted in **NAGAR PANCHAYAT, PANDATARAI**. who shall supervise and be in charge of the work.
 - (e) Competent Authority means CHIEF MUNICIPAL OFFICER of **NAGAR PANCHAYAT, PANDATARAI** where work is going to be executed.
 - (f) The PMC means Project Management Consultant for UWM Projects under SBM-U 2.0, the representative of **NAGAR PANCHAYAT, PANDATARAI**.
 - (g) The term “Chief Engineer” means the Chief Engineer, Technical Cell, Directorate, Urban Administration and Development, Indravati Bhavan, Naya Raipur – Atal Nagar, Chhattisgarh (CG).
 - (h) The term "Superintending Engineer" means the Superintending Engineer posted in Regional Offices UADD.
 - (i) **Deleted.**
 - (j) The term "Assistant Engineer" means the Assistant Engineer **NAGAR PANCHAYAT, PANDATARAI**.
 - (k) The word "Sub Engineer" shall mean "Section Officer" of the **NAGAR PANCHAYAT, PANDATARAI**.

NOTE: “Words” importing the singular number include plural number and vice-versa.

11.2 CONDITIONS OF CONTRACT

1. The person(s) whose tender may be accepted (hereinafter called the contractor(s), which expressions shall unless excluded by or repugnant to the context include his heirs executors, administrators' representatives and assigns) shall permit Govt at the time of making any payments to him for the value of work done under the contract to deduct Security deposit as under.

The Security Deposit to be taken for the due performance of the contract under the terms & conditions printed on the tender form will be earnest money plus a deduction of 5 percent from the payment made in the running bills, till the two together amount to 5 percent of the cost of work put to tender or 5 percent of the cost of the works executed when the same exceeds the cost of work put to tender. **The NAGAR PANCHAYAT, PANDATARA** at any time can forfeit the security deposit if it seems to their opinion that the contractor is making any prejudice with the essence of the contract. The decision of the CHIEF MUNICIPAL OFFICER in this regard shall be final and binding on the contractor.

2. The Contractor(s) is/are to provide every-thing of every sort and kind (with the exception noted in the schedule attached) which may be necessary and requisite for the due and proper execution of the several works included in the contract according to the true intent and meaning of the drawings and specifications taken together, which are to be signed by Engineer-in-Charge/CHIEF MUNICIPAL OFFICER and the contractor(s) whether the same may or may not be particularly described in the specification or shown on the drawings, provided that the same are reasonably and obviously to be inferred there-from and in case of any discrepancy between the drawings and the specification the Engineer-in-Charge/ CHIEF MUNICIPAL OFFICER is to decide which shall be followed.

2 (a) The Contractor(s) is/are to set out the whole of the works in conjunction with an officer to be deputed by the Engineer-in-Charge/CHIEF MUNICIPAL OFFICER and during the progress of the works to amend on the requisition of the Engineer-in-Charge/CHIEF MUNICIPAL OFFICER any errors of which may arise therein and therein and provide all the necessary labour and materials for so doing. The contractor(s) is/are to provide all plant, labour and materials (with the exceptions noted in the schedule attached) which may be necessary and requisite for the works. All materials and workmanship are to be the best of their respective kinds. The contractor(s) is/are to leave to works in all respects clean and perfect at the completion thereof.

2(b) All inspection charges will be payable by the Contractor.

3. Complete copies of the drawings and specification signed by the SE/EE of concerned regional office are to be furnished by him to the contractor(s) for his/their own use, and the same or copies thereof are to be kept on buildings in charge of the Contractor(s) agent who is to be constantly kept on the ground by the contractor(s) and to whom the instructions can be given by the CHIEF MUNICIPAL OFFICER. The Contractor(s) is/are not to sublet the works.
4. The Engineer-in-Charge/CHIEF MUNICIPAL OFFICER is to have at all times access to the works which are to be entirely under his control. He may require the contractor(s) to

- dismiss any person in the Contractor(s) employ upon the works that may be incompetent or misconduct himself and contractor(s) is/are forthwith to comply with such requirements.
5. The Contractor(s) is/are not to vary or deviate from the drawings or specifications or execute any extra work of any kind whatsoever unless upon the authority of Engineer-in-Charge to be sufficiently shown by any order in writing by any plan or drawings expressly given and signed by him as an extra or variation or by any subsequent written approval signed by him. In cases of daily labour all vouchers for the same are to be delivered to the Engineer-in-Charge/CHIEF MUNICIPAL OFFICER at least during the week following that in which the work may have been done and only such day work is to be allowed for as such as may have been authorized by the CHIEF MUNICIPAL OFFICER to be so done unless the work cannot from its character be properly measured and valued. The drawings in respect of which this contract is drawn up provide for a minimum depth of foundations for good soil. Any extra depth will not be measured as an extra when the foundation trenches have been opened up and will not be paid for in addition to the sum contracted for the completed work. The contractor has to ascertain the foundation strata in advance and shall prepare the designs as per actual site conditions.
 6. Any authority given by the CHIEF MUNICIPAL OFFICER for any alterations or additions in or to works is not to vitiate the contract, but all additions, omission or variations made in carrying out the works are to be measured and valued and certified by the Engineer-in-Charge/CHIEF MUNICIPAL OFFICER and added to or deducted from the amount of the contract, as the case may be, at rates in force in the CGPWD/UADD/CGPHED Department. In such cases in which rates do not exist, the CHIEF MUNICIPAL OFFICER will fix the rates to be paid.
 7. All work and materials brought and left upon the ground by the Contractor(s) or his/their orders for the purpose of forming part of the works are to be considered to be the property of **NAGAR PANCHAYAT, PANDATARAI** and the same are not to be removed or taken away by the Contractor(s) or any other without the special license and consent in writing of the CHIEF MUNICIPAL OFFICER of **NAGAR PANCHAYAT, PANDATARAI** is not to be in any way answerable for any loss or damage which may happen to or in respect of any such work or materials either by the same being lost or stolen or injured by weather or otherwise.
 8. The CHIEF MUNICIPAL OFFICER has full power to require the removal from the premises of all materials which, in his opinion, are not in accordance with the specification and in case of default the CHIEF MUNICIPAL OFFICER is to be at liberty to employ other persons to remove the same without being answerable or accountable for any loss or damage that may happen or arise to such materials. The CHIEF MUNICIPAL OFFICER is Also, to have full power to require other proper materials to be substituted and in case of default the CHIEF MUNICIPAL OFFICER may cause the same to be supplied and all costs which may attend such removal and substitution are to be borne by the contractor(s).
 9. If in the opinion of the Engineer-in-Charge /CHIEF MUNICIPAL OFFICER any of the works are executed with improper materials or defective workmanship, the contractor(s) is/are when required by the CHIEF MUNICIPAL OFFICER forthwith to re-execute the same and to substitute proper materials and workmanship and in case of default of the contractor (s) is so doing within a week the CHIEF MUNICIPAL OFFICER is to have full

- power to employ other persons to re-execute the work and the cost thereof shall be borne by the contractor(s).
10. Any defects, shrinkage or other faults which may appear within 12 months performance period, from the completion of the work arising out of defective or improper materials or workmanship are upon the direction of the CHIEF MUNICIPAL OFFICER/ Engineer-in-Charge to be amended and made good by the contractor(s) at his/their own cost unless the CHIEF MUNICIPAL OFFICER/ Engineer-in-Charge shall decide that he/they ought to be paid for the same and in case of default the CHIEF MUNICIPAL OFFICER may recover from the contractor(s) the cost of making good the works.
 11. From the commencement of the works to the completion of the same they are to be under the contractor's(s) charge. The contractor(s) is/are to be held responsible for and to make good all injuries, damages and repairs, occasioned or rendered necessary to the same by fire/ Natural Calamity or other causes and they are to hold the **NAGAR PANCHAYAT, PANDATARAI**/Govt of C.G harmless from any claims for injuries to persons or for structural damage to property happening from any neglect, default, want of proper care of misconduct on the part of the contractor(s) or any one in his/their employ during the execution of the works
 12. The CHIEF MUNICIPAL OFFICER have full power to send workmen upon the premises to execute fittings and other works not included in the contract for whose operation the contractor(s) is/are to afford every reasonable facility during ordinary working hours, provided that such operations shall be carried in such a manner as not to impede the progress of the work included in the contract but the contractor(s) is/are not to be responsible for any damage which may happen to or be occasioned by any such fittings or other works.
 13. The works comprised in this tender are to be commenced immediately upon receipt of order of commencement given in writing by CHIEF MUNICIPAL OFFICER. The whole work, including all such addition and variations as aforesaid (but excluding such, if any, as may have been postponed by an order from the CHIEF MUNICIPAL OFFICER) shall be completed in every respect within **15 months (including rainy season) + 03 (three) months of trial run**. The work shall throughout the stipulated period of contract be proceeded with all due diligence, keeping in view that time is the essence of the contract. The contractor shall be bound in all cases, in which the time allowed for any work exceeds one month, to complete 1/8th of the whole work before 1/4th of the whole time allowed under the contract has elapsed, 3/8th of the work before 1/2 of such time has elapsed and 3/4th of the work before 3/4th of such time has elapsed. In the event of the contractor failing to comply with the above conditions, the Engineer-in-Charge shall levy on the contractor, as compensation an amount equal to: 0.5% (zero-point five percent) of the value of work (contract sum) for each week of delay, provided that the total amount of compensation under the provision of the clause shall be limited to 6% (six percent) of the value of work. (Contract sum)

Provided further that if the contractor fails to achieve 30% (thirty percent) progress in 1/2 (half) of original or validly extended period of time the contract shall stand terminated after due notice to the contractor and his contract finalised.

If the contractor shall desire an extension of time for completion of work on the ground of his having been "UNAVOIDABLY" hindered in its execution or on any other ground, he

must apply giving all and complete details of each of such hindrances or other causes in writing, to the Engineer-in-Charge/CHIEF MUNICIPAL OFFICER positively within 15 days of occurrence of such hindrance(s) and seek specific extension of time (period from.....to.....). If in the opinion of Engineer-in-Charge, such reasonable grounds are shown, the Engineer-in-Charge shall himself grant extension of time, if the extension of time sought by the contractor is for one month or 10% (ten percent) of the stipulated period of completion, whichever is more. If the extension of time sought is more than above period mentioned, then the Engineer-in-Charge shall refer the case to the Superintending Engineer with his recommendation and only after his decision in this regard, the Engineer-in-Charge shall sanction extension of such time as decided by the Superintending Engineer.

Once the CHIEF MUNICIPAL OFFICER has decided the case of extension of time with reference to the particular application of the contractor, it will not be competent for them to review/change such a decision later on. However, the Superintending Engineer shall give the contractor an opportunity to be heard (orally and or in writing), before taking any final decision either of granting extension of time or permitting the contractor to complete the work by the delayed date or before refusing both.

Provided further where the CHIEF MUNICIPAL OFFICER has recommended grant of extension of particular time of the contract or has refused to recommend extension of time but has recommended permitting the contractor for delayed completion, the contractor shall continue with the work till the final decision by Superintending Engineer of the concerned zone.

Failure on the part of the contractor for not applying extension of time even within 30 days of the cause of such a hindrance, it shall be deemed that the contractor does not desire extension of time and that he has "Waived" his right if any, to claim extension of time for such cause of hindrance.

Once the CHIEF MUNICIPAL OFFICER has heard (oral and or in writing) the contractor on this subject matter of extension of time and if CHIEF MUNICIPAL OFFICER/Superintending Engineer fails to communicate his decision within a period of 30 days of such hearing, it shall be deemed that the contractor has been granted extension of time for the period as applied by him. Provided that the Contractor(s) shall not be entitled to any extension of time in respect of the extra work involved in the extra depth of foundation mentioned clause 5.

13.1 Compensation Events for consideration of extension of time without penalty: -

The following mutually agreed Compensation Events unless they are caused by the contractor would be applicable;

- (a) The CHIEF MUNICIPAL OFFICER does not give access to a part of the site.
- (b) The CHIEF MUNICIPAL OFFICER modifies the schedule of other contractor in a way, which affects the work of the contractor under the contract.
- (c) The CHIEF MUNICIPAL OFFICER orders a delay or does not issue drawings, specification or instructions /decisions/approval required for execution of works on time.
- (d) The CHIEF MUNICIPAL OFFICER instructs the contractor to uncover or to carry out additional tests upon work, which is then found to have no defects.

- (e) The CHIEF MUNICIPAL OFFICER gives an instruction for additional work required for safety or other reasons.
- (f) The advance payment and or payment of running bills (complete in all respect) are delayed.
- (g) The CHIEF MUNICIPAL OFFICER unreasonably delays issuing a Certificate of Completion
- (h) Other compensation events mentioned in contract if any

14. Action when the work is left incomplete abandoned or delayed beyond the time limit permitted by the CHIEF MUNICIPAL OFFICER.

- (i) The CHIEF MUNICIPAL OFFICER may terminate the contract if the contractor causes a fundamental breach of the contract.
- (ii) Fundamental breach of contract shall include, but not be limited to, the following: -
 - a) The contractor stops work for four weeks, when no stoppage of work is shown on the current programme or the stoppage has not been authorised by the Engineer-in-Charge.
 - b) The Engineer-in-Charge gives notice that failure to correct a particular defect is a fundamental breach of contract and the contractor fails to correct it within reasonable period of time determined by the Engineer-in-Charge in the said notice.
 - c) The contractor has delayed the completion of work by the number of weeks [12 (Twelve) weeks] for which the maximum amount of compensation of 6% of contract sum is exhausted.
 - d) If the contractor has not completed at least thirty percent of the value of construction work required to be completed in half of the completion period (Including validly extended period if any).
 - e) If the contractor fails to appoint the technical staff and if appointed do not function properly for 4 weeks even after due written notice by the Engineer-in-Charge.
 - f) If he violates labour laws.
 - g) Any other deficiency which goes to the root of the contract Performance
- (iii) 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.
- (iv) The Engineer-in-Charge shall cause recording and checking of measurements of all items of work done (taking in to account quality and quantity of items actually executed) and prepare the final bill after adjusting all pervious outstanding dues. Such recording of measurements shall be done after due notice regarding time and date of recording measurement and directing the contractor to either remain present himself or his authorised representative so as to satisfy himself that the recording of measurement is just and proper. Failure on his parts either to attend and or refusing to acknowledge the measurement so recorded in the department measurement book, shall be at his sole risk and responsibility.

The CHIEF MUNICIPAL OFFICER shall forfeit the earnest money and or security deposit and further recover/deduct/adjust a compensation @ 10% (ten percent) of the balance value of work left incomplete either from the bill, and or from available security/performance guarantee or shall be recovered as "Arrears of land revenue". The Chief Municipal Officer shall than initiate all necessary actions as per procedure defined under Annexure 'M'

15. Deleted

16. A certificate of the CHIEF MUNICIPAL OFFICER or an award of the referee hereinafter referred to, as the case may be showing the final balance due or payable to the contractor(s) is to be conclusive evidence of the works having been duly completed and the contractor(s) is/are entitled to receive payment of the final balance, but without prejudice to the liability of the contractor(s) provision of clause 10.

17. **ARBITRATION CLAUSE:** Except as otherwise provided in this contract all question and dispute, relating to the meaning of the specifications designs, drawings and instructions herein before mentioned and as to thing whatsoever, in any way, arising out of or relating to the contract, designs, drawings, specifications, estimates, concerning the works, or the execution or failure to execute the same, whether arising during the progress of the works or after the completion abandonment thereof shall be referred to the CHIEF MUNICIPAL OFFICER shall give his written instructions and/or decisions within a period of 60 days of such request. This period can be extended by mutual consent of the parties.

Upon receipt of written instructions of decisions, the parties shall promptly proceed without delay to comply such instruction or decision, If the CHIEF MUNICIPAL OFFICER fails to give his instructions or decisions in writing with in a period of 60 days or mutually agreed time after being requested or if the parties are not satisfied with the decision of the CHIEF MUNICIPAL OFFICER, they may within 60 days refer and appeal to The Superintending Engineer posted in Regional Offices UADD, who shall afford an opportunity to the parties of being heard and to offer evidence in support of his appeal. The Superintending Engineer posted in Regional Offices UADD, will give his decision within 90 days. If any party is not satisfied with the decision of The Superintending Engineer posted in Regional Offices UADD, he can, refer such dispute for arbitration governed as per "The ChhattisgarhMadhyasthaAbhikaranRaipur"

18. If at any time before or after the commencement of the work, Chief Municipal Officer **NAGAR PANCHAYAT, PANDATARAI** shall for any reason whatsoever.

- 18.1 Cause Alterations, omissions or Variation in the drawings and specification involving any curtailment of the works as originally contemplated; OR

- 18.2 Not required the whole of work as specified in the tender to be carried out,

The contractor(s) shall have no claim to any payment or compensation whatsoever on account of any profit or advantage which he/they might have derived from the execution of the work in full as specified in the tender but which he/they did not derive in consequence of the curtailment of the works by reason of alterations, omissions or variations or in consequence of the full amount of the work not having been carried out.

But the contractor(s) shall be entitled to compensation for any loss sustained by him/them by reason of his/their having purchased or procured any materials or entered into any engagements or made any advances to labour or taken any other preliminary or incidental measures on account of or with a view to the Execution of the works or the

performance of the contract.

19. Death or permanent invalidity of the contractor-If the contractor is an individual or a proprietary concern, partnership concern, dies during the currency of the contract or becomes permanently incapacitated, where the surviving partners are only minors the contract shall be closed without levying any damages/ compensation as provided for in clause 14 of the contract agreement. However, if the competent authority is satisfied about the competence of the surviving, then the competent authority shall enter into a fresh agreement for the remaining work strictly on the same terms and conditions, under which the contract was awarded.

11.3 SPECIAL CONDITIONS OF CONTRACT

1. The Addresses are :
2. (i) "Employer" : The CHIEF MUNICIPAL OFFICER, **NAGAR PANCHAYAT, PANDATARAI** attention:
- (2) Tax will be deducted at source as per prevailing Income Tax Rules
- (3) The risk insurance coverage shall be as follows :
 - a) Third party vehicle liability insurance as required under India's Motor Vehicle Act, 1988 by the Contractor or its personnel Sub Contractor or their personnel for the period of contract.
 - b) Third Party liabilities insurance, with a minimum contract of equal to amount of contract.
 - c) Professional liabilities insurance with a minimum coverage equal to amount of contract.
 - d) Employer's liabilities & workers compensation insurance in respect of the Personnel of the Contractor, in accordance with the relevant provisions of the Applicable Laws of India, as well as with respect to such personnel any such life, health, accident, travel or other insurance as may be applicable
 - e) Any other laws / rule applicable in India.
- (4) The arbitration proceedings shall take place in **NAGAR PANCHAYAT, PANDATARAI, Chhattisgarh.**
- (5) The performance Securities amount is 5% of the contract value

Dated:

Signature of the Contractor

Dated:

**CHIEF MUNICIPAL OFFICER
NAGAR PANCHAYAT, PANDATARAI
DISTRICT- KABIRDHAM (CG)**

LIST OF ANNEXURES

Annexure 'A'	:	Model Rules relating to labour, water supply and sanitation etc.
Annexure 'B'		Contractor's Labour Regulations
Annexure 'C'		Drawings enclosed with NIT for understanding of bidder
Annexure 'D'		Statement showing the lead of materials
Annexure 'E-I'		Design and Construction of Intercepting Sewer Network
Annexure 'E-II'		Design and Construction of Chambers
Annexure 'E-III'		Constructing Wet Well with overhead pump house near STP
Annexure 'E-IV'		Specifications for Raw Sewage Pumping Machinery (Pumps and Motors) on Wet Well
Annexure 'E-V'		Specifications for Raw Sewer Pumping Main from Wet Well to STP
Annexure 'E-VI'		Specifications for Sewage Treatment Plant – 1.0 MLD Aerated Lagoon
Annexure 'E-VII'		Specification for Co-Treatment of Faecal Sludge with Planted Drying Bed
Annexure 'E-VIII'		List of Laboratory Equipments
Annexure 'E-IX'		Specifications for Operation and Maintenance
Annexure 'F'		Break -up schedule of payments
Annexure 'G-I & G-II'		Deleted
Annexure 'H'		Special Conditions of NIT
Annexure 'I'		Information & instructions to the bidders for online electronic government procurement system (e-GPS).
Annexure 'J'		Pre-Contract Integrity Pact
Annexure 'K'		Deleted
Annexure 'L'		Salient Features of Major Labour Law
Annexure 'M'		Demotion of Contractors
Annexure – 'N'		Approved Make

Annexure- "A"

Model Rules relating to Labour, Water Supply and Sanitation in Labour Camps.

NOTE

These model rules are intended primarily for labour camps which are not of a permanent nature. They lay down the minimum desirable standard which should be adhered to. Standards in permanent or semi-permanent labour camps should not obviously be lower than for temporary camps.

LOCATION

The camp should be located in elevated and well drained ground in the locality. Labour huts to be constructed for one family of 5 persons each. The layout to be shown in the prescribed sketch.

HUTTING

The huts to be built of local materials. Each hut should provide at least 20 sqm. of living space.

SANITARY FACILITIES

Latrines and urinals shall be provided at least 15 mtrs. away from the nearest quarters separately for men and women and specially so marked in the following scale.

LATRINES

Pit provided at the rate of 10 users of families per seat. Separate Urinals are required as the privy can also, be used for this purpose.

DRINKING WATER

Adequate arrangements shall be made for the supply of drinking water. If practicable filtered and chlorinated supplies shall be arranged when supply is from intermittent sources. Overhead storage tank shall be provided with a capacity of five Liters per person per day. Where the supply is to be made from a well it shall conform to the sanitary standard laid down in the report of the rural sanitation committee. The well should be at least 30 meters away from any latrine or other source of pollution. If possible, the pump should be installed for drawing the water from well. The well should be effectively disinfected once every month and the quality of the water should be got tested at the Public Health Institution between each work of disinfecting.

BATHING AND WASHING

Separate bathing and washing place shall be provided for men and women for every 25 persons in the camp. There shall be one place and space of 2 sq.m for washing and bathing. Proper drainage for waste water should be provided.

WASTE DISPOSAL

Dustbin shall be provided at suitable places in camp and the residence shall be directed to throw all rubbish into those dustbins. The dustbin shall be provided with cover. The contents shall be removed every day and disposed off by trenching.

MEDICAL FACILITIES

- a) Every camp where 1000 or more persons reside shall be provided with whole time doctor and dispensary. If there are women in the camp a whole time Nurse shall be employed.
- b) Every camp where less than 1000 but more than 250 persons resides shall be provided with a dispensary and a part time, Nurse/Midwife. If there are less than 250 persons in any camp a first aid kit shall be maintained in charge of whole time persons trained in first aid. All the medical facilities mentioned above shall be for the all residents in the camp, including a dependent of workers, if any, free of costs. For each labour camp there should be qualified sanitary inspector and sweepers should be provided in the following scales:-

For camps with strength over 200 but not exceeding 500 persons - One sweeper for every 75 persons above the first 200 for which 3 sweepers will be provided.

For camps with strength over 500 persons - One sweeper for every 100 persons above first 500 for which 6 sweepers should be provided.

Annexure- "B"

Contractors Labour Regulations

The contractor shall pay not less than fair wage to labours engaged by him in the work:

EXPLANATION

- A. "FAIR WAGES" means whether for time of piece work as notified on the date of inviting tenders and where such wages have not been so notified the wages prescribed by the competent authority for division in which the work is done.

The contractor shall, notwithstanding the provision of any contract to the contrary, cause to be paid a fair to labours indirectly engaged on the work including any labour engaged by his sub-contractor in connection with the said work as if labourers had been immediately employed by him.

In respect of all labour directly or indirectly employed on the works or the performance of his contract, the contractor shall comply with or cause to be complied with the labour Act. Enforce.

The Engineer-in-Charge/Assistant Engineer shall have the right to deduct from the money due to the contractor any sum required or estimated to be required for making good, the loss suffered by a worker or workers by reason of non-fulfilment of the conditions of the contract for the benefit of the workers non-payment of the wages or of deductions made from his or their wages which are not justified by their terms of contract or non-observance of regulations.

The contractor shall be primarily liable for all payments to be made under and for the observance of the regulations aforesaid without prejudice to his right to claim indemnity from his sub-contractor.

The Regulations aforesaid shall be deemed to be a part of this contract and any breach thereof shall be deemed to be a breach of this conduct.

The contractor shall obtain a valid license under the contract (Regulation & Abolition) Act, in force and rule made there under by the competent authority from time to time before commencement of work and continue to have a valid license until the completion of the work.

Any failure to fulfill this requirement shall attract the penal provisions of this contract arising out of the resulted non execution of the work assigned to the contractor.

Special Additional Condition

- Cess@1% (one percent only) shall be deducted at source, from every bill of contractor by Engineer-in-Charge under "Building and other Construction for workers welfare, cess Act-1996"

It is mandatory for the contractor(s) to get himself/themselves registered with "Chhattisgarh Building and other Construction Welfare Board" for work amounting to Rs. 10.00 Lakh (Ten Lakh) and above and enclose a true copy of such registration certificate within one month of award of contract.

Annexure-“C”

Drawings enclosed with NIT for understanding of bidder

1. Key Plan showing location of proposed infrastructures.
2. Ward Wise Map
3. STP General Arrangement Drawing
4. STP Process Flow (Typical)
5. Contour Map of STP site
6. Diversion Weir (Typical)
7. Wet Well with overhead Pumphouse.

Note – The above Drawings are only for guidance of the Bidder, are enclosed as Enclosure 1.

ANNEXURE – “D”

Statement showing the Lead of Materials

S.No.	Description	Lead
1.	Not Applicable	
2.	
3.	
4.	
5.	

Note - This statement is only for guidance of the Bidder. The Bidder should satisfy himself regarding the availability of the required quality and quantity and Lead of materials.

ANNEXURE 'E'

TECHNICAL SPECIFICATION

SALIENT FEATURES AND SCOPE OF THE PROPOSED PROJECT

OBJECTIVE

The objectives of the **Used Water Management Plan for PANDATARAINAGAR PANCHAYAT (C.G.)** project are to provide a commercially and technically viable solution on a priority basis, which can be implemented within a short time frame. This solution aims to effectively reduce pollution in the local drain and, ultimately, in the Nearby Ponds, while improving water quality to make it suitable for the designated or projected use. The system will include the construction of intercepting chambers along the local drains, leading to wet well, and subsequently to the STP (Sewage Treatment Plant).

The scope of work under this project provides the aim of arresting the Wastewater entering in the Nearby Ponds and after the treatment discharge the treated water into nearby ponds. The main drains which run with the wastewater from **PANDATARAI** meeting to Nearby Ponds. Thus, planning approach have been kept in accordance to the aim of discharging treated used water in the Nearby Ponds by locating the STP as near of the point of arresting Sewer flow in Drain. This approach may in turn add to some additional capacities to the proposed STP but shall provide sustainable solution to avoid pollution.

PANDATARAI, CHHATTISGARH

PANDATARAI is a **NAGAR PANCHAYAT** located in Pandariya Tehsil of **KABIRDHAM** district, Chhattisgarh. **PANDATARAINAGAR PANCHAYAT** is located at 22.188359°N 81.326122°E and 360m above sea level. **PANDATARAI** covers an area of 8.92 km² and is divided into 15 wards, with elections held every five years. The **PANDATARAINAGAR PANCHAYAT** administers 1,514 houses, providing essential amenities such as water and sewerage. It is also responsible for road construction within its limits and has the authority to impose property taxes within its jurisdiction.

PANDATARAI at a Glance:

Total population in 2011	7,008(Census 2011)
Total area	8.92km ²
Population projected	9,027(2026); 11,739(2041)
Number of Wards	15 Wards

PROPOSED SCHEME

Considering the magnitude of used water to be treated, it is proposed to go for economical yet effective technology which will suffice the objective of treatment. As per the guidelines of SBM 2.0, there are various technologies available for adoption on the basis of various parameters. The two verticals mainly Natural process and mechanised process. The size of **PANDATARAI** town is moderate and it is proposed to go for Nature Based / less Mechanised Treatment as the quantity of sewage to be treated is 1.0 MLD only. The requirement of land for 1.0 MLD mechanised-based process will be around 0.8 Hac. Secondly the larger spread of sewage water may in turn enhance the problem of mosquitoes and odour. Hence it is proposed to go for Less Mechanised-Treatment Technology i.e. Facultative Aerated lagoon. In addition to this it is proposed to provide Maturation ponds at both the STPs for cultivation of Fish Culture in order for revenue generation which will reduce the O&M cost of the treatment System.

Note :-

The bidder shall prepare detailed construction drawing as per actual working conditions including minimum obstruction to existing utilities road ways and railways. On successful completion of the project as per best engineering practices the bidder shall operate and maintain during DLP period the proposed works for next 5 years. Therefore, bidder shall adopt the best design practice to develop the construction drawings and shall carryout quality construction for timely implementation of the works.

The work shall have to be executed in accordance with the drawings (prepared by contractor & approved by the competent authority), technical specifications specified in the bid data / contract data and shall have to meet high standards of workmanship, safety and security of workmen and works.

The Bidder is required to prepare construction details including drawings and take approval of all detailed designs and construction drawings for all components of the projects from the competent authority.

The bidder is required to make his own assessment of work before bidding & the bidder shall not be entitled for claim on account of any change in works due to designs to complete the work as per the scope of work.

Accordingly,

- i) Bidder shall carryout detail survey (existing and proposed network), conditional assessment of existing network and soil investigations (including soil test) as may be required for preparation of detail designs and drawings. If any area is left out in the existing network then contractor has to consider it while designing the network. Left out connections in the existing network will have to be taken into account.

- ii) The bidder by the completion of construction, shall ensure connection of all outfalls to the treatment facility. It shall be the responsibility of the bidder to ensure that all waste water generated from the proposed area shall be tapped & get treated.
- iii) As far as possible the entire system shall be designed and operated on the principles of gravity flow. The Price Breakup Schedule attached with the present invitation is based on detailed survey, investigation, tentative designing, and estimation. For achieving the desired parameters and desired deliverables, the Bidder shall carry out necessary survey and investigations and would prepare the detail designs and drawings etc. as may be required for collection of sewage including pumping stations or other structures as required on best engineering practices. The Bidder shall also prepare detailed construction drawings as per actual working conditions including usage of back lanes and side lanes and minimum obstruction to existing utilities, roadways, and railways.
 - a. The availability of land already identified by the ULB.
 - b. Effluent characteristics should meet the standards prescribed by State Pollution CECB /MoEF&CC Notification 2017.
 - c. Reuse of the treated water in community purposes like gardening and fire-fighting etc. Also use for irrigation and industrial purposes should be explored.
- iv) ULB shall make available the right of way and the land area allocated for Zone-I-1.0 MLD for setting up of sewage treatment plant (STP) and sewage pumping station (SPS) and all the appurtenant structures.

GENERAL SPECIFICATIONS AND STANDARDS

The execution of the Work shall strictly adhere to the CPWD/CGPWD specifications that have been updated to the latest version at the time of tender submission, unless specifically stated otherwise. The Project's guiding specifications include the following codes and standards:

1. CPWD specification
2. C.G. PWD Specification
3. BIS specification
4. National Building Code 2016
5. National Electrical Code, 2011
6. Indian Electricity Act 2003
7. Requirements of the local Water Supply Company, Electricity Supply Company/ Department.
8. Requirements of the Pollution Control Board, and other statutory authorities, as applicable.
9. Requirements of any other standards and bye-laws as applicable.
10. Applicable particular specifications
11. Part A, Part B and Part C of CPHEEO Manual on Sewerage and Sewerage Treatment Systems 2013
12. Brief List of Specifications and BIS codes to be followed. (Refer Chapter 1).

Proposed PANDATARAI Sewage Treatment Plant under S.B.M. 2.0

Components of the Project

S.No.	Particulars
I.	Interceptor Sewer HDPE / DWC Pipe Line for road crossing of (Zone-I) 200mm dia. X 1682.2M (length), 250mm dia. X 360.1M (length) and 300mm dia. X 300.7M (length)
II.	Construction of Connecting Receiving Chambers for outfalls
III.	Construction of Coarse Screen Chamber and Fine Screen Chamber for Wet Well.
IV.	Constructing of Wet Well-1 No (Zone-I- 2.8 m dia x Depth-6.2m) with Overhead pump house including all electrical and mechanical works.
V.	Providing Pumping Machinery in Wet Well complete in all respects with mechanical, civil and electrical components.
VI.	Rising Main Pipe, about Dia 100mm of length 15M from Wet well Pump House to STP
VII.	<p>1.0 MLD Aerated Lagoon STP Technology with all Civil, Mechanical, Electrical Works including:</p> <ol style="list-style-type: none"> Receiving Chamber, Elevated Screen and Grit Chamber. Aerated Lagoon Pond (Cap. Zone-I: 1.0 MLD) with Baffle Wall and floating Aerated mechanism System. Maturation Pond Chlorine Contact Tank Discharge System Internal Piping Network connecting different units. <p>Any other function /utility required to complete the STP and make it functional in all respect.</p>
VIII.	<p>3 KLD co-treatment of Faecal Sludge with (Zone-I) Planted Drying Beds-1 No with all Civil, Mechanical, Electrical Works including</p> <ol style="list-style-type: none"> Sedimentation / Tank of 3KLD for Sludge Treatment Pumping System from Sedimentation tank to Planted Drying Bed Planted Drying Bed <p>Diversion of Effluent Water from Sedimentation Tank to Inlet Screen Chamber of STP.</p>
IX.	Allied civil works for STP comprising of Compound Gate, Compound Wall of size (Zone-I: L-352.93m x H-1.80m, Internal Road and Illumination, Area Levelling, Cleaning Choked Drains, Informatory Sign Board, Etc.
X.	Complete Internal and External Electrification for the Project is in the Scope of Contractor including Power to all Equipments, Plants and Machineries, Buildings, Illuminations, Street Lighting, Earthing, Lightning Arrestors, Etc.
XI.	O & M for the complete scheme including Operation and Maintenance for 5 Years.

Note : Power supply to STP Project Site from distribution Grid will be provided by the ULB. All the cost towards providing power thru Grid shall be borne by ULB.

ANNEXURE - "E-I"

Design and Construction of Intercepting Sewer Network

S. no.	Description of Work	Type	Length in Meters	Diameter in mm	Remarks
1	Intercepting Sewer Pipeline to connect Existing Drain (Zone-I)	HDPE / DWC	1682.2 360.1 300.7	200 250 300	Manhole as per CPHEEO Manual on Sewerage and Sewerage Treatment Systems (2013)

Scope of Work

Dismantling of Cement Concrete Pavement (if required) shall be done by mechanical means using pneumatic tools, cutter breaking to pieces not exceeding 0.02 cum in volume and stock piling at designated locations and disposal of dismantled materials up to a lead of 1000 metres, stacking serviceable and unserviceable materials separately. Restoration of Pavement shall be done using mechanically mixed cement concrete with crushed stone aggregate with 40mm nominal size graded stone aggregate.

Pipe bedding shall be done with moorum/river sand with minimum thickness of 150mm

Providing, Laying and jointing of DWC / PE (HDPE) Pipes of renowned manufacturer as per Approved Makes of appropriate dia.. The jointing shall be done using elastic meric sealing ring with non-smooth external annular corrugated and smooth internal surfaces (double wall) for non – pressure underground sewerage, drainage as per IS 16098(PART2):2013 & EN 13476

Filling shall be done with available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 200mm in depth, consolidating each deposited layer by ramming and watering.

Manholes

Design and construction of Brick Masonary manholes with spacing as per CPHEEO Sewerage and Sewage Treatment Systems 2013.

Construction of Brick Masonry Circular Man Hole of varying size as per approved design by competent authority. Mortar shall be 1:4 (1 cement: 4 fine sand), inside Cement plaster 12 mm thick with cement mortar 1:3 (1 cement : 3 fine sand) finished with a floating coat of neat cement, foundation concrete 20 cm thick in 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) and making channels in cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20mm nominal size) finished with a floating coat of neat cement.

MS foot rests shall be provided with 20mm square bar, the spacing between footrest shall be as per CPHEEO Manual of Sewerage and Sewage Treatment Systems 2013

Moorum/ river sand for pipe bedding or over the pipe (including supply) of thickness at least 150 mm shall be provided at connections

PCC of M-10 with minimum thickness of 100mm shall be provided for intercepting drains

Chambers of required size shall be provided with M-25 grade of RCC and reinforcement shall be at the rate of 90 kg /m³ of concrete

All receiving chambers shall be design as per CPHEEO Manual of Sewerage and Sewage Treatment Systems 2013

About Interceptor Sewers:

Interceptor sewers are one of an important component of wastewater management system, for transporting sewage from numerous sources to a treatment plant.

The Interceptor Sewer Pipeline (Gravity Based) is to be Designed to collect wastewater from multiple smaller sewers or outfalls. Manholes to be provided at every outfalls / other smaller sewer line, as per CPHEEO / Indian Standards Norms. It will intercept flows before they reach Kharoon River; preventing pollution and safeguarding public health. This sewer line shall be connected to Inlet Chamber of proposed STP.

Location of Interceptor Sewer Pipes and Drains with all the appurtenances, Invert Level of Pipe and Drain and all the land marks with geo-coordinates marked on the L-section will be prepared by the contractor for the approval of Engineer-in-Charge.

Key Functions:

Flow Collection and Conveyance: Interceptor sewers shall gather wastewater from various sources. They efficiently channel this flow to STP for purification.

Preventing Overflow and Infiltration: Interceptor sewer will minimize the risk of sewer overflows and infiltration of stormwater into the wastewater system. This is crucial for ensuring clean water and preventing environmental contamination.

Improving Treatment Efficiency: By collecting wastewater from multiple sources, interceptor sewers enable centralized treatment, which is more efficient and cost-effective than treating small, dispersed flows.

Benefits of Interceptor Sewer:

Improved Water Quality: By preventing wastewater from entering rivers, lakes, and oceans,

interceptor sewers significantly enhance water quality, protecting aquatic ecosystems and human health.

Reduced Environmental Impact: Interceptor sewers minimize the risk of pollution from raw sewage, contributing to a cleaner and healthier environment.

Public Health Protection: They prevent the spread of waterborne diseases.

Economic Benefits: Interceptor sewers allow for the efficient management of wastewater, reducing the cost of treatment and minimizing environmental liabilities.

Maintenance and Repair: Regular Maintenance and Repairs are required.

ANNEXURE - “E-II”

Design and Construction of Chambers

INLET CHAMBER :-

Inlet Chambers are proposed to be constructed considering peak flow as per Design (Peak factor shall be as per CPHEEO Manual). Detention period for RCC inlet chamber is as per Design. RCC inlet screen chamber shall be provided with minimum 0.5 m free board.

RECEIVING CHAMBER

The deep gravity outfall sewers after interception & diversion will discharge the raw sewage into a Receiving chamber. The function of the Receiving chamber is to distribute the flow for process units. The Receiving Chamber shall be designed for peak flow. The Receiving chamber shall consist of sluice gates on upstream and downstream for flow regulation. In the sidewall of the Receiving chamber, sluice gates shall be installed such that it is possible to operate them manually, inspection as well as operation by standing on a platform constructed at a suitable elevation adjoining and circumventing the inlet chamber. There shall be a provision of one bye pass channel along with gates. Alternatively, plant bypass can be provided from existing / proposed manhole before pumping station. The inlet chamber shall be of adequate size to meet the requirements of workability inside it. The receiving chamber shall be open to sky and shall be water tight to prevent seepage of the sewage out of the inlet chamber. The entire construction is in M30 grade concrete and as per IS : 3370. RCC access platform with railing as per specifications shall be provided on one side of the chamber

INLET SCREENS :-

Screens or racks are to be installed at the entrance of the intercepting chambers to trap flotsam and debris by providing Static bar racks / screens.

Static trash racks and coarse screens can be used effectively for preliminary treatment because they capture a significant amount of aesthetically undesirable floating debris and trash contained in the wastewater. Removal efficiencies are tied closely to the design size of the racks, and can range from 25-90 percent of the total solids. The effectiveness of

screening units is reduced significantly by the presence of oil and grease in the flow and large quantities of rags and plastics. Small conventional bar racks often require manual cleaning with long handled rakes or pitch forks.

Coarse and Fine screen is proposed to be constructed for designed velocity 0.7 m/sec. RCC chamber shall be with a bifurcating wall dividing the unit in two parts for easy maintenance of each part. Screen will be inclined at 45 degree and depth of flow will be as per hydraulic design in coarse screen and fine screen.

COARSE SCREEN CHANNELS

Two manual screen of 20mm are proposed in the screen chamber. The manual bar screens shall be made of 10 mm thick Stainless Steel (SS 304) flats of 20mm opening as per CPHEEO Manual. Manually operated aluminium gates shall be provided at the upstream and downstream ends to regulate the flow. RCC Platforms shall be provided at the upper level to enable operation of the Gates. Railings shall be provided around the entire periphery of the well as well as for the platform. The entire structure is to be as per IS 3370 including the platform for the gates. RCC staircase min. 1.2m wide shall be provided for access from the ground level to the top of the unit & to the operating platforms.

All other accessories, whether specified or not, but required for completeness of contract shall be in contractor's scope.

GRIT CHAMBER

Grit removal channels have been used successfully to capture sand, gravel and large debris from wastewater at treatment plants. Typically, velocities in grit channels are less than 0.6 m/s and provisions are made to isolate and take one channel out of service for removal and disposal of the grit while the second channel is in service. This technology is simple but requires proper flow and velocity control in order to effectively remove grit and large debris from the wastewater.

Two Manual Bypass Channel (Standby) shall be provided after Fine Screen Channels. The entire construction shall be in M30 grade reinforced cement concrete and as per IS 3370.

RCC Platform/Walkway, minimum 1.20 m wide with Hand Railing as per specifications shall be provided. RCC Staircase, minimum 1.20 m wide with Hand Railing as per specifications shall be provided for access from Finished Ground Level to the top of the Unit & to the Operating Platform/Walkway.

Each Grit Chamber shall have the following features

- One tapered Inlet Channel running along one side with adjustable Influent Deflectors for entry of sewage into the Grit Chamber.
- One tapered Outlet Channel for collecting the de-gritted sewage, which overflow over an adjustable Weir into the Outlet Channel. It shall be designed in such a way that no settling takes place in it.
- One sloping Grit Classifying Channel in to which the collected grit shall be classified.
- The grit from Classifier shall be collected in a Wheeled Trolley.
- A Grit Scraping Mechanism.
- Screw Classifier or Reciprocating Rake Mechanism to remove the grit.
- One Organic Matter Return Pump

Manually operated CI Sluice Gates shall be provided at entrance of the Inlet Channel of the Grit Chambers as well as Bypass Channel to regulate the flow.

All other accessories, whether specified or not, but required for completion of Contract shall form the part of Bidder's Scope for the STP.

ANNEXURE - “E-III”

Constructing Wet Well with Overhead Pump House near STP

Sno.	Description of Work	Internal Clear length in Meters	Internal Clear Width in Meters	Internal Clear Depth in Meters	Clear Height in Meters
1.	Wet Well with Pump House near STP (Zone-I)	-	2.8 (circular)	As per Design	6.2

Design and Construction of Wet Well with Overhead Pump House as per the technical specification

- Design and Construction of RCC wetwell of Zone-I Size 2.8m dia. (circular) and clear height of 6.2m above Finish Floor Level.
- PCC work below wetwell of M-10 grade with minimum thickness 100mm
- RCC of M30 grade with wall thickness of at least 200mm and top slab of atleast 150mm with reinforcement at the rate of minimum 100kg/m³ of concrete.
- Providing MS foot rests of 20mm square bar as per CPHEEO Manual of Sewerage and Sewage Treatment Systems
- Pump House shall be design as per CPHEEO Manual of Sewerage and Sewage Treatment Systems. The height of pumphouse shall be at least 5 m clear with 12mm thick cement plaster in single coat including finishing even, smooth and curing, finishing walls with Acrylic Smooth exterior paint of approved shade with atleast two two coats applied @ 1.67 ltr/10 sqm over and including priming coat of exterior primer applied @ 2.20 kg/ 10sqm.
- Door shutters with frame of size 2.10m x 1.00m and Window with frame of size 1.23m x 0.90m shall be used with 1mm thick M.S. sheet and diagonal braces of 40x40x6 mm angle iron in doors, 3mm M.S. gusset plates at the junctions and corners all necessary fittings complete including applying a priming coat of approved steel primer. Painting with synthetic enamel paint of approved brand and manufacture to give an even shade with atleast two two coats applied.
- Flooring of Pumphouse shall be done using 25 mm thick IPS Flooring over 20mm (Average) thick base of cement mortar 1:4 laid over and jointed with grey cement slurry mixed with pigment to match the shade of the slab including grinding rubbing and polishing.
- Water proofing treatment shall be done at vertical and horizontal surfaces of depressed portions and the like consisting of: i) 1st course of applying cement slurry @ 4.4 Kg/sqm mixed with water proofing compound conforming to IS 2645 including rounding off junction of vertical and horizontal surface. 2nd course of 20mm cement plaster 1:3 (1 cement : 3 coarse sand) mixed with water proofing compound including rounding off junction of vertical and horizontal surface. 3rd course of applying blown or residual bitumen applied hot @ 1.7 Kg. per sqm of area. 4th course of 400 micron thick PVC sheet. (Overlaps at joints of PVC sheet should be 100 mm wide and pasted to each other with bitumen @ 1.7 Kg. per sqm of area

- Copper lightening conductor as per IS 3070 - 1965 (with up to date amendment) including copper rod of 20mm dia as per upper terminal 1.5M long with a knob at end and with conical spike at top, Aluminium tape conductor 20x3mm size, copper earth plate of 3mm thick and 0.81 sqm. in area, clamps at 1 M centre to centre including, necessary excavation, laying and fixing the conductor, providing and fixing 40mm G.I. pipe including making all connections, filling the earthing pit with charcoal, salt, etc. and refilling and watering. complete as per specifications laid down in I.S. codes 3070 shall be provided.
- Air valve of ductile iron single chamber triple function temper proof, small orifice with screwed end as per IS : 14845-2000 including jointing & testing with cost of jointing material and rubber insertion all complete as per IS :13095-1991 shall be provided.
- Ductile iron double flanged sluice valves as per I.S.:14846- 2000 fitted with cap including jointing & testing with cost of jointing material such as bolts, nuts, rubber insertions shall be provided
- Exhaust fan 1 no. with ac 230/250 volt 50 H 300mm shall be provided
- Non clog type Sewage Submersible Pump 5 nos. suitable for sewage/ Liquidwaste application with standard MOC and given duty points. Including all pipes, fittings and Valves required for pumping sewage to connect Rising Main.
- Push button operated direct online starter with an antiweld silver cadmium oxide contactor with replaceable fixed and moving contacts and bimetallic thermal overload relay help in anticorrosion treated sheet steel or iron clad enclosure and fixing the same to suitable capacity wires for 230/440 V 1/3 phase motor as per Design shall be provided.
- MCCB distribution Panel confirming to IS/IEC61439-3 and IK09 tested as per IS/IEC 62262 with minimum IP43 protection provided with Polyurethane (PUR)gasket,with suitable earthing system, onwall/ woodboard/ flush mounting using equiredcl A, bolts, nuts, etc., with provision for fixing of suitable type capacity MCCB's asanincomer for 3 phase Double door with necessary bus bar completely wired to use on 440V 3 phase 4 wire powder coated painting etc., complete with a provision for fixing of single/ three phase suitable capacity MCB's as outgoings confirming to IS/IEC 60898 - 2.
- C.I. foot valve having single leather flap and gunmetal seating. Valve shall be fixed on suction side of pump as per requirement including jointing material and hardware.

ANNEXURE 'E-IV'

SPECIFICATIONS FOR RAW SEWAGE PUMPING MACHINERY (PUMPS AND MOTORS) ON WET WELL

Non clog type Sewage Submersible Pump 5 nos. (for each wet well) suitable for sewage/ Liquidwaste application with standard MOC and given duty points as under :

For Zone-I Wet Well Pump House (Near STP)

Sno.	Use of Pump/s	Power of Pump	Capacity of Pump in Ltrs/Hr.	Head	Nos. (Working + Standby)
1	For Peak Flow	7.5HP	72000	10M	1 W
2	For Average Flow	3.0HP	18000	10M	1 W + 1 S
3	For Lean Flow	2.0 HP	12000	10M	1 W + 1S

The Contractor shall provide manufacturer's published pump curves, system curves and the necessary hydraulic calculations to justify the sizes of any pumps selected. The Contractor shall provide the shop drawings.

After approval of the pump types the Contractor shall submit the test data as required under factory inspection and testing

The Contractor shall submit Operation and Maintenance Manuals and Instructions which shall include all the documentation provided as above and as required in the Specification.

Pump Requirements

Pumps and drives shall be rated for continuous duty and shall be capable of pumping the flow range specified in the Specification without surging, cavitations, or excessive vibration to the limits specified. All pumps and drives shall be from approved manufacturers.

The pumps shall meet maximum allowable shut-off head.

The pumps shall not overload the motors for any point on the maximum pump speed performance characteristic curve and the pump operating range, within the limits of stable pump operation, as recommended by the manufacturer, to prevent surging, cavitations, and vibration.

To ensure vibration-free operation, all rotative components of each pumping unit shall be statically and dynamically balanced to BS 6861.

Vibration levels shall not exceed the levels given in BS 4675 for Class 11 machines, quality bands A and B.

All units shall be so constructed that dismantling and repairing can be accomplished without difficulty. The Contractor shall be responsible for proper operation of the complete pumping system, which includes the pump, motor, variable speed drive unit (if designated), and associated controls furnished with the pump.

The Contractor shall ensure that the controls and starting equipment are suitable for use with the pump motor, taking into account all requirements including starting currents and number of starts per hour.

The Contractor shall ensure that drive motors, variable speed drive systems (if specified) and pumps shall be supplied and tested together by the pump manufacturer, who shall supply full certification for the proper function of the entire pumping system.

Design Conditions

It should pump all kinds of sewage in particular unscreened sewage containing long fibres, solid admixes, sludges, liquid containing trapped air and gas etc, long fibres, polythene covers, and capable of dealing with sewage of specific gravity 1.5. Profile gasket should be provided in pump casing so as to avoid metal to metal contact between pump and the special designed duck foot bend/ flanged elbow, automatic coupling to ensure leak proof joint with delivery pipe .

Pumps shall be designed and constructed to satisfactorily operate and perform within the designated design conditions and the requirements specified herein. They shall be designed for a life of 100,000 hours with service intervals at 20,000 hours.

Castings, fabrications, machined parts and drives shall conform to the industry standards for strength and durability and shall be rated for continuous duty over the entire operating range.

Suitable RCC slab / ISMB (with necessary anti-corrosive painting) to be erected over suction well to fix guide wire / guide pipe holding bracket.

The pump, motor and associated electrical equipment shall be rated for a minimum 10 starts per hour, unless otherwise specified.

The Contractor shall ensure that the pump manufacturer provides certification which guarantees the following

- Flow rate
- Total head
- Power input
- Efficiency

Control Panel

The control panel shall be made of 14/16 SWG sheet steel for the front side for bottom and other sides with powder coating for long life. It should have suitable starter. The control panel consists of multi section unit containing one pump and one incomer/control. The sections are interfaced, via, cable way/marshalling section. All wires and links are of electric grade copper conductor. The control of the pumps viz., Mercury/magnet activated/ any other float switch with auto for duty pump.

Power circuit is operating at 3 phase, 415 Volts, 50 Hz supply and for control circuit it is single phase 230 V, 50 Hz supply.

Type of starter shall be only VFD

The following protections should be provided in the panel short circuit protection, over load protection, over temperature protection for motors, single phasing preventor, reverse rotation protection, dry run failure protections to be made. Suitable range ammeter, voltmeter, selector switch, auto-manual switch, pump running lamp, pump fault lamp, fault reset push button, phase indicating lamps, indication of high level in the well, hours run counter should Also, be provided.

The control panel wiring circuit should be furnished in triplicate.

The pump should be controlled by the magnetic/mercury float switches while the pumps run in auto. The floats with switches should be available in the wet wells and the connections from float should be made to the individual control panel through the cable duct. Necessary control sensor wiring should be made to convert the signals of mercury/magnet float switches while the level is high/low so that the pump starts/stops on auto mode.

The necessary push button stations with control wiring should be made on the wells for each pump set each stations as per std. rules.

The control panel, pump set and accessories for pumps should be manufactured by same manufacturer. The pump and motor shall be accordance with the relevant standards.

Site Inspection and Testing

The equipment delivered to the Site shall be examined by the Contractor to determine that it is in good condition and in conformance with the approved working drawings and certifications. All equipment shall be installed in strict conformance with the Specification and the manufacturer's instructions.

The Contractor shall provide the services of the pump manufacturer's representative to supervise the installation, commissioning and start-up of the pumping equipment.

The commissioning tests shall be performance and reliability trials, mainly for the purpose of satisfying the Engineer that the pump sets have been correctly assembled and installed and that their performance matches that obtained during the manufacturer's works tests. In the event of an unwarranted change in the pump performance characteristics or power consumption, all necessary steps shall be taken as soon as possible to establish the cause and remove the fault. Similar action shall be taken for an undue increase in bearing or gland temperature, increased gland leakage rates, unsatisfactory vibration levels or any other fault or defect in the operation of the pump set.

The commissioning trials shall extend until each pump unit has run 'continuously' for at least 3 days under all operating conditions. The term 'continuously' shall include running at various speeds or on a start/stop basis as determined by the control system

The Contractor's supervisory staff, and the pump manufacturer's representative shall be present during the period of the tests and trials. The Contractor shall be responsible for any failure of the whole equipment or any part thereof, whether such failure shall be determined by the methods detailed herein or otherwise. If the Contractor interrupts the pump test or trial, or through negligence on the part of the Contractors staff, it shall be completely repeated for the pump set concerned.

Motors

All motors shall be suitable for operation on a 415v, 50 Hz, 3 phase, AC supply.

Motors shall be capable of giving rated output without reduction in the expected life span when operated continuously under the following supply conditions.

I	Variation of supply voltage from the rated motor voltage	+ / - 10%
li	Variation of supply frequency from the rated frequency	+/- - 5%
lii	Combined voltage and frequency variations	+ / - 10%

ANNEXURE 'E-V'

SPECIFICATIONS OF RAW SEWER PUMPING MAIN FROM WET WELL TO STP

The schedule for proposed DI K-9 sewage pumping mains shall be as mentioned in the table below

Sr. No.	Rising main and Gravity main pipeline		Distance	Diameter	Material and class
	From	To	In m	In mm	
1	Wet Well(Zone-I)	STP	15	100	DI K-9

SCOPE OF WORK

Survey, Investigation, Design, Supply, Laying, Jointing and construction of Rising Main (DI-K9 Pipe) as defined above.

- Providing, laying and jointing including testing following socket & spigot centrifugally cast (Spun) Ductile Iron pressure pipes with inside cement mortar lining (class K-9) conforming to IS 8329 /2000 with suitable Rubber Gasket (Push on) joints as per IS:5382/2018 shall be executed.
- Providing and fixing M.S. sluice valve as per approved drawing.
- Joint shall be done using Rubber ISI marked Gasket (push on) joint as per IS:5382/2018 to following DI pipes K-9

The work of providing, laying DI pipeline in Raw Sewer Rising Main from Wet Well to Inlet of STP; including excavation, cutting road if required, and restoring to the original shape after lowering the pipes **including protecting public services and making good if damaged**, including valves, pressure relief valves, DI and MS specials, fixing of all the appurtenance, if any, hydraulic testing of pipe line to rated capacities as applicable complete.

The materials shall be of ISI mark socket and spigot centrifugally cast (spun) Ductile Iron Pressure pipes class K-9 with inside cement mortar lining conforming to IS8329-2000 with suitable rubber gasket (Push on) joints as per IS5382-1985 duly inspected by competent authority appointed by State with all ductile iron fittings and ISI marked sluice valve conforming to IS 9523-2000 including testing and commissioning.

All the allied civil works necessary for laying and jointing of pipeline shall be a part of this contract; therefore, the contractor shall design and carry out the necessary civil works such as thrust blocks, anchor blocks, chambers for appurtenances and necessary earth work. All the civil works shall be designed and carried out as per the relevant Indian Standard Code of practice. All the materials used on civil work should be of a quality approved by Executive Engineer. Rejected material shall be removed from the site immediately at the cost of contractor.

After completing the job of laying and jointing of pipe line the contractor will do testing, commissioning and operation & maintenance for duration of Contract. The repairing of bursting and leakage of pipeline during this period shall be done by the contractor at his cost including cost of all materials.

ANNEXURE - “E-VI”

SPECIFICATIONS FOR SEWAGE TREATMENT PLANT

Designing (aesthetically), providing, and constructing and giving satisfactory trials of Sewage Treatment Plant consisting of receiving chamber, screen chamber, grit chamber, measuring flume, distribution chamber with primary and secondary treatment, etc. of **Zone-I capacity 1.0 MLD** including allied units for waste disposal with all civil and mechanical works involved, etc. The design of Sewage Treatment Plant (STP) shall be done in compliance to following below parameters:

AS there is no sewage pipe network and all effluent reaches the **Sewage Treatment Plant (STP)** through open drains, the design considerations and CPHEEO guidelines for the treatment system must address the following

S. No.	Parameter	Influent	Effluent
1.	Biological Oxygen Demand (BOD) mg/l	250 mg/ lt	≤ 30mg/ lt
2.	Chemical Oxygen Demand (COD) mg/l	425 mg/ lt	≤ 250mg/ lt
3.	pH	6.5 to 9	5.5 to 9
4.	TSS	375 mg/l	≤ 100 mg/l
5.	TN	50 mg/l	100 (TKN) 50 (NH ₃ -N)

The Contractor shall conduct a trial run period of 3 months for successful completion of the project. Treated water from STP shall be conveyed through gravity pipe of DWC /PE (HDPE) Pipes of approved manufacturer duly tested, and inspected with atleast 300mm inner dia. pipe of length as per site to connect effluent to nearest pond/nala/drain/lake etc. Design of STP shall be based on CPHEEO Manual of Sewerage and Sewage Treatment Systems 2013.

FACULTATIVE AERATED LAGOON

General

This chapter describes the requirements for the **Facultative Aerated lagoons**

Refer Indian Standard IS:5611, Code of Practice for Construction of Waste Stabilization Ponds (Facultative Type) and CPHEEO Manual for Lagoon design.

Supplement to Engineering Report

The engineering report shall contain pertinent information on location, geology, soil conditions, area for expansion, and any other factors that will affect the feasibility and acceptability of the proposed treatment system.

Results of the geotechnical investigation performed at the site.

Data demonstrating anticipated seepage rates of the proposed pond bottom at the maximum water surface elevation

A description, including maps showing elevations and contours, of the site and adjacent area suitable for expansion

The ability to disinfect the discharge is required.

Aerated Lagoon

Design Basis:

Sewage Treatment Plant Aerated Lagoon Process:

- | | | | |
|----|---------------------|---|--|
| a) | Lagoon Capacity | : | 1.0 MLD |
| b) | Operation Time | : | 24 hrs. |
| c) | Peak Factor | : | As per CPHEEO Manual on Sewerage and Sewage Treatment Systems by CPHEEO 2013 |
| d) | Area of Lagoon | : | As per design |
| e) | Depth of Lagoon | : | As per design |
| f) | Mode of Operation | : | Manual/Semi-Automatic. |
| g) | Scheme of Treatment | : | Aerated Lagoon Process. |

Scheme of Treatment:

The sewage treatment plant (aerated lagoon) is designed for a capacity of **1.0 MLD**. Sewage treatment plant scheme is based on aerated Lagoon Process followed by maturation ponds.

- Pre-treatment:

Pretreatment will consist of screening, grit removal & distribution.

- Secondary / Biological Treatment:

Completely Mix Aerated Lagoon including Sedimentation Pond, Chlorination Pond and Aerated Lagoon with Aerators.

- Tertiary Treatment:

Tertiary treatment process will consist of Disinfection of treated sewage.

Process Description Sewage Treatment Plant (Aerated Lagoon) Process:

The sewage treatment plant should be designed for a capacity of **1.0 MLD** with a peak factor as mention in Manual on sewerage and sewage treatment systems by CPHEEO(2013). The scheme of treatment plant is based on Aerated Lagoon Process as per the design. Lifted Raw sewage will then be passed through fine manual bar screens to remove solids, floatable from raw sewage stream before passing to grit chamber. Grit chambers have been provided for removal of grit and sand type material coming along with raw sewage. Sewage then will flow to aerated lagoon for biological aeration and biological clarification. An aerated lagoon (or aerated pond) is a simple sewage treatment system consisting of a pond with artificial aeration to promote the biological oxidation of sewages. Aerated lagoon is provided with surface aeration system for mixing and aeration purpose. Surface aeration system is used to increase the DO (dissolved oxygen) level of mixed liquor in aerated lagoon. Surface aeration system is designed on basis of incoming organic load.

Aerated lagoon using floating surface aerators achieve 80 to 90% removal of BOD with retention times of 1 to 10 days. In a surface aerated system, the aerators provide two functions: they transfer air into aerated lagoons required by the biological oxidation reactions, and they provide the mixing required for dispersing the air and for contacting the reactants (that is, oxygen, sewage, and microbes). Aerated lagoons have the advantages such as ease of operation and maintenance, equalization of sewage, and a high capacity of heat dissipation when required. An ample oxygen supply in a sewage pond system is the key to rapid and effective sewage treatment. Oxygen is needed by the bacteria to allow their respiration reactions to proceed rapidly. The oxygen is combined by the bacteria with carbon to form carbon dioxide. Without sufficient oxygen being present, bacteria are not able to quickly biodegrade the incoming organic matter. In the absence of dissolved oxygen, degradation must occur under septic conditions which are slow, odorous and yield incomplete conversions of pollutants. Under septic conditions, some of the carbon will be react with hydrogen and sulfur to form sulfuric acid and methane. Other carbon will be converted to organic acids that create low pH conditions in the ponds and make the water more difficult to treat. To avoid creation of septic conditions aerated lagoon is provided with surface aeration system. Based on oxygen requirement subject to organic load we have provided or proposed 5 number of surface aerators (3 working + 2 standby).

After aerated lagoon water flow to maturation ponds. Some additional removal of organic matter and other pollutants may be achieved in maturation ponds. These ponds are only included in the treatment line when high efficiencies of pathogen removal are required, either for discharge of the treated sewage in surface water bodies, or for use for irrigation or aquaculture. Ponds require very little maintenance since there is no heavy electric or mechanical equipment that requires attention. The only routine maintenance needed is on the preliminary treatment (cleaning of screens and removal of sand), routine checking of

pipes, weirs and other hydraulic structures, and removal of unwanted vegetation growth in embankments. Sludge accumulates inside the ponds. It needs to be removed only in the interval of several years. This is an important advantage of the system. However, when removal is necessary, it is usually an expensive and labor-intensive operation.

After maturation pond water flows to chlorine contact tank where chlorine is used for disinfection of treated sewage. Chlorine inactivates a microorganism by damaging its cell membrane. Once the cell membrane is weakened, the chlorine can enter the cell and disrupt cell respiration and DNA activity. The disinfection of potable sewage provides a degree of protection from contact with pathogenic organisms including those causing cholera, polio, typhoid, hepatitis, and several other bacterial, viral, and parasitic diseases. Disinfection is a process where a significant percentage of pathogenic organisms are killed or controlled. After disinfection treated, sewage is discharge to nearest outfall.

Technical Specifications of Surface Aerators:

Surface aeration plays an equally important role in oxygenating liquids. Surface aerators push water from under the water's surface up into the air, then the droplets fall back into the water, mixing in oxygen. The jets of water break the surface with varying degrees of force. The Surface Aerator line is designed to maximize two most important functions of any aeration device i.e., oxygen transfer and mixing of sewage. The waste liquid (sewage) is pumped through the unit in a manner which creates the most advantageous spray pattern for introducing oxygen into liquid. At the same time, this pumping action creates a tank velocity pattern which insures the mixing of contents and thus the oxygen dispersion. Years of experience in design and application of mechanical aeration equipment have been combined with full capabilities of our extensive research to provide a line of Surface Aerators which not only maximize oxygen transfer and tank mixing characteristics but perform these functions in the most economical and reliable manner.

The Surface Aerator uses motor to drive axial flow type impeller directly to pump sewage for creating the spray pattern (or water drop) through the water guide panel. When water contacts air, it will become water drops, which fall to water surface and form turbulence and bubbles. These bubbles will improve oxygen dispersion and increase oxygen in water. Aerator device pumps water from bottom to top and creates circulation flows and stir processes. It is suitable for domestic sewage treatment, agriculture and aquaculture oxygen supply and other industrial sewage aeration. Aerator aspirates the water from the bottom and sprays it back on the surface. The spray is horizontally injected into the water surface over 360° and the turbulence creates micro bubbles which are pushed downwards. The result is a maximum oxygen transfer efficiency. The flow pattern generates a perfect oxygen dispersion and full homogenization even in deep basins and on large surfaces. Based on organic and hydraulic load of sewage treatment plant total nine surface aerators are provided of which seven will be working and two will be standby. The switchover of working and standby aerators will be based on PLC based panel. Also placed Dissolved oxygen meter will control working of surface aerators through VFD (variable frequency drive).

Construction of Surface Aerators:

Surface Aerators are carefully designed and manufactured for Durability and Energy Efficiency.

The aerators deliver rated Dissolved Oxygen output with the least possible energy consumption in its range. Providing powerful pumping action, Surface Aerator transfers oxygen by breaking up wastewater into a spray of particles. This action creates more surface area for atmospheric pressure to drive oxygen into the wastewater. At the same time, the oxygen-enriched water is dispersed and mixed. The entire process offers more efficient wastewater treatment for municipalities and industrial applications.

SR NO	DESCRIPTION	MATERIAL
1	FLOAT	SS304
2	IN TACK CONE	SS 304
3	DEFLECTOR CONE	SS304
4	LANTERN SUPPORT	SS304
5	SHAFT	SS304
6	BUSH.	BRASS/GUN METAL
7	IMPELLER 3 BLADES	SS304
8	NUT WITH DOME CUT check nut	SS304
9	MOORING HOOK 4 NOS	SS 304
10	MOTER 5 HP, 1440 RPM STD TEFC 415 3 PHASE 50 HZ, I.P.55 PROTECTION COMPRESS GLAND,	CI
11	CANOPY	SS 394

- 1) **Float:** Float is constructed with SS 304 that adds to the structural stability of surface aerator and prevents sinking if excessive damage to the float exterior should occur. Float exteriors are stainless steel. Float is most prominent feature of surface Aerator. It keeps assembly afloat in water. Float is provided with four anchor eyes for mooring rope or chains if required. The entire aerator assembly is mounted on float. The float provides for stability and floatation.
- 2) **Intake Cone:** Intake cone of an aerator must be able to withstand constant duty in corrosive, abrasive, and high velocity propeller-induced flow. Intake cone of the Surface aerator is constructed of heavy wall stainless steel to resist this assault. The heavy construction of the Surface aerator volute will provide a long, trouble-free life.
- 3) **Deflector Cone:** as name suggests it is used to deflect flow radial creating a film of liquid. Deflector cone is made of SS 304 to resist corrosive and abrasive action.
- 4) **Lantern Support:** it creates a gap as well as supports to motor on it and is made of SS 304. Liquid splatters out creating a thin film.
- 5) **Shaft:** One-piece shaft of stainless steel 304 eliminates the use of couplings which require constant lubrication with water or wastewater. The one-piece design eliminates erosion and

constant maintenance problems.

- 6) **Bush:** made of brass or gun metal works like a bearing making the rotary smooth in terms of rotations.
- 7) **Impeller 3 Bladed:** Propeller is a three-blade design constructed of stainless steel 304. It features a sweepback design for non-clog operation and greater operating efficiency. The three-blade design impels higher quantity of water and yet operates smoothly due to its well-balanced shape. The impeller is heavy duty stainless steel and withstands heavy shock loads of water hammer as well as impact load caused by solids if any solid manages to pass through the protective net already provided. It features robust design for continuous non-clog operation for a long life under the most arduous conditions with greater operating efficiency.
- 8) **Nut with Dome Nut (Check Nut):** it is made of Stainless steel 304. Firmly and securely locks the propeller to the shaft. Just two tools required to install or remove the propeller.
- 9) **Mooring Hooks 4 Nos.:** mooring hooks are used to place surface aerators in desired location in aerated lagoon or aeration basin. Our aerators have four mooring hooks for anchorage of surface aerators.

Motor: Vertical Flange Mounted, 415 volts, 3 phase, 50 Hz's frequency, high efficiency motors are used with IP-55 protection as standard. Motors are totally enclosed, fan cooled, squirrel cage and designed for continuous operation. Higher protection and specialized motors are supplied optionally. Standard motors are high efficiency and vibration tested for optimum performance in the most stringent applications. Generally top brand motors such as Kirloskar, Crompton, ABB and other equivalent only, are used as a standard feature. They have heavy-duty bearings and seals, class F insulation or better and a minimum 1.15 service factor.

- 10) **Canopy:** canopy made of SS 304, on top of motor is used to protect motor from getting wet during operation as well as during wet season.

11) **Mooring Options:**

Post Mooring is used in larger lagoons where distances prohibit mooring the surface aerator to the shore. A mooring post is installed into the lagoon floor and the mooring line is attached to an eyebolt in the post.

Pivotal Mooring arm is used in applications with varying water levels not exceeding arm length (lengths available up to 13 meters long). The surface aerator pivotal mooring arm fits at the base of the motor allowing the aerator to adjust to varying water levels.

Maintenance Mooring enables the operator to easily move the aerator to the shore for maintenance. One or two mooring connection points are supplied with a disconnect device and a long length of cable. This allows the aerator to be moved to the opposite side of the basin without disconnecting the mooring.

Shore Mooring, a three-point or four-point mooring to the shore, is the most common mooring configuration. Mooring cables are connected to surface aerator mooring eyes and to an eyebolt or embedded anchor on the shore.

Restrained Mooring is used in applications with varying water levels. Surface aerator restrained mooring frame fits around the mooring posts and allows aerator to slide up and down the post as the water level changes.

Pier (Fixed) Mounting is used when surface aerator can be fixed-mounted to various platforms or structures. The hanging design shown here is one of the more common fixed-mounted arrangements. This mooring option is ideal for those installations where gear-reduced units are being replaced by the more efficient surface aerator.

Bottom Mooring is another mooring arrangement for those installations where the distance from surface aerator to the shore would require longer lengths of cable than is practical and where the use of a mooring post is not feasible. The unit is moored from three (3) or four (4) points to concrete blocks on the lagoon floor.

Additional Specifications and Instructions:

Water Table

The effect of the ground water location on pond performance and construction must be considered.

Ground Water Protection

Ground Water Protection's main emphasis should be on site selection and liner construction. Proximity of ponds to water supplies and other facilities subject to contamination and location in areas of porous soils and fissured rock formations should be critically evaluated to avoid creation of health hazards or other undesirable conditions. The possibility of chemical pollution may merit appropriate consideration. Test wells to monitor potential ground water pollution may be required and should be designed with proper consideration to water movement through the soil as appropriate.

An approved system of ground water monitoring wells or lysimeters may be required around the perimeter of the pond site to facilitate ground water monitoring. The use of wells and/or lysimeters will be determined on a case-by-case basis depending on proximity of water supply and maximum ground water levels. This determination will be at the Design approval phase.

A routine ground water sampling program shall be initiated prior to and during the pond operation, if required.

Pond Shape

Rectangular ponds with a length not exceeding three times the width are considered most desirable for complete mix aerated lagoons. Dikes should be rounded at corners to minimize accumulations of floating materials. Common dike construction should be considered whenever possible to minimize the length of exterior dikes.

Recirculation

Recirculation of lagoon effluent may be considered. Recirculation systems should be designed for 0.5 to 2.0 times the average influent wastewater flow and include flow

measurement and control.

Flow Measurement

The design shall include provisions to measure, total, and record the wastewater flows.

Level Gauges

Pond level gauges should be located on outfall structures or be attached to stationary structures for each pond.

Pond Dewatering

All ponds shall have emergency drawdown piping to allow complete draining for maintenance. Sufficient pumps and appurtenances should be available to facilitate draining of individual ponds in cases where multiple pond systems are constructed at the same elevation or for use if recirculation is desired.

General Site Requirements

The pond area shall be enclosed with an adequate Boundary to keep out livestock and discourage trespassing, and be located so that travel along the top of the dike by maintenance vehicles is not obstructed. A vehicle access gate of width sufficient to accommodate mowing equipment and maintenance vehicles should be provided. All access gates shall be provided with locks.

Provision for Sludge Accumulation

Influent solids, bacteria, and algae that settle out in the lagoons will not completely decompose and a sludge blanket will form. This can be a problem if the design does not include provisions for removal and disposal of accumulated sludge, particularly in the cases of anaerobic stabilization ponds and aerated lagoons. The design should include an estimate of the rate of sludge accumulation, frequency of sludge removal, methods of sludge removal, and ultimate sludge handling and disposal. The design life shall be stated in the report.

Stabilization Ponds

The primary (first in a series) pond depth should not exceed 2.5 Meter. Greater depths will be considered for polishing ponds and the last ponds in a series of 4 or more (or baffling provided for a single cell lagoon design configuration), if designed.

Manholes

A manhole should be installed at the terminus of the interceptor line or the force main and should be located as close to the dike as topography permits; its invert should be at least 6 inches above the maximum operating level of the pond to provide sufficient hydraulic head without surcharging the manhole.

Influent Pipelines

The influent pipeline can be placed at zero grade. The use of an exposed dike to carry the influent pipeline to the discharge points is prohibited, as such a structure will impede circulation.

Inlets

Influent and effluent piping should be located to minimize short-circuiting and stagnation within the pond and maximize use of the entire pond area. All gravity lines should discharge horizontally onto discharge aprons. Force mains should discharge vertically up and shall be submerged at least 2 feet when operating at the 3-foot depth.

Discharge Apron

Provision should be made to prevent erosion at the point of discharge to the pond.

Interconnecting Piping and Outlet Structures

Interconnecting piping for pond installations shall be valved or provided with other arrangements to regulate flow between structures and permit variable depth control.

The outlet structure can be placed on the horizontal pond floor adjacent to the inner toe of the dike embankment. A permanent walkway from the top of the dike to the top of the outlet structure is required for access. The outlet shall be preceded by an underflow baffle.

The outlet structure should consist of a well or box equipped with multiple-valved pond draw off lines. An adjustable draw off device is also acceptable. The outlet structure should be designed so that the liquid level of the pond can be varied from a 3.0- 5.0-foot depth in increments of 0.5 foot or less. Withdrawal points shall be spaced so that effluent can be withdrawn from depths of 0.75 foot to 2.0 feet below pond water surface, irrespective of the pond depth.

The lowest draw off lines should be 12 inches off the bottom to control eroding velocities and avoid pickup of bottom deposits. The overflow from the pond shall be taken near but below the water surface. A two-foot-deep baffle may be helpful to keep algae from the effluent. The structure should also have provisions for draining the pond.

A locking device should be provided to prevent unauthorized access to level control facilities. An unvalued overflow placed 6 inches above the maximum water level shall be provided.

Outlets should be located nearest the prevailing winds to allow floating solids to be blown away from effluent weirs.

The pond overflow pipes shall be sized for the peak design flow to prevent overtopping of the dikes.

Number of Ponds

A minimum of three ponds, and preferably four ponds, in series should be provided (or baffling provided for a single cell lagoon design configuration) to insure good hydraulic design. The objective in the design is to eliminate short circuiting. Not less than three basins should be used to provide the detention time and volume required. The basins should be arranged for both parallel and series operation. A settling pond with a hydraulic detention time of 2 days at average design flow must follow the aerated cells, or an equivalent of the final aerated cell must be free of turbulence to allow settling of suspended solids.

Parallel/Series Operation

Designs, other than single ponds with baffling, should provide for operation of ponds in parallel or series. Hydraulic design should allow for equal distribution of flows to all ponds in either mode of operation.

Depth

Depth should be based on the type of aeration equipment used, heat loss considerations, and cost, but should be no less than 7 feet. In choosing a depth, aerator erosion protection and allowances for ice cover and solids accumulation should be considered.

Aeration Equipment

A minimum of two mechanical aerators or blowers shall be used to provide the horsepower required. At least three anchor points should be provided for each aerator. Access to aerators should be provided for routine maintenance which does not affect mixing in the lagoon. Timers will be required.

Pond Construction Details

Pond Bottom shall be compacted before laying of Synthetic Membrane Sheet and thereafter about 100mm PCC, M10 Grade shall be done on bottom and sides too.

Requirement for Lining

The seepage rate through the lagoon bottom and dikes shall not be greater than a water surface drop of 1/4 inch per day. (Note: The seepage rate of 1/4 inch per day is 7.3×10^{-6} cm/sec coefficient of permeability seepage rate under pond conditions.)

General

Pond liner systems that should be evaluated and considered include synthetic membrane liners below PCC Surface.

The liner should not be subject to deterioration in the presence of the wastewater. The geotechnical recommendations should be carefully considered during pond liner design.

Liners

The thickness and the permeability of the liners shall be sufficient to limit the leakage to the maximum allowable rate of 1/4 inch per day. The evaluation of liner should include laboratory permeability tests of the material and laboratory compaction tests. The analysis should take into consideration the expected permeability of the soil when compacted in the field. All of the pcc Liner material shall have essentially the same properties.

The analysis of an earth should also include evaluation of the earth material with regard to filter design criteria. This is required so that the fine-grained liner material does not infiltrate into a coarser subgrade material and thus reduce the effective thickness of the liner.

If the ponds are going to remain empty for any period of time, consideration should be given to the possible effects on the pcc Liners from freezing and thawing during cold weather or cracking from hot, dry weather. Freezing and thawing will generally loosen the soil for some depth. This depth is dependent on the depth of frost penetration.

The compaction requirements for the liner should produce a density equal to or greater than the density at which the permeability tests were made. The minimum liner thickness should be 12 inches, to ensure proper mixing of bentonite with the native soil. The soil should be placed in lifts no more than 6 inches in compacted thickness. The moisture content at which the soil is placed should be at or slightly above the optimum moisture content.

Construction and placement of the pcc Liner should be inspected by a qualified inspector. The inspector should keep records on the uniformity of the liner material, moisture contents, and the densities obtained.

Bentonite and other similar liners should be considered as a form of earth liner. Their seepage characteristics should be analyzed as previously mentioned, and laboratory testing should be performed using the mixture of the native or local soil and bentonite or similar compound.

In general, the requirements for bentonite or similar compounds should include the following: (1) The bentonite or similar compound should be high swelling and free flowing and have a particle size distribution favourable for uniform application and minimizing of wind drift; (2) the application rate should be atleast 125 percent of the minimum rate found to be adequate in laboratory tests; (3) application rates recommended by a supplier should be confirmed by an independent laboratory; and (4) the mixtures of soil and bentonite or similar compound should be compacted at a water content greater than the optimum moisture content.

Synthetic Membrane Liners

Requirements for the thickness of synthetic liners may vary due to the liner material, but it is generally recommended that the liner thickness be no less than 0.5 mm; that is, 0.02 inch. There may be special conditions when reinforced membranes should be considered. These are usually considered where extra tensile strength is required. The membrane

liner material should be compatible with the wastewater in the ponds such that no damage results to the liner. PVC liners should not be used where they will be exposed directly to sunlight. The preparation of the subgrade for a membrane liner is important. The subgrade should be graded and compacted so that there are no holes or exposed angular rocks or pieces of wood or debris. If the subgrade is very gravelly and contains angular rocks that could possibly damage the liner, a minimum bedding of 3 inches of sand should be provided directly beneath the liner. The liner should be covered with 12 inches of soil. This includes the side slope as well. No equipment should be allowed to operate directly on the liner. Consideration should be given to specifying that the manufacturer's representative be on the job supervising the installation during all aspects of the liner placement. An inspector should be on the job to monitor and inspect the installation.

Other Liners

Other liners that have been successfully used are soil cement, gunite, and asphalt concrete. The performance of these liners is highly dependent on the experience and skill of the designer. Close review of the design of these types of liners is recommended.

Pond Construction

General

Ponds can be constructed of either a built-up dike or embankment section constructed on the existing grade, or they are constructed using a cut and fill technique. Dikes and embankments shall be designed using the generally accepted procedures for the design of small earth dams. The design should attempt to make use of locally available materials for the construction of dikes. Consideration should also be given to slope stability and seepage through and beneath the embankment and along pipes.

Top Width

The minimum recommended dike top width should be 12 feet on tangents and 15 feet on curves to permit access of maintenance vehicles. The minimum inside radius of curves of the corners of the pond should be 35 feet.

Side Slopes

Normally, inside slopes of either dikes or cut sections should not be steeper than 3 horizontals to 1 vertical. Outer slopes should not be steeper than 2 horizontals to 1 vertical. However, in many instances, the types of material used, maintenance considerations, and seepage conditions can indicate that other slopes should be used.

Freeboard

There should be sufficient freeboard to prevent overtopping of the dike from wave action and strong winds. A minimum of one foot is required.

Erosion Control

Erosion control should be considered for the inside slopes of the dike to prevent the formation of wavecut beaches in the dike slope. If the currents are strong enough, considering the type of material used for the earth cover, erosion pads may be necessary beneath the aeration units. Erosion control should also be considered wherever influent pipes empty into the pond.

If a grass cover for the outer slopes is desired, they should be fertilized and seeded to establish a good growth of vegetative cover. This vegetative cover will help control erosion from runoff. Consideration should also be given to protection of the outer slopes in the event that flooding occurs. The erosion protection should be able to withstand the currents from a flood.

Prefilling

The need to prefill ponds in order to determine the leakage rate shall be determined by the Department and incorporated into the plans and specifications. The strongest consideration for prefilling ponds will be given to ponds with earth liners. Ponds in areas where the surrounding homes are on wells will also be given strong consideration for prefilling.

Utilities and Structures Within Dike Sections

Pipes that extend through an embankment should be bedded up to the springline with concrete. Backfill should be with relatively impermeable material. No granular bedding material should be used. Cutoff collars should be used as required. No gravel or granular base should be used under or around any structures placed in the embankment within the pond. Embankments should be constructed at least 2 feet above the top of the pipe before excavating the pipe trench.

Operability

Once a pond is designed, little operation should be required. However, to achieve results, pond flexibility is desired. Operation flexibility is best facilitated by the addition of piping and valves to each pond which allows isolation of its volume during an algal bloom.

11.2 Design Requirements

The Civil & Structural design shall be carried out in accordance with BIS:456, and BIS:3370 and other relevant Indian Standard Codes. For the seismic forces, the structure should be designed as per IS: 1893 and all the factors as applicable for relevant Zone.

A] The following are the design requirements for all reinforced or plain concrete structures:

- All blinding and leveling concrete shall be minimum 100 mm thick in concrete grade M15,

unless otherwise specified.

- All structural reinforced concrete shall be with a maximum 20 mm stone aggregate size.
- The minimum grade of concrete shall be M-25 for RCC structures other than liquid retaining structures, for which minimum grade of concrete shall be M 30.
- The minimum reinforcements in walls, floors and roofs of liquid retaining structures in each of two directions at right angles shall be 0.3% HYSD bars.
- Minimum reinforcement and cover to the reinforcement shall be provided as per relevant IS standards.

B] Minimum Thicknesses of Reinforced Concrete Members

The following minimum thicknesses shall be used for different reinforced concrete members, irrespective of design thicknesses:

Walls for liquid retaining structures (except for Launderers, Channels	: 150 mm
Bottom slabs for liquid retaining structures	: 150 mm
Wall foundation (at junction of base slab & wall)	: 250 mm
Roof slabs for liquid retaining structures	: 150 mm
Launderers & Channels – Base Slab & Wall	: 150 mm
Floor slabs including roof slabs, walkways, canopy slabs	: 100 mm
Walls of cables / pipe trenches	: 75mm
Precast trench cover	: 75 mm

ANNEXURE - “E-VII”

SPECIFICATIONS FOR 3 KLD CO-TREATMENT FOR FAECAL SLUDGE WITH PLANTED DRYING BED

Planted Drying Beds at the premises of proposed STP for the co-treatment of Faecal Sludge

Sludge from the Facultative Lagoon and Maturation Pond shall be discharged by open impeller type sludge pumps to the drying beds. The sludge from Vehicles, carrying faecal sludge directly from septic tanks shall be Discharged in to Receiving tank and after settlement the through Thickener Feed Pump. The Planted drying beds shall be with RCC M25 floor, supported by CC bed concrete of not less than (1:3:6) prop., and with side walls of RCC M25 with proper granular material filled up over suitable drainage system designed and laid for collecting the filtrate and to discharge the same to the inlet chamber and arrangement to discharge it into nearby natural drain shall also be provided.

Filtrate from the drying bed under drains shall be discharged in to the inlet chamber the discharge shall meet the standards for discharge into inland surface waters. When a drying bed is full to a depth of 200 mm with dried sludge, the sludge shall be dug out and used for landfill / as directed by Engineer-in-charge. The detail drawing is **Enclosed as Enclosure – 1**, with this NIT for reference for Execution. However, the detail design is to be done by the contractor and shall get it approved from the relevant department of IIT/NIT/SGEC before the submission to the ULB.

PLANTED DRYING BED

- Base slab for drying bed and base slab for inlet chamber shall be of PCC, M10 with 1:3:6 and 40 mm nominal size graded stone aggregate with thickness of atleast 100mm.
- Walls shall be provided of brick work with modular well burnt clay bricks of crushing strength not less than 35 kg/sqcm and water absorption not more than 20% in foundation and plinth in Cement Mortar 1:4 (1 Cement : 4 Coarse Sand)
- Plaster shall be of 20mm thick cement plaster on stone masonry of mix in Cement Mortar 1:4 (1 cement : 4 fine sand)
- HDPE pipes 10 kg/sq.cm (High Density Polyethylene Pipes) confirming to IS 4984/14151/12786/13488 with necessary jointing material like mechanical connector of jointing pipes by heating to the ends of pipes with the help of Teflon coated electric mirror/ heater to the required temperature and then pressing the ends

together against each other, to form a monolithic & leak proof joint by thermosetting process. It may be required to be done with Jack/ Hydraulic Jacks/ Butt fusion machine. (50 mm & above fusion jointed & below 50mm mechanical jointed) shall be used to connect the PDB to STP of minimum dia. of 160mm internal.

- Stone boulders/ Gravels/ Coarse sand, in recharge pit, in the required layers and thickness, all complete as per direction of Engineer-in-charge
 - Stone boulders of size range 5 cm to 20 cm, in recharge pit cum
 - Gravels of size range 5 mm to 10 mm, over the existing layer of boulders
 - Coarse sand of size range 1.5 mm to 2 mm over existing layer of gravel
- Plants for Drying Bed shall be of Furn like Arica, China etc (3 year old) and spacing shall not be more than 8 plants per sqm.

All screens shall be design as per CPHEEO Manual of Sewerage and Sewage Treatment Systems 2013/Latest with steel material in welded built-up section/framed work, including cutting hoisting, fixing in position and applying a priming coat of approved steel primer using structural steel.

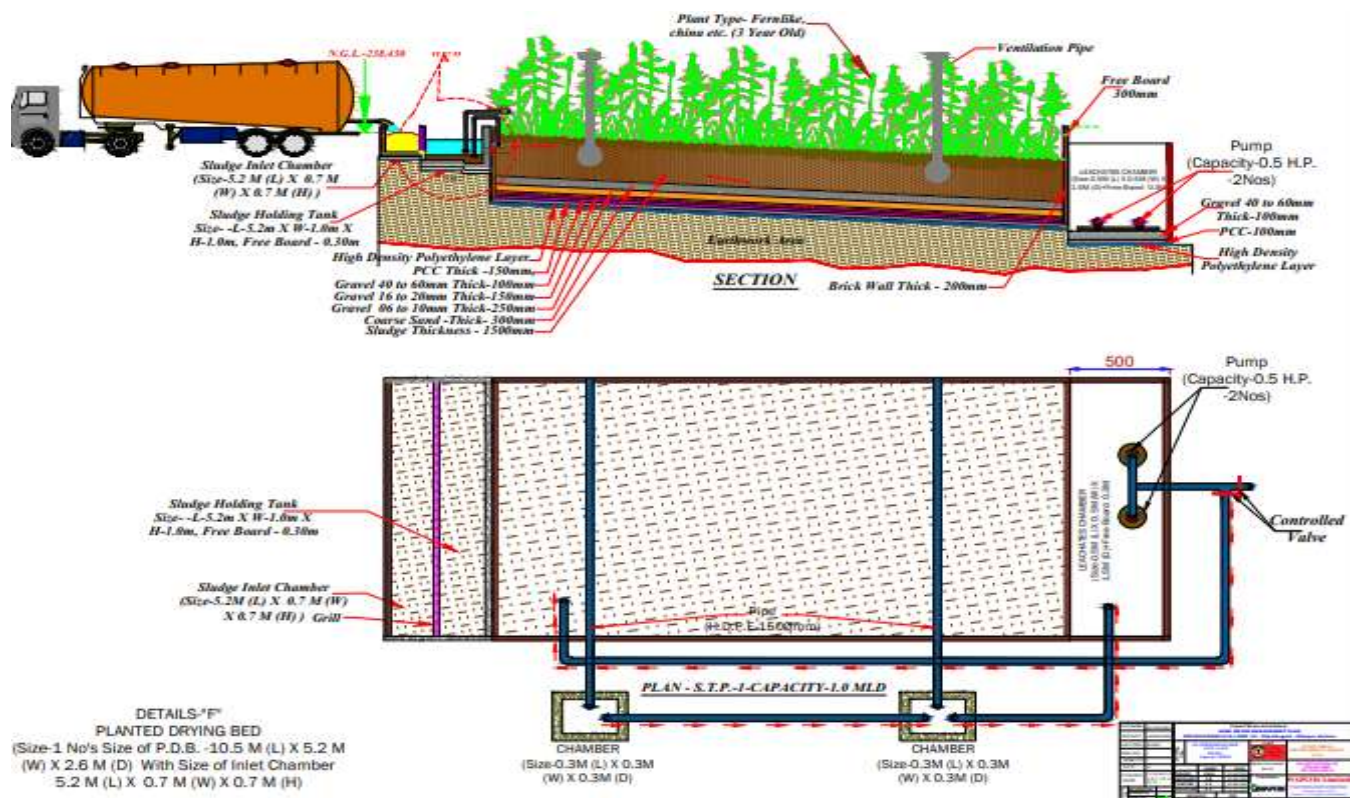


Figure showing Planted Drying Bed.

Planted Drying Bed -1No- Zone-I (Size-6.60x 3.30x 2.60)m Inlet Chamber-3.30mx0.70mx0.70 (+0.30FB)m, Sludge Holding Tank (1.0 x 3.3 x 1.3 (+0.30FB))m

ANNEXURE “E-VIII”

LABORATORY INSTRUMENTS

The Contractor shall provide minimum laboratory instruments as detailed in the table below in administrative cum laboratory building and upkeep all instruments & consumables during Operation and Maintenance period of 5 years. The laboratory shall be equipped with instruments, equipment, chemicals and other infrastructure that is necessary to perform the routine analysis for the parameters as detailed in table below:

ITEM NO.	DESCRIPTION
1.	Comparator test set for residual chlorine or chloroscope
2.	Multimeter (pH and Conductivity Meter)
3.	Mains operated pH meter completed with one calomel electrode and glass electrode
4.	Turbidimeter - Hand held (Portable)
5.	Photoelectric colorimeter / Spectrophotometer
6.	Water bath with 6 to 8 concentric holes and discs, electrically heated
7.	Soxhlet extraction unit
8.	Kjeldahl digestion unit
9.	Hot plates
10.	Distilled water plant
11.	Demineraliser
12.	Refrigerator (280 litres capacity) double door
13.	B.O.D. incubator
14.	Muffle furnace
15.	Electric oven
16.	Magnetic stirrer
17.	Monopan balance with digital display
18.	Jar-Test apparatus with RPM controller and simultaneous addition of Chemicals in all jars
19.	Centrifuge
20.	Gas cylinder if gas supply is not available
21.	Fume cupboard/hood

ITEM NO.	DESCRIPTION
22.	Field Test kit for cations and anions
23.	Depth sampler
24.	Total organic carbon analyser
25.	Sieve shaker with standard sieves and Two pan balance, weighing up to 200gm samples
26.	Weighing Balance (Max. 10 kg)
27.	Durham tubes and Imhoff cones (1 lot)
28.	D.O meter
29.	Online analyser
	Equipment Needed for Bacteriological Examination
1.	Hot Air Oven
2.	Autoclave
3.	Incubator 37°C or 44°C (Water/Air-Jacketed)
4.	Binocular microscope
5.	pH Meter
6.	Pipette Box (Stainless Steel)
7.	Wooden Racks/Aluminium Racks
8.	Wire Baskets
9.	Cotton/ Aluminium Foils
10.	Burners (Bunsen) With Pilot Lamp
11.	Suction Flask (1 Litre Cap)
12.	Suction Pump
13.	Sampling Bottles
14.	Measuring Cylinders (1000 MI, 500 MI, 200 MI, 100 MI, 50 MI, 25 MI)
15.	Vacuum pump

The Contractor shall submit the complete list of lab. equipment required for full analysis of parameters to the competent authority for approval. Contractor shall include in his offer supply of chemicals required for analysis along with proposed lab instruments and associated equipment, including for the O&M period as specified elsewhere in the bid document.

The contractor shall procure any additional equipment/ instrument (not covered in the above table) which is required to make the equipment functional for analyzing parameters.

ANNEXURE “E-IX”

SPECIFICATIONS FOR OPERATION AND MAINTENANCE

Operation and maintenance (O&M) for the proposed works / entire sewerage system (Proposed) for a period of 5 years after successful completion of trial run period or handing over whichever is later. Power consumption, charges against water supply or any other charges required to upkeep the proposed work shall be part of the contract and shall be paid by the contractor to concerned authority for a period of 5 years. The contractor shall follow Part B and Part C of CPHEEO Manual of Sewerage and Sewage Treatment Systems 2013 / Latest for Operation and Maintenance.

**DETAILED SPECIFICATIONS APPLICABLE FOR ALL SUB WORKS WHEREVER AND
WHENEVER APPEARS IN THIS NIT OTHER THAN RESPECTIVE SPECIFICATIONS
APPEARED UNDER RESPECTIVE SUBWORKS**

Design and Construction of Administration cum Laboratory Building of min. 800 Sq. Ft. at the premises of proposed STP.

Building shall be RCC M-25 framed structure B. B. masonry (II-Class in C. M. 1:6) 20mm cement plaster in C. M. 1:3 inside and outside painting with acrylic smooth paint. Aluminium door and windows with glass panels, Vitrified / Mosaic Tile flooring and skirting and all other allied items, fixtures fastening electrification arrangement water supply arrangement.

The building will have laboratory setup with all lab articles, glasswares, chemicals & equipment and should be so centralised that it should not be attached with any unit but should have complete control of every unit as per Laboratory Equipment, beautification, telephone and intercom arrangement and Wireless system etc

CHAPTER - 1

REFERRAL CODES / SPECIFICATIONS

The following are the respective CPWD sub sections/clauses relating to the relevant items of works under this package. Where there is discrepancy between CPWD specifications and BIS codes the former will prevail. In addition to the provided list, if there are any other specifications or standards applicable to works not explicitly mentioned here, it is essential to adhere to the relevant standards from BIS or CPWD as appropriate.

Sno.	Item Description	Indian Specification (IS) Reference	Remarks
1.	Earth work etc.	1. IS: 783 -1985 Code of practice for laying of concrete pipes. 2. IS: 1200-1992 Method of Measurement of Building Works (Part I). 3. IS: 3764-1992 Safety code for excavation work. 4. IS: 3385 Code of practice for measurement of Civil Engineering Works. 5. IS: 2720-1983 Method of test of soils (All parts) 6. IS: 1498-1980 Classification and identification of soils for General Engineering purposes 7. IS: 2809 Glossary of terms and symbols relating to Soil Engineering 8. IS: 4081-1986 Safety code for blasting and related drilling operations 9. IS: 4988 Glossary of terms and classifications of earth moving machinery (All Parts)	CPWD specifications 2.0 to 2.27
2.	P.C.C. (Plain Cement Concrete)	1. IS 456 2. Ordinary Portland cement, 33 Grade, conforming to IS: 269-1989. 3. Ordinary Portland cement, 43 Grade, conforming to IS: 8112-1989. 4. Ordinary Portland cement, 53 Grade, conforming to IS: 12269-1987. 5. Sulphate Resistant Portland cement, conforming to IS: 12330-1988.	CPWD specifications sub head 4.0
3.	R.C.C. (Reinforced	1. IS: 269-1989 Specification for Ordinary, Rapid-Hardening and Low	CPWD specifications

Sno.	Item Description	Indian Specification (IS) Reference	Remarks
	Cement Concrete)	<p>Heat Portland Cement.</p> <p>2.IS: 455-1989 Specification for Portland Blast Furnace Slag Cement.</p> <p>3.IS: 1489-1991 Specification for Portland- Pozzolana Cement.</p> <p>4.IS: 4031-1996 Methods of Physical Tests for Hydraulic Cement.</p> <p>5.IS: 650-1991 Specification for Standard Sand for Testing of Cement.</p> <p>6. IS: 383 Specification for Coarse and Fine Aggregates from Natural Sources for Concrete.</p> <p>7.IS: 2386-1983 Methods of Test for Aggregates for Concrete. (Part I To VIII)</p> <p>8.IS: 516-1959 Method of Test for Strength of Concrete.</p> <p>9.IS: 1199-1959 Method of Sampling and Analysis of Concrete.</p> <p>10.IS: 3025-1987 Method of Sampling and Test (Physical and Chemical) Water Used in Industry.</p> <p>11.IS: 432-1982 Specification for Mild Steel and Medium Tensile Steel Bars and Hard Drawn Steel</p> <p>Wire for Concrete Reinforcement. (Part I & II)</p> <p>12.IS: 1139-1966 Specification for Hot Rolled Mild Steel and Medium Tensile Steel Deformed Bar for Concrete Reinforcement.</p> <p>13.IS: 2645-1975 Specification for Integral Cement Water-Proofing Compounds.</p> <p>14.IS: 2751-1979 Code of Practice for Welding of Mild Steel Bars Used for Reinforced Concrete Construction.</p> <p>15.IS: 2502-1963 Code of Practice for Bending and Fixing Vibrators for Consolidating Concrete.</p>	sub head 5.0

Sno.	Item Description	Indian Specification (IS) Reference	Remarks
		16.IS: 3558-1983 Code of Practice for Use of Immersion Vibrators for Consolidating Concrete. 17.IS: 3414-1968 Code of Practice for Design and Installation of Joints in Buildings. 18.IS: 2571-1970 Code of Practice for Laying In-Situ Cement Concrete Flooring. 19.IS: 2250 Code of Practice for Preparation and Use of Masonry Mortar (1st Revision) 20.9.2.5 Construction Safety IS: 3696-1987 Safety Code for Scaffolds and Ladders. (Part I & II) 21.IS: 3385 Code of Practice for Measurement of Civil Engineering Works. 22.IS: 3385 Code of Practice for Measurement of Civil Engineering Works.	
4.	Masonry Brick work/laterite stones	1.IS 3620(Laterite), 2.IS: 1077-1992 Specifications for Common Burnt Clay Building Bricks <ol style="list-style-type: none"> 1. IS: 1200 Measurements for Building Works 2. IS: 1725 Specifications for Solid Cement Blocks used in General Building Construction 3. IS: 1905-1987: Code of Practice for Structural Safety of Buildings: Masonry Walls. 4. IS: 2116-1980: Sand for Masonry Mortars 5. IS: 2212-1991: Code of Practice for Brick Work 6. IS: 2222 Specification for Burnt Clay Perforated Building Bricks 7. IS: 2691-1988: Specification for Burnt Clay Facing Bricks 8. IS: 3466 Specification for Masonry Cement. 	CPWD specifications sub head 7.0

Sno.	Item Description	Indian Specification (IS) Reference	Remarks
5.	Joinery works	<ol style="list-style-type: none"> 1. IS: 205 Specifications for non-ferrous metal butt hinges 2. IS: 287-1993 Recommendation for maximum permissible moisture content of timber used for different purposes. 3. IS: 303 Specification for plywood for general purpose 4. IS: 362 Specification for parliament hinges 5. IS: 419-1967 Specification for putty for the use on window frames. 6. IS: 883 Code of practice for design of structural timber in building. 7. IS: 1200-1992 Method of measurement of building and Civil Engineering Works – Wood Work and Joinery 8. IS: 1341 Specification for steel butt hinges 9. IS: 3087 Specification for wood particle boards (medium density for structural timber building) 10. IS: 814-1991(Part I) Specifications for covered electrodes for metal are welding of structural steel. 11. IS: 814-1991(Part II) For welding products other than sheets, Specifications for covered electrodes for metal are welding of structural steel. 12. IS: 815 Classification and coding of covered electrodes for metal are welding and cutting operation. 13. IS: 1948-1961 Aluminum doors, windows & ventilators. 14. IS: 6248-1979 Specifications for metal rolling shutters and rolling grill 15. IS: 1081-1960 Code of Practice for fixing and glazing of metal (steel and aluminum) doors, windows and ventilators. 16. IS: 2062-1999 	CPWD specifications sub head 9.0

Sno.	Item Description	Indian Specification (IS) Reference	Remarks
		<p>Weldable Structural Steel</p> <p>17. IS: 1200-1993(Part VIII) Measurements for steel work and iron work</p> <p>18. IS: 1038-1983 Specifications for steel doors, windows, and ventilators.</p> <p>19. IS: 102-1962</p> <p>20. Ready mixed paint, brushing, red lead non-sitting, and priming.</p> <p>21. IS: 1363-1992</p> <p>22. For black hexagon bolts, nut and lock nuts (dia. 6 to 39mm) and black hexagon screws (Dia. 6 to 24mm)</p> <p>23. IS: 813 Scheme of symbols for welding.</p>	
6.	Flooring	<p>1. IS: 1200 (PartXI) 1977 Method Of Measurement Of Building And Civil Engineering Work (Part XI) Paving, Floor Finishes, Dado And Skirting) (3rdRevision) (Amendment) (Reaffirmed 1992)</p> <p>2. IS: 1237-1980 Specification For Cement Concrete Flooring Tiles (1st Revision) (Reaffirmed1990)</p> <p>3. IS: 1322-1982(1322-1993) Specification For Bitumen Felts For Water Proofing And Damp-Proofing (4thRevision)</p> <p>4. IS: 1443-1972 Code Or Practice For Laying And Finishing Of Cement Concrete Flooring Tiles (1st Revision)(Reaffirmed 1991)</p> <p>5. IS:1489(Part-1) 1991 Specification For Portland Pozzolana Cement (Part - 1) Fly ash Based (3rd Revision)</p> <p>6. IS: 1489- (PartII) 1991 Specification For Portland Pozzolana Cement (Part II) Calcined Clay Based (3rdRevision)(Amendment 1)</p> <p>7. IS: 1580-1991 Specification For Bituminous Compounds Of Water Proofing And Caulking Purpose (3rd Revision)</p>	CPWD specifications sub head 11.0
7	Painting and Finishing	<p>1. IS: 77-1976 Ready Mixed Paint, Brushing, Red Lead, Non setting, Priming (Reaffirmed 1991) (Revised)</p>	CPWD specifications

Sno.	Item Description	Indian Specification (IS) Reference	Remarks
		2. IS: 104-1979 Ready Mixed Paint, brushing, priming Plaster to Indian Standard Colour No. 361, 631 White and off White (Reaffirmed 1993) (1st Revision) 3. IS: 109-1968 Ready Mixed Paint, Brushing, priming Plaster to Indian Standard Colour No. 361, 631 White and off White (Reaffirmed 1993) (1st Revision) 4. IS: 133-1993 Enamel, Interior (a) Under Coating (b) Finishing (3rd Revision) 5. IS: 217-1988 Specification For Cut Back Bitumen (2nd Revision) 6. IS: 290-1961 Coal Tar Black Paint (Reaffirmed 1991) (1st Revision) 7. IS: 419-1967 Putty For Use On Window Frames (Reaffirmed 1992) (1st Revision) 8. IS: 427-1965 Distemper, Dry Colour as Required (Reaffirmed 1993) (Revised) 9. IS: 428-2000 Distemper, Oil Emulsion, Colour as Required (Reaffirmed 1993) (1 st Revision) 10. IS: 533-1973 Gum Spirit of Turpentine (Oil of Turpentine) (Reaffirmed 1990) (1 st Revision) 11. IS: 712-1984 Specification For Building Limes (Reaffirmed 1991) (3rd Revision) 12. IS: 1200-1976 (Part: XII) Method of Measurements of Building and Civil Engineering Works: Part: XII-Plastering and Pointing (Reaffirmed 1992) (3rd Revision) 13. IS:1200-1987 Method of Measurements of Building and Civil Engineering Works	sub head 13.0
8.	Cement	1. Ordinary Portland cement, 43 Grade, conforming to IS: 8112-1989. 2. Ordinary Portland cement, 53 Grade, conforming to IS: 12269-1987.	
9.	Fine and Coarse aggregates	IS 383, 2386	CPWD specifications sub head 5.0
10.	Mortars	IS 3025,4031, 269,455,1269	CPWD specifications sub head 3.0

Sno.	Item Description	Indian Specification (IS) Reference	Remarks
11.	Water supply and Sanitary works	<ol style="list-style-type: none"> 1. IS 554 Pipe threads where pressure tight joints are required on the threads-Dimensions, tolerances and designation. 2. IS 778 Specification for copper alloy gate, and check valves for water works purposes 3. IS 779 Water meters (domestic type) - Specification 4. IS 780 Specification for sluice valves for water works purposes (50 to 300 mm size) 5. IS 781 Specification for cast copper alloy screw down bib taps and stop valves for water services 6. IS 1239 (Part 1) Steel tubes tubular and other wrought steel fittings, Part 1- Steel tubes-Specification 7. IS 1239 (Part 2) Specification for mild steel tubes tubular and other wrought steel fittings, Part 2- Mild street tubular and other wrought steel pipe fittings 8. IS 1538 Cast iron fittings for pressure pipes for water, gas and sewage - Specification 9. IS 1703 Water fittings - copper alloy float valves (horizontal plunger type) -Specification 10. IS 2692 Ferrules for water services-Specification 11. IS 3950 Specification for surface boxes for sluice valves 12. IS 5312 (Part 1) Swing type reflex (non return) valves for water works purposes Part 1- Single door pattern 13. IS 5312 (Part 2) Swing type reflex (non return) valves for water works purposes Part 2- Multi door pattern 14. IS 5382 Rubber sealing rings for gas mains, water mains and sewers 15. IS 9762 Specification for polyethylene floats (spherical) for float valves 16. IS 9763 Plastic Bib taps and stop valves (rising spindle) for cold water services specifications 17. IS 15450 PE-AL-PE Pipes for hot and cold water supplies Specifications 	CPWD specifications sub head 18 and 17

Sno.	Item Description	Indian Specification (IS) Reference	Remarks
		<p>18. IS 15778 Chlorinated Polyvinyl Chloride (CPVC) pipes for potable hot and cold water distribution supplies-specifications</p> <p>19. IS 15801 Polypropylene- Random Copolymer Pipes for hot and cold water supplies Specifications</p> <p>20. IS 4984 Specification for high density polyethylene pipes for potable water supplies.</p> <p>21. IS 4985 Unplasticised P.V.C. pipes for potable water supply – Specifications.</p> <p>22. IS 7231 Plastic flushing cisterns for water closets and urinals – Specifications.</p> <p>23. IS 13983 Stainless steel sinks for domestic purposes –Specifications</p>	
12.	IS Codes for Electrical	<p>1. IS:732 (1989) - Code of Practice for Electrical Wiring Installation</p> <p>2. IS:3043 (1987)- Code of practice for Earthing.</p> <p>3. IS:3070 (1993)-Lightning arrester for Alternating Current System.</p> <p>4. IS:900-Installation and maintenance of Induction motors.</p> <p>5. IS:1271-Classification of insulating materials for electrical machinery.</p> <p>6. IS:1646-Fire safety of buildings (general) electrical installation.</p> <p>7. IS:1886-Installation and maintenance of Transformers.</p> <p>8. IS 5600 : Sewage and drainage pumps</p> <p>9. IS:1913-General and safety requirements of electric lighting fitting</p> <p>10. IS:2032-Graphical symbols related to electrical technology.</p> <p>11. IS:2274-Electrical wiring installations where system voltage is more than 658 volts.</p> <p>12. IS:3034-Fire safety of industrial buildings (Electrical generation and distribution stations).</p> <p>13. IS:3072 (part-1)-Installation and maintenance of switchgear where system voltage is less than 1000 volts.</p> <p>14. IS:3646-Practice for interior illumination.</p>	

Sno.	Item Description	Indian Specification (IS) Reference	Remarks
		15. IS:3716-Guide for insulation coordination. 16. IS:3842-Guide for electrical relays for AC system. 17. IS:4004-Guide for lightening arrestors (non-linear) for AC system. 18. IS:5571-Selection of electrical equipment in hazardous area. 19. IS:5572-Types of hazardous areas for electrical installations. 20. IS:5780-Intrinsically safe electrical apparatus and circuit 21. IS:5908-Measurement of electrical installations in buildings. 22. IS:375-Making and arrangement for switchgear bus-bars, main connections and auxiliary winding. 23. IS:694(part-1)-PVC insulating cables with copper conductors (where voltage is up to 100 V). 24. IS:1248-Direct acting electrical indicating instruments. 25. IS:2147-Degrees of protections for enclosures for switchgear and control gear (low voltage). 26. IS:2208-Guide for HRC fuse (up to 650v). 27. IS:3202-Guide for climate proofing of electrical equipment. 28. IS:3231-Guide for electrical relays of power system protection. 29. IS:1951-PVC sleeving for electrical works 30. IS:2419- Guide for dimension of electrical indicating instruments	

Note: Wherever preferred makes are not mention for any items it should be as Relevant IS-Codes

CHAPTER - 2

SUBMITTALS

DESCRIPTION

This section covers additional requirements for submittals and forms a part of all other sections in which submittals are required. It is subjected to General Conditions of Contract.

Submittal requirements to be included

1. CPM Progress Schedule.
2. Samples
3. Material lists and equipment
4. Factory test reports.
5. Certificates
6. Laboratory test reports

SUBMITTAL REQUIREMENTS

CPM Progress Schedule

Within 30 days of award of the tender, submit a critical path method analysis for construction progress control and make such revisions as are required for approval. Clearly indicate all construction activities, sub activities and mile posts on a time oriented basis, with the critical path fully identified for all activities. Update and resubmit the charts monthly, flag all slippage's and mile posts and attach a narrative description of the proposed corrective actions to the resubmitted charts. Include the following minimum information for each activity and critical path item

- i. Date and initial submittal, as applicable.
- ii. Ordering dates for long lead time items.
- iii. Dates for materials on site.
- iv. Testing and clean up.
- v. Final completion and handing over.

SAMPLES

The Contractor has to submit samples of all materials used for the work prior to start the works and get the approval of the Engineer in charge. Label or tag each sample or set of samples, identifying the manufacturer's name and address, brand name, catalogue number, project title and intended use.

MATERIAL LISTS AND EQUIPMENT DATA

The Contractor has to submit all material lists. Equipment lists etc. well in advance before starting the work and get the approval from the Engineer in charge.

CHAPTER - 3

SITE PREPARATION

3.1 BENCH MARKS

Permanent bench marks at least one in every kilometre, shall be fixed carried from nearest DMC Bench marks before any work is started by the contractor in any section; These benchmarks shall be fixed away from the field of work so as not to be disturbed during the contract Period and shall be accurately fixed in concrete pillar/pedestal.No separate payment shall be paid towards fixing of bench marks.

3.2 CLEARING SITE OF LARGE TREES, STRUCTURES ETC.

This shall include the removal of large trees, stumps, structures, services such as cables, water supply, sewerage, storm water drains etc. or parts thereof lying along the alignment of sewer. The contractor should inform the Engineer in charge before removing trees, structures, other services and structures etc. well in advance. Large trees and other valuables are the property of the Government and it should be properly stacked along the side of the road and conveyed to the place as per directions of the departmental Engineer. The cutting of trees or demolitions of structure are done in such a way that it should not disturb the traffic and pedestrians.

3.3 REMOVAL OF TOP SOIL, SHRUBS AND OTHER VEGETATION

The work has to be tackled in between two adjacent manholes only. All shrubs, vegetation and other plants shall be removed and cleared from the selected stretch of the site. All debris and unsuitable material up to a depth of 30 cm between ground level or road level shall be removed. All debris and unsuitable material shall be carted away from the site as per the direction of departmental engineer. The payment against this item as per Bill of Quantities includes loading, unloading, carting the material to a site selected by the contractor at his own cost.

3.4 PREPARATORY WORK, SIGHT-RAILS AND BONING STAVES

The centre line of the trench is first marked out on the ground duly driving pegs at convenient intervals. Before commencement of earth work excavation, levels shall be taken along the centre line of the proposed sewer at intervals of say 10 m and at the manhole locations. A longitudinal section (LS) of the profile of the ground surface showing the proposed sewer, indicating the gradients and giving the invert levels of the sewer as well as the manholes is provided with the tender. This L.S may be updated by the contractor and approved by the Engineer before taking up the work.

Width of the trench to be excavated is marked on both sides of the centre line and excavation lines cut out.

Two wooden posts 100 mm x 100 mm x 1800 mm high shall be firmly, erected/fixed across the centre line i.e. on either side at nearly equal distance, from the centre line and sufficiently clear of all intended excavation such that the

poles/posts are not disturbed during the course of execution of the work. These posts are so arranged and fixed that a sight-rail when fixed at a level against these posts shall cross the centre line of sewer or centre of the manhole, as the case may be.

The sight-rail made from 250 mm wide x 40 mm thick wooden planks shall be screwed to the poles. The sight-rails shall be truly horizontal. The centre line of the sewer shall be marked on the sight-rail by fixing a nail or otherwise as determined by the Engineer. The sight-rails maybe fixed about 1.23 m above the ground, which is convenient distance for sighting by a levelling instrument. The sight-rails have to be so fixed that when a line sighted along the top edge of the sight-rails shall represent the true fall or gradient of the proposed sewer. This gradient is transferred below the ground level by means of boning-rod. Boning is carried out between the sight-rails with the help of a cord or a rope extended from nail to nail fixed on the sight-rails.

Boning rods with cross section 75 x 50 mm of various lengths shall be prepared with wood. Each length shall be a certain number of meters and shall have fixed tee-head. (A cross piece of 450x 100 mm is to be fixed with nails at the top of the boning rod so as to form shape like a Tee-square) and a cross piece about 300 mm long fixed at the bottom of the boning staff. The distance between the top of Tee head and the cross piece shall depend upon the site requirements viz, Dia of pipe, depth of cutting, level of sight-rail, designed level of sewer, etc. The boning rod must be marked on two sides to indicate its full length. According to the circumstances of each case, a suitable length of boning rod, duly fixing the cross piece, will be determined upon the reduced level of the invert of pipe at each sight-rail.

The sight-rail and vertical posts shall be perfectly square and planed smooth on all sides and edges. This arrangement of erecting poles with sight-rail shall be done at suitable intervals depending on the site requirements, as directed by the Engineer. The posts and rails must in no case be removed until the trench is excavated, the pipes are laid and permission given to proceed with the filling in.

3.5 PROBING PITS

Before starting the excavation of trenches, the contractor shall dig probing pits of size 1 m x 1 m and 1.5 m deep including road cutting at every 100 m interval along the alignment to accurately locate and determine the position of existing utilities and obstructions. The contractor shall refill the probing pits in layers of 15 cm with excavated earth up to the original ground level. In all cases the probing pits are to be excavated in accordance with the specification for excavation, refilling etc. No separate payment will be made for these probing pits.

3.6 UTILITIES PROTECTION

All utilities within the site, such as water, storm and sewage mains, shall be ascertained by probing pit results at various intervals.

All utility lines and structures, whether indicated on the drawings or not, which are to remain in service shall be protected by the contractor from any damage likely to

result from his operations. Relocation wherever necessary, shall be with the approval of the Engineer and the Utility Authority. Payment will be made as per the Bill of Quantities only for relocating the utilities. Any damage to any utility resulting from the contractor's operations shall be repaired at the contractor's expense.

3.7 PAVEMENT REMOVAL

The contractor must inform the Engineer before the starting of work well in advance so that it can be communicated to other concerned departments. The contractor must provide and maintain proper and efficient traffic control system such as safety lamps, sign boards etc. operating day and night for the full duration of work. The JMC shall not be responsible under any circumstances for any mis-happenings therefore. For the purpose of payment of removal of pavement, steel tapes are to be used and the measurement shall be taken jointly by the Engineer's representative and contractor or his representative. The width of trenches shall be as per table-1 and only such widths shall be taken into account for computing quantities for payment. For other elements of work such as manholes, making cross connections, fixing other appurtenances etc. the engineer shall prescribe the dimensions for removal of pavement from time to time.

3.8 MAINTENANCE OF TRAFFIC AND CLOSING OF STREETS

The work shall be carried out in such a manner which will cause the least interruption to traffic, and the road/street may be closed in such a manner that it causes the least interruption to traffic, Where it is necessary for traffic to cross open trenches, suitable bridges shall be provided. Suitable signs indicating that a street is closed shall be placed and necessary detour signs for the proper maintenance of traffic shall be provided.

3.9 INTERRUPTION TO SERVICE

No valve or other control of the existing services shall be operated without the permission of the authority.

3.10 WORK DURING NIGHTS

It is expected that the intensity of traffic is likely to be less in the nights from 22.00 hours to 5.00 hours. Hence, for efficient uninterrupted work, the contractor shall equip himself with the required manpower, materials, and machinery to do the work exclusively in the above periods alone. No separate payment will be made for doing the work in the nights. The contractor shall get prior approval from the Engineer-in-charge before starting the work during nights.

CHAPTER-4 EARTH WORK

4.1 DESCRIPTION

The work specified in this section includes the provision of all labour, machinery, construction equipment and other appliances required to perform all earth work shown on the drawing or otherwise specified or required, in a sound, workman like manner.

4.2 GENERAL

Excavation shall be required to be done for the following works

- a) Excavations for underground Pipeline/s.
- b) Excavations for Diversion Drains.
- c) Excavation for various Units of Buildings / Sumps etc.
- d) Excavations for Lagoons, Tanks Etc.
- e) Excavation for Allied Civil Work.

No separate payment shall be made for removal of shrubs, grass, large and small bushes, trees, stumps and stems of trees cut, fencing including posts and gates.

4.3 SOIL INVESTIGATIONS

Soil analysis / Soil tests shall be carried out along the alignment and at STP Locations and the soil bore logs shall be prepared by the contractor at his own cost. Where off-site materials have to be used, the contractor shall, if the Engineer desires make available certified soil test reports including information regarding sieve analysis, plastic limit, liquid limit, maximum density, optimum moisture content etc. from an approved testing laboratory.

4.4 CLASSIFICATION

The excavation work shall be classified into the following categories - Loamy, clayey soils like BC soils, red earth, ordinary gravels, hard gravel, mixture of gravel and soft disintegrated rock, ordinary gravel, stony earth and earth mixed with fair sized boulders, hard disintegrated rock or soft rock or conglomerate rock, to be removed by pick axes and crow bars, Hard rock and boulders may be removed by chiselling and benching or Blasting if required.

4.5 EXCAVATION

Excavation - The line and levels and Depths of Excavation shall be as shown on the drawings. Before Commencing excavation, the route / area shall be pegged out / marked accurately and the natural ground levels shall be agreed with the Engineer in charge.

The width of Excavation shall permit adequate working space. The widths to be adopted to be shown in respective drawings. Care should be taken to avoid excessive widths / Lengths.

The depths of Excavation should not be more than required. All excavation carried below the grades shown on drawings, shall be refilled with compacted bedding material at the Contractor's expense.

The Contractor will not be permitted to keep trenches open for unduly long periods, creating public hazards. The Engineer's decision in this respect shall be final.

The material from the excavation shall be deposited near the work site if required / to be used in backfilling. Else, all balance Excavated Earth shall be disposed off at Locations provided by ULB. The excavated soil should be so placed and handled as not to inconvenience the usual traffic, till it is carted away. The contractor should also, provide necessary bridging over the excavated trenches to cross over and vehicular crossings if and where required at no extra cost. If the Engineer decides that there is no hindrance to traffic due to not carting away the excavated earth, he will give instructions to that effect.

4.6 Dewatering / Pumping Sewage Water / Water or Diversion by Gravity

The works included in this Section are - Provision of all labour, equipment, materials etc. to ensure a safe and dewatered condition and free from sewage flow in all areas in which the work in this contract is to be executed. Continuous operation of the dewatering systems if required to complete all portions of the works.

Removal of the equipment when no longer required.

The contractor shall provide and work at his own cost all dewatering pumps and accessories requisite to keep the excavations for the foundations and all other excavations clear of water, weather subsoil water, storm water, sewage, leakage from tanks, wells, drains, sewers, water mains or pipes etc., so that there should not be any accumulations of such water. The pumping shall be continued so long after execution of any portion of the work and repeated so after as the Engineer may consider necessary.

Where ground water is encountered or anticipated the contractor shall provide sufficient pumps to handle the ingress of water and must provide and maintain in working order. Standby pumping units are to be made available and employed in the event of mechanical failure. The contractor must also, arrange for night and day operation of the pumps wherever necessary to ensure that the work proceeds at all times.

4.7 BARRICADING, WATCHING, LIGHTING

All Excavated areas should be properly barricaded, and Lights to be provided for nights with Informatory Danger Boards.

The contractor shall be held responsible for all claims for compensation as a result of accident or injury to person and non-provision of red flags.

4.8 Refilling / Backfilling

With a view to restrict the open excavation, on completion of the work, refilling of trenches shall be started immediately by the contractor. The excavation shall be filled by suitable excavated earth / new material only.

Optimum Moisture Content (OMC) test to be carried at trench section and Maximum DryDensity (MDD) test for the refilled soil in trench to confirm the proper compaction up to 95% of maximum dry density.

Should any subsidence take place in the filling at any place of work i.e. at manholes and over pipe trenches and road surface whatsoever during contract, the contractor shall make good the same at his own cost.

Excavated materials shall be used for refilling etc. and surplus earth shall be disposed off to the outskirts of corporation safely with all leads and lift as directed by the engineer in charge for which no separate payment will be made.

CHAPTER - 5

GENERAL SPECIFICATIONS FOR CIVIL WORKS

GS 1 Sand and Metal

Sand and coarse aggregate (metal) shall be stored separately on site on hard ground so as to keep them free from foreign materials such as soils, clay, glass etc. In case of machined crushed metal separate depot shall be prepared for different sizes of metal and suitable proportion to form dense mix as directed by the Officer In-Charge shall be taken from these different sizes of metal.

GS 2 Form Work

2.1 The wooden shuttering planks shall be not less than 40 mm thick or such other thickness as may be allowed by the Engineer -in- charge for a particular job. The entire form work, whether of steel, plywood or wooden planks, shall be very strongly proposed and braced with sufficiently strong vertical and horizontal members and the entire Servicing structure shall be of sufficiently horizontal members and sufficiently strong to take up the load of concrete and all stresses it may be subjected to, without any deflection. The Contractor shall be wholly and fully responsible for any defects in the entire form work and its Servicing structure.

2.2 The form work shall be very smooth and entirely free from any dust particles direct and its inner surface shall be oiled for the easy facility of form removal and shall be watertight.

2.3 It shall be generally as under subject to the written approval and modification by the Engineer-in-charge.

Vertical form works to walls, beams	16-24 hours
Soffit form works to slabs (prop.to be refixed Immediately after removal of formwork)	3 days
Soffit form works to beams (prop.to be refixed immediately after removal of formwork)	7 days
1. Spanning up to 4.5 m.	7 days
2. Spanning over 4.5 m.	14 days
1. Spanning up to 6.0 m.	14 days
2. Spanning over 6.0 m.	21 days

GS 3 Reinforcement

3.1 The Contractor has to procure it from open Market at his cost. The bars shall be scrapped thoroughly for removing any scales, rust, etc. before use in work. Bars that may be found defective in any way shall not be allowed to be used. The reinforcement is to be fabricated and placed in position as per the Officer In-Charge or contractors design to be intimated to the Contractor during execution from time to time. The hooks, laps, anchors, cover, etc. shall be as per IS code. The Contractor has to place in position the reinforcement as directed and to secure it

by binding wire to be provided at Contractors cost. Any additional reinforcement provided by contractor in addition to approved design and direction shall not be measured and paid for.

3.2 To ensure that the minimum cover require for slabs, beams, etc. is provided. Separators of precast or cast in situ CC block with wires embedded shall be used and shall be tied to the reinforcement with wires. Between 2 or more layers of reinforcement, separators, of 200 mm or 25 mm size bars as directed shall be used duly tied separators of M.S. bar piece shall not be admissible for payment. The GI binding wire shall not be admissible for payment.

3.3 When Contractor has to bring steel then it shall be only tested one and Contractor shall produce the manufacturers rolling mills test certificate without which it shall not be accepted. Further the Contractor shall arrange to get tested any samples from steel brought at site in a laboratory at his cost, and result should be submitted to Officer In-Charge. Defective steel shall be rejected.

3.4 In a nutshell

1. The item provides for supply of **Tor Steel bars**, cutting, bending, binding with wire and placing in position.
2. For plain and reinforced cement concrete works, the reinforcement steel shall consist of following grades of reinforcing bars.

Grade Designation	IS Specification	Strength(Mpa)	Elastic Modulus
T.M.T.	I.S.1786	500	200

- 3 The binding wire shall confirm to Specification A-15 of Standard Specification of Public Works Department, Latest Edition.

- 4 Bending reinforcement confirm accurately to the dimensions and shapes in the details drawings (approved) or as directed by the Engineer-in-charge.

5. Bars shall be bend cold only. In no way bending by heat will be allowed.

Bars with kinks, bends or cracks shall not be used.

Details of length, size, laps and bending diagram shall be got approved from the Engineer.

As far as possible full length of bars shall be placed as per drawing details. When full lengths are not available, bars with short lengths be supplies only after written permission of the Engineer. Bars shall be lapped as specified in IS : 456-2000 with due regards to the grade of concrete. Welding may be used for large diameter of bar only after permission of Engineer.

Welding, if permitted shall conform to PWD specifications.

All reinforcement shall be accurately placed in position with spacing and cover shown in detailed drawing and firmly held during the placing and setting of concrete. Bars shall be tied at all intersections. Binding wire of 1.63 mm or 1.22 mm diameter (about 16 or 18 gauge) shall be used. Spacing of the bars shall be maintained by means of stays, blocks, ties, spacers, hangers or other approved supports at sufficient close intervals so that bars will not be displaced during placing. Vibrating or compacting concrete, placing bars for reinforcement on a layer of fresh concrete, as the work progress will not be permitted. The use of pieces of broken stones or bricks or wooden blocks for maintaining spacing or cover shall not be permitted. Layers of bars shall be separated by precast cement blocks, spacer bars or other devices.

Full details of numbers, sizes, lengths, weights, laps, welds, spacing of bars placed in position in different parts of the work shall be recorded by the contractor and furnished to the Engineer or his representative to show that all reinforcement has been placed correctly as per sanctioned drawing or as directed by the Engineer in writing before placing concrete. No concrete shall be placed in position until the correctness of reinforcement is checked by the Engineer and has given permission in writing to place concrete. Even after approval of reinforcement as above, it will be the contractor's responsibility to seal that the spacing of reinforcement and arrangements are not tampered with in any way before or during concreting.

The contractor has to supply required steel. He shall produce the test certificate. In addition, actual test shall be carried out according to IS : 432 – 1982 in an approved Proof Consultants or test laboratory and the cost of test shall be borne by the Contractor including all transport etc.

The items includes ...

- a) Cost of labour materials, use of tools, plant and tackle and other incidental items to complete the work satisfactorily.
- b) Supplying, conveying, cleaning, cutting, bending, binding with (1.63 mm or 1.22 mm diameter – 16 to 18 gauge) wire on spot welding and placing reinforcement in position and maintaining it clean and in position till the concrete is laid.
- c) Cost of sampling and testing as required.

6. In no case, any foreign material e.g. oil, grease, etc., which prevent bonding between steel and concrete, shall remain on steel on steel bars during placing of concrete.

GS 4 Mixing

4.1 Good clean water shall only be used for mixing. Arrangements for bringing such water shall be done by the Contractor at his cost. The amount of water to be used shall be as directed by the Engineer-in-charge. On the bases of correct water cement ratio. The water measuring apparatus shall be provided by the Contractor at his cost.

4.2 For R.C.C. works which in the opinion of the Engineer -in- charge are important the concrete shall be only machine mixed. The mixing shall be continued for at least 8 minutes after all materials and water are placed in the drum which shall revolve for 14 to 18 revolutions or as specified by the manufacturers. The mixer for this purpose shall be brought by Contractor at his cost and the Officer In-Charge does not take any responsibility for supply of mixer if as a result of breakdown of mixer during concreting, hand mixing has to be resorted to temporarily. Only such work which is considered absolute essential by the Engineer -in- charge shall be allowed to be done by hand mixing and the entire operation of hand mixing and precaution thereof shall be taken as directed by the Engineer-in-charge. For hand mixture mixing shall be done for sufficient time till it is of uniform colour. The required quantity of aggregate shall then be added and the mixture again turned over for at least 14 to 18 times. The required quantity of water shall then be added gradually through rose pieces attached to the can until process of turning is in progress and till is of uniform consistency where such hand mixing is allowed as a result of area requirement and no extra payment for this excess cement shall be admissible.

4.3 For works other than mentioned in above para, hand mixing will be allowed and in such cases, cement to be used shall be as per standard requirement only.

4.4 Normally the standard cement consumption will be as under: for one cum of concrete 1:2:4 (M-150) 1:1.1/2:3 (M-200) 1:3:6 (M-100) 5.90 bags 6.90 bags 4.42 bags For any other mix the cement consumption shall be as decided by the Executive Engineer. The consumption as mentioned above shall be for the gross RCC column actually cast.

GS 5 Concrete Laying

5.1 The forms shall first be lightly moistened before laying concrete. The concrete shall be placed in position within 20 minutes after adding water to the mix and shall be slowly deposited in its place and not thrown or dumped from a height shall be placed in uniform layers. For vertical walls or water retaining structure, water stoppers shall be provided. 5.2 For columns the concrete shall be laid in maximum 1.2 M height at a time. For vertical walls of reservoir it shall be laid in maximum 0.6 M height only at a time.

GS 6 Tamping, Ramming and Consolidating

6.1 For all RCC structures and other works which are considered by the Engineer -in- charge to be important mechanical vibrators shall invariably be used by the Contractor at his cost. The Contractor shall provide at least 2 vibrators in good working condition, so as to have one as a standby and to prevent interruption in work. The concrete being laid shall be vigorously vibrated laying and also loaded by bars where vibrator cannot reach so that dense and complete filling is assured. The Contractor shall make his own arrangements for procuring vibrators at his cost and the OFFICER IN-CHARGE does not guarantee that they will be supplied on hire.

6.2 For all other works consolidation and tamping shall be manual labour by rodding vigorously by M.S. bars, throughout for a sufficient time and in such manner as directed by the Engineer-in-charge. Adequate number of labourers shall be set apart specifically for tamping and ramming with relieves.

6.3 The efficiency of tamping and consolidation shall be judged by absence of any air pockets and absence of honey combing any defective consolidation and tamping shall be entirely on Contractor's risk and costing will have to be entirely pulled down if so directed and redone properly entirely at the cost of the Contractor.

GS 7 Curing

7.1 All RCC work will be watered and kept constantly wet for 28 days after initial set casting by means of wet gunny bags and pounding as directed by the Engineer-in-charge. This operation shall start immediately after initial set of the concrete. Should the Contractor fail to water the concrete - continuously, it will be done immediately at Contractor's cost.

7.2 Removal of Form It shall be generally as under, subject to the written approval and modification by the Engineer-in-charge.

Column and Beam Sides	3 Days
Vertical Walls	6 Days
Bottom of Slab and Domes	10 Days
Bottom of Beams	14 Days
Bottom of Beams of Span 4.5 M and above	21 Days

GS 8 Inspection

The work of each category of operation i.e. completion of form work placing reinforcement, concreting, removal of form, etc. must be got inspected by the Junior Engineer before commencing and succeeding operation in case of RCC works and major RCC jobs. In all cases, however, before the concrete is laid it must be got inspected and approved by the Deputy Engineer to concreting shall be commenced with approval of the Deputy Engineer. In case of RCC structures and other major works concreting must be done in presence of Deputy Engineer himself. In other case, it shall be done in presence of Junior Engineer. In case of failure to comply with above specifications, the work is liable to be pulled down if directed for any work which is done contrary to specification and no payment thereof shall be admissible.

GS 9 Finish and Quality of Concrete

9.1 The RCC work cast shall be of dense mix, homogenous without any honey combing true in size alignment and shape. Any defective work shall not be entitled for full tendered rates for payment and if the defects are major no measurements and payment are admissible and Contractor shall have to pull down such defective work and redo at his cost. The decision of the Engineer -in- charge regarding such defective work and the decision, viz. pulling it down or reducing rates as may be necessary shall be final and binding on the contractor.

9.2 All RCC work shall be finished as directed by the Executive Engineer. It should be clearly

under stood that the finishing is not meant to cover the casting defects but only to give a smooth appearance. In case of RCC reservoirs and other major RCC works Contractor shall not commence finishing unless and until Engineer-in-charge has inspected the casting of concrete after removal of form and has satisfied about its quality failing which it shall be regarded that casting was defective and action deemed fit will be taken since finishing has to commence immediately after removal of forms. The forms removal in RCC reservoirs and other major work shall be done in presence of Deputy Engineer. Cube casting acceptance of concrete will be as specified in IS 456 - 1964 and relevant ISS. Unacceptable quality concrete shall be demolished and redone without any extra cost by the contractor. The Engineer -in- charge at his discretion consider substandard work at a suitable reduced rate, provided such weak concrete is restricted to such members and in such quantities, which in the opinion of the Engineer -in- charge will not endanger the safety of the structures. Engineer -in- charge's decision in such cases shall be final and binding on the contractor.

9.3 Surfaces not in contact with form work and not subject to any plaster shall be finished by a float to present a smooth and uniform appearance. Surfaces which are in contract of form work but for which no plastering is provided as per plan and estimate shall also be finished smooth, and sand faced as directed. Surfaces for which plastering is to be done, as per separate provision of plastering plans and estimates, shall immediately on removal of forms, be roughened for bond by a pointed tamping tool.

9.4 In case, whether would be specified in the tender item or not the finish shall be such as to match with the rest of the structure to present a harmonious appearance. It shall consist of 3 coats of cement, rendering, plastering float finished faced, etc. as per to the requirement at site and as directed by the Engineer -in- charge and Contractor shall have to do it at his own cost. Failure to do proper finishing as directed shall result in payment at reduced rates only to the Contractor and the decision of the Engineer -in- charge in this respect shall be final and binding on the Contractor.

GS 10 Testing

10.1 All structure meant to hold water shall be tested for water tightness test at Contractor's cost, by filling them to their desired level. The water tightness test shall be considered satisfactory when the fall in water level after the container is filled to the FSL is not more than 6mm in 48 hours and there is no sweating from outside or bottom whatsoever.

10.2 Contractor has to make his own arrangements for water for testing at his cost and these arrangements shall be such that immediately after initial setting of plaster, the containers are filled with water. After the satisfactory water tightness test the container shall be kept constantly filled with water at Contractor's cost till the completion of work.

10.3 Till satisfactory water tightness test is given by the Contractor, at his cost, to the satisfaction of the Officer In-Charge. Only 90% tendered rates shall be admissible for payment for RCC concrete items.

10.4 In case of major RCC works from batches or concrete mix actually being laid, testing cubes

shall be cast periodically as directed by the Officer In-Charge, in presence of the Deputy Engineer-in-charge and these cubes shall be got tested after they have attained their full strength, from a suitable testing laboratory. The Officer In-Charges representative shall arrange for taking test cubes, sending them to laboratory and obtaining test results, at full cost of Contractor. The charges of this viz. moulds, labour for casting, materials, conveyance charges to and from the laboratory including TA of staff members and laboratory test charges, etc. are included in the tender rates and they shall be recovered from Contractor's bills. The ultimate compressive stress as revealed from these tests shall not be less than Cube casting acceptance of concrete will be as specified in IS 456-1964 and relevant ISS. Unacceptable quality concrete shall be demolished and redone without any extra cost by the Contractor. The Engineer -in-charge at his discretion consider substandard work at a suitable reduced rate, provided such weak concrete is restricted to such members and in such quantities, which in the opinion of the Engineer -in- charge will not endanger the safety of the structure. Engineer -in- charge's decision in such cases shall be final and binding on the Contractor.

GS 11 Measurements

11.1 The Measurements shall be the unit as mentioned in the Schedule 'B' and break - up schedule.

11.2 Mode of measurements shall be:- a) Columns: Height from top of footing to bottom of beams shall be measured as columns. b) Braces for columns shall be measured as net between column faces. c) For straight beams, duly ribs between column top and slab bottom surface shall be measured to beams and rest in slabs. d) For ring beams the full section of beams from bottom to top shall be measured in beams and quantities laying outside the full beam section in beams. Slant walls, slabs, etc. as the case may be shall be measured in the respective slant wall vertical wall, flat slab, etc. as the case may be. e) Vertical walls shall be measured for net quantity outside columns, beams, slabs. f) No deduction shall be made for reinforcement in RCC work.

11.3 The measurement under RCC works for net dimensions cast as directed without any allowance for rendering, finishing, etc.

GS 12 Specification for Masonry viz. UCR/CR, Brick Masonry Khandki Facing, etc.

12.1 The masonry shall be either UCR/CR Khandki facing, BB Masonry, etc. as specified in the respective tender items.

12.2 For stone masonry either UCR/CR or Khandki facing, with 1:5 proportion cement mortar, which has to retain, the percentage of mortar shall be between 40% to 45% of the gross built-up masonry and in no case less than 40%. The cement to be used in masonry shall be on the basis of this percentage. If the masonry is constructed with less percentage of the mortar than specified above and if in the opinion of Engineer -in- charge it is not suitable retain water pressure, it shall have to be dismantled and redone at Contractor's cost with correct percentage of mortar.

12.3 For all other masonries viz. UCR/CR/BB, etc. the percentage of mortar shall be as per IS Specifications and cement to be used shall be based on these percentage.

12.4 Tender rates of masonry item, unless otherwise mentioned specifically in the tender items, shall include scaffolding, watering, curing and cement pointing in CM 1:2 to the exposed faces, where necessary and as directed.

12.5 For masonries meant for retaining structures, the Contractor shall give a satisfactory water tightness test at his cost to the satisfaction of OFFICER IN-CHARGE Till such a satisfactory water tightness test is given, only part rates (90%), as directed by the Engineer -in- charge shall be admissible for payment and the decision for such part regarding reduced rates, shall be final and binding on the Contractor. It shall be Contractor's responsibility to give the water tightness test and he may use standard waterproofing compounds at his cost in the mortar.

12.6 In all other items viz. materials like sand, stones, joints, headers, khandkies, etc. the IS shall apply.

12.7 The wall of masonry should be truly vertical on both faces or should be truly as specified grade.

12.8 The height of masonry should not be raised at more than 1 M per day.

GS 13 Shahabad Stone Flooring

13.1 Stone shall be specified in tender item. The Shahabad stones shall be square with suitable dimensions and of approved quality only. All stones shall be of the same size. They shall be either rough Shahabad or polished Shahabad as mentioned in tender item. If there is no such mention, they shall be rough shahabad only. These shall be set in 1:2:4 CC and joints properly finished in CM 1:1 pointing. The CC bedding below 10 cm thickness (M-10) is included in the item.

GS 14 Providing, Fixing RSJ and Other Structural Steel Works

14.1 This item covers fixing MS/RS girders, MS angle, channel, flats base plates, gusset plates, clear, bracket, etc. and other accessories as per requirement and as directed and fabricating the assembly by cutting, drilling holes, etc. and erecting and fixing item at site with necessary riveted or welded joints, fixtures with nuts and bolts, etc. wherever necessary as directed. Structural steel works materials shall be procured by the Contractor from open market at his cost. The item includes 3 coats of oil paint of shade as directed to all structural work.

14.2 All above operations including cost of material and labour thereof are included in the tender. RSJ channels, angles, flats, gusset plates, brackets, base cleats, packing pieces actually provided and erected as directed shall be admissible for payment but not the rivets, nuts and bolts, etc. The riveted or welded joints or fixing with nuts are included in the complete item of work.

GS 15 Specifications for Stone Pitching Scope of Work

The slopes of the embankment to receive the pitching shall be first prepared and the pitching laid

upon the bank work

15.1 Material: Stones should be large and placed vertically so as to interlock with each other and the chips used for filling the interstices and wedging may be in pieces. The stone should be large enough so as not to be disturbed by wave action. Also the flat surface of the pitching should face the embankment. The remaining interstices being filled in with chips, spauls properly hammered in so that the entire mass becomes firm and cannot be disturbed by hand 15.2 Laying of Pitching: The stones used for pitching shall be perfectly sound and as regular as possible. 60% of the stones shall not weigh less than 40Kg each. The stones should be interlocked and keyed together with minimum voids. High irregular points shall be knocked off and the finished pitching shall present a neat and reasonably smooth and uniform surface free of loose stones.

GS 16 Synthetic Membrane Liners

Requirements for the thickness of synthetic liners may vary due to the liner material, but it is generally recommended that the liner thickness be no less than 0.5 mm; that is, 0.02 inch. There may be special conditions when reinforced membranes should be considered. These are usually considered where extra tensile strength is required. The membrane liner material should be compatible with the wastewater in the ponds such that no damage results to the liner. PVC liners should not be used where they will be exposed directly to sunlight. The preparation of the subgrade for a membrane liner is important. The subgrade should be graded and compacted so that there are no holes or exposed angular rocks or pieces of wood or debris. If the subgrade is very gravelly and contains angular rocks that could possibly damage the liner, a minimum bedding of 3 inches of sand should be provided directly beneath the liner. The liner should be covered with 12 inches of soil. This includes the side slope as well. No equipment should be allowed to operate directly on the liner. Consideration should be given to specifying that the manufacturer's representative be on the job supervising the installation during all aspects of the liner placement. An inspector should be on the job to monitor and inspect the installation.

Other Liners

Other liners that have been successfully used are soil cement, gunite, and asphalt concrete. The performance of these liners is highly dependent on the experience and skill of the designer. Close review of the design of these types of liners is recommended.

GS 17 Excavation

Excavation lagoons in straight lines and as Dag belled and to the correct depths and gradients required for flow of water as specified in the drawings. The material excavated from, shall not be deposited very close to the trench to prevent the weight of the materials from causing the sides of the profile to slip or fail. The sides of the trench shall, however, be supported by shoring where necessary to ensure proper and speedy excavation. This excavated material shall be brought back to the site of work for filling the area and used for embankment. In case the presence of water is likely to create unstable soil conditions, a well point system shall be employed to drain the immediate area of the profile prior to excavation operation. A well point system consists of a series of perforated pipes driven into the water bearing strata on the bed of profile and connected

with a header pipe and vacuum pump. If excavation is deeper than necessary, the same shall be fitted and stabilized before proceeding.

17.1 The shoring shall be adequate to prevent caving in of the profile walls by subsidence of soil adjacent. Wide planks set vertically at intervals and firmly fixed with struts. For wider profile, a system of wall plates (Wales) and struts of heavy timber section is commonly used. Continuous sheeting shall be provided outside the wall plates to maintain the stability of the profile. The number and the size of the wall plates shall be fixed considering the depth of profile and type of soil. The cross struts shall be fixed in a manner to maintain pressure against the wall plates, which in turn shall be kept pressed against the timber sheeting by means of timber wedges or dog spikes. In non-cohesive soils combined with considerable ground water, it may be necessary to use continuous interlocking steel sheet piling to prevent excessive soil movements by ground water percolation and extend the piling at least 1.5 m below the profile bed.

GS 18 Dewatering

Lagoon bed shall be dewatered for the placement of concrete and laying and kept dewatered until the concrete foundations, concrete have cured. The pumped-out water shall be disposed off in existing storm water drainage arrangement nearby.

GS 19 Foundation and Bedding

The profile bottom shall be stabilized by the addition of coarse gravel or rock. In case of very bad soil, the bottom shall be filled in with cement concrete of appropriate grade. In the areas subject to subsidence. In the case of cast-in-situ an RCC section with both transverse and longitudinal steel reinforcement shall be provided when intermittent variations in soil bearing capacity are encountered. In case of long stretches of very soft profile bottom, soil stabilization shall be done either by rubble, concrete or wooden crib.

GS 20 Pond Shape

The shape should be such that there are no narrow or elongated portions. The comers should always be rounded to minimize accumulations of floating matter and to avoid dead pockets

GS 21 Embankment

Ponds are usually constructed partly in excavation and partly in embankment. The volume of cutting and the volume of embankment should be balanced to the maximum extent possible in order to economize construction costs. Embankment materials usually consist of material excavated from the pond site. The material should be fairly impervious and free of vegetation and debris. The embankment should be compacted sufficiently. The top, width of the embankment should be at least 1.5 m to facilitate inspection and maintenance. The free board should be at least 0.5 m in ponds less than 0.5 ha in area. In larger installations, the free board should be

designed for the probable wave heights and should be at least 1.0 m. Embankment slopes should be designed based on the nature of soil, height of embankment and protection proposed against erosion. Outer slopes are generally 2.0 to 2.5 horizontal to 1 vertical. Inner slopes are made 1.0 to 1.5 when the face is fully pitched and flatter and 2.0 to 3.0, when the face is unprotected. Inner slopes should not exceed 4 as flatter slopes create shallow areas conducive to the growth of aquatic weeds. The outer faces of the embankments should be protected against erosion by turfing. The inner faces should preferably be completely pitched to eliminate problems of erosion and growth of marginal vegetation. Pitching may be by rough stone revetment or with plain concrete slabs or flat stones with adequate gravel backing. When complete pitching is not possible, at least partial pitching from a height 0.3 m above water line to 0.3 m below water line is necessary and the face above the line of pitching should be turfed to the top of embankment. A properly constructed pond is shown in Figure 8.10 in this manual.

GS 22 Pond Bottom

The pond bottom should be level, with finished elevations not more than 0.10 m from the average elevation. The bottom should be cleared of all vegetation and debris. The soil formation of the bottom should be relatively impervious to avoid excessive liquid losses due to seepage. Where the soil is loose, it should be well compacted. Gravel and fractured rock areas must be avoided.

GS 23 Pond Inlets and Outlets

The pipeline conveying raw sewage to the pond, whether by gravity or by pumping, should be terminated in a flow measuring chamber located close to the pond. There should be sufficient fall from the measuring chamber to the pond surface so that the measuring weir may not be submerged. The size of the pipeline may be designed to maintain an average velocity of 0.3 m/s. The pipeline should be semi-flexible and should be properly supported inside the pond. The inlets in the pond shall be so located as to avoid short-circuiting of flow to the outlets. The inlets should not be upwind of the outlets and should be extended into the pond for one-third to one-fourth the pond length or 15 to 20 m, whichever is less. The discharge may be horizontal and at half depth. A concrete apron of adequate size should be provided under the discharge to prevent erosion of pond bottom, especially when the pond is being filled up.

GS 24 Pond Interconnections

Pond interconnections are required when ponds are designed in multiple cells in series. These interconnections should be such that the effluent from one cell withdrawn from the aerobic zone can be introduced at the bottom of the next cell. Simple interconnections may be formed by pipes laid through the separating embankments. At their upstream ends, the interconnecting pipes should be submerged about 0.25 m below the water level. The downstream ends may be provided with a bend, facing downward, to avoid short-circuiting by thermal stratification, care being taken to prevent erosion of the embankment.

GS 25 Other Aspects

Provision should be made for flow measurement both at inlet and outlet of the ponds, wherever practicable, facilities should be available to drain out the pond completely by gravity through a sluice arrangement. The pond site should be fenced to prevent entry of cattle and discourage trespassing. Public warning boards should also be put up near the ponds clearly indicating that the pond is a sewage treatment facility.

GS 26 Performance

The algae in the pond effluent will exert BOD in the standard laboratory BOD test involving darkroom incubation and will give high SS values. The BOD and SS values may each be in the range of 50 to 100 mg/l. However, the effluent will not cause nuisance when disposed of on land or discharged into receiving waters because the algal cells do not readily decompose or exert oxygen demand under natural conditions, in fact, the algae increases the oxygen levels in the receiving water by continued photosynthesis.

Because of the above reasons, the standard BOD and SS tests are not considered useful for evaluating the quality of facultative pond effluents. The quality is usually assessed based on the BOD₅ of the filtered effluent, the assumption being that the suspended solids in the effluent are all algae. The filtration procedure adopted for the test is the same as for the suspended solids test.

Well designed facultative ponds give about 80% to 90% BOD reduction based on the filtered BOD₅ of the effluent. Facultative ponds also effect high bacterial reduction, the efficiency being particularly high in multi cell ponds operated in series. Coliform and faecal streptococci removals are as high as 99.99%. Intestinal pathogens belonging to Salmonella and Shigella groups are reportedly eliminated in stabilization ponds. Cysts of Entamoeba Histolytica and Helminthic larvae are also eliminated.

GS 27 Construction for Filtering Out Algae

The algae flowing out of the pond need not be removed when the treated sewage is used for crop irrigation. The most appropriate technique for this is a rock filter, which consists of a submerged porous rock bed within which algae settle out as the effluent flows through. The algae decompose releasing nutrients which are utilized by bacteria growing on the surface of the rocks. In addition to algal removal, significant ammonia removal may also take place through the activity of nitrifying bacteria growing on the surface of the filter medium. The performance depends on loading rate, temperature and rock size and shape. The permissible loading increases with temperature and in general an application rate of 1.0 m³ of pond effluent per m³ rock bed per day should be used. Rock size is important, as surface area for microbial film formation increases with decreasing rock size but, if the rocks are too small, then problems can occur with clogging.

GS 28 Specifications for Embankment

28.1 Scope of work: The item shall include deposition and spreading the available material from

excavation in final position and consolidation as specified

28.2 Clearance of site: Before commencing the work on the embankment, the site should be cleared of stones and vegetation without any charges. The soil available from excavation and to be used for embankment work should be free from any deleterious materials and the same shall be carried out by the contractor without any charges.

28.3 Material used: All the material to be used shall be free from organic material and shall contain coarse-grained material whose suitability being confirmed by laboratory tests. The material shall not contain stones larger than 3/4th thickness of compacted layer Surplus rubble available at site can be used as casing material as directed by the Engineer-in-charge.

28.4 Compaction including watering: All the materials placed in the embankment shall be compacted to attain a dry density which shall not be less than 95% of the modified proctor density of the material under consideration. The required amount of water to be sprinkled for a specific quantity of soil shall be first calculated when water is proposed to be added at the dam. This water should be thoroughly mixed with the soil and then rolling should be started. Rolling should be done by wheeled power rollers of 10 Tonne capacity. For the portions where compaction is permitted by the Engineer -in- charge to be done by non-mechanical means, the compaction shall be done by stone or iron rollers of such a size and weight that they will give a pressure of 15 Tonne per metre length of the roller. There should be at least 2 field density tests per day for ascertaining the dry density of the soil. Also the field tests shall be done for every 300 cum of embankment compacted.

28.5 Tamping. In those part of the structure in accessible to the specified rolling equipment's, around and in contact with the structure and in proximity to structures where the rolling equipment will not be permitted to operate, compaction shall be either accomplished either with hand or mechanical tampers of approved type. Rollers will not be permitted to operate within one meter of structures and this distance shall be tamped by mechanical tamper. All materials to be tamped shall be exercised to obtain a good contact and bond with surface of structures.

GS 29 Specifications for Pitching with floor/ paver block etc. Scope of Work

The slopes of the embankment to receive the pitching shall be first prepared and the pitching laid upon the bank work

29.1 Material: Stones should be large and placed vertically so as to interlock with each other and the chips used for filling the interstices and wedging may be in pieces. The stone should be large enough so as not to be disturbed by wave action. Also the flat surface of the pitching should face the embankment. The remaining interstices being filled in with chips, spalls properly hammered in so that the entire mass becomes firm and cannot be disturbed by hand

29.2 Laying of Pitching: The stones used for pitching shall be perfectly sound and as regular as possible. 60% of the stones shall not weigh less than 40Kg each. The stones should be interlocked and keyed together with minimum voids. High irregular points shall be knocked off and the finished pitching shall present a neat and reasonably smooth and uniform surface free of loose stones.

GS 30 Providing H.D.P.E. Pipes

This Indian Standard lays down requirements for high density polyethylene pipes from 16mm to 1000mm nominal diameter of pressure rating from 0.25 MPa to 1.6 MPa in material grades of PE63, PE 80, PE 100, for use for buried water, sewerage mains and services conforming to IS 4984/14151/12786/13488 latest version 1.1

References: *The Indian Standards listed below are necessary adjuncts to this standard*

IS No.	Title
2530	: 1963 Methods of test for polyethylene moulding materials and polyethylene compounds.
4905	: 1968 Methods for random sampling.
7328	: 1991 High density polyethylene materials for moulding and extrusion (First revision).
9845	: 1968 Method of analysis for the determination of constituents of plastics materials and articles intended to come into contact with foodstuffs (First revision)
10141	: 1982 Positive list of constituents of polyethylene in contact with foodstuffs, pharmaceuticals and drinking water.
10146	: 1982 Polyethylene for its safe use in contact with foodstuff, pharmaceuticals and drinking water

GS- 31 Action in Case work Not Done as per Specifications

31.1 All work under or in course of execution or executed in pursuance of the Contract shall at all times be open and accessible to the inspection and supervision of the Engineer-in-Charge, his representatives and assistants in charge of the Works and all senior officers, officer of the quality control division of the Employer, third party hired by Employer, and of the chief technical examiner's office. The Contractor shall, at all times, during the usual working hours and at all other times at which reasonable notice of the visit of such officers has been given to the Contractor, either himself be present to receive orders and instructions or have his responsible agent, present for that purpose.

31.2 In the event it appears to the Engineer-in-Charge or his representative in charge of the Works or any nominated officer (as described above in this clause), that any work has been executed with unsound, imperfect, or unskilful workmanship, or is against Good Engineering Practice or with material or articles of a quality inferior to that contracted or otherwise not in accordance with the Contract, the Contractor shall, on demand in writing which shall be made during construction and upto six months after completion of the Works by the Engineer-in-Charge specifying the work, materials or articles complained (not withstanding that the same may have

been passed, certified and paid for forthwith) rectify, or remove and reconstruct the Works so specified in whole or in part, as the case may require, remove the materials or articles so specified and provide other proper and suitable materials or articles at his own charge and cost. In the event of failing to do so within a period specified by the Engineer-in-Charge in his demand aforesaid, the Contractor shall be liable to pay compensation at the same rate specified earlier in the Contract (for noncompletion of the Works in time) for this default.

31.3 Provided that in such an event the Engineer-in-Charge may not accept the item of Works at the rates applicable under the Contract but may accept such items at reduced rates as the Employer may consider reasonable during the preparation of on-account bills or final bill if the item is so acceptable without detriment to the safety and utility of the item and the structure or he may reject the Works outright without any payment and/or get it and other connected and incidental items rectified, or removed and re-executed at the risk and cost of the Contractor. Decision of the Engineer-in-Charge to be conveyed in writing in respect of the same shall be final and binding on the Contractor.

GS 32 Action where there are no Specifications

In the case of any class of work for which there is no such specifications as referred in tender conditions, such work shall be carried out in accordance with the CPWD/ Bureau of Indian Standards Specifications or any other applicable standards specific to the Works. Provided that where there is no such specification in CPWD/ Bureau of Indian Standards, the Works shall be carried out as per manufacturers' specifications. Provided further that where there are no such specifications as required above, the Works shall be carried out in all respects in accordance with Good Engineering Practice and Site requirements under the instructions and requirements as communicated by the Engineer-in-Charge.

GS 33 Contractor to Supply Tools & Plants etc.

The Contractor shall provide at his own cost all materials (except such special materials If any, as may in accordance with the Contract be supplied from the Employer) stores, plants, tools, appliances, implements, ladders, cordage, tackle, scaffolding and temporary work required for the proper execution of the work, whether original, altered or substituted and whether included in the specification or other documents forming part of the Contract or referred to in these conditions or not, or which may be necessary for the purpose of satisfying or complying with the requirements of the Engineer-in-Charge. The Contractor shall also supply without charge the requisite number of persons with the means and materials, necessary for the purpose of setting out Works, and counting, weighing and assisting the measurement for examination at any time of the Works or materials. In the event the Contractor fails to supply such requisite number of persons with the means and materials the same may be provided by the Engineer-in-Charge at the expense of the Contractor and the expenses may be deducted, from any money due to the Contractor, under this Contract or otherwise and/or from his security deposit or the proceeds of sale thereof, or of a sufficient portions thereof.

33.1 Hire of Plant and Machinery

(i) The Contractor shall arrange at his own expense all tools, plant, machinery or equipment (hereinafter referred to as T&P) required for execution of the Works except for the Plant & Machinery listed in Special Conditions of Contract and stipulated for issue to the Contractor. If the Contractor requires any item of T&P on hire from the T&P available with the Employer over and above the T&P stipulated for issue, the Employer will, if such item is available, hire it to the Contractor at rates to be agreed upon between him and the Engineer-in-Charge. In such a case all the conditions hereunder for issue of T&P shall also be applicable to such T&P as is agreed to be issued.

(ii) Plant and Machinery when supplied on hire charges as shown in Special Conditions of Contract shall be taken from the departmental equipment yard/shed and the Contractor shall bear the cost of carriage from the place of issue to the Site and back. The Contractor shall be responsible to return the plant and machinery in the condition in which it was handed over to him, and shall be responsible for all damage caused to the said plant and machinery at the Site or elsewhere during operation and otherwise during transit including damage to or loss of plant and for all losses due to his failure to return the same, soon after the completion of the Works for which it was issued. The Engineer-in-Charge shall be the sole judge to determine the liability of the Contractor and its extent in this regard and his decision shall be final and binding on the Contractor

(iii) The plant and machinery as stipulated above shall be issued as and when available and if required by the Contractor. The Contractor shall arrange his work program schedule according to the availability of the plant and machinery and no claim whatsoever will be entertained from him for any delay in supply by the Employer. If such re-arrangement results in delay in completion of work, and such delay, in the opinion of Engineer-in-Charge are unavoidable, the contractor shall be entitled to shall be eligible for extension of time.

(iv) The hire charges shall be recovered at the prescribed rates from and inclusive of the date the plant and machinery made over up to and inclusive of the date of the return in good order even though the same may not have been working for any cause except major breakdown due to no fault of the Contractor or faulty use requiring more than three working days continuously (excluding intervening, holidays and Sundays) for bringing the plant in order. The Contractor shall immediately intimate in writing to the Engineer-in- Charge when any plant or machinery gets out of order requiring major repairs as aforesaid. The Engineer-in- Charge shall record the date and time of receipt of such intimation in the log sheet of the plant or machinery. Based on this if the breakdown occurs before lunch period or major breakdown will be computed considering half a day's breakdown on the day of complaint. If the breakdown occurs in the post lunch period of major breakdown will be computed starting

from the next working day. In case of any dispute under this clause the decision of the Engineer-in-Charge shall be final and binding on the Contractor.

(v) The hire charges shown above are for each day of 8 hours (inclusive of the one hour lunch break) or part thereof.

(vi) Hire charges shall include service of operating staff as required and also supply of Lubricating

oil and stores for cleaning purposes. Power fuel of approved type, firewood, kerosene oil etc. for running the plant and machinery, and also the full time chowkidar for guarding the plant and machinery against any loss or damage shall be arranged by the Contractor who shall be fully responsible for the safeguard and security of plant and machinery. The Contractor shall on or before the supply of plant and machinery sign an agreement indemnifying the Employer against any loss or damage caused to the plant and machinery either during transit or at Site.

(vii) Ordinarily, no plant and machinery shall work for more than 8 hours a day inclusive of one hour lunch break. In case of an urgent work however, the Engineer-in-Charge may, at his discretion, allow the plant and machinery to be worked for more than normal period of 8 hours a day. In that case the hourly hire charges for overtime to be borne by the Contractor shall be 50% more than the normal proportionate hourly charges (1/8th of the daily charges) subject to a minimum of half day's normal charges on any particular day. For working out hire charges for overtime a period of half an hour and above will be charged as one hour and a period of less than half an hour will be ignored.

(viii) The Contractor shall release the plant and machinery every 7 (seventh) day for periodical servicing and/or wash out which may take about three to four hours or more. Hire charges for full day shall be recovered from the Contractor for the day of servicing/ wash out irrespective of the period employed in servicing

(ix) The plant and machinery once issued to the Contractor shall not be returned by him on account of lack of arrangements of labour and materials, etc. on his part, the same will be returned only when they are required for major repairs or when in the opinion of the Engineer-in-Charge the Works or a portion of Works for which the same was issued is completed.

(x) Log Book for recording the hours of daily work for each of the plant and machinery supplied to the Contractor shall be maintained by the Employer and shall be countersigned by the Contractor or his responsible agent daily. In case the Contractor contests the correctness of the entries and/or fails to sign the Log Book, the decision of the Engineer-in-Charge shall be final and binding on him. Hire charges shall be calculated according to the entries in the Log Book and will be binding on the Contractor. Recovery on account of hire charges for road rollers shall be made for the minimum number of days worked out on the assumption that a roller can consolidate per day and maximum quantity of materials or area surfacing, the data for which shall be provided by Employer later on request may use GPS tracking devices for on-line monitoring of movements and recording of log book.

(xi) In the case of concrete mixers, the Contractors shall arrange to get the hopper cleaned and the drum washed at the close of the work each day or each occasion. In case rollers for consolidation are employed by the Contractor himself, log book for such rollers shall be maintained in the same manner as is done in case of departmental rollers, maximum quantity of any items to be consolidated for each roller-day shall also be same as in data

(x) For less use of rollers recovery for the less roller days shall be made at the stipulated issue rate.

(xii) The Contractor shall be responsible to return the plant and machinery in the condition in which it was handed over to him and he shall be responsible for all damage caused to the said

plant and machinery at the Site or elsewhere in operation or otherwise or during transit including damage to or loss of parts, and for all losses due to his failure to return the same soon after the completion of the Works for which it was issued. The Engineer-in-Charge shall be the sole judge to determine the liability of the Contractor and its extent in this regard and his decision shall be final and binding on the Contractor.

(xiii) The Contractor shall be exempted from levy of any hire charges for the number of days he is called upon in writing by the Engineer-in-Charge to suspend execution of the work, provided Employer plant and machinery in question have, in fact, remained idle with the Contractor because of the suspension.

(xiv) In the event of the Contractor not requiring any item of plant and machinery issued by Employer though not stipulated for issue in Contract any time after taking delivery at the place of issue, he may return it after 2 (two) days written notice or at any time without notice if he agrees to pay hire charges for 2 (two) additional days without, in any way, affecting the right of the Engineer-in-Charge to use the said plant and machinery during the said period of 2 (two) days as he likes including hiring out to a third party.

CHAPTER - 6

ELECTRICAL WORKS

GENERAL

The entire electrical Work shall be carried out in accordance with specification without any extra cost. The Work shall conform to relevant Indian standard, Indian Electrical Acts and requirements of local electricity board.

For supervision, Contractor must depute qualified electrical engineer with sufficient experience for similar type of Work.

The Contractor shall employ only experience and licensed electrical / wiremen for the Work. Only licensed electrical Contractor are allowed to Work.

When the electrical installation is complete, the same shall be tested as per I.S. code, i.e. Regulations in front of Engineer-in-Charge and result are to be submitted in four sets.

The Contractor shall carry out all minor civil works connected with electrical Work. The Contractor shall repair and make good damage caused to the civil structure while carrying out the electrical works.

DRAWING & SPECIFICATION

SHOP DRAWINGS

The Contractor prepares detailed shop drawing and submit for the approval of the Engineer before commencing the Work. The shop drawings showing all setting out details and physical dimensions of all complements in the system like conduits and cable, routes, location of Panel/s and fixing details. Works shall not be commence without the approval from the Engineer for each working drawings.

Drawing and specification shall be followed and if any deviation from the same is necessary to make the Work conform to the requirement, the same shall be called to the attention of the Engineer. If any discrepancy between specification, Drawing and BOQ is noticed the same shall be informed to the Engineer-in-charge before execution of the Work.

The engineer's approval of such drawings, schedule, brochures, etc. will be an approval of general details and arrangements only and shall not relieve the Contractor from responsibility for deviation from drawings or specifications unless he had, in writing, called the Engineer attention to such deviations at the time of submission, nor shall it relieve the Contractor from responsibility for errors or Omissions of any kind in the shop drawings

when approved.

All materials and requirements shall be stored properly to the satisfaction of the Engineer so that physical handling and climatic conditions do not affect the equipment.

PROTECTION

All Work related Equipment's and Accessories shall be protected at all times to prevent obstruction, damage or breakage. All equipment shall be covered and protected against water, dust and sand as well as chemical and/or mechanical damage. At the completion of the Work, all equipment shall be thoroughly cleaned and delivered in a perfect unblemished and working condition.

HANDING OVER OF INSTALLATION

The Contractor shall handover the complete installations to the Corporation in a clean, brand new and perfect working condition. Any area in which the Contractor has worked, shall be thoroughly cleaned of all debris and unwanted materials cleaned and handed over in a perfectly finished, ready to use condition.

SPECIFICATIONS

Galvanized Iron (MS) Pipes with specials (such as bends, elbows, tees etc) class light, medium & heavy including testing of joints, cost of pipes, specials and jointing materials shall be provided. Pipes and sockets conforming to IS:1239/2011 Part-II of inner dia. 100mm and 150mm

Earthing with G.I. earth pipe 4.5 mtr long, 40 mm dia and providing masonry enclosure with cover plate having locking arrangement and watering pipe etc. with charcoal and salt as per the approved design.

GI strip shall be of 25 mm X 6 mm at 0.50 Meter below ground as strip earth electrode, including soldering, excavation and refilling the trench etc. as per the approved design.

6 SWG G.I. wire at 0.50 Meter below ground level for conductor earth electrode, including soldering, excavation and refilling the trench etc. as per the approved design.

One number, steel armoured, copper conductor XLPE power cable of size 3 x 50 sq mm with 11 KV grade on surface/ existing cable tray with M.S flat clamp and steel dash fastener/ G.I. bolts and nuts as per the approved design shall be provided

Powder coated, perforated M.S. cable trays of size 600 mm width X 62.5 mm depth X 2.0 mm thickness with perforation not more than 17.5% rigidly suspended from the ceiling with M.S. suspenders at a distance not more than 2.5 metre and near every junction/ joint

etc complete as per the approved design shall be provided.

3½ x 25 sq. mm size PVC insulated PVC sheathed aluminium conductor cables suspended with bobbin insulator on existing bearer wire in an approved manner and as per the design shall be provided.

2 X 2.5 sq. mm + 1 X 2.5 sq. mm earth wire wiring for circuit/ submainwiring alongwith earth wire of FR PVC insulated copper conductor, single core cable in surface/ recessed medium class PVC conduit as per the design shall be provided.

GI box with modular plate and cover in front on surface or in recess 3 pin 5/6 A modular socket outlet and 5/6 A modular switch, connections etc. as per the design shall be provided.

GI box with modular plate and cover in front on surface or in recess, 6 pin 15/16 A modular socket outlet and 15/16 A modular switch, connections etc. as per the design shall be provided.

Wall Mounted Bracket light fitting suitable for 20 Watt LED Light with all accessories as per the design shall be provided.

Appendix # 1

Operation and Maintenance Schedule

SAMPLE O & M SCHEDULE TABLE

Sno.	Name of Equipment	Name of Part	Action to be Taken	Schedule of Action				Remarks
				Daily	Weekly	Monthly	Yearly	
1.	Manual Screen – Coarse Screen / Fine Screen	Screen	Cleaning of Rags, and other waste material stick to Screen		Yes			As and When required, frequency to be increased
2.	Valves	Spindles	Greasing			Yes		H.P. multipurpose Grease
		Check Nuts	Greasing			Yes		
3.	Inlet and Outlet Gates	Spindles	Greasing			Yes		
4.	Submersible Pumps and Motor							As and when required
5.	Aerated Lagoon	Bottom Sludge	Sludge Cleaning				Twice	As and When required, intermediate cleaning to be done
6.	Aeration Equipments	General	Cleaning, Oiling and Greasing as applicable				four	Minimum twice a year cleaning for diffusers, but if the wastewater has high solids or scaling tendency, then quarterly (every 3 months) cleaning is recommended

The above table to be prepared and shall be submitted for approval by the successful bidder only.

Appendix # 2

Reporting Schedules

S. No.	Attend	Diagnose	Rectification- Minor complaints	Rectification- Major complaints
1.	Within 60 minutes Minutes from reporting time [#]	60 Minutes from reporting time [#]	180 Minutes from reporting time [#]	15 Hours from reporting time [#]

#- Reporting shall be done through letter/ e-mail from the Authority and reporting time shall mean the issuance of letter/ e-mail.

Minor complaint: Civil works such as breakage of closed drains, choking of sewer/ drains, minor electrical or mechanical works related to STP etc.

Major complaint: Replacement of Parts/ Special Chemicals, Major civil works such as trench repair etc.

Appendix # 3

OPERATOR STAFF REQUIREMENT

1. The Contractor shall deploy sufficient qualified man power required for meeting functional requirement of the project as given below:
 - a. General maintenance jobs and attending to specific complaints shall be carried out round the clock daily including Sundays by keeping at least minimum manpower as detailed in the table below:

Minimum Manpower Requirement	Nos.
Plant Operator on monthly basis	1
Lab Attendent on monthly basis	1
Semi-skilled Staff on monthly basis	2
Security Guard / Watchman	2

- b. Sufficient support staff shall also be deployed to support the duty of general staff. Minimum manpower to be provided during O&M period.
 - c. Any other manpower as deemed fit for regular maintenance of the project.
 - d. Other technician / manpower required for defect rectification shall be as per the requirement and cost for the same shall be borne by the Contractor without any extra claim.
 - e. The above list is illustrated for guidance only and actual manpower requirement of the assets developed shall be as per specific requirement.
2. The contractor shall provide team of skilled, semi skilled and unskilled worker for maintaince during accidental situation such as choking of Sewer, breakage of Closed drains etc. during 5 years of O&M period.
3. The Contractor shall take prior approval from the Authority before deploying manpower at site.
4. The Contractor shall remain in touch with the Authority of regarding instructions in connection with day-to-day operation and maintenance work. He will also keep records of materials / consumables procured by him from time to time. Contractor shall coordinate personally and promptly with statutory bodies in case of power failure or accident to restore the services.
5. It shall be the responsibility of the Contractor to arrange for deployment of operation and maintenance staff beyond normal working hours/ on holidays etc. whenever need arises without additional cost.
6. It shall be the responsibility of the contractor to keep all equipment and working area in a clean condition after maintenance.
7. The Contractor shall inform immediately to the Authority about any abnormality found in any equipment supplied as per the scope of work.
8. The Contractor shall ensure regular checkup of the entire services including civil/ electrical/ mechanical and other associated services as per the scope of the work.
9. The Contractor shall have to arrange the training programme for the occupants of the Authority so that they are able to make use of the STP and other specialized works commissioned/ completed.
10. The Contractor shall have to maintain all records relating to the operation, maintenance and servicing of the systems/ equipment's as reported for and shall have to make the same available for inspection as & when asked for. The copy of the same shall be submitted to the Authority in electronic sheet.
11. The schedule for periodic inspection and maintenance of the major equipment and all accessories shall be submitted by the contractor and it shall be contractor's responsibility to carry out routine inspection and maintenance for the up-keep of the system as a whole, to ensure trouble free service round the clock. If the equipment requires major maintenance, the same shall be informed to the Authority.

SCHEDULE – I
DEVIATIONS FROM TECHNICAL SPECIFICATIONS

NIL

We undertake that our bid is strictly as per the technical specifications, where given in the bid document.

Signature of Bidder
Seal

Company

SCHEDULE – II
DEVIATIONS FROM CONDITIONS OF CONTRACT

NIL

We undertake that our bid is strictly as per the conditions and requirements of the bid documents.

Signature of Bidder
Seal

Company

SCHEDULE – III
DESCRIPTION OF WORK

The bidder shall submit a detailed Description of Work i.e. Technical Write-up, Process & Instrumentation Diagram, Layout, Hydraulic Flow Diagram, Electrical Load List, Power Consumption & Chemical Consumption etc.

Signature of Bidder
Seal

Company

SCHEDULE – IV
SEWAGE TREATMENT PLANT - OPERATING DETAILS

Sno.		Item	Unit	Value to be submitted by Bidder
A.		Electrical Loads for Entire Process		
	1	Total connected load	KVA	
	2	Maximum running load	KW	
	3	Average running load	KW	
	4	Average power factor		
	5	Daily average power requirement	KWH/Day	
	6	Annual average power requirement	KWH/Year	
B.		Chemical Usage		
	1	Average Dose of Chlorine	mg/l	
	2	Maximum Dose of Chlorine	mg/l	

Signature of Bidder
Seal

Company

SCHEDULE -V

FUNCTIONAL GUARANTEES

General

This schedule sets out the functional guarantees required for the calculation of Liquidated Damages for failing O&M performance guarantees.

The Bidder shall provide values of electrical energy and chemical usage for the quantity and quality of raw sewage given in the technical specifications.

Functional Guarantees

The contractor's guarantee for the performance in the O&M period to be as follows

Quality of Treated Effluent - The quality of treated effluent shall be as described in "E-VII" and CECB(Chhattisgarh State Pollution Control Board) Norms.

Signature of Bidder
Company Seal

SCHEDULE –VI
FORMAT FOR ELECTRICAL LOAD LIST & POWER CONSUMPTION

Sr. No.	Description of Equipment	Motor Rating KW	W	S	T	BKW	Operating Hrs. Hrs./day	Power Consumption (Kw.Hrs./day)
1								
2								
3								
4								
5								
6								
7								
8								
9								

Signature of Bidder
Seal

Company

SAMPLE FORMS AND FORMAT

GENERAL NOTES

Bidders shall complete and provide the Bid Security in accordance with the requirements of the bidding documents.

Bidders should not complete the Form of Agreement at this time. Only the successful bidder will be required to complete the Form. The Form of Agreement when it is finalized at the time of Contract award, shall incorporate any corrections or modification to the accepted bid resulting from arithmetic corrections, acceptable deviations (time for completion, technical deviations, commercial deviations etc.) spare parts or quantity variations in accordance with the requirements of the bidding documents.

The form of Performance Guarantee, form of Advance Payment Guarantee and others shall not be completed by the bidders at the time of bid preparation. Only the successful Bidder will be required to get these securities in accordance with the forms indicated herein or in another form acceptable to the Employer.

BID FORM (WITH OUT PRICE)

Bidders are required to fill up all blank spaces in this Bid Form

.....
.....
.....
.....

Dear Sir,

Sub: "Design, Construction, Testing, Commissioning of all the Components of Interception and Diversion Based Sewage Treatment Plant (STP) work including 05 Years of Operation and Maintenance of the Entire System At **NAGAR PANCHAYAT, PANDATARAI**".

1. Having visited the site and examined the Bid Documents, Drawings, Conditions of Contract, Specifications, Schedules and the Pricing Schedules etc. (Tender document) and Addenda/Amendments to the above, for the execution of the above Contract, we the undersigned offer to procure engineered items, construct, complete, commission, operate and maintain the whole of the said Works for Five years as given in Conditions of Contract, Instruction to bidders and in conformity with the said Drawings, special Conditions of Contract, Specifications, Preamble to and the Pricing Schedules, Schedules, Bidding Documents, including Addenda Nos. (Insert numbers).
2. We agree that:
If we fail to provide required facilities to the Engineer's Representative for carrying out the inspection and testing of materials and workmanship.
If we incorporate into the works, materials before they are tested and approved by the Engineer's Representative
If we fail to produce treated effluent of required quality or fail to satisfy other performance parameters, according to the conditions/stipulations of the contract, the Engineer-in-Charge will be at liberty to take any action as per the condition of this contract.
3. We undertake, if our Bid is accepted to complete and deliver the Works in accordance with the Contract within 15 months, inclusive of monsoons, from the commencement date.
4. We agree to abide by this Tender until..... {120 days after the latest date of submission} and it shall remain binding upon us and may be accepted at any time before that date. We acknowledge that the Appendix forms part of this Letter of Tender.
5. In the event of our Bid being accepted, we agree to enter into a formal Contract Agreement withincorporating the conditions of Contract hereto annexed but until such agreement is prepared, this Bid together with your written acceptance thereof shall constitute a binding Contract between us.
6. We agree, if our Bid is accepted, to furnish Performance bank guarantee in the forms and of value specified in the Special Conditions of Contract for due performance of the Contract.
7. We have independently considered the amounts of liquidated damages as specified in conditions of contract and special conditions of contract and agree that they represent a fair estimate of the damages likely to be suffered by you in event of the Work not being completed by us in time.
8. We understand that you are not bound to accept the lowest or any Bid you may receive.

Dated this Day of20 .

(Name of the Person)

(In the capacity of

(Name of firm)

Company Seal

Duly authorised to sign bid for and on behalf of
(Fill in block capitals)

Witness

Signature: _____

Name: _____

Address: _____

Company Seal

Signature of the Bidder

FORMAT OF CONTRACT AGREEMENT

This Agreement made theday of2026 between
.....of..... (Hereinafter called "the Employer") of the one part and
..... of..... (Hereinafter called "the Contractor") of the other part.

Whereas the Employer desires that the Works known as should be executed by the Contractor, and has accepted a Tender by the Contractor for the execution and completion of these Works and the remedying of any defects therein.

The Employer and the Contractor agree as follows:

1. In this Agreement words and expressions shall have the same meaning as are respectively assigned to them in the Conditions of Contract hereinafter referred to.
2. The following documents shall be deemed to form and be read and construed as part of this Agreement.
 - (a) The Letter of Acceptance dated
 - (b) The Letter of Tender dated
 - (c) The Addenda nos.
 - (d) The Conditions of Contract
 - (e) The Employer's Requirements
 - (f) The completed Schedules, and
 - (g) The Contractor's Proposal.
 - (h) Concept Drawings and Soil Investigation Report
3. In consideration of the payments to be made by the Employer to the Contractor as hereinafter mentioned, the Contractor hereby covenants with the employer to design, execute and complete the Works and remedy any defects therein, in conformity with the provisions of the Contract.
4. The Employer hereby covenants to pay the Contractor, in consideration of the execution and completion of the Works and remedying of defects therein, the Contract Price at the times and in the manner prescribed by the Contract.

In witness whereof the parties hereto have caused this Agreement to be executed the day and year first before written in accordance with their respective laws.

SIGNED by :SIGNED by:

For and on behalf of the Employer in the presence of For and on behalf of the presence of Contractor in the presence of

Witness:
Name:
Address:
Date:.....

Witness:
Name:
Address:
Date:.....

FORMAT OF MOBILIZATION ADVANCE SECURITY (BANK GUARANTEE)

To: _____ [name of Employer]
_____ [address of Employer]
_____ [name of Contract]

In accordance with the provisions of the Contract, Sub-Clause of Volume-II Price Schedules ("Mobilization Advance") of the above mentioned Contract _____ [name and address of Contractor] (hereinafter called "the Contractor") shall deposit with _____ [name of Employer] a bank guarantee to guarantee its proper and faithful performance under the said clause of the Contract in an amount of _____ [amount of guarantee] _____ [in words].

We, the _____ [bank or financial institution], as instructed by the Contractor, agree unconditionally and irrevocably to guarantee as primary obligator and not as Surety merely, the payment to _____ [name of Employer] on its first demand without whatsoever right of objection on our part and without its first claim to the Contractor, in the amount not exceeding _____ [amount of Guarantee] _____ [in words].

We further agree that no change or addition to or other modification of the terms of the Contract or of Works to be performed there under or of any of the Contract documents which may be made between _____ [name of Employer] and the Contractor, shall in any way release us from any liability under this guarantee and we hereby waive notice of any such change, additions or modification.

This guarantee shall remain valid and in full effect from the date of the advance payment under the contract until _____ [name of Employer] receives full repayment of the same amount from the Contractor. Such guaranteed amount shall be reduced by the amounts of the advance payment repaid to you, as evidenced by your notices issued under Sub-Clause 14.6 of the Conditions of Contract. Following receipt (from the Contractor) of a copy of each purported notice we shall promptly notify you of the revised guaranteed amount accordingly.

Yours Truly
Signature and Seal
Name of Bank/Financial Institution
Address
Date

FORMAT OF PERFORMANCE SECURITY– BANK GUARANTEE

To: [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 its obligations in accordance with the Contract.

AND WHEREAS we have agreed to give the contractor such a Bank Guarantee;

NOW THEREFORE we hereby affirm that we are the Guarantor and responsible to you, on behalf of the contractor, up to a total of [amount of Guarantee]
..... [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, upon first written demand and without cavil or argument, any sum or sums within the limits of [amount of Guarantee] as aforesaid without your 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 Contract 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 us from any liability under this guarantee, and we hereby waive notice of any such change, addition or modification.

This guarantee shall be valid until the completion of O&M period.

Signature and Seal of the Guarantor :

Name of Bank :

Address :

Date :

SECTION 9

BILL OF QUANTITIES

Note:

- (1) Item for which no rate or price has been entered, will not be paid for by the Employer/Purchaser when executed and shall be deemed covered by the other rates and prices in the Bill of Quantities
- (2) Unit rates and prices shall be quoted by the Tenderer in Indian Rupees.
- (3) Where there is a discrepancy between the rate in figures and words, the lower of the two will govern.
- (4) Where there is a discrepancy between the unit rate and the line item total resulting from multiplying the unit rate by quantity, the unit rate quoted shall govern

ANNEXURE– F1

Breakup of Payment for STP and allied structures

Design, Construction, Testing, Commissioning of all the Components of Interception and Diversion Based Sewage Treatment Plant (STP) work including 05 years of Operation and Maintenance of the Entire System for NAGAR PANCHAYAT, PANDATARAI under SBM 2.0.

CONTRACT VALUE _____

Design, Construction, Testing and Commissioning of all the Components of Interception and Diversion Based Sewage Treatment Plant (STP) work including 05 Years of Operation and Maintenance of the Entire System in NAGAR PANCHAYAT, PANDATARAI under SBM 2.0.		
Contract Value		
% BREAK UP OF PART 1		
S. No.	Particulars	% of Bifurcated Contract Value
	Conveyance (Sewer)	
1.	Survey, Investigation, Design, Supply, Laying, Jointing and construction of Gravity Sewer DWC/HDPE (Zone-I) Pipe 200mm dia. X 1682.20M (length). 250mm dia. X 360.10M (length), 300mm dia. X 300.7M (length) Design and construction of minimum 55 nos. Brick Masonry manholes with spacing as per CPHEEO Sewerage and Sewage Treatment Plant 2013.	46.17
	Pumping Machinery and Various Chambers	
2.	Survey, Investigation, Design, Supply, Laying, Jointing and construction of Rising Main (DI-K9 Pipe) of Zone-I dia. 100mm for a length of 15m as detailed in the scope of work.	9.19
	Design and Construction of Wet Well – 1 No. with overhead Pump House as detailed in scope of work.	
	Survey, Investigation, Design and Construction of Outfall Connecting Receiving, Receiving, Coarse screen, Medium Screen, Fine Screen and Grit Chambers as detailed in scope of work	
	Treatment and Allied Units	
3.	Designing (aesthetically), providing, and constructing and giving satisfactory trials of Sewage Treatment Plant consisting of receiving chamber, screen chamber, grit chamber, measuring flume, distribution chamber with primary and secondary treatment, etc. as per the technical specification of capacity Zone-I 1.0 MLD Aerated Lagoon Conventional Technology including allied units for waste disposal with all civil and mechanical works involved complete with all electrical works.	42.43
	Survey, Investigation, Design and Construction of Boundary wall of Zone-I Length 352.93m and height 1.80m as detailed in the scope of work.	
	Co-Treatment facility for Faecal Sludge	
4.	Design and Construction of (Zone-I) Planted Drying Bed-1 No. for Co-Treatment of faecal sludge complete as detailed in the scope of work.	2.21
	Total	100.00

ANNEXURE- F2

Contract Value for O&M PAYMENT AGAINST O&M WORKS

Sr. No.	Particulars	Release of Yearly % of Payments
	Against Monthly Running Bills	
1	1 st year	15%
2	2 nd year	18%
3	3 rd year	20%
4	4 th year	22%
5	5 th year	25%
	Total	

Note :-

1. The Contractor may claim the payment for O&M on monthly basis after submission of required reports and data as mentioned.
2. O&M cost includes all consumables required, manpower required to run and maintain the plant, power required to run the plant. It is noteworthy to mention that the O&M cost proposed to be paid to the contractor shall include the charges for Electrical consumption.
3. ULB shall have the right to deduct the Electricity Charges as per CSPDCL Bills from contractor's O&M Bill/any other payable amount.

IMPORTANT NOTE

For the works whose Lum sum offers has been quoted and accepted, the payment shall be made as per quoted Lum sum offer as per the break up schedule given above.

In case of additional/ reduced work, the additional payment/ deduction shall be made as per Schedule/SOR of PHE/ PWD/ UADD. The percentage above / below shall be applicable on additional work/ reduced work.

The final payment of STPs& other structures shall be equal to the amount fixed by percentage of STPs/other structures as shown in NIT.

Note :- Percentage cost in Main Break up will not change. However, contractor may submit detail sub breakup for release of interim payment. Sub Break up will be approved by competent authority of **NAGAR PANCHAYAT, PANDATARAI**. Interim payment shall be released as per approved sub break up.

ANNEXURE- "G-I"

DELETED

ANNEXURE- "G-II"

DELETED

ANNEXURE H
SPECIAL CONDITIONS OF N.I.T
(Reference Clause 8 of NIT)

- 1) "Additional performance security (APS) shall be deposited by the successful bidder at the time of signing of agreement when the bid amount is seriously unbalanced i.e. less than the estimated cost by more than 10% in such an event the successful bidder will deposit the Additional performance security (APS) to the extent of difference of 90 % of the PAC and bid amount in the shape of FDR, in favor of the CHIEF MUNICIPAL OFFICER before signing the agreement. The same shall be refunded along with the normal S.D. after completion of the work. If the contractor fails to complete the work or left the work incomplete, the additional performance security (APS), Shall be forfeited by the department, & the agreement shall be terminated and action shall be taken in accordance with clause 3 of the agreement. In case the tendered/contractor refuses to deposit Additional performance security (APS) then his bid will be rejected by the sanctioning authority and earnest money shall be forfeited"
- 2) If the tendered, whose tender has been accepted, and after signing the agreement, (i) does not start regular actual physical items of work within 25% (twenty five percent) of the time allowed for completion, or abnormally slowdown the work or (iii) abandons the work, or (iv) merely goes on applying for extension or time, the Chief Municipal Officer shall serve a "show cause" notice with details to the contractor in this regard and if the contractor dose not reply, or if his reply is considered not satisfactory (at the sole discretion of the Chief Municipal Officer), his Earnest money Deposit or the Bank Guarantee in this regard shall be forfeited in favor of the Chief Municipal Officer **NAGAR PANCHAYAT, PANDATARAI**, Dist. **KABIRDHAM**, Chhattisgarh. if the contractor has committed a similar default on earlier occasion (s) in previous three consecutive years the contractor shall be debarred from participating in any future tender of Chief Municipal Officer **NAGAR PANCHAYAT, PANDATARAI**, Dist. **KABIRDHAM**, Chhattisgarh for a period of 2 (two) years from the date of such order, by the authority which had registered him/her.
- 3) Such orders & action shall be final binding and conclusive.
- 4) Detailed program Construction:
 - i. Within 30 days of issue of order to start work, the contractor shall submit in the prescribed Performa a detailed construction programme month wise mentioning start and completion or each item/event involved in the due performance of the contract for contract more than 10 Crores Contractor shall Also, submit detailed proramme month wise for
 - a. Materials procurement.
 - b. Their transport arrangement to work site with details of No. of truck/tippers.
 - c. Detailing of construction plants & equipments.
 - d. Cash flow/revised Cash flow
 - ii. The contractor shall submit in the first week of each month a statement of "target vis-à-vis actual performance" of each item/event with slippage, if any mentioning reasons of slippage and proposal for revised construction

programme to complete the same in targeted date or validly extended date. Failure to submit this monthly statement for 4 (Four) months can be treated as "Fundamental Breach of Contract" and can result in invoking clause 3 of the conditions of contract.

- iii. The contractor shall have to carry out all necessary "Rectification" of defects noticed, caused due to any reasons at his own cost within such reasonable period mentioned in such communication notice from the Engineer-in-Charge to him.
- iv. Failure of the contractor to rectify the defects properly in the given period, it shall be open for the Engineer-in-Charge/Assistant Engineer to get the defect (s) rectified either departmentally or through other agency (without calling any tender/quotation) and recover the actual cost plus 15% (Fifteen Percent) of such cost from the contractor from any sum, in any form, and available with the department or can be recovered as "Arrears of Land Revenue".

The performance guarantee will be in addition to the normal security to be deducted as per clause 1 of agreement for the execution of contract.

- 5) The tendered/contractor shall give in advance authority letter (s) in favor of the CHIEF MUNICIPAL OFFICER, authorizing him to get all bank's fixed deposit receipts, Bank Guarantees (either normal security deposit and or for Performance Bank Guarantee) to get these bank receipts and guarantee deeds verified and got confirmed from the concerned bank. It will be only after getting such confirmation that the CHIEF MUNICIPAL OFFICER shall pay any amount accordingly or refund the equal amount for which BG submitted has been duly verified and confirmed.
- 6) The contractor shall not remove minor mineral from borrow areas, quarries without prior payment of Royalty charges.

NAGAR PANCHAYAT, PANDATARAI

Name of Contractor
 Date of work order
 Due date of completion

Detail work programme – Original/1st Revision/2nd Revision/ Revision)

Work Items

Sr. No.	Items	Unit	Months							
			1	2	3	4	5	6	7	8
1										
2										
3										
4										
5										

Approved

Engineer-in-Charge
 Signature

MONTHLY TARGET Vs. ACTUAL ACHEVEMENT

Cumulative Achievement of item of work for the month ending of

Agt. No.

Name of Work

Length

Date of W.O.

.....

.....

Date of Completion.....

Sr. No.	Items	Cumulative Work Programme			Cumulative Achievement actual	Slipage if any (Period)	Reason for slippage (Use add sheet if needed)
		As per Original	1St Revision	Last No. Revision			
1	2	3 (a)	3 (b)	3 C	4	5	6

Comments of Engineer-in-Charge if any

Cash Flow for performing the contract (applicable for works cost)

Name of Division

Name of Contractor

Period of Contract

Value

(A)	Investment	1st Month	2nd Month	3rd Month	4th Month	5th Month	6th Month
(I)	Initial (E.M.) P.G. Insurance (Establish Site Office)						
(II)	Advance for Procurement of Material (if any)						
(III)	Advance for Procurement of labour (if any)						
(IV)	Purchase of New Equipment (if any)						
(V)	Other overheads staff including head office						
(VI)	Other if any (Furnish details)						
Total Investment(x)							
(B)	Receipt						
(I)	Gross Bill Amount						
	Deductions.						
a	S.D.						
b	Advance						
c	TDS						
d	Other recoveries if any						
(y) Total Receipt							
Net cash flow (x-y)							

Note: - (1) This Should co-relate to work programme/progress of work during the month.

(2) Running bill will be expected to be paid within 15 days of the receipt and checking of measurement, quality and quality of items

(3) Investment less net receipt for 1st 15 days and then during.

(4) (Final bills is expected to be paid within 2 months of satisfactory completion work.

(5) Total investment less Total Receipt (-) be shown in bracket.

**CHIEF MUNICIPAL OFFICER
NAGAR PANCHAYAT, PANDATARAI**

ANNEXURE-I

Guidelines for bidders on using Integrated eProcurement System Govt. of Chhattisgarh.

<https://eproc.cgstate.gov.in>

Note: These conditions will over-rule the conditions stated in the tender document(s), wherever relevant and applicable.

1. Vendor / Bidder Registration on the e-Procurement System:

All the Users / Bidders (Manufacturers / Contractors / Suppliers / Vendors / Distributors etc.) registered with and intending to participate in the Tenders of various Govt. Departments / Agencies / Corporations / Boards / Undertakings under Govt. of Chhattisgarh processed using the Integrated e-Procurement System are required to get registered on the centralized portal <https://eproc.cgstate.gov.in> and get approval on specific class (e.g. A, B, C, D, UGE, UDE) from Public Works Department (in case to participate in tenders restricted to vendors / bidders in a particular class).

The non – registered users / bidders who are Also, eligible to participate in the tenders floated using the e-Procurement system are Also, required to be registered online on the e-Procurement system.

Vendors are advised to complete their online enrolment / registration process on the portal well in advance to avoid last minute hassle, it is suggested to complete enrolment at least four days before the last date of bid submission date, failing which may result in non-submission of bids on time for which vendor/end user shall be solely responsible.

For more details, please get in touch with e-Procurement system integrator, M/s. Mjunction Services Limited, Raipur – 492001 on Toll free 1800 258 2502 or email helpdesk.eproc@cgsan.gov.in

2. Digital Certificates:

The bids submitted online must be signed digitally with a valid Class II / Class – III Digital Signature Certificate to establish the identity of the bidders submitting the bids online. The bidders may obtain pair of Encryption & Signing Class – II / Class – III Digital Certificate issued by an approved Certifying Authority (CA) authorized by the Controller of Certifying Authorities (CCA), Government of India.

Note: It may take up to 7 to 10 working days for issuance of Class-II / Class-III Digital Certificate, Therefore the bidders are advised to obtain it at the earliest. It is compulsory to possess a valid Class-II / Class-III Digital Certificate while registering online on the above mentioned e-Procurement portal. A Digital Certificate once mapped to an account / registration cannot be remapped with any other account / registration However, it may be inactivated / deactivated.

Important Note: bid under preparation / creation for a particular tender may only be submitted using the same digital certificate that is used for encryption to encrypt the bid data during the bid preparation / creation / responding stage. However, bidder may prepare / create and submit a

fresh bid using his/her another / reissued / renewed Digital Certificate only within the stipulated date and time as specified in the tender.

In case, during the process of a particular bid preparation / responding for a tender, the bidder loses his/her Digital Certificate because of any reason they may not be able to submit the same bid under preparation online, Hence the bidders are advised to keep their Digital Certificates secure to be used whenever required and comply with IT Act 2000 & its amendments and CVC guidelines.

The digital certificate issued to the authorized user of an individual / partnership firm / private limited company / public limited company and used for online bidding will be considered as equivalent to a no-objection certificate / power of attorney to the user.

Unless the certificate is revoked, it will be assumed to represent adequate authority of the specific individual to bid on behalf of the organization / firm for online tenders as per Information Technology Act 2000. This authorized user will be required to obtain a valid Class-II / Class-III Digital Certificate. The Digital Signature executed through the use of Digital Certificate of this authorized user will be binding on the organization / firm. It shall be the responsibility of management / partners of the concerned organization / firm to inform the Certifying Authority, if the authorized user changes, and apply for a fresh digital certificate for the new authorized user.

3. Online Payment: As the bid is to be submitted only online, bidders are required to make online payment(s) of the Registration fee / Transaction or Service fees / EMD using the online payments gateway services integrated into the e-Procurement system using various payment modes like Credit Card / Debit Card / Internet Taki yang / Cash Card / NEFT / RTGS etc.

For the list of available online modes of electronic payments that are presently accepted on the online payments gateway services, please refer the link '**Payments accepted online**' on portal <https://eproc.cgstate.gov.in>.

4. Setup of User's Computer System: In order to operate on the e-Procurement system for a bidder / user, the computer system / desktop / laptop of the bidder is required to have Java ver. 765 , Internet explorer 9 / 11, latest Mozilafirefox with IE Tab V2 (Enhanced IE Tab) or any other latest browser. A detailed step by step document on the same is available on the home page. Also, internet connectivity should be minimum one MBPS.

5. Publishing of N.I.T.: For the tenders processed using the e-Procurement system, only a brief advertisement notice related to the tender shall be published in the newspapers and the detailed notice shall be published only on the e-Procurement system. Bidders can view the detailed notice, tender document and the activity time schedule for all the tenders processed using the e-Procurement system on the portal <https://eproc.cgstate.gov.in>.

6. Tender's Critical Dates & Time/Tender Time Schedule: The bidders are strictly advised to follow the tender time for their side for tasks / activities and responsibilities to participate in the tender, as all the activities / tasks of each tender are locked before the start time & date and after the end time & date for the relevant activity of the tender as set by the concerned department

official.

7. Download Tender Document(s): The tender document and supporting document(s) if any can be downloaded only online. The tender document(s) will be available for download to concerned bidders after online publishing of the tender and up to the stipulated date & time as set in the tender.

8. Submit Online Bids: bidders have to submit their bid online after successful filling of forms within the specified date and time as set in the tender.

The encrypted bid data of only those bidders who have submitted their bids within the stipulated date & time will be accepted by the e-Procurement system. It is expected that the bidder complete his bid and submit within timeline, a bidder who has not submitted his bid within the stipulated date & time will not be available during opening.

Bid documents uploading during bid preparation should be less than five MB (for individual document) and over all bid documents should be less than fifty MB.

9. Submission of Earnest Money Deposit: The bidders shall submit their Earnest Money Deposit Either as in usual physically sealed Earnest Money Deposit envelope and the same should reach the concerned office OR Online using payment gateway as stated in the Notice Inviting Tender/ Tender document. Bidders Also, have to upload scanned copy of Earnest Money Deposit instrument OR Online Payment /NEFT/RTGS receipt along with the reference details online.

10. Opening of Tenders: The concerned department official receiving the tenders or his duly authorized officer shall first open the online Earnest Money Deposit envelope of all the bidders and verify the same uploaded by the bidders. He / She shall check for the validity of Earnest Money Deposit as required. He / She shall Also, verify the scanned documents uploaded by the bidders, if any, as required. In case, the requirements are incomplete, the next i.e. technical and commercial envelopes of the concerned bidders received online shall not be opened.

The concerned official shall then open the other subsequent envelopes submitted online by the bidders in the presence of the bidders or their authorized representatives who choose to be present in the bid opening process or may view opened details online.

11. Briefcase: Bidders are privileged to have an online briefcase to keep their documents online and the same can be attached to multiple tenders while responding, this will facilitate bidders to upload their documents once in the briefcase and attach the same document to multiple bids submitting.

For any further queries / assistance, bidders may contact:

1. The Service Integrator of e-Procurement system, M/s. Mjunction Service Ltd. on Help Desk Toll free No. 1800 258 2502 or email helpdesk.eproc@cgswan.gov.in.
2. Mr. Shailesh Kumar Soni, Sr. Manager, Chhattisgarh Infotech Promotion Society (CHIPS) on Tel. No. 0771 - 4014158 or email: pro-chips@nic.in.

Annexure – ‘J’

Pre contract Integrity Pact

1. GENERAL

- 1.1. This pre-bid contract Agreement (herein after called the Integrity Pact) is made on.....day of the month.....2026 between, the **NAGAR PANCHAYAT, PANDATARAI** acting through Shri.....(Designation of the officer, Department) **NAGAR PANCHAYAT, PANDATARAI** (hereinafter called the “BUYER” which expression shall mean and include, unless the context otherwise requires, his successors in the office and assigns) and the First Party, proposes to procure (name of the Stores / Equipment /Work/Service) and M/srepresented by ShriChief Executive Officer (hereinafter called the “BIDDER/Seller” which expression shall mean and include , unless the context otherwise requires, his successors an permitted assigns) and the Second Party, Is willing to offer/has offered.
- 1.2. WHEREAS the BIDDER is a Private Company/Public Company/Government Undertaking/ Partnership/ Registered Export Agency, constituted in accordance with the relevant law in the matter and the BUYER is a Ministry/Department of the Government, performing its function on behalf of the **NAGAR PANCHAYAT, PANDATARAI**.

2. OBJECTIVES

NOW, THEREFORE the BUYER and the BIDDER agree to enter into this pre-contract agreement, hereinafter referred to as Integrity Pact, to avoid all forms of corruption by following a system that is fair, transparent and free from any influence/prejudiced dealings prior to, during and subsequent to the Contract to be entered into with a view to :-

- 2.1 Enabling the BUYER to obtain the desired Stores/Equipment /Work/Service at a competitive price in conformity with the defined specifications by avoiding the high cost and the distortionary impact of corruption on public procurement, and
- 2.2 Enabling BIDDERS to abstain from bribing or indulging in any corrupt practices in order to secure the contract by providing assurance to them that their competitors will Also, abstain from bribing any corrupt practices and the BUYER will commit to prevent corruption, in any form, by its official by following transparent procedures.

3. COMMITMENTS OF THE BUYER

The BUYER commits itself to the following :-

- 3.1 The BUYER undertakes that no official of the BUYER, connected directly or indirectly with the contract, will demand, take promise for or accept, directly or through intermediaries, any bribe, consideration, gift, reward, favours or any material or immaterial benefit or any other advantage from the BIDDER, either for themselves or for any person, organization or third party related to the contract in

exchange for an advantage in the bidding process, bid evaluation, contracting or implementation process related to the contract.

- 3.2 The BUYER will, during the pre-contract stage, treat BIDDERS alike, and will provide to all BIDDERS the same information and will not provide any such information to any particular BIDDER which could afford an advantage to that particular BIDDER in comparison to the other BIDDERS.
- 3.3 All the officials of the BUYER will report the appropriate **NAGAR PANCHAYAT, PANDATARA** office any attempted or completed breaches of the above commitments as well as any substantial suspicion of such a breach.

In case any such preceding misconduct on the part of such official(s) is reported by the BIDDER to the BUYER with the full and verifiable facts and the same prima facie found to be correct by the BUYER, necessary disciplinary proceedings, or any other action as deemed fit, including criminal proceedings may be initiated by the BUYER and such a person shall be debarred from further dealings related to the contract process. In such a case while an enquiry is being conducted by the BUYER the proceedings under the contract would not be stalled.

4. COMMITMENTS OF BIDDERS

The BIDDER commits itself to take all measures necessary to prevent corrupt practices, un fair means an illegal activities during any stage of its bid or during any pre-contract or post- contract stage in order to secure the contract or in furtherance to secure it and in particular commit itself to the following :-

4.1 The BIDDER will not offer, directly or through intermediaries, any bribe, gift, consideration, reward, favour any material or immaterial benefit or other advantage, commission, fees, brokerage or inducement to any official of the BUYER, connected directly or indirectly with the bidding process, or the any person, organization or third party related to the contract in exchange for any advantage in the bidding, evaluation, contracting and implementation of the contract.

4.2 The BIDDER further undertakes that it has not given, offered or promised to give, directly or indirectly any bribe, gift, consideration, reward, favour , any material or immaterial benefit or other advantage, commission, fees, brokerage, or inducement to any official of the BUYER or otherwise in procuring the Contract of forbearing to do or having done any act in relation to the obtaining or execution of the contract or any other contract with the **NAGAR PANCHAYAT, PANDATARA** for showing or forbearing to show favour or disfavours to any person in relation to the contract or any other contract with the Government.

4.3 The BIDDER further confirms and declares to the BUYER that the BIDDER in the original Manufacture/Integrator/Authorized **NAGAR PANCHAYAT, PANDATARA** sponsored export entity of the stores and has not engaged any individual or firm or company whether Indian or foreign to intercede, facilitate or in any way to recommend to the BUYER or any of its functionaries, whether officially or unofficially to the award of the contract to the BIDDER, nor has any amount been paid, promised or intended to be paid to any such individual, firm or company in respect of any such intercession, facilitation or recommendation.

4.4 The BIDDER, either while presenting the bid or during pre-contract negotiations or before signing the contract, shall disclose any payment he has made, is committed to or intends to make

to officials of the BUYER or their family members, agents, brokers or any other intermediaries in connection with the contract and the details of services agreed upon for such payments.

4.5 The BIDDER will not collude with other parties interested in the contract to impair the transparency, fairness and progress of the bidding process, bid evaluation , contracting and implementation of the contract.

4.6 The BIDDER will not accept any advantage in exchange for any corrupt practice, unfair means and illegal activities.

4.7 The BIDDER shall not use improperly, for purpose of competition or personal gain, or pass on to others, any information provided by the BUYER as part of the business relationship, regarding plans, technical proposal and business details, including information contained in any electronic data carrier. The BIDDER Also, undertakes to exercise due and adequate care lest any such information is divulged.

4.8 The BIDDER commits to refrain from giving any complaint directly or through any other manner without supporting it with full and verifiable facts.

4.9 The BIDDER shall not instigate or cause to instigate any third person to commit any of the acts mentioned above.

5. PREVIOUS TRANSGRESSION

5.1 The BIDDER declares that no previous transgression occurred in the last three years immediately before signing of this Integrity Pact with any other company in any country in respect of any corrupt practices envisaged hereunder or with any Public Sector Enterprise in India or any **NAGAR PANCHAYAT, PANDATARAI** Department in India that could justify BIDDER's exclusion from the tender process.

5.2 If the BIDDER makes incorrect statement on this subject, BIDDER can be disqualified from the tender process or the contract, if already awarded, can be terminated for such reason.

6. EARNEST MONEY (SECURITY DEPOSIT)

6.1 Every BIDDER while submitting commercial bid, shall deposit an amount as specified in RFP as Earnest Money/Security Deposit, with the BUYER through any of the following instruments :

(i) Bank Draft or a Pay Order in favour of

(ii) A confirmed guarantee by an Indian Nationalised Bank, promising payment of the guaranteed sum to the(BUYER)on demand within three working days without any demur whatsoever and without seeking any reasons whatsoever, The demand for payment by the BUYER shall be treated as conclusive proof of payment.

(iii) Any other mode or through any other instrument (to be specified in the RFP).

6.2 The earnest Money/Security Deposit shall be valid up to a period of five years or the complete conclusion of the contractual obligations to the complete satisfaction of both the BIDDER and BUYER, including warranty period, whichever is later.

6.3 In the case of successful BIDDER a clause would Also, be incorporated in the Article pertaining to Performance Bond in the Purchase Contract that the provisions of Sanctions for violation shall be applicable for forfeiture of Performance Bond in case of a decision by the BUYER to forfeit the same without assigning any reason for imposing sanction for violation of this Pact.

6.4 No Interest shall be payable by the BUYER to the BIDDER on Earnest Money/Security Deposit for the period of its currency.

7. SANCTIONS FOR VIOLATIONS

7.1 Any breach of the aforesaid provisions by the BIDDER or any one employed by it or acting on its behalf (whether with or without the knowledge of the BIDDER) shall entitle the BUYER to take all or any one of the following actions, wherever required :-

(i) To immediately call off the pre contract negotiations without assigning any reason or giving any compensation to the BIDDER. However, the proceeding with the other BIDDER (s) would continue.

(ii) To forfeit fully or partially the Earnest Money Deposit (in pre-contract stage) and/or Security Deposit/Performance Bond (after the contract is signed), as decided by the BUYER and the BUYER shall not be required to assign any reason therefore.

(iii) To immediately cancel the contract, if already signed, without giving any compensation to the BIDDER.

(iv) To recover all sums already paid by the BUYER, and in case of the Indian BIDDER with interest thereon at 2% higher than the prevailing Prime lending Rate while in case of a BIDDER from a country other than India with Interest thereon at 2% higher than the LIBOR. If any outstanding payment is due to the BIDDER from the BUYER in connection with any other contract such outstanding payment could Also, be utilized to recover the aforesaid sum and interest.

(v) To encase the advance bank guarantee and performance bond/warranty bond, if furnished by the BIDDER, in order to recover the payments, already made by the BUYER, along with interest.

(vi) To cancel all or any other contracts with the BIDDER and the BIDDER shall be liable to pay compensation for any loss or damage to the BUYER resulting from such cancellation / rescission and the BUYER shall be entitled to deduct the amount so payable from the money (s) due to the BIDDER.

(vii) To debar the BIDDER from participating in future bidding processes of the **NAGAR PANCHAYAT, PANDATARA** for a minimum period of five years, which may be further extended at the discretion of the BUYER.

(viii) To recover all sums paid in violation of this Pact by BIDDER (s) to any middlemen or agent or broken with a view to securing the contract.

(ix) In cases where irrevocable Letters of Credit have been received in respect of any contract signed by the BUYER with the BIDDER, the same shall not be opened.

(x) If the BIDDER or any employee of the BIDDER or any person acting on behalf of the BIDDER, either directly or Indirectly, is closely related to any of the officers of the BUYER, or Alternatively, if any close relative of an officer of the BUYER has financial interest/stake in the BIDDER's firm, the same shall be disclosed by the BIDDER at the time of filling of tender. Any failure to disclose the interest involved shall entitle the BUYER to rescind the contract without payment of any compensation to the BIDDER.

The term 'close relative for this purpose would mean spouse whether residing with the **NAGAR PANCHAYAT, PANDATARAI** servant or not, but not include a spouse separated from the **NAGAR PANCHAYAT, PANDATARAI** servant by a decree or order of a competent court, son or daughter or step son or step daughter and wholly dependent upon **NAGAR PANCHAYAT, PANDATARAI** servant but does not include a child or step child who is no longer in any way dependent upon the **NAGAR PANCHAYAT, PANDATARAI** servant, or of whose custody the **NAGAR PANCHAYAT, PANDATARAI** servant has been deprived of by or under any law, any other person related, whether by blood or marriage, to the **NAGAR PANCHAYAT, PANDATARAI** servant or to the **NAGAR PANCHAYAT, PANDATARAI** servant's wife or husband and wholly dependent upon **NAGAR PANCHAYAT, PANDATARAI** Servant.

(xi) The BIDDER shall not lend to or borrow any money from or enter into any monetary dealings or transactions, directly or indirectly with any employee of the BUYER, and if he does so, the BUYER shall be entitled forth with to rescind the contract and all other contracts with the BIDDER. The BIDDER shall be liable to pay compensation for any loss or damage to the BUYER resulting from such rescission and the BUYER shall be entitled to deduct the amount so payable from the money(s) due to the BIDDER.

7.2 The decision of the BUYER to the effect that a breach of the provisions of this pact has been committed by the BIDDER shall be final and conclusive on the BIDDER. However, the BIDDER can approach the Monitor (s) appointed for the purpose of this Pact.

8. FALL CLAUSE

8.1 The BIDDER undertakes that if has not supplied /is not supplying similar product/systems or subsystems at a price lower than that offered in the present bid in respect of any other Department of the **NAGAR PANCHAYAT, PANDATARAI** or PSU and if it is found at any stage that similar product/systems or sub systems was supplied by the BIDDER to any other Department of the **NAGAR PANCHAYAT, PANDATARAI** or a PSU at a lower price, then that very price, with due allowance for elapsed time, will be applicable to the present case and the difference in the cost would be refunded by the BIDDER to the BUYER, if the contract has already been concluded.

9. INDEPENDENT MONITORS

9.1 The BUYER will appoint Independent Monitors (hereinafter referred to as Monitors) for this Pact.

9.2 The task of the Monitors shall be to review independently and objectively, whether and to what extent the parties comply with the obligations under this Pact.

9.3 The Monitors shall not be subject to instructions by the representatives of the Parties and perform their functions neutrally and independently.

9.4 Both the parties accept that the Monitors have the right to access all the documents relating to the project/procurement including minutes of meetings. The Monitor shall be under contractual obligation to treat the information and documents of the BIDDER/Subcontractor(s) with confidentiality.

9.5 As soon as the Monitor notices, or has reason to believe, a violation of this Pact , he will so inform the Authority designated by the BUYER.

9.6 The Monitor will submit a written report to the designated Authority of BUYER/Secretary in the Department/within 8 to 10 weeks from the date of reference or intimation to him by the BUYER/BIDDER and, should the occasion arise, submit proposals for correcting problematic situations.

10. FACILITATION OF INVESTIGATION

In case of any allegation of violation of any provisions of this Pact or payment of commission, the BUYER or its agencies shall be entitled to examine all the documents including the Books of Accounts of the BIDDER and the BIDDER shall provide necessary information of the relevant documents and shall extend all possible help for the purpose of such examination.

11. LAW AND PLACE OF JURISDICTION

This Pact is subject to Indian Law, the place of performance and jurisdiction shall be the seat of the BUYER.

12. OTHER LEGAL ACTIONS

The actions stipulated in this Integrity Pact are without prejudice to any other legal action that may follow in accordance with the provisions of the any other law in force relating to any civil or criminal proceedings.

13. VALIDITY

13.1 The validity of this Integrity Pact shall be from the date of its signing and extend up to 5 years or the complete execution of the contract to the satisfaction of both the BUYER and the BIDDER/Seller whichever is later. In case BIDDER is unsuccessful , this Integrity Pact shall expire after six months from the date of the signing of the contract.

13.2 If one or several provisions of this Pact turn out to be invalid ; the remainder of this Pact shall remain valid. In such case, the parties will strive to come to an agreement to their original intentions.

The parties hereby sign this Integrity Pact aton.....

BUYER

BIDDER

Name of the Officer

CHIEF MUNICIPAL OFFICER
NAGAR PANCHAYAT, PANDATARAI
Chhattisgarh

Witness

Witness

- 1).....
- 2)
- 3).....
- 4)

ANNEXURE – ‘K’

DELETED

Annexure- "L"

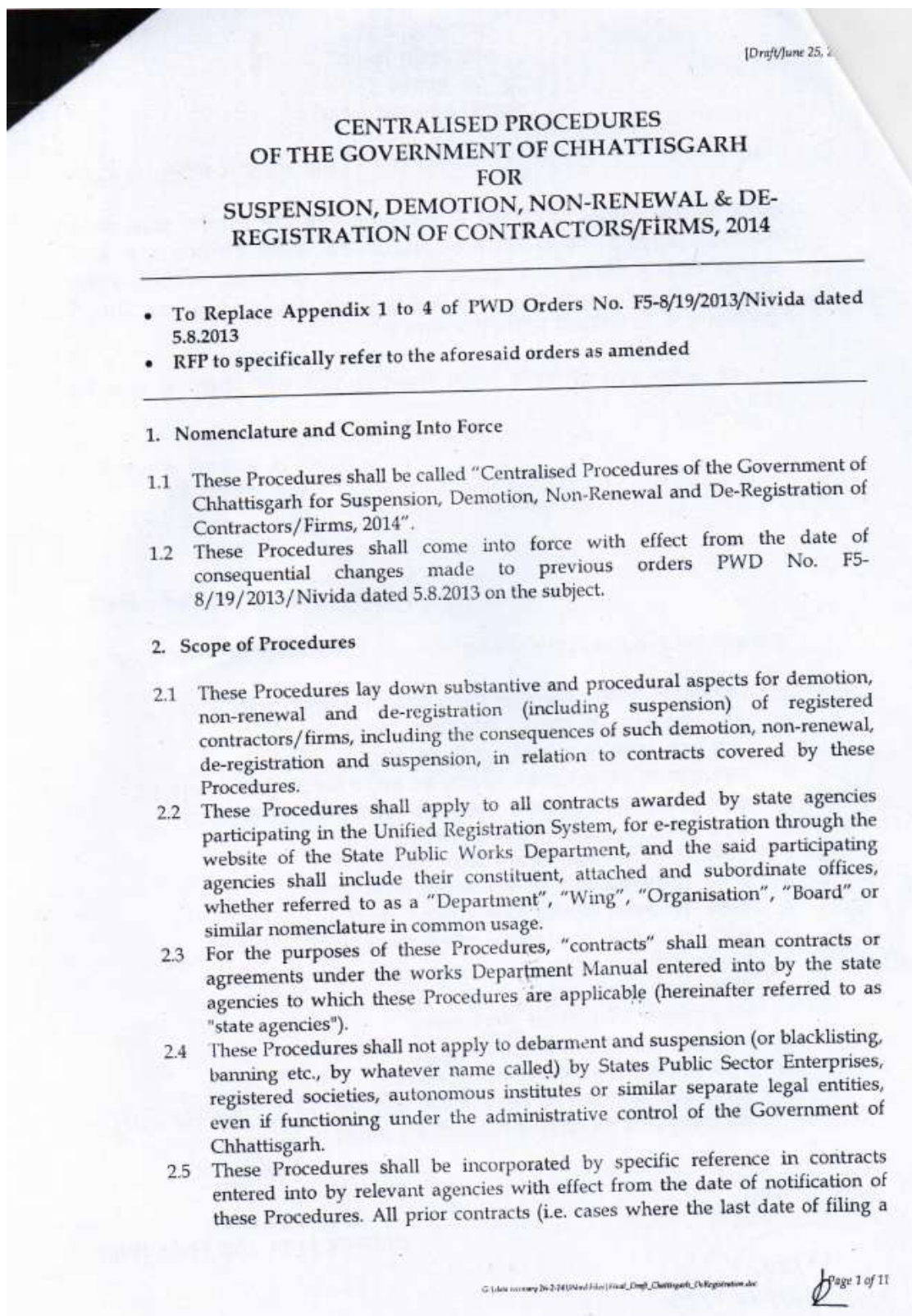
FEATURES OF MAJOR LABOUR LAWS

Salient Features of Some Major Labour Laws Applicable to Establishments Engaged in Building and other Construction Works

a)	Workmen Compensation Act 1923 :- The Act provides for compensation in case of injury by accident arising out of and during the course of employment.
b)	Payment of Gratuity Act 1972 :- Gratuity is payable to an employee under the act on satisfaction of certain conditions on separation if an Employee has completed 5 years' service or more or death the rate of 15 days wages for every completed years of service. The Act is applicable to all establishments employing 10 or more employees.
c)	Employees P. F. and Miscellaneous Provision Act 1952 :-The Act Provides for monthly contributions by the employer plus workers @ 10% Or 8.33% the benefits payable under the Act are ---
i)	Pension or Family pension on retirement or death as the case may be
ii)	Deposit linked insurance on the death in harness of the worker
iii)	Payment of PF accumulation on retirement /death etc .
d)	Maternity Benefit Act 1951 :- The Act provides for leave and some other benefits to women employees in case of confinement or miscarriage etc
e)	Contract Labor (Regulation & Abolition) Act 1970 :-The Act provides for certain welfare measures to be provided by the Employer. If the Employer fails to provide, the same are required to be provided by the Principal owner by law. The Principal Owner is required to take Certificate of Registration and the Employer is required to take License from the designated Officer. The Act is applicable to the establishment of Employer or Principal Owner if they employ 20 or more contract labour
f)	Minimum Wages Act 1948 :- The employer is supposed to pay not less than the Minimum Wages fixed by appropriate Government as per provisions of the Act if the employment is a scheduled employment. Construction of Building , Roads. Runways are scheduled employment
g)	Payment of Wages Act 1936 :- It lays down as to by what date the wages are to be paid, when it will be paid and what deduction can be made from the wages of the workers.
h)	Remuneration Act 1979 :-The Act provides for payment of equal wages for work of equal nature to Male & Female workers & for not making discrimination against Female employees in the matter of transfers training and promotions etc
i)	Payment of Bonus Act 1965 :- The Act is applicable to all establishment employing 20 or more employees. The Act provides for payments of annual bonus subject to a minimum of 8.33% of wages and maximum of 20% of wages to employees drawing Rs 3500/- per month or less. The bonus to be paid to employees getting Rs 2250/-per month or above up to Rs 3500/- per month shall be worked out by taking wages as Rs 200/- per month only. The Act does not apply to certain establishment. The newly set-up establishment are exempted for five years in certain circumstances. Some of the State Government have reduced the employment size from 20 to 10 for the purpose of applicability of this Act.
j)	Industrial Disputes Act 1947 :- The act lay down the machinery and procedure for resolution of Industrial disputes in what situations a strike or lockout becomes illegal and what are the requirements for laying off or retrenching the employees or closing down the establishment.

k)	Industrial Employment (Standing Order) Act 1946:- It is applicable to all establishments employing 100 or more workmen (employment size reduced by some of the State and Central Government to 50) The Act provides for laying down rules governing the conditions of employment by the employer on matters provided in the Act and get the same certified by the designated Authority.
l)	Trade unions Act 1926 :- The Act lays down the procedure for registration of trade unions of workmen and employers. The Trade Unions registered under the Act have been given certain immunities from civil and criminal liabilities
m)	Child Labour (Prohibition & Regulation) Act 1986 :- The Act prohibits employment of children below 14 years of age in certain occupations & processes and provides for regulation of employment of children in all other occupations and processes. Employment of Child Labor is prohibited in Building And Construction Industry.
n)	Inter- State Migrant workmen's (Regulation of Employment & Condition of Services) Act 1979 :- The Act is applicable to an establishment which employs 5 or more inter-state migrant workmen through an intermediary (who has recruited workmen in one state for employment in the establishment situated in other state) The Inter-state migrant workmen in an establishment to which this Act becomes applicable are recruited to be provided certain facilities such as housing medical aid traveling expenses from home up to the establishment and back, etc.
o)	The Building and Other Construction Workers (Regulation of Employment and conditions of Service)Act 1996 and the Cess Act of 1996 :- All the establishment who carry on any building or other construction work and employees 10 or more workers are covered under this act . All such establishment are required to pay Cess at the rate not exceeding 2% of the cost construction as may be modified by the Government. The employer of the establishment is required to provide safety measures at the Building or construction work & other welfare measures such as Canteens First Aid facilities Ambulance Housing accommodations for workers near the work place. The employer to whom the act applies has to obtain a registration certificate from the Registering Officer appointed by the Government
p)	Factories Act 1948 :- The Act lays down the procedure for approval of plans before setting up a factory, health and safety provisions, welfare provisions, working hours, annual earned leave and rendering information regarding accidents or dangerous occurrences to designated authorities. It is applicable to premises employing 10 person or more with aid of power or 20 or more persons without the aid of power engaged in manufacturing process.
q)	As per the Chhattisgarh Contract Labour Act Rules 1971, for Equal work and Equal Pay : General Body has passed Resolution No. 1716 dated 06/08/2007 for payment to contract labour. The payment to contract labour shall be paid as per above General Body Resolution.

Annexure- "M" Demotion Of Contractors



[Draft/June 25, 2014]

proposal, tender, quotation, bid etc., by whatever name called, predates the date of notification of these Procedures, including contracts entered into before the date of notification of these Procedures), shall however continue to be governed by the specific clauses of contract and instructions issued by the Government of Chhattisgarh in force prior to notification of these Procedures. For cases where the last date of filing a proposal, tender, quotation, bid etc., by whatever name called, has already been scheduled and notified, and is subsequent to the date of notification of these Procedures, an addendum to the Request For Proposal (or Notice Inviting Tender, Request For Quotation, Invitation To Bid etc., by whatever name called) shall be issued by procuring officials, to ensure that acceptance of the terms and conditions prescribed under these Procedures is obtained from all participating bidders.

- 2.6 "Entities" shall include individuals, as well as companies, trusts, societies or other associations of individuals with whom the state agencies have entered into contracts, or intend to enter into contracts, or could enter into contracts.

3. Cross-Debarment

- 3.1 Any order for demotion, non-renewal, suspension or de-registration issued by the Designated Authority provided for under these Procedures shall have immediate effect as provided herein on contracts awarded and processed by the state agencies.
- 3.2 Any order for suspension, banning, demotion, blacklisting, de-registration or debarment issued by any authority in the Government of India or other State Governments, or by any other entity not covered under the scope of these Procedures, shall not affect the eligibility of contractors or firms participating in the Unified Registration System, unless the Designated Authority under these Procedures has issued its own order of suspension, non-renewal, demotion or de-registration, pursuant to or consequent or based upon the order issued by such an external agency, after satisfying itself that the order of suspension, non-renewal, demotion or de-registration against such a contractor/firm is appropriate and warranted in order to protect government or public interest in the facts and circumstances of the specific case.

4. Satisfaction of Designated Authority

- 4.1 Proceedings for suspension, demotion or de-registration shall be in the nature of summary administrative decisions by the Designated Authority, aimed at protecting government or public interest.
- 4.2 Accordingly, the Designated Authority shall exercise due diligence normally expected of an administrative authority in terms of his/ her subjective satisfaction that such administrative action for issue of an order of suspension, non-renewal, demotion or de-registration against a contractor/firm is appropriate and warranted in order to protect government or public interest in the facts and circumstances of the specific case.

[Draft/June 25, 2014]

- 6.3 The Appellate Authority shall be free and be empowered to consult any Department that it deems appropriate (such as legal or finance divisions or Departments) before deciding an appeal. However, the advice, recommendation or comments of any such Department shall neither be binding upon the Appellate Authority and nor shall it form the sole basis of the decision taken in appeal by the Appellate Authority.
- 6.4 The orders of suspension, non-renewal, demotion or de-registration (including notice of proposed demotion or de-registration) of the Designated Authority, or the orders in appeal issued by the Appellate Authority, shall not form part of the scope of issues that can be brought before arbitrator(s) or arbitral tribunal, notwithstanding anything contained in an arbitration agreement in relation to contracts covered by these Procedures. Similarly, the orders of the Designated Authority or the Appellate Authority shall not form part of the scope of issues that can be referred to the Independent External Monitor under any "Integrity Pact" signed by covered entities under these Procedures, notwithstanding anything contained in the Integrity Pact.
- 6.5 To the extent practicable, the Appellate Authority shall decide an appeal within thirty days of the appeal being submitted to it against de-registration, non-renewal, suspension or demotion, provided he/she has received all documents that he/she deems relevant from the appellant and from respondents.
- 6.6 The Appellate Authority shall have the power to pend the processing of a contract for reasons it may deem fit.

7. Grounds for Demotion, Non-Renewal and De-Registration

- 7.1 The Designated Authority may de-register a contractor/firm (referred hereinbelow as "entity") for any sufficient reason, including any one or more of, but not limited to, the grounds listed below:
 - (i) Conviction for, or the commencement of an investigation under the Criminal Procedure Code, 1973 or the filing of a chargesheet by an investigative agency in a criminal court of competent jurisdiction, or a civil judgment in respect of commission or alleged commission of fraud or an offence under any law in force in India or elsewhere, either directly or indirectly, by an entity, its proprietor, employee, partner, agent or representative in connection with (a) obtaining, or (b) attempting to obtain, or (c) performing a government contract or agreement:
Provided that in case of commencement of criminal investigation this clause shall constitute a valid ground for de-registration only if the said fraud or offence is in relation to a contract or agreement entered into with

[Draft/June 25, 2001]

- (i) the Government of Chhattisgarh or an entity directly or indirectly under its administrative control;
- (ii) If national security considerations, including question of loyalty to the State, so warrant;
- (iii) If the entity contemptuously refuses to return Government dues without showing adequate cause, and the Designated Authority is satisfied that this is not due to a reasonable dispute which would attract proceedings in arbitration or a court of law;
- (iv) If the entity employs a government official, dismissed or removed on account of corruption, or employs a non-official convicted for an offence involving corruption or abetment of such an offence, in a position where he/she could corrupt public officials;
- (v) If the Designated Authority is satisfied that the entity has submitted fake or forged document(s);
- (vi) If the entity fails to take all measures necessary to prevent corrupt practices, unfair means and illegal activities at any stage of a contract; and
- (vii) Instigating or causing any third person to commit any of the above.

7.2 The Designated Authority may demote a contractor/firm for any sufficient reason, including any one or more of, but not limited to, the grounds listed below:

- (i) Non-performance or under-performance under the terms of a covered procurement action that the Designated Authority considers serious enough to justify debarment or suspension;
- (ii) Without prejudice to the generality of clause (i), any grounds including any one or more of, but not limited to, the following causes:
 - (a) Wilful supply of sub-standard material;
 - (b) Wilful delays or poor performance;
 - (c) Cartel formation;
 - (d) Violation of labour laws;
 - (e) Violation of any other statutory requirement;
 - (f) Obtaining official government information or documentation by questionable means;
 - (g) Submission of false documents;
 - (h) Established litigant nature;
 - (i) Wilful misuse or damage to public property;
 - (j) Failure to disclose names of agents, whether Indian or foreign, and their foreign principals or associates;
 - (k) Failure to fulfil any requirement that may be laid down from time to time under the Unified Registration System, as published in the website for the system, for disclosure of any payments made to any broker,

[Draft/June 25, 2014]

agent, representative or any other intermediary in relation to any contract to which these Procedures apply;

(l) Engagement of any individual or entity to intercede, facilitate, or recommend the award of a contract, excluding legal representatives employed directly by the entity;

(m) Collusion to impair transparency, fairness or progress of the contracting process;

(n) Complaining without full and verifiable facts; or

(o) Instigating or causing any third person to commit any of the above.

7.3 A Designated Authority may not renew the registration of a contractor/firm for any sufficient reason, including any one or more of, but not limited to, the grounds listed below:

(i) Failure to meet any volume of work criterion specified from time to time under the Unified Registration System as published on the website for the system, for the particular class of registration for the last three financial years ending with the financial year immediately prior to the date of submission of proposal for non-renewal to the Designated Authority; and

(ii) Any of the grounds specified in paragraphs 7.1 or 7.2 above.

8. Grounds for Suspension

8.1 Suspension of an entity can be ordered by the Designated Authority, where it determines that continuation of dealings is not considered desirable in government or public interest, pending completion of proceedings into allegations or facts related to any of the grounds enumerated in paragraphs 7.1 and 7.2 above, and where it is considered necessary to forthwith order such discontinuation without prior notice of suspension to the entity.

8.2 In all such cases of suspension it shall be incumbent upon the Designated Authority to put the suspended entity on notice and to grant an early opportunity of post-decisional hearing.

9. Effect of Suspension, Non-Renewal, De-Registration and Demotion

9.1 A final order of de-registration or non-renewal in respect of a contractor/firm shall result in immediate ineligibility of the contractor/firm and its affiliates for all classes of contracts (or for classes of contracts higher than the resultant demoted class in cases of demotion) from participating in future bids or contracts or agreements for a minimum period of two years and a maximum period of ten years with effect from the date of demotion or non-renewal or de-registration, including ineligibility from evaluation in ongoing cases where a contract or agreement is yet to be finally signed. Such ineligibility shall be without compensation from or liability to the state agency. Similarly, a de-registered or non-renewed contractor/firm and its affiliates shall be ineligible for award of a contract, including receipt of an order under a Rate Contract,

[Draft/June 25, 20..]

- and for entering into any contract covered by these Procedures, in cases where an order for de-registration or non-renewal has come into effect before the signing of such contract.
- 9.2 Where the de-registered, non-renewed, demoted or suspended contractor/firm has already emerged as the most preferred bidder using price and/or technical criteria as specified in the Request For Proposal (or Notice Inviting Tender or Invitation To Bid or Request For Quotation by whatever name called), the procurement process shall be continued treating the de-registered, suspended, demoted or non-renewed contractor/firm as ineligible, notwithstanding any appeal, unless the Appellate Authority has pended the procurement process.
- 9.3 A de-registered or non-renewed contractor/firm shall not be eligible to receive a Request For Proposal (or Notice Inviting Tender or Invitation To Bid or Request For Quotation etc., by whatever name called) from the state agencies in cases of limited and/or restricted tendering where such issue is provided for under tender procedures.
- 9.4 In any case where the entity is suspended, de-registered, non-renewed or demoted subsequent to such issue, it shall not be considered eligible for the purposes of any technical, field or commercial evaluation or for award or signing of contract undertaken in pursuance to the Request For Proposal (or Notice Inviting Tender or Request For Quotation or Invitation To Bid etc., by whatever name called).
- 9.5 Mere initiation of a criminal or other investigation or inquiry by any authority in the Government of India or other State Governments, or by any other entity not covered under the scope of these Procedures, or the mere filing of a chargesheet or any other formal proceedings against an entity by an enforcement agency exercising powers of a court, shall not render a contractor/firm ineligible, unless the Designated Authority under these Procedures has issued its own order of suspension, non-renewal, demotion or de-registration, pursuant to or consequent or based upon the order issued by such an external agency, after satisfying itself that the order of suspension, non-renewal, demotion or de-registration against such a contractor/firm is appropriate and warranted in order to protect government or public interest in the facts and circumstances of the specific case. Similarly, a notice of proposed demotion or de-registration shall not render a contractor/firm ineligible, unless a final order for demotion, non-renewal or de-registration has been issued by the Designated Authority under these Procedures prior to conclusion of the contract.
- 9.6 The above consequences on ineligibility of a contractor/firm shall be in addition to any criminal liability that may arise out of any laws in force in India, and also in addition to any other pecuniary consequences and civil liabilities including penalties, costs or liabilities as may be imposed by procuring officials, as well as forfeiture of earnest money deposits, encashment of bank guarantees and performance bonds, risk and cost purchase, recovery of certain sums from the erring entity, and liability for compensation for losses or damages as may be provided for under contract or agreement, as may be

[Draft/June 25, 2014]

provided for in the relevant Notice Inviting Tender, Request For Proposal, Request For Quotation, Invitation To Bid and any such documents.

- 9.7 Notwithstanding anything contained in the contract, procuring officers shall not renew, expand or extend current contracts with suspended, non-renewed, demoted or de-registered contractors/firms, or otherwise extend their duration or modify them to the advantage of a contractor/firm, unless prior approval of the authority one level above the authority competent to approve the same under the contract is taken for such renewal, modification or extension: Provided further that in respect of de-registered contractors/firms, the level of prior approval shall be the state Government;
- 9.8 Termination of contracts, if considered appropriate by procuring officials, shall follow procedures as provided for under the contract and other relevant instructions of the Government.

10. Notice of Proposal for Demotion or De-Registration (and Order of Suspension or non-Renewal)

10.1 Demotion or de-registration shall be initiated by the Designated Authority upon receipt of information or proposals by putting a contractor/firm on notice:

- (i) That demotion or de-registration is being contemplated;
- (ii) Of the reasons for proposed demotion or de-registration relied upon under paragraph 7 of these Procedures for the proposed demotion or de-registration;
- (iii) Stating the period of demotion or de-registration and the proposed start and end dates for the period of demotion and de-registration;
- (iv) That, within fifteen days of receipt of the notice, the contractor/firm may submit in writing, either in person or through a representative, information and arguments in connection contesting the proposed demotion/ de-registration.

10.2 An order for suspension or non-renewal by the Designated Authority shall afford an opportunity for a post-decisional hearing to the suspended contractor/firm, including therein:

- (i) The fact that suspension has been ordered forthwith;
- (ii) Of the reasons for suspension or non-renewal relied upon under paragraph 7 read with paragraph 8 of these Procedures;
- (iii) Stating the period of suspension or non-renewal with proposed effective end dates;
- (iv) Advising that suspension or non-renewal is effective only in respect of state agencies;
- (v) That, within fifteen days of receipt of the notice, the entity may submit in writing, either in person or through a representative, information and arguments in connection contesting the suspension or non-renewal.

11. Final Orders for Demotion/ De-Registration

[Draft/June 25, 2018]

11.1 If the Designated Authority decides to issue a final order of demotion or de-registration, whether after the issue of an initial order of suspension or non-renewal or otherwise after issue of notice of proposed demotion or de-registration, the contractor/firm concerned shall expeditiously be given notice of such final order:

- (i) Referring to the notice(s) of the order of suspension or non-renewal, if any, and notice of proposed demotion or de-registration;
- (ii) Specifying the reasons for demotion or de-registration; and
- (iii) Stating the period of demotion or de-registration, including effective start and end dates.

11.2 If pursuant to the notice of demotion or de-registration, final orders of demotion or de-registration are not imposed, the Designated Authority shall promptly notify the contractor/firm by speed post or by registered post (acknowledgement due), in addition to the manner of publication specified under these Procedures.

11.3 Upon completion of the period of de-registration or demotion, a de-registered contractor/firm that has been de-registered or demoted, as well as a contractor/firm whose registration has not been renewed under these Procedures shall need to make a fresh application of enlistment or empanelment as a registered contractor/firm under applicable rules and procedure for registration of contractors/firms.

12. Period of Demotion, De-Registration, Suspension and Non-Renewal

12.1 Demotion and de-registration shall be for a period commensurate with the seriousness of the reason(s), but not less than two years and not more than ten years in any case, including subsequent extensions of demotion or de-registration orders, if any:

Provided that in case the period of demotion for an entity is less than the remaining period of registration, the order of demotion shall have the effect of restricting the renewal of registration or re-registration upon completion of registration to the demoted class for the balance period of demotion;

12.2 The period of suspension shall not exceed one year from the date of issue of the orders for suspension.

12.3 If suspension precedes a demotion or de-registration, the suspension period shall be included in determining the total demotion or de-registration period.

12.4 The Designated Authority may extend the demotion, non-renewal or de-registration for an additional period, within the cumulative maximum permissible period of ten years, if it determines that an extension is necessary to protect government or public interest. However, demotion, non-renewal or de-registration may not be extended solely on the basis of the facts and circumstances upon which the initial orders were issued. If demotion, non-renewal or de-registration for an additional period is considered necessary, the procedure prescribed under paragraph 10 of these Procedures shall be followed for such extension.

[Draft/June 25, 2014]

12.5 The Appellate Authority may reduce the period of demotion, non-renewal, suspension or de-registration, at the affected contractor/firm's request, supported by documentation, if it is satisfied upon examination of all facts and circumstances of the case, including all of the following:

- (i) That such reduction shall be in government or public interest;
- (ii) That such reduction shall be appropriate for reasons such as newly discovered material evidence, and/or reversal of the facts, circumstances, enquiry, investigation, conviction or judgment, if any, upon which the original debarment or suspension was based; and
- (iii) That the contractor/firm, subsequent to demotion, non-renewal, de-registration or suspension, has put in place sufficient remedial measures, including compliance mechanisms, effective standards of conduct and other internal control systems that are relevant to facts and circumstances of the case.

12.6 Except in cases falling under paragraph 12.5(ii) above, reconsideration requests shall not be entertained prior to two years from the date of demotion, suspension, non-renewal or de-registration.

13. Affiliates and Anti-Circumvention

13.1 Demotion, non-renewal, de-registration and suspension shall always, by implication, extend to "affiliates" of a demoted or non-renewed or de-registered or suspended contractor/firm.

13.2 The demoted, non-renewed, de-registered or suspended contractor/firm and another entity to which such orders can extend shall be presumed to be "affiliates" for the purpose of these Procedures if:

- (i) If either one controls, or has the power to control the other; or
- (ii) A third party controls, or has the power to control both.

13.3 Indices of control include, but are not limited to, interlocking management or ownership, identity of interests amongst employees, owners or members, or shared facilities.

13.4 Particular care needs to be taken by procuring officers to ensure that a demoted or non-renewed or de-registered or suspended contractor/firm does not transact contracts or agreements under a different name or division, either through a transfer of assets of a demoted, non-renewed, de-registered, or suspended contractor/firm to another legal entity or otherwise.

14. Consolidated List of Demoted, Non-renewed, De-Registered and Suspended Contractors/Firms

14.1 A nodal officer specifically notified by the Government shall ensure that an updated list of demoted, non-renewed, de-registered and suspended entities, as informed by the Designated Authority, is always maintained on the official website of the Unified Registration System.

14.2 In particular, such nodal officer shall be responsible for:

[Draft/June 25, 2014]

- (i) Compiling and maintaining a current, consolidated and searchable list of all demoted, non-renewed, de-registered or suspended entities (including their known affiliates), complete in all respects such as scope, period and coverage of orders of demotion, de-registration, non-renewal or suspension; and
- (ii) Providing within such list the name and telephone number of Designated Authorities and Appellate Authority; and
- (iii) Providing within such list the official contact person responsible for its maintenance and distribution.


15. Responsibilities of Procuring Officials

15.1 Procuring officials of the state agencies of the Government shall ensure full compliance with the provisions of these Procedures, and shall be responsible, in particular, for the following:

- (i) That appropriate procedures are established to implement the substantive and procedural aspects of these Procedures;
- (ii) That their actions are coordinated with internal and external agencies and offices so as to enable receipt of prompt information relevant to potential breaches of entities' obligations that may require cases to be placed before Designated Authorities for their consideration for suspension, non-renewal, demotion or de-registration; and
- (iii) That ineligibility of demoted, non-renewed, de-registered or suspended entities is given effect to forthwith in accordance with the terms of the orders for demotion, non-renewal, de-registration or suspension, especially through a careful watch on the consolidated list as provided for under Rule 14 above.

16. Clarifications and Amendments

16.1 All clarifications and amendments to these Procedures shall be issued under the authority of the General Administration Department.


उप सचिव
उ.ग. शासन, लोक निर्माण विभाग
पानडारा (उ.ग.)

ANNEXURE N: APPROVED MAKES

This is the exhaustive list for the Civil, Electrical and Eletromechanical Items required for the works of Sewage Treatment Plants and allied works, only the items required for this specific project shall be referred from this list

CIVIL ITEMS

SL. NO.	MATERIAL, WORK	SUPPLIER, MANUFACTURER, VENDOR, AGENCY
1	Cement (OPC) 43 Grade / 53 Grade	As per IS
2	Cement (SRC)	As per IS
3	Cement (White)	As per IS
4	Cement (PPC)	As per IS
5	Bricks	Ordinary Burnt Clay Bricks of any brand conforming to IS: 1877 with minimum Crushing Strength of 40 Kg/cm ² and Water Absorption Ratio restricted to 25% for Bricks used in Panel Walls and 20% for Bricks used in Load Bearing Walls/Fly ash bricks as per IS
6	Mild, Tor Steel, CRS Steel	As per IS
7	Structural Steel	As per IS
8	Screws	GKW Nattlefold, Oxidised
9	Dash Bolt Fasteners	Fischer, Hilti
10	Ceramic Tiles	Spartex, Kajaria, Nitco, Johnsons, Somany, Pedder
11	Glazed Tiles (1st Quality)	H & R Johnson, Kajaria, Spartex, Naveen, Rommano, SomaniPilkingtm, ECL
12	Granite Tiles	Bell Granito, Naveen, H & R Johnson, RAK Ceramics – Dubai, Restile Ceramic
13	Glass Mosaic Tiles	Bisazza India, Pino Bisazza
14	Paver Blocks	Conwood Prefab, Hindustan Prefab or equivalent
15	Adhesives	Pidilite, Fairmate, Bal Adhesive, MC Bauchemie, Cementone India, Fosrock, Sunanda Speciality Coating
16	MS Door Frames & Shutters (With Galvanising)	Agew, Ferroteel, Sen Harvic, Weldoors, YashashriPolyextrusion
17	Door Shutters (Wooden)	Kutty, Anchor, Classic, Goyal, Timber Techniks, Sejpai Doors, Wood Designs, YashashriPolyextrusion, Anand Wood Crafts, Northern Doors
18	Door Shutters (FRP) & Plastic	Everest fibre glass Industries, Unipals India, Advance Marketing, YashashriPolyextrusion, Sintex
19	Hardware (Handles, Hinges, Mortice Locks)	Shalimar, Sobeet, Vijayan, Navbharat Brass Works, CIEF, AmarbhoyDossaji
20	Aluminium Windows	Aluminite, Aluplex, Almech, Indrajit Associates, Aldoweit, Crystal Corporation, Indal, Jindal, Ajit India

SL. NO.	MATERIAL, WORK	SUPPLIER, MANUFACTURER, VENDOR, AGENCY
21	Night Latch	Godrej, Sobeet, Vijayan, Yale
22	Paints	
	a. Internal	Snowcem, Asian, ICI, British Paints, Shalimar, Nerolac, Burger, Jenson & Nicholson
	b. External	NITCO Paints, Killick Nixon, Hindustan Colours and Chemicals, Supreme, Shalimar, Burger, Jenson & Nicholson, Super Snowcem.
23	Synthetic Plaster Finish	Nitco, Accro, Damani Dye Stuff, Supreme, Renova
24	Waterproofing Works	India Waterproofing Co., Likproof India, Overseas Waterproofing Co.
25	Waterproofing Compound	Accoproof, Pediproof, CICO, Impermo, Vamiplas 302, Vamiproof 101 & 102
26	Glazing	Float Glass of Modi ,Asahi , Saint Gobain
27	M.S. Rolling Shutters (With Galvanising)	Swastik, Standard, Shudwar
28	Aluminium Grills	DECO, Alumnigrille
29	Aluminium Joinery	Crystel Corporation, Alumlite, Aluplex, Alm
30	Anti-stripping Agent	Yuva, BE 100
31	Chemical Admixtures and Compounds for RCC and Mortar	MC Bauchemie, Krishna Conchem Products, Sunanda Chemicals, Pidilite, Fairmate, Fosroc, Sika Qualcrete
32	Anti-Corrosive Paint	Krishna Conchem Products, CICO Chemisol Adhesive, Shalimar, Burger
33	Sanitary ware	Hindustan, Parry, Cera, John Gas, Jotisum
34	Flushing Cistern	Flush Line or equivalent Approved ISI Manufacturers
35	Sanitary Fittings and Fixtures	Mark, Jaguar, Gem, Dripless, Kingston, Essco, Metro, EssEss
36	Lead for Lead Joints	Approved ISI Manufacturers
37	Rubber Ring	Approved ISI Manufacturers
38	Stainless Steel Sink	Nirali, Tuff, Diamond, Kingston, Neel Kamal
39	SW Gully Trap and Stone ware Pipes	Perfect, Sonya, Girco, Elecon, Rajura
40	Cast Iron Covers	RIFCO, Mohit Steel, Ashok Iron Works, JayswalNeco
41	Piling Works	Kvaerner, Afcons, Michigan Engineering, Larsen & Toubro, DBM Geotechnics, Meher Foundations, Safe Foundations, Simplex
42	Fire-fighting Works	Monsher, Mather & Platt, Bells Controls, Nitin Fire, Rahul Fire
43	Elevators	Otis, Mitsubishi, Kone, Bharat Bijlee, Schindler
44	Sodium Nitrate	Devica Chemicals or equivalent Approved ISI Manufacturers
45	Sodium Silicate	DevicaChemicals or equivalent Approved ISI

SL. NO.	MATERIAL, WORK	SUPPLIER, MANUFACTURER, VENDOR, AGENCY
		Manufacturers
46	Marine Plywood	Anchor, Kitply
47	Neeru	Swastic Instant Neeru or equivalent Approved ISI Manufacturers
48	Lime for Whitewash	As directed by Engineer-in-charge
49	Tarfelt	Shalimar, Lloyds
50	Lightening Conductor	Approved ISI Manufacturers
51	Teak Wood	C.P. Teakwood, First Quality with following Tolerances. Sap Wood to the extent of 25% Wrap to the extent of 10 mm in 3m Knots/meter
52	S.W. Pipes	Burn & Co., Perfect Potteries, Navroji Vakil, Kashmirira
53	CI Soil Pipes & Fittings as per IS 3989/84	NECO, CENTRI
54	G.I. Pipes Class "C"	TATA, Zenith, Jindal, Suryaprakash
55	G.I. Fittings	Approved ISI Manufacturers
56	Gate Valve / Non Return Valve	Sant, Zoloto, Leader
57	S.W. Pipes	Rajura or other Approved ISI Manufacturers
58	Flush Valve	Jaguar ,EssEss
59	Water Meter	Capstan or other Approved ISI Manufacturers
60	Screens (J-Type)	Adroit or Equivalent manufacturers.

ELECTRICAL ITEMS

SL. NO.	MATERIAL, WORK	SUPPLIER, MANUFACTURER, VENDOR, AGENCY
1	S.F.U., Breakers	Lauritz Knudsen, Siemens, GE, Schneider, Mitsubishi, ABB
2	Distribution Boards	MDS, Siemens, Schneider, Havells, Lauritz Knudsen
3	Indicating Digital Meters	AE, Meco, Lauritz Knudsen, Konzerv
4	Crimping Lugs, Glands of Double Compression Type	Dowells, Jainson, Lotus, Braco
5	Jelly filled Telephone Cables	Finolex, Universal, RPG
6	Tag Block with Boxes	Krone
7	Rossets	ITL, Tele Connectors India
8	MCB, RCCB	MDS, Siemens, Schneider, Lauritz Knudsen
9	Main L.T Panels, PDB, LDB	Incorporating L&T, Siemens, GEC, Schneider, Mitsubishi, ABB Switchgear Components,
10	Switches and Sockets	MDS (Leagrand), Schneider, Anchor, Cona, ROMA, Lauritz Knudsen

SL. NO.	MATERIAL, WORK	SUPPLIER, MANUFACTURER, VENDOR, AGENCY
11	PVC Copper Wires (FRLS Grade)	Sundeep, Finolex, RR Kabel, LAPP, Polycab
12	Motors	Siemens, ABB, Bharat Bijlee, Crompton, Kirloskar, Texmo, NGEF, Alstom
13	Cable Glands and Lugs	Dowell, Lotus, A.G. Electricals, Siemens
14	Cat-6 Lan Wire	Lucent, LAPP, AMP
15	PVC Pipe	Diamond, Precision (PPI), Asian
16	Lighting Fixtures	Wipro, Phillips, Clipsal, Crompton, Bajaj, K-Lite, Keselec Shredder, Havells
17	Fans & Air-Circulators	Crompton, Bajaj, Almonard, Usha, Cinni, Rallies, Orient, Khaitan
18	Distribution Transformer 11 KV, 433V	Crompton, Kirloskar, Emco, BHEL, Bharat Bijlee, Voltas, Andrew Xule, Pactil, NGEF, Voltamp, ABB
19	11 KV VCB Breaker & Panel	ABB, Schneider, Siemens, Alstom, Kirloskar, Crompton, Lauritz Knudsen
20	Relays	ABB, Siemens, Alstom (AREVA), Schneider, Lauritz Knudsen
21	11 KV SF6, Insulated 3-Panel, 4-Panel extensible type RMU	Crompton, ABB, Siemens, Alstom, Schneider, Lauritz Knudsen
22	ACB 8-Way, Feeder Pillar 6-Way, 4 Way & Mini Pillars	Popular Brass Metal Works, ABAK, Manish, Fitwell, Super Panel, Control & Switchgear, Chavare Engineering Pvt. Ltd., Lauritz Knudsen
23	Fuse Base	Siemens, Lauritz Knudsen, Popular Brass Metal
24	Control Cables	LAPP, Finolex, RR Kabels, Havells, Polycab
25	Batteries	Amar Raja, HBL Knife, Exide, Emco, Fuji
26	11 KV End Termination & Straight through Joint	Raychem, Xicon, Danson
27	Measuring Instruments	MECO, IMP, KEW, Rishiline (L&T), Conzerv, Lauritz Knudsen
28	PVC Insulated Cable for Working Voltage up to 1.1 KV as per IS 694 1990	Finolex, Asian, Polycab, Reliance, Fixolite, Torrent, Universal, Fortgloster, Vardhaman, Fixolite, Macro, CCI
29	XLPE – LT Cables as per IS7098 Part – I 1988	CCI, Asian, Finolex, Torrent, Macro, Fixolite, KEI, Polycab with Nitrogen Corring, Gloster
30	XLPE – HT Cables as per IS7098 Part II – 1985	CCI, Asian, Finolex, Torrent, Macro, Fixolite, Polycab, Vardhaman
31	PVC Insulated (HD) Cable up to 1.1 KV as per IS1554 Part I – 1988	Torrent, Macro, Vardhaman, Finolex, CCI, Asian, Polycab
32	Air Conditioners	Samsung, LG, Voltas, Carrier, Mitsubishi, Lloyd, Daikin
33	Lamps HPMV, HPSV Metal Halide Lamps & Accessories	Vallient, Fixolite, Bajaj, Philips
34	MCB, ELCB, RCCB, HRC	Indo Asian, MDS, Datar, Lauritz Knudsen
35	T. W. Boards & Blocks	Double Folding Polished Board shall be in one Piece.

SL. NO.	MATERIAL, WORK	SUPPLIER, MANUFACTURER, VENDOR, AGENCY
		Block up to 8" x 10" shall be in two Pieces
36	T. Switch S.P. or 2-Way S.A. to I.S.A.	Khosla, Keycee, GNE, Modern, Kalki
37	Three Pin Socket 5A to 15A	Khosla, Keycee, Standard, Ellora, Lauritz Knudsen
38	Ceiling Rose	Khosla, Keycee, Ellora, Oshan, Modern
39	Ring Main Unit, HT, Switch and Fuse Unit	MEI, South Andrew Yule or Department approved, Lauritz Knudsen
40	C.T. / P.T.	Department approved
44	Auto Transformer Starter	MEI, Kilburn, JMP, Siemens, Andrew Yule, GEC, KEC
42	Trivector Meter	Department approved
43	Measuring Instrument	IMP, AE, UE, MECO, FE, Rishiline (L&T), Conzerv
44	Current Transformer	AE, Gilbert & Maxwell, IMP, Siemens, SEGC (C.S.), VM Electric or Department approved
45	PVC Conduits, PVC Pipes, HDPE Pipes	Garware, Finolex, Shakti, Circlearc, Popular, Prince
46	GOD Switches and Dropout Fuse Outfit	Kiran, Pactil, Atas or Department approved
47	Chain Pulley Block	Elephants, Herculas, WMI
48	Lugs	Dowels, Lotus, AG Electricals
49	Motor Protection Relays	Universal, Thresold, E.E., Lauritz Knudsen, Minilac, Siemens, C&S. Telemechanique, Indo-Asian
50	Feeder Pillar, Mini Pillar	Popular Brass Metal Works, Anil Electrical Industries or Department approved
51	MCB & MCB, D.B.	MDS, Siemens, EE, Telemechanique, Havells, Indo-Asian, Standard, Versa Trip, Helcon, Safeline, Datar, Schneider, Mitsubishi, Lauritz Knudsen
52	ELCB	Datar, MDS, Standard, GE, Telemechanique, Havells, Safex, HH-ELCON, Naptune, Gutts, Indo-Asian, Siemens, GE, Schneider, Lauritz Knudsen
53	PVC Wires, Copper Aluminium Conductor, Flexible Cables	Philco, Phyroflux, Paragon, Polyplast, V-Plast, Apex, Silvex, Delta, Pagoda, Spacecab, HMT, Ralicab, Finolex
54	HRC Fuses	Lauritz Knudsen, Indo Asian, Siemens, Havells, ARCON, Standard, Samrat
55	Fuse Switches, SW Fuse	L&T, Siemens, Crompton, Telemechanique, Indo-Asian, Havells, HH-ELCON, Standard, KEW, Kalki, Sentinel, Stenly, Samrat, Schneider
56	Switches, Sockets	Kalki, CPL, Anchor, Precision, MK, HME, EEW, Lauritz Knudsen
57	Cable Glands	HME, EEW, Conzerv & Department approved,
58	HC Fuse Distribution Board	CPL, EE, EssEss, Stenly, KEW, Kalki, Standard
59	Air, Oil Circuit Breakers (HT,LT)	Kilburn, Easun, MEI, Jyoti, Andrew Yule, Siemens, Lauritz Knudsen, GEC, Soutern, BHEL, Telemechanique, Crompton & Department approved

SL. NO.	MATERIAL, WORK	SUPPLIER, MANUFACTURER, VENDOR, AGENCY
60	Energy Meters	Jaipur or Department approved
61	Capacitors	GEC, KhatauJunkar, Crompton, L&T, Momaya, Madhav, Atlanta, Prabhodhan, Maladay, Asian, Schneider, EPCOS, (S+M) or Department approved
62	Steel Tubular Poles	Indian Electric Poles, Bombay Tubes, Nityanand, Rajan Tubes or approved ISI Manufacturers
63	GI Pipes, Poles	Zenith, Tata, Bharat, Jindal, Suryaprakash
64	Terminal Box, Bracket, Junction Box, Control Pillar	ELM, United, DVK or Department approved
65	Street Lighting Luminaries	Bajaj, Crompton, Philips, Genelec, Keselac, ELM, Mysore, Wipro, GE-Apar, Canara, Glolite, Indo-Asian, Havells
66	Chokes, Ignitors	Bajaj, Crompton, Philips, Genlec, Keselac, GE-Apar, Glolite, ECE, Indo-Asian
67	Power Contactors	Lauritz Knudsen, Siemens, Bharat Cutter & Hammer, Telemecanique, HH-ELCON, Kirloskar, Crompton, Mitsubishi, ABB, Schneider
68	Lamps	Bajaj, Crompton, Philips, Cema, HMT, Electron, Surya, Mysore, Sylvania-Laxman, Solarson, ECE, Indo-Asian, Havells
69	Rotary Selector Switches	Lauritz Knudsen, Siemens, Kaycee, EE, BISOONS (ELM), Schneider
70	Post Top Lantern	Philips, Crompton, Glolite, Bajaj, Parimal, Tulip, Keselec, ECE, Genlec, ELM, Wipro, Indo-Asian
71	Street Light Controller, Timer	L&T, (TSQ 100) 24 hrs. Dial, ELM, GIC
72	ASCR Conductors	Department approved
73	Alternators	Kirloskar, Jyoti, NGEF, AVK-SEGC, KEL, Caterpillar, Stamford, CG Newage
74	Diesel Engines	Kirloskar, Greaves Cotton, Cummins, Ashok Leyland, Cater Piller, Perkins, Volvo, Sterling Wilson, Mahendra&MahendraPowerica
75	Cable Jointing Kit	Raychem, Xicon, Benson, Mahindra (Push on) M Seal
76	Pole Paint	Jenson & Nicholson, Asian (S+M), Nerolac
77	Fluorescent Fixtures	Bajaj, Crompton, Philips, GEC, Genelec, Mysore, Wipro, Glolite, Litwell, Prestolite, Indo-Asian, Havells
78	Analyzers	Forbes Marshall, Endress& Hauser, Yokogawa
79	Level Switch, Level Indicator	Levcon, Revathi, Fitzer. S.B. Electro-Mechanical. Endress & Hauser, P&F, Fisher Rosemount, Forbes Marshall
80	Flow Meter – Magnetic, Ultrasonic	Endress & Hauser, Fisher Rosemount, Forbes Marshall, ABB
81	Soft Starters	Allen Bradly, Schneider, Siemens, Lauritz Knudsen

SL. NO.	MATERIAL, WORK	SUPPLIER, MANUFACTURER, VENDOR, AGENCY
82	Motors	Bharat Bijlee, Crompton, ABB, Siemens, Kirloskar, NGEF
83	Electrical Panels	Interlec, Positronocs, Jay Switchgear, Chavare Engineering, L&T, Siemens, ABB, Schneider, Crompton, Spark Electro

ELETROMECHANICAL & INSTRUMENTATION WORK

SL. NO.	MATERIAL, WORK	SUPPLIER, MANUFACTURER, VENDOR, AGENCY
1	Mechanical Screens– Coarse & Fine	Jash, Johnson, Huber, Adroit, Triveni, Apollo Screens
2	Detritus Mechanism	Voltas, Emco, Geomiller, Shivpad, Adroit, Apollo Screens
3	Pumps Horizontal Centrifugal	Kirloskar, Kishor, Johnson, KSB, Grundfos, Worthington, Mather & Platt, Jyoti, Homa
4	Pumps Submersible	Su Motors, Kishor, Kirloskar, KSB, Grundfos, Homa, Jyoti, Dharani, Flowmore, ABS Aqua, Wilo, Jasco
5	Pumps Vertical Turbine	Kirloskar Brothers Limited, WPIL, Mather & Platt, Jyoti, Homa, Flowmore
6	Pumps Screw (Positive Displace / Progressive Cavity Type)	Roto, Ramo, Flosys, Alfa Helical, Tushaco, Netzsch
7	Pumps Chemical Dosing (Positive Displacement Type)	Milton Roy, Swellore, Shapotoools, Prominent, Sandur, Roto
8	Air Blowers	Kay International, Swam, Everest, KPT, Jash -invent,
9	Air Compressor	Ingersoll Rand, Elgi
10	Fine Bubble Membrane Diffusers	EDI, OTT, Rehau, SSI
11	Chlorinators	Metito, Chloro Control, Industrial Devices, Pennwalt
12	Submersible Mixers	ABS, Grundfos, ATE, Grundfos, WILO, Jash-Invent, Adroit
13	Agitators	Dorr-Oliver, Voltas, Emco, KCP, Batliboi, Shivpad, Fibre & Fibre, Standard Engineers, Helx, Triveni, Adroit, Apollo Screens
14	Centrifuges	Alfa Laval, Hiller, Humbolt, Pennwalt
15	Belt Filter press	Dewa, Triveni, Andritch, Siemens, Auric, EMO
16	Screw press	Adroit or Equivalent approved manufacturers
17	Chain Pulley Block, Electrical Hoist, JIB Crane	Elephant, Hercules, WMI, Indef, Brady & Morris
18	Pipes	
	GI Pipes	Tata, Zenith, Indus tubes, Swastic, Jindal

SL. NO.	MATERIAL, WORK	SUPPLIER, MANUFACTURER, VENDOR, AGENCY
	SS Pipes	As per IS
	CI Pipes	As per IS
	DI Pipes	As per IS
	PVC Pipes	As per IS
	UPVC Pipes	As per IS
	HDPE Pipes	As per IS
	RCC Pipes	As per IS
19	Sluice Gate	Voltas, Emco, KCP, Jash, Yeshwant, IVC, KABIRDHAMa, Adroit
20	Valves Butterfly, Non-Return, Knife Gate, Gate, Ball, Globe, Diaphragm, Plug	Audco, BDK, Crane Process Control, Fouress, Intervolve, IVC, Jash, Kirloskar, Vaas, H Sarker
21	MCC	Interlec, Positronocs, Jay Switchgear, Chavare Engineering, L&T, Siemens, ABB, Schneider, Crompton, Spark Electro, Mitsubishi
22	Variable Frequency Drive (VFDs)	ABB, Nord, Mitsubishi, Siemens, Rockwell, Schneider, Lauritz Knudsen
23	PLC	Allen Bradley, Mitsubishi, GE, Siemens, Messung, Honeywell, Schneider, ABB, Lauritz Knudsen
24	SCADA	Only of the same make of PLC Controller
25	Pressure Gauges	H.Guru, Gluck
26	Level Switches, Level Transmitters	Levcon, Revathi, Fitzer. S.B. Electro-Mechanical, Endress & Hauser, P&F, Fisher Rosemount, Forbes Marshall
27	PH / ORP Meters, Flow Meters, DO Meters etc.	Endress & Hauser, Fisher Rosemount, Forbes Marshall, Yokogawa
28	TOC, Turbidity, MLSS & other Analysers	Hach, ABB, GE, Yukogawa, Fisher Rosemount, Forbes Marshall
29	DISC FILTER	Yucheon International, Siemens, Huber, Adroit, Jash-Invento
30	Ozonator	KAUFMANN/ SEWEC / ORAIPL/ TOSHIBA / MITSUBISHI
31	BOD, COD Analyzer	Krohne Marshall or Equivalent Manufacturers
32	Oxystar Aerators	SBS-FUCHS

Note:

1. During Execution, if it is observed that any make is out of market, then equivalent make approved by Engineer in Charge shall be used.
2. This is elaborative list of all items required in the works of Sewage Treatment Plant (STP) based on all technologies.

Performance Bank Guarantee for Construction Works

Option 1: (Demand Guarantee)

[Insert Guarantor letterhead or SWIFT identifier code]

Beneficiary:*[Insert name and Address of the Employer]*

Date:*[Insert date of issue]*

PERFORMANCE GUARANTEE No.:*[Insert guarantee reference number]*

Guarantor: *[Insert name and address of place of issue, unless indicated in the letterhead]*

We have been informed that *[insert name of Contractor, (hereinafter called "the Applicant")]* has entered into Contract No. *[insert reference number of the contract]* dated *[insert date]* with the Beneficiary, for the execution of *[insert name of the contract and brief description of the Works]* (hereinafter called "the Contract").

Furthermore, we understand that, according to the conditions of the Contract, a performance guarantee is required.

At the request of the Applicant, we as Guarantor, hereby irrevocably undertake to pay the Beneficiary any sum or sums not exceeding in total an amount of *[insert amount in figures]* (*[insert amount in words]*),¹ such sum being payable in the types and proportions of currencies in which the Contract Price is payable, upon receipt by us of the Beneficiary's complying demand supported by the Beneficiary's statement, whether in the demand itself or in a separate signed document accompanying or identifying the demand, stating that the Applicant is in breach of its obligation(s) under the Contract, without the Beneficiary needing to prove or to show grounds for its demand or the sum specified therein.

This guarantee shall be valid for 3 months after successful completion of defect liability period.

This guarantee is subject to the Uniform Rules for Demand Guarantees (URDG) 2010 Revision, ICC Publication No. 758, except that the supporting statement under Article 15(a) is hereby excluded.

[signature(s)]

[Note: All italicized text (including footnotes) is for use in preparing this form and shall be deleted from the final product.]

¹ *The Guarantor shall insert an amount representing the percentage of the Accepted Contract Amount specified in the Letter of Acceptance, less provisional sums, if any, and denominated either in the currency(cies) of the Contract or a freely convertible currency acceptable to the Beneficiary.*

Performance Bank Guarantee for Operation & Maintenance Works

Option 1: (Demand Guarantee)

[Insert Guarantor letterhead or SWIFT identifier code]

Beneficiary: *[Insert name and Address of the Employer]*

Date: *[Insert date of issue]*

PERFORMANCE GUARANTEE No.: *[Insert guarantee reference number]*

Guarantor: *[Insert name and address of place of issue, unless indicated in the letterhead]*

We have been informed that *[insert name of Contractor]*, (hereinafter called "the Applicant") has entered into Contract No. *[insert reference number of the contract]* dated *[insert date]* with the Beneficiary, for the execution of *[insert name of the contract and brief description of the Works]* (hereinafter called "the Contract").

Furthermore, we understand that, according to the conditions of the Contract, a performance guarantee is required.

At the request of the Applicant, we as Guarantor, hereby irrevocably undertake to pay the Beneficiary any sum or sums not exceeding in total an amount of *[insert amount in figures]* (*[insert amount in words]*),¹ such sum being payable in the types and proportions of currencies in which the Contract Price is payable, upon receipt by us of the Beneficiary's complying demand supported by the Beneficiary's statement, whether in the demand itself or in a separate signed document accompanying or identifying the demand, stating that the Applicant is in breach of its obligation(s) under the Contract, without the Beneficiary needing to prove or to show grounds for its demand or the sum specified therein.

This guarantee shall be valid for successful completion of 5 years O&M period plus 3 months.

This guarantee is subject to the Uniform Rules for Demand Guarantees (URDG) 2010 Revision, ICC Publication No. 758, except that the supporting statement under Article 15(a) is hereby excluded.

[signature(s)]

[Note: All italicized text (including footnotes) is for use in preparing this form and shall be deleted from the final product]

LAST PAGE