IIT BOMBAY
RESEARCH PARK
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IIT BOMBAY RESEARCH PARK FOUNDATION

6B, Main Building, IITB Powai

Mumbai -400076

Tender Document

for

Execution, supply, installation and commissioning

of Effluent Treatment Plant of 57 KLD

at IIT Bombay Research Park

2025 - 2026

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1. Tender Notice

The IIT Bombay Research Park Foundation (hereinafter referred to as IITBRPF) invites proposals from qualified and experienced contractors (ETP COMPANY/contractor) for the execution, supply, installation, and commissioning of an Effluent Treatment Plant (ETP) at the state-of-the-art Research Park building. The detailed design for the ETP has already been finalized by IITBRPF, and this tender specifically pertains to the implementation and execution of the approved design.

The Research Park spans 14 floors, comprising laboratory spaces, office areas, and common facilities. Given the effluent generated by laboratory operations, the ETP is a critical infrastructure to ensure compliance with Pollution Control Board (PCB) standards and the Research Park's commitment to environmental sustainability.

This project is of utmost importance for maintaining the Research Park's operational and environmental standards. IITBRPF seeks experienced contractors with a proven track record in executing ETP projects, particularly those involving laboratory environments. The selected contractor must demonstrate expertise in delivering projects with precision, adherence to quality standards, and timely completion.

Sr.no.	Particulars	Details
1	Tender No.	IITBRPF/Infra/Tender/03/25-26
2	Tender Date	**4-09-2025**
3	Designation and Address of the RFP Inviting Authority	To, The PIC, IITB Research Park Foundation, 11th Floor, Research Park Building, IIT Bombay campus, Powai, Mumbai - 400076
4	Nature of work	Execution, supply, installation and commissioning of Effluent Treatment Plant of 57 KLD at IIT Bombay Research Park
5	Supply/work to be carried out at	IITB Research Park Building
7	*Earnest Money Deposit (EMD)	5 lakhs
8	Pre-Bid Meeting & Site visit	12-09-2025
9	Last Date and Time for Submissions of tender	3-10-2025, 11 AM
10	Date and Time of Opening of the technical bid	3-10-2025
11	Date and Time of Opening of the Commercial bid	6-10-2025

2. SUBMISSION OF BIDS

Both the bids (Technical and Financial) duly signed Authorized Signatory should be submitted in two separate sealed envelopes as described below:
All details with the relevant information/documents/acceptance of all terms and conditions strictly as described in this tender document will have to be submitted.

A. Envelope 1: Containing Technical Bid duly completed in all respects all relevant documents and the envelope should be superscribed in bold letters with the statements **'Technical Bid for Execution, supply, installation and commissioning of Effluent Treatment Plant of 57 KLD at IIT Bombay Research Park'**

B. **Envelope 2**: Containing the Financial Bid, and the envelope should be superscribed in bold letters with the statements **'Financial Bid for Execution, supply, installation and commissioning of Effluent Treatment Plant of 57 KLD at IIT Bombay Research Park'**

Finally, the above-mentioned envelopes should be kept in a single sealed cover/envelop and the envelope super-scribed in bold letters with the statements – **Execution, supply, installation and commissioning of Effluent Treatment Plant of 57 KLD at IIT Bombay Research Park'** and to be submitted at:

Professor-In-Charge,
IITB Research Park Foundation,
11th Floor, Research Park Building,
IIT Bombay campus, Powai, Mumbai - 400076

3. Eligibility Criteria

Bidders should submit copies of the following documents in the technical bid (along with other supporting documents mentioned under Technical Evaluation Criteria in this document) for the IITBRPF ETP work contract for the Research Park building.

a) Experience of having Successfully completed similar works during the last 7 years ending previous day of the date of submission of tenders month of as per b and c'.

b) Copies of three similar completed work orders for projects with a one-year period not less than 5 crores, along with work completion certificates and performance certificates (in FORM B format), and copies of three ongoing works of similar scope and scale with details such as the date of start, stipulated and actual completion date, the value of work etc.

c) A copy of one single work order for any completed work, with work completion certificate, performance certificate, and costing not less than 5 crores in a Government, Semi-Government, or Public Undertaking organization or large private organization.

d) Copies of pan card & Income tax return statement of last three years 2022-23, 2023-24 & 2024-25.

e) The ETP COMPANY should have an average annual turnover of Rs. 50 crores during the last three financial years ending 31/03/2025. This should be certified by a chartered accountant and should not have incurred any loss in more than two years. The format of submission as per FORM A in this document.

f) Submit copies of work orders and work completion certificates as mentioned in Sr. No. (b) & (c). Failure to submit these documents will result in the bid capacity not being calculated, and the technical bid will be summarily rejected without opening the financial bid.

g) All bidders should submit an EMD amount **Rs. 5 Lakhs** in the form of demand draft to the IITB Research Park on or before 4:00 PM, 1st October,2025 in favor of **IITB Research Park Foundation**. Also bidders have to send a scanned copy of the same D.D. along with technical documents. If EMD is not received from any bidder as detailed above, the tender of that bidder will be liable for rejection. EMD without interest of all unsuccessful bidders will be returned after the completion of tender process and award of contract.

h) Bidders should submit the undertaking certificate as specified in Annexure 1 in this document.

i) Litigation history of the agency is required to be submitted (on stamp paper) along with the application. A tender would not be awarded if any inquiry proceeding related to the criminal case. Also if the contract is terminated in the last 07 years due to noncompliance with the statutory provision, they cannot participate in this tender and will be summarily rejected.

j) Proof of Constitution: An affidavit in case of Sole Proprietorship, Partnership Deed for partnerships, and Articles of Association for Private/Public Limited Companies must be submitted.

k) The bidders should submit GST annual turnover certificates for the last three financial years(form F) .

l) Bidders are required to submit a valid MSME certificate and income tax exemption certificate(if applicable)

Evaluation of applications for eligibility: -

- The applications will be evaluated for conformity to the eligibility criteria under Sr. No. a, b, c, d, e, f, g, h, i, j as per the prescribed format, along with a copy of relevant documents and certificates. All the documents should be signed and sealed by the authorised signatory.
- Only those applications found eligible as per the criteria above will be considered for the technical evaluation, as outlined in the next stage.

Note:

- The available bid capacity will be calculated based on the above information received from the agencies and the agencies that have sufficient bid capacity, ie. bid capacity of more than 5 crores will only be considered. The tender of agencies having less bid capacity will be rejected.
- If required, contractors/Agencies/proprietors should submit the power of Attorney to their representative to deal on any matter with any officer or Staff of IITBRPF on behalf of them or their agency.
- Tender will be rejected if white ink is used in tender documents.
- ETP COMPANY who wishes to attend pre-bid meeting shall intimate IITBRPF with a number of visitors attending it with their names at infra@iitbresearchpark.com in advance on or before.
- Tenderers should send by email all their queries, latest by 15 hours one day before to the scheduled pre- bid meeting date to infra@iitbresearchpark.com
- If there are varying or conflicting provisions made in any one document forming part of the contract, the IITBRPF shall be the deciding authority with regard to the interpretation of the documents and its decision shall be final and binding on the tender.
- IITBRPF reserves its right to verify all the credentials, quality, quantity, workmanship, other required details etc. of the bidders/ ETP COMPANY with their clients along with ongoing/completed work based on-site visit and other sources before finalization and award of the work.
- IITBRPF reserves its right to reject/accept any tender forms and / or accept/reject any tender or re-invite the tenders without assigning any reason and without any reference.

4. Technical Evaluation Criteria

Quality/ schedule/ performance / compliance evaluation of completed works shall be conducted by an Evaluation committee constituted by PIC/COO/CEO, IIT Bombay Research Park. Evaluation will be based on the following performance: -

1. Firm Turnover - 20 marks.
2. Capacity of ETP projects executed - 20 marks.
3. Number of ETP Projects (> 50 KLD) - 30 marks.
4. Presentation - 30 marks.
5. Litigation History

Note: All bidders must submit relevant and verifiable supporting documents for each of the criteria to obtain scores. All the documents/reports should be signed and sealed by the authorized signatory. Failure to provide appropriate documentation may result in zero marks being awarded for that criterion.

Sr. No	Criteria	Max Marks	Remarks/Documents for submission in technical bid folder	Documents for submission in technical bid folder
01	Firm Turnover	20	a) If firm turnover > 50 Cr = 20 Marks b) else If firm turnover is more than 30 Cr but up to 50 Cr range =15 Marks C) else If firm turnover is more than 10 Cr but up to 30 Cr range = 10 Marks	a) Firm turnover is defined as the average turnover from ETP work over the last 3 Years **b) Chartered Accountant verified / audited turnover statements to be furnished as proof for the same**. Bidder shall ensure that any certificate/reports issued/attested by a practicing-chartered accountant in India and submitted in the bid shall mandatorily include the UDIN number. Certificate/reports issued/attested without UDIN number of practicing chartered accountant in India shall not be considered for evaluation.
02	Capacity of ETP projects executed	20	a) Upto 50 KLD – 5 points b) 50 KLD to 150 KLD - 15 Marks c) Above 150 KLD - 20 Marks	Client/Performance Certificates: Must specify ETP capacity (KLD), project location, scope of work, duration, and client satisfaction. 2. Work Orders/Contracts: Highlight project details, value, and capacity. 3. Completion Certificates: For completed projects, confirming capacity and adherence to specifications. 4. Progress Certificates: For ongoing projects, confirming at least 1 year of execution and capacity installed. 5. O&M Proof (if applicable): For projects with operation and maintenance

				experience. 6. Technical Specifications: Summary of project details and technologies used.
03	Number of ETP Projects of capacity more than 50 KLD.	20	a) No. of works of ETP of 50KLD capacity >= 7 Nos in the past 7 Year = 20 Marks b) No. of works of ETP of 50KLD capacity greater than 4 but lesser than 7 in the past 7 Year = 15 Marks c) No. of works of ETP of 50KLD capacity greater than or equal to 2 and lesser than or equal to 4 in the past 7 Year = 10 Marks d) No. of works of ETP of 50KLD capacity lesser than 2 in the past 7 Year - 05 Marks	**Self-attested certificates from clients indicating ETP capacity (>50 KLD) and client satisfaction.**

Sr. No	**Criteria**	**Max Marks**	**Remarks/Documents for submission in technical bid folder**	**Remarks/Documents for submission in technical bid folder**
04	Presentation	30	The presentation by the bidders need to cover the following aspects for evaluation assessment by IITBRPF. **a)**Details of ETP capacities managed for different clients supported by relevant documents. **b)** List of key professionals / technical staff who will be employed for the project with their qualification & experience. **c)** Time Lines for execution: (Capacity to complete the work as per the timelines given in tender document) **d)** Execution methodology: ● Understanding the treatment scheme. ● Description of the methodology to be	**Innovations or deviations from standard practices showcased in the presentation will be binding in the contract.** **- Description of innovative practices or technologies proposed for ETP management and their impact on efficiency.** **- Case studies or references supporting proposed innovations are highly encouraged.** 'Presentation will be evaluated by a panel appointed by IITB Research Park. Presentation needs to be given In-person and Date of Presentation will be intimated.Bidders who get minimum 60% marks in other criteria will only be called for the presentation.

			adopted to execute the overall work	
05	Litigation History	10	No litigation History – 10 marks	**Self-declaration on company letterhead regarding litigation history, signed by an authorized signatory.**

***** A Bidder should mandatorily secure a minimum of 70% marks (i.e. 70 marks out of total 100 marks) in Technical Evaluation in order to be a qualified bidder for being eligible for Technical weight-age and subsequently for opening of financial bids. The authority reserves the right to lower the qualification marks to 60% if at least 2 bidders do not achieve 70 marks out of total 100 marks.

TOTAL MARKS= 100

Kindly Note:

- The bidder shall submit documents/report detailing each of the above **6** items signed by the authorized signatory and should be part of the bid.
- Work order, work completion certificate & Performance certificate of each work should be submitted in the technical bid
- To qualify, the applicant must secure at least 60% (sixty percent) marks in each of the above criteria and 70% (seventy percent) marks in aggregate.Bidders who get disqualified in the technical evaluation will not have their financial bids considered.
- The evaluation of the proposal will be based on a weightage distribution of 70% for technical proposal and 30% for commercial proposal.
- Invitation for presentation and Site visit does not mean the bidder is technically qualified.
- Date of presentation shall be intimated to the bidders after opening of technical bid with prior notice.
- IITBRPF reserves the right to restrict the list of eligible Tenderers/bidders to any number deemed suitable.
- Even though an applicant may satisfy the specified criteria, he/she would be disqualification if he/she has: -

  a) Made misleading or false representations or deliberately suppressed the Information in the form statements and enclosures required in the application for eligibility.

  b) Record of poor performance such as, slow progress of work, abandoning of work, not properly completing the contract, or financial failures/ weaknesses etc.

*****The IITBRPF reserves the right to accept or reject any application and to annul the qualifications process /Tender process and reject all applications at any time without assigning any reason or incurring any liability to the applicants.

5. FINANCIAL BID

Price Bid of only technically qualified bidders shall be opened at later date in presence of Evaluation committee constituted by PIC/COO/CEO, IIT Bombay Research Park. The date & time of opening the price bid shall be communicated to the technically qualified bidders. In case if the price bid is found to be tampered/modified in any manner, tender will be completely rejected. Do not quote price in the Technical Bid which would lead to bid getting disqualified without any further reference to the bidders. IITBRPF reserves the right to negotiate the quoted price with the successful bidder. The quoted rates shall remain firm throughout the first year of the contract and no revision is permissible for any reason.

List of documents to be submitted by the bidders in the financial bid are as follows:

1) FORM C – Estimation of Piping and Pump work

2) FORM D – Estimation of Electromechanical Equipment

3) FORM E – Estimation of Civil work.

4) FORM G – Project cost Declaration certificate

FORM A

FINANCIAL INFORMATION

(To be duly filled, signed and uploaded along with a technical bid by the tenderer.)

I) Financial Analysis:-

Details to be furnished duly supported by figures in Balance sheet/profit and loss Account for the last three years duly certified by the Charted Account, as uploaded by the applicant to the Income-Tax Department(Copies to be submitted separately).

Sr. No.	Details	Year ending 31st March of		
		2022-23	2023-24	2024-25
1	Gross annual turnover in ETP work			
2	Profit(+)/Loss(-)			

III) Income Tax Pan details (to be uploaded separately)

IV) Solvency certificate from Bankers of Applicant (to be uploaded separately).

SIGNATURE OF APPLICANT (S)

SIGNATURE OF CHARTERED ACCOUNTANT WITH SEAL

FORM B

(To be duly filled, signed and uploaded along with technical bid by the tenderer)

PERFORMANCE REPORT FOR WORKS REFERRED (At least three)

1.	Name of the work & Location.
2.	Scope of work: -
3.	Agreement No.
4.	Tendered Cost
5.	Value of work done
6.	Date of start
7	Date of completion
i	Stipulated date of completion
ii	Actual date of completion
9	Amount of compensation levied for Unsatisfactory work
10	Performance report based on quality of work
11	Excellent/very good/ Good/ Fair

Date :

(*Signature and seal of the client/owner to whom the work executed)

*** Certified by self will not be accepted**

FORM C

Estimation of Piping and Pump work

S No.	DESCRIPTION OF WORK	UNIT	QTY	RATE	Amount
A	LAB WASTE, STORAGE TANK & PUMPS				
1	Supplying installing testing and commissioning of HDPE pipes of PE 66 grade PN6 of following diameter including necessary supports, butt welded along with moulded fittings like tee elbows, stub flanges etc complete.				
	Vertical Downtake pipes from Each Floor to Storage Tank at GFL				
a	dia 110 mm	Rm	2,700		-
2	Supplying installing testing and commissioning of HDPE pipes of PE 66 grade PN6 of following diameter including necessary supports, butt welded along with moulded fittings like tee elbows, stub flanges etc complete.				
	Pumping Line To E.T.P From Storage Tank				
a	65mm dia	Rm	2,000		-
3	Supply, fixing,testing and commissioning of full way lever operated stainless stell l ball valve working pressure not less than PN10 with threaded / flanged joints complete with nuts, bolts, gaskets, washers etc.				
a	65 mm dia (Flanged ends)	Nos	45		-

4	Supply, installing testing and commissioning of UPVC non return valves, flanged end to be used in the HDPE pumped mains				
a	65 mm dia	Nos	15		-
5	Supplying installing testing and commissioning of digital (Electro magnetic) flow meters of following sizes as per manufacturer's recommendations. These water meters shall be compatable with BMS integration via RS 485 Modbus or Mbus protocol communication				
a	dia 65 mm for lab waste	Nos	15		-
6	Double layer of polyethylene ready made HDPE/FRP tank with manhole covers and necessary sleeves for inlet & outlet.(2,000 lts)	Nos	15		-
7	Supplying, Installing, Testing and Commissioning of Submersible pumps, suitable for 415 ± 10% Volts, 3 phase / 230 ± 10% volts, 50 Hz A.C. power supply. Each pump shall be suitable for automatic / manual operation and shall be complete Control panel inclusive of controller DOL starter, necessary wiring, cable alleys, earthing, interlocking, starter with Automatic float type level controller, provision of high level alarm, sequence timer, potential free contact to starter for connection to BAS. Pump panels shall have provision for potential free contacts for On/Off, Trip status to maintain in BMS.				
	Purpose:To transfer lab effluent water from tank to ETP				
a	Flow rate : 1.0 lps(Each Pump)				
	Head : 25 mwc				
	MOC : SS Body / Impeller & SS Shaft	set	15		-
	1set = (1W+1S)				
	SUB TOTAL				-

FORM D

Estimation of Electromechanical Equipment

Sl.No	Tag	Description	Detailed Specification	MOC	Quantity				Unit Cost	Total Cost
					Working	Standby	Total	Unit		
I	WASTE WATER TREATMENT SYSTEM - ETP									
A		Pre-treatment Unit								
1	FS	Fine Screen	Screen Opening: 6 mm	SS	1	0	1	No.		-
2	CS	Coarse Screen	Screen Opening: 20 mm	SS	1	0	1	No.		-
3	OS	Oil Skimmer	Belt Type / Slotted Type Oil Skimmer	polyurethane belt	1	0	1	No.		-
4	ETP	Effluent Transfer Pumps	HCP Non clog type with Mech seal, Cap.: 3 – 4 M3/Hr, 10M head,	CI with SS wetted parts	1	1	2	Nos.		-
5	CBM-EQT	Coarse Bubble Mixing for EQT	Coarse Bubble Grid / Diffusers	PVC / PP	1	0	1	Lot		-
B		PRIMARY TREATMENT UNIT								-
6	FM	Flash Mixer &	Suitable for the tank Size: 2 M L x 1.2M W	SS Shaft	1	0	1	Set		

		Flocculator	x1.5 M Ht	& Impeller						-
7	CDP -1	Coagulant - 1 Dosing Pump for Primary Treatment	Diaphragm / electronic, Cap: 15 LPH @ 3.0 bar Pressure	PP	1	1	2	Nos.		-
8	CDP -2	Coagulant - 2 Dosing Pump for Primary Treatment	Diaphragm / electronic, Cap: 15 LPH @ 3.0 bar Pressure	PP	1	1	2	Nos.		-
9	PDP	Polymer Dosing Pump for Primary Treatment	Diaphragm / electronic, Cap: 15 LPH @ 3.0 bar Pressure	PP	1	1	2	Nos.		-
10	CD T	Chemical Dosing Tank for coagulants & Flocculant	Cap.: 200 Liters	HDPE / LDPE	3	0	3	Nos.		-
11	M-C DT	Mechanical Mixing for Chemical Dosing Tank	Suitable for 200 Liters Tank	SS Shaft & Impeller	3	0	3	Nos.		-
12	PST P	Primary Sludge transfer Pump	HCP/ Screw Type, 1 M3/Hr @ 3 bar Pressure	CI	1	1	2	Nos.		-
C		BIOLOGIC AL TREATME NT SYSTEM								-
13	AB-A	Air blower with motor for Aeration Application	Cap.: 175 M3/Hr @ 0.55 Kg/cm2, Blower Speed < 1000 RPM	2 (1W+ 1S)	1	1	2	Nos.		-
14	BST P	Biological Recirculatio n &	HCP Type, 1 M3/Hr @ 1 bar Pressure	CI	1	1	2	Nos.		-

		Transfer Pump								
15	FBD - 1	Fine Bubble Diffused Aeration System for MBBR Tank - 1	Retrivable type, Tubular Type Fine Bubble diffusers, 63 mm (OD) x 1.0 m long	EBDM Membrane	1	0	1	Lot		-
16	FBD - 2	Fine Bubble Diffused Aeration System for MBBR Tank - 2	Retrivable type, Tubular Type Fine Bubble diffusers, 63 mm (OD) x 1.0m long	EBDM Membrane	1	0	1	Lot		-
17		MBBR media			2		2	Lots.		-
18	TP	Tube Packs	Suitable for the tank Size: 2.0 M L x 2.0 M W x 5.0 M Ht	PVC / PP	1	0	1	Lots.		-
D		SLUDGE DEWATERING SYSTEM								-
19	CBM-SDS	Coarse Bubble Mixing for Sludge Dewatering system	Coarse Bubble Grid / Diffusers suitable for the tank size:3.0 M L x 2.0 M W x 3.6 M Ht	PVC / PP	1	0	1	Lot		-
20	PDP-SDS	Polymer Dosing Pump for Sludge Dewatering System	Diaphragm / electronic, Cap: 15 LPH @ 3.0 bar Pressure	PP	1	1	2	Nos.		-
21	PDT-SDS	Polymer Dosing Tank for Sludge dewatering System	Cap: 100 Liters Tank with Mechanical Mixer	LDPE / HDPE	1	0	1	No.		-
22	FP-FP	Filter Press Feed Pump	HCP/ Screw Type, 1 M3/Hr @ 3 bar Pressure	CI	1	1	2	Nos.		-

23	FP	Filter press	Hydraulic Filter Press of Size : 800 mm x 800 mm size, 10 plates	PP Plates , MS Frame	1	0	1	No.		-
E		FILTERS & UF SYSTEM								-
24	FFP	Filter Feed Pump	HCP, Cap.: 3 – 4 M3/Hr, 35 M head,	CI with SS wette d parts	1	1	2	Nos.		-
25	PSF	Pressure Sand Filter	Cap: 3 M3/Hr, Design pressure : 10 bar with Filtering Media & Frontal piping & Valve	MS / FRP	1	0	1	Set		-
26	ACF	Activated Carbon Filter	Cap: 3 M3/Hr, Design pressure : 10 bar with Filtering Media & Frontal piping & Valve	MS / FRP	1	0	1	Set		-
F		Electrical, Pipes & Fittings - ETP								-
27	MC CP -ET P	MCC Panel for Effluent Treatment System	Floor mounting Non Compartmental Type Power & control panel for the operation - 160 Amp incommer with 63 Amp MCBs-D curves.		1	0	1	No.		-
28		Power & Control Cables	3C x 4 / 6 Sqmm Armourd Cables along with terminations		1	0	500	Rmts		-
29		DB's	8 way SPN flexi DB with 63 Amp DP MCB as incommer 20 Amp SP MCBs 8 nos as out going		4	0	4	No.		-
30		Cable Tray & Supports	600mm wide perforated tray with threated rod support	UPV C & GI	1	0	50	Rmts		-
31		Piping,		UPV	1	0	1	Lot		

		Fittings and valves		C & GI						-
32		Electromagnetic Flow meter			1	0	1	No.		-
33		Online Conductivity Meter			1	0	1	No.		-
34		pH Meter			1	0	1	No.		-
	TOTAL AMOUNT FOR WASTE WATER TREATMENT SYSTEM									-

FORM E

Estimation of Civil work

Sl no	Description	Unit	Quantity	Rate	Amount (INR)	Remarks
1	Excavation Work :					
	Earth work:					
	Note: Unless otherwise specified rates quoted for all excavation shall include the following: a) Site clearance such as clearing shrubs undergrowth, roots and small trees brush wood, etc., b) Setting out the work to profile, etc., c) Bailing or otherwise removing all water may accumulate in the excavation from all causes. d) Cutting out and throwing soil clear of area excavated or depositing clear of edge of foundation to avoid fall in. e) Trimming all sides to plumb or otherwise as instructed at site and square leveling all bottoms. Clearing out all loose earth etc., f) Disposing surplus soil as directed within the site or outside and dressing to proper level and grade as required. g) Dismantling, removing and stacking as directed existing water pipe and /or soil pipes within the excavated portion. h) Providing shoring and strutting for protecting the sides of foundation where required.					
1a	Excavation Soil by Mechanical means:					

	Earth work Excavation for foundation of structures by mechanical means (Hydraulic excavator) in all sorts of soils, soft or hard (Sand, clay, black cotton, slushy and marshy soil), Disintegrated/ weathered/ soft rock including soft or hard murram but excluding hard rock. For footings, pedestals, lift pits, sump, STP, SSM, plinth beam, equipment foundations, pile caps, drains, trenchs, cable trenchs, man holes, water supply, sanitary lines and electrical conduits etc, as per specifications, including necessary manual excavation for dressing the edges & leveling, all leads and lifts. Rate to include disposing the excess earth and spreading in layers to the required levels within the owner premises as wherever specified and carting away out side the site to the designated areas identified by the local authorities. Dewatering of both ground and surface water, removal of slurry generated while excavation and keeping the area free of water with necessary shoring, struting, required for keeping earth in position etc,. Excavating loose pockets and compacting the same. Note:PCC area shall be considered for measurement (working space & provision of slopes required for execution will not be paid separately). Note : Above specification includes for all type of soil such as Soft soil and Hard soil which soil having N value from 10 to 60. Where as N indicates corrected standard penetration test.					
i	Excavation From 0.00 Lvl - 1.50 m Lvl	Cum	622.50		-	
ii	Depth exceeding 1.50 m, but not exceeding 3.0 m	Cum	458.00		-	

iv	Excavation in all types of soil including dense soil, disintegrated/ weathered/ soft rock (Poclainable) for Footings of columns, Retaining walls, Core walls, catch pits, Lift pits, trenches for drains, etc., by mechanical means including manual excavation for leveling, dressing the edges, with all leads and lifts including back filling in layers of 150mm with watering and compaction. Dewatering of both ground and surface water, removal of slurry generated while excavation and keeping the area free of water with necessary shoring, struting, required for keeping earth in position etc, Rate to include disposing the excess earth and spreading in layers to the required levels within the site wherever specified and carting away out side the site to the designated areas identified by the local authorities. Depth upto 6m and above. Note:PCC area shall be considered for measurement (Working space & provision of slopes if required for execution shall not be paid separately).	Cum	12.90		-	
v	Same as item No - 1a but for general excavation in Hard rock/ boulders (more than 1/2 Cum in size -Un-poclainable) by chiselling/ wedging to the required level & depth including all leads and lifts, using serviceable excavated material within plot at approved location and carting away un serviceable material outside the site as directed, de-watering of both ground and surface water, removal of slurry generated while excavation and keeping the area free of water with necessary shoring, strutting, stepping, dressing, grading required for keeping earth in position, excavating loose pockets and compacting them after back filling as directed etc. as per detailed specification and conforming to safety rules during progress of the work. Depth upto 6m and above. Note:PCC area shall be considered for measurement (Working space & provision of slopes if required for execution shall not be paid separately. Mode of measurrement shall be by joint measurements/ levels before and after excavation).	Cum	12.90		-	
1b	Back Filling- Bought from outside					

	Supply and filling in foundations and the area wherever specified with approved good quality filling materials inside plinths area development, Retainning Wall Sides, Foundations etc., wherever specified in layers of not exceeding 200 mm thick including breaking clods, storing, transportation, double handling, watering, compacting each layer with vibratory roller compactor and at unaccessible places with wooden/steel rammers to achieve 98% proctor density at optimum moisture content, all leads and lifts, bailing/ pumping out of water to keep site dry while backfilling; cost shall include conveyance of all materials, labour, machinery etc. complete as directed. The rate to includes loading, unloading, hire and fuel charges for tools and plants and other incidental charges etc., complete as directed by engineer-in-charge.	Cum	15.00		-	
1c	Back Filling- Available stored soiled within the site					
	Supply and filling in foundations and the area wherever specified with approved good quality filling materials in plinths, area development, Retainning Wall Sides, Foundations etc., wherever specified in layers of not exceeding 150 mm thick including breaking clods, storing,transportation , double handling, watering, compacting each layer with vibratory compactor and at unaccessible places with wooden/steel rammers to achieve 98% proctor density at optimum moisture content, all leads and lifts, bailing/ pumping out of water to keep site dry while backfilling; cost shall include conveyance of all materials, labour, machinery etc. complete as directed. The rate to includes loading, unloading, hire and fuel charges for tools and plants and other incidental charges etc., complete as directed by engineer-in-charge.	Cum	250.00		-	
	Total - A				-	
2	Sub Base course :					

2b	Anti-Termite Treatment					
	Providing and carrying out pre-construction anti-termite treatment for the building at plinth level as per IS 6313 (Part-II) 1981 by using non-repellent termiticide Premises (Imdiachlorpid) of Bayer India Limited, alternatively Biflex T.C. of F.M.C. may be used. Premise shall be applied at 0.07% a.i. concentration, i.e. 1 lit. Premise + 499 lit. of water = 500 lit. of Premise 'ready to use solution' or as recommended by the manufacturer. Treatment shall be carried out for top surface of plinth filling, junction of wall and floor, along the external perimeter of building, expansion joints, surrounding of pipes, and conduits etc. complete as per specifications. Item Shall be measured out on the basis of plinth area.	Sqm	180.00		-	
	Total - B				-	
3	Plain Cement Concrete : Ready Mix Pumped / Site Mix Concrete.					

	Note: Unless otherwise specified, the following will apply for all items of Reinforcement cement concrete. Rate quoted shall be inclusive of the following but will exclude cost of inserts like bolts, plates, sleeves, pipes etc., a) All form of work moulds, centering and shuttering. Shuttering material shall be steel, timber or plywood as directed. b) Adequate protection to edges and corners for damage during construction. c) Work either straight, curved, plain or tapered. d) Keeping the work well watered for at least 14 days after casting. e) Roughening concrete to surface where required after removal of centering or shuttering receiving plaster. f) Work on all floors at all levels. g) Building and placing in position any insert supplied. h) Weigh batching and machine mixing and consolidation using; vibrators of approved type. i) Fine aggregates shall conform to appropriate gradation/zones as per IS: 383 - 1990. j) Course aggregate shall be of hard broken Granite, basalt or trap of size specified. and shall confirm to IS: 383-1990. k) The contractors are particularly advised to study relevant drawings before quoting. l) A qualified mechanic shall be available during concreting for maintenance of mixers and vibrators. m) Minimum cement content for controlled concrete shall be of specified grade as per IS 8112. n) PCC shuttering will not be paid.					
	Providing and laying cement concrete conforming to specified grade (IS 456-1976) with 20mm and down size graded aggregate of granite as per specifications,excluding to cost of reinforcement, and including all leads / levels and lifts, pumping using line pump or boom placer, vibrating/ compaction, stagging, scaffolding wherever necessary, curing as directed, excluding cost of Steel reinforcement, shuttering and centering etc., complete as directed by engineer in					

	charge, hacking the exposed surface to receive plaster wherever necessary etc.,complete as per drawings and specifications for the following items of work :					
	The maximum allowed replacement of OPC in concrete by fly ash shall be restricted to 15% or The maximum allowed replacement of OPC in concrete by Ground granulated blast furnace slag shall be restricted to 30%.					
3a	PCC - 20mm down size					
	Providing and laying in position plain cement concrete of mix 1:4:8 for foundation wall trenches and column footings/ below flooring with OPC cement @ 180kgs, with 20mm and down size graded granite metal coarse aggregates using by RMC concrete, concrete laid in layers not exceeding 10 cms. thick, well compacted, in foundation, including cost of all materials, labour, HOM of machinery, curing complete as per specifications.	Cum	30.00		-	
	Total - C				-	
4	Reinforced Cement Concrete Work :					

	Note: Unless otherwise specified, the following will apply for all items of Reinforcement cement concrete. Rate quoted shall be inclusive of the following but will exclude cost of inserts like bolts, plates, sleeves, pipes etc., a) All form of work moulds, centering and shuttering. Shuttering material shall be steel, timber or plywood as directed. b) Adequate protection to edges and corners for damage during construction. c) Work either straight, curved, plain or tapered. d) Keeping the work well watered for at least 14 days after casting. e) Roughening concrete to surface where required after removal of centering or shuttering receiving plaster. f) Work on all floors at all levels. g) Building and placing in position any insert supplied. h) Weigh batching and machine mixing and consolidation using; vibrators of approved type. i) Fine aggregates shall conform to appropriate gradation/zones as per IS: 383 - 1990. j) Course aggregate shall be of hard broken Granite, basalt or trap of size specified. and shall confirm to IS: 383-1990. k) The contractors are particularly advised to study relevant drawings before quoting. l) A qualified mechanic shall be available during concreting for maintenance of mixers and vibrators. m) Minimum cement content for controlled concrete shall be of specified grade as per IS 8112. n) PCC shuttering will not be paid.					
	Providing and laying cement concrete conforming to specified grade (IS 456-1976) with 20mm and down size graded aggregate of granite as per specifications,excluding to cost of reinforcement, and including all leads / levels and lifts, pumping using line pump or boom placer, vibrating/ compaction, stagging, scaffolding wherever necessary, curing as directed, excluding cost of Steel reinforcement, shuttering and centering etc., complete as directed by engineer in					

	charge, hacking the exposed surface to receive plaster wherever necessary etc.,complete as per drawings and specifications for the following items of work :					
	The maximum allowed replacement of OPC in concrete by fly ash shall be restricted to 15% or The maximum allowed replacement of OPC in concrete by Ground granulated blast furnace slag shall be restricted to 30%.					
4a	RCC M30 Grade Design mix Ready Mix Concrete :					
	Providing and laying in position reinforced cement concrete of Design Mix M30 grade as per design drawing at machine mixed, concrete laid in layers not exceeding 15 cms thick, vibrated for all works in foundation for footings, pedastals, retaining walls, return walls, walls (any thickness) including attached pilasters, columns pillars, posts, struts, Slab, Beam, Flat slab, drops, buttresses, bed blocks, anchor blocks & plinths etc., including cost of all materials, labour, HOM curing, complete but excluding cost of reinforcement as per specifications.					
i	Footing / base slab	Cum	78.00		-	
ii	RC wall concrete/core wall	Cum	132.00		-	
iii	Slab concrete	Cum	68.00		-	
iv	Column concrete	Cum	20.00		-	
v	roof beam concrete	Cum	16.00		-	
vi	Staircase.	Cum	2.00		-	
	Total - D				-	

5	Form work :					
	a. Scheme of Formwork including casting slabs to gentle slope, special staging for casting floors of different heights, roof projections at various levels and profiled formwork. b.Contractors shall submit drawings showing the scheme of formwork including back proping and proper sequence of removal of formwork and back propping so that the structural slab will not be overloaded due to construction loads. c.Formwork shall be designed for close jointed rigid, durable and shall have adequate strength, water tightness and ensure easy removal etc., d.Props, shorings and bracings shall be all in steel or Aluminium. e.Formwork designed with proposed materials (to be approved prior to making) shall be able to retain its shape,line,dimension,level within the allowable limits of variations. f. Formwork shall facilitate for making holes / recess for leaving dowells embedments etc.at no additional cost and shall be submitted for approval. g.Necessary arrangement shall be envisaged to provide camber in beams or slabs as per design. h.Formwork shall have adequate openings for cleaning. i.Providing, fabricating and erecting form work, special staging for casting floors of different heights, roof projections at various levels and profiled formwork as per drawing at all levels and places wherever needed/ specified as per drawing including striking with 12mm Plastic coated, marine resistant waterproof ply with adjustable steel props of acceptable Staging system and with sufficient bracing as approved by consultant.					

	j.Cost to include designing of proper form work and staging system to suit the requirements,Submission of design calculations and shop drawings for approval,sealing the joints with heavy duty brown self adhesive tape, aligning to line and levels including M.S.Ties, PVC Spacer, Providing openings/ cutouts/ pockets, applying deshuttering chemical, Deshuttering as approved by the consultant etc., complete at all levels, double/tripple heights and profiles for Note : Only plan area shall be considered.No extra shall be paid for Side shuttering of Drop panel/column capitals. k. Formwork for construction joints shall be submitted for approval, sealing the joints with heavy duty brown self adhesive tape, applying mould releasing agents(Rebol from Fosroc or equivalent), aligning to line and levels including M.S Ties, PVC spacer, Providing openings/cut outs/ pockets , All slabs shall be progressively deshuttered and backpropped as per instructions by structural engineer, complete at all levels,double/tripple height and profiles. l.Only plan area shall be considered for payment. Sides of drop panels/ column capitals shall not be considered for payment. Shuttering below the shrinkage strip at every level shall be retained in place without disturbing for a time as specified by the structural engineer, Contractors shall submit drawings showing the scheme of formwork including back proping and proper sequence of removal of formwork and back propping so that the structural slab will not be overloaded due to construction loads. Any honey coombs not affecting structural stability shall be smootly finished with CM 1:4. Any undulations, bulging etc shall be chipped and finished by the contractor without any extra cost. Any leakage of slurry, concrete etc should not be payed exrta. (o). The Exposed surface of concrete which plastereing will be coming, hence grainding of concrete column, beam, ceiling shall be considered in the cost.					

	Providing, fabricating and erecting form work at all levels and places wherever needed / specified as per drawing including 12mm thk shuttering plywood suitably framed with silver oak sections and supported by adjustable steel props of acceptable Staging system and with sufficient bracing as approved by consultant. Cost to include designing of proper form work and staging system to suit the requirements, sealing the joints with heavy duty brown self adhesive tape,aligning to line and levels including M.S. Ties,PVC Spacer, Providing openings/ cutouts/ pockets,Deshuttering as approved by the consultant etc., complete at all levels.					
	Providing and fixing CENTERING AND SHUTTERING in foundations, footings,raft beams, slabs, pile caps, retaining walls, jambs, counter-forts, buttresses, trenches, equipment/machine foundations, pedestals, abutments, pipe sleepers, columns, plinth beams, lintels, suspended slabs, beams, staircases, landings, steps, non-circular tunnels/bunkers/ silos/ shafts/ hoppers/liquid storage structures etc. for all depths including shuttering for single pour concreting, strutting, bracing, propping etc., keeping the same in position during concreting and removal of the same after specified period etc. for Straight/ Inclined Shuttering, keeping necessary provision for inserts, projecting dowels, anchor bolts or any other fixture etc. all complete and as specified and directed.					
i	Base Slab and footings	Sqm	145.00		-	
ii	RC walls	Sqm	2095.50		-	
iii	Slab	Sqm	350.00		-	
iv	Roof Beams	Sqm	142.08		-	
v	Staircase	Sqm	10.00		-	

	Total - E				-	
6	Reinforcement steel work :					
	Note :- Preparing Bar Bending schedule, obtaining consultant's approval, supplying, fabricating,delivering at site, hoisting and fixing in position and making all steel work in accordance with the design drawings prepared by the consultants.					
	Providing and fixing : reinforcement for RCC work with TMT or equivalent HYSD bar of various diameters and grade of steel and percentage elongation, minimum 14.5% as per IS:1786 including decoiling, straightening, cutting, bending,and placing in position at all levels according to drawings and binding the reinforcement with 18 gauge galvanised annealed binding wire of double fold and providing precast cement concrete cover blocks for placing the reinforcements in position and for maintaining the cover specified as per drawing or according to relevant IS codes. Note:Unless noted otherwise the measurements in accordance with IS 1200. However reinforcement shall be measured only in lengths of bars as actually placed in position on standard weight basis, no allowance being made in the weight for rolling margin and wastage. splices ,Chairs of any shape & profile, Spacer bar of any shape & profile, cover block, wastage, binding wire and proper protection of reinforcement shall not be measured and shall be included in the quoted rates. Quoted rate shall be deemed to have considered the above stipulation. Quoted rate to include lead, lift, placing at all levels and as directed. Authorised laps only payable. Grade of reinforced steel - Fe 550 (Basic rate shall be 65,000 Rs/M.T excluding tax)	M.T	45.00		-	
	Total - F				-	

7	Masonry Works:					
	Note: Unless otherwise specified, the rates quoted for all items shall include the following: a) All scaffolding, ladders,platforms, staging and plant required in the execution of work to any height and depth. b) Hacking and roughening of concrete or other surface in contact with masonry for bondage. c) Racking joints to specified depth either for plastering or painting. d) Leveling up and preparing top of masonry for Damp Proof Coarse (DPC) e) Building in hold fasts and such other inserts. f) Keeping the work well wetted for two weeks. g) Work at all heights and depths unless otherwise specified. h) Providing through bond stones at every 2 mtrs., apart in each course in stone masonry. i) Protection of edges and corners of Bricks / Concrete Blocks. j) Cleaning of Mortar daubs and any effloroscence to prevent discoloration. k) Providing shear connectors in the form of lugs/ hold fasts at junctions of masonry wall junctions as directed.					
7a	Size Stone Masonry :					
	Providing and Constructing Size stone masonry in Foundation/Plinth/Retaining Wall/Cable trenches/above ground at any level in Cement mortar 1:6 using granite/trap/basalt stones, in courses not less than 175mm high, the face stones to be squared on all joints and beds, faces to be hammer dressed, bushing to project not more than 6mm,through bond stones every 2m interval in each course including curing, lifting, shifting etc., complete all as per drawings and specifications.	Cum	1.00		-	

	Total - G				-	
8	Water proofing / Weather Proofing					
	NOTE: 1.Specialized agency to be approved by Client / Consultants. THE AGENCY SHOULD GIVE GUARANTEE FOR 10 YEARS FOR THE WATERPROOFING WORKS DONE AT SITE. a) The guarantee for waterproofing should be provided by the principal company for both material and application. b) Guarantee/warrenty from applicators will not be acceptable. An undertaking in this regard from the principal company should be enclosed along with the letter for approval of waterproofing agency. c) Testing of the surfaces prior to start the work by ponding, grouting or sealing of joints, making watta at corners/ junctions etc are deemed to be included for all items while quoting rates. If any leakage is found subsequently, it has to be made water tight by the contractor free of cost. The water retaining tanks should be tested for leakages.					
8a	UG SUMP internal walls and base slab					
	The first part consists of application of first layer of micro fibre reinforced acrylic polymer modified white cementitious waterproof coating, two part, after base preparation of cleaning, brushing and removal of flaky materials, grouting the porous area with cementatious grout, fixing of weep holes, Grouting of pipe outlets etc and applying in two coats @ 750 Gms/Sqm/Coat. The coatings shall be applied at intervals and as per the manufacturer's specifications. Cost to include the treatment along wall up to min 300 mm and no extra measurements shall be accounted for the wall treatment. The second part consists of surface method in two layers in CM 1:4 of thickness 35mm					

	for floor, 25mm for walls till floor level and 18mm till 300mm above floor level with water proof admixture as per Manufacturer's specification approved by consultants. Note: Plan area shall be the mode of measurement.					
	Providing waterproofing by Surface method INTERNALLY by following methods with min. 10 years guarantee.	Sqm	1350.00		-	
	Total - H				-	
	Miscellanious Work :					
9	Manhole Cover					
	Provide and installation of heavy duty man hole covers with antiskid at top surface as per project requirements. Manhole cover and Frame of Mild Steel (MS) conforming to ASTM A36 or BS EN 124.Finished with galvanized/ painted/ epoxy-coated as per drawing and specifications. The manhole cover shall include fixing of bolted, hinged, such as lifting hooks, gaskets, or frames. Rate shall include frame, openable door, door handle, locking arrangement for size upto 1000x1000mm. Cost to include welding of members using structural steel welding electrodes as per IS 814/816/817, a coat of anti corrosive primer (non flammable) to the exposed surfaces, testing as per IS 7307 (PART 1), necessary equipments, tools and tackles, staging, scaffolding required etc.,complete. for roof, etc., including a coat of zinc chromate primer and two coats of Synthetic enamel painting (for canopy, chiller platform & facade etc)	Nos	5.00		-	
	Total - I				-	
	TOTAL (1+2+3+4+5+6+7+8+9)				-	

Sl no	Description	Unit	Quantity	Rate	Amount (INR)	Remarks
1	Masonry Works:					
	Note: Unless otherwise specified, the rates quoted for all items shall include the following: a) All scaffolding, ladders,platforms, staging and plant required in the execution of work to any height and depth. b) Hacking and roughening of concrete or other surface in contact with masonry for bondage. c) Racking joints to specified depth either for plastering or painting. d) Leveling up and preparing top of masonry for Damp Proof Coarse (DPC) e) Building in hold fasts and such other inserts. f) Keeping the work well wetted for two weeks. g) Work at all heights and depths unless otherwise specified. h) Providing through bond stones at every 2 mtrs., apart in each course in stone masonry. i) Protection of edges and corners of Bricks / Concrete Blocks. j) Cleaning of Mortar daubs and any effloroscence to prevent discoloration. k) Providing shear connectors in the form of lugs/ hold fasts at junctions of masonry wall junctions as directed.					
1a	200mm thk Solid Block Masonry :					
	Providing Brick work with common burnt clay machine moulded perforated bricks of class designation 5.0 (class I brick) conforming to IS: 2222 in superstructure above plinth level in cement mortar 1:4 (1 cement : 4 coarse sand) With Non modular bricks including cost of all materials, labour, scaffolding and usage charges of	Sqm	360.00		-	

	machinery & other incidental charges complete as per the direction of engineer incharge of work.					
1b	110mm thk Solid Block Masonry :					
	Providing Half brick masonry with common burnt clay Non Modular bricks of class designation 3.5 in superstructure above plinth level up to floor 1 level cement mortar 1:4 (1 cement :4 coarse sand) with concrete band of 100 mm thick with reinforcements 8T 2 no's, at every 5th courses ,including cost of all materials, labour, scaffolding and usage charges of machinery & other incidental charges complete as per the direction of engineer incharge of work.	Sqm	10.00		-	
	SUB - TOTAL				-	
2	Plastering Work :					
	NOTE :Unless otherwise specified, rates quoted for all items shall include the following :- a) Hacking or scarifying concrete surface to be plastered or rendered. b) Preparation of surfaces by raking out joints, wetting the surface etc. c) Providing grooves at the junction of masonry and concrete members wherever different materials are connected and also wherever necessary. d) Providing drip moulds as size mentioned wherever necessary.(40 x 15). e) Washing floors, cleaning glass and levelling premises clean and tidy. f) Curing. g) Finishing of chasing etc., done by other agencies. h) Necessary scaffolding,ladder, platform etc., for any height and depth. i) Work at all heights and depths. j) Rate to include providing Arpitha / chicken mesh of required width for Masonry and RCC joints.					

2a	External Sand faced Plaster :					
	Providing 18mm thick cement plaster in single coat with cement mortar 1:4 to block masonry including rounding off corners wherever required smooth rendering, : Providing and removing scaffolding, including cost of materials, labour, curing complete.	Sqm	460.00		-	
2b	Internal Cement Plaster :					
	Providing cement plastering 15mm thick in single coat with cement mortar 1:4 to block masonry for with sand of approved quality, providing and removing scaffolding, including cost of materials, labour, curing complete.	Sqm	680.00		-	
2c	Internal Celing Plaster					
	Providing 12mm thick cement plaster in single coat with cement mortar 1:3, to ceiling including rounding off corners wherever required smooth rendering, including providing and removing scaffolding, cost of materials, labour, curing etc., complete.	Sqm	250.00		-	
	SUB - TOTAL				-	
3	Painting work :					
1a	Plastic Emulsion paint for Internal Walls & Ceilling :					
	Providing and applying painting for walls and ceiling with two or more coats with plastic emulsion paint of approved brand on wall surface and ceiling surface over the two coats of Birla/JK/Berger wall putti and Single coat primer after scrapping the original surface and rubbing with sand paper of zero size. Two or more coats of plastic emulsion painting of approved colour successively after drying each coats and finishing etc complete.including cost of all material,cost of labour,cost of	Sqm	550.00		-	

	equipment and machinary ,scaffolding,all lead and lift ,loading and unloading ,transportation and all other incidental charges etc complete as per design Drawing. The work shall be carried out as per directions of Engineer in charge.					
1b	Exterior weather proof paint:					
	providing and finishing walls with Acrylic Smooth exterior weather proof paint of required shade two coat applied @ 1.67 ltr/10 m² over and including priming coat of exterior primer applied @ 2.20 kg/10 m² with paint of approved quality to give an even shade, after thoroughly brooming the surface to remove all dirt, dust, mortar drops and foreign matter including preparing the surface even and sand paper smooth, cost of materials, labour complete as per specifications and as per directions of Engineer-in-charge.	Sqm	680.00		-	
1c	Enamel paint for Doors Frames :					
	Providing and applying painting in two coats with Synthetic Enamel paint of approved brand on wooden surface over one coat of wooden primer to give an even approved shade after thoroughly brushing the surface, free from mortar drops and other foreign matter including preparing the surface even and sand paper smooth, cost of materials, labour, complete as per specifications with Primer	RM	21.00		-	
1d	Enamel paint for Metal Surfaces :					
	Providing and applying painting in two coats with Synthetic Enamel paint of approved brand on metal surface over one coat of yellow oxide metal primer to give an even approved shade after thoroughly brushing the surface, free from mortar drops and other foreign matter including preparing the surface even and sand paper smooth, cost of materials, labour, complete as per specifications with Primer	Sqm	220.00		-	

	SUB - TOTAL				-	
4	Door & Windows					
4a	Fire rated Door frames and Shutter					
	Providing and fixing in position Fire rated (120minutes) Metal Doors with frames CONFIRMS TO IS 3614 (PART 2) 1992 BS476 (PART 20 & 22) of approved size shape/ Textute/finish and colour (as per standard availability in the market and architect requirement) with approved make. Door frames (conform to IS4351:2003) and leaves are made from Skin Passed Galvanized Iron Sheet (confirm to IS277) Constructed from 1.6mm (12 SWG) thick Skin Pass Galvanized Iron Sheet formed to double rebate profile of size 143mm X 58mm (+/- 0.3mm) with a maximum bending radius of 1.4mm. The Door shutter of 46mm thick is constructed from 1.2mm (18 SWG) thick Skin Pass Galvanized Iron Sheet formed to provide a 46mm thick fully flush, double skin door shell with lock seam joints at stile edges. The core of the shutter or the internal construction of the door is a specially designed Mineral wool/Honey Comb Kraft Paper Insulation with reinforcement at top, bottom and stile surrounds. The internal construction of the door varies with the degree of fire rating as tested FOR 2 hrs Fire Rated. with required hardware fittings like door stopper ,handle,lock,ball catch , Door Closer etc.as per Architet's design etc.as per Architet's design.with required hardware fittings like door stopper ,handle,lock,ball catch , Door Closer etc.as per Architet's design etc.as per Architet's design.The vision pannel Fire rated Vision Glass single glazed with 7mm thick clear/wired glass shall be provided for a maximum of 2 hours fire rating. The Vision Glass can be provided in 330mm dia/ rectangular in standard dimensions of 200mm X 300mm. The door frames and door shutter are primed with Zinc-Phosphate Stoving Primer and finished with Polyurethane Aliphatic grade	Sqm	12.00		-	

	or epoxy paint as required/Epoxy Polyester/Pure Polyester/ Polyurethane powder for powder coating of thickness 60-65 Microns (Dry frim thickness), etc, to be completed in all respect to have 2 Hour fire rated door . Necessary test certificate to be given regarding testing of 2hour fire rated door.Manufacturer to give Gaurantee certificate.					
	SUB - TOTAL				-	
5	Flooring work					
5a	Providing and laying Cement flooring with concrete of 75mm avg thick, under layer 40 mm thick cement concrete screed of 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 12 mm nominal size) top layer of 12mm thick plaster with 1:3 cement mortar with floating coat of neat cement. including machinaries, labor, powerflooter,making groves of 10mm wide and 6mm deep and filling with polysulphide filler. groove interval 1.2x12.m interval bays or as per direction of Engineer incharge. including cost of all mateirals, mortar, labour, etc., Complete as per specification.	Sqm	180.00		-	
	SUB - TOTAL				-	
6	Fabrication Works					
	Structural Steel (Shop dwg must be submitted for consultant approval. Rate included for preparation of shop dwgs)					
6a	MS handrailing staircase and ramp.					

	Supplying, fabricating, errection of M.S.Railings, consisting of approved dia pipe handrail and vertical required dia pipe, flats, solid, square and circular bars and any other required sizes etc. arranged in verticals and horizontals with spacing as required by welding as per design & drawing and fixed to the wall/slab and finishing the same complete as per the design with one coat of primer and two coats of enamel paint including the cost of all material,cost of labour,cost of equipment and machinary ,all lead and lift ,loading and unloading ,transportation and all other incidental charges etc complete as per design Drawing. MS fastners for fixing railing in floor by cutting hole of required dia in floors/landings/ staircase and finished by grouting with MS coller, complete in all respect and making good in the floors as per specifications and architectral drawings.The work shall be carried out as per directions of Architect in charge of works.					
	with one coat of primer and two coats of enamel paint	Sqm	12.00		-	
6a	MS Grills					
	Supplying, fabricating, errection of M.S.Grills, consisting of approved dia pipe handrail and vertical required dia pipe, flats, solid, square and circular bars and any other required sizes etc. arranged in verticals and horizontals with spacing as required by welding as per design & drawing and fixed to the wall/slab and finishing the same complete as per the design with one coat of primer and two coats of enamel paint including the cost of all material,cost of labour,cost of equipment and machinary ,all lead and lift ,loading and unloading ,transportation and all other incidental charges etc complete as per design Drawing. MS fastners for fixing railing in floor by cutting hole of required dia in floors/landings/ staircase and finished by grouting with MS coller, complete in all respect and making good in the floors as per specifications and architectral drawings.The	Sqm	25.00		-	

	work shall be carried out as per directions of Architect in charge of works.					
	SUB - TOTAL				-	
	TOTAL				-	

FORM F

GST **INFORMATION**

(To be duly filled, signed and uploaded along with a technical bid by the tenderer.)

I) GST details:-

Details to be furnished duly supported by GST annual turnover certificates for the last three financial years, certified by a Chartered Accountant (Copies to be submitted separately)

Sr. No.	Details	Year ending 31st March of		
		2022-23	2023-24	2024-25
1	GST annual turnover			
2	GSTIN(registration number)			
3	GST paid			

III) Income Tax Pan details (to be uploaded separately)

IV) Solvency certificate from Bankers of Applicant (to be uploaded separately).

V)GST certificate

SIGNATURE OF APPLICANT (S)

SIGNATURE OF CHARTERED ACCOUNTANT WITH SEAL

Annexure 1

UNDERTAKING CERTIFICATE

To,
PIC,
IIT Bombay Research Park,
Powai, Mumbai, Maharashtra- 4000076

Name of Work: - Execution, supply, installation and commissioning of Effluent Treatment Plant of 57 KLD at IIT Bombay Research Park

Dear Sir,

We are hereby quoting all the rates for the attached schedule of tender of the above-mentioned work. We hereby accept & sign all the General Terms and Conditions of the Contract.

We hereby submit our quotation for the open tender for the above-mentioned work. We accept and sign all the General Terms and Conditions of the Contract. We agree to keep the validity of the bid for 180 days from the date of opening the tenders, without any modification to its terms and conditions.

We confirm that the information provided in our bid is accurate and complete to the best of our knowledge. We undertake to execute the work as per the scope, specifications, and timelines mentioned in the tender documents if the contract is awarded to us.We understand and agree that failure to comply with the terms and conditions may result in disqualification or cancellation of the bid.

We look forward to the opportunity to execute the work as per the requirements of IIT Bombay Research Park.

Thanking you,

Yours faithfully,

Signature of the authorized signatory of ETP COMPANY
with the official Seal/ stamp of the firm.

Form G

Quotation for the ETP Project of IITB Research Park – Price Submission

To,
PIC,
IIT Bombay Research Park,
Powai, Mumbai, Maharashtra- 4000076

Name of Work: - Execution, supply, installation and commissioning of Effluent Treatment Plant of 57 KLD at IIT Bombay Research Park

Our rate for the above-mentioned work/project (as defined in the scope of work in terms and conditions) is as under:

In figures: Rs.....

In words :Rupees.....

The above rates are inclusive of prices of materials & services proposed to supply under the contract, all taxes, duties, packing and forwarding charges, levies of state or central governments, all costs like travel, lodging and boarding, local travel expenses etc.

Yours faithfully,

Signature of the authorized signatory of ETP COMPANY
with the official Seal/ stamp of the firm.

6. Terms & Conditions of the Contract

1. Before submissions of the tender, the prospective bidders are expected to examine Technical Specifications of the equipment/machinery allied items required, terms and conditions, etc., given in the Tender Documents. Failure to furnish all information required by the Tender documents may result in the rejection of the bid.

2. The Vendor/contractor/bidder should provide both theoretical and practical training to the IITBRPF team after commissioning the machinery or at an appropriate stage.

3. In the Financial Bid, the Bidders shall indicate all the prices of material & services Proposed(FORM C, D E & G) to supply under the contract. All costs shall be inclusive of all taxes, duties, charges and levies of State or Central Governments, as applicable, at the time of submitting the financial bids. No concessional form will be provided by the IITBRPF. In case of upward revision to duties and taxes the Bidder will be responsible to incur the additional cost. The Bidder has to include all costs like Travel, Lodging and Boarding, Local Travel expenses etc. Incurred during the implementation and IITBRPF will not bear any additional costs on these. Break-up of cost may be given.

4. All material should be under Insurance coverage at the time of despatch till the time of completion of the project and handing over to IITBRPF.

5. The successful bidder shall provide a Performance Bank Guarantee (PBG) equivalent to 5% of the total contract value, issued by any Nationalised bank in favour of IITB Research Park Foundation (IITBRPF). This PBG will remain valid for the entire contract duration, including the Defect Liability Period (DLP), and will be returned after successful completion of the work and expiry of the DLP.

6. The terms of payment shall be as under :
a) 20% of the contract value will be paid as advance against confirmation of orders and after submission of Performance Bank Guarantee.
b) 25% of the contract value will be paid on receiving of all the material at site after pre-dispatch inspection (wherever necessary) and certification of the equipment/items to be supplied.
c) 25% of the contract value will be paid on completion of erection of ETP at site.
d) 20% of the contract value will be paid on completion of hydraulic and dynamic testing, equipment confirmation and plant operation and result confirming to the standard as mentioned in the tender document.
e) Balance 10% payment will be made after completion of the work in all respect duly certified by the IITBRP's authorized representative.

7. Construction/fabrication/erection of the ETP should be as per the commitment from the date of receipt of initial payment against acceptance of order.

8. Validity of the tender should be available up to 180 days. The tender may be rejected if the validity is not given up to 180 days.

9. The contractor should take responsibility for construction/fabrication/ erection and commissioning of the "Effluent Treatment Plant" at IITB Research Park Building. The address will be specified in

the Purchase Order.

12. Late / delayed tender offers will not be considered at all.

13. Any non-fulfilment of the stipulation given above will make the bid invalid.

14. If the tenders received are not sealed properly, they will not be considered at all.

15. Purchase Committee, IITBRP reserves the right to accept or reject any or all the bids either in full or part without assigning any reason thereof.

16. The contractor shall be entirely responsible for all taxes duties, license fees etc., incurred until completion of the contract.

17. The construction/fabrication/erection and commissioning period of the ETP as agreed to should not be extended under normal conditions. Suitable penalty for non-execution of the order may be enforced to the extent of 1% of the Contract Value for every week extended. In case of the delay beyond scheduled period due to some unforeseen reason, written permission is required from the PIC/COO/CEO, IITBRPF with proper justification to avoid penalty.

18. During the guarantee / warrantee period, servicing / maintenance should be undertaken regularly, subsequently Servicing/maintenance should be undertaken by the manufacturer or authorised agency of the manufacturer.

19. Warranty / performance guarantee period of 18 months should be given in respect of all the related machinery and accessories supplied for setting up of ETP.

20.SCOPE OF WORK & IMPORTANT INSTRUCTIONS

A) WORK AND SITE

The work consists of Setting up of 57 KLD- Effluent Treatment Plant (ETP) at IITB Research Park.The tenderers are advised to inspect the site before tendering the rates so that they may fully acquaint themselves with the nature of the work to be done, the means of communications and availability of materials and water required for the work. The tenderer must complete the work in accordance with the specifications and to the entire satisfaction of the IITBRPF within the specified period. The drawings regarding this work are attached with tender document and clarifications can be dealt with during pre-bid meeting in the office of the IITBRPF. The prospective contractor in whose favour the tender would be awarded has to execute a separate and distinct agreement with the IITBRPF notwithstanding anything contained herein.

B) SCOPE OF WORK

The Scope of work consists of construction civil work, Supply & installation of electro mechanical equipment, Piping work, Hydraulic testing, electrical & instrumentation work, set up of laboratory, trial run and commissioning and handholding support for 1 year related to 57 KLD- Effluent Treatment Plant. This specification covers the minimum requirements for the design,
engineering, material Procurement, civil construction, fabrication, painting, assembly, Inspection, supply, shipment, erection and commissioning of Wastewater treatment and recycle plant. The recovered water is proposed to be used for Irrigation purpose.

C) RATES :

The contract shall be for overall work as per the scope of work as described in tender document. The Contractor shall be paid for the actual rates finalized in the agreement (to be signed during award of work). That rates quoted shall include labour, materials, tools and plants, equipments, applications, transports, taxes, charges, levies, contractor's supervision, overheads, pollution, PF, ESI and other legislations and all charges necessary for the satisfactory completion of the work. Rates for the work should include all such expenses. Rate in Rupees shall be quoted and the tender shall remain good and open for acceptance for a period of 180 days from the date of opening of tender. IITBRPF shall make arrangement in regard to electricity and water supply required for the execution of the works ETP COMPANY has to pay for the same on actual consumption

D) MATERIALS

All materials supplied by the contractor and brought on the site shall be got tested frequently to check up to conform to the specifications. All tests as may be necessary shall be performed at the contractor's expenses and he shall make all necessary arrangements for conducting the tests in the approved laboratories or as directed by the IITBRPF.

21) TIME OF COMPLETION AND DEFECT LIABILITY PERIOD

All works specified herein shall be completed in all respects to the entire satisfaction of IITBRPF within an overall period of 120 days (approximately 4 months) from the date of the letter for commencement of work. This period includes:

- Civil Works (below ground): 45–60 days
- Procurement & Supply of Mechanical/Electrical/Plumbing (MEP) Materials: 45–60 days
- Installation Works at Site: 21–30 days
- Testing & Commissioning: 10–15 days

Civil works shall be executed in parallel with the procurement and supply of mechanical systems to optimize the timeline. If the work extends beyond 120 days, a penalty of 1% of the contract value will be levied for each week of delay.

The contractor's/vendor's responsibility shall, however, not end until the Defect Liability Period of 18 months from the date of completion is over. If any defect during this period is notified, the contractor shall rectify it at their own cost.

22) ACCEPTANCE OF TENDERS

The acceptance of tender shall rest with the IITBRPF, which does not bind itself to accept the lowest tender and reserves to itself the authority to reject any or all the tenders received without assigning any reasons thereto. All tenders, in which any of the prescribed conditions are not full- filled or are incomplete in any respect, are liable to be rejected. The IITBRPF also reserves the right of accepting the whole or any part of the tender and the Contractor shall be bound to perform the same at the quoted rates.

23) REJECTION OF TENDERS

The tenders received after due date of submission shall be rejected. The contractor should fill in the rates in figures as well as in words for sub-total & Total Price. The tenders, which do not fulfil this requirement, are liable to be rejected. No alterations be made by the Contractor in the notice to the tender, instructions to the contractors, the contract form, conditions of contract, the specifications or the quantities accompanying the same shall be recognized and if any such alterations are made or any special conditions are attached, the tender is liable to be rejected.

24)COMPENSATION FOR DELAY / LIQUIDATED DAMAGES The contractor must strictly adhere to the time schedule specified in the tender, which will commence from the 7th day after receiving the order to start work. The work must progress diligently, as time is deemed essential to the contract.

If the contractor delays the commencement or completion of the work, they will be liable to pay compensation at the rate of 1% (or a lesser amount as determined by IITBRPF) of the estimated project cost for each week of delay.

The contractor must complete the work within 4 months of the written commencement order. Failure to meet this timeline may result in additional compensation at the same rate for incomplete work.

Before imposing penalties, IITBRPF will issue a 10-day written notice. The total compensation under this clause will not exceed 10% of the estimated project cost.

25) TERMINATION OF CONTRACT

IITBRPF reserves the right to terminate the contract by providing written notice to the contractor. This right may be exercised in the event of delays, substandard workmanship, or any other breach of the contract terms. Such termination shall not affect IITBRPF's rights to:

- Claim losses for damages resulting from the contractor's breach.
- Enforce any other rights or remedies available under the contract or applicable law.

This termination can be invoked regardless of whether the project completion date has passed.

27) FINAL CERTIFICATE

Within 30 days of completing the work, the contractor must notify IITBRPF in writing. IITBRPF, along with its consultant, will inspect the work within 60 days of receiving the notice. If no defects are found, a completion certificate will be issued. If defects are identified, a provisional completion certificate will be issued, outlining:

(a) Defects to be rectified by the contractor.

(b) Items for which payment will be made at reduced rates.

The work will not be considered complete, nor will any certificate (provisional or final) be issued until the contractor:

1. Removes all scaffolding, surplus materials, rubbish, huts, and sanitary arrangements used for the work.

2. Cleans all woodwork, doors, windows, walls, floors, and any other parts of the building.

If the contractor fails to fulfill these requirements by the date specified, IITBRPF may remove the materials, scaffolding, and rubbish at the contractor's risk and cost

28)WORK TO BE DONE WITH GOOD WORKMANSHIP. The contractor shall carry out the entire scope of work with utmost professionalism and in a substantial, workmanlike manner, adhering to standard engineering practices. All work must strictly comply with the specifications, quality, and quantities outlined in this tender document.

29) ALTERATIONS IN SPECIFICATIONS & DESIGNS

IITBRPF reserves the right to make alterations, omissions, additions, or substitutions to the original specifications, equipment, designs, or instructions as deemed necessary during the progress of the work. The contractor must execute such changes as directed in writing by IITBRPF. These changes shall not invalidate the contract, and the contractor shall perform the additional or altered work under the same terms and conditions as the main work.

30) Rates of Additional/Substituted Items

If any item(s) not detailed in the drawings or the specifications of the contract documents is required by IITBRPF for execution alongside the normal works under this contract, the Contractor shall be obligated to carry out such work(s). Any refusal by the Contractor to execute such work(s) shall be deemed a breach of the agreement.

31) Rates of Additional/Substituted Items

(i) If the rates for additional, altered, or substituted work are specified in the contract, the Contractor must execute the work at the same rates as specified in the contract.

(ii) If the rates for such work are not explicitly provided in the contract, the rates shall be derived from those specified for a similar class of work in the contract.

(iii) If the rates for the additional, altered, or substituted work cannot be determined using the methods outlined in sub-clauses (i) to (ii), IITBRPF shall determine its rate based on prevailing market rates at the time the work was executed.

32) Removal of Defective or Inferior Work

If IITBRPF finds that any work has been executed with unsound, substandard, or unskillful workmanship, or if any materials or articles provided by the Contractor are of inferior quality or fail to meet the contract specifications, the Contractor shall, upon receiving written notice from IITBRPF, rectify or remove the defective work and reconstruct it, as required. This shall be done at the Contractor's own cost, even if the defective work had been inadvertently approved, certified, or paid for.

If the Contractor fails to comply within the period specified by IITBRPF, the Contractor shall be liable to pay a compensation of 1% of the estimated cost of the particular work for each day of delay, up to a maximum of 10 days. If the Contractor does not act within this timeframe, IITBRPF reserves

the right to rectify, remove, or re-execute the defective work, or replace the materials/articles, at the Contractor's risk and expense.

33) Inspection of Works

All works under execution, in progress, or completed under this contract shall be open for inspection and supervision by the IITBRPF team at any time. The Contractor must ensure their presence or that of a responsible, duly authorized agent during normal working hours and at other times, as required. Instructions or orders given to the Contractor's authorized agent shall hold the same authority as if issued directly to the Contractor.

34) Work Not to Be Covered Without Prior Permission

The Contractor shall provide at least seven days' prior written notice to the IITBRPF before covering or placing any work beyond the reach of measurement. This will allow the work to be measured and its dimensions verified before it is concealed. If any work is covered without prior notice or written consent from the IITBRPF, the Contractor shall, at their own expense, uncover the work to facilitate proper measurement. Failure to do so will result in no payment or allowance for the concealed work or the materials used.

35) Liability for Defective or Damaged Work

If the Contractor, their workers, or agents cause damage to Research Park building, road, fence, enclosure, grassland, or cultivated ground adjacent to the worksite, or if the completed work suffers damage due to defects, shrinkage, or faults, the Contractor shall repair the damage at their own expense. If the Contractor fails to do so, the IITBRPF may arrange for repairs to be carried out by other means and recover the cost from the Contractor's payments or PBG

36) Supply of Materials, Tools, and Equipment

The Contractor shall, at their own cost, provide all materials, labor, tools, equipment (including all machinery and systems related to the ETP plant where applicable), scaffolding, and temporary works necessary for the proper execution of the project. This includes items specified in the contract documents or required to meet IITBRPF's expectations. The Contractor shall maintain sufficient stock of materials, including approved Ordinary Portland Cement (OPC) and reinforcement steel, to ensure uninterrupted progress. Substitution of materials, such as using other grades of cement, will not be permitted.

Additionally, the Contractor shall supply personnel and materials required for setting out works, as well as for measurements and inspections, without additional charges.

The Contractor shall procure all third-party materials and equipment only after obtaining prior written approval from IITBRPF for the proposed vendor and specifications. Any material or equipment procured without such approval will be rejected and removed from the site at the Contractor's cost.

This requirement does not relieve the Contractor from the final guarantee as to materials, apparatus, workmanship, and performance of the equipment and services supplied. The Contractor shall guarantee the equipment and all component parts against defective workmanship and improper materials for the agreed period following the date of delivery of the equipment or from commencement of operation as agreed. The Contractor shall replace or repair (including uncovering, removal, procurement, reinstallation, and any construction work necessary) any defective

components at their own cost during the guarantee period at a time suitable to IITBRPF.

37) Subletting of Work

The Contractor shall assign or sublet the contract with prior written approval from IITBRPF. Any attempt to do so without approval, or in the event of the Contractor's insolvency or initiation of insolvency proceedings, shall result in immediate termination of the contract. Upon such termination, the Contractor's PBG shall be forfeited and retained by IITBRPF, and all associated consequences will apply as if the contract were rescinded.

38) Compliance with Labor Laws

The Contractor shall adhere to all applicable labor laws, including but not limited to the Minimum Wages Act, 1948, the Contract Labour (Regulation and Abolition) Act, 1970, the Building and Construction Workers (Regulation of Employment and Conditions of Service) Act, 1996, and any related rules or amendments introduced from time to time.

39) Health and Sanitation Arrangements

The Contractor shall ensure compliance with all directions issued by health authorities concerning the protection of workers' health and the provision of sanitary arrangements for laborers employed directly or indirectly on the project. These measures shall be implemented to maintain health and hygiene standards at the worksite.The contractor shall be solely responsible for ensuring compliance with all statutory requirements related to ESIC, gratuity, and other applicable labor laws for workers engaged at the site. IITBRPF shall not be held liable for any default, penalty, or non-compliance in this regard.

40) DEFECTS AFTER COMPLETION

Any defects, shrinkage, settlement, or other faults arising within the "Defects Liability Period" , caused by materials or workmanship, shall be rectified by the contractor at their own cost upon receiving written instructions from IITBRPF. The contractor must complete the necessary corrections within the reasonable time specified in the instructions.

If the contractor fails to comply, IITBRPF reserves the right to engage third parties to rectify such defects, shrinkage, settlement, or faults. All costs, damages, losses, or expenses incurred as a result, whether directly or incidentally, shall be borne by the contractor. These amounts may be recovered by IITBRPF from payments due or PBG.

41) Variation in Prices and Wages

The rates quoted by the Contractor shall remain firm throughout the contract period, and no escalation in the cost of materials or labor will be permitted.

42) Insurance for Damage to Persons and Property

The Contractor shall bear full responsibility for any injury to persons, animals, or damage to property resulting from the actions, negligence, or operations of the Contractor, subcontractors, or their employees. This includes any injury or damage caused by carelessness, accidents, or any other cause connected to the execution of this contract.

This responsibility extends to damages caused to nearby buildings, roads, streets, footpaths, bridges,

or any other infrastructure, as well as to the contract works themselves due to weather conditions like rain. The Contractor shall indemnify and hold IITBRPF harmless from all expenses, claims, or compensation arising from such damages under any government laws or otherwise.

The Contractor must reimburse all such damages and ensure that the entire contract works are completed in perfect condition. They are also responsible for satisfying any third-party claims for property damage as stipulated in this clause.

43) Adherence to Drawings and Specifications

The Contractor shall execute the work strictly in accordance with the drawings and specifications provided in the tender document. The IITBRPF's interpretation of these documents shall be final and binding. IITBRPF reserves the right to issue revisions, modifications, or additional instructions to the drawings and specifications at any stage of the project. Any deviations from the drawings by contractor require prior written approval from the concerned authority or IITBRPF. If errors or inconsistencies in the drawings or specifications are identified, the Contractor must promptly notify IITBRPF for clarification or correction. Similarly, local conditions affecting the work must also be brought to the notice of IITBRPF.

If any work is discovered to be non-compliant with the drawings or specifications, the Contractor shall rectify it immediately at no additional cost or time extension. Furthermore, the Contractor shall not proceed with the work without prior written intimation to IITBRPF.

44) Deployment of Qualified Engineers

The Contractor must ensure the continuous presence of one or more qualified, full-time graduate engineers, with expertise in civil, mechanical, and electrical works, at the site during the progress of the work. These engineers shall ensure the proper execution of the work in accordance with the drawings, specifications, and schedule of quantities.

The IITBRPF reserves the right to request the immediate removal of any person employed by the Contractor on the site who, in their opinion, is incompetent or guilty of misconduct. Such individuals shall not be re-employed on the project without IITBRPF's prior approval.

45) The Contractor shall provide and install all necessary hoists, ladders, scaffolding, tools, tackles, plants, all transport for labour, materials and plant necessary for the proper carrying on, execution and completion of the work to the satisfaction of the IITBRPF. The Contractor shall make his own security arrangements to guard the materials and the portion of work under his control site at all times, at his own expenses. It is the responsibility of the contractor to safe storage of all materials till the completion of project and handed over to IITBRPF.

46) Site Cleanliness and Quality Assurance

The Contractor shall maintain cleanliness on the worksite by regularly cleaning as work progresses and removing rubbish and debris as necessary and as directed. Every effort must be made to ensure the quality of mechanical, electrical, and civil works, including the use of high-quality branded items, equipment, and spares.

The Contractor shall provide all necessary facilities, assistance, and opportunities for the inspection of all work completed by their team to the authorized representatives of IITBRPF. No obstruction or hindrance of any kind shall be caused by the Contractor or their workers during such inspections.

47) Dispute Resolution and Arbitration

All disputes or differences arising out of or related to this Agreement shall be resolved through arbitration as per the provisions of the prevailing Indian Arbitration and Conciliation Act, 1996, and its amendments.

The seat of arbitration shall be Mumbai, and the proceedings will be conducted in English. A sole arbitrator will be mutually appointed by the Parties within 15 (fifteen) days from the date of the first written recommendation by one Party to the other.

If the Parties fail to mutually decide on the sole arbitrator within the specified 15-day period, the arbitrator shall be appointed in accordance with the provisions of the Arbitration and Conciliation Act, 1996.

48) Provision and Use of Personal Protective Equipment (PPE)

The Contractor shall provide and ensure the use of the following personal protective equipment (PPE) by the workforce engaged at the site, as deemed necessary and as directed by authorized officials or consultants:

- Safety Helmets conforming to IS-2925
- Safety Belts conforming to IS-3521
- Safety shoes conforming to IS-1989
- Eye, Ear & Face Protection devices conforming to IS-8520 and IS-8940, IS-5983
- Hand & body protection devices conforming to IS-2573, IS-6994, IS-8807 & IS-8519.
- Rubber gloves for electrical purposes confirming to IS-4770
- Industrial safety gloves (leather & cotton gloves) confirming to IS-6994
- Industrial and safety rubber knee boots confirming to IS- 5557.

49) QUALITY ASSURANCE

The contractor is fully responsible for the quality of all work, including that done by sub-contractors and suppliers. Providing assistance to sub-contractors does not reduce this responsibility. IITBRPF reserves the right to audit the contractor's quality processes at any time.

b) The contractor must deploy adequate full-time staff to manage and maintain the Quality Assurance and Quality Control system throughout the project. A documented QA/QC manual should be updated regularly.

c) The contractor shall organize an inspection meeting with IITBRPF before starting major works and submit a Quality Assurance Plan/Inspection Test Plan for IITBRPF's approval within 2 weeks of the Purchase Order/Letter of Intent.

d) Failure to comply with quality assurance requirements, or rejection during inspection, will lead to rework at the contractor's cost and may result in penalties or termination as per contract terms.

50. INSPECTION AND TESTING

50.1. Factory Inspection & Testing

a. The responsibility for inspection, certification, etc. of all materials, parts lies with the Contractor . The contractor shall specify all of the inspection and testing requirements in the Quality Assurance plan (QAP)/ Inspection Test plan (ITP) which shall identify the activities requiring the IITBRPF approval, review, witnessing etc.

b. Inspection and testing requirements shall be in accordance with the applicable standards as listed in this requisition and the data sheets and Vendor's Quality Assurance Plan/ Inspection test plan approved by IITBRPF/ Consultant.

50.2. All equipment shall be inspected for compliance with

a. Requirements of the IITBRPF/Consultant's specifications, data sheets and correspondence thereafter.

b. Applicable Codes, standards and specifications, which shall also include sub- referenced standards therein.

c. QAP/ ITPs produced by the Contractor duly approved by IITBRPF/ Consultant.

d. IITBRPF's/ Consultant's Inspectors have the right to request additional inspections or tests to ensure that the equipment complies with this specification and all relevant codes and standards.

e. All equipment shall be presented for inspection in an unpainted state except for the final inspection. All instruments and other equipment necessary for testing shall be supplied by the Vendor and the same shall be checked and certified by the IITBRPF / Consultant's inspector. Any defects found by the I / Consultant's appointed Inspector shall be rectified in his presence. Where this is not possible or practical, check lists shall be prepared and signed by the Inspector stating all "pending items". Copies of these lists shall be sent to the IITBRPF to enable their subsequent checking.

f. Mill and shop inspection shall not relieve the Contractor from his contractual responsibility for replacing any defective material and for repairing any defective workmanship that may be discovered in the field.

g. The Contractor shall be responsible for co-coordinating the inspection and testing of sub-vendor supplied equipment, and for ensuring that the IITBRPF / Consultant's representatives are given the necessary access for inspection, and adequate warning of inspection and tests.

51. PERFORMANCE GUARANTEE

Unless otherwise agreed, all equipment shall be guaranteed as follows:

All equipment shall perform satisfactorily under the operating conditions and provide treated water quality to reuse and shall be fit for the purpose intended. The Contractor shall guarantee following as a minimum at site conditions:

52. DEFECT LIABILITY PERIOD

Defect liability period would be 18 months from successful commissioning and handing over the plant with respect to design deliverables of the plant. All equipment's/supplies to be guaranteed to perform at manufacturer's standards/efficiency, any upgradation/replacements to get desired recovery (>90%) at rated plant capacity will have to be replaced at free of cost from supplier.

53.ANNUAL MAINTENANCE CONTRACT

Non comprehensive Annual Maintenance Contract is part of WWTP(waste water treatment plant) supply and successful bidder to sign contact agreement for operation and maintenance of ZLD(zero liquid discharge).

55. SCOPE OF WORK

a. Regular operation and Maintenance of 57 KLD in three shifts per day by providing man power such as one skilled operator in a shift and one reliever and helper as and when required for attending service/break downs shall be arranged by contractor.
b. One Engineer visit in a month to train operators, verify & ensure smooth operations. Also, submission of monthly CESS report to the PCB is part of contact and agreement.
c. It is contractor's responsibility to attend any kind of breakdowns/technical issues arising during operational stage will have to be resolved without effecting to the factory functions.
d. Compliance safety rules and regulations
e. Keep all the records, log books and inventories.
f. Routine examining to raw water/Effluent water/Treated water.
g. Report any abnormalities, preventive & predictive maintenance.
h. Handling sludge drying systems, packing, storing etc.

II. Contractors Personnel:
a. Contractor shall ensure always required staff specified in the agreement for operating plant. Any case found team engaged less than the requirement, IITBRPF has every right to recover the wages of the short supply.
b. It shall be the duty and responsibility of contractor to comply with all required statutory requirements with regard to employment of his personnel. Contactor shall liable to payment of ESI, PF and Insurance etc.
c. Contractor shall supply necessary uniform, safety wears to the personal engaged for operation.
d. The age limit for employment shall be in strict accordance with existing labour legislations.
e. All the required tools and tackles to be facilitated by contractor to carryout routine maintenance Jobs.

7. DESIGN PARTICULARS FOR THE TREATMENT UNITS

DrawingsLink:
https://drive.google.com/drive/folders/1RbKIIMxLEr7M0QCkZxsln2TAsgF3J0XE?usp=sharing

Design Information
Type of Industry : IITB Research Park
Sources of Waste water : Lab Processing Units
Qty of Wastewater : 57 M3 / Day
Plant Hours of Operation Considered : 20 Hrs.
Average Flow : 2.85 M3 / Hr.
Design Flow : 3 M3/Hr.

Wastewater Quality
The following Wastewater quality is considered for designing the Wastewater Treatment plant.

PARAMETERS	RAW EFFLUENT
pH	6 - 8
Total Dissolved Solids(TDS),mg/l	2000-3000
Total suspended solids(TSS), mg/l	50-100
Total Hardness(TH),mg/l	350-400
Biochemical Oxygen demand(BOD),mg/l	800-1000
Chemical Oxygen demand(COD),mg/l	<3000
Oil & Grease, mg/l	<20
Ammoniacal Nitrogen, mg/l	50-60(assumed)
Total Kjeldhal Nitrogen, mg/l	80-100(assumed)
Silica, mg/l	<20 (assumed)
Colour	Light to Medium

Treated Water Quality
The treated water quality at the outlet of the waste water recycling plant based on above Waste water inlet quality shall be as follows:

PARAMETERS	RAW EFFLUENT
pH	7 - 8
Total Dissolved Solids(TDS),mg/l	No change
Total suspended solids(TSS), mg/l	10 - 20
Total Hardness(TH),mg/l	No change
Biochemical Oxygen demand(BOD),mg/l	< 20
Chemical Oxygen demand(COD),mg/l	150 - 200
Oil & Grease, mg/l	< 10
Ammoniacal Nitrogen, mg/l	<5
Total Kjeldhal Nitrogen, mg/l	< 10
Silica, mg/l	No change
Colour	Traces

Note : The recovered water is proposed to be used for Irrigation purpose.

TREATMENT SCHEME

The following treatment scheme envisaged shall consist of following treatment steps:

PRE - TREATMENT SYSTEM

Wastewater generated from Processing units are collected in the Equalization Tank, after passing through a Manually operated Bar Screen followed by the Oil & Grease Chamber. Screening is done to retain the large, floating matter using Coarse & Fine Bar Screen. The collected screenings are disposed of manually. In the Equalization Tank, sufficient retention time is provided to equalize and homogenize the variations in the flow and pollutant concentration. The contents of the EQT are mixed using set of Coarse Bubble diffusers. The homogenized effluent is pumped to the Primary Chemical Treatment system.

PRIMARY TREATMENT SYSTEM

The Homogenized effluent is pumped to the Primary Flash mixing cum Primary Flocculation tank. In the Primary Flash Mixer Tank suitable grade and quantity of coagulant is dosed to coagulate the colloids present in the raw effluent. A slow speed agitator / Flash Mixer is Considered in the Flash Mixing zone to mix the contents thoroughly for effective coagulation. It is then taken to the flocculation zone where suitable grade and quantity of flocculant is dosed to flocculate the colloids present in the raw effluent. A slow speed Flocculator is Considered in the flocculation zone for effective flocculation. The coagulated/flocculated effluent is then taken by gravity to Primary

Settling Tank (PST) where solid-liquid separation occurs. The settled sludge at the bottom of the Primary Settling Tank (PST) is taken to the Sludge Handling system. The overflow i.e., the primary treated effluent is taken to the biological treatment system

BIOLOGICAL TREATMENT SYSTEM (MBBR SYSTEM)

Primary Treated Sewage is entering into the Biological Treatment system.

The MBBR has become a popular mode of biological wastewater treatment. MBBR uses plastic carriers covered in biofilm to decompose waste. In addition to being an effective means of removing organic substances, MBBR is also an innovative method for nitrification and denitrification. As with other biological treatment processes, MBBR is often part of a multi-step system for wastewater treatment, with other processes focused on different aspects of purification. Individual plants can customize the MBBR process itself and their overall wastewater treatment regimen to properly address their purification needs.

Two stage MBBR facility has been suggested to cater to the higher organics load. The first MBBR compartment shall have an inbuilt anoxic compartment to effectively denitrify the waste water. The MBBR process takes place in a basin, also known as a reactor or as an aeration tank. The size of this receptacle depends on the filtration needs of a particular plant. Influent enters this basin for treatment, and may enter a second basin for further MBBR processing or for another type of water treatment process. MBBR aeration tanks are open at the top, exposing the water to the open air, which makes this an aerobic process of filtration.

Media: The basin is full of thousands of small plastic chips, called media or carriers. These media may occupy as much as 50 to 70% of the tank. Their design maximizes the surface area they provide for biofilm to grow on them. Many carriers resemble rotelle, or wheel-shaped pasta. They mimic the density of water, allowing them to mix throughout the fluid, rather than floating or sinking.

Aeration grid: Another thing that helps the media move effectively throughout the tank is an aeration grid. This device is essentially a fan located at the bottom of the reactor tank. The aeration grid helps keep carriers on the move so they can come into contact with all the waste present and efficiently decompose it, and it introduces more oxygen into the tank.

Sieve: When picturing the MBBR system described thus far, one might wonder how the media stay in the tank, rather than escaping through the exit. That would be a problem if it weren't for a sieve attached to the tank. The mesh material allows water to pass through, but keeps the plastic carriers inside the basin.

Compact: MBBR is an excellent option for facilities with space constraints, since it typically has a much smaller footprint than other systems. An MBBR aeration tank can effectively treat the same amount of water as a much larger tank used for a more traditional process. Primarily, it offers this benefit due to the maximized surface area the media provide for biofilm growth.

Simple: Another practical advantage of MBBR is that it is a relatively straightforward process. MBBR allows nature to take its course, which minimizes the role of the operator. It is worth noting that operators must be knowledgeable about the process so they can ensure everything is working properly at the molecular level. However, the process itself does not require very many steps.

Low maintenance: MBBR is also known for being a low-maintenance process. Maintenance tasks like backwashing that an operator would have to perform in other cases are typically unnecessary with MBBR. This system is largely self-moderating, so users can trust it to operate effectively without the need for demanding, ongoing maintenance.

Flexible: MBBR is naturally able to adjust as needed to varying loads and changes in the influent, since the microorganisms on the carriers respond to changes. It allows MBBR systems to resist shock loading or a sudden spike in pH levels. MBBR demonstrated the system's ability to remain highly stable when faced with organic, hydraulic and salt shock loadings and to quickly return to normal.

Efficient: One of the most significant advantages of MBBR is its impressive level of efficiency. An MBBR system can work much more quickly than alternative methods to treat the water. The hydraulic retention time (HRT) for BOD and nitrogen removal with an MBBR is only few hours. The continuously moving media and the sheer amount of biofilm make this low HRT possible.

FILTRATION SYSTEM:

The Biologically Treated Water from Secondary settling Tank is collected in Filter Feed Tank is pumped to the set of Pressure Sand filter (PSF) followed by Activated Carbon Filter (ACF). The PSF & ACF removes traces of fine suspended solids in the treated effluent and reduces the load to the downstream units.

SLUDGE DEWATERING SYSTEM:

The settled sludge at the bottom of the Primary Settling Tank & Excess Sludge from Secondary settling tank are collected in sludge holding tank from where it is pumped to the Mechanical sludge dewatering system for sludge concentration for easy disposal of the concentrated sludge.

LIST OF CIVIL AND STRUCTURAL DETAILS

Sl No.	Description	Qty	MOC	Tank Dimensions				
A	Water Retaining Structure							
1	Screening Chamber	1	RCC	1.5	0.5	0.25	0.5	0.75
2	Oil & Grease Chamber	1	RCC	3	1.2	0.9	0.7	1.6
3	Equalization Tank	1	RCC	5	3	2.5	1	3.5
4	Primary Flash Mixing & Flocculation Tank	1	RCC	2	1	1.5	0.5	2
5	Primary Settling tank	1	RCC	2	2	3	0.5	3.5
6	Anoxic zone	1	RCC	2	2	3	0.5	3.5
7	MBBR Tank - 1 1 RCC	1	RCC	2.5	2	4.5	0.5	5

8	MBBR Tank - 2	1	RCC	2.5	2	4.5	0.5	5
9	Secondary Settling Tank	1	RCC	2	2	4	0.5	4.5
10	Filter Feed Tank	1	RCC	2	2.5	3.5	0.5	4
11	RO Permeate Water Tank	1	RCC	3	2.5	3.5	0.5	4
12	RO Reject Water Tank	1	RCC	3	2.5	3.5	0.5	4
13	Sludge Holding Tank	1	RCC	3	2	2.5	0.5	3
B	Column Structures	1						
	Area for Chemical Preparation Area	1		4	3	3.5		
	UF & RO Room	1		6	4	3.5		
	Blower cum Panel Room	1		4	3	3.5		
	Sludge dewatering Area	1		3	3	3.5		
	Other Misc. work							
	1.1. RCC / BCC Blocks for diffuser fixing 2. Civil foundations for Pumps, Panel, Filters, Air blower, Skid, etc., 3. Internal plant drains facilities, etc.,							
	Note: The sizes & volume of tanks may vary based on site conditions.							

Note : The specification of the equipment is a guideline only and as per process requirement if need to be modified shall be done with prior information / approval from the consultant.

LAB EQUIPMENT'S

Intended supplier shall provide Minimum equipment required for testing PH, TDS,TSS, COD, BOD, Total hardness including all testing apparatus like beakers, flasks,TDS testing by gravimetric method.

4. ELECTRICAL & PIPING REQUIREMENTS

a) Vendor shall submit the Motor Datasheet with all the data filled by the Motor Manufacturer.

b) Single Power supply point -3Ph, 415V, 50Hz provided within the battery limit of the intended vendor. Further distribution & control shall be in the scope of supplier, Supplier shall get drawing approval for MCC Panels [SLD, GA, BOM], Refer annexures for list of approved makes

c) Local control panel shall have all necessary standard features viz.

i. Motor ON/OFF push buttons

ii. Process interlocking provisions

iii. Auto / Manual selection position

iv. Motor ON/OFF indication

v. Load manager

vi. MPCB's for motor protection

d) Local control panel shall be suitable for Safe location near ZLD.

e) Electrical Panel:

f) The Electrical Panel shall be fabricated from cold rolled MS sheets of minimum 2mm thickness for load bearing members, 1.6mm for non-load bearing members and 3mm for gland plates. Panel shall be suitable for outdoor installation with IP-55 ingress protection. The Electrical panel shall also house the starter and breaker units for the drive motors and these feeders shall be fixed type. Motors rated up to 5KW shall be started direct on line (DOL starter) and 5KW and above shall have Star-Delta starter. Supply for the Motor space heater shall be derived from this panel. Suitable power feeders shall be provided for the control panel. The electrical Panel shall have Start, Stop Push buttons and Indication provision for all motors/pumps, an auto start to be enabled for blower andPumps whenever power resumes after immediate interruption. All the pumps to have auto high level and low-level cut offs

g) All Power and Control cables shall be 1.1kv grade, XLPE insulated, multi standard conductor, single/multi core, steel armored, extruded PVC inner sheathed and extruded FRLS PVC outer sheathed. Cable of size 6 sq.mm and below shall be of copper conductor. Cables of size 10 sq.mm and above shall be aluminum conductors confirming to IS 7098 (Part-1) to be laid in GI

perforated/ladder cable trays to be dressed and tagged.

h) Detailed P&I diagram to be produced for approvals and on completion of installation and commissioning works as built drawings, set of O&M manuals, SOP's and consumable and spare list to hand over to the in charge at site.

i) Complete piping systems to be standardized as per international color codes, flow direction labeling, complete as required at site.

j) Complete piping installation with necessary structural supports duly painted including carrying pressure testing for pipes and tanks etc. can be done and test certificates submitted for records and compliance.

k) Approved Make list

Sr. No.	Description	MAKE
1	OPC - 53 Grade Cement	Birla Super / Ultratech cement / ACC
2	Ready Mix Concrete	RMC Readymix (India) Pvt. Ltd.,/ ACC - RMC / Ultratech RMC
3	Nito Bond/Conbextra GP2	FOSROC Chemicals (India) Ltd., / BASF construction chemicals (India) Pvt Ltd.,
4	Tor steel (Rolled) / TMT STEEL	Steel Authority of India Ltd., / JSW Steel Ltd., / TATA Steel Ltd.
5	Structural steel	JSW Steels Ltd.,/ TATA Steel Ltd./ Steel Authority of India Ltd.,
6	PUF panells roofing	JSW Steels Ltd.,/ Millennium Building Systems Inc.,/
7	Roofing & ClaSDing sheets	Lloyd Insulations (India) Ltd., Ltd.,/ Tata Blue Scope / JSW Roofing Solutions
8	Waterproofing compound / Waterproofing solutions & Agency	FOSROC Chemicals (India) Ltd., / Pidilite Industries Limited / Sika India
9	Concrete Interlock pavers / Cubical pavers	Sobha Developers Ltd, (Concrete Products Div.) / Basant Beton / pavit .
10	Cobble Stones	Basant Beton / Pavit / Ultra tile
11	Anchor Bolts	Hilti India Pvt Ltd / Fischer Building Materials India