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1.	Page 3 of 45 Clause 4 NIT	Tender Fee Rs. 100,000 (Rupees One lakh only) excluding applicable taxes	We humbly request you to kindly waive-off the condition of submission of Tender Fee for MSME (Udyan Certificate holder) companies.	RFP cum RFQ conditions for Package B remain unchanged.
2.	Page 3 of 45 Clause 4 NIT	Tender Fee Rs. 100,000 (Rupees One lakh only) excluding applicable taxes	We request you to kindly keep the Tender Fee to Rs. 10,000 only, as per the Industry Standards.	RFP cum RFQ conditions for Package B remain unchanged.
3.	Page 3 of 45 Clause 5 NIT	Bid Security Rs. 3,00,00,000/- (Rupees Three Crore only)	We humbly request you to kindly waive-off the condition of submission of Bid Security for MSME (Udyan Certificate holder) companies.	RFP cum RFQ conditions for Package B remain unchanged.
4.	Page 3 of 45 Clause 5 NIT	Bid Security Rs. 3,00,00,000/- (Rupees Three Crore only).	We request you to kindly keep the Bid Security to Rs. 1 Crores only, as per the Industry Standards.	RFP cum RFQ conditions for Package B remain unchanged.
5.	NA MSME Preferences	Not specified in the tender document	We humbly request you to kindly keep the provision of all the benefits / preferences and relaxations as per "Public Procurement Policy for Micro and Small Enterprises (MSEs) Order, 2012" for MSME (Udyan Certificate holder) companies.	RFP cum RFQ conditions for Package B remain unchanged.



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6.	Page 3 of 45 Clause 7 NIT	Time for Completion of Part 1 - EPC of the Works 18 months from the date of signing of the Agreement, including commissioning and trial run.	In view of the type & size of the project, we humbly request you to kindly keep the completion schedule as 24 months from the date of Approval of Drawings submitted by the contractor / Receipt of the Advance Payment, whichever is later.	RFP cum RFQ conditions for Package B remain unchanged.
7.	Page 3 of 45 Clause 8 NIT	Address for Correspondence Managing Director, Maharashtra Industrial Township Limited Udyog Sarathi, MIDC Office, Marol Industrial Area, Andheri (East) Mumbai, Maharashtra State, India – 400093	Kindly share the contact details of key persons for site visit.	The contact number for the site visit is Mr Nilesh Londe – 97300 30092
8.	Page 3 of 45 Clause 9 NIT	Details for Downloading Tender Document The complete RFQ cum RFP document can be viewed/downloaded from the websites https://aitl.eproc.in & www.auric.city from 20th July 2026 to 14th August 2026 up to 1500 hours IST. 10.	We are not able to download the following documents, kindly share the same once again: P&ID Volume 1 Part 5	The documents can be downloaded from the site https://www.auric.city/tender https://aitl.eproc.in
9.	Page 3 of 45 Clause 10 NIT	Submission of Bid Bid must be submitted online only at (https://aitl.eproc.in) on or before (14th August 2026 up to 1500 hours IST).	In view of the big size and the nature of project, we humbly request you to kindly extend the due date of submission of bid till 4 weeks from your last replies to the bidder's Pre Bid Queries / any	RFP cum RFQ conditions for Package B remain unchanged.



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	Due date of Submission of Bid.	Applications received online shall be opened on 14th August 2026 at 16.00 hours IST.	corrigendum / addendum to the tender enquiry. Kindly confirm.	
10.	Page 11 of 45 NIT CETP Background	The first phase will be implemented for an area of about 1000 Ha, a greenfield area which will be planned and engineered into a world-class industrial development. However, the CETP and STP works being developed as per the current tender are related to the development of Phase 1 only.	Kindly share the list of CETP Member Industries with their area of activities i.e. Solar, Electronics, Textiles F&B etc, the tentative effluent qualities and their contribution in the terms of KLD into the proposed CETP for getting more clarity on this matter.	Data not available as the plots have not been leased to any industries.
11.	Page 22 of 45 NIT CETP Background	a. General Eligibility Criteria i. The bidder should have independently and successfully completed on Engineering Procurement Construction (EPC)/ Design-build (DB)/ Design-Build-Operate (DBO)/ Hybrid Annuity Model (HAM) of Public-Private Partnership (PPP) contract basis at least one Sewage Treatment Plant (STP) of not less than 0.5 MLD capacity based on advanced activated sludge process (excluding any variant of sequential batch process or time based control process) producing treated water quality with BOD < 5 mg/l and TN <10 mg/L	We understand that reference plant with Membrane Bio-Reactor (MBR) Technology shall be acceptable under this clause as "advanced activated sludge process". Kindly confirm.	Bidder's understanding is in order.



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		ii. The bidder should have independently and successful completed on Engineering Procurement Construction (EPC)/ Design-build (DB)/ Design-Build-Operate (DBO)/Hybrid Annuity Model (HAM) of Public-Private Partnership (PPP) contract basis at least one ETP/CETP of not less than 5.6 MLD capacity or two ETPs/ CETPs of not less than 3.5 MLD capacity each or three ETPs/ CETPs of not less than 2.8 MLD each based on advanced activated sludge process (excluding any variant of sequential batch process or time based control process) with effluent standards as BOD < 10mg/l, TSS < 10mg/l.		
12.	Page 20 of 45 Group Company Experience	Similar work experience of group companies, sister companies, concessionaires, or work executed for such entities shall not be considered.	We humbly request you to allow similar work experience of group companies, sister companies, concessionaires, or work executed for such entities for the purpose of qualification criteria for this tender. The bidder shall be required to submit the CA certified details for the purpose of verification.	RFP cum RFQ conditions for Package B remain unchanged.
13.	Page 20 of 45	Qualification of the Bidder	We understand that the reference plants executed by the bidder out of India	RFP cum RFQ conditions for Package B remain unchanged.



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	NIT CETP Background	(For all the Clauses with regards to the bidder's qualification)	(Global Reference of an Indian Bidder) shall be accepted for meeting the Pre-Qualification Criteria for this project. Kindly confirm.	
14.	Page 14 of 75 Vol 2 / Part 2	Ammoniacal Nitrogen has been specified in the treated effluent, but not in the feed effluent to be treated.	Please provide the value of Ammoniacal Nitrogen (TAN) at Feed effluent	Bidder to refer to Corrigendum 1.
15.	Page 14 of 75 Vol 2 / Part 2	Silica has not been specified in the feed effluent to be treated.	Please provide the value of Silica as (Total Silica) Reactive silica & colloidal silica at feed effluent	Bidder to refer to Corrigendum 1.
16.	Process Diagram	Flow The Scheme of Treatment as prescribed in the tender document.	We understand that the Scheme of Treatment as prescribed in the tender document is for reference only and based upon their experience, the bidders can propose the Scheme of Treatment so as to meet the Guarantee Parameters.	The treatment scheme specified in the tender is the minimum requirement. The Bidder shall provide additional units in accordance with its design to meet the guaranteed parameters. The RFP cum RFQ conditions for Package B remain unchanged.
17.	Page 14 of 75 Vol 2 / Part 2	The values of Chloride & Sulphate in treated effluent quality parameters	In treated effluent quality parameters, the values of Chloride & Sulphate are more than the TDS, kindly check.	Bidder to refer to Corrigendum 1.



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18.	Page 73 of 75 Vol 2 / Part 2	A combined tank shall be provided to collect the MBR-treated water from both package STPs. The MBR-treated water shall be discharged/pumped to the inlet of the UV chamber of the CETP.	We understand the mention of "Raw Sewage" at the Feed of PFD of CETP is a typographical error and the treated sewage from the MBR shall be mixed with the MBR treated effluent in "UV Disinfection Tank".	Bidder to refer to Corrigendum 1. The MBR treated effluent from the STP and the MBR treated effluent from the CETP shall be mixed prior to the UV disinfection process.
19.	Civil Work in bidder's Scope	Civil details for the project	Kindly share the Civil details including the following documents: Complete Geo – Technical Survey Report Soil Characteristics Investigation Report including the Soil bearing capacity etc Contour Plan of the proposed site Borewell Log Data	Bidder to refer to Corrigendum 1.
20.	General	Presence of PVA / PVAs in the wastewater to be treated.	We understand that the wastewater which is to be treated thru the proposed Plant, shall be from synthetic polymers like Polyvinyl Alcohol (PVA), Polyvinyl Acetate (PVAc) or any derivatives thereof. Kindly confirm.	Bidder to refer to Corrigendum 1.
21.	Vendor List Volume 2 Part 5	Vendor List as per the Tender Document.	In view of the size & nature of the project and to ensure the availability of the bought out items and their spares for a long duration, we humbly request you to kindly allow us to use the following	RFP cum RFQ conditions for Package B remain unchanged.



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			components / equipment from our own makes as follows: KAIGO: Pressure Tubes, FRP Tanks, Dosing Pumps, HDPE Tanks, PHE Bags, Micron Cartridge Filters etc Qurem: UF / MBR/SUF/RO Segmo: Solid Liquid Separation Equipment including HRSCC, Clarifiers, DAF, PSF/DMF Housings, Thermal (MVC/ATFD/MEE), MCF Housings, Sludge Handling Systems like Filter press, Paddle dryers etc. This will help us to ensure the availability of spare parts and to provide the service support to you for a long duration. Kindly approve.	
22.	Payment Terms as specified in Volume – 1 / Part 4 Page 56 to 58 of 110	Payment Terms applicable for this tender	We request you to kindly consider the payment terms as follows: For the Supply of Material: 10% advance alongwith the Letter of Award / Letter of Intent 10% against submission of GA Layout & Load data	RFP cum RFQ conditions for Package B remain unchanged.



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			10% against the submission of Proof of Placement of Purchase Orders for Major Equipment 60% (including 100% GST of the basic value) against the submission of Proforma Invoice before the dispatch of equipment from their respective dispatch locations 5% Against the Erection of the Plant 5% Against the Commissioning of the Plant For the Erection & Commissions of the Plant : 80% before the mobilization of site 20% After the Erection of the Plant Kindly confirm.	
23.	Volume – 1 / Part 4 Page 54 of 110 Clause 7.9.2	Treated Water Output Guarantee: On failure to achieve the rated maximum output of treated water as per Vol 2, Part 2 Process Specifications, the contractor will be levied Liquidated Damages equal to 1.5% of Contract Price for Part 1- EPC of the Works for each 1.0% shortfall below the guaranteed capacity.	The Liquidated Damages mentioned here are very much on the higher side. We request you to kindly consider 0.15% of the Contract Price for Part 1- EPC of the Works for each 1.0% shortfall below the guaranteed capacity.	RFP cum RFQ conditions for Package B remain unchanged.



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24.	Volume – 1 / Part 4 Clause 7.9.3 Page 54 of 110	7.9.3 Water Quality Guarantee: On failure to achieve the guaranteed water quality parameters as per Vol 4, Part 3, Schedule of Guarantee, the contractor will be levied Liquidated Damages equal to 0.1% Contract Price for Part 1- EPC of the Works for each incremental increase in measured water quality parameters over 24 hours composite sampling beyond the stipulated requirements. The charges will be applied separately for each parameter. No increase in coliform count beyond the stipulated limit is allowable. Applicable Increments: Turbidity - 0.3 NTU, All other parameters 1 mg/L	We request you to kindly waive-off this condition for individual parameters. As per the industry standards the Guarantees are only on few key parameters like TDS and pH.	RFP cum RFQ conditions for Package B remain unchanged.
25.	Volume – 1 / Part 4 Page 54 of 110 Clause 7.9.2 & 7.9.3	The maximum limit of the LD for not meeting Treated Water Output Guarantees mentioned above.	The total sum of the above mentioned LDs should not exceed 0.25% of the contract price.	RFP cum RFQ conditions for Package B remain unchanged.
26.	Page 6 of 7	LD applicable for the delay in completion of project.	Please provide the LD for delay as it has been referred to be mentioned in the Contract Data Sheet and there the reference of Vol 1 Part 4 [Conditions of	Bidder to refer to Corrigendum 1.



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	Vol 1 Part 4 [Conditions of Contract] Clause 7.3		Contract] Clause 7.3 has been given, without the mention of LD for delay. Kindly confirm.	
27.	Page 6 of 7 Vol 1 Part 4 [Conditions of Contract] Clause 7.3	19. Maximum amount of Delay damages 10% of the accepted Contract Price for Part 1 - EPC Works.	We humbly request you to kindly keep the Liquidated Damages for delay in supply of material @ 0.25% per week of Non-Supplied / Delayed portion of the supply part of the contract to a maximum amount of 2.5% of Non-Supplied / Delayed portion of the supply part of the contract. Further, any delay arising due to the delay in the approval of documents submitted by the supplier for the reasons not attributable to the supplier shall be added in the delivery period. Kindly confirm.	RFP cum RFQ conditions for Package B remain unchanged.
28.	NA	Non – Availability of Effluent Delay in the completion of Project for the reasons Not Attributable to the Bidder	In case the equipment installation / wet trials i. e. plant trial with effluent / commissioning is delayed due the reasons not attributable to BIDDER or by anything under client's scope (e.g., Non availability of effluent, civil readiness, power/steam availability), plant shall be "deemed commissioned" after 15 days	RFP cum RFQ conditions for Package B remain unchanged. Bidder to refer to clause 17.



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			from readiness indicated by the successful bidder. Pending payments, if any, shall be released immediately against undertaking by Envisol to support the client in finishing the pending work for which the revised additional rate shall be shared at the time of client readiness. Advance Bank Guarantee / Performance Bank Guarantee or any other Guarantees shall be released immediately in these circumstances. The Plant & Equipment Guarantees & Warrantees shall also be applicable accordingly from the date of intimation of readiness of the plant as indicated by BIDDER. Please confirm.	
29.	Defects Liability Period Vol 1 Part 4 Conditions of Contract Clause 1.1.31	The DLP shall be 4 years from the date of completion of the trial run.	We humbly request you to kindly consider the following Warrantee Clause for this project: The plant performance shall be warranted for 12 months from the date of commissioning / deemed commissioned date, whichever is earlier. AND, equipment supplied shall be warranted for	RFP cum RFQ conditions for Package B remain unchanged.



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			18 months from the readiness to dispatch of respective equipment from the Bidder's or its sub-contractor factories OR, 12 months from the date of commissioning / deemed commissioned date, whichever is earlier.	
30.	Page 6 of 7 Vol 1 Part 4 of [Conditions Contract] Clause 7.3	Two separate performance security for the Part 1 - EPC Works and the Part 2 - Operation and Maintenance. The amount of Performance Guarantee shall be equal to 5% of the Bid Price for each Part 1 - EPC Works and Part 2 - Operation and Maintenance.	We request you to keep the amount of Performance Guarantee to a maximum of 2.5% of the Bid Price for each Part 1 - EPC Works and Part 2 - Operation and Maintenance.	RFP cum RFQ conditions for Package B remain unchanged.
31.	Page 6 of 7 Vol 1 Part 4 of [Conditions Contract] Clause 7.3	20. Maximum amount of Liquidated Damages in a month for Breakdown of Equipment during O&M Vol 1 Part 5 [Particular Conditions for O&M] Clause 3.1.4 Maximum liquidated damages shall not exceed twice the monthly O&M bill.	We request you to keep the Maximum amount of Liquidated Damages in a month for Breakdown of Equipment during O&M under this clause as 5% of the monthly O&M bill.	RFP cum RFQ conditions for Package B remain unchanged.
32.	Page 6 of 7	21. Maximum amount of Liquidated Damages in a month for non-compliance with treated water standards during O&M	We request you to keep the Maximum amount of Liquidated Damages in a month for Breakdown of Equipment during O&M under this clause as 5% of the monthly O&M bill.	RFP cum RFQ conditions for Package B remain unchanged.



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	Vol 1 Part 4 of [Conditions of Contract] Clause 7.3	Vol 1 Part 5 [Particular Conditions for O&M] Clause 3.1.4 Maximum liquidated damages shall not exceed twice the monthly O&M cost.		
33.	Page 6 of 7 Vol 1 Part 4 of [Conditions of Contract] Clause 3.6	25. Percentage of retention for Part 1 – EPC part of the Works 5% (five per cent) of the amount of all Interim Payment Certificates for the Works Contract portion of the Contract, excluding any Provisional Sums.	We humbly request you to kindly waive-off the condition of Retention Money Deduction as the Bid Security is already there.	RFP cum RFQ conditions for Package B remain unchanged.
34.	Page 6 of 7 Vol 1 Part 4 of [Conditions of Contract] Clause 3.6	26. Limit of Retention Money for Part 1 - EPC part of the Works 5% (five per cent) of the Works Contract Price, excluding any Provisional Sums.	In case the Retention Money Deduction is applicable it should be limited to maximum 2.5% only.	RFP cum RFQ conditions for Package B remain unchanged.
35.	Volume – 1 / Part 4 Page 61 of 110 Clause 10	50% of this Retention Money shall be released within 28 days of the issue of the Completion Certificate. The balance Retention Money may be paid to the contractor upon submission of a Bank Guarantee of 110% of the balance	We request you to kindly release full 100% of the Retention Money within 15 days of completion of works.	RFP cum RFQ conditions for Package B remain unchanged.



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		amount, valid up to 60 days beyond the expiry of the Defect Liability Period.		
36.	Volume 1, Part I – NIT & ITB, Page no 11. Clause no 2.3.2	Joint venture or Consortium is not acceptable.	To promote competitive bidding, we humbly request you to kindly allow Joint Venture or Consortium maximum up to 02 (Two) partners, jointly meeting the eligibility criteria.	RFP cum RFQ conditions for Package B remain unchanged.
37.	Volume 1, Part I – NIT & ITB, Page no 12. Clause no 2.1.b.i - General Eligibility Criteria	The bidder should have independently and successful completed on Engineering Procurement Construction (EPC)/ Design- build (DB)/ Design-Build-Operate (DBO)/Hybrid Annuity Model (HAM) of Public-Private Partnership (PPP) contract basis at least one ETP/CETP of not less than 5.6 MLD capacity or two ETPs/ CETPs of not less than 3.5 MLD capacity each or three ETPs/ CETPs of not less than 2.8 MLD each based on advanced activated sludge process (excluding any variant of sequential batch process or time based control process) with effluent standards as BOD < 10mg/l, TSS < 10mg/l.	To increase the participation of the number of bidders, we humbly request you to kindly allow the ETP/CETP based on sequential batch process as a part of General Eligibility Criteria.	Bidder to refer to Corrigendum 1.
38.	Volume 1, Part I – NIT & ITB, Page no 12. Clause no 2.1.b.i	The bidder should have independently and successful completed on Engineering Procurement Construction (EPC)/ Design- build (DB)/ Design-Build-	We humbly request you to kindly allow Technology Provider Qualifications for membrane bioreactor (MBR) technology, as the same has been allowed for	Kindly Read as : The bidder/technology provider should have and successful



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	- Particular Eligibility Criteria	Operate (DBO)/Hybrid Annuity Model (HAM) of Public-Private Partnership (PPP) contract basis at least one membrane bioreactor (MBR) based effluent/sewage treatment plant of not less than 3.5 MLD capacity with effluent standards as BOD < 5mg/l, TSS < 2 mg/l.	Reverse Osmosis and Zero Liquid Discharge systems.	completed on Engineering Procurement Construction (EPC)/ Design- build (DB)/ Design-Build-Operate (DBO)/Hybrid Annuity Model (HAM) of Public-Private Partnership (PPP) contract basis at least one membrane bioreactor (MBR) based effluent/sewage treatment plant of not less than 3.5 MLD capacity with effluent standards as BOD < 5mg/l, TSS < 2 mg/l.
39.	Volume 2, Part 2, Process Specifications. Page 3 and 67	1.4 Scope of Unit Processes vs. 5.14.1 MBR Treated Water.	Clause 1.4 (I) lists a "Disinfection system with Sodium Hypochlorite" within the scope of the new STP. However, Clause 5.14.1 states that MBR-treated water shall be pumped to the "inlet of the UV chamber of the CETP". We understand that the disinfection is solely handled by routing the effluent to CETP's UV system.	Bidder to refer to Corrigendum 1.
40.	Volume 2, Part 2 Process Specifications	CETP Design Requirements.	The tender mandates 3 (2W+1S) for various equipment like screens, pumps, blowers, etc. Since this is relatively a small capacity plant, we request amending this to "1 working and 1 standby (1W+1S) configuration for CETP".	RFP cum RFQ conditions for Package B remain unchanged.



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41.	Volume 2, Part 2 Process Specifications	STP Design Requirements.	The tender mandates 3 (2W+1S) for various equipment like screens, pumps, blowers, etc. Since this is a packaged STP, we request amending this to "as per the packaged STP plant approved vendor's recommendation for STP".	RFP cum RFQ conditions for Package B remain unchanged.
42.	Vol 2: Part 2 Process Specification, Clause no 4.1.1, page no 13	The industrial wastewater will be received in the CETP receiving chamber from the last/designated manhole outside the CETP & STP plot boundary.	We request you to provide us with the Incoming sewer level and Ground level for the CETP pumping station hydraulic design.	Bidder to refer to Corrigendum 1.
43.	Vol 2: Part 2 Process Specification, Clause no 5.2.1, page no 57	The raw sewage will be received in the STP receiving chamber from the last manhole outside the CETP & STP plot boundary.	We request you to provide us with the Incoming sewer level and Ground level for the STP pumping station hydraulic design.	Bidder to refer to Corrigendum 1.
44.	Vol 2: Part 2 Process Specification, Clause no 5.4, page no 59	The wet well should be designed for the phase peak flow of 1250 m3/d.	As the sewage volume is very low, we request you to allow the STP wet well to be designed as a combined part of a CETP wet well by providing an isolated compartment only to receive Sewage influent.	Subject to the suitability of the design for easy maintenance during O&M, location of the last manholes for the industrial and domestic sewers, and as per approved detailed engineering documents. In any case, domestic sewage and industrial wastewater have to be treated separately in STP and CETP, respectively.
45.	Vol 2: Part 2 Process Specification, Clause	Process Requirement for prefabricated and skid- mounted 2 x 250 KLD	We understand that the given design requirements are for reference purposes	STP design may be based on the system design by the MBR



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	no 5, NEW STP PARTICULAR DESIGN REQUIREMENTS	Membrane Bio Reactor Process-based Sewage Treatment plant, so that it can be easily shifted from one place to another.	only. As the STP is prefabricated and skid - mounted, the process design scheme of the same shall be as per the manufacturer's system design listed under the Approved Vendor list, to achieve the guaranteed treated sewage parameters.	technology manufacturer listed under the Approved Vendor list. In any case, the Bidder has to ensure that the guaranteed treated sewage parameters are complied with and is suitable as feed to RO.
46.	Vol 2: Part 2 Process Specification, Clause no 5, NEW STP PARTICULARS DESIGN REQUIREMENTS	Process Requirement for prefabricated and skid- mounted 2 x 250 KLD Membrane Bio Reactor Process-based Sewage Treatment plant, so that it can be easily shifted from one place to another.	We request you to allow the use of MS (Mild Steel) with internal Epoxy coating as MOC for STP units/Tanks for better structural integrity and transportability.	RFP cum RFQ conditions for Package B remain unchanged.
47.	Vol 2/ Part 1 General requirement/18 of 113/1.1	1.1 Noise Limits: The Contractor shall ensure that the noise level generated by blowers, pumps, motors, or any other equipment installed in the treatment plant does not exceed 80 dB(A) at a distance of 1 meter from the equipment surface under any operating condition. Measurement shall be carried out in accordance with internationally recognized standards (such as ISO 3744 or equivalent).	All equipment noise emissions, including blowers, pumps, motors, and ancillary systems, shall not exceed 85 dB(A) measured at 1 meter from the equipment surface during all operating conditions.	RFP cum RFQ conditions for Package B remain unchanged.
48.	Vol 2/ Part 1 General requirement, / 39 of 113/4.4.4	Software Requirement (OpenBIM): The following software shall be based on the	Bidder shall provide 3D model format for Piping - AutoCAD Plant 3D(P3D) -	RFP cum RFQ conditions for Package B remain unchanged.



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		latest operating system available and shall have the latest compatible version.	Version 2023 and Structural – TEKLA – Version 2022.	
49.	Vol 2/ Part 2 Process Specification/page 7 of 75/1.3	1.3 Scope of Unit Processes and Equipment for new CETP 10. Pre-anoxic tank with submersible mixer.	Bidders shall design the MBR system with an Anoxic + Aerobic configuration rather than an Anaerobic + Anoxic + Aerobic system. Influent total phosphorus (TP) of 10 ppm shall be removed in the primary clarifier using chemical precipitation with Alum or FeCl ₃ dosing.	The selection of anoxic, anaerobic, and aerobic conditions shall be as per the contractor's design and as approved during detailed engineering.
50.	Vol 2/ Part 2 Process Specification/page 7 of 75/1.3	1.3 Scope of Unit Processes and Equipment for new CETP 23. Brine Treatment and ZLD System.	EDR systems are unsuitable for high-TDS feedwater (10,000- 12,000 ppm), as elevated salinity causes scaling and fouling, resulting in reduced operational lifespan and increased maintenance costs. Instead, bidders shall design the RO reject stream for direct feed to the thermal treatment system. Thus, we request to eliminate the Electrodialysis Reversal (EDR) systems for brine treatment.	Bidder to refer to Corrigendum 1.
51.	Vol 2/ Part 2 Process Specification/page 12 of 75/2.1	2.1 Design flow for New CETP Peak flow factor -1.5 Peak Daily Flow (PDF)-10,500 m ³ /day.	The Employer shall confirm the peak flow frequency and duration of occurrence. Bidders shall design the system based on an average feed flow of 7 MLD. Peak flow is defined as 1.5 times the average flow	Bidder's understanding is in order. RFP cum RFQ conditions for Package B remain unchanged.



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			(10.5 MLD) and shall not be used as the design basis.	
52.	Vol 2/ Part 2 Process Specification/page 13 of 75/2.2	Industrial Raw Influent Quality Wastewater Temperature (Min) - 20 Deg C Wastewater Temperature (Max) -40 Deg C.	Please confirm the power consumption guarantee at an average temperature of 30°C and the outlet quality at a maximum continuous operating temperature of 35°C. At 40 Deg C biological system of continuous operation will be more challenging for the growth of aerobic bacteria.	RFP cum RFQ conditions for Package B remain unchanged.
53.	Vol 2/ Part 2 Process Specification/page 14 of 75/2.3	CETP Treated Effluent Limits Chemical Oxygen Demand (COD) - 20 ppm; Total Dissolved Solids - 500 ppm; Chloride -600 ppm; Sulphate - 1000 ppm.	The Guaranteed CETP treated effluent limits refer to the quality of RO permeate or MVR distillate. According to the Volume 4 Schedule of guaranteed document, the specifications are as follows: Chemical Oxygen Demand (COD): 80 ppm; Total Dissolved Solids (TDS): 500 ppm. Could you please confirm which of these will be considered for reuse purposes?.	Bidder to refer to Corrigendum 1.
54.	Vol 2/ Part 2 Process Specification/page 44 of 75/4.24	Brine Treatment System: The design of the brine management systems shall be modular. The design capacity of the brine treatment system shall be calculated considering the RO recovery of not more than 80%. The TDS of brine water shall	We propose to feed RO reject directly to the Thermal treatment system to achieve zero liquid discharge. The RO system shall be proposed to consistently achieve a recovery rate exceeding 90%. Thus, we request to eliminate the Brine treatment system consisting of Lime & Soda treatment or Electrodialysis Reversal	RFP cum RFQ conditions for Package B remain unchanged.



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		be as per the Contractor's design of the RO system.	(EDR) systems for RO reject management.	
55.	Vol 2/ Part 2 Process Specification/page 47 of 75/4.24.4.1	MVR Plant Components e) Deaerator with condenser (1 duty) h) Concentrate recycle pump (1 duty, 1 spare).	"MVR plant components shall be designed by the Bidder to meet Tender specifications and Key Performance Indicators (KPIs). e) Deaerator with Condenser: If applicable, Bidder shall provide Deaerator only (condenser not required). h) Concentrate Recycle Pump: Bidder shall offer one (1) duty recycle pump without installed spare. Installed standby pumps are not advisable for high-concentration MVR operation ($\approx 400,000$ ppm TDS) due to operational criticality and maintenance concerns.	The design of MVR components shall be as per the contractor's design and as approved during detailed engineering.
56.	Vol 4 Part 3 Schedule of Guarantee r3	Page 2	Table 1 -1, influent characteristics, Cyanide < 2 mg/l; this contradicts Vol 2, Part 2 process specifications, whereas Cyanide is mentioned to be 0.2 mg/l; which one should be considered for design?	Bidder to refer to Corrigendum 1.

Corrigendum No. 1

Sl	Clause and Page No.	Previous Clause	Revised Clause to be read as
1.	Clause 2.1.(b).(i) - General Eligibility Criteria, Volume 1, Part I – NIT & ITB, Page no 12.	The bidder should have independently and successful completed on Engineering Procurement Construction (EPC)/ Design- build (DB)/ Design-Build-Operate (DBO)/Hybrid Annuity Model (HAM) of Public-Private Partnership (PPP) contract basis at least one ETP/CETP of not less than 5.6 MLD capacity or two ETPs/ CETPs of not less than 3.5 MLD capacity each or three ETPs/ CETPs of not less than 2.8 MLD each based on advanced activated sludge process (excluding any variant of sequential batch process or time based control process) with effluent standards as BOD < 10mg/l, TSS < 10mg/l.	The bidder should have independently and successful completed on Engineering Procurement Construction (EPC)/ Design- build (DB)/ Design-Build-Operate (DBO)/Hybrid Annuity Model (HAM) of Public-Private Partnership (PPP) contract basis at least one ETP/CETP of not less than 5.6 MLD capacity or two ETPs/ CETPs of not less than 3.5 MLD capacity each or three ETPs/ CETPs of not less than 2.8 MLD each based on advanced activated sludge process with effluent standards as BOD < 10mg/l, TSS < 10mg/l
2.	Clause 7.3, Page 45, Vol 1, Part 4 [Conditions of Contract]	If the Contractor fails to comply with the time for completion of the project, the Contractor shall be subject to a penalty as specified per the delay damages to the Employer for this default. These delay damages shall be the sum stated in the Contract Data Sheet, which shall be paid for every day which shall elapse between the relevant Time for Completion and the date stated in the Taking-Over Certificate.	If the Contractor fails to comply with the time for completion of the project, the Contractor shall be subject to a penalty as delay damages to the Employer for this default. These delay damages shall be the sum calculated at the rate of 0.05% (zero-point zero five per cent) of the Contract Price , which shall be paid for every day that has elapsed between the relevant Time for Completion and the date stated in the Taking-Over Certificate.
3.	Clause 1.4, Page 3, Vol 2 / Part 2	l) Disinfection system with Sodium Hypochlorite m) Treated Water Pumping System to pump treated water to the RO plant and the Recycle Water Sump at CETP. (common between the two package STPs)	l) Disinfection system with UV m) Treated Water Pumping System (common between the two package STPs) to pump treated water to the inlet of the UV chamber of the CETP.
4.	Clause 2.2, Page 7,	2.2 Industrial Raw Influent Quality Table 2-1 Influent Characteristics of new CETP	2.2 Industrial Raw Influent Quality Table 2-1 Influent Characteristics of new CETP

Corrigendum No. 1

Sl	Clause and Page No.	Previous Clause			Revised Clause to be read as		
	Vol 2 / Part 2	Parameters	Values*	Unit	Parameters	Values*	Unit
		Biochemical Oxygen Demand (BOD ₅)	600.0	mg/l	Biochemical Oxygen Demand (BOD ₅)	600.0	mg/l
		Chemical Oxygen Demand (COD)	1500.0	mg/l	Chemical Oxygen Demand (COD)	1500.0	mg/l
		Total Dissolved Solids	2100	mg/l	Total Dissolved Solids	2100	mg/l
		Total Suspended Solids (TSS)	600.0	mg/l	Total Suspended Solids (TSS)	600.0	mg/l
		Total Kjeldahl Nitrogen (TKN)	100.0	mg/l	Total Kjeldahl Nitrogen (TKN)	100.0	mg/l
		Total Phosphorus	10.0	mg/l	Ammoniacal Nitrogen	90.0	mg/l
		pH	6.5-9.0		Total Phosphorus	10.0	mg/l
		Oil & Grease (Free oil)	100	mg/l	pH	6.5-9.0	
		Total Coliform	10 ⁶ to 10 ⁸	MPN/100 ml	Oil & Grease (Free oil)	100	mg/l
		Wastewater Temperature (Min)	20	Deg C	Total Coliform	10 ⁶ to 10 ⁸	MPN/100 ml
		Wastewater Temperature (Max)	40	Deg C	Wastewater Temperature (Min)	20	Deg C
		Chloride	600	mg/l	Wastewater Temperature (Max)	40	Deg C
		Sulphate	1000	mg/l	Chloride	600	mg/l
		Phenolic compounds	5	mg/l	Sulphate	1000	mg/l
		Iron	5	mg/l	Phenolic compounds	5	mg/l
		Arsenic	0.2	mg/l	Iron	5	mg/l

Corrigendum No. 1

Sl	Clause and Page No.	Previous Clause			Revised Clause to be read as		
		Cadmium	1	mg/l	Arsenic	0.2	mg/l
		Lead	1	mg/l	Cadmium	1	mg/l
		Copper	3	mg/l	Lead	1	mg/l
		Zinc	5	mg/l	Copper	3	mg/l
		Nickel	3	mg/l	Zinc	5	mg/l
		Mercury	0.01	mg/l	Nickel	3	mg/l
		Selenium	0.05	mg/l	Mercury	0.01	mg/l
		Total Chromium	1	mg/l	Selenium	0.05	mg/l
		Hexavalent Chromium	0.1	mg/l	Total Chromium	1	mg/l
		Cyanide	0.2	mg/l	Hexavalent Chromium	0.1	mg/l
		Fluoride	2	mg/l	Cyanide	2	mg/l
		Boron	2	mg/l	Fluoride	2	mg/l
					Boron	2	mg/l
					Total Silica	60	mg/l
					Reactive Silica	50	mg/l
					Colloidal Silica	10	mg/l
					Polyvinyl Alcohol (PVA)	25	mg/l
					PVAc and derivatives	10	mg/l

Corrigendum No. 1

Sl	Clause and Page No.	Previous Clause	Revised Clause to be read as																																																																													
			Total Polymeric Organics	50	mg/l																																																																											
5.	Clause 2.3, Page 14 of 75 Vol 2 / Part 2	2.3 CETP Treated Effluent Limits The effluent shall be treated to achieve a quality that will satisfy the end user requirements for surface drain disposal as described in Table 4.3. Table 4.3 CETP Treated Effluent Characteristics <table><tr><th>Parameters</th><th>Discharge Limit</th><th>Unit</th></tr><tr><td>Biochemical Oxygen Demand (BOD₅)</td><td>≤ 5.0</td><td>mg/l</td></tr><tr><td>Chemical Oxygen Demand (COD)</td><td>≤ 20.0</td><td>mg/l</td></tr><tr><td>Total Suspended Solids (TSS)</td><td>≤ 1.0</td><td>mg/l</td></tr><tr><td>Turbidity</td><td>≤0.5</td><td>NTU</td></tr><tr><td>Total Nitrogen (TN)</td><td>≤ 10.0</td><td>mg/l</td></tr><tr><td>Ammoniacal Nitrogen</td><td>≤ 2.0</td><td>mg/l</td></tr><tr><td>Total Kjehtdal nitrogen</td><td>≤ 5.0</td><td>mg/l</td></tr><tr><td>Total Phosphorus</td><td>≤ 1.0</td><td>mg/l</td></tr><tr><td>pH</td><td>6.5-9.0</td><td></td></tr><tr><td>Oil and grease</td><td>≤ 10.0</td><td>mg/l</td></tr><tr><td>Total Dissolved Solids</td><td>≤ 500</td><td>mg/l</td></tr></table>	Parameters	Discharge Limit	Unit	Biochemical Oxygen Demand (BOD ₅)	≤ 5.0	mg/l	Chemical Oxygen Demand (COD)	≤ 20.0	mg/l	Total Suspended Solids (TSS)	≤ 1.0	mg/l	Turbidity	≤0.5	NTU	Total Nitrogen (TN)	≤ 10.0	mg/l	Ammoniacal Nitrogen	≤ 2.0	mg/l	Total Kjehtdal nitrogen	≤ 5.0	mg/l	Total Phosphorus	≤ 1.0	mg/l	pH	6.5-9.0		Oil and grease	≤ 10.0	mg/l	Total Dissolved Solids	≤ 500	mg/l	2.3 CETP Treated Effluent Limits The effluent shall be treated to achieve a quality that will satisfy the treated effluent characteristics as described in Table 4.3. Table 4.3 CETP Treated Effluent Characteristics <table><tr><th>Parameters</th><th>Discharge Limit</th><th>Unit</th></tr><tr><td>Biochemical Oxygen Demand (BOD₅)</td><td>≤ 5.0</td><td>mg/l</td></tr><tr><td>Chemical Oxygen Demand (COD)</td><td>≤ 20.0</td><td>mg/l</td></tr><tr><td>Total Suspended Solids (TSS)</td><td>≤ 1.0</td><td>mg/l</td></tr><tr><td>Turbidity</td><td>≤0.5</td><td>NTU</td></tr><tr><td>Total Nitrogen (TN)</td><td>≤ 10.0</td><td>mg/l</td></tr><tr><td>Ammoniacal Nitrogen</td><td>≤ 2.0</td><td>mg/l</td></tr><tr><td>Total Kjehtdal nitrogen</td><td>≤ 5.0</td><td>mg/l</td></tr><tr><td>Total Phosphorus</td><td>≤ 1.0</td><td>mg/l</td></tr><tr><td>pH</td><td>6.5-9.0</td><td></td></tr><tr><td>Oil and grease</td><td>≤ 10.0</td><td>mg/l</td></tr><tr><td>Total Dissolved Solids</td><td>≤ 500</td><td>mg/l</td></tr><tr><td>Conductivity</td><td>≤ 800</td><td>µS/cm</td></tr></table>			Parameters	Discharge Limit	Unit	Biochemical Oxygen Demand (BOD ₅)	≤ 5.0	mg/l	Chemical Oxygen Demand (COD)	≤ 20.0	mg/l	Total Suspended Solids (TSS)	≤ 1.0	mg/l	Turbidity	≤0.5	NTU	Total Nitrogen (TN)	≤ 10.0	mg/l	Ammoniacal Nitrogen	≤ 2.0	mg/l	Total Kjehtdal nitrogen	≤ 5.0	mg/l	Total Phosphorus	≤ 1.0	mg/l	pH	6.5-9.0		Oil and grease	≤ 10.0	mg/l	Total Dissolved Solids	≤ 500	mg/l	Conductivity	≤ 800	µS/cm
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Corrigendum No. 1

Sl	Clause and Page No.	Previous Clause			Revised Clause to be read as		
		Chloride	< 600	mg/l	Chloride	< 100	mg/l
		Sulphate	< 1000	mg/l	Sulphate	< 250	mg/l
		Bacteria	≥ Log 5 Reduction		Alkalinity (as CaCO₃)	< 45	mg/l
		Viruses	≥ Log 5 Reduction		Silica	< 10	mg/l
		Protozoa	≥ Log 5 Reduction		Bacteria	≥ Log 5 Reduction	
		Phenolic compounds	< 1	mg/l	Viruses	≥ Log 5 Reduction	
		Iron	< 0.5	mg/l	Protozoa	≥ Log 5 Reduction	
		Arsenic	< 0.05	mg/l	Phenolic compounds	< 1	mg/l
		Cadmium	< 0.5	mg/l	Iron	< 0.5	mg/l
		Lead	< 0.1	mg/l	Arsenic	< 0.05	mg/l
		Copper	< 0.5	mg/l	Cadmium	< 0.5	mg/l
		Zinc	< 0.5	mg/l	Lead	< 0.1	mg/l
		Nickel	< 0.5	mg/l	Copper	< 0.5	mg/l
		Mercury	< 0.01	mg/l	Zinc	< 0.5	mg/l
		Selenium	< 0.05	mg/l	Nickel	< 0.5	mg/l
		Total Chromium	< 1	mg/l	Mercury	< 0.01	mg/l
		Hexavalent Chromium	< 0.1	mg/l	Selenium	< 0.05	mg/l
		Cyanide	< 0.2	mg/l	Total Chromium	< 1	mg/l

Corrigendum No. 1

Sl	Clause and Page No.	Previous Clause			Revised Clause to be read as		
		Fluoride	< 2	mg/l	Hexavalent Chromium	< 0.1	mg/l
		Boron	< 2	mg/l	Cyanide	< 0.2	mg/l
					Fluoride	< 2	mg/l
					Boron	< 2	mg/l
					Polyvinyl Alcohol (PVA)	< 1	mg/l
6.	Clause 4.20.8, Page 35, Vol 2, Part 2	The design Parameter for the UV Disinfection system shall be			The design parameters for the UV Disinfection system shall be		
		Parameters	Values	Unit	Parameters	Values	Unit
		Flow	4000 + Returns	m3/day	Flow	7000 + Returns	m3/day
		Quantity	As per design, with a standby provision	Nos.	Quantity	As per design, with a standby provision	Nos.
		Dosing Rate	Minimum 40	mJ/cm2	Dosing Rate	Minimum 40	mJ/cm2
		Ultraviolet Transmittance 253.7 nm	Minimum 7	%	Ultraviolet Transmittance 253.7 nm	Minimum 7	%
7.	Clause 4.23.3, Page 37, Vol 2, Part 2	Design flow = (4000 + Returns) m ³ /d			Design flow = (7000 + Returns) m ³ /d		

Corrigendum No. 1

Sl	Clause and Page No.	Previous Clause	Revised Clause to be read as
8.	Clause 4.24.3, Page 38, Vol 2, Part 2	The Electrodialysis Reversal (EDR) unit shall be used for brine concentration.	The Electrodialysis Reversal (EDR) unit, or the second- and third-stage RO as per the contractor's design, shall be used for brine concentration. The Contractor may, at its option, propose a multi-stage Reverse Osmosis (RO) system, including second-stage and/or third-stage RO, as an alternative to the Electrodialysis Reversal (EDR) system specified herein. In such case, the proposed RO-based system shall be designed to achieve performance that is equal to or better than the specified EDR system with respect to treated water quality, overall water recovery, availability, operability, and reject minimisation. All minimum design criteria, performance guarantees, recovery requirements, redundancy provisions, instrumentation, monitoring, and other technical requirements specified for the EDR system shall, to the extent applicable, remain fully applicable to the alternative RO-based system. The alternative RO system proposed for the Brine Concentration shall be designed to receive and process 100% of the reject flow generated from the First-Stage RO system under all design operating conditions. No bypass, diversion, dilution, reduction in First-Stage RO recovery, or provision for partial treatment of the First-Stage RO reject shall be permitted for the purpose of meeting the specified performance requirements.

Corrigendum No. 1

Sl	Clause and Page No.	Previous Clause	Revised Clause to be read as
			The bidder shall submit detailed design calculations and membrane projections along with the bid demonstrating that the proposed second-stage and/or third-stage RO system can reliably achieve the specified recovery and performance guarantees throughout the design life of the plant while adequately addressing scaling, fouling, cleaning, and operational requirements.
9.	Clause 4.24.4.2 Page 44, Vol 2, Part 2	The minimum design requirements for the MVR System shall be as per the table below	The minimum design requirements for the MVR System shall be as per the table below. However, where second-stage and/or third-stage RO is proposed in lieu of EDR, the concentrate from such RO system may be fed to the MVR system. The minimum design criteria, performance guarantees, recovery requirements, availability requirements, and all other applicable specifications stipulated for the MVR system treating EDR concentrate shall equally apply to the MVR system treating the RO concentrate. The MVR system shall be designed to receive and process 100% of the concentrate stream generated from the EDR or alternative RO-based concentration system under all design operating conditions. No relaxation in MVR design or performance requirements shall be permitted on account of the use of second-stage and/or third-stage RO in place of EDR.
10.	Vol 5	“Raw Sewage” at the Feed of PFD of CETP.	“Industrial Effluent/Wastewater” at the Feed of PFD of CETP.

Corrigendum No. 1



Sl	Clause and Page No.	Previous Clause	Revised Clause to be read as
	MITL-DPIA-PKG B- PFD-01		
11.	-	Not available in the tender	Volume 6 – Reference Reports Geotechnical Investigation Report for the area near the project site are included as Annexure 1 to the Corrigendum 1 The Geotechnical Investigation Report provided with the Bid Documents pertains to boreholes carried out in a nearby area and is furnished solely for the Bidder's reference and preliminary information. The Employer/MITL does not warrant, represent, or guarantee the accuracy, completeness, adequacy, or applicability of the information contained therein for the Site or the Works, and shall not be liable for any discrepancies, omissions, interpretations, or conclusions drawn therefrom. The Bidder shall independently satisfy itself regarding the nature of the Site, subsurface conditions, groundwater levels, geotechnical characteristics, and all other conditions that may affect the design, construction, performance, and cost of the Works, in accordance with Clause 1.12 of Volume 2: Part 1 – General Requirements. The Bidder shall be deemed to have taken all such conditions into account while preparing and pricing its Bid, and no claim for additional cost, time, or compensation shall be entertained on account of actual

Corrigendum No. 1

Sl	Clause and Page No.	Previous Clause	Revised Clause to be read as								
			site conditions differing from the information provided in the referenced report.								
12.	Clause 4.1.1, page no 13 Vol 2: Part 2 Process Specification,	The industrial wastewater will be received in the CETP receiving chamber from the last/designated manhole outside the CETP & STP plot boundary.	The industrial wastewater will be received in the CETP receiving chamber from the last/designated manhole outside the CETP & STP plot boundary with IL: 69.39 m, GL:71.09 m.								
13.	Clause 5.2.1, page no 57 Vol 2: Part 2 Process Specification,	The raw sewage will be received in the STP receiving chamber from the last manhole outside the CETP & STP plot boundary.	The raw sewage will be received in the STP receiving chamber from the last manhole outside the CETP & STP plot boundary with IL: 69.41 m, GL: 71.31 m.								
14.	Clause 1.5, Page 2 Vol 4: Part 3 Schedule of Guarantees	Table 1-2 CETP Treated Effluent Characteristics	Table 1-2 Treated Effluent Characteristics at MBR Outlet								
15.	Clause 1.5, Page 2 Vol 4: Part 3 Schedule of Guarantees	Not available in the tender	Table 1-3 Blended Permeate Characteristics at outlet from RO, EDR <table border="1"> <tr> <th>Sr. No.</th><th>Parameter</th><th>Unit</th><th>Guaranteed Value</th></tr> <tr> <td>1</td><td>pH</td><td>-</td><td>6.5 - 8.5</td></tr> </table>	Sr. No.	Parameter	Unit	Guaranteed Value	1	pH	-	6.5 - 8.5
Sr. No.	Parameter	Unit	Guaranteed Value								
1	pH	-	6.5 - 8.5								

Corrigendum No. 1

Sl	Clause and Page No.	Previous Clause	Revised Clause to be read as			
			2	TDS	mg/L	≤ 500
			3	Conductivity	μS/cm	≤ 800
			4	Turbidity	NTU	≤ 0.5
			5	TSS	mg/L	≤ 1
			6	Chlorides (as Cl)	mg/L	≤ 100
			7	Sulphates (as SO ₄)	mg/L	≤ 250
			8	Alkalinity (as CaCO ₃)	mg/L	≤ 45
			9	Silica (as SiO ₂)	mg/L	≤ 10
			10	Oil & Grease	mg/L	≤ 1
			11	Overall Salt Rejection	%	≥ 95
			12	Overall Water Recovery (RO + EDR / RO-based System)	%	≥ 95
Note: The above parameters shall be guaranteed as follows: 1. 24-hour composite samples with 95% plus compliance. 2. The Conformity is based on a 30-day rolling month with a maximum of two failures allowed per month for composite samples, and at no time does a grab sample exceed the limits as specified above.						

Corrigendum No. 1

Sl	Clause and Page No.	Previous Clause	Revised Clause to be read as
16.	Clause 2.1, Page 4 Vol 4: Part 3 Schedule of Guarantees	kW h (guarantee) = guaranteed power consumption as stated in Error! Reference source not found..	kW h (guarantee) = guaranteed power consumption as stated in Table 42-1 Power Consumption in kWh/m ³

Annexure 1 to Corrigendum 1

2.1 Exploration Scope

Two boreholes (B12-1, B12-2) were completed for the project as illustrated on the Borehole Location Plan. Borehole termination depths are summarized in Table A below.

Table A
Borehole Details

Borehole No.	Northing	Easting	Depth
B12-1	2031966	318304	9.25m
B12-2	2031963	318288	9.00m



2.2 Subsurface Conditions

Subsurface profile at this site generally consists of residual soil includes pebbles, cobbles etc. overlying moderately weathered rock and then by hard basalt bedrock. Encountered soil/rock layers are described below;

Layer I: Residual Soil

Residual soils, consisting mostly of brownish sandy silty clay, pebbles, cobbles were encountered in boreholes. The lower boundary of this layer was encountered at depth of 3.00m below ground.

Layer II: Moderately weathered bedrock (MWR)

Brownish grey Moderately weathered bedrock was encountered at depth of 3.00m below ground surface. Core Recoveries varied between 15% and 66%, while Rock Quality Designation (RQD) ranged between 0% and 38%. Compressive strength of rock core sample ranges from 600kg/cm² to 840kg/cm². The lower boundary of this layer was encountered at depths of 4.00m to 4.25m below ground surface.

Layer III: Hard Basalt bedrock (HR)

Grey basalt bedrock was encountered at depths of 4.00m to 4.25m below ground surface in the boreholes. The bedrock was sound, generally improving with depth, inclined and vertical veins are observed. Core Recoveries varied between 88% and 100%, while Rock Quality Designation (RQD) ranged between 60% and 98%. Compressive strength of rock core sample ranges from 570kg/cm² to 880kg/cm². The boreholes were terminated in this hard bedrock layer at depths of 9.00m to 9.25m below ground surface.

2.3 Ground Water Levels

Groundwater accumulation in the boreholes was monitored during and after completion of drilling activities. Groundwater was encountered at depths between 0.50m to 1.00m below ground surface in the boreholes. Seasonal and annual fluctuations in ground water levels can be expected.

3.0 Foundation Recommendations

Spread foundations for proposed structure at a depth of 1.50m below ground on native soils, can be designed for a maximum net allowable bearing capacity of 20 t/m².

Alternatively, moderately weathered rock (MWR) was encountered at depth of 3.00m below ground surface. In this layer compressive strength of rock core samples ranged between 600kg/cm² to 840kg/cm².

As per minimum compressive strength 570kg/cm² of bedrock the spread foundations for proposed structure supported on this bedrock at minimum depth of 3.0m can be designed for a maximum net allowable bearing capacity of 100 t/m². Depths from ground surface of MWR & hard rock are given in Table B below:

Table B
Depths from Ground Surface

Borehole Numbers	MWR	Hard Rock
B12-1	3.00m	4.25m
B12-2	3.00m	4.00m

Excavation sides should be sloped at a maximum slope of 1:1 (Horizontal: Vertical) or flatter. Continuous dewatering may be required in footing excavations (During Monsson).

3.1 Foundation Protection:

For Bridge no. 1, groundwater sample was collected for chemical analysis from the site and not from the boreholes. Based on chemical results, the site falls under Class I for sulphates and chlorides (As per IS456-2000, Plain and Reinforced Concrete - Code of Practice. and as per CIRIA Special Publication No. 31). A 'Moderate' exposure condition was assigned to this site. Hence, following precautions shall be taken to protect concrete and reinforcement in foundations:

Type of Cement:	OPC or PPC
Minimum Grade of Reinforced Concrete:	M25
Minimum Cement Content for Spread Footings:	280 kg/m ³
Maximum Water Cement Ratio:	0.55
Minimum Cover to Reinforcement:	50mm



APPENDIX I
CALCULATIONS FOR BEARING CAPACITY



Calculation of Allowable Bearing Capacity for Spread Foundations on Rock:

	GL +0.0m
Layer I, Residual soil, boulders	
	-3.00m
Layer II, Moderately weathered rock	
	-4.00m to -4.25m
Layer III, Hard Basalt Bedrock	

Allowable bearing capacity = $(N_j) \times Q_u$ (IS: 12070: 1987, Code of Practice for Design and Construction of Shallow Foundations on Rocks, Clause 6.2, pg. 7)

Where,

N_j = Joint condition factor = 0.1 to 0.4 (IS: 12070: 1987, Code of Practice for Design and Construction of Shallow Foundations on Rocks, Table 4, clause 6.2, pg. 9)

Assumed as 0.1 for hard rock

Q_u = Rock Compressive strength = minimum of 5700 t/m² (Annexure, Laboratory Test Result)

Therefore, Allowable Bearing Capacity = $0.1 \times 5700 = 570 \text{ t/m}^2$

Restricted to 100 t/m².

REFERENCES

- 1) Foundation Analysis and Design, J.E. Bowles, McGraw Hill Publication, 5th Edition, 1996. (Table 5-2, Figure 5-7, Reference No. 1)
- 2) IS: 6403:1981, Code of Practice for Design and Construction of Shallow Foundations on Soils.
- 3) IS: 12070: 1987, Code of Practice for Design and Construction of Shallow Foundations on Rocks. (Clause 6.2, pg. 7)
- 4) IS: 12070: 1987, Code of Practice for Design and Construction of Shallow Foundations on Rocks. (Table 4, clause 6.2, pg. 9)
- 5) IS: 456:2000, Plain and Reinforced Concrete - Code of Practice.
- 6) CIRIA Special Publication No. 31.



APPENDIX II BORELOGS AND LAB TEST REPORTS

Report Sheet

Project : Geotechnical Investigation for DMIDC-Dighi Port Industrial Area.

P. N. Shidhore
Civil Engineers (I) Pvt. Ltd.
Kalyan(W).0251-2206495.

BORE LOG																	
Site :Geotechnical Investigation for DMIDC-Dighi Port Industrial Area.										Client :EGIS Consulting Engineers Pvt. Ltd.							
Type of Boring		Calyx with Bent. with casing			Calyx with Bent. without casing			Job No. : BRIDGE 12									
Dia of Hole (mm):		100.00			75.00			Bore Hole No.: B12-1									
Depth (M):		0.00-1.20			1.20-9.25			Co-ordinates : N=2031966, E=318304									
Commenced on : 16 April 2023				Completed on : 18 April 2023				Ground Bed RL: 71.50M									
Water Struc :				Ground Water : 0.50 Meter				Location of Bore Hole : As per plan									
From (M)	To (M)	Sample Depth (M)	Description of Strata	Symbol	SPT Record					Sample Ref. No.	Sl. No. of core recovery	Core Rcvry (%)	R.Q.D.	Remarks			
					0-150	150-300	300-450	450-600	N								
0.00		0.00 - 0.40	BROWNISH MURUM, COBBLES, PEBBLE							DS-1							
		0.40 - 1.50								1 TO 6					0.28	25.00	0.00
		1.50 - 3.00								7 TO 13					0.56	37.00	13.00
3.00	3.00	3.00 - 4.25	BROWNISH GRAY HIGHLY WEATHERED ROCK							14 TO 16	0.20	15.00	0.00				
4.25	4.25	4.25 - 5.35	GRAY BASALT							17 TO 24	1.07	95.00	61.00				
		5.35 - 6.35								25	1.00	100.00	98.00				
		6.35 - 7.35								26 TO 30	0.90	90.00	60.00				
		7.35 - 8.35								31 TO 32	0.89	89.00	80.00				
		8.35 - 9.25								33 TO 35	0.80	88.00	66.00				
	9.25				Bore Hole Terminated at : 9.25												
D-Disturbed Sample, U-Undisturbed Sample, P-Standerd Penetration Test,C-Core, W-Water Sample, V-Vane Test																	
No. of disturbed Sample : 1					No. of U.D.S. : 0					No. of Vane Test : 0							
No. of S.P.T. : 0					No. of Water Sample : 0												

Report Sheet

Project : Geotechnical Investigation for DMIDC-Dighi Port Industrial Area.

P. N. Shidhore
Civil Engineers (I) Pvt. Ltd.
Kalyan(W).0251-2206495.

BORE LOG																	
Site :Geotechnical Investigation for DMIDC-Dighi Port Industrial Area.										Client :EGIS Consulting Engineers Pvt. Ltd.							
Type of Boring		Calyx with Bent. with casing			Calyx with Bent. without casing			Job No. : BRIDGE 12									
Dia of Hole (mm):		100.00			75.00			Bore Hole No.: B12-2									
Depth (M):		0.00-2.00			2.00-9.00			Co-ordinates : N=2031963, E=318288									
Commenced on : 16 April 2023				Completed on : 17 April 2023				Ground Bed RL: 71.30M.									
Water Struc :				Ground Water : 1.00 Meter				Location of Bore Hole : As per plan									
From (M)	To (M)	Sample Depth (M)	Description of Strata	Symbol	SPT Record					Sample Ref. No.	Sl. No. of core recovery	Core Rcvry (%)	R.Q.D.	Remarks			
					0-150	150-300	300-450	450-600	N								
0.00		0.00 - 0.50	BROWNISH MURUM, COBBLES, PEBBLES							DS-1							
		0.50 - 2.00								1 TO 2					0.15	10.00	0.00
		2.00 - 3.00								3 TO 8					0.50	50.00	0.00
		3.00															
3.00		3.00 - 4.00	GRAY MODERETALY WEATHERED BASALT							9 TO 14	0.66	66.00	38.00				
	4.00																
4.00		4.00 - 5.50	GRAY BASALT							15 TO 23	1.43	95.00	80.00				
	5.50 - 7.00		24 TO 28	1.38						92.00	69.00						
	7.00 - 8.00		29 TO 33	0.90						90.00	64.00						
	8.00 - 9.00		34 TO 38	1.00						100.00	95.00						
	9.00																
					Bore Hole Terminated at : 9.00												
D-Disturbed Sample, U-Undisturbed Sample, P-Standerd Penetration Test,C-Core, W-Water Sample, V-Vane Test																	
No. of disturbed Sample : 1					No. of U.D.S. : 0					No. of Vane Test : 0							
No. of S.P.T. : 0					No. of Water Sample : 0												

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TEST REPORT

STRUCTWEL/Level/IV/ PHY/TR/Soil/061	
Rev. No. - 03	Dtd 30/08/2022
Discipline: Mechanical	Group: Soil and Rock

PAGE 2 OF 2

TEST REPORT NO. & DATE**R&D/LAB/SAN/2023-24/SAN0032323/02226****ULR No. :TC528223000007550F****17/05/2023****1. Name & Address of Client**M/s. P.N. Shidhore Civil Engineers (India) Private Limited.
Prabhakar Apt., "B" Wing, 3rd floor, Gaondevi Chowk,
Kalyan (W) - 421301.**2. Project / Site**Soil, Water and Rock samples for lab. testing for the work of Geotechnical
Investigation for DMIDC-Dighi Port Industrial Area, Indapur

Ref. No./ID. Mark/B.H. No.:		IS CODE FOLLOWED	Bridge B12-1				Bridge B12-2											
Sample No. :		--	DS-1				DS-1				--				--			
Depth, m :		--	0.00 to 0.40				0.00 to 0.50				--				--			
Description :		--	Silty Gravel Sand				Sand Clay				--				--			
Atterberg Limits	Liquid Limit	IS 2720-Part 5	57				46				--				--			
	Plastic Limit		38				57				--				--			
	Plasticity Index		19				9				--				--			
	ShrinkageLim.	IS 2720-Part 6	--				--				--				--			
% Grain size by Sieve & Hydrometer	Clay + Silt	IS 2720-Part 4	34				33				--				--			
	Sand		68				72				--				--			
	Gravel		27				26				--				--			
Shear Strength : Triaxial / Unconfined compression, Direct	Test Code	Triaxial Test (TUU)	--				--				--				--			
	Cohesion,kg/cm ²	IS 2720 Part-11	--				--				--				--			
	Angle	Direct Shear Test (DUU, DCU & DCD)	--				--				--				--			
	Bulk		--				--				--				--			
	Density,T/m ³		--				--				--				--			
	Water Content,%	IS 2720 Part-13	--				--				--				--			
Unconfined compression test	qu (kg/cm ²)	IS 2720 Part-10	--				--				--				--			
	Shear Strength (kg/cm ²)		--				--				--				--			
Consolidation Test	Pressure Range, T/m ²	IS 2720 Part-15	5-10	10-20	-	-	5-10	10-20	-	-	5-10	10-20	-	-	5-10	10-20	-	-
	Mv, m ² /Tx10 ⁻⁴		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Cv,m ² /yr x10 ⁻²		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Moisture Content %		IS 2720 Part-1	--				--				--				--			
Specific gravity		IS 2720 Part-3	2.66				2.60				--				--			
Compaction	Max dry density, g/cm ³	Light Compaction IS 2720 Part-7	--				--				--				--			
Heavy Compaction	Optimum Moist-Cont.,%	Heavy Compaction IS 2720 Part-8	--				--				--				--			
California Bearing Ratio	Soaked %	IS 2720 Part-16	--				--				--				--			
	Unsoaked %		--				--				--				--			
**Coefficient of Uniformity (Cu)		IS 1498	--				--				--				--			
**Coefficient of Curvature (Cc)			--				--				--				--			
Free Swell Index (%)		IS 2720 Part-40	--				--				--				--			
Swelling Pressure (kg/cm ²)		IS 2720 Part-41	--				--				--				--			

Triaxial Compression

TUU : Unconsolidated Undrained

Unconfined Compression

UCU : Undisturbed

UCR : Remoulded

Direct Shear

DUD : Unconsolidated Drained

DUU : Unconsolidated Undrained

DCU : Consolidated Undrained

DCD : Consolidated Drained

Consolidation Test

Mv : Coefficient of volume decrease

Cv : Coefficient of consolidation

 Checked By

 Vikram B. Parmar
 Nodal Quality Manager
 Authorised Signatory

SST/N/LAB/Tech Report/2022-23/turbhe/test report/NABL/Phy/Soil/SAN032323

End of Report

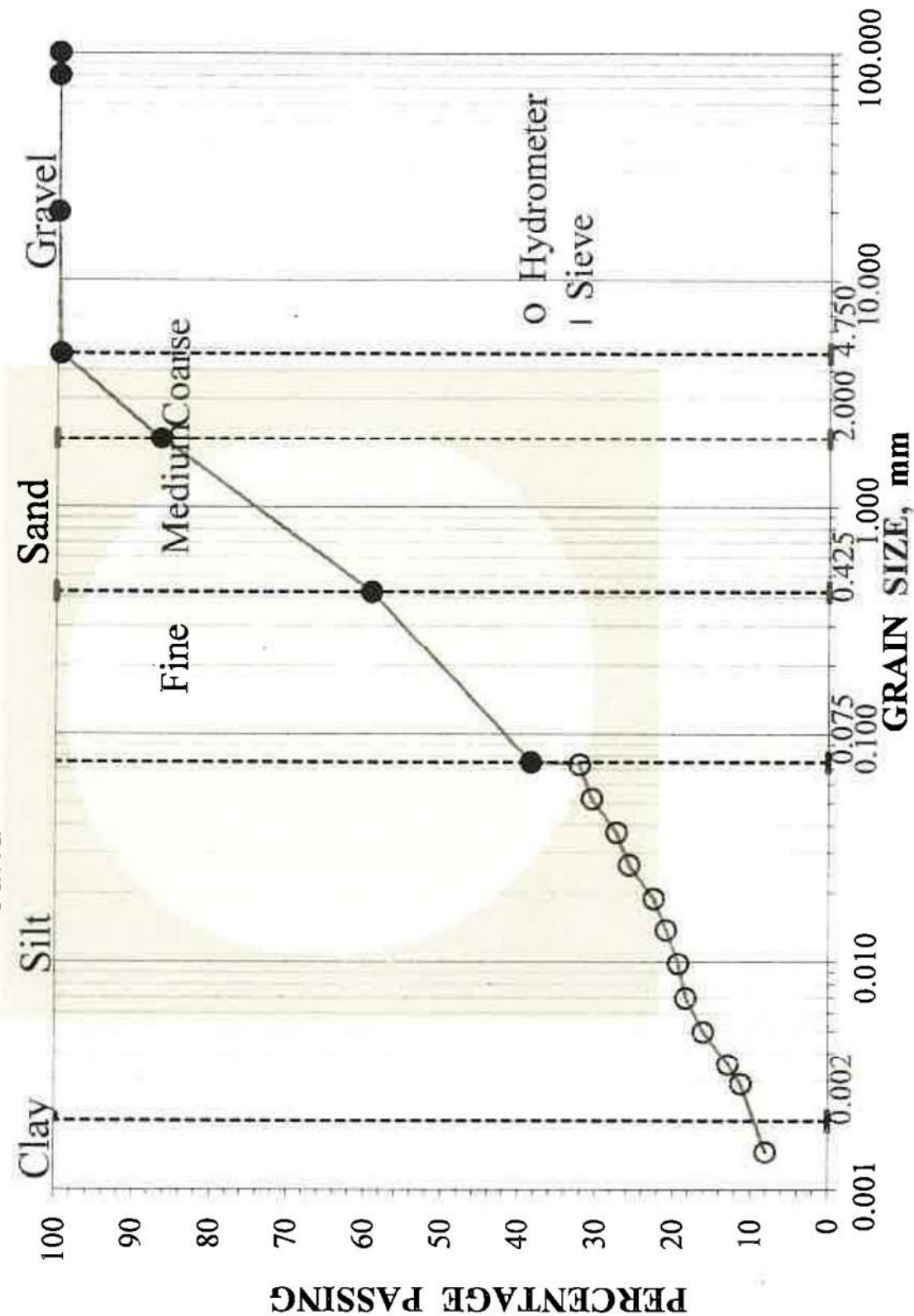
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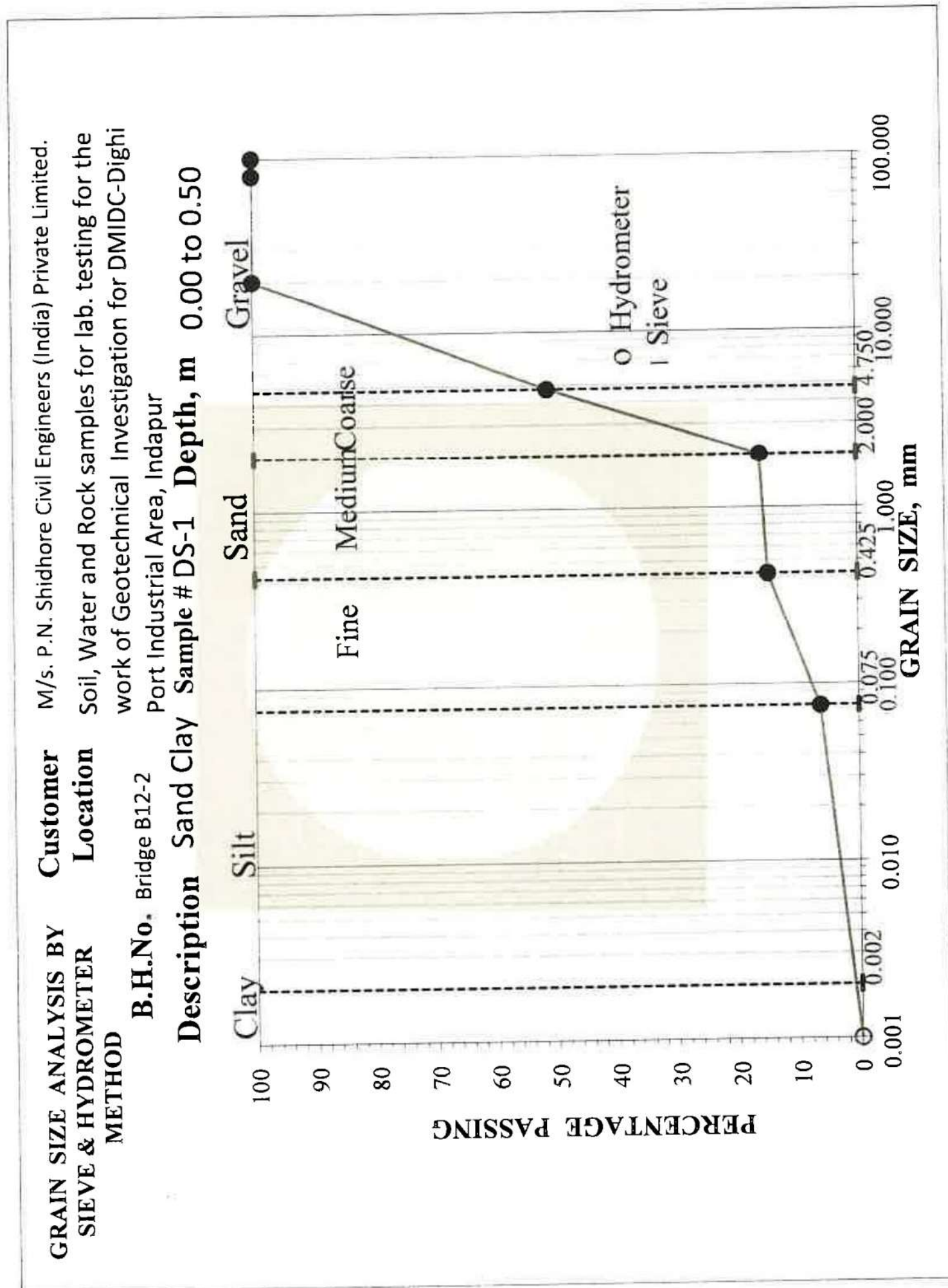
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GRAIN SIZE ANALYSIS BY Customer M/s. P.N. Shidhore Civil Engineers (India) Private Limited.
SIEVE & HYDROMETER Location Soil, Water and Rock samples for lab. testing for the work
 of Geotechnical Investigation for DMDC-Dighi Port
METHOD B.H.No. Bridge B12-1 Industrial Area, Indapur
Description Silty Gravel Sample # DS-1 Depth, m 0.00 to 0.40





TC-5282



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TC-5282

TEST REPORT

STRUCTWEL/NM/Level/IV/PHY/TR/Rock/059	
Rev No 05	Rev Date 30/08/2022
Discipline: Mechanical	Group: Soil and Rock

PAGE 1 OF 1

TEST REPORT NO. & DATER&D/LAB/SAN/2023-24/SAN0032323/02233
ULR No. : TC528223000007557F
17/05/2023**1. Name & Address of Customer**M/s. P.N. Shidhore Civil Engineers (India) Private Limited.
Prabhakar Apt., "B" Wing, 3rd floor, Gaondevi Chowk,
Kalyan (W) - 421301.**2. Project / Site**Soil, Water and Rock samples for lab. testing for the work of Geotechnical
Investigation for DMIDC-Dighi Port Industrial Area, Indapur**3. Customer's Reference**

PNS/Structwel/22 Dtd. 21.04.2023

4. Location of test Performance

At Laboratory

5. Sample**i) Description**

Rock

ii) Quantity

04 Nos.

iii) Date of receipt

21/04/2023

iii) Condition

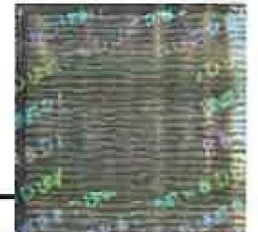
Acceptable

6. Test method followed

As Mentioned Below.

7. Date of Testing From

23/04/2023 to 28/04/2023

**TEST REPORT**

SR No.	ID. Mark	Depth mtr.	Dia. mm.	Area mm ²	Length mm.	Dry Density kg/m ³	Load N	Compressive strength N / mm ²	Compressive strength corrected for L/D- N / mm ²	SP Gravity	Porosity %	Water Absorption %	Hardness by Moh's scale
Test Method Followed						(IS:13030): 1991 (RA 2021)		(IS:9143): 1979 (RA 2021)		(IS 1122): 1974 (RA 2017)	(IS:13030):1991 (RA 2021)		IS 13630 (Part 13): 2019
1	BH No B12-1 (Piece No. 17)	4.25	54.20	2306.05	108.74	--	138470	60	60	--	0.014	0.45	--
2	BH No B12-1 (Piece No. 25)	6.35	55.30	2400.60	112.09	--	210500	88	88	--	0.009	0.32	--
3	BH No B12-2 (Piece No. 10)	3.10	54.72	2350.51	110.85	--	198470	84	85	--	0.012	0.42	--
4	BH No B12-2 (Piece No. 15)	4.15	54.74	2352.23	100.40	--	134800	57	56	--	0.018	0.54	--

Parameters for Classification as per Strength of Intact Rock Material as per IS 13365:1998 Part 1(RA 2021)

Sr. No.	Classification	Comp. Strength (N/mm ²)
1	Exceptionally Strong	> 250
2	Very Strong	100-250
3	Strong	50-100
4	Average	25-50
5	Weak	10-25
6	Very Weak	2-10
7	Extremely Weak	< 2

NOTE :

- Classification shall be used for feasibility studies & preliminary designs only.
- This test report refers only to the sample submitted for testing.
- This test report is valid at the time of and under the conditions specified herein.
- This test report may not be reproduced in part, without the permission of this laboratory.
- Any correction invalidates this test report.
- Data provided by Customer

Checked By

SST/N/LAB/Tech Report/2023-24/Test Report/Nabl/Phy/Rock/SAN0032323

Vikram B. Parmar
 Nodal Quality Manager
 Authorised Signatory

*****End of Report*****

• Hologram authenticates report • Hologram authenticates report • Hologram authenticates report

TEST REPORT

STRUCTWEL/NM/Level/IV/CHE/TR/Construction Water/001	
Rev. No. - 06	Dtd. 20/08/2022
Discipline: Chemical	Group: Water

PAGE 1 OF 1

TEST REPORT NO. & DATE

R&D/LAB/SAN/2023-24/SAN0032323/01542

ULR No. : TC528223000006866F

02/05/2023

1. Name & Address of Customer

M/s.P.N. Shidhore Civil Engineers (India) Private Limited.
Prabhakar Apt., "B" Wing, 3rd floor, Gaondevi Chowk,
Kalyan (W) - 421301.

2. Project / Site

Soil, Water and Rock samples for lab. testing for the work of
GEotechnical Investigation for DMIDC-Dighi Port Industrial Area, Indapur

3. Customer's Reference

PNS/Structwel/22 Dtd. 21.04.2023

4. Location of performance of test

At Laboratory

5. Sample

i) Description

Construction Water

ii) Quantity

01 No.

iii) Date of receipt

21/04/2023

iv) Condition

Acceptable

6. Test method followed

Mentioned Below

7. Date of Testing

26/04/2023

STRUCTWEL

Provisional Report

For information only

CHEMICAL ANALYSIS OF CONSTRUCTION WATER

* ID Mark. : Bridge No.B12-2

Test Parameter	Test Method Followed	Results	Permissible Limits	
			IS 456 : 2000 (RA 2021)	
			Mixing and Curing Clause 5:4 Table 1	Ground Clause 8:2:2:4 & Table 4
pH	IS 3025 (Part 11) : 2022	8.26	Not less than 6	From 6 to 9
Chlorides (mg/ltr)	IS 3025:1988 Part 32 (RA 2019) (Argentometric Method)	9	2000 Max. (Plain Concrete) 500 (Reinforced Concrete)	--
Sulphates as SO ₃ (mg/ltr.)	IS 3025 Part 24/Sec 1) : 2022 (Gravimetric Method)	13	400 Max.	Refer Table 4
Volatile (Organic) Residue (mg/ltr.)	IS 3025 (Part 18) : 2022	--	200 Max.	--
Fixed (Inorganic) Residue (mg/ltr.)	IS 3025 (Part 18) : 2022	--	3000 Max.	--
Total Suspended Matter (mg/ltr.)	IS 3025 (Part 17) : 2022	--	2000 Max.	--
Total Alkalinity (To neutralize 100 ml water sample, 0.02 N, H ₂ SO ₄ required) mL	IS 456:2000 (RA 2021), (Indicator Method)	--	25 Max.	--
Total Hardness as CaCO ₃ mg/L	IS 3025:2009 Part 21 (RA 2019). (EDTA method)	--	--	--
Acidity (To neutralize 100 ml water sample, 0.02 N, NaOH required) mL	IS 456:2000 (RA 2021), (Indicator Method)	--	5 Max.	--

NOTE :

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- This test report is valid at the time of and under the conditions specified herein.
- This test report may not be reproduced in part, without the permission of this laboratory.
- Any correction invalidates this test report.
- BDL - Below Detection Limit
- * Data provided by Customer.

Swati Sonawane

Manager - Chemical

Checked by

Suchita/N/LAB/Tech Report/2023-24/Test Report/Nabl/Che/Water/SAN0032323

Vikram B. Parmar

Nodal Quality Manager

Authorised Signatory

***** End of Report *****