



# VAPI GREEN ENVIRO LIMITED

Formerly known as Vapi Waste & Effluent Mgt. Co. Ltd.

VIA House, Plot No. 135, Char Rasta, GIDC VAPI - 396 195. Gujarat. INDIA  
Mob.: 9714000828 | Tel.: (0260) 2428950, Telefax : (0260) 2429950 | Email : admin@vgelvapi.com  
Website : www.vgelvapi.com | www.coevapi.com | CIN : U74210GJ1997GAP031525

Document No: FM/PUR/02

## TECHNICAL BID

**e-Tender for Supply and Construction of**

## **Secured Landfill Site**

**for Cell 1&2 Extension at CSWP Site Vapi**

**TENDER No. - VGEL/Common Solid Waste  
Plant/Projects/1/21-22/ET/2(Secured Landfill Site)**

AT

CELL 1&2 EXTENSION at

SECURED LANDFILL SITE (TSDF)

(PROJECT NO. CSWP/CELL-1&2 Extension /2021-22)

FOR

VAPI GREEN ENVIRO LIMITED

Plot No : 135, VIA House,  
G.I.D.C., VAPI

Work site at

Common Solid Waste Site  
Plot No.4807, Near Old GEB Station,  
4<sup>th</sup> PHASE, G.I.D.C.,  
VAPI – 396195, Dist.: VALSAD  
GUJARAT

Drawing Link : <https://drive.google.com/drive/folders/1-u-PUUkHR3-DFVMzNN-dBhFA9-ySs4TZ?usp=sharing>



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### Important Note:

- Firm Should have proof of experience of similar work like Construction of Reinforced Earthen Wall for Solid Waste storage Cell Preparation using Geomembrane, Geotextile, GCL with bonded high strength Geo Grid and CC Block in Govt. Dept., R&B, Irrigation department, Sardar Sarovar Narmada Nigam, PSU's, Private companies esp. in field of land filling of Hazardous Waste as per GPCB / CPCB norms. Please submit more details at ANNEXURE.
- VGEL may issue all work i.e. Base Preparation work and R E Wall Construction work of Solid Waste Cell to single party for easy work completion at a lower rate due to limitation of work space and time limit at decided rate.



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## PART – B Technical Bid

Please submit company profile including following details in separate cover

- Name of the Company : \_\_\_\_\_
- Address & telephone No. of contact person & designation : \_\_\_\_\_
- **AA Class Contractor (Reinforced Earthen Wall Experienced) and/OR Similar Work Executed.**
- Organization structure : proprietor / partnership/ Pvt. Ltd. / other
- Profile of Technical persons : Attach separate sheet
- Average Turnover of the Company in INR for last 4 years should be Rs.15 Crores
  - 2017-2018 : \_\_\_\_\_
  - 2018-2019 : \_\_\_\_\_
  - 2019-2020 : \_\_\_\_\_
  - 2020-2021 : \_\_\_\_\_ (Un-Audited)
- Details of similar work executed : Attach separate sheet (**Annexure :1**)  
(Year, cost, Owner, Consultant for Project)
- List of major work executed in last two years:  
(Year, cost, Owner, Consultant): Attach separate sheet (**Annexure :2**)
- List of machinery & equipment : Attach separate sheet (**Annexure :3**)  
(Vibro Roller, JCB, Excavator, Rotavators, Tractors, Water tankers, Dumpers, Trucks, Surveying Equipments like Total station Equipment, Levels etc.)
- List of work on hand : Attach separate sheet (**Annexure :4**)  
(Year, cost, Owner, Consultant)
- Detailed Bar Chart (starting from 0 days) : \_\_\_\_\_
- Profile of Technical persons to be deputed at site : **Attach separate sheet**
- Detailed planning of resources & list of machinery, equipment, levels, skilled man-power and testing facilities proposed to be deployed at site for the execution of work  
: **Attach separate sheet**
- Mobilization time within : 7 Days



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## PART - C DATA SHEET

### **Name of Tender:**

Tender for Supply and Construction of Secured Landfill Site for Cell 1&2 Extension at CSWP Site (Base Preparation work and Retaining Earth Wall using Geo Grid and CC Blocks.)

- **Estimated Cost: Rs.12,00,00,000/- (Rs. Twelve Crores only)**
- Tender document obtaining date: 05-05-2021 to 24-05-2021
- Pre-Bid Meeting Date & Place: 15-05-2021, at 11:00 AM at CSWP Site
- Last Submission date, Time & Place: 12:30 PM on 24-05-2021 at our Head office address as per page 1.
- Technical part Opening Date: 24-05-2021 at 13:30 PM at Head Office
- Tender Fee : **Non-Refundable** as visible on MSTC website. Transaction Fees to be paid directly to MSTC Limited Only.
- Earnest Money (**Bid Security**): **Rs.12,00,000/- (Rs. Twelve Lakh only) Refundable & Interest Free** In form of Bank Draft or DD / Pay Order payable at Vapi drawn in favour of "Vapi Green Enviro Limited.". **Cheque or Bank Guarantee shall not be acceptable.**  
EMD of Unsuccessful Bidder will be returned within 15 days from the date of work order.
- Security Deposit of Tender: EMD of Successful Bidder will be converted as Security Deposit.
- **Retention Money: Total 10% Retention Money. Out of 10%, 2.5% will be Small Saving certificate, 2.5% will be deducted from each running bill, 5% Performance Bond.**
- Date of Technical part Opening: 24-05-2021 at 13:30 PM at Head Office
- Commencement of Tender: Mobilization within 7 days from the date of LOI / Work order.
- Evaluation of Technical Part & Price Part:
- Award of Contract: Selected bidder has to sign Agreement on Rs.100/- Stamp paper within 10 days of LOI/Work order as per probable Draft attached with this tender. Draft may change as per this tender requirement.



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## SECTION - I : TENDER NOTICE

Sealed item-rate tenders are hereby invited for '**e-TENDER FOR SUPPLY AND CONSTRUCTION OF SECURED LANDFILL SITE** AT CELL 1&2 EXTENSION and link up Area at SECURED LANDFILL SITE (TSDf) as per GPCB / CPCB Guidelines' for Vapi Green Enviro Limited, Plot No: 135, VIA House, GIDC, VAPI.

1. Tender Documents consisting complete specifications, schedule of quantities and set of conditions to be complied with by the Bidder, can be obtained from Website of MSTC [www.mstcindia.co.in](http://www.mstcindia.co.in) or [www.mstcecommerce.com](http://www.mstcecommerce.com) Or Vapi Green Enviro Limited website [www.vgelvapi.com](http://www.vgelvapi.com) between **05<sup>th</sup> May, 2021 to 24<sup>th</sup> May, 2021** VGEL shall not accept any change in any word or figure in tender document.

e-Tender shall be conducted on MSTC portal. Interested organizations with similar type of work experience who wish to participate in these e-tenders may visit [www.mstcindia.co.in](http://www.mstcindia.co.in), [www.mstcecommerce.com](http://www.mstcecommerce.com) and [www.vgelvapi.com](http://www.vgelvapi.com).

2. Online Tender shall be submitted on or before 12:30 PM on 24-05-2021 being the last date for submission of tender on [www.mstcindia.co.in](http://www.mstcindia.co.in) or [www.mstcecommerce.com](http://www.mstcecommerce.com).
3. A pre-bid meeting shall be held on **15<sup>th</sup> May, 2021 at 11:00 AM** at our CSWP site (Common Solid Waste Plant, Plot No.4807, Phase IV, Near Old GEB station, GIDC, Vapi – 396195). Technical bid shall be opened on **24<sup>th</sup> May, 2021 at 13.30 PM** at our head office address.
4. Profile of the company including other details as listed on page – 2 (**PART – A**) of this document shall be placed in a sealed cover. It shall be accompanied by deposit of Earnest Money (**Bid Security**) of **Rs. 12,00,000 (Rs. Twelve lack only)** by DD or Bank Draft or Pay Order drawn in favour of "Vapi Green Enviro Limited", payable at Vapi. Cheque or Bank Guarantee shall not be acceptable. Tender document (Financial Bid) (**Part – B**) superscripted with the name of work as given in Para (1) above shall be submitted in separate sealed cover. They should be submitted in the office of Vapi Green Enviro Limited at the address given above. The Earnest Money Deposit shall be returned on the non-acceptance of the tender but it shall be forfeited in the event of the Bidder whose tender is accepted and fails to accept the contract award within a period of 7 days from the date of placing work-order.
5. Any tender which does not fulfill any of the prescribed conditions shall be rejected.
6. This notice shall be part of the contract.
7. **Completion time: 24 Weeks.** (Inclusive of Sundays and public holidays)  
(24 Weeks from Date of Commencement including Base Preparation and up to 3 mtr height)  
Balance construction to be done as per waste filling in side R E Wall, Mutually discussion will be done with contractor as per construction requirements)
8. The owner reserves the right to delete partly or fully any item not to be constructed by the Bidder if instructed by the Consultants / VGEL during the course of construction.

Chief Executive Officer  
Vapi Green Enviro Limited



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## SECTION - II : LETTER OF ACCEPTANCE

To,  
Vapi Green Enviro Limited,  
Plot No : 135, VIA House, G.I.D.C. Char Rasta, VAPI - 396 191, GUJARAT

Sub :- **Construction of Secured landfill site (TSDF) as per GPCB & CPCB guidelines**  
at CSWP site, 4<sup>th</sup> Phase, GIDC, VAPI.

Dear Sir,

With reference to the tender invited by you for the above mentioned work, we write this after having:

- Examined the Tender Document relating to the **construction of Secured landfill site (TSDF) as per GPCB & CPCB guidelines** for Vapi Green Enviro Limited at CSWP site, 4th Phase, G.I.D.C., Vapi, Gujarat.
- Visited and examined the site of the proposed work and
- Acquired the requisite information as affecting the tender invited by you.

We the undersigned hereby offer to construct, execute, complete and maintain the proposed work in strict accordance with Contract Document for the consideration to be calculated in terms of the priced schedule of quantities.

We undertake to complete and deliver the whole of the works within 6 Months from Date of Commencement up to 3 meter height) from the date of issue of and intimation by you that our tender has been accepted or upon receiving possession of the site whichever is later. We further within the above period subject to the conditions of contract relating to extension time, we shall pay to the owner the sum named in the appendix to the conditions of contract as 'Agreed Liquidated Damages' for the period during which the work shall remain incomplete.

We further agree to the deduction of 10% from interim payments as Retention Money. Half of the retention money shall be returned after completion certificate issued by consultant. The balance shall be returned after the 'Defects Liability period is over as per the terms and conditions of contract.

We hereby tender **Rs.12,00,000/-** by D.D. or Pay Order or Bank Draft payable at Vapi, in favour of Vapi Green Enviro Limited as Earnest money (carrying no interest) and we do hereby agree that this sum shall be forfeited to the owner in the event of the owner accepting our tender and we failing to take up the work when called upon to do so by Vapi Green Enviro Limited. We confirm we have studied all the conditions and factors affecting or bearing upon this work before filling this Tender.

Yours faithfully,

Name of the Partners of the Firm for  
Name of person having Power-of Attorney to sign the contract.

*(Duplicate copy of Power of Attorney to be submitted along-with this which shall be compared with the original to be produced to the employer in case the tender is accepted)*



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## SECTION - III : GENERAL INSTRUCTIONS TO THE CONTRACTOR

- a. Interested parties may obtain the tender document from the website [www.vgelvapi.com](http://www.vgelvapi.com) or from MSTC and VGEL Website.
- b. e-Tender for Construction of Base Preparation Work and Reinforced Earthen Wall for Hazardous Solid Waste Disposal Cells at CSWP Site at Vapi in Gujarat shall be conducted on MSTC portal. Interested organizations with similar type of work experience who wish to participate in these e-tenders may visit [www.mstcindia.co.in](http://www.mstcindia.co.in), [www.mstcecommerce.com](http://www.mstcecommerce.com) and [www.vgelvapi.com](http://www.vgelvapi.com).
- c. The duly filled Tender Document is to be submitted through E-Tendering Process to:  
Chief Executive Officer,  
Vapi Green Enviro Limited  
135, VIA House, Char Rasta  
GIDC, Vapi 396 195  
Gujarat (India)
- d. The bids should be submitted to containing following two separate envelopes:  
**Technical bid:**
  1. Technical qualification page along with all the documents mentioned in it.
  2. Copy of all the section Including Blank Price Bid duly signed and stamped on all the pages.**Price bid:**  
Containing the price bid in the form provided in the tender document. No condition other than what already mentioned in the tender documents shall be accepted.
- e. The bid shall be submitted through E-Tendering process only. The complete liability to ensure that the bid shall reach in time shall be with the bidder. Under no circumstance shall allow any allowance for the delay arising out of time limit.
- f. VGEL reserves the rights to accept the lowest or any of the tenders no reasons whatsoever shall be furnished for the acceptance or rejection of the tender. VGEL reserves the right to accept or reject any or all tenders in part or full or to cancel the issue of tender documents without assigning any reason whatsoever. Similarly, in the interest of company, company have absolute right to go for re-tendering without assigning any reason whatsoever to anyone.
- g. Bidder has to accept all terms and conditions unconditionally.
- h. Management reserves the right to modify the tender document for more clarity and/or to get more competition. If there is any revision in the tender document, the same shall be published on website [www.mstcindia.co.in](http://www.mstcindia.co.in), [www.mstcecommerce.com](http://www.mstcecommerce.com) and [www.vgelvapi.com](http://www.vgelvapi.com). All the interested parties are requested to regularly check our website for any updates.
- i. Negotiations, if any, for any item shall be held with the respective L1 party for that item. No bidder shall have any right whatsoever for his bid if it is not obtained in time and in proper format.



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*Requirements of all the following general instructions have to be fulfilled by the contractors in performance of the contract and nothing extra shall be payable to the Contractor on account of the same :-*

- 3.1 This order is for the Construction work as specified in tender and as shall be modified from time to time based on design and other considerations,
- 3.2 The quantities given in the tender are approx. at this stage. The rates offered by the contractor shall be firm & final for the variation.
- 3.3 All required tools & Tackles, Equipment, All required Materials for completing work to be arranged and supplied by Contractor. Delay in work completion will not be acceptable for unavailability of Tools and material.
- 3.4 Electricity shall be provided to the contractor at one point by providing sub-meter. Charges for Electricity consumption to be borne by Contractor. Rate per unit shall be **Rs.15 per unit.** Distribution of electricity to be done by the contractor at his cost.
- 3.5 Final bill shall be prepared by the contractor, excluding cost of materials provided by the VGEL if any.
- 3.6 All Govt. formalities and statutory liabilities such as ESIC / PF / workman compensation Policy, Labour Licenses etc. shall be in contractor's responsibility.
- 3.7 The contractor shall submit detailed work schedule.
- 3.8 The work shall be carried out as per standards & good engineering practices as per instruction of site in-charge.
- 3.9 The contractor shall be responsible for the complete co-ordination of all the works Including that of sub-contractors and nominated sub-contractors for arranging runs of all services and working to the requirements and layouts of the specialist trades, execution of the works.
- 3.10 The contractor shall be required, if necessary, to work overtime at site for the Instructions of site in-charge to complete all the work by the stipulated date.
- 3.11 All drawings, tracings, photo prints and writings (except letter) to be considered by all parties concerned to be the sole property of the VGEL and they must be returned to him on the completion of works.
- 3.12 The drawings maintained on the site are to be carefully mounted on boards of appropriate size and cover with a coat of approved varnish. They are to be protected from the ravages of termites, ants, silver fish and other insects.
- 3.13 The whole of the work must be preceded with such sections and at such times as





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directed by the VGEL/consultant.

- 3.14 The Whole of the material (Except where otherwise described), stores and equipment require for the faithful performance of the contract must be provided through normal trade channels and must include for Sales Tax, Octroi and duties and other charges. Material must be the best of their kind available at the time and the contractor must be responsible for the proper and efficient carrying out of the work. Samples of all materials to be used must be submitted to the Consultant / VGEL /Consultants or representative of VGEL on the site for approval prior to procurements.
- 3.15 The contractor shall provide and do everything necessary for the proper execution of the works according to the true intent and meaning of the drawings and specification taken together, whether the same may or may not be particularly shown on the drawings or described in the Schedule of Quantities.
- 3.16 It must be clearly understood that the whole of the conditions and specification are intended to be strictly enforced, and that no extra charges in respect of extra work shall be allowed unless they are clearly outside the spirit and meaning of the conditions nor unless such works shall have been ordered in writing by the Site Authority.
- 3.17 Any instruction given verbally shall be deemed instruction for the proper execution of the works not involving extra charges. However, if any extra charges are involved, the Contractor shall inform the Consultant / VGEL in writing and seek written instruction from the Consultant / VGEL.
- 3.18 The contractor shall conform to the provisions of any regulation and bye - laws of any water or lighting companies with whose system the structures are proposed to be connected, and shall before making any variations from the drawings that may be necessitated by so conforming give the Consultant / VGEL or his representative on the site written notice specifying the variations proposed to be made and the reason for making it and apply for instruction thereon. In case the contractor shall not in due course receive instruction he shall proceed with the work, conforming to the provision regulation or Bye-Laws to the supply companies and shall provide for and pay all fees and charges.
- 3.19 The rates quoted by the Contractors include for providing all Material, Man power Machineries, scaffolding, hoists, tackle and other plants, shuttering profiles and apparatus etc. generally required for the proper execution of the work. The contractor shall provide without extra charge all labour and things required by the Consultant / VGEL for testing and measuring the works and weighing, measuring, providing or testing the efficiency of any portion of the works and shall also at his own cost provide al planking, gangways, etc., necessary for affording access to every part of the works.
- 3.20 The contractor shall on the written request of the Consultant / VGEL or his Representative on the site immediately dismiss from the work any person



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employed by him thereon who may in the opinion of the Consultant / VGEL be incompetent or misconduct himself and such person shall not again be employed on the works without the written permission of the VGEL.

- 3.21 The contractor from the time of being placed in possession must include for watching, lighting and protecting the work, the site and surrounding property by day, by night on Sundays or any other holidays.
- 3.22 Provide all artificial light required for the works and to enable the contractors and sub- contractors to complete the works in the specified time including that for the workman of any sub-contractor or special tradesman which must be provided by the contractor at on his own cost.
- 3.23 Include for providing a suitable temporary hut for the watchmen and clear when no longer required and provided all necessary attendance, light etc., required.
- 3.24 Include for providing the whole of the water require for the work including that required by special tradesmen and sub-contractors and must be clean fresh water. The contractor must execute any temporary plumbing and pay all fees and charges.
- 3.25 The contractor shall provide a separate office for the Site In-Charge of VGEL / Consultant's representative with drawing desk, stool for this desk, drawers, writing table, four chairs, electric lights, fan, drinking water arrangements, separate adequate toilet facilities etc., and clear away at completion and make good all work disturbed.
- 3.26 The contractor shall provide, fit up and maintain in at approved position proper offices shall be open at all reasonable hours to receive instructions, notices or communications and clear away at completion and make good all works disturbed.
- 3.27 The contractor shall provide adequate latrine accommodation and keep the same in a clean and sanitary condition to the satisfaction of the Public Health Authorities and shall cause such latrines and soil make good all works disturbed by these conveniences.
- 3.28 The contractor shall pay rates of wages and observe hours of work and conditions of employment according to rules in force from time to time.
- 3.29 Should the work be suspended by reason of rain, strike, lockouts, or other cause the contractor shall take all precautions necessary for the protection of the work and at his own expenses shall make good any damages arising from any of these causes.
- 3.30 The Terms "Approved", "Directed" or "Selected" mean the approval, direction or selection of the Consultant / VGEL and wherever the word "Allow" occurs the cost of item or items is at the risk of the contractor.
- 3.31 The whole of the fences, paths, trees, shrubs, green and other surfaces about the



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buildings or approaches thereto, which are required to be maintained are to be kept free from damage due to the operations in connection with the works.

- 3.32 The contractor shall provide such temporary road on the site as may be necessary and for his own convenience but not otherwise. Upon completion such roads shall be broken up and leveled where so required by the drawings unless the Consultant / VGEL shall otherwise direct.
- 3.33 All object of value or antiquity found on the site shall remain the property of the Owner and such findings shall be immediately reported to the Consultant / VGEL.
- 3.34 All savings, cutting and other rubbish as it accumulates from time to time during the progress of the works and at completion, including that of sub-contractors and special tradesmen to be cleared and carted away and all material condemned by the Consultant / VGEL representative to remove.
- 3.35 The rates quoted by the contractor cover for necessary transport of material from place of availability to the site of works.
- 3.36 Total station, level machine, prismatic compass, chain, steel and metallic tapes and all other surveying instrument found necessary on the works shall be provided by the contractors for the due performance of their contract as instructed by the Site Authority.
- 3.37 The contractors or their representatives shall accompany the Consultant / VGEL or his representative or the Engineer-in-Charge when required to do so, and assist in taking the measurements recorded on the spot.
- 3.38 The contractors shall provide suitable stone with flat tops and build the same in concrete for temporary bench marks. All the pegs for setting out the work and fixing the necessary levels required for the execution thereof shall if desired by the Consultant / VGEL, likewise be built in masonry at such places and in such manner as the Consultant / VGEL may determine.
- 3.39 The charges for testing of any materials shall be borne by the contractor from time to time including transport and handling charges.
- 3.40 Contractor should carefully study lift of materials, as he shall have to carry out the work at any and all levels at the quoted rates and lift shall not form the criterion for any extra amount on that cause, unless specifically stated otherwise in the wording of items specified in the Bill of Quantities.
- 3.41 The charges for testing of any materials / Soil etc shall be borne by the VGEL. 1% amount of total contract price or at actual testing charge + Expenses whichever is higher shall be deducted for this testing purpose. Bidder shall have to carry out site investigation and required tests to get preliminary data for construction work, with own cost. Bidder shall Study, the existing condition of site. Bidder shall provide technical personal for testing, handing and transportation for samples to laboratory.



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## Important Note:

1. Defects Liability Period : 5 Monsoon Season from Work completion date
2. Period of Final Measurement & Valuation: 1 Month.
3. Date of Commencement : Within 7 days from the date of work order
4. Work Completion Period: 11 Month. (Inclusive of Sundays and public holidays) (11 Month from Date of Commencement including Base Preparation and up to 5 mtr height) Balance construction to be done as per waste filling in side R E Wall, mutually discussion will be done with contractor as per construction progress requirements)

Sr. No.	Stage wise Work Details	Work Completion Period
1	Base Preparation Work + 5 Meter Height including Monsoon season	11 Month
2	Next 6 Meter Height out of total 17 meter Height Excluding Monsoon season (5 meter to 11 meter)	6 Month
3	Next 6 Meter Height out of total 17 meter Height Excluding Monsoon season (11 meter to 17 meter)	6 Month

5. Agreed Liquidated damages : 0.5% amount per week subject to maximum 5% amount of the delayed work.
6. Value of work for Interim Certificate: As per schedule on page 23.
7. Retention Money percentage : 10 %. (5% amount of Performance Bond shall be return after work completion certificate and balance 5% amount shall be return after Defects Liability Period)
8. Period of honoring certificate : 15 days.
9. **Testing and Analysis of Material:**  
It is required to make joint inspection of material by Contractor, Consultant, and VGEL at 3<sup>rd</sup> party Analysis laboratory like CIPET or BTRA or as per VGEL decision. Contractor have to co-operate for Sample Preparation, Joint Inspection in presence of Consultant and VGEL Representative. It is joint responsibility of all participants for use of best material during Project work.
10. **Guaranty of Work: Contractor have to provide** Guarantee of work till Defect Liability period of 5 Monsoon from work completion date. 5% Retention money to be returned after Defect Liability period.
11. Specially Contractor has to take responsibility for leak proof welding work of Geomembrane sheet, Proper lying and stitching of Geotextile sheet.
12. GST will be Extra on Quoted Rate. Not Required to Add in Basic Amount.



# VAPI GREEN ENVIRO LIMITED

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## SECTION – IV: CONSTRUCTION PROCEDURE

Tender for Construction of Embankment Dyke with Segmental Wall Block Facing & Geogrid Soil Reinforcement for storage of Solid Waste at TSDF site – Cell 1&2 Expansion.

Tenders are called for construction of embankment dyke with segmental wall block facing with geogrid soil reinforcement for storage of solid waste at TSDF site – Cell 1&2 Expansion.

Preference will be given to bidders with similar prior experience.

Materials manufacturers are mentioned below. Material to be used as per VGEL Requirements, Test reports as per IS standard to be submitted along with supply of the same.

<b>Geogrid :</b> a) Hueskar b) Maccaferri India c) Strata Geo systems d) Techfab e) Tencate f) Geosys India g) CTM	<b>Geosynthetic Clay Liner:</b> a) CETCO b) GSE c) Hueskar d) Laviosa Trimex e) Naue GmbH f) Ashapura g) Key Tech	<b>Non-Woven Geotextile:</b> a) Jeevan <b>Geosynthetic</b> b) Skaps c) Techfab d) Techno Fabricks e) Terram <b>Geosynthetic</b> f) Khaton Technical Textiles Limited g) Manas Fabrics Private Limited	<b>Geo-composite Drains :</b> a) Alyaf Industrial Co. Ltd. b) Skaps c) Terram <b>Geosynthetics</b> d) Techfab e) CTM f) Mahashree g) Intermas	<b>Geomembrane :</b> a) Hueskar b) GSE c) Naue GmbH d) Megaplast e) Maharshee f) Climax Synthetic
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Specification for Construction of Block faced Reinforced Soil Wall

### PART 1.: GENERAL

#### A. Work Included

This section includes the following: The specifications on furnishing the materials and labor required to construct the modular concrete reinforced soil Reinforcement Earthen walls within the project. This will include and is not limited to casting of modular blocks, preparing foundation soil, furnishing and installing leveling pad, drainage fill and backfill to the grades shown on the construction drawings, the modular Reinforcement Earthen wall units, installing geogrid-soil reinforcement- of the type, location, and lengths designated on the construction drawings and capping beam.

#### B. Delivery, Storage and Handling

- The contractor shall check all the blocks to assure that they are the proper dimension & color.
- The contractor needs to protect all stored materials from damage. Damaged materials will not be incorporated into the work and will be marked for identification and disposed of or removed from the job site as soon as possible.



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- The faces of the concrete wall units will be free of excessive chips and cracks and will not have stains that discolor the faces. The contractor needs to prevent excessive mud, chemicals, moisture etc. that could come in contact with the Reinforced Earthen wall materials and cause discoloration or damage.

## Part 2 : PRODUCTS Definitions :

- a. **Modular Facing Unit** - A concrete Reinforced Earthen wall unit, as manufactured by hydraulic press using a dry casting process using cement, water, and aggregates.
- b. **Geogrid** – High Tenacity Polyester knitted or woven material with protective coating used as a soil reinforcement component and is used in conjunction with the Modular Units. The Geogrid is a structural component formed by a network of connected elements capable of producing tested tensile strengths and must also contain apertures of sufficient size to allow interaction with the backfill.
- c. **Unit Drainage / Unit Fill** – Aggregate which is placed within and immediately behind the modular concrete units for 450 mm. The aggregate will be crushed, free draining stone.
- d. **Backfill** - The compacted soil that is placed within the reinforced soil zone of the wall. The soil will be non-organic in composition and contain the moisture necessary for proper compaction to the densities required in the drawings.

## Modular Concrete Reinforced Earthen Wall Units

The Modular facing units will conform to the following aesthetic requirements:

- i. Color - color should be grayish/cement colour
- ii. Bond - running bond is a term used to describe the alignment of the set courses of block. A wall conforming to true bond has successive vertical units staggered midpoint to endpoint evenly up the face of the wall.
- iii. Tolerance in vertical dimension of block will not be more than 2.0 mm and the horizontal dimensional tolerance will not be more than 4.0 mm.
- iv. Modular concrete Reinforced Earthen wall units shall conform to the structural tolerances in accordance with these specifications. The concrete will have a crushing strength at 28 days curing not less than 30 Mpa.
- v. The modular concrete Reinforced Earthen wall blocks will be cast using a hydraulic press casting machine. The machine shall be firmly founded on the ground to ensure stability during operation. The concrete mix will be designed as per the material available at the site. The mix needs to be designed as a dry mix with the water cement ratio being as low as possible.
- vi. The block casting machine should have a facility for vibration on both top and bottom of the mould to ensure a compact concrete block.
- vii. The blocks need to be kept on the palettes for about 12 to 15 hours of initial curing depending on the local climate. The palettes bearing the freshly cast block shall be placed on made up beds for initial curing. Later they can be stacked in heights not greater than of 5 blocks. Curing will be done by sprinklers or by placing wet Hessian cloth over the blocks.
- viii. Concrete cubes should be taken at predetermined intervals and the curing of cubes be done as per the IS code provisions. Cubes will be tested at 7 and 28



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days. Proper register for testing needs to be maintained. Blocks can be used only after 28 days curing. In case the characteristic compressive strength is obtained in less than 28 days, the blocks may then be used.

## Base Leveling Pad Material

The base pad material will consist of a 150 mm thk. PCC, lean (M-15 grade) concrete leveling pad of 450b mm width

## Unit Drainage / Unit Fill

Unit drainage and unit fill shall consist of clean, well draining, 10mm 20 mm minus crushed stone or gravel. The sieve analysis will be in accordance with Indian standards. The tested gradation should be as follows (IRC SP:102) :

Particle Size (mm)	Percent Passing
10	75-100
0.420	0 - 60
0.150	0 - 50
0.075	0 - 5

Particle Size (mm)	Percent Passing
37.50	90 – 100
20.00	80 – 100
12.50	0 – 20

The unit fill must be placed behind and completely fill the core areas within and around the Reinforced Earthen wall units. The unit drainage fill must be placed at a minimum of 450mm, total depth, directly behind the wall units during construction.

## Backfill

The backfill, which will be compacted on top of and around the geogrid reinforcement shall be free of debris, non-organic in nature and meet the following gradation tested in accordance with relevant Indian standards, MORTH, 5<sup>th</sup> Revision:

Particle Size (mm)	Percent Passing
100	100
0.420	100 - 75
0.150	0 - 60
0.075	0 – 15

Particle Size (mm)	Percent Passing
75	100
0.425	0 – 60
0.075	0 - 15

*The plasticity of the fine fraction of the reinforced soil shall be having liquid limit < 40 and plasticity index < 6. Coefficient of uniformity Cu should be greater than or equal to 4.*

The maximum aggregate size in the backfill soils should be limited to 20mm unless tests have been performed to evaluate potential strength reductions to the geogrid design due to construction damage.



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## Geogrid Soil Reinforcement

Geosynthetic reinforcement will be manufactured specifically for soil reinforcement applications and will be manufactured from high tenacity polyester yarns. Certification for testing of factors for Creep, Installation Damage, Durability, Pullout and Direct Sliding to be submitted along with bid.

## Drainage Pipe

The drainage collection pipe shall be top perforated or slotted 100 mm diameter PVC pipe. The pipe and surrounding drainage aggregate may be wrapped with a non-woven geotextile fabric of 200 GSM to aid in filtration by Reinforced Earthen the fines and allowing the water to drain through.

## PART 3 : EXECUTION SITE PREPARATION

- i. Clear & grub the site.
- ii. The Installer shall excavate to the lines and grades shown on the approved construction drawings submitted by the design engineer. Any over excavation that is not approved by the design engineer, owner or the owner's representative will be filled and compacted to the required density using the reinforced backfill. Soils are not to be disturbed beyond the designed grade lines.
- iii. Excavate a trench for construction of leveling pad.
- iv. Excavate and remove any soft and undesirable materials discovered in the foundation area. The excavation area should be adequately oversized.

## Base Leveling Pad

- i. The Base Leveling pad material shall be placed to the lines and grades shown on the construction drawings. The leveling pad can be constructed of 150 mm thick PCC and having width 450 mm as shown on approved drawings.
- ii. The Base Leveling Pad needs to be constructed on undisturbed ground. The leveling pad needs to be constructed in a manner that allows full contact of wall units with foundation, do not rock back and forth, and also must allow the wall units to remain in contact horizontally without gap.
- iii. Leveling pad shall be prepared to insure full contact to the base surface of the concrete units.

## Modular Unit Installation

- i. Wall units are placed directly on the leveling pad. Block alignment and levels, parallel and perpendicular to the wall face, should be checked to ensure that all units are in full contact with the leveling pad and completely level. Wall units must also be inline horizontally, or side to side, with adjacent units.
- ii. As the wall is being constructed the drainage fill is placed within and behind wall units during each coarse placement. Place backfill soils behind drainage fill carefully and in a maximum of 200mm lifts (after compaction of 300mm thick layer) for proper compaction.
- iii. For curves and corner applications, please see the construction drawings.





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## Geogrid - Soil Reinforcement Placement

- i. The geogrid reinforcement will be placed at elevations and depths shown on the construction drawing given by the design engineer. Care should be taken that the geogrid reinforcement is placed correctly, with the strength direction of the reinforcement is perpendicular to the Reinforced Earthen wall.
- ii. The geogrid reinforcement is installed horizontally on the compacted backfill and placed fully to the front of the Reinforced Earthen wall units. The next course of Reinforced Earthen wall blocks are put in place next, binding the geogrid reinforcement between the lower and just installed wall units. The geogrid reinforcement will then be pulled taut, and staked at the end furthest away from the wall face prior to further backfill placement. Care needs to be taken that the stakes or the tension applied does not adversely affect the installed condition of the geogrid reinforcement.
- iii. The geogrid reinforcement sheets will be continuous horizontally, side-by-side, to provide total 100% coverage on each installed course. Each sheet of installed geogrid reinforcement will be continuous. Splicing shorter pieces to make longer ones during construction is not permitted.

## BACKFILL PLACEMENT

- i. The backfill soils will be placed, spread, and compacted in a manner that minimizes the development of slack and damage in the installed geogrid.
- ii. The backfill soils will be placed and compacted in 200 mm compacted lifts using mechanized compaction equipment. Only vibratory rollers are allowed in the reinforcement zone of the Reinforced Earthen wall so to minimize the possibility of geogrid reinforcement damage. Care should also be taken that the compaction equipment should not come too close to the wall units themselves.
- iii. All construction plant having a mass exceeding 1000kg shall be kept at least 1.5m away from the face of slope or wall. In this area (up to 1.5m from the face of slope or wall, following compaction plant shall be used.
  - o Vibratory roller having a weight per meter width of roll not exceeding 1300kg.
  - o Vibratory plate compactor of maximum weight 1000kg.
  - o Vibro tamper having a weight not exceeding 75kg.
- iv. During construction of reinforced fill, the retained material beyond the reinforcement at the rear or the structure shall be maintained at the same level as reinforced fill.
- v. The backfill will be compacted to 95% proctor density per Indian Standards.

## ❖ IS Standard and Materials Specifications:

### Item No. 02

- ❖ **Backfill - levelling and grading –**
- ❖ The ground shall be excavated, levelled and graded as per approved drawings using mechanical equipment.
- ❖ Filling and compaction of Reinforced fill ( $\phi \geq 30$ ) –



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- ❖ The fill material in the reinforced soil zone shall have drained or effective angle of friction not less than 30° measured by conducting drained direct shear test method. Materials with more than 15% PASSING 75 micron sieve, but less than 10 percent of particles smaller than 15 microns are acceptable provided PI (Plasticity Index) is less than 6 and angle of friction is not less than 30°.
- ❖ The maximum aggregate size in the backfill soils should be limited to 20mm unless tests have been performed to evaluate potential strength reductions to the geogrid design due to construction damage.

## Item No. 03

### Modular M35 Grade Concrete Reinforced Earthen Wall Units (Fascia Units) –

The Modular facing units will conform to the following aesthetic requirements:

1. Color - color should be grayish/cement colour.
2. Tolerance in vertical dimension of block will not be more than 2.0 mm and the horizontal dimensional tolerance will not be more than 4.0 mm
3. Modular concrete Reinforced Earthen wall units shall conform to the structural tolerances in accordance with these specifications. The concrete will have a crushing strength at 28 days curing not less than 35 Mpa.
4. The modular concrete Reinforced Earthen wall blocks will be cast using a hydraulic press casting machine. The machine shall be firmly founded on the ground to ensure stability during operation. The concrete mix will be designed as per the material available at the site. The mix needs to be designed as a dry mix with the water cement ratio being as low as possible.
5. The block casting machine should have a facility for vibration on both top and bottom of the mould to ensure a compact concrete block.
6. The blocks need to be kept on the palettes for about 12 to 15 hours of initial curing depending on the local climate. The palettes bearing the freshly cast block shall be placed on made up beds for initial curing. Later they can be stacked in heights not greater than of 5 blocks. Curing will be done by sprinklers or by placing wet Hessian cloth over the blocks.
7. Concrete cubes should be taken at predetermined intervals and the curing of cubes be done as per the IS code provisions. Cubes will be tested at 7 and 28 days. Proper



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register for testing needs to be maintained. Blocks can be used only after 28 days curing. In case the characteristic compressive strength is obtained in less than 28 days, the blocks may then be used.

## Item No. 04

### Filter Media –

600mm wide (Maximum), 450mm minimum

Filter media material is to be placed within the block cores and behind the block fascia for a maximum width of 600mm (should not be less than 450mm wide). It should consist of clean, well-draining, 20 mm minus crushed stone or gravel. The sieve analysis will be in accordance with Indian standards. The tested gradation should be as follows:

Particle Size (mm)	Percentage Passing (%)
20	80-100
12.5	0-20

The filter media must be placed behind the fascia blocks and completely fill the core areas within and around the Reinforced Earthen wall units.

## Item No. 05

### High Strength Flexible knitted/woven polyester geogrid reinforcement

Providing uniaxial knitted/woven polyester (PET) geogrids constructed of high molecular weight and high tenacity polyester yarns and coated with a UV stabilised coating.

Fiber properties (tested for fiber on any grid style)

- Molecular weight: > 25,000 g/mol (tested as per GRI GG8)
- Carboxyl End Group (CEG) number: max. 30 mmol/kg (tested as per GRI GG7)

Chemical resistance and stable in the pH range of 4 to 9 (tested as per EN ISO 12960)

Max elongation – 10% at designated UTS strength

The 5 types of geogrid which are used in the design of reinforced soil embankment are shown in table below with short term ultimate strength and corresponding long-term design



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strength for 30°C temperature for 114 years.

Geogrid Type	Type - 1	Type - 2	Type - 3	Type - 4	Type - 5	Type - 6	Type - 7
Ultimate strength of geogrid (kN/m)	40	60	80	100	120	150	180
Long term design strength at 30°C temperature for 114 years (kN/m)	23.09	34.6	46.2	57.7	69.28	86.6	104.0

## Qualification requirements

- Geogrids shall be manufactured in an ISO certified factory and must have a CE certification. Geogrids should have a NTPEP accreditation report for strict quality control.
- Test reports from GAI-LAP accredited laboratories certifying above properties should be provided for approval
- One set of test certificates (for ultimate tensile strength, strength @ 5% and elongation) shall be provided with every lot of 1,00,000 m<sup>2</sup> of geogrids supplied to site. Tests shall be conducted at a 3rd party test house; the test house has to be GAI-LAP accredited
- Manufacturer should have prior experience of supplying geogrid in MSE (Mechanically Stabilized Earth) structures constructed for Landfills structures of atleast 12m height.

## Item No. 06

- ❖ **Non-woven geotextile – Wrapped on 100mm PVC perforated drainage pipe**
- ❖ **Base Liner – protection layer for geomembrane, 1 layer – 200 GSM**
- ❖
- ❖ Providing Nonwoven Geo-textile of polypropylene, staple fiber, needle punched geotextiles with following specifications - Mass per unit area - 200 g/Sq. Meter (GSM), Grab tensile strength 710 N, Grab elongation -50 %, Puncture Strength 395 N, Trapezoidal Tear Strength 290 N, Water Flow rate 4480 L/min/m<sup>2</sup>, UV resistance 70 % retained after 500 hrs.



## Item No. 07

### Base Levelling Pad –

The levelling base pad material will consist of a 150 mm thick and 450mm wide PCC, lean (M-15 grade) concrete levelling pad. This is to be placed at two levels viz. below the first course of concrete block layers at the base and below first course of blocks at the berm.

The Base Levelling Pad needs to be constructed on undisturbed ground. The levelling pad needs to be constructed in a manner that allows full contact of wall units with foundation.

## Item No. 08

### M25 Grade Concrete:

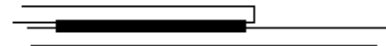
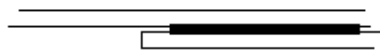
RCC Leachate Collection chamber, RCC Casing for Leachate collection Pipe, RCC Peripheral Drain, RCC Steps for slop portion and coping beam of size 300mm wide and 300mm thick is to be constructed on the top most block of the first berm of the reinforced soil embankment.

## Item No. 09 AND 10

### ❖ 1.5mm & 2.0 mm HDPE Liner (Geomembrane) for Base Liner –

### ❖ GEOMEMBRANE LAYER (With HDPE sheet):

- ❖ The HDPE sheet of 1.5mm thick shall be uniformly placed over the surface of clay liner. The HDPE sheet should be tested as per the quality assurance plan. The joint between HDPE sheets shall be of Dual hot wedge extrusion welding as shown below.



- ❖ The surface of compacted clay shall be smooth and free of protrusion of roots, lumps and large particles before installing HDPE sheet. The construction equipment should not be allowed to ride on Geomembrane. During installation, working crew should not wear heavy boots and carry minimum necessary tools. The Geomembrane panels shall be placed as per the direction of site engineer. The Geomembrane should stick firmly with surface of Clay layer and no bulging should occur due to the air interference. After seaming operation, the HDPE sheet must be anchored at the top of the first soil bunds as shown in the relevant drawings.



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## ❖ **Base Liner System and Side slope Liner system:**

### ❖ 1) *1.5mm thick HDPE Geo-membrane of following specification:*

- ❖ Width of roll – 7m min.
- ❖ Tensile strength at yield greater than 22 KN / m.
- ❖ Tensile Strength at break greater than 40 KN / m.
- ❖ Tear Resistance greater than 187 N
- ❖ Puncture Resistance greater than 480 N
- ❖ Should meet ASTM:GRI-GM 13 specifications

### ❖ 2) *2 mm thick HDPE Geo-membrane of following specification:*

- ❖ Width of roll – 7m min.
- ❖ Tensile strength at yield greater than 29 KN / m.
- ❖ Tensile Strength at break greater than 53 KN / m.
- ❖ Tear Resistance greater than 249 N
- ❖ Puncture Resistance greater than 640 N
- ❖ Should meet ASTM:GRI-GM 13 specifications

## **Item No.11**

### **Geosynthetic Clay Liner (side slopes and Base liner)**

Providing Geo Synthetic Clay Liner with Geotextile 200 GSM cover of PP nonwoven Geotextile including bentonite (natural Sodium - Granules) of 4 Kg/m<sup>2</sup> (at 0% moisture content) with montmorillonite content > 75%, tensile strength 10 KN/m<sup>2</sup>, hydraulic conductivity is less than  $\leq 1.85 \times 10^{-11}$  m/sec.

Geosynthetic clay liner should satisfy all the parameters mentioned in GRI GCL3 standard - specification for "Test methods, Required properties and Testing Frequencies of GCLs".

## **Item No.12**

### **Geo-composite drain –**

For Side Slope Liner - Specifications

Drainage Geocomposite, A high-density polyethylene (HDPE) geonet with one Polypropylene (PP) geotextile heat laminated. The geonet is made with 2 over crossed strands at 60° or 45° (Both will be acceptable), whose geometry create channels with a high



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flow capacity, also under pressure and at very low gradients.

MAIN USES: Landfill capping, new landfills, water reservoirs, horizontal drainage in embankments and platforms of roads, railways, trams and other trafficked areas, **Reinforced Earthen** structures, bridges, foundations, basements, canals, cut and cover tunnels, tunnels and other underground structures, gardens and sport fields.

Above details of Drainage Geo-net is given as example specifications. Better or equal in quality items will be acceptable. Please submit more details with sample piece with your offer.

Characteristic	Value	Unit	Test Standard
<b>Geonet</b>			
Polymer	High Density Polyethylene (HDPE)		
Thickness at 2 kPa/200 kPa	4.2/3.8	Mm	ISO 9863-1
<b>Geotextile</b>			
Polymer	Polypropylene (PP)		
Mass per unit area	120	g/m <sup>2</sup>	ISO 9864
Cone drop	30	Mm	ISO 13433
CBR	1.3	kN	ISO 12236
Opening size	90	µm	ISO 12956
<b>Geocomposite</b>			
Mass per unit area	740	g/m <sup>2</sup>	ISO 9864
Thickness at 2 kPa/200 kPa	4.8/4.2	mm	ISO 9863-1
Peak tensile strength MD/CMD	19/17	kN/m	ISO 10319
Elongation at peak, MD/CMD	40/50	%	ISO 10319
Flow capacity in their plane MD			
i = 1	S = 20 kPa	0.62	l/m.s
	S = 200 kPa	0.38	

## For Base drain (Secondary drainage layer of double liner system) -

Providing triplaner geocomposite drain with nonwoven geotextile on both sides. Drainage



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Geocomposite, is a tri-planer high-density polyethylene (HDPE) geonet with one Polypropylene (PP) geotextile heat laminated. The geonet is made with 3 over crossed strands, whose geometry create channels with a high flow capacity, also under pressure and at very low gradients.

Characteristic	Value	Unit	Test Standard
<b>Geonet</b>			
Polymer	High Density Polyethylene (HDPE)		
Thickness at 2 kPa/200 kPa	5.4/5.1	mm	ISO 9863-1
<b>Geotextile</b>			
Polymer	Polypropylene (PP)		
Mass per unit area	120	g/m <sup>2</sup>	ISO 9864
Cone drop	30	mm	ISO 13433
CBR	1.3	kN	ISO 12236
Opening size	100	µm	ISO 12956
<b>Geocomposite</b>			
Mass per unit area	1060	g/m <sup>2</sup>	ISO 9864
Thickness at 2 kPa/200 kPa	6.0/5.5	mm	ISO 9863-1
Peak tensile strength MD/CMD	20/15	kN/m	ISO 10319
Elongation at peak, MD/CMD	30/40	%	ISO 10319
Flow capacity in their plane MD			
i = 0.5	S = 500 kPa	0.46	ISO 12958
			ISO 12958

## A) Gravel layer for primary leachate collection system –

The leachate collection layer (drainage layer) will usually be a 30 cm thick sand-gravel layer with a slope of 2% or higher and a permeability of greater than 10<sup>-2</sup> cm/sec (10<sup>-4</sup> m/sec).





## Item No. 13 & 14

### Perforated Pipes (HDPE) for base leachate collection –

A series of 200 & 315 mm dia (max) perforated HDPE pipes wrapped with non-woven geotextile are to be provided in the leachate collection system within the gravel drainage leachate collection layer of the base liner system. It is to be ensured that the pipes should meet following specifications –

Pipe diameter – 200 & 315 mm (max.)

Overburden pressure to be resisted by the pipe – 350 kPa

Proper coupling mechanism should be used to connect pipes (Including sleeves for outlet below RS Wall)

Pipes to be provided at 5m C/C spacing laterally

## Item No. 15 & 16

### Protection of Geomembrane – Non-Woven Geotextile 250 GSM & 500 GSM

#### Separation layer between gravel and waste – 250 GSM & 500 GSM

**250 GSM Geotextile:** Providing Nonwoven Geo-textile of polypropylene, staple fiber, needle punched geo-textiles with following specifications –

Mass per unit area - 250 g/Sq. Meter (GSM),

Grab tensile strength 900 N,

Grab elongation -50 %,

Puncture Strength 550 N,

Trapezoidal Tear Strength 365 N,

Apparent Opening size(O95) 18 µm,

Permeability 0.18cm/s,

Water Flow rate 62.5 L/m<sup>2</sup>/Sec,

Endurance UV resistance 70 % retained after 500 hrs.

**500 GSM Geotextile:** Providing Nonwoven Geo-textile of polypropylene, staple fiber, needle punched geo-textiles with following specifications –

Mass per unit area - 500 g/Sq. Meter (GSM),

Grab tensile strength 1700 N,



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Grab elongation - 70 %,  
Puncture Strength 1100 N,  
Trapezoidal Tear Strength 780 N,  
Apparent Opening size(O95) 90 µm,  
Permeability 0.18cm/s,  
Permittivity 0.5 s-1,  
Water Flow rate 25 L/m<sup>2</sup>/Sec,  
Endurance UV resistance 70 % retained after 500 hrs. **As per Approved drawing.**

## **Item No. 17**

### **Soil Bags with Soil Filling**

Soil bags are to be used for construction of back slope of the embankment (Waste side) as specified in the tender drawings. Used bags would be permitted for construction. These bags are to be filled with locally available soil and are to be stitched back before using for construction.

## **Item No. 18**

### **CRS Steel for RCC**

Fixing CRS TMT with Grade FE500 Reinforcement including, cutting, bending and binding and excluding the material cost.

## **Item No. 19**

### **Sand Filling**

Sand filling for use in base preparation for leachate collection layer.

## **Item No. 21**

### **Compacted Clay Liner –**

A compacted clay (or compacted amended soil) layer of thickness 45 cm or more having a coefficient of permeability of 10<sup>-7</sup> cm/sec (10<sup>-9</sup> c/sec) or less. Compacted clay liner should satisfy all the specifications and installation guidelines as per CPCB norms for Hazardous waste landfill.

**The construction procedure for Cell 1&2 Expansion of landfill facility shall be in the following sequence:**



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- Side soil bunds
- Side liner system

## SIDE SOIL VERTICAL BUNDS

The vertical reinforced soil walls shall be as per design and drawing. Over the inner slope, side liner has to be placed as per the details given in drawings. The side soil bunds have to be constructed with soft murrum granular soil. Soil has to be laid in layers of about 30 cm and well compacted with vibratory roller. During laying of each layer, clay (of side liner) shall be placed at the inner side of soil bund. Number of passing of roller shall be judged based on proctor density test. Proctor density test should be carried out one at every 500 sq.mt on each layer and density shall not less than 95%. During compaction water shall be sprayed and optimum moisture content of soil shall be in maintained. The material for construction of soil bunds shall satisfy the minimum dry density requirement (i.e. Not less than 1.44gm /cc), the testing has to be carried out as per IS 2720 (PT. VII). The following are the other requirements of material, which shall be checked and satisfy before it is used for construction.

Sr.	Parameters	Required results
1	Liquid Limit (%)	<50
2	Plastic Index (%)	< 18
3	Shrinkage Limit (%)	>15
4	Volumetric free swell index (%)	< 50
5	Direct Shear	
	c (kg/cm <sup>2</sup> )	0.10 - 0.30
	Ø (degree)	8.0 – 15.0

After constructing soil bund up to the required height, the side slope shall be cut neatly as per designed slopes.

## HARD COMPACTED BASE: -

After the formation of subsurface it has to be compacted with vibratory roller. After compaction Proctor density test should be carried out one at every 500 sq.mt. and the same shall not less than 95%. The total number of density test is about **10**. The entire test shall be carried out in the presence of site engineer, staff of VGEL and results be well documented.

## GEOMEMBRANE LAYER (With HDPE sheet):

The HDPE sheet of 1.5mm thick shall be uniformly placed over the surface of clay liner. The HDPE sheet should be tested as per the quality assurance plan. The joint between HDPE sheets shall be of Dual hot wedge extrusion welding as shown below.

The surface of compacted clay shall be smooth and free of protrusion of roots, lumps and large particles before installing HDPE sheet. The construction equipment should not be allowed to ride on Geomembrane. During installation, working crew should not wear heavy boots and carry minimum necessary tools. The Geomembrane panels



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shall be placed as per the direction of site engineer. The Geomembrane should stick firmly with surface of Clay layer and no bulging should occur due to the air interference. After seaming operation, the HDPE sheet must be anchored at the top of the first soil bunds as shown in the relevant drawings.

## GEOTEXTILE

The needle punched non-woven type Geo-textile of thickness 3 mm having the mass per unit area greater than 500 g /Sq.mt. shall be uniformly placed on the HDPE sheet. This acts as a cushion to HDPE sheet and prevents any damage causing due to vehicle movement or any other shock loads. The joints of geo-textile should be well stitched.

## SIDE LINER SYSTEM

The side liner system is on the inner side of soil bunds with slope 1:1.5(V:H). embankment. The construction procedure of each layer of sideliner system (i.e. Clay liner, HDPE sheet, Geo-textile and Grit) is same as bottom liner system. The clay liner shall be constructed along with the construction of first soil bund embankment. The details of sideliner are shown in drawing no 1.

## Design Consideration of Liner System of Landfill site:

The specifications and quality aspects of the Landfill facility is very important, in order to achieve designed performance of secured landfill facility. Liner system of landfill facility has been designed in consideration with following points: -

- The water table at the site is 3 meters, considering 2-meter clearance between water table and lowest point of bottom liner system, double composite liner system has been designed for the proposed Cell Extension of landfill facility.
- To prevent migration of waste, leachate to the adjacent subsurface soil or ground water or surface water.
- Material specified for liner has adequate chemical properties, physical properties and engineering properties to prevent failure on account of loads, climatic conditions, and contact with waste or leachate.
- Thickness and slopes of landfill has been designed for safety limits, considering all sort of forces.



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## **MATERIAL SPECIFICATIONS FOR COMPOSITE REINFORCED SOIL WALL SYSTEM**

### **1) PROVIDING HIGH STRENGTH FLEXIBLE GEOGRIDS AS PRIMARY SOIL REINFORCEMENT OF COMPOSITE SOIL REINFORCEMENT SYSTEM**

#### **1.1 Material**

The primary soil reinforcement shall be high strength flexible geogrid with a high-quality coating like LDPE or equivalent. Latex or PVC coating or geotextile shall not be permitted. The selection of the geogrid needs to be strictly based on the long-term design strength values at 30°C. The primary soil reinforcement shall conform to the details given in table 1. The Ultimate tensile strength values indicated in table 1 are short term, which needs to be reduced to long term strength for design purpose by applying suitable partial material factors or reduction factors (RF) as explained in clause 1.2. The selection of the geogrid needs to be strictly based on the long-term design strength values for a design life of 120 years at 30°C.

#### **NOTE:**

- Tensile strength per metre should be based on tests performed as per ISO 10319 test procedure BIS/ ISO / ASTM.
- Tensile properties per metre should be based on tests performed as per guidelines given in ISO TR 20432 BIS/ ISO / ASTM.
- The resulting loads are factored to produce values appropriate to a 1 metre wide sample.

#### **1.2 Long term design strength properties**

The long term design strength shall be derived as per guidelines given in ISO TR 20432 for design life of 120 years following factors

$$T_{\text{allow}} = T_{\text{UTS}} / R_F$$

$$R_F = R_{F_{CR}} \times R_{F_{ID}} \times R_{F_W} \times R_{F_{CH}} \times F_S$$

$$T_{\text{allow}} = \text{Allowable tensile strength}$$

$$T_{\text{UTS}} = \text{Ultimate tensile strength}$$

$$R_F = \text{Reduction factor}$$

$$R_{F_{CR}} = \text{Reduction factor for creep}$$

$$R_{F_{ID}} = \text{Reduction factor for the effect of installation damage}$$

$$R_{F_W} = \text{Reduction factor for weathering}$$

$$R_{F_{CH}} = \text{Reduction factor environmental degradation (chemical and biological) at the service temperature}$$

$$F_S = \text{Reduction factor related to the mass of information available and to the production quality}$$

The adoption of reduction factors should be strictly based on reliable test data and performance data available with the manufacturer from accredited independent agency or the manufacturer should provide a valid third-party accredited certification like BBA (British Board of Agreement) certifying the Reduction Factor (RF) value for their geogrid for design temperature of 30°C and design life of 120 years. Manufacturer should have creep test data from independent accredited laboratory for period of 5 years.



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## 1.3 Testing and acceptance criteria

The material should get approval from the client before the actual supply start. Contractor within 30 days of issue of work order shall intimate Engineer in charge about the brand of material he intends to procure along with technical literature, past experience and other details about the manufacturer and arrange a visit of consultant to factory for inspection and testing of the material. The visit expenses (traveling, lodging and boarding) shall be borne by client whereas the testing expenses shall be borne by the Contractor.

Tensile strength test shall be done as per IS Standard of geogrid supplied. Manufacturer of the geogrid should provide "Manufacturers Test Certificate" and Quality Conformity Certificate for the tensile strength of geogrid elements.

## 1.4 Eligibility criteria- Manufacturer for High Strength Flexible Geogrid

The Manufacturer should have experience in manufacturing, supplying and providing design and technical support for structures with composite soil reinforcement systems for a minimum height of 25m, with supporting documentary evidence for satisfactory performance of completed structures for minimum 5 years.

The manufacturer shall have in-house technical support facilities to provide site specific design and required technical assistance at site.

The manufacturing plant should be ISO 9001:2008 certified plant. The flow chart of quality procedures adopted in the plant should be submitted to the client for getting the source approval.

The manufacturer of the geo grid should have in-house facility to test the tensile strength of the geogrid with optical extensometer.

The manufacturer / supplier shall have supplied geogrid for reinforced soil structures for Landfill sites / or a wall of equivalent height (16m). Manufacturer / Supplier shall submit case study or relevant document supporting the same.

The manufacturer / supplier shall have supplied geogrid for minimum quantity of 40,000 Sq. mtr. In a single project five years prior to the tender notice.

**Geo Grid material should be integrally jointed as per MoRTH specification as mentioned in latest MoRTH edition.**

The Manufacturer / Supplier should not have a history of poor performance such as abandoning the works, financial failures, blacklisting. If it is observed, Manufacturer / Supplier shall be automatically disqualified.

## 2. PROVIDING NON-WOVEN GEOTEXTILE AS FILTER MEDIA BEHIND REINFORCED SOIL WALL / GABION WALLS AROUND PERFORATED PIPES AND BELOW INTERCEPTING DRAINS AT VAPI

### 3.1 Material

The nonwoven thermally bonded or any equivalent geotextile shall be used. The geotextile shall be made of polyethylene and Polypropylene fibres manufactured



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through machine made process of heat bonding techniques. The mean Values of Geotextile shall be as shown in Table 3.

**Table 3**

<b>PROPERTIES:</b>	<b>Mean Values</b>	<b>Tolerance</b>	<b>Test Method</b>
<b>Mechanical:</b>			
Wide Width strip tensile	8kN/m	- 0.75 kN/m	EN ISO 10319
Elongation	24%	± 10%	EN ISO 10319
CBR Puncture resistance	1500	-150 N	EN ISO 12236
<b>Hydraulic:</b>			
Apparent Opening Size, AOS <sub>90</sub>	150 micron	± 50 microns	EN ISO 12956
Permeability, VI H=50mm	100 l/m <sup>2</sup> .sec	- 30 l/m <sup>2</sup> .sec	EN ISO 11058
<b>Physical:</b>			
Mass per Unit Area	110 g/sq.m	± 5 g/sqm	EN ISO 9864

### 3.2 Method of Testing

The supplier has to submit a Quality conformity certificate and Manufactures test certificate for the design parameters indicated in Table 3 for every lot/shipment.

### 3.3 Method of Measurement

Quantity of filter geotextile shall be determined from cross sections and the linear distance and shall be measured in Sq.mtr.

### 3.4 Basis of Payment

Accepted filter Geotextile shall be paid for at the unit price (per square meter area) for each pay item included in the contract



## SECTION – VI: CONSTRUCTION QUALITY ASSURANCE PLAN OF LANDFILL

Quality in construction of the facility has to be ensured to match highest standards. The basic purpose is to minimize the possibility of deviation from design specifications. The contractor, responsible for the construction of the facility has to ensure the quality of the overall structure of the facility. Quality assurance plan has covered the quality of material to be used as well as quality of the construction process to be carried out. Therefore, at each and every stage of construction, the construction procedure, specifications of materials used and the tests results have to be documented.

*The Quality assurance planning mainly involves;*

- ❖ Quality assurance planning before construction activity.
- ❖ Quality assurance planning during Construction activity.
- ❖ Documentation Checking.

### **Quality assurance planning before starting of construction activity.**

Before start of construction activity, client shall finalize the sources of raw materials to be procured from. Later on there should be no change, which can affect the quality of construction. The following are the test to be conducted before start of construction;

#### **1) On existing soil:**

- Classification test.
- Atterbergs limit
- Permeability test
- Grain size distribution
- Density / Specific Gravity
- Moisture content

#### **2) 1.5 mm thick HDPE Geomembrane:**

- Thickness test > 1.5mm
- Density test > 0.94 g/cc
- Tensile Strength at yield > 18 KN/m
- Tensile Strength at break > 30 KN/m
- Tear resistance > 150 N
- Puncture resistance > 250N
- Chemical resistance

As given.

#### **3) 3 mm thick Geotextile:**

- Type – (Should be non-woven, needle punched)
- Mass per unit area > 500g/ sq.mt

As given.

#### **4) Hard soil for sub base and for soil bund backfill:**

- Density
- Grain size distribution





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- Atterberg's limit as per IS: 2720 (part-5)
- Strength parameters as compacted –then- saturated” as per IS:2720 (PART 10,11,12) (direct shear - consolidated drained)
- Compressibility parameters as per :IS2720 (part 15)
- Moisture content
- Modified dry density

## **Quality assurance planning during construction activity**

During construction activity, client shall arrange for conducting the entire required test at each stage of construction in time. The test to be conducted in the field as well as laboratory for different components of bottom, side and top liner is as follows;

### 1) During compaction for sub base

*The following tests to be carried out:*

- Insitu density test as per IS:2720 (part 28,29,34) Total no. of density test **10**
- Insitu water content as per IS: 2720(part2)Total no. Of water content test **10**

### 2) During placement of hard soil for soil bund embankment (With murrum) Layer wise construction, thickness of each layer = 30 cm, compacted to 20cm

*The following tests to be carried on each layer:*

- Insitu density test as per IS:2720 (part 28,29,34) Total no. of density test on each layer are **3**
- Insitu water content as per IS: 2720( part2)
- Total no. Of water content test on each layer are **3**

### 4) During placement of HDPE Geomembrane, Geotextile, Geogrid and GCL.

- Check for thickness
- Check the joints.

As given in specifications.



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## SECTION – VIII : TERM OF PAYMENT

- 8.1 No advance shall be paid to the contractor for mobilization.
- 8.2 Progressive payment shall be made against running amount bills once in a month basis. A total of 10% security deposit (Retention amount) shall be deducted from each running bills as per Items nos. of price bid.
- 8.3 Out of 10% security deposit, 5% Performance Bond shall be released after Total work completion and balance 5% shall be released after defect liability period. 5% Retention amount shall be released after 5 monsoon seasons from the date of completion certificate.
- 8.4 Necessary taxes (TDS) shall be deducted at source from the Running Bills.



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## SECTION – IX : GENERAL TERMS & CONDITIONS OF THE CONTRACT

### 9.1.0 GENERAL:

#### 9.1.1 DEFINITIONS:

In this and in other documents forming this contract, the following words and expressions shall have the respective meaning hereby assigned to the, unless the context otherwise states:

- (a) **CLIENT** shall mean “Vapi Green Enviro Limited” Who Accepts the contract and shall include his authorized nominee or successor.
- (b) **VGEL / CONSULTANT** shall mean any person or agency engaged/employed by the owner for providing detailed design of common waste secured landfill facility, to furnish specifications for construction and monitoring the quality of the construction work for and on behalf of the owner for this project CONSULTANT.
- (c) **CONTRACT** shall mean the contract concluded by and between at the **Client / Consultants / VGEL** and **CONTRACTOR**. Which consists of the contract documents and **Contract Documents** shall mean all the documents enumerated and defined in the agreement.
- (d) **CONSTRUCTION EQUIPMENT** shall mean all appliances or things of whatsoever nature required in or for the execution and maintenance of the **works**, but does not include materials of other things intended to form or forming part of the **permanent work**.
- (d) **DAY** shall mean Calendar Day.
- (e) **DRAWINGS** shall mean drawing to be furnished by the Consultants / VGEL to Contractor and any modifications thereof or additions thereto as may from time to time be furnished by the Consultant / VGEL.
- (f) **EFFECTIVE DATE** shall mean Effective Date of contract as define in the Agreement.
- (g) **ENGINEER** shall mean the **Engineer** or **Executive-in-Charge** of the project site nominated by the client/consultant at site.
- (h) **COMPLETION** shall mean that the construction of all the works shall have been completed in accordance with specifications and drawing. (Here onwards called as works).
- (K) **JOB SITE** shall mean the part within the **site** as Vapi where works are to be performed and shall include adjacent areas allocated for all **temporary works**.
- (l) **MONTH** when used for the purpose of calculating a period of time, shall mean period from the date of one calendar month to the corresponding date of next calendar month, if such date exists or, if not, to the last date of the next calendar



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month.

- (m) **PERMANENT WORK** shall mean and include all works which shall be handed over to the client/consultant by the contractor, under this contract.
- (n) **PROJECT** shall mean the proposed construction work for VGEL -COMMON SOLID WASTE DEPOSITORY at G.I.D.C. Vapi in Gujarat.
- (o) **SERVICES** shall mean all the services directly performed by the contractor covered under the contract.
- (p) **SITE** shall mean that part of project site at Vapi in the state of Gujarat where proposed VGEL -COMMON SOLID WASTE DEPOSITORY is being set up by the client.
- (q) **SPECIFICATIONS** shall mean the various specifications as set out in subsequent sections of this contract and given by the client/Consultant from time to time during the execution of work and any modification thereof or addition thereto that may from time to time be furnished by the Client/Consultant.
- (r) **TEMPORARY WORK** shall mean and include work of a temporary nature of every kind required in or about the execution of work.
- (s) **WEEK** means seven (7) successive days.
- (t) **Work** shall collectively the services to be undertaken by the contractor in accordance with the terms and conditions of the contract.

## 9.1.2 INTERPRETATIONS :

- a) The several Contract documents forming the contract are to be read together as a whole and are to be taken as mutually explanatory. Should the same work appear in several parts of the Contract and there be any ambiguity in the interpretation thereof, the word shall be constructed in accordance with the context of the sentence in which the word appears.
- b) The headings of clauses and marginal notes shall not be deemed to be part thereof or be taken into construction thereof or of the contract.
- c) Words carrying singular number shall also include plural and vice versa, where context so requires.
- d) Should there be any discrepancy or any inconsistency, error omission in the documents contractor shall abide by the decision of the Client/Consultant on such discrepancy, inconsistency, error or omission and the contractor shall carry out the work in accordance with such decision.
- e) Work shown on the drawings, and not mentioned in the specifications and vice versa



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shall be executed by the contractor as though they are specifically set forth in both. Should any work or materials not shown in the specifications and /or drawings be necessary for the proper carrying out of the work by the contractor, the contractor shall understand the need for such work and materials to be implied and shall perform all such work and arrange to furnish such materials fully as though they were particularly described in both the drawings and specifications.

- f) Decisions by the client/consultant shall be binding as to the true intent and meaning of the drawings and specifications. Any discrepancy which may exist between drawings and specifications shall be referred to the Client/Consultant and shall report in writing to the Client/Consultant any discrepancies, inconsistencies, or omissions of statement regarding the materials and methods of construction which the contractor discovers.
- g) Verbal instruction or information shall not be recognized in any case, unless confirmed in writing.

### 9.1.3 ENTIRE AGREEMENT:

- a) The contract sets forth the entire agreement and understanding between the parties as to the subject matter of the contract and supersedes all prior discussions, agreement and understanding of any and every nature between them.
- b) No amendment, variation or change in the provisions of the contract shall be made except in writing signed by the authorized representative of the parties hereto.

### 9.1.4 ASSIGNMENT AND SUBLETTING :

The whole of the work included in the contract shall be executed by the contractor and the contractor and the contractor shall not directly or indirectly transfer, assign or sublet the contract of any part, share or interest therein, nor shall he take a new partner without the written consent of the Client/Consultant and no subletting shall relieve the contractor from the full and entire responsibility of the contract of from active superintendent of the work during its progress.

If the contractor shall cause any part of the work to be performed by his approved contractor, the provisions of this contract shall apply to such contractor and his or its officers, agents or employees of the main the contractor and the main contractor not, in any manner hereby, be discharged from his obligations and liability hereunder, but shall be liable hereunder for all acts and negligence of his contractor. No subcontract shall be made by the main contractor without the approval of the Client/Consultant of both the subcontract and the contractor, but no such approval shall affect the provisions hereof.

### 9.1.5 NON-WAIVER:

waiver by the Client/Consultant of any provision of the contract in one instance shall not constitute a waiver of any other provisions of the contract or of the same provisions in any other instance, and waiver by the Client/Consultant of a breach by the contractor of one provision of the contract shall not constitute a waiver of any other breach of such provision or breach of any other provision of the contract.



# VAPI GREEN ENVIRO LIMITED

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Website : www.vgelvapi.com | www.coevapi.com | CIN : U74210GJ1997GAP031525

## 9.1.6 LANGUAGE:

All documents, communications and notices to be given by either party of the other under or pertaining to this contract shall be made in English language only.

## 9.1.7 NOTICES:

Every notice, instruction, information order or decision to be given under the contract shall be given decision is given orally; it shall be confirmed in writing within seven (7) days. However, any such notice, information, instruction, order or decision given orally at site shall, if recorded in authorized minutes, have effect as if it had been given in writing.

All certificates, notices and written orders to be given by the Client/Consultant to the contractor under the terms of contract shall be serve by sending by registered mail to or hand delivering the same to the contractor's principal place of business, or such other address as the contractor shall nominate for this purpose. All notices to be given to the Client/Consultant under the terms of the contract shall be served by sending by registered by the Client/Consultant for such purpose.

All notices and communication between the Client/Consultant and the contractor which are directly related to the execution of the work at the site shall be addressed or hand delivered to their respective offices at the Job site.

## 9.2.0 REPRESENTATIVE AND REPRESENTATION :

### 9.2.1 CLIENT/CONSULTANT AND CONTRACTOR'S REPRESENTATIVE :

- a) The Client/Consultant shall be represented at Site by their nominated officer to represent them for their purpose.
- b) The contractor shall appoint a Representative who shall act for and on behalf of the contractor and who shall be present at Job site during the performance of this contract. The contractor shall proceed with work in accordance with the instruction of the Client/Consultant's Representative and shall submit to him in writing any questions, interpretation or clarifications that may arise during the execution of work. The decision of this representative on such questions, interpretations and clarifications shall be final.
- c) The Contractor shall maintain a strong and capable organization at Job site headed by a Site Representative who shall have full responsibility for the execution of the work.
- d) The Contractor shall given or provide all necessary superintendent during the execution of his obligations under the contract. The Contractor or his authorized representative approved in writing by Client/Consultant, is to be constantly at Job site during the execution of work and he shall give his whole time to superintendent of the same.
- e) Such authorized Representative shall have full authority to make binding decision in the name of the contractor and shall receive, on behalf of the contractor, directions and instructions from Client/Consultant. The contractor's Representative shall carefully examine all drawings and specifications and notify the Client/Consultant of any discrepancy that may appear before proceeding with the work.



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## 9.2.2 REPRESENTATION :

- (a) Contractor here by represents that he is fully experienced and properly qualified, licensed, equipped, organized and financed to adequately perform the work and is possession to necessary Knowledge as to the legal requirements and familiar with the business practices to be observed or followed in the course of performance of the contract, and further represents that he is therefore capable of performing the work, in accordance with the contract and to the reasonable satisfaction of the Client/Consultant
- (b) The Contractor also represents that, prior to reaching an agreement as to the contract price and the conditions of the contract, he has :
  - i) Carefully and thoroughly studied and examined all the contract Documents, the work standards, the laws and regulations and others that may in any way affect the work the cost to the contractor for the work, the time schedule and/or Contractor's representation in respect to his guarantee and warranty obligation under the contract.
  - ii) Obtained all necessary information concerning the work and made himself fully aware thereof in all respects.
  - iii) Inspected the Job site and its surrounding areas and/or obtained, as stated in Clause 2.3 site conditions hereof, any and all necessary information relevant thereto and made himself fully aware thereof.

## 9.2.3 SITE CONDITIONS:

The contractor shall have the sole responsibility of satisfying himself as to the nature and location of the site, the applicable laws, agreements and regulation, the general and local conditions, particularly those bearing upon transportation, disposal, handling and storage of materials, availability of labour, materials, water, electricity, roads and uncertainty of weather or similar physical conditions at Site, the condition of the ground, and all other matters which may in any way affect work or the cost thereof under the contract.

## 9.2.4 COMPLIANCE WITH LAWS AND CLIENT/CONSULTANT'S INSTRUCTION

The client/contractor shall perform work, and administer his employees in strict accordance with the contract and to the satisfaction of the Client/Consultant and shall, in all aspects, observe, comply with and strictly adhere to :

- a) Any and all statutes, laws and bye-laws, ordinances, regulations of the Government of India or the state of Gujarat or any subdivision there of or other duly constituted authorities, and rules and regulation of all public bodies and companies whose property or right may be affected in any way by the work.
- b) The Client/Consultant's instructions or directions on any matter, whether mentioned in the contract or not, concerning the work.
- c) All site working rules of the Client/Consultant including working conditions, safety, security, fire prevention and sanitary rules etc. to be furnished by or through the Client/Consultant.



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- d) The requirement of the work standards.
- e) The contractor shall keep the Client/Consultant indemnified against all penalties and liabilities resulting from the breach by the contractor of the obligations referred to in paragraph (a) above.

## 9.3.0 GENERAL OBLIGATIONS:

### 9.3.1 CONTRACTOR'S WORK AREA:

- (a) While performing his obligation under the contract, the contractor shall restrict himself to the work area, and the route of access. The contractor shall also confine his offices, shops, storage and equipment's parking to the areas, etc. assigned to him by the Client / Consultant.

### (b) Roads and Footpaths :

The work throughout shall be carried out in such a manner and to the extent practically possible so as not to interfere with the traffic on any roads or footpaths at the Jot Site and /or in the vicinity thereof. The contractor shall at all times and to the extent practically possible ensure and keep free from obstruction the public and private roads, footpaths, and open spaces at of adjacent to the site, and wherever required by the laws and regulations, the contractor shall promptly remove any material or staging used by him which may interfere with the use of such areas.

### (c) Access to contractor's work areas :

The client/Consultant shall at all times have access to any and all places, including but not limited to, the work site, warehouse, workshop, storage area, where the work or any part hereof are being prepared or performed or shall have been performed. The contractor shall affords the client consultant every facility for and every assistance in obtaining the right of such access.

- (d) The contractor shall ensure that his workers do not encroach into forest land and cut trees for fuel and that fuel and that fuel are provided to workers free of cost.

### 9.3.2 TAXES AND DUTIES:

The contractor shall be exclusively liable for the payment of any and all taxes introspect of the contractor's personnel, materials procured and for the payment of all contributions and taxes, insurance etc. now imposed by the Government or Authority with respect to or covered by the wages, salaries or other compensations paid to persons employed or engaged by the contractor and does hereby undertake to indemnify and keep indemnified the Client/Consultant from and against the same and all claims, actions, demands and payments whatsoever against the Client/Consultant howsoever, arising there from or in connection therewith.

### 9.3.3 DRAWINGS AND SPECIFICATIONS:

The Contractor Shall safely keep at job Site all drawings, specifications including instructions and other data issued by the Client/Consultant and upon receipt of Certificates of Provisional Acceptance of work shall immediately return to the contractor all such documents and data. The Client/Consultant and its representatives shall have the right to use and inspect these documents and data at any time during the execution of the work.





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The VGEL /Consultant shall have full power and authority to supply to the contractor from time to time during the progress of the work such further drawings, specifications and instructions and their revisions as shall be necessary for the purpose of the proper and adequate execution and maintenance of work and the contractor shall carry out as per, and be bound by the same. The contractor shall prepare detailed drawings and material takeoffs based on basic data, specifications and drawings given by the Client/Consultant. These shall also include field sketches, bar bending schedule etc. Construction drawings shall be issued in a phased manner to suit the construction schedule.

#### **9.3.4 SITE WORKING RULES:**

The Contractor shall observe all site working rules including the working hours, safety and sanitary rules to be provided from time to time by the Client/Consultant. The contractor shall declare in advance list of holidays to be observed at site by the contractor. However, the Client/Consultant shall mutually discuss with contractor and finalize the list of holidays.

#### **9.3.5 LABOUR DISPUTE:**

The contractor shall advise the Client/Consultant promptly, in writing of any labour disputes known to the contractor which may affect the performance of the contract.

#### **9.3.6 RESTRICTION TO ARMS AND AMMUNITION:**

The contractor shall not at any time bring the job site, import or sell, give, barter or otherwise dispose of any arms and ammunition of any description to any person or whomsoever, no permit or suffer any of his agents or employees to make such sale, barter or other disposition.

#### **9.3.7 RESTRICTION TO ALCOHOLIC LIQUORS:**

The contractor shall not any time bring into the job site, sell give or barter any alcoholic liquors nor permit any such sale, gift or barter to be made by any person or persons whomsoever.

#### **9.3.8 GENERAL PROGRAMME:**

Within two (2) weeks after the signing date of this contract, the contractor shall prepare and submit in writing to the Client/Consultant a detailed program showing the order of procedure and method in which it proposes to carry out the Work. The submission to and approval the Client/Consultant or any such program shall not relieve the contractor of any of his duties or responsibilities under the contract.

#### **9.3.9 SCHEDULE AND PROGRESS:**

The contractor shall give the Client/Consultant full information in advance as to his plans for carrying on work. At any time during the progress of work, if the contractor's actual progress appears to the Client/consultant to be inadequate to meet the requirements of the contract, the Client/Consultant may notify the Contractor of such imminent or actual non-compliance with the contract.

#### **9.3.10 REPORTS:**

During the performance of the work, the contractor shall submit three (3) copies of all documents mentioned in clause no 4.0 all documents which are required to be submitted monthly shall be prepared covering the status up to the 25<sup>th</sup> day of the reporting month and submitted to the Client/Consultant by end of the reporting month. All documents which are



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required to be submitted every week shall be prepared covering the status up to the Saturday of the reporting week and submitted to the Client/Consultant on the following Monday.

It is specifically understood, however, that the receipt by the Client/Consultant of any documents/reports indicating a delay in the progress of the work or any discussion with and discussion by the Client/Consultant regarding necessary measures to be taken to minimize such delay, or any revision of the construction schedule taking into consideration the current status of the work, shall in no way relieve the contractor from his obligations to achieve the quality of work and rate of progress required by the contract nor shall it result in any waiver by the Client/Consultant of any right to claim liquidated damages for delay or any other right which Client/Consultant may have under the contract.

Apart from this, the contractor shall also furnish on a monthly basis the progress of all activities and material, manufacturing and supply status, inspection reports, expediting reports etc. The Contractor shall also submit to the Client/Consultant undated progress curves, percentage progress achieved during the month as compared to the targeted along-with reasons for backlog and constraints from the Client/Consultant, if any.

### **9.3.11 CONTRACTOR'S OFFICE :**

The contractor shall provide and maintain an office at job site at a location and during a period agreed upon by Client/Consultant such office shall be open at all reasonable hours to receive directions, instructions, or other communication from Client/Consultant. In addition to the office, the contractor should also provide and maintain the field laboratory at site for testing of construction materials, concrete etc.

### **9.3.12 DELIVERY, UNLOADING AND STORAGE :**

The contractor shall arrange to deliver to the job site, unload and store all materials, except for material furnished by the Client/Consultant, unless otherwise stated in the special Terms and Conditions.

### **9.3.14 OTHER CONTRACTORS :**

- a. The client may employ other contractors who are to work in the same portion of the job site where contractor is to work and the contractor shall offer required cooperation and coordination, and shall render possible assistance to other contractors at site. The Client/Consultant may give directions to the contractors during the time of necessities to co-operate / administrate with the other contractors jointly such portion of the job site where contractor and other contractors are concurrently working and shall control all the contractor's activities thereby to be in good order so as not to cause unnecessary work interference in between.
- b. All operations necessary for the performance of the works, the care and maintenance of the permanent works and temporary works shall be carried on in the manner so as to minimize interference with, or inconvenience to other contractors or to the Client, and the Client/Consultant reserves the right of directing the contractor to reschedule the order of his operations for such purpose. If any material construction Equipment, the Temporary works or others stored or placed by the contractor at any other place or places than those designated or approved by the Client/Consultant shall cause any



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- inconvenience to the owner or other contractor, the Client/Consultant may order the contractor to remove at the contractor's cost the same promptly.
- c. When any part of the permanent works or performance of the works depends upon the work done by any other contractor, the contractor shall inspect to a reasonable extent such work and promptly notify the Client/Consultant of defect, if any, which may affect permanent works or proper performance of the permanent works.
  - d. Should the contractor find or become aware of any work of or any work performance of defective, inadequate or unsafe nature by any of other contractors, the contractor shall immediately report thereof to the client/Consultant so as to prevent or minimize the undesirable consequences arising there from.

### 9.3.15 IDENTIFICATION BADGES :

The contractor shall provide each of his employees including labour with identification badges, at his cost. The employees shall display the badges on their person so that the badges are clearly visible or easy checking by the gateman as they enter the premises of the client. The badges shall be serially numbered. The contractor's name shall be printed with number on the badge. No worker, supervisor or the agent of the contractor or his sub-contractor or the agent of the contractor or his sub-contractor shall be allowed in the client's premises without such approved badge or identity card. The contractor shall strictly follow and obey the security rules laid down by the client.

The contractor shall immediately notify to the Client/Consultant, if any of the badges is lost and new one issued in its places, or when badges are carried away by discharged labour. No employees of the contractor, without badges shall be permitted to enter the premises of work except in such cases, where special permission of the Client/Consultant is obtained.

### 9.4.0 DOCUMENTS TO BE SUBMITTED BY THE CONTRACTOR :

The contractor shall at his cost prepare and submit to the Client/Consultant the following at such times and in such manners as may be provided in the Contract.

### 9.5.0 PERFORMANCE OF WORKS

#### 9.5.1 PERFORMANCE OF WORKS

- a) The Contractor shall with due care and diligence and in a workmanlike manner perform work at the job site including all miscellaneous works of a direct or indirect work nature and all those including works necessary thereof.
- b) It is fully understood by the contractor that, the project schedule made available to him in the pre-contract stage may be of the preliminary nature and that the Client\Consultants may make changes or modification to clients proposed details time schedule maintained in clause 4.0 Document to be submitted by the contractor. The client agrees and accepted that he shall not be entitled to claim for the claims for the adjustment of the contract price or for any other compensation whatsoever for modification made by Client\Consultants provided that these changes do not alter the overall time schedule as indicated in Appendix-VII Schedule and completion period as specified in Articles-4 of the agreement.



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- c) It is also fully understood by the contractor that, continuous work performance by the Consultant and the work may at times be interrupted due to the necessity of harmonious Co-working among the contractor and other contractor (s) /Contractor (s) for the convenience of overall project control by the Client/Consultant or for other reasons Client/Consultant may reasonably deem necessary.

## 9.5.2 ADDITIONAL WORK:

For any additional work, if so requested by the Client/Consultant, the Contractor shall promptly submit in writing to the Client/Consultant his estimate of the cost of making such change together with relevant details and particulars of any of the variation required to be made to any of the contractor's or the Client/Consultant's obligations under this the contract. Thereafter, the Client/Consultant and the contractor shall agree in writing to the following :

- The scope of the change and charges therefore.
- The relevant terms of payment.
- Any change in of any of the contractors or the Client/Consultant's obligation and/or guarantees, under this contract.

It is understood that no change or additions shall become effective and no work shall be performed by the contractor, until all provisions required under this Clause have been mutually agreed upon in writing.

## 9.5.3 TESTS AND INSPECTION:

- a) Workmanship shall be of the respective kinds and quality described in other contract documents and in accordance with the Client/Consultant instructions and shall be subjected from time to time to such tests as the Client/Consultant may direct on the Job site or at such other place or places as may be specified in the contract. The Contractor shall ensure that reasonable access to premises both off and on the Job Site, is afforded to the Client/Consultant for inspection and participating in testing.
- b) The Contractor shall perform in the presence of the Client/Consultant all necessary and reasonable testing and inspection activities on his own cost.
- c) Should it appear to the Client/Consultant that any work in progress is being carried out in a faulty manner, by unskilled workmen when skilled workmen should be employed or by means or manner not in accordance with the contract, the Client/Consultant may order the immediate suspension of such faulty work by director order to the reason and such suspension shall continue until such time as the contractor shall adopt remedial measures, to the satisfaction of the Client/Consultant. Any order to suspend work shall be complied with immediately and the contractor shall not be entitled to any extra payment, compensation or extension of time on account of such suspension.

## 9.5.4 REJECTION OF DEFECTIVE WORK AND MATERIAL:

If any part of the work is considered defective by the Client/Consultant, the Client/Consultant shall reject such work and the contractor shall arrange necessary remedial measures to rectify/replace the defective work/materials in the manner approved by the Client/Consultant at free of cost.



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## 9.6.0 TIME FOR WORKS:

### 9.6.1 EFFECTIVE DATE:

The Contractor time schedule shall commence from the effective date of contract.

### 9.6.2 COMMENCEMENT OF WORK

The Contractor shall commence the work immediately after the effective date of contract and shall proceed with same with due expedition and without delay except as may be expressly sanctioned or ordered by the Client/Consultant.

### 9.6.3 COMPLETION:

The Contractor shall ensure that the work is completed within due time in keeping with the time schedule, and completion period as specified.

Whenever the contractor considers that the work is completed in accordance with the definition of Completion given in Clause 6.4 here of, the Contractor shall issue a written notice with necessary supporting documents to the client/consultant. Within seven (7) days of receiving from the Contractor written notice that the work has been completed. The Client/Consultant shall inspect the work in order to ascertain whether the requirements are in accordance with the definition of Completion.

If the inspection proves that the work complies with the above-mentioned conditions, the Client/Consultant shall. Within the above-mentioned duration, issue the Certificate of completion which shall state the date on for the completion of the remaining minor works which shall be guaranteed by the contractor. If the inspection proves the work to be unsatisfactory, then the Client/Consultant shall issue a report stating where and how it must be required and altered or completed and at the Client/Consultant shall issue a report stating where and how it must be required and altered or completed and the Client/Consultant may postpone the issuance of the Certificate of Completion until the above-mentioned requirements have been complied with. When the work of any part thereof is completed, it shall be taken over by the Client/Consultant and shall become risk of the Client/Consultant.

### 9.6.4 DEFINITION OF COMPLETION:

Completion shall mean the stage where Work is completed, in accordance with drawings, specifications including instructions and approved by the Client/Consultant, including minor works like: - Disposal of the contractor's material from his workshop/store.

- Removal of the contractor's site office and stores.
- Any other item suggested by the Client/Consultant.

### 9.6.5 EXTENSION OF TIME:

1. Should the contractor actually face of forecast any delay in the progress of the work or any part thereof, he shall promptly notify the VGEL /Consultant in writing on such actual or anticipated delay, together with the contractor's plan or plans of remedial measures to scope therewith. The VGEL /Consultant may, upon receipt of such notification accompanied by such plan or plans, give instruction or make decision in respect to such plans or to the remedial measures to be taken so as to adequately cope with, minimize or prevent such actual or anticipated delay.



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2. Extension of time shall not be in any way granted for the delay due to the contractor's fault negligence or failure to properly perform his contractual obligations or to comply with the VGEL /Consultant's instructions.
3. The VGEL /Consultant may allow the contractor to claim or to reserve the right of claim for extension of time if such actual delay is caused or anticipated delay is likely caused either by :
  - a) The VGEL /Consultant's order for considerable increase in quantity or volume for work.
  - b) The VGEL /Consultant's order for suspension subject to the provisions of clause 13.2 "Suspension" hereof.
  - c) Force majeure pursuant to the provisions of clause 13.3 "Force Majeure" hereof.
4. The Contractor may, if so allowed by the VGEL /Consultant subject to sub-clause (1) through (3) of this clause, submit a claim for or a notice to reserve his right to claim for extension of time, supported by full details of satisfactory justification therefore. Such claim or notice shall be submitted to the VGEL /Consultant not later than one (1) week after the contractor realizes the reason or cause for such possible delay or after the reason of cause has occurred. If he fails to do so, the Client/Consultant may not take into account any such claim or notice in respect of extension of time.
5. If the claim is not presented in sufficient detail thus preventing the client/Consultant to check or verify the claim, the client/Consultant may invalidate the claim entirely or in part.

## 9.6.6 DEFECTS LIABILITY:

### 1.DEFECTS LIABILITY :

The contractor shall be solely and fully responsible for the defect liability hereunder during the defects liability period pursuant to sub-clause (2) of this clause, if such defect or damage is caused by or arises from either

- a. Any defective materials, workmanship or others performed by the contractor or arranged through vendors, fair wear and tear excepted.
- b. Any act, failure to act or omission of the contractor, including his sub-contractor, made or committed during the period until the expiry of defects liability period pursuant to sub-clause (2) of this clause expires.

Even in case of disagreement as to the cause of such defect, etc., the contractor nevertheless shall promptly arrange to perform all necessary remedial works, provided that the contractor's right for making a claim thereof shall not be prejudiced.

The Client/Consultant may, even if such damages are not attributable to the contractor, order the contractor to repair, replace or make good such damages, etc. at the Claim/Consultant's cost and in such event, the contractor shall promptly comply therewith.



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## 2.DEFECTS LIABILITY PERIOD:

Defects liability period shall mean the period in which the contractor shall remain liable for repair, replacement or making good of any and all defects and damages as mentioned in sub-clause (1) of this clause. Defects liability period shall start on and from the date of the certificate of completion pursuant to the provisions of clause 6.4 "Completion" hereof, and shall end upon expiry of Twenty Four (24) months from the date of the certificate of provisional acceptance of work or completion whichever is earlier hereof.

### 9.6.7 EXECUTION OF REPAIR WORKS, ETC:

The contractor shall arrange to remedy and repair any defects resulting from causes attributable to the contractor which might be discovered during the defects liability period as stated in clause 6.6 above, and the contractor shall proceed at his own expenses to remove such defects and their causes. The contractor within seven (7) days from the date of intimation regarding the defects by the client/Consultant shall inform the Client/Consultant regarding period required by him for rectification of the defects and there causes. The duration requested for repairs by the contractor, shall be subject to approval or modification by the Client/Consultant.

### 9.6.8 REMEDY ON CONTRACTOR'S FAILURE TO CARRY OUT REPAIR WORK OR ARRANGE THE SAME:

Should the contractor fail to take necessary steps as may be required under clause 6.7 within a period requested by the contractor, the Client/Consultant shall be entitled to carry out such work by himself or by other contractors at the option of the Client/Consultant, and if such work is the work which the contractor should have carried out at his own cost, the Client/Consultant shall be entitled to recover the cost thereof from the contractor.

### 9.6.9 PROVISIONAL ACCEPTANCE OF WORK:

The certificate of provisional acceptance of work shall be granted to the contractor when all remaining work including minor work referred in clause 6.4 is completed to the reasonable satisfaction of the Client/Consultant in accordance with the contract. The issue of the certificate shall to relieve the contractor of responsibilities regarding the defects liability period as provided in clause 6.6 hereto.

Whenever the contractor considers that work including the minor work referred in clause 6.4 is completed, the contractor shall issue a written notice with necessary supporting documents to the Client/Consultant. Within seven (7) days of receiving such notice, the Client/Consultant shall inspect the work.

If the inspection proves that work complies with the above mentioned conditions then the Client/Consultant shall issue a certificate of provisional acceptance of work, which shall state the date on which the work if completed.

If the inspection proves that the work is unsatisfactory, then the Client/Consultant shall issue a report stating where and how it must be rectified, altered or completed and the Client/Consultant may postpone the issuance of the certificate or provisional requirements have been complied with.



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## 9.6.10. FINAL ACCEPTANCE OF WORK:

- a) The final acceptance certificate for the work shall be granted to the contractor after the expiry of the defects liability period specified in clause 6.6 provided that the contractor shall have fulfilled all his obligations under the contract.
- b) **CONTRACTOR'S OBLIGATIONS FULFILLED :**  
The contractor's obligations for the works shall be considered to be fulfilled when final acceptance certificate for work shall have been issued by the Client/Consultant.

## 9.6.11 GUARANTEES AND LIABILITIES :

### a) TIME GUARANTEE :

Since time is the essence of the contract, the contractor shall guarantee the completion of work as indicated in the special terms and conditions.

If there is any delay in the completion of work beyond the completion date stipulated in the contract including the extension time allowed as per clause 6.9 above, the contract price, shall be reduced as specified to the special terms and conditions and other contract documents and in the manner stipulated therein.

### b) PERFORMANCE GUARANTEE :

The contractor shall guarantee the work with good workmanship and materials as per specification given in the contract. The performance of the work executed shall be guaranteed up to the expiry of defects liability period.

## 9.7.0 CONTRACT PRICE AND PAYMENT TERMS :

### 9.7.1 CONTRACT PRICE :

In consideration of and as the full compensation for the contractor's performance of the work and his other obligations under the contract, the Client/Consultant shall in accordance with the terms of and the procedures for payment set forth, pay to the contractor the sum being the contract price.

The contract price shall cover any and all costs, charges, expenses, contingencies, taxes and profit in the contractor's part for fulfillment of his contractual obligations.

Such adjustment shall be in accordance with clause of special terms and conditions of contract.

### 9.7.2 PAYMENT TERMS\_:

Payment of the contract price or any part thereof shall be made in accordance with the payment terms set forth. Any payment made by the Client/Consultant to the contractor shall not constitute or be construed in mean the Client/Consultant's acceptance or any portion of work.





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## 9.8.0 CONTRACTOR'S EMPLOYEES :

### 9.8.1 EMPLOYEES :

- a) **Rates of wages and working hours** : The contractor shall, while performing his obligations under the contract pay his employees the rates of wages and observe working hours not less favorable than those established by the labour laws and regulations fixed by central state government for that class of employees for the same type of work and in same area. The contractor shall keep proper wage books and time sheets and other proper books of account and shall, at the request of the Client/Consultant, produce the same for the Client/Consultant's inspection.
- b) The contractor shall arrange adequate facilities such as toilets, etc. for his staff at job site.
- c) The contractor shall submit weekly returns on labor and staff employed at job site to the Client/Consultant to meet statutory requirements.
- d) The contractor shall provide medical facilities for all his staff and labour at his cost.

### 9.8.2 KEY PERSONNEL :

The contractor shall provide an adequate number of personnel such as engineers, supervisors and shall present his organization chart at any time when called upon to do so by the Client/Consultant.

### 9.8.3 QUALIFICATION :

The contractor shall employ only competent and skilled personnel fully experience and capable of performing the duties assigned to them. The contractor shall remove and replace at his own expense any employees, who in the opinion of the Client/Consultant, is not competent to perform the work assigned to him or who is disorderly or otherwise objectionable.

### 9.8.4 REMOVAL :

Such key personnel as engineers, supervisors shall not be withdrawn by the contractor from the job site without the prior permission of the Client/Consultant.

### 9.8.5 SAFETY EQUIPMENT :

The contractor at his own cost shall provide necessary and suitable safety equipment and clothing such as helmets, gloves, etc. to his employee.

## 9.9.0 TEMPORARY WORKS, CONSTRUCTION EQUIPMENT AND MATERIALS :

Except as may be specifically provided in the special terms and conditions or in other contract documents, the contractor shall provide, arrange or make available at the job site all necessary materials for the temporary works, and shall retain them there until the time they are used or for the period for which they are needed.



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## **9.10.0 SAFETY, SECURITY AND PROTECTION :**

### **9.10.1 OBLIGATIONS FOR SAFETY, ETC. :**

The contractor shall, in respect of performance of the work, be responsible for safety, security and protection and shall make, provide and maintain at his cost all measures and arrangements required.

1. The contractor shall submit to the Client/Consultant written report of any accident occasioned by him or any agency under his control immediately after occurrences thereof without delay, which report shall contain the description of the accident, of the injuries and fatalities there from of the actions taken by him and the measures to be taken for prevention of any future accident of the similar nature and other descriptions related to the accident.

The contractor shall also prepare and, after inspection by the Client/Consultant, distribute the safety statistics including, but not limited to, the rates of accidents, the cause of accidents, the cause and background of injuries and fatalities, hours lost, remedial actions taken etc., and to sort out the nature and cause of the accidents having most recently occurred.

### **9.10.2 SAFETY AND HEALTH :**

The contractor shall, at his cost, observe, and/or comply with the Client/Consultant's safety and health rules and procedures, in such other contract documents and in the laws and regulations of the state and shall have the overall responsibility for safety and health of his employees or others working in, visiting to or being in any way present at the site during the entire duration of the work.

The contractor shall furnish or cause to furnish suitable safety equipment to his employees and shall enforce the use thereof by such personnel and workers and/or visitors.

### **9.10.3 SECURITY :**

1. The contractor shall in collaboration with the Client/Consultant and other contractors, be responsible for the security and safeguarding of the job site.
2. The contractor shall be liable for any and all damages due directly or indirectly to his Own, or to his representatives or employees activities such as, but not limited to, making or using fires or fire-tools.

## **9.11.0 INSURANCE :**

### **9.11.1 CONTRACTOR FURNISHED INSURANCE :**

From effective date of contract until the provisional acceptance of work, the contractor shall obtain at his own expenses, adequate insurance cover, for transit risks, storage risk, construction and erection all risks and third party liability to cover transport storage, at work.

### **9.11.2 GENERAL REQUIREMENTS FOR INSURANCE :**

The contractor shall hold harmless and indemnify the Client/Consultant against any claim



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arising in respect of injury to or death of the contractor's personnel or loss of or damage to the property of such personnel howsoever caused in connection with the work or the execution or performance of this contract.

## **9.12.0 LIABILITIES AND INDEMNITIES :**

### **9.12.1 PATENTS RIGHTS :**

Should the Client/Consultant be sued or be served with a notice for breach of any patent as registered design by reason of use of any design provided by the contractor who shall if necessary, negotiate the licensing of such patent or design or the settlement of such infringement action with the processor of the same The Contractor shall indemnify and keep harmless the Client/Consultant of any cost or damages or expenses of litigation relating to such infringement action or of any cost, expenses or charges incurred for obtaining license of such patent or design or any settlement of such infringement action.

### **9.12.2 GENERAL INDEMNIFICATION :**

The Client/Consultant shall at all times indemnify and keep indemnified the contractor against all suits, proceedings, claims and demands, costs, damages and expenses brought or made against the contractor either individually or jointly with the Client/Consultant which the contractor may sustain or incur by reason of or arising out of the Client/Consultant's agreement with third parties or laborers in connection with the work to be done under this contract save and except such dealings, acts, affairs or thing or concerning the contractor or any of its agents, employees or workers employed or working for or under him.

The Contractor shall indemnify and legally protect the Client/Consultant and/or its employees from all claims, demands, causes or action or suits arising out of service/work provided by sub-contractor under this contract.

### **9.12.3 TITLE OF DOCUMENTS :**

- a. Title to technical data furnished by the Client/Consultant. Title to all technical data and information furnished to the contractor by the Client/Consultant. Such data shall not be used or divulged to others by the contractor without the written consent of the Client/Consultant expect for the use in connection with the performance of this contract.
- b. Title to technical documents furnished by the contractor. Title to all the technical documents to the Client/Consultant under this contract shall remain with the contractor. However, it is understood that only know-how incorporated in such drawings and/or documents shall remain with such party who provides the know-how. Any of the said technical documents, prepared by sub-contractor and furnished by the contractor to the client/consultant hereunder shall be kept by the Client/Consultant as secret and confidential and the Client/Consultant shall not use them for any purpose other than construction, operation, repair or maintenance of work nor disclose or divulge whole or part of them to any third party without prior written consent of the contractor who retains the title therefore.



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The Client/Consultant's obligations to keep secret and confidential the documents mentioned herein shall not apply to any technical documents.

The Client/Consultant obligations to keep secret and confidential the documents mentioned herein shall not apply to any technical documents.

- a. Which at the time of disclosure are in the public domain.
- b. Which, after disclosure, become part of the public domain, by publication or otherwise, other than by the Client/Consultants.
- c. Which Client/Consultant can show where in the Client/Consultant's possession at the time of the disclosure and were not acquired directly or indirectly from the contractor and.
- d. Which have been furnished or made known to Client/Consultant by third party as a matter of right and without any restriction of disclosure.

#### **9.12.4 DISCLOSURE TO GOVERNMENT :**

The contractor shall have no objection to Client/Consultant disclosing information referred above to government of India/State Government/Financial institution or any other Institution or any other statutory bodies, if so specifically demanded.

The provision of this clause, even if contract is terminated for whatever reason, shall remain in force until the said confidentiality of all the technical data and information or document ceases to exist.

#### **9.13.0 SUSPENSION AND TERMINATION :**

##### **9.13.1 TERMINATION :**

1. If the contractor shall commence to be wound up (not being a member's voluntary winding up for the purpose of amalgamation or reconstruction) or carry on his business under the receiver for the benefit of his creditor or any of them, Client/Consultant shall have liberty :
  - a) To terminate the contract for with by notice in writing to the contractor or to receiver or liquidator or to any person in whom the contractor may become vested or
  - b) To give such receiver, liquidator, or other person, the option of carrying out the contractor subject to his providing a guarantee for the due and faithfully performance of the contract.
2. If the contractor shall neglect to execute the work with due diligence or expedition or subject the work or any other part thereof or abandon the work or shall refuse or neglect to comply with any reasonable orders given to him in writing by the Client/Consultant in connection with the work, or shall contravene the provisions of the contract, the Client/Consultant may give notice in writing to the contractor calling upon him to make good the failure, neglect or contravention complained of, within such time as may be deemed reasonable, and in default of compliance with the said



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notice, the Client/Consultant without prejudice to its rights may rescind or terminate the contract

3. Upon termination by the Client/Consultant under clauses 1 and 2 above :
  - a) The Contractor shall (1) terminate all work, (2) place no further order (3) assign to the Client /Consultant all of the Contractor's rights, title and interest under orders hereto fore properly placed and completed hereunder and the Client/Consultant shall assure all responsibilities for said order (4) as directed by the Client/Consultant for materials and deliver to the Client/Consultant plans, drawings and specifications produced, prepared or acquired for the work.
  - b) The Client/Consultant may carry on the work necessary to complete the work envisaged in contract, either by himself or through his agents, or may recontract with any other person or persons to execute the same.
  - c) The Client/Consultant shall, without being responsible to the contractor for fair wear and tear of the same, be entitled to seize and take possession and have free use of all materials, of other things and property of the contractor which may be on site, for use at any time in connection with the work to the exclusion of any right of the Contractor over the same and the client/Consultant shall be entitled to retain and apply any balance of a sum which may otherwise be then due by him to the Contractor or such part thereof as may be necessary, to the payment of the cost of execution of such work as aforesaid .
  
4.
  - a) The Client/Consultant may at any time by written or telegraphic notice to the contractors terminate the contract.
  - b) No notice, order or instruction of the Client/Consultant shall constitute a Termination order unless:-
    - i. It is entitled "Termination Order", or
    - ii. Is expressed to be given pursuant to this clause.
  - c) On termination by the Client/Consultant under clause (4) above the Client / Consultant shall pay :
    - i. Such proportion of the Contract price as the work actually done by the Contractor bears to the total amount of work for which Contract price was fixed, and
    - ii. Any cost reasonably necessarily incurred by the Contractor in connection with the termination of the contract which have not previously been taken into account.

The Contractor shall, however, not be entitled to claim any sum for consequential business loss or damage on account of such termination.

### **9.13.2 SUSPENSION:**

The Client/Consultant may order the Contractor to suspend all or any part of the work for such period of time as may be determined by it to be necessary or desirable for the convenience of the Client/Consultant. If such suspension delays the progress of the work to such an extent as to cause additional expense or loss to the contractor, the matter shall be mutually discussed and agreed to. As soon as the contractor finds that such extra cost is likely to be involved on account of suspension of such work or part thereof he shall promptly notify the Client/Consultant accordingly, giving his estimates of such cost likely to



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be involved. Unless the Client/Consultant is no notified he shall not be bound to entertain any subsequent or delayed claims on this account. However, no compensation for suspension of the work shall be payable by the Client/Consultant to the Contractor if the total period of suspension during the current contract does not exceed 45 days.

### 9.13.3 FORCE MAJEURE:

The terms and conditions agreed upon with respect to this Contract shall be subject to Force Majeure. Force Majeure shall deemed to be any cause beyond the reasonable control of the contractor of the Client/Consultant as the case may be, which prevents or impedes the due performance of the Contract and which by the due diligence the affected party is unable to avoid or overcome through its individual concerned effort "Force Majeure" shall include but shall not be limited to the following matters;

- a) any war or war like hostilities,
- b) Any riots or civil commotion,
- c) Any earthquake, flood, tempest, lightning or other natural physical disaster
- d) Any accident, fire or explosion not caused by the negligence of the contractor.

If, either party so prevented or inordinately delayed in the performance of any its obligations under the Contract by Force majeure and if affected party gives written notice thereof to the other party specifying the matter constituting Force Majeure with necessary evidence that a contractual obligation is thereby prevented or delayed, and the further period for which it is estimated that such prevention or delay shall continue then the affected party shall be excused the performance or delayed performance as the case may be of such obligation as from the date of such notice for so long as may be justified.

Any occurrence of force majeure shall be informed in writing within 15 days of occurrence otherwise it shall not be deemed as force majeure, Continuance if Force majeure shall be informed to the Client/Consultant every week. If by virtue of the preceding paragraphs either party shall be excused the performance of punctual performance of ; and obligation for a continuous period of three 9) Months the parties shall consult together with a view to agreeing what action should in the circumstances be taken and what amendments to the terms of the Contract ought to be made.

### 9.14.0 SETTLEMENT OF DISPUTE : ARBITRATION :

All disputes arising in connection with or arising out of this contract shall be settled by both the parties in a spirit of co-operation. When such disputes cannot be settled amicably by the parties themselves the same shall be referred to an arbitrator selected by the Client/Consultant. The decision of the arbitrator shall be final and binding of both parties, and provisions of the Indian Arbitration Act, 1940 and modifications thereof in force, shall apply to all such arbitration proceedings. The venue of arbitration shall be at Bombay or as decided by Arbitrator. The Arbitrator's award shall be a speaking order in respect of the award giving detailed reasons



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## 9.15.0 CONFIDENTIALITY:

The Contractor shall treat all drawings /specifications /instructions /documents etc. issued by the Client/Consultant strictly Confidential and shall not divulge/ photocopy any part of such documents to any third party without written permission of the Client/Consultant.

In the event of termination of the Contract or in the event of Completion of the contract, the contractor shall return all such drawings, specifications, instructions, documents to the client/Consultant before demobilizing from Job Site.

## 9.16.0 MISCELLANEOUS :

1. Open space shall be provided by the Client for construction of temporary office at site.
2. On completion of work all such temporary lines, temporary constructions etc. Shall be removed by the Contractor at his own cost.
3. In case the contractor fails to keep the pace of work or fails to comply with any of the condition of this tender, the Client shall have right to terminate the contract with due notice to the contractor.
4. The Contractor shall be wholly responsible for quality, timely completion and other aspects of the work even though he may appoint Sub-contractors with prior approval.
5. The Contractor shall be fully responsible for all local labor laws such as state Insurance policy, labour, license, contractors all risk policy, provident fund etc. He should be aware of the local problems and unrest of local labor.
6. The drawings, designs and data given in this tender and during the course of contract shall be kept confidential by the contractor and shall not be used for any purpose other than this contract. If required the contractor may have to enter into a secrecy agreement.
7. No part of the contract shall be sublet or transferred to other party except with prior approval of the consultant/Client.
8. If the work is delayed beyond stipulated time liquidated damages at the rate of 0.5 % per week of delay to the maximum of 5% of the total contract value shall be imposed. Please note that time is essence of contract.
9. Any delays caused due to the following shall form force majeure and not to be counted in completion time provided such loss of time is more than a week at a time for these reasons:
  - Sabotage, fire, riots.
  - Illegal Strike
  - Acts of God such as earthquake, flood etc.
10. All the local taxes and duties shall be included by the Bidder in his offer.



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11. The Contractor shall be allowed to work on Sundays and holidays only with prior approval.
12. The Contractor shall be fully responsible for levels and alignment of the work. Necessary permanent bench Mark to be made with respect to G.I.D.C. Bench Mark.
13. The Contractor shall provide all construction material, tools, tackles, construction equipment shuttering material etc. The Client shall not provide any material whatsoever.
14. The Contractor shall be wholly responsible for the safety of this materials, tools, tackles, equipment etc.
15. All the construction materials shall be best quality locally available and shall be subject to approval by the Consultant/Client. The availability of materials shall be his own responsibility.
16. The Consultant/Client shall have full access to the work being executed by him.
17. The Contractor shall arrange for all quality tests at his own cost for the works executed by him.
18. In case of samples failing test or visual inspection indicating bad work the Consultant/Client shall have right to ask the Contractor to remove such bad work and do it afresh without any extra cost. In case of refusal of such work the Client shall have the right to get the rectification done by other agency at the cost of the contractor.
19. The Client shall have right to possession of the completed or partly completed work as the case may be required by the Client.
20. A period of twelve months from the date of issue of final completion certificate shall be treated as Defects Liability period during which period, the Contractor shall be responsible for rectification of all defects.
21. The rates quoted by the Bidder shall be inclusive all materials, labor tools, tackles plant and equipment rent, royalties, material testing, taxes, duties, risks of delay etc.
22. All measurements shall be in metric system as per is code. All joint measurements shall be taken once in a fortnight with the consultant/Client's Representative and the contractor's Representative.
23. The contractor's running bills shall be a cumulative basis to be certified by the Consultant/Site Engineer/. 10% from each bill shall be deducted to be treated as Retention Money. The retention money shall be paid in two installments. The first 50% installment shall be paid against completion of work to satisfaction and handing over, against B/G. Remaining 50% shall be paid after maintenance period i.e. 12 month.
24. In case of dispute, if any, the matter shall be subject to arbitration and the disputes shall be subject to Vapi / Valsad Jurisdiction.





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## SECTION X : SAFETY REGULATIONS

### 10.1 WORKING AND SAFETY REGULATIONS:

The Contractor shall observe all statutory and legal requirements by central and state Governments applicable to the work as well as any local regulations applicable to the site issued by the owner/Consultant or other authority, and collaborate with the Owner/Consultant in all a matters connected with safety.

### 10.2 PARTICULAR ATTENTION IS DRAWN TO THE FOLLOWING:

- a) In case of accident, the contractor assumes responsibility for such accident. However, the Owner/Consultant shall be informed in writing forthwith. The Contractor shall strictly follow regulations laid down by factory inspector, Government and State authorities in this regard.
- b) Fencing all contractors' plant, platforms, excavations, etc.
- c) Compliance with all electricity regulations.
- d) Compliance with statutory requirements for inspection and test of all lifting appliances and auxiliary lifting gear.

**10.3** Staircases, doors or gangways must not be obstructed in any way that shall interfere with means of access or escape.

**10.4** No excavation shall be started without the permission of the Owner/Consultant, who shall inform the contractor of the position of any pipes or cables known to be buried in the area. All excavations must be effectively railed off at all times or completely boarded over and property marked during the hours of darkness by red warning lamps, using flameproof warning lamps in nonsmoking areas. During the hours of darkness, heaps of debris or material which cannot be immediately removed must be heaped in such a way as to leave adequate passage way.

**10.5** The Contractor shall notify the Owner/Consultant of this intention to bring on the site any equipment such as space heating or welding apparatus, or any container holding liquid or gaseous fuel or other substance which might crate a hazard. The Owner/Consultant shall have the right to prohibit the use of such equipment of to prescribe the conditions under which such equipment may be used.

The Contractor shall carry out his work without causing any hindrance to other work in site which may be carried out by the Owner/Consultant or any other Contractor.

The Owner/Consultant shall have the right to inspect any construction plant, and to forbid its use if in his opinion, it is unsuitable or unsafe. No claim arising there from shall be made by the contractor.



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The contractor or any one acting on his instruction shall not bring on to the site any radioactive substance or any apparatus using such substances or any x – ray apparatus until written permission and direction regarding the use of such equipment has been received from the Owner/Consultant.

**10.6** The Contractor shall meet all requirements and act on the instructions of the Owner/Consultant where it is necessary to operate a “permit-to-work” system.

**10.7** Where it is necessary to provide and/or store petroleum products or petroleum mixtures and explosives, the Contractor shall be responsible for carrying out such provision and/or storage in accordance with the rules and regulations laid down in petroleum ACT 1934, Explosives ACT 1948 and petroleum and carbide of calcium manual published by the Chief Controller of Explosives of India. All such storage's shall have prior approval of the Owner. In cash of any approvals are necessary from the Chief Controller of Explosives or any statutory authorities, the Contractor shall be responsible for obtaining the same.

**10.8** The Contractor shall have his own fire fighting extinguishers and Equipment.

**10.9** The Contractor shall be responsible for the provision of all safety notices and safety equipment required by both the relevant legislation and such as the Contractor may deem necessary.

**10.10** The Contractor shall be repressible for the safe storage of his radio-graphic sources of those of his Sub-contractor.

**10.11** For bringing in any of the Contractor's materials or taking out of any material out of the premises, gate passes from the Owner shall be obtained.



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## SECTION XI : ELECTRICAL SAFETY

1. In no circumstances shall the Contractor interfere with fuses and electrical equipment belonging to the Consultant or the Owner.
2. Before the Contractor connects any electrical appliances to any plug or socket belonging to the Consultants or the Owner he shall:
  - a) Satisfy the Owner/Consultant that the appliances is in good Condition;
  - b) Inform the Owner/Consultant of the maximum current required, and the voltage and Phase of the appliance;
  - c) Obtain permission of the Owner/Consultant detailing the sockets to the appliances may be connected.
3. The Owner/Consultant shall not grant permission to plug in until he is satisfied that :
  - a. The appliance is in good condition and is fitted with a suitable plug;
  - b. The appliance is fitted with a suitable cable having to earth conductors, one of which shall be an earthed metal sheath surrounding the cores.
4. No electric cable in use by the Owner/Consultant shall be disturbed without prior permission of the Owner/Consultant. No weight of any description shall be imposed on any such cable and no staging, ladder or similar equipment shall rest against or be attached to it.
5. The voltage of all portable equipment e.g. drilling machines, temporary lighting etc. shall not exceed 220 volts. Voltage of all hand lamps used for lighting inside vessels shall not exceed 25 Volts.
6. No work must be carried out on any live equipment's. The equipment must be made safe by the Owner/ Consultant and a "permit-to-work" issued before any work is carried out.



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## VENDOR REGISTRATION FORM

Any Bidder who is **not registered** at Vapi Green Enviro Ltd. has to fill below form:

1	Supplier / Contractor / Both *	
2	Name *	
3	Type of Vendor * [Regd. Manufacturer / Non Regd. Manufacturer / Regd. Distributer / Non Regd. Distributer / Transporter / Retailer / Service Provider / Other ]	
4	Branch [ CETP, CSWP, COE, HO ] *	
5	Address 1 *	
	Address 2	
	Address 3	
6	City *	
7	State *	
8	Country *	
9	Pin Code *	
10	Phone No.1 *	
11	Phone No.2 *	
12	Extension	
13	Mobile No. *	
14	Fax No.	
15	E-Mail ID. *	
16	PAN No.	
17	MSME Registration No.	
18	GST Registration No. **	
19	Name of the Bankers *	
20	Bank Branch *	
21	Bank Account No. *	
22	RTG/NEFT Ref. No. *	
23	Contact Person Name	
24	Designation	
25	Contact Person Mobile No.	
26	E-mail ID.	
27	Performance	
28	Remarks	

- a) \*\* Marked is mandatory entry for Contractor. Without this data, form will not be accepted by VGEL.  
b) If any details are not applicable / not available the please type "NA".  
c) Also kindly mail the above Updated file to e-mail address "dgm.purchase@vgelvapi.com" & "so.purchase@vgelvapi.com" in excel format.  
d) Please attach copy of cancelled cheque & PAN along with this form.



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## ANNEXURE - 2

### PERFORMANCE BOND (See Clause No. 1)

(The date of this bond must not be prior to the date of the instrument in connection with which it is given)

Principal (Contractor)

Surety (Bank)

Sum of bond (express in words and figures)

Contract No. and date of Contract

KNOW ALL MEN BY THESE PRESENT, THAT WE, THE PRINCIPALS AND SURETY: Above named are held and firmly bound up to the ..... hereinafter called the Employer in the amount stated for payment of which sum, well and truly to be made, we bind ourselves, our heirs, executors, administrators and successors jointly and severally, firmly by these presents subject to the provisions of which the aforesaid Contractor on demand and without demand on a claim being made by the Employer.

THE CONDITION OF THIS OBLIGATION IS SUCH : That whereas the principals have entered in to a contract with the Employer numbered and dates as shown above and hereto attached for the execution ..... of ..... work .....

NOW THEREFORE, if the Principal shall well and truly perform and fulfill at the undertakings, covenants, terms, conditions and agreements of said contract during the original terms of the said Contract and any extensions thereof that may be granted by the Employer with or without notice to the surety and during the life or any guarantee required under the contract and shall also well and truly perform and fulfill all the Undertakings, covenants terms, conditions and agreements of any all duty and unduly authorised modifications of said Contract that may hereafter be made, notice of which modifications to the surety being hereby waived or shall pay over, make good and reimburse to the Employer all loss and damages which the employer may sustain by reason of failure or default on the part of said Principal so to do.

We ..... further agree that the guarantee herein contained shall remain in full force and effect during the period that would be taken for the validity of the said Contract, and that it shall continue to be enforceable till all the dues of the employer under or by virtue of the Contract have been fully paid and its claims satisfied or discharge or till the Employer certifies that the terms and conditions and accordingly discharges the guarantee. Unless a demand or claim under this guarantee is made on us in writing on or before the ..... we shall be discharged from all liability under this guarantee thereafter.

IN WITNESS WHERE OF, the above bounded parties have executed this instrument under their several seals on the date indicated above the name and corporate seal of each corporate partly being hereto affixed and these presents duly signed by its undersigned representatives, pursuant to authority of its governing body.

In the presence of witness Individual Principal

- 1.....as to ..... (Seal)
- 2.....as to ..... (Seal)
- 3.....as to ..... (Seal)
- by..... affix Corporate Seal

Attested

Corporate surety  
Business address

Affix by .....Corporate Seal

**Title** \_\_\_\_\_

For and on behalf of the Employer



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## Other Technical and Commercial Clarification as per last tender corrigendum:

Sr. No.	Tender Reference No.	Quarry by participants	Reply by Vapi Green Enviro Limited	Remarks from Bidder in Yes / No
1	Page 15/95	Thickness of Drainage media behind CC Block	As per Section Minimum Drainage Media should be 450mm and payment will be done on 450mm basis	
2	Item 3, Point 3 Page 22/95	Grade of CC Block	CC Block will be considered as M35	
3	Point 7 Page 23/95	CC Block Testing by Concrete Cube method or by Core Cutting method	CC Block Testing will be done by Core Cutting method	
4	New Points	CC Block Testing Frequency	CC Block Testing Frequency will be an interval of 5000 Nos. It will be decided by Project Supervisor / Inspector.	
5	Drawing	Road on the top of Wall, Metal Railing, Gas Vents, and Capping of Landfill. Items not included in BOQ.	These all Items will be executed during Capping Work. Only CPVC Hand Railing will be done as per Drawing.	
6	Drawing	Side Drain detail provided in drawing differs from the Item description in BOQ. As per Drawing 1.4 X 1.02 m. As per BOQ 1.5 X 1.5 m.	It Was decided that Pre-cast drain Replace with Cast In Situ as per the drawing which will be besides the approach road on the opposite side of R E Wall	
7	Appendix-B Page 04/13	List of plant and Equipment	Equipment should be available as per work requirement. Contractor may discard as per work requirement.	
8	New Points	Tolerance level for Cracks on CC Block	Cracks to be Repaired and Fill during Defect Liability period. M35 Concrete will be considered for CC Block and Cracks.	
9	Section B-B, Detail G Section C-C	Leachate Outtake Pipes and RCC Casing around pipes needs clarification. Section B-B, Detail – G.	For Leachate pipe casing below the R E Wall as per given section as per revised drawing	



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			casing has to be executed. Work should be carried out as per revised drawing for the casing of Leachate Pipe below the R E Wall.	
10	Drawing	Leachate Collection Sump, Manhole, RCC Casing for pipes are not provided in BOQ	Yes, Revised BOQ will be prepared and issued with this Corrigendum.	
11	New Items	Quantity of Excavation, Earth work, and Other Items.	+ 10% Quantity will be considered as contingency. Payment will be done as per Actual Measurement.	
12	New Items	Pre-Cast Drains of Higher Flow capacity in place of Cast in Situ Drains.	As discussed, this drain has to be carried as per revised drawing with cast in Situ Drains.	
13	Drawing	Drawing for Joint between Base Liner System and Side Slope Liner System	As discussed on this point, Primary liner will be continue at Side wall without joint on the corner.	
14	Drawing and BOQ	Discrepancy in Double Liner System with Quantity of Drainage Composite.	Item has been Verified with consultant. Revised quantity has been amended in revised BOQ.	
15	Item 13 in BOQ	As per BOQ, 500 GSM Non-woven Geotextile should be laid on both side of the Geomembrane.	Same things have been verified with consultant. As per section, Bottom Layer is GCL followed by Geomembrane and Geotextile.	
16	New Items	Weighment of Soil Dumpers or another material movement Vehicle	Yes, Weighment of each vehicle is compulsory.	
17	New Items	Construction work during night period	No. Material Movement will not be allowed during night. In-House activity like Welding of Geomembrane or Stitching of Geotextile can be done as per contractor schedule.	
18	New Items	Electrical Pole Removal	It is under process and it	



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	and Tree Cutting work	will be the responsibility of VGEL	
--	-----------------------	------------------------------------	--

## Commercial Conditions:

Sr. No.	Tender Reference No.	Quarry by participants	Reply by Vapi Green Enviro Limited	Remarks
1	New Point	Payment of CC Block charges will be paid after Erection or Partially after casting of the same	Total approx. 73000 Nos M35 CC Block is required for construction. 25000 X 3 Lot will be constructed for R E Wall work. Each lot part payment will be done after Inspection by VGEL Inspector and Consultant.  50% advance Payment shall be released against secured bond after Inspection report.	
2	Page 5 of 95	Retention Money & Security Deposit	Total 10 % Retention Money will be kept on hold till completion of Project. Out of 10% Retention Money <ul style="list-style-type: none"> <li>➤ 2.5% Security Deposit of Project basic amount will be collected from Selected Bidder (Contractor) at the time of Agreement. EMD Amount will be adjusted in this Security Deposit. This amount will be released after Defect Liability period.</li> <li>➤ 2.5% Amount will be deducted from each running bill from Contractor. This amount will be released after Defect Liability period.</li> <li>➤ 5% Performance Bond from Bank will be submitted at the time of Contract signing. This</li> </ul>	





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			amount will be released after work completion certificate.	
3	Page 12 of 95	Defect Liability period	3 Monsoon Season from Work Completion Date.	
4	New Point	Interest on Balance Payment	There is no requirement of this points. No Interest will be paid on balance payment.	
5	Page 5 of 95	Commencement of Tender	Mobilization Period within 7 days from date of LOI / Work order / Agreement.	
6	Price Bid Page 2 of 2	GST Applicability	18% GST is Applicable for this project. Bidders have to clearly mention in price bid that this 18% GST is Extra or Inclusive on Quoted Rate.  If bidders will not be mentioned on Price Bid then it will be considered as 18% Inclusive in quoted rate.	
7	Price Bid	Revised BOQ	Revised Price Bid will be published with this corrigendum. Bidders have to fill the same as per revised quantity.	
8	New Point	Applicability of Star Rate	Star Rate will not be applicable for this project due to very less quantity of Cement compare to total project cost.	

**General Conditions:**

- (1) Individual items to be quoted separately in price bid. No Lump-Sum total quotation will be allowed.
- (2) Manufacturing of CC Block near CSWP site will be responsibility of the Contractor.
- (3) The bidder shall submit their offer which shall be techno-commercially viable.



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## BID EVALUATION CRITERIA / INSTRUCTIONS FOR PRE QUALIFICATION APPLICATION and PRE-QUALIFICATION APPLICATION

- 1.0 Application for pre-qualification shall be submitted in prescribed format attached herewith.
- 2.0 The enclosed schedules should be filled in completely & if any particular query is not relevant. It should be stated as "NOT APPLICABLE". Financial data, project cost value of works etc. should be given in Indian Rupees only. Failure to provide information, which is essential to evaluate the applications & qualifications or to provide timely clarification or supplementation of the information supplied may result in the disqualification of applicant.
- 3.0 Letter of application is attached with technical bid.
- 4.0 **Prequalification evaluation:**
- Initial screening
  - Detailed screening

5.0 **Qualification Criteria:**

**AA Class Contractor (Reinforced Earthen Wall Experienced) and/OR Similar Work Executed.**

**(a) Annual Turn Over**

- Average Annual financial turnover during the last Three financial years i.e. from **2017-18, 2018-19 and 2019-20** updated to the current financial year shall be more than Rs. **15 crores (x)**
- For arriving at updated value, turnover of any financial year shall be multiplied by the enhancement factor corresponding to that year. These enhancement factors shall be as given in Para 7.0 herein below.

[ For guidance of deriving X : This value shall be derived by dividing amount put to tender by the time limit expressed in years for the proposed work.]

**(b) Successful Experience (As per Annexure 1 of this tender)**

Bidder must have as prime contractor successful experience as follows:

- At least oThree similar work having updated completion cost not less than Rs. 6.00 crores (40% of the amount put to tender of the proposed work) **OR**
- At least Two similar work having updated completion cost not less than Rs. 7.50 crores (50% of the amount put to tender of the proposed work) **OR**
- At least One similar work having updated completion cost not less than Rs. 12.00 crores (80% of the amount put to tender of the proposed work) **OR**
- Such work must have been completed within last seven financial years i.e. from **01/04/2014** till the due date of bid for the proposed work.
- A work would qualify as similar work only if it meets with definitions given in Appendix-A
- For updating completion cost of the work to the current financial year, procedure narrated in **5(a) ii** shall mutatis mutandis apply.



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## [c] Bid Capacity:

- i. The bidder must have Available Bid Capacity (ABC) more than the amount put to tender.

$$ABC = 2 * A * N - B$$

Where

**A** is the maximum of updated total amount of works executed in any one year of the last five financial years i.e. from **2016-17, 2017-18, 2018-19, 2019-20 and 2020-21**

**N** is the number of years prescribed for completion of the proposed work.

**B** is the amount of the existing commitments and ongoing works to be discharged during time interval of **N** years from the bid due date.

For the purpose of updating amount of works executed in any year, procedure narrated in para **5 (a) ii** shall mutatis mutandis apply.

Existing commitments shall include all such works for which letters of acceptance of the tenders have been received by bidder till the date on which bidder has submitted his bid for the proposed work.

## 6.0 Other Requirements :

### a. Bidder's registration

- i. Registration certificate required with offer as per Tender conditions.

### b. Litigation history

The applicant should provide accurate information on litigation and /or arbitration resulting from Contracts completed or under execution by him over the last five years. A consistent history of arbitration awards/ judgements against the applicant or any partner of joint ventures may result in disqualification for proposed work. If the details of Litigation History is hidden by the applicant and later on it comes to knowledge of the employer the bidder shall be disqualified for the proposed work and other appropriate actions shall be taken against the bidder.

**An Affidavit duly notarized regarding termination / Black Listed/ban/registration kept Abeyance.**

### C. Machinery/ Equipment

Bidder shall have to assure availability of machinery / equipments in working condition as per Appendix-B. If bidder fails to provide proof of assured availability of required machinery, he will be disqualified for the proposed work. Machinery ownership document or lease/ hire agreement for the work under tender shall be considered as valid proof for assured availability.

**An under taking for deploying Machinery / Equipment / Plant as per work requirement Shall be submitted by bidder with Technical Bid.**

### d Bidding in E-tendering: Required to submit offer by E-tendering.

### e. Submission of documents

- i. Following documents/ papers shall form part of the bid.
  1. Annual turnover certificate issued by chartered accountant for last four financial year.
  2. Form 3A issued by employer to substantiate successful experience of similar work. When employer of similar work is not a government, following need also to be furnished.
    - a. Self attested copy of Work Order.
    - b. Self attested copy of agreement
    - c. Self attested copy of Completion certificate.
    - d. Self attested copy of Final Bill
    - e. Self attested copy of TDS certificates
    - f. Self attested copy of letter of permission given by employer for subletting the work
    - g. **An Affidavit duly notarized regarding termination / Black Listed/ban/registration kept Abeyance.**
    - h. Copy of Registration Certificate of Firm / Agency / Company.
    - i. Power of Attorney if any.
    - j. PAN Card
    - k. Latest Income Tax Return Certificate
    - l. GST Registration Certificate



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m. RPPFC Challan of last three Months

3. Existing commitments and ongoing works as per Annexure as per Tender conditions
  4. Litigation/ Arbitration history
  5. Proof of assured availability of required Machinery/ equipment
  6. An undertaking for truthfulness of information furnished.
- ii. Any information data, statistics etc. which are not related to bid document will not be considered in evaluation even though furnished by the applicant.
  - iii. VGEL has specifically asked for any information/ document, which is mandatory, essential and critical for evaluation of PQ document. If required information is not furnished within stipulated time, proposal will be liable for rejection.
  - iv. If any of the information provided by the bidder is found false during scrutiny or at the later stage, his EMD shall be forfeited and he shall be disqualified for the proposed work. If any of the information provided by the bidder is found false after award of work, the performance security of the bidder shall be forfeited and the contract shall be terminated.
  - v. An Affidavit duly notarized regarding Registration kept Abeyance/ termination/Black listing/Ban
  - vi. Copy of Registration certificate of Firm/agency/company.
  - vii. Power of attorney if any.
  - viii. Pan Card
  - ix. Latest income tax return certificate
  - x. GST registration certificate
  - xi. RPPFC Challan of last three Months

## 7.0 Escalation Factors

Following enhancement factors will be applied to annual turnover and completion cost of works to bring them to the base year. The current financial year in which bid is invited shall be considered as the base year.

Year	Financial Year	Enhancement factor
Base (year of inviting tender)	2020-21	1.0
-1	2019-20	1.1
-2	2018-19	1.21
-3	2017-18	1.33
-4	2016-17	1.46

8.0 The pre-qualification documents received from the **CEO**, VGEL shall be considered by Evaluation committee of VGEL.

### 8.1 DETAILED SCREENING:-

The committee will evolve a suitable methodology before opening of Price Bid for making final assessment of the Suitability of the firms who have applied for qualification which also include the following

- I Structure & organization
- II Financial Status of the firm including average annual turnover, work on hand, financial arrangement proposed, viz own resource, bank credit etc.
- III Resources of the firm including Personnel & Equipment
- IV Experience of the firm for similar project as applicable and other works as well as prompt completion for work and available bid capacity.

[v] Any other criteria which the committee may like to consider in any individual case.

8.3 Based on the above proposed broad principles, the committee shall make an assessment and finalize its recommendations indicating the firm, which are considered suitable for pre-qualification purpose.

- (i) Employer reserves the right to accept any bid, and
- (ii) Cancel the qualification process and reject all bids,

The employer shall neither be liable for any such actions nor be under any obligation to inform the applicant of the grounds for them. The Employer's decision shall be final and binding.



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Chief Executive Officer  
Vapi Green Enviro Limited

## APPENDIX – A

Definition of similar work:

**Bidder should have experience for construction of Reinforced Earthen Wall / Retaining Earth Wall work using GEO Grid and CC block and/or Similar Work Executed.**

## APPENDIX – B

Indicative List of minimum Plant & Equipment to be deployed on Contract Work

Sr. No.	Equipment type & characteristic	Minimum number required	Available or Not-Available
1	Excavator cum Loader	2	
2	Hydraulic trucks	6	
3	Hydraulic Tractor with Tailor	4	
4	Water Tanker	2	
5	Niddle vibrator	2	
6	Automatic level instrument	1	
7	Steel formwork	Req. qty.	
8	Motor grader (Hydraulic Control Arrangement)	1	
9	Tandem vibratory roller 80/100 KN	2	
10	Pneumatic tyred / Vibro roller of 12 to 15 T. weight having 9 wheels	1	
11	Tippers	10	

Chief Executive Officer  
Vapi Green Enviro Limited



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## STRUCTURE AND ORGANISATION

1. Name of the Company :  
Address :  
  
Telephone No. :  
Telex No. :  
Fax No. :
2. Description of Company (For e.g. General Civil Engineering Contractor supplier of equipment etc.)  
Type of firm  
(a) Individual :  
(b) Partnership :  
(c) Limited Co, :
3. Registration and classification :
4. Name and address of the bankers :
5. No. of year of experience as a contractor :  
(i) In own country :  
(ii) Internationally :
6. No. of year of experience as a Sub Contractor :  
(i) In own country :  
(ii) Internationally :
7. Name and address of the partner and associated companies to be involved in subsidiary others :
8. To be organization chart showing the structure of the company including names and position of Directors and key personnel :

---

(Signature of Bidder)

**Note :-** *The above necessary information shall be supported with necessary documents, otherwise the same shall be treated as null & void.*



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## FINANCIAL STATEMENT

(To be given separately for each partner for partnership firm)

1. Name of firm :
  
2. Capital  
(a) Authorised :  
(b) Issued & paid up :
  
3. Attach audited balance sheet & profit & loss statement for the past 5 (five) years :
  
4. Financial position :  
(exact amount in Rupees to be stated)  
(a) Cash :  
(b) Current Asset :  
(c) Current Liability :  
(d) Working Capital :  
(e) Net worth :
  
5. Total liability  
(a) Current Ratio : Current assets to current liabilities  
(b) Acid test Ratio : Cash, Temporary investment held in lieu of cash & current receivable to current liabilities.  
(c) Total liabilities Net worth :

**Note :-** Information asked against each item to be carefully filled in more preference to balance sheet in reply to above points is acceptable.

6. Annual value (turn over) of construction works undertaken for each of the last five years & projected for current (this will be calculated at the rate of 10% increased for each years). Annual turn over for the works.

Year	Last year 2019-20	One year before i.e. 2018-19	Two year before i.e. 2017-18	Three year before i.e. 2016-17
Home				
Abroad				

7. Net profit tax  
(a) Current period (2019-20) :  
(b) During the last financial year (2018-19) :  
(c) During the course of the Three :



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financial years previous to last  
financial years i.e. (2016-17 to 2019-  
20)

The profit and loss statement have been  
certified  
Through .....

by.....

8. Applicant's financial arrangement for proposed works (exact amount in Rupees to be mentioned)
- |                     |   |     |
|---------------------|---|-----|
| (a) Own resources   | : | Rs. |
| (b) Bank Credits    | : | Rs. |
| (c) Other (specify) | : | Rs. |
9. Certificate of financial soundness from bankers :  
of applicants together with their full address
10. Approximate value of works in hand : Rs.
11. Value of anticipate orders for next financial :  
year.  
Home  
Abroad

**Note :-** Details of Item No. 10 and 11 are to be given in Schedule-E experience.

- Note :-**
- 1) Information asked against each item shall be carefully filled in any additional information shall be given separately duly signed.
  - 2) The above details supported by last financial year Balance sheet / profit & loss account etc. must be audited by the Chartered Accountant. And ITC shall be furnished if available.
  - 3) The above information shall be supported with necessary documents otherwise, the same shall be treated as null and void.

\_\_\_\_\_  
(Signature of Applicant)





# VAPI GREEN ENVIRO LIMITED

Formerly known as Vapi Waste & Effluent Mgt. Co. Ltd.

VIA House, Plot No. 135, Char Rasta, GIDC VAPI - 396 195. Gujarat. INDIA  
Mob.: 9714000828 | Tel.: (0260) 2428950, Telefax : (0260) 2429950 | Email : admin@vgelvapi.com  
Website : www.vgelvapi.com | www.coevapi.com | CIN : U74210GJ1997GAP031525

## PERSONAL

### DETAILS OF PERSONNEL WITH THE APPLICANT (ON ROLL)

Name of Applicant :-

Sr. No.	Description	On Applicants Pay Roll
(1)	Project Manager	:
(2)	Works Manager (Main Civil Works)	:
(3)	Number of Engineering Graduates	:
	a) Design	
	(b) Construction supervision	
	c) Electrical Engineer	
(4)	Number of administrative graduates	:
(5)	Number of skilled employees	:
(6)	Number of Unskilled employees	:
(7)	Please indicate whether design wherever required as per conditions of bid, will be carried out in house or with the help of consultant. If in house, please indicate the details of designs carried out over the last few years. If to be done by back-up consultants please give the data such as name of the company, key personnel and professional qualifications, present position total experience, number of engineering staff under each category of specification and details of work executed.	:
(8)	1) Incase of personnel at Sr. No. 1 to 4 please given name, qualification present position, professional experience and linguistic ability.	:
	2) The certified copy of degree / diploma engineers, qualification with an affidavit on stamp paper stating their appointment in the firm shall have to be attached with this schedule.	
	3) The above information shall be supported with necessary documents otherwise the same shall be treated as null & void.	



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## DECLARATION / UNDERTAKING

### DECLARATION/UNDERTAKING

- (1) I/We agree that the decision of the VGEL in selection of applicants/ contractor, phasing of works and in any other project related matter will be final and binding to me/us.
- (2) All the information and details furnished herewith are correct to my/our best of knowledge.
- (3) I/We agree that we have no objection if inquiries are made about our works, it's related areas and any other inquiry regarding all details, projects and works listed by us in the prequalification document.
- (4) I/We also understand that furnishing of wrong information or hiding of any information shall be a cause for disqualification.

Date :-

Signature with seal of the company

#### **Note :-**

- 1) *The above information may be furnished for each machinery and equipment listed herewith.*
- 2) *The location of machinery should be furnished in detail  
i.e. (i) Site of work (ii) Own Workshop (iii) Other places*
- 3) *The documents regarding ownership of machinery / equipment etc and attested copies of hire purchase agreement if it must be enclosed and for to be procured the copy of work order placed shall be furnished.  
If leased indicated the date when the current lease expires.*
- 4) *Describe the fabrication and workshop facilities (a) to be set up at site (b) to be sub contracted locally (c) to be set up any other place with relevant details.*
- (5) *The above information shall be supported with necessary documents otherwise, the same shall be treated as null & void.*



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## EXPERIENCE ALL PROJECTS IN PROGRESS

Give information about all projects which are in progress including the company has received a letter of intent/  
 Acceptance  
 but a formal contract has not yet been awarded

Employer	Engineer responsible for supervision	Location and description of works	Value of contract	Cost of work executed as on the date of this bid	Remaining work to be executed as on date of this bid	Percentage of practical completion	Date of work order	Stipulated date of completion of work	Likely date of completion	Reasons for slow progress if any
1	2	3	4	5	6	7	8	9	10	11

**Note :-** Non disclosure of any information in the schedule will result in disqualification of the bidder.

\_\_\_\_\_  
 (Signature of Bidder)

## EXPERIENCE RELEVANT PROJECTS COMPLETED

Please furnished information about relevant project (Road works) completed over the last five years

Name of Employer	Name of Location & type of Bridge contracted	Name of Engineer responsible for supervision	Contract price (Rs. in Lacs)	Final value as per bill prepared by the employees	Additional amount released if any through court claims or by award or arbitrat or	Date of work order	Stipulated date of completion of work	Actual date of completion	Reason for slow progress if any
1	2	3	4	5	6	7-A	7-B	7-C	8

**Note :-** Non disclosure of any information in the schedule will result in disqualification of the bidder.

\_\_\_\_\_  
 (Signature of Bidder)

### DETAILS OF LITIGATION

Name of applicant / parties :-

Applicant should provide information on any History of litigation or arbitration resulting from contracts executed in last five years or currently under execution.

Years	Award for / or against applicant	Name of client, Cause of litigation & matter of dispute	Disputed amount in rupees
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**Note :-** *The above information shall be supported with necessary documents otherwise the same shall be treated as null & void. If the information to be furnished in this schedule will not be given & come to the notice subsequently will result in disqualification of bidder.*

**This Point should be revise as per Circular.**

\_\_\_\_\_  
(Signature of Applicant)

### ADDITIONAL INFORMATION

(The applicant can add here any further information relevant to the evaluation of their pre-qualification bid)

**Note :-** *The above information shall be supported with necessary documents otherwise the same shall be treated as null & void.*

\_\_\_\_\_  
(Signature of Applicant)

Referred to in Rules No.5 to (b) (II)  
DETAILS OF SIMILAR WORKS COMPLETED

- |         |   |               |                                |
|---------|---|---------------|--------------------------------|
| 1       | Name of Contractor  | :             |                                |
| 2       | Name of Work  | :             |                                |
| 3       | Estimated cost of work put to tender  | :             |                                |
| 4       | Revised Estimated cost  | :             |                                |
| 5       | Tender Amount   | :             |                                |
| 6       | Date of starting the work   | :             |                                |
| 7       | Date of completion of the work (As per contract agreement)  | :             |                                |
| 8       | Actual date of the completion of work   | :             |                                |
| 9       | Amount of completed work done   | :             |                                |
| Sr. No. | Main component of work  | Qty. Executed | Amount Rs. in Lacs             |
| I       | WMM work  | :             |                                |
| II      | GSB work  |               |                                |
| III     | DBM Work  |               |                                |
| IV      | SDBC Work   |               |                                |
| V       | Concrete work   |               |                                |
| 10      | State whether the details as above given by the contractor are correct, if not state as to what is the correct information                      | :             |                                |
| 11      | State whether the contractor has executed the work in progress satisfactory as per specification, if not, give the correct position of the work | :             |                                |
| 12      | Period, rate & amount of the compensation if levied   | :             |                                |
| 13      | Period of extension granted if any  | :             |                                |
| 14      | Reason for delay in granted if any  | :             |                                |
| 15      | Any other remarks   | :             | Particulars of work completed. |

Date :

Signature of Bidder

Chief Executive Officer,  
VGEL

**LETTER OF PRE-QUALIFICATION APPLICATION**

**To**  
Chief Executive Officer,  
Vapi Green Enviro Limited

Dear Sir,

Having examined the Pre-qualification documents attached with this bid including scope of work & frame of construction, we hereby submit all the necessary information and relevant documents for qualifying us for bidding for this work.

The application is made by us on behalf of

\_\_\_\_\_ in the capacity  
of \_\_\_\_\_  
\_\_\_\_\_ duly authorized

to submit the offer.

It is certified that the information furnished in these documents are authentic. We shall gracefully accept the Pre-Qualification and shall not litigate the issue of Disqualification upon the scrutiny of this application of ours.

We, undersigned, accept that the VGEL reserves the rights to reject any or all applications without assigning any reason.

Date: \_\_\_\_\_ Signature of applicant.  
Name in Brackets incl. Title & capacity in which application is made

Encl :

- [1] Schedule (D to J) duly filled in the prescribed pro-forma.
- [2] Evidence to authority to sign.
- [3] Latest brochures.
- [4] Other documents, if any.

**Common Solid waste Project Extension of Cell 1&2** **Date :- 01-05-2021**  
**PRICE BID of Tender for Supply and Construction of Secured Landfill Site at Cell 1&2 Expansion**  
**at CSWP Site (Base Preparation work and Reinforcement Earth Wall)**

Sl. No	Item	Unit	Qty	Rate Rs.	Amount Rs
1	Excavating, levelling & grading of the site shall be done with auto level or digital level so as to attain the accuracy in slopes. The contractor shall appoint an experienced surveyor and able to understand true slope profile given in the drawing. Wherever the surface is high, it shall be excavated and suitably compacted by adding fresh material. All leads and lift to be included etc. all completed.	cum	36,225.00		
2	Providing & Filling of compacting with approved ( $\phi \geq 30^\circ$ ) borrowed granular backfill material in layers not exceeding 200 mm. Rate to include transport, royalties etc. all Completed.	cum	98,460.00		
3	Casting and installing Segmental Wall blocks of M35 concrete of required shape and size as per Design and Drawings. Including the cost of materials, casting & Installation etc. all completed.	Nos	74,500.00		
4	Providing and Laying of 20mm down size drainage media (filter media) comprising of aggregates with grain size distribution as given in specifications, including the cost of materials, laying, spreading & filling etc. all complete.	cum	4,600.00		
5	Providing & fixing of Polyester geogrid with appropriate coating. Rate to include wastages. Certification for testing of factors for Creep, Installation Damage, Durability, Pull-out and Direct Sliding, etc. all completed.				
5.1	40 kN/m	sqm	16,838.00		
5.2	60 kN/m	sqm	29,539.00		
5.3	80 kN/m	sqm	20,378.00		
5.4	100 kN/m	sqm	34,192.00		
5.5	120 kN/m	sqm	17,658.00		
5.6	150 kN/m	sqm	1,80,068.00		
6	Providing & fixing perforated 100mm dia PVC pipe with more than 10 Kg/cm <sup>2</sup> pressure rating, covered with 200 gsm polypropylene nonwoven geotextile. Make of PVC Pipe should be <b>Prince</b> <b>OR Astral.</b>	Rmt	989.00		
7	Providing & Laying of Plain Cement Concrete M15 grade 1:2:4 (1 Cement :2 Coarse Sand : 4 Stone Aggregate 40mm nominal size ) for Foundation and flooring bed including making stack for mixing as directed, mixing, watering, curing, ramming, consolidating, levelling, and curing etc. all Completed.	cum	340.00		

8	providing & Laying of controlled concrete of Grade M25(1:1:2) in Side wall and bottom Raft of leachate Collection Chamber as well as RCC Casing Below the Wall-1&2 etc including the cost of curing, vibrating & Watering and Cantering and Shuttering Work excluding the cost of steel reinforcement including mixing by Mixer M/c, pouring, consolidation, levelling, curing etc complete as per Drawings and Direction by Site engineer.	cum	340.00		
9	Providing & Laying of 1.50 mm thick HDPE geomembrane Sheet including the rate of materials, installation, Laying Wastage, Overlapping and trenching for anchoring etc all Completed.	sqm	16,250.00		
10	Providing & Laying of 2.00 mm thick HDPE geomembrane Sheet including the rate of materials, installation, Laying Wastage, Overlapping and trenching for anchoring etc all Completed.	sqm	16,429.00		
11	Providing & Laying of Geosynthetic Clay Liners as per the scheduled design and Drawings including the rate of materials, installation, Laying Wastage, Overlapping and trenching for anchoring etc all Completed.	sqm	30,289.00		
12	Providing & Laying of Geo-composite Drain as per the scheduled design and Drawings including the rate of materials, installation, Laying Wastage, Overlapping and trenching for anchoring etc all Completed.	sqm	22,297.00		
13	Providing and laying 315mm dia HDPE Pipe with more than 10 Kg/cm <sup>2</sup> pressure rating for leachate collection system provided in Base Liner as per specification with provision of perforations, laying in slope and covering with aggregate etc. all Completed.	Rmt	725.00		
14	Providing & Laying of 200mm dia HDPE Pipe with more than 10 Kg/cm <sup>2</sup> pressure rating for leachate collection system provided in Base Liner as per specification with provision of perforations, laying in slope and covering with aggregate etc. all completed.	Rmt	725.00		
15	Providing & Laying of 250 gsm PP nonwoven geotextile made with thermally bonded staple fibre on both sides of geomembrane. Rate to include all Material, Lying, wastages and overlap etc all Completed.	sqm	15,750.00		
16	Providing & Laying of 500 gsm PP nonwoven geotextile made with thermally bonded staple fibre covering 100mm dia PVC Pipe. Rate to include all Material, Lying, wastages and overlap etc All completed.	sqm	15,682.00		



17	Providing and placing PP tape woven geotextile bags of grab tensile strength 1.00 kN (Used bags or empty cement bags may be used) filled with soil (as specified in Item No. 2). Rate to include material cost of soil and bags and labour cost of filling the bags, filling the soil and properly arranging them as specifications and drawings in back face of wall to provide stability and anchor trenches. Size of Geotextile bag filled with soil as per Drawings etc. all Completed.	sqm	6,790.00		
18	Providing & Fixing CRS (Corrosion Resistance Steel) TMT FE-500 reinforcement including, cutting, bending, binding etc. incl. cost of binding wire incl. necessary transportation, removing, foreign materials from rods providing hook, chairs, laps, fixing at a place etc. complete. Reinforcement shall be of as TATA, SAIL, VIZAG, JINDAL make as approved by engineer in charge and as per IS code. Laps and wastages shall not be paid.	Kg	40,700.00		
19	Providing & Laying of Sand Filling in Base liner including the cost of materials, laying, spreading & filling etc. all complete.	cum	4,725.00		
20	Providing & Laying Rubble Soiling work 250mm thick as per Direction by Site engineer etc all Completed.	cum	100.00		
21	Compacted clay (or compacted amended soil) layer of thickness 40 cm or more having a coefficient of permeability of 10 <sup>-7</sup> cm/sec (10 <sup>-9</sup> c/sec) or less. Compacted clay liner should satisfy all the specifications and installation guidelines as per CPCB norms for Hazardous waste landfill.	cum	4,700.00		

TOTAL BASIC AMOUNT Rs.	
GST (9% CGST + 9% SGST = Total 18%):	
<u>GRAND TOTAL:</u>	
<u>GRAND TOTAL AMOUNT (In Words):</u>	

Note: (1) Quantity of some items may change, or some items may not require for construction. Bidder has to accept all technical change,

(2) Bidder has to fill rates in above prescribed format only. No change shall be allowed in our signed documents. If any bidder has changed any word or language or figure or quantity, the bids shall be directly rejected. No argument shall be considered on this regard,

(3) Offer should be inclusive of all Taxes, Duties, Transportations, etc, Except GST. Bidder has to attach copy of PAN and GST Registration Certificate and Cancel Cheque with Technical offer.