

Document No: FM/PUR/02

TECHNICAL BID

e-Tender for Supply and Construction of

Capping Work

Of Cell 4 Extension 1&2 at CSWP Site Vapi

**MSTC TENDER No. - VGEL/Common Solid Waste
Plant/Projects/1/22-23/ET/13[Capping Work of Landfill Cell 1]**

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,
4th PHASE, G.I.D.C.,
VAPI – 396195, Dist.: VALSAD
GUJARAT

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Important Note:

- a. Firm Should have proof of experience of similar work like Construction like using Geomembrane, Geotextile, GCL in Govt. Dept., R&B, Irrigation department, Sardar Sarovar Narmada Nigam, PSU's, Private companies esp. in field of Treatment of Hazardous Waste as per GPCB / CPCB norms. Please submit more details at ANNEXURE.
- b. VGEL may issue all work Capping work 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.

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 and 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
 - 2018-2019 : _____
 - 2019-2020 : _____
 - 2020-2021 : _____
 - 2021-2022 : _____
- 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

PART - C
DATA SHEET

Name of Tender:

e-Tender for Supply and Construction of Capping Work of Cell 4 Extension 1&2 at CSWP Site Vapi

- **Estimated Cost: Rs.9,00,00,000/- (Rs. Nine Crores only)**
- Tender document obtaining date: 22-11-2022 to 10-12-2022
- Pre-Bid Meeting Date & Place: 29-11-2022, at 11:00 AM at CSWP Site
- Last Submission date, Time & Place: 12:30 PM on 10-12-2022 on MSTC Website.
- Technical part Opening Date: 10-12-2022 at 12:31 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.9,00,000/- (Rs. Nine 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 to be deposited at the time of Agreement / Work order / LOI signing, 2.5% will be deducted from each running bill, and 5% Performance Bond.**
- 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.

SECTION - I : TENDER NOTICE

Sealed item-rate tenders are hereby invited for '**e-TENDER FOR SUPPLY AND CONSTRUCTION OF Capping Work** AT CELL 4 Extension 1&2 and link up Area at CSWP Vapi 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 or www.mstcecommerce.com Or Vapi Green Enviro Limited website www.vgelvapi.com between Date **22-11-2022 to 10-12-2022**

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, www.mstcecommerce.com and www.vgelvapi.com.

2. Online Tender shall be submitted on or before last date for submission of tender on www.mstcindia.co.in or www.mstcecommerce.com.
3. A pre-bid meeting shall be held on 29-11-2022, 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 **10-12-2022 at 12.31 PM onwards** 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. 9,00,000 (Rs. Nine 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: 6 Month.**
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.
9. VGEL shall not accept any change in any word or figure in tender document.

Chief Executive Officer
Vapi Green Enviro Limited

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

Sub: Supply and **Construction of Capping work of landfill site as per GPCB & CPCB guidelines** at CSWP site, 4th Phase, GIDC, VAPI.

Dear Sir,

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

- a) Examined the Tender Document relating to the Supply and **construction of Capping work 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.
- b) Visited and examined the site of the proposed work and
- c) Acquired the requisite information as affecting the tender invited by you.

We the undersigned hereby offer to Supply and 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 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 Total 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.9,00,000/-** 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)

SECTION - III : GENERAL INSTRUCTIONS TO THE CONTRACTOR

- a. Interested parties may obtain the tender document from the website www.vgelvapi.com or from MSTC and VGEL Website.
- b. e-Tender for Supply and Construction of Capping Work for Hazardous Solid Waste Disposal Cells 4 Extension 1&2 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, www.mstcecommerce.com and 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, www.mstcecommerce.com and 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.

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. Copy of WC Policy to be submitted to HR Department before starting the work.
- 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 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 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 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.

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: 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 %. (2.5% Deposit + 2.5% Retention Money + 5% Performance Bond (5% Performance Bond will 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 3rd party Analysis laboratory like CIPET or BTRA or as per VGEL decision. Contractor has 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. Required to show separately. Not Required to Add in Basic Amount. i.e. Basic + GST = Total.

SECTION – IV: CONSTRUCTION PROCEDURE

Tender for Supply and Construction of Capping Work of Solid Waste Cell 4 Extension 1&2 at CSWP Vapi.

Tenders are called for Supply and construction of Capping work of Cell 4 Extension 1&2 as per Bill of Quantity mentioned in Price Bid of this tender.

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.

Geosynthetic Clay Liner:	Non-Woven Geotextile:	Geo-composite Drains:
a) CETCO	a) Jeevan Geosynthetic	a) Alyaf Industrial Co. Ltd.
b) GSE	b) Skaps	b) Skaps
c) Hueskar	c) Techfab	c) Terram Geosynthetics
d) Laviosa Trimex	d) Techno Fabricks	d) Techfab
e) Naue GmbH	e) Terram Geosynthetic	e) CTM
f) Ashapura	f) Khator Technical Textiles Limited	f) Mahashree
g) Key Tech	g) Manas Fabrics Private Limited	g) Intermas

Specification for Construction of Capping Work

Technical Specifications for TSDF Landfill Closure at VGEL

(A) ROAD AND DRAIN WORK:

Item No. 01: PROVIDING AND LAYING GSB

This work shall consist of laying and compacting well-graded material on prepared sub grade in accordance with the requirements of these Specifications. The material shall be laid in one or more layers as sub-base or lower sub-base and upper sub-base (termed as sub-base hereinafter) as necessary according to lines, grades and cross-sections shown on the drawings or as directed by the Engineer.

Materials

The material to be used for the work shall be natural sand Murrum, gravel, crushed stone, or combination thereof depending upon the grading required. Materials like crushed slag crushed concrete, brick metal and kankar may be allowed only with the specific approval of the Engineer. The material shall be free from organic or other deleterious constituents and conform to one of the three grading.

Physical requirements: The material shall have a 10 per cent fines value of 50 KN or more (for sample in soaked condition) when tested in compliance with BS: 812 (Part 111). The water absorption value of the coarse aggregate shall be determined as per IS: 2386 (Part 3); if this value is greater than 2 per cent, the soundness test shall be carried out on the material delivered to site as per IS: 383. For Grading II and III materials, the CBR shall be determined at the density and moisture

content likely to be developed in equilibrium conditions which shall be taken as being the density relating to a uniform air voids content of 5 per cent.

Strength of sub-base

It shall be ensured prior to actual execution that the material to be used in the sub-base satisfies the requirements of CBR and other physical requirements when compacted and finished.

When directed by the Engineer, this shall be verified by performing CBR tests in the laboratory as required on specimens remolded at field dry density and moisture content and any other tests for the “quality” of materials, as may be necessary.

Construction Operations

Preparation of sub grade: Immediately prior to the laying of sub-base, the sub grade already finished as applicable shall be prepared by removing all vegetation and other extraneous matter, lightly sprinkled with water if necessary and rolled with two passes of 80-100 KN smooth wheeled roller.

Spreading and compacting: The sub-base material of grading specified in the Contract shall be spread on the prepared sub grade with the help of a motor grader of adequate capacity, its blade having hydraulic controls suitable for initial adjustment and for maintaining the required slope and grade during the operation or other means as approved by the Engineer.

When the sub-base material consists of combination of materials, mixing shall be done mechanically by the mixing-place method.

Manual mixing shall be permitted only where the width of lying is not adequate for mechanical operations, as in small-sized jobs. The equipment used for mix-in-place construction shall be a rotator or similar approved equipment capable of mixing the material to the desired degree, if so desired by the engineer; trial runs with the equipment shall be carried out to establish its suitability for the work.

Moisture content of the loose material shall be checked in accordance with IS: 2720 (Part 2) and suitably adjusted by sprinkling additional water from a truck mounted or trailer mounted water tank and suitable for applying water uniformly and at controlled quantities to variable widths of surface or other means approved by the Engineer so that, at the time of compaction, it is from 1 per cent above to 2 per cent below the optimum moisture content corresponding to IS: 2720 (Part 8). While adding water, due allowance shall be made for evaporation losses. After water has been added the material shall be processed by mechanical or other approved means like disc harrows, rotators until the layer is uniformly wet.

Immediately thereafter, rolling shall start. If the thickness of the compacted layer does not exceed 100 mm, a smooth wheeled roller of 80 to 100 KN weight may be used. For a compacted single layer up to 225 mm the compaction shall be done with the help of a vibratory roller of minimum 80 to 100 kN static weight with plain drum or pad foot drum or heavy pneumatic tyred roller of minimum 200 to 300 kN weight having a minimum tyre pressure of 0.7 MN/m² or equivalent capacity roller capable of achieving the required compaction. Rolling shall commence at the lower edge and

proceed towards the upper edge longitudinally for portions having unidirectional cross fall and super-elevation and shall commence at 6 the edges and progress towards the centre for portions having cross fall on both sides.

Each pass of the roller shall uniformly overlap not less than one third of the track made in the preceding pass. During rolling, the grade and cross fall (camber) shall be checked and any high spots or depressions, which become apparent, corrected by removing or adding fresh material, the speed of the roller shall not exceed 5 km per hour.

Rolling shall be continued till the density achieved is at least 98 per cent of the maximum dry density for the material determined as per IS: 2720 (Part 8). The surface of any layer of material on completion of compaction shall be well closed, free from movement under compaction equipment and from compaction planes, ridges, cracks or loose material. All loose, segregated or otherwise defective areas shall be made good to the full thickness of layer and re-compacted.

Surface Finish and Quality Control of Work: The surface finish of construction shall conform to the requirements of Clause 902. Control on the quality of materials and works shall be exercised by the Engineer in accordance with Section 900.

Measurements for Payment: Granular sub-base shall be measured as finished work in position in cubic meters. The protection of edges of granular sub-base extended over the full formation as shown in the drawing shall be considered incidental to the work of providing granular sub-base and as such no extra payment shall be made for the same.

Item No. 02: PROVIDING AND LAYING NP3 HUME PIPE 300mm diameter

This shall consist of furnishing and installing reinforced cement concrete pipe of the type diameter and length required at the location shown on the drawings or as ordered by the Engineer-in-charge.

Reinforced concrete pipe shall be of NP3 type conforming to the requirements of IS: 458 and shall be of dia. as specified in the item. Pipes shall be durable & its durability shall be achieved as a result of low water cement ratio & high compaction with the use of latest "Vertical Casting Technology" with precisely controlled socket & spigot joints & quality of pipes and its inner surface shall be smooth and strictly as per I.S. 458/1971. Each consignment of cement concrete pipes shall be inspected, if necessary and approved by the Engineer-in-charge either at the place of manufacture or at the site before their incorporation in the works.

NP4, NP3, NP2 and NP1 pipes are used for R.C.C. Pipes. Where the testing of pipes will not be feasible the contractors will have to produce a certificate from the manufacturer on company's letter head in the given hereinafter from.

Production of such certificate will not however relieve the Contractor from his responsibility of supplying pipes of required standard and will have to bear the loss or damage caused to the work on account of defects found subsequently during execution. It will also be necessary to purchase these pipes from manufacturer having standard equipments for carrying out various tests as per IS:458 at his factory.

No pipes shall be placed in position until the foundations have been approved by the Engineer-in-charge. Where two or more pipes are to be laid adjacent to each other, they shall be separated by a

distance equal to at least half the diameter of the pipe subject to minimum of **300 mm**. The laying of pipes on the prepared foundation shall start from the outlet and proceed towards the inlet and be completed to the specified lines and grades. The pipes shall be fitted and matched so that when laid in works they form a culvert with a smooth uniform invert. Any pipe found defective or damaged during laying shall be removed at their cost of Contractor.

The pipes shall be jointed either by collar joint or by flush joint in the former case the collars shall be of R.C.C. 150 to 200 mm. wide and having the same strength as the pipes to be jointed. Caulking space shall be between 13 and 20 mm. according to the diameter of the pipes caulking material shall be slightly wet mix of cement and sand in the ratio of 1:2 rammed with caulking irons. Before caulking the collar shall be so placed that its centre coincides with that of pipes and an even annular space is left between the collar and the pipes. Flush joint may be shaped to form a self-centering joint with a joining space 13 cm wide. The joining space shall be filled with cement mortar 1:2 (1 cement: 2 sand) mixed sufficiently dry to remain in position when forced with a trowel or rammer. Care shall be taken to fill all voids and excess mortar shall be removed. All joints shall be made with care so that their interior surface is smooth and consistent with the interior surface of the pipes. After finishing, the joint shall be kept covered and damp for at least four days.

R. C. C. pipes shall be measured along their center between their inlet and outlet ends in linear meters.

The rate for the pipes shall include the cost of pipe including loading, unloading, handling, storing laying in position and joining complete. The rate shall be for a unit of one running meter.

Item No. 03: RCC - M-25 FOR ROAD

This work shall consist of controlled cement concrete M-25 and curing complete excluding the cost of reinforcement of reinforced concrete work in Road by Trimix method with Compaction and finishing of cement concrete road by trimix M-25 process providing extra labour charges for the trimix vacuums dewatering service process on cement concrete road surface by using vacuum dewatering pump floater surface vibrator including making grooves, and rough finish to surface including levelling etc. complete.

Tremix Process:

The specification of Trimix vacuumed dewatering system shall be carried out as follows.

Reinforcement shall be placed as directed and got checked from Engineer-in-charge before laying cement concrete, if specified. The position of the pipes for water and drainage shall be fixed before concrete work is started, so that they do not disturb the concrete work.

- A** Providing and fixing required side channels fixing in required line & level by true level to get required paneling and shuttering formwork.
- B** Screed vibrators: Providing and operating screed vibrator to get compacted concrete with perfect level as per guldens both side of channels.
- C** Vacuum dewatering in compacted level floor: After laying of concrete in line and level with full compaction excess water should be removed by vacuum dewatering system as per trimix method. Water is drawn out through auction pipe resulting in a dense concrete with a lower

water/cement ratio.

Power traveling: After perfect dewatering the surface shall be treated by power traveling to get perfect surface by filling all the voids in flooring, applying two to three times power floater to get hard and smooth surface. After getting smooth and perfect leveling top surface shall be treated by power traveling to get fine smoothing of the surface. Traveling shall be done in some required intervals to get smooth and hard surfacing.

Making Grooves:

Cement concrete pavement, the defective areas having surface irregularity exceeding 3 mm but not greater than 6 mm may be rectified by bump cutting or scrabbling or grinding using approved equipment. When required by the Engineer, areas which have been reduced in level by the above operation(s) shall be retextured in an approved manner either by cutting grooves (5 mm deep) or roughening the surface by hacking the surface. If high areas in excess 6mm or low area in excess of 3mm occur, exceeding the permitted numbers and if the Contractor cannot rectify, the slab shall be demolished and reconstructed at the Contractor's expense and in no case the area removed shall be less than the full width of the lane in which the irregularity occurs and full length of the slab.

If deemed necessary by the Engineer, any section of the slab which deviates from the specified levels and tolerances shall be demolished and reconstructed at the Contractor's expense.

Mode of Measurement & Payment:

The rate includes cost of all materials, labours, tools & plants required formwork, using vacuum dewatering machine, mechanical vibrator, mechanical floaters and mechanical trowel as directed. The rate shall include the cost of conveyance loading unloading and placing etc. complete as directed by engineer in-charge.

The contract unit rate shall be for one Cubic meter basis for complete item.

Item No. 04: PROVIDING, LAYING & PLACING OF H.Y.S.D BARS (TOR STEEL)

This work shall consist of furnishing and placing coated, or uncoated or high strength deformed reinforcement, bars (intentioned) of the shape and dimensions shown on the drawings and conforming to these specifications or as approved by the Engineer in charge.

4.1. T.M.T. Bars

Reinforcements may be either T.M.T. tensile steel, conforms to IS 1786-2008 bars. They may be uncoated or coated with epoxy or with approved protective coatings.

4.1.2. T.M.T. bars reinforcement for R.C.C. work shall conform IS 432 (Part II) 1982 (Reaffirmed 1995) and shall be of tested quality. It shall also comply with relevant part of IS 456-2000.

4.1.3. All reinforcement shall be clean and free from dirt, paint, grease or oil, all scale or loose or

thick rust at the time of placing.

- 4.1.4.** All steel shall be procured from original producers no re-rolled steel shall be incorporated in the work.
- 4.1.5.** Only new steel shall be delivered to the site every bar shall be inspected before placing to its position and defective brittle or burnt bar shall be discarded cracked ends of bars shall be discarded.

4.2 Pitch

Distance between bars shall be as specified in drawings and as directed by the Engineer in charge all bars shall be placed at an accurate distance from each other and shall be bind tightly to maintain the desired pitch Suitable means shall be provided for holding bars securely in position.

4.3. Binding wire

- 4.3.1** Mild steel binding wire shall be of 1.63 mm or 1.22 mm (16 to 18 gauge) diameter and shall conform IS 280-2006.
- 4.3.2** The use of black wire will be permitted for binding reinforcement bars. It shall be free from dirt, paint, grease or oil, oil scale or loose or thick rust and any other undesirable coating which may prevent adhesion of cement mortar at the time of binding.
- 4.3.3** Only new binding wire shall be delivered to the site all binding wire shall be inspected before binding to its position and defective brittle, rusted, used wire, shall be discarded.

4.4 PROTECTION OF REINFORCEMENT

- 4.4.1** Uncoated reinforcing steel shall be protected from rusting or chloride contamination. Reinforcements shall be free from rust, mortar, loose mill scale, grease, oil or paints. This may be ensured either by using reinforcement fresh from the factory or thoroughly cleaning all reinforcement to remove rust using any suitable method such as sand blasting, mechanical wire brushing, etc. as directed by the Engineer. Reinforcements shall be stored on bricks, racks or platforms and above the ground in a clean and dry condition and shall be suitably marked to facilitate inspection and identification.
- 4.4.2** Portions of uncoated reinforcing steel and dowels projecting from concrete shall be protected within one week after initial placing of concrete with a brush coat of neat cement mixed with water to a consistency, of thick paint. This coating shall be removed by lightly tapping with a hammer or other tool not more than one week before placing of the adjacent pour of concrete. Coated reinforcing steel shall be protected against damage to the coating. If the coating on the bars is damaged during transportation or handling and cannot be repaired, the same shall be rejected.

4.5 Workmanship

- 4.5.1.** The work shall consist of furnishing and placing reinforcement to the shape and dimensions shown as on the drawings or as directed by The Engineer in charge.
- 4.5.2.** Reinforcing steel shall conform accurate to the dimensions given in the bar bending

schedules shown on relevant drawing

4.6 BENDING OF REINFORCEMENT

4.6.1. Bar bending schedule shall be furnished by the Contractor and got approved by the Engineer before start of work.

4.6.2. Reinforcing steel shall conform to the dimensions and shapes given in the approved bar bending Schedules.

4.6.3. Bars shall be bent cold to the specified shape and dimensions or directed by the Engineer using a proper bar bender operated by hand power to obtain the correct radius of bends and shape.

Bars shall not be bent or straightened in a manner that will damage parent material or the coating bars bent during transport or handling shall, be straightened before being used on work and shall not be heated to facilitate straightening.

4.7 PLACING OF REINFORCEMENT

4.7.1. The reinforcement cage should generally be fabricated in the yard at ground level, and then shifted and placed in position. The reinforcement shall be placed strictly, in accordance with the drawings and shall be assembled in position, only when structure is otherwise ready for placing of concrete. Prolonged time gap, between assembling of reinforcements and casting of concrete, which may result in rust formation on the surface, shall not be permitted.

4.7.2. Reinforcement bars shall be placed accurately in position as shown on the drawings. The bars, crossing one another shall be tied together at every intersection with binding wire (annealed), conforming to IS:280 to make the skeleton of the reinforcement rigid such that the reinforcement does not get displaced during placing of concrete, or any other operation. The diameter of binding wire shall not be less than 1 mm.

4.7.3. Bars shall be kept in position usually by the following methods:

In case of beam and slab construction, industrially produced polymer cover blocks of thickness equal to the specified cover shall be placed between the bars and formwork subject to Satisfactory evidence that the polymer composition is not harmful to concrete and reinforcement. Cover blocks made of concrete may be permitted by the Engineer, provided they have the same strength and specification as those of the member.

4.7.4. In case of dowels for Columns and walls the vertical reinforcement shall be kept in position by means of timber templates with slots in them accurately, or with cover blocks tied to the reinforcement timber templates shall be removed after the concreting has progressed up to a level just below their location.

4.7.5. Layers of reinforcements shall be separated by spacer bars at approximately One meter intervals. The minimum diameter of spacer bars shall be 12 mm or: equal to maximum size of main reinforcement or maximum size of coarse aggregate, whichever is greater. Horizontal reinforcement shall not be, allowed to sag between supports.

4.7.6. Necessary stays, blocks, metal chairs, spacers, metal hangers supporting wires etc, or other subsidiary, reinforcement shall be provided to fix the reinforcements firmly in its correct position.

4.7.7. Use of pebbles, broken stone, metal pipe, brick, mortar or wooden blocks etc as devices for positioning reinforcement shall not be permitted.

4.7.8. Bars coated with epoxy or any other approved protective coating shall be placed on supports that do not damage the coating. Supports shall be installed in a manner such that planes of weakness are not created in hardened concrete. The coated reinforcing steel shall be held in place by use of plastic or plastic coated binding wires especially manufactured for the purpose.

4.7.9. Placing and fixing of reinforcement shall be inspected and approved by the Engineer before concrete is deposited.

4.8 Lapping

All reinforcement shall be furnished in full lengths as indicated on the drawing. No splicing of bars, except where shown on the drawing; will be permitted without approval of the Engineer. The lengths of the splice shall be as indicated on drawing or as approved by the Engineer. Where practicable, overlapping bars shall not touch each other, and shall be kept apart by 25 mm or 1 1/4 times the maximum size of coarse aggregate, whichever is greater, If this is not feasible, overlapping bars shall be bound with annealed steel binding wire, not less than 1 mm diameter and twisted tight in such a manner as to maintain minimum clear cover to the reinforcement from the concrete surface. Lapped splices shall be staggered or located at points, along the span where stresses are low.

For the purpose of payment, the bar shall be measured correct up to 10 mm length and weight payable works out at the rate specified below

Sr. No	Diameter of steel	weight of steel per running meter	Sr. No	Diameter of steel	weight of steel per running meter
1	8 mm	0.39 Kg / Rmt	9	22 mm	2.98 Kg / Rmt
2	10 mm	0.62 Kg / Rmt	10	25 mm	3.85 Kg / Rmt
3	12 mm	0.89 Kg / Rmt	11	28 mm	4.83 Kg / Rmt
4	16 mm	1.58 Kg / Rmt	13	36 mm	7.99 Kg / Rmt

Excess consumption over 5% will be charged at penal rate.

Reinforcement shall be measured in length including hooks, if any, separately for different diameters as actually used in work, excluding overlaps. From the length so measured, the weight of reinforcement shall be calculated in tonnes on the basis of IS: 1732. Wastage, overlaps, couplings, welded joints, spacer bars, chairs, stays, hangers and annealed steel wire or other methods for binding and placing shall not be measured and cost of these items shall be deemed to be included in the rates for reinforcement.

The contract unit rate for coated/uncoated reinforcement shall cover the cost of material, fabricating, transporting, storing, bending, placing, binding and fixing in position as shown on the drawings as per these specifications and as directed by the Engineer, including all labour, equipment, supplies, incidentals, sampling, testing and supervision.

The unit Rate for coated reinforcement shall be deemed to also include cost of all material, labour,

tools and plant, royalty, transportation and expertise required to carry out the work. The rate shall also cover sampling, testing and supervision required for the work.

The rate shall be for a unit of **one M.T.**

Item No. 05: P/F SHUTTERING

Providing form work of ordinary timber planking so as to give a rough finish including centering strutting etc. and removal of the same for in situ reinforced concrete and plain concrete work.

The shuttering to be provided shall be of ordinary timber plank.

The dimensions of scantlings and battens shall conform to the design. The strength of the wood shall not be less than that assumed in the design.

The form work shall conform to the shape lines and dimensions as shown on the plans and be constructed as to remain sufficiently rigid during the placing and compacting of the concrete. Adequate arrangements shall be made by the contractor to safe-guard against any settlement of the form-work during the course of concreting and after concreting. The form work of shuttering, centering, scaffolding, bracing etc. shall be as per design.

All rubbish, particularly chipping shaving and saw dust shall be removed from the interior of the form before the concrete work is placed and the-form in contact with concrete shall be cleaned and thoroughly wetted or treated. The surface shall be then coated with soap solution applied before concreting is done. Soap solution for the purpose shall be prepared by dissolving yellow soap in water to get consistency of paint.

Alternatively, a coat of raw linseed oil shall be applied after thoroughly cleaning the surface. Care shall be taken that the coating does not get on construction joint surface and reinforced bars.

Stripping time: In normal circumstances and where ordinary cement is used forms may be struck after 24 to 48 hours for road sides.

All form work shall be removed without such shock or vibrations as would damage the reinforced concrete surface.

The rate shall be for a unit of one sq. meter.

Item No. 06: CONSTRUCTION OF RCC CHAMBER/MANHOLE

The manholes of size as specified shall be constructed in sewer line at such places and to such levels and dimension as shown in drawings or as directed.

The manholes shall be built on a bed of cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 brick bats) (40 to 50 mm. nominal size) to the thickness of the bed concrete shall be 15 cms. for manhole up to 1.0 m depth.

Projection of bed concrete beyond the masonry wall shall be 15 cms.

The walls of manhole shall be carried out with burnt bricks using having bricks crushing strength not less than 35 kg/cm² in C.M. 1:5 (1 cement: 5 coarse sand). The thickness of brick masonry wall shall be 230 mm. The jointing face of such brick shall be well buttered with cement mortar before laying so as to ensure a full joint.

The inside of walls shall be plastered 15 mm. thick with C.M. 1:5 (1 cement: 5 coarse sand) and finished with floating coat of neat cement. All angles shall be rounded to 7.50 cms. radius and all

rendered internal surfaces shall have hard impervious finish obtained by using a steel trowel. The external joints of masonry shall be finished smooth.

Channels shall be semicircular in the bottom half and of diameter equal to the sewer. Above the horizontal diameter, the sides shall be extended vertically to the same level as the crown of the outgoing pipe and the top edge shall be suitably rounded off. The branch channels shall also be similarly constructed with respect to the benching but at their junction with the main channel an appropriate fall suitably rounded off in the direction of flow the main channel shall be given.

The channel and benching shall be done in C.C. 1:2:4 (1 cement: 2 coarse-sand: 4 graded stone aggregate 20 mm. nominal size) rising at a slope in line from edges of channel. The channels of the bottom of the chamber shall be plastered with C.M. 1:2 (1 cement: 2 coarse sand) and steel troweled smooth.

The cover slab of R.C.C. 1:2:4 (1 cement: 2 coarse sand: 4 graded stone aggregate 20 mm. nominal size) 15 cms. thick reinforced with 10 mm. bars at 15 cms. C/C both ways, surface and edges finished fair. Full bearing equal to the width of wall shall be given to the slab on all sides. The frame of manhole cover shall be embedded firmly in R.C.C. slab so that the top of the frame remains flush with the top of R.C.C. slab.

Testing:

- Manhole shall be tested by filling with water to a depth not exceeding 1.2 m as directed.
- After completion of work, manhole cover shall be sealed by means of thick grease.

Mode of measurements and payment

The depth of manholes shall be distance between the top of the manhole cover and the invert level of the main drain. The rate includes all labours, materials, tools, and plant etc. required for satisfactory completion of this item as directed above.

The rate shall be for a unit of the **One number**.

Item No. 07: PROVIDING AND LAYING 200mm diameter PVC pipe (Downtake pipe with support and clamping)

7.1. Materials

- 7.1.1.** The specified dia. of **U.P.V.C. Type B pipe conforming to IS 13592-1992 (I.S.I)** shall conform M-68.
- 7.1.2.** The fittings, clamps etc. required for specified dia. bore pipes shall be of best quality and makes as approved by the Engineer-in-charge. Necessary accessories with inner/ outer brass thread shall be used as required and instruction by Engineer in charge.

7.2. Workmanship

7.2.1. Cutting, Laying & Jointing

When the tubes are to be cut or rethreaded, the ends shall be carefully filed out so that no obstruction to bore is offered. The ends of the tubes shall then be threaded conforming to the requirements of I.S. 554-1955 with pipe dies and taps carefully in such a manner that it will not result in slackness of joints when the two pieces are screwed together.

The taps and dies shall be used only for straightening screw threads which have becoming bent or damaged and shall not be used for turning of the threads so as to make them slack as the latter procedure may not result in the water tight joint. The screw threads for tube and fitting shall be protected from edge until they are fitted.

In jointing the tubes, the inside of the socket and the screwed end of the tubes shall be oiled and smeared with white or red lead and wrapping around with a few turns of fine spun yarn round the screwed end of the tube. The end shall then be tightly screwed in the socket, tees, etc. with a pipe wrench. Care shall be taken that all times free from dust and dirt during fixing. But from the joints shall be removed after screwing. After laying the open ends of the pipes shall be temperately plugged to prevent access of water, soil, or any other foreign matter. Jointing shall be carried out with proper chemical adhesive material and allow to dry. Any threads exposed after jointing shall be painted or in the case of underground piping thickly coated with approved anti-corrosive paint to prevent corrosion.

7.2.2. Fixing concealed to wall, ceiling & floors.

In case of fixing **concealed cement point** to walls or ceilings, these shall run on the surface of the wall, or ceiling (not in chase) unless otherwise specified. The fixing shall be done by means of standard pattern, holder clamps keeping the pipes about 15 mm. clear of the wall. When it is found necessary to pattern, holder clamps keeping the pipes about 15 mm. clear of the wall. When it is found necessary to conceal the pipes and when specified so, chasing may be adopted or pipe fixed in ducts or recesses etc. provided that there is sufficient space to work on the pipe with usual tools. The pipe shall not ordinarily be buried in walls or solid floors, where unavoidable, pipe may be buried for short distances provided that adequate protection is given against damage and where so required joints are not buried. Where required M.S. tube sleeve shall be fixed at a place a pipe is passed through a wall or floor for expansion and contraction and other movements. In case the pipe is embedded in walls or floors, it should be painted with anti-corrosive bitumastic paint of approved quality. The pipe should not come in contact with lime mortar or lime concrete as the pipe is affected by lime. Under the floors, the pipe shall be laid in layer of sand filling.

- . All pipes and fittings shall be fixed truly vertical and horizontal unless unavoidable. The pipes shall be fixed to walls with standard pattern clamps of required size and shape, one end of which shall be properly plugged or cemented into walls with cement mortar 1:3 (1 cement : 3 coarse sand) and the other tightened round the pipes to hold it securely. These clamps shall be spaced at regular intervals in straight lengths at 2 MC/C interval in horizontal run and 2.5 m. interval in vertical run. For pipe of 15 mm. dia. up to 25 mm. dia the holes in the walls and floors shall be made by drilling with chisel or jumper and not by dismantling the brick work or concrete. However for bigger diameter pipes the holes shall be carefully made (1 cement : 3 coarse sand), and properly finished to match the adjacent surface.

7.2.3. Testing of joints :

After laying and jointing, the pipes and fillings shall be inspected under working conditions of pressure and flow. Any joints found leaky shall be redone, and all leaking pipes removed and replaced without extra cost.

The pipes and fittings after they are laid shall be tested to hydraulic pressure of 6 Kg./Sq cm. The pipe shall be slowly and carefully charged with water allowing all air to escape and avoiding all shocks and water hammer. The draw off takes and stop cock shall then be closed and specified hydraulic pressure shall be applied gradually. The pressure gauge must be accurate. The pipes and fittings shall be tested in sections as the work laying proceeds, keeping, the joints exposed for inspection during the testing.

7.3. Mode of measurements and payment

- 7.3.1.** The description of the item shall, unless otherwise stated be held to include where necessary conveyance and delivery, handling, unloading, storing fabrication, hoisting, all labour for finishing to required shape and size, setting, fitting in position straight, cutting and waste return of packing etc.
- 7.3.2.** The length shall be measured on **running meter** basis of finished work. The length shall be taken along the centre line of the pipe and fittings. The pipes fixed to wall, ceiling. floors etc shall be measured and paid under this item.
- 7.3.3.** All the work shall be measured in decimal system as fixed in its place, subject to tolerance given below unless otherwise stated.
- (i) Dimension shall be measured to the nearest 0.01 meter.
 - (ii) Area shall be worked out to the nearest 0.01 sq. meter.
- 7.3.4.** All measurements of cutting shall unless otherwise stated be held to include the consequent waste.
- 7.3.5.** In case of fitting of unequal bore, the targets bore shall be measured for the test.
- 7.3.6.** Testing of pipe lines fittings, and joints include for providing all plant appliances necessary for obtaining access to the work to be tested and carrying out the tests.
- 7.3.7.** The rate includes **U.P.V.C. Type B pipe** with screwed socket joints to gather with all fittings (such as bends, sockets springs, elbows, test, crosses, short pieces, clamps and plugs, unions etc.) and fixing complete with clamping wall hooks, wooden plug etc. and also curing, screwing and waste and for making forged (or hand made) bends on piping as required. Connector shall be inserted where required or directed. The rate also includes cutting through walls, floors etc. and their making good and painting exposed threads with anti-corrosive paint as above and testing where tubes are to be fixed to wall, ceiling and flooring, the rates shall not include painting of pipes, providing sleeves and sand filling under floor for which separate payment shall be made.
- 7.3.8.** The rate shall be for a unit of **one running meter**.

Item No. 08: PROVIDING EXPANSION JOINT

This work shall consist of providing and fixing 25mm thick expansion joint by hydro cell semi rigid UV resistance and dimensions shown on the drawings and conforming to these specifications or as approved by the Engineer in charge.

- 8.1.** Expansion joint shall be constructed according to the details shown on the drawings. The position of all bolts cast and holes drilled in plates shall be accurately determined from

templates.

- 8.2.** 50mm thick polyethylene fiber sheet provided in the expansion joints shall conform to the relevant IS specification and shall be accurately shaped to the section of concrete beam & slab. Positive methods shall be employed in placing the assemblies, to keep them in correct position during the placing of concrete. Care shall be taken to avoid impairment of the clearance in any manner. The material used for filling expansion joint shall be silicon sealant water proofing rubberized adhesive as specified on the drawings. It shall conform to the requirement of IS : 1838 & shall be got approved from the Engineer-in-charge. The joint filler shall consist of large pieces and assembly of small pieces to make up the required size shall be avoided.
- 8.3.** The expansion joints shall be measured in meters.
- 8.4.** The rate shall include the cost of all material, labour, equipment and other incidental charges for fixing the joints complete in all respects as shown on the drawings.

(B) CLOSURE WORK:

Item No. 01: PROVIDING & FILLING REGULATORY SOIL 300mm THICK

- The ground shall be excavated, levelled and graded as per approved drawings using mechanical equipment.
- Filling and compaction of Reinforced fill ($\phi \geq 30$)
- 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. 02: PROVIDING AND LAYING HDPE VENT PIPE: 150 mm diameter

A series of 150 mm diameter perforated HDPE pipes having capping with perforations as shown in drawing 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. Overburden pressure to be resisted by the pipe – 350 kPa

Item No. 03: AUGURING FOR VENT PIPE: 250 mm diameter

Auguring the Borehole in solid waste & fixing the HDPE vent as above (250mm Dia. & 5.0 Mtr. Deep). Augers shall be of helical or post hole type and manually operated. While boring care shall be taken to minimize the disturbance to the strata below the bottom of the borehole. The cuttings brought up by the auger shall be carefully. No water shall be used while auger boring.

Item No. 04: PROVINDING & LAYING OF GEO - TEXTILE 250 microns

Providing Nonwoven Geo-textile of polypropylene, staple fiber, needle punched geo-textiles with following specifications:

Sr. No.	Properties	Unit	Test Method	Values
1	Grab strength (MD/CD)	N	ASTMD 4632	860
2	Elongation at break (MD/CD)	%	ASTMD 4632	>60
3	Tensile strength (MD/CD)	kN/m	ASTMD 4595	14
4	Elongation at break (MD/CD)	%	ASTMD 4595	>50
5	Trap. Tear strength (MD/CD)	N	ASTMD 4533	300
6	Static puncture Strength (CBR)	N	ASTMD 6241	2600
7	Permeability Co-efficient	N	ASTMD 4491	0.24
8	Flow rate	l/m ² /s	ASTMD 4491	50
9	Opening Size 095	micron	ASTMD 4751	<75
10	Thickness (2kn.m)	mm	ASTMD 5199	1.8
11	Mass per unit area	g/m ²	ASTMD 5261	250
12	Roll dimension	m		5x100
13	UV resistance @500 hrs	% Strength retained	ASTMD 4355	70

Item No. 04a: PROVINDING & LAYING OF GEO - TEXTILE 500 microns

Providing Nonwoven Geo-textile of polypropylene, staple fiber, needle punched geo-textiles with following specifications:

Sr. No.	Properties	Unit	Test Method	Values
1	Grab strength (MD/CD)	N	ASTMD 4632	1750
2	Elongation at break (MD/CD)	%	ASTMD 4632	>60
3	Tensile strength (MD/CD)	kN/mtr	ASTMD 4595	28
4	Elongation at break (MD/CD)	%	ASTMD 4595	>50
5	Trap. Tear strength (MD/CD)	N	ASTMD 4533	650
6	Static puncture Strength (CBR)	N	ASTMD 6241	5275
7	Permeability Co-efficient	N	ASTMD 4491	0.18
8	Flow rate	l/m ² /s	ASTMD 4491	30
9	Opening Size 095	micron	ASTMD 4751	<75
10	Thickness (2kn.m)	mm	ASTMD 5199	3.2
11	Mass per unit area	g/m ²	ASTMD 5261	500
12	Roll dimension	m		5X50
13	UV resistance @500 hrs	% Strength retained	ASTMD 4355	70

Item No. 05: Laying of GCL

Providing Geo Synthetic Clay Liner with Geotextile 200 GSM cover of PP nonwoven Geotextile including bentonite (natural Sodium - Granules) of 4 Kg/m² (at 0% moisture content) with Montmorillonite content > 75%,
Tensile strength 10 KN/m²,
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. 06: LAYING AND JOINING OF 1.5mm THICK HDPE SHEET

This specification is for supply and laying the HDPE Liner at the base and on side slopes *of* the landfill over the compact clay liner. The HDPE liner shall meet the following minimum criteria:

- i. The thickness of the liner shall be 1.5 mm for primary & secondary liner.
- ii. The liner shall be one side textured.

The liner must have minimum specification as per following.

- a. Tensile Strength at yield > 18 KN/m
- b. Tensile Strength at Break > 30 KN/m
- c. Tear Resistance > 150 N
- d. Puncture Resistance > 250 N
- e. Be of uniform thickness, free from thin spots, cracks, tears, blisters, and foreign particles.

You shall consider the following points during the installation of HDPE liner:

Quality assurance and quality control procedures shall be followed to ensure proper handling *of* HDPE Liner.

The manufacturer's instructions outlining handling, storage, and construction specifications for the product need to be followed.

The sub-grade material should meet specified grading, moisture content, and density requirements.

Ensure that the construction equipment used to place the liner does not deform the underlying materials.

Perform acceptance and conformance testing on the HDPE liner received from the manufacturer to determine whether the material meets the specifications requested. Various available ASTM methods are to be used for testing thickness (**ASTM 0-5199**), tensile strength and elongation (**ASTM 0-638 for HDPE**), tear resistance (**ASTM 0-1004, Die C**). The testing shall be carried out in the laboratories

You shall take measures to protect HDPE liners from wind damage.

To ensure the integrity of the seam, the method recommended by the manufacturer is to be followed. Conditions that could affect seaming should be monitored and controlled during installation.

HDPE liner should be covered with a layer of soil or a geo-synthetic material as soon as possible after quality assurance activities associated with HDPE testing are completed.

Testing shall be carried out during construction to assess the integrity of seams connecting the HDPE panels.

You shall furnish warranties from manufacturer as well as for installation. The warranties shall cover manufacturing defects and HDPE deterioration due to ozone, UV and exposure to other elements. The installation warranties shall cover defects in materials and workmanship for a period of 2 years.

Manufacturer shall provide of HDPE their internal quality assurance program and qualification of CQA personnel along with the offer. The sampling procedure and the number of samples to be tested at field shall be provided along with the offer.

You shall provide details of delivery, storage and handling procedures so as to avoid any damages of the material during the process.

You shall prepare the surface to be lined so that it is free of irregularities, protrusions, vegetation, excessive water, loose soil or abrupt changes in grade. The supporting surface does not contain stones or other matter of such composition, shape or size which may be damaging to the HDPE and there are no excessively soft surface areas.

You shall provide proposed HDPE panel layout

SEAM LAYOUT

In general, seams shall orient parallel to the direction of maximum slope, i.e. oriented along, not across, the slope. In corners and odd-shaped geometric locations, the number of seams should be minimized. No horizontal seams should occur on a panel less than five feet from the toe of the slope. On slopes other than 10% (6L: 1 H), this rule shall not apply. A cross slope seam may be utilized provided the panel ends are cut at an angle of approximately 45°.

A seam is considered a separate entity if it is the principal attachment that joins two or more panels. Repairs are not considered seams in this context.

A numbering system using adjacent panel numbers shall used to identify each seam.

SEAM PREPARATION

The Welding Technician shall verify that prior to seaming the seam area is free of moisture, dust, dirt, sand, or debris of any nature; the seam is properly overlapped for welding, the seam is properly heat tacked and abraded with extrusion welding, and seams are performed to minimize "fish mouths".

The HDPE panels should deploy only when the environmental conditions are satisfactory for HDPE installation.

INSTALLATION

Deployment equipment does not damage the sub grade personnel who are in contact with the liner do not smoke, wear damaging shoes or engage in other activities, which risk damage to the liner.

Use of a low ground pressure, rubber-tyred all-terrain vehicle (i.e. ATV) is allowed on the HDPE surface, proper care is taken to avoid damage and excessive traffic.

Field panel placement installation sequence should take into account site drainage, wind direction, sub-grade surface, and access to the site, and production schedule of the project. HDPE panel deployment shall not proceed when adverse weather conditions exist which may jeopardize the integrity of the liner installation. Field panels should be seamed as soon as possible after deployment and all deployed material shall mark with appropriate identification.

VISUAL INSPECTION

The Engineer-in-Charge and the OA Technician and the designated Independent Inspector shall visually inspect each panel, as soon as possible after deployment for damage or areas needing repair. Areas shall mark for repair.

ANCHORING of GEOMEMBRANE

The anchor trenches shall be constructed by the Earthwork Contractor as per the lines, widths and depths as shown on the drawings and specifications. This task should perform prior to the HDPE deployment. The edges where the HDPE enters in trench should be free of irregularities, protrusions, etc. to avoid potential damage to the material.

Backfilling should occur when the HDPE material is at its most contracted state to avoid potential bridging problems. Care must be taken to avoid damaging the HDPE during backfilling.

Manufacturer is required to provide procedures for seaming of HDPE liners. The installer shall follow the same.

Every HDPE seam should be tested over 100 percent of its length. Any time a seaming operation begins, a sample should be cut for testing. A sample also should be taken any time a seaming operation is significantly modified.

TRIAL SEAMS (TRIAL WELDS)

Prior to production seaming, trial seams shall made and accepted using project specified criteria. Trial seams shall be made on appropriately sized pieces of identical or equivalent HDPE material to verify that seaming conditions and procedures are adequate. Each trial seam sample shall be assigned a number and the *test* results recorded in the appropriate log.

Trial seams shall be performed for each welder to be used and by each operator of extrusion welders,

and by the primary operator of each fusion welder.

A passing trial seam shall be made prior to the beginning of each seaming period. Typically, this is at the start of the day and after lunch break.

Fusion welded trial seam samples shall be done approximately six feet long by one foot wide with the seam centered lengthwise. For extrusion welder, the trial seam samples size shall be approximately three *feet* long, by one *foot* wide with the seam centered lengthwise.

Four specimens, each one-inch wide and six inches long shall be cut from the trial seam using a coupon cutter. Two of the specimens shall be tested in shear and two specimens tested for peel on a field tensiometer. When testing a fusion-welded seam, both inside and outside seams shall be tested. All shear and peel test specimens shall meet or exceed the project requirements.

PANEL SEAMS (PRODUCTION SEAMING)

Upon acceptance of the trial seams, work may begin on deployed panels. All seams shall be non-destructively and destructively tested. Each completed seam shall be labeled with pertinent information.

NON-DESTRUCTIVE SEAM TESTING

You shall non-destructively test field seams for their full length using an air pressure test or a vacuum test and furnish the results to Engineer-in-Charge. The purpose of non-destructive tests shall be to demonstrate the leak resistance of the seam.

You shall schedule all non-destructive testing operations in consultation with Engineer-in-Charge in order to ensure prompt demonstration of weld quality and the orderly progress of the project. The QA Technician shall instruct the testing personnel regarding marking of repairs needed, leaks and sign-off marks on seam and repairs.

VACUUM TESTING

Vacuum Testing shall be carried out in the following manner. The equipment shall consist of a vacuum box assembly with a vacuum gauge, a pumping device, and a soap solution.

You shall follow the following procedure:

Wet a section of the seam with the soap solution. The seam section must be longer than the vacuum box.

Place the vacuum box over the wetted area and apply body weight to form a seal between the gasket and the liner.

Evacuate air to create a negative pressure of approximately 5 psi.

Observe the seam through the viewing window for presence of soap bubbles emitting from the seam.

If no bubbles are observed, reposition the box on the next wetted area for testing with a slight overlap.

If bubbles are detected which indicates a leak in the seam, mark the area of the leak for repair and retest.

AIR PRESSURE TESTING

You shall perform air pressure testing and results submitted to Engineer-in-Charge on seams made by a double-seam fusion welding apparatus.

You shall use the equipment comprised of the following:

An air pump, or air tank, capable of producing a minimum air pressure of 30 psig in the seam channel.

A sharp hollow needle to insert air into the air channel of the seam.

A hot air gun or other heating device to seal the ends of the air channel.

You shall follow the following procedures:

Seal both ends of the air channel of the seam to be tested.

Insert the needle into the air chamber at either end of the seam to be tested. Pressurize the air channel to a minimum of 30 psig. Allow the pressure to stabilize and if necessary, re-pressurize to 30 psig and note the pressure.

With a minimum pressure of 30 psig stabilized in the air channel, the time of day shall be noted.

After approximately 5 minutes the air pressure should be read again.

If the difference between the two readings is more than 4 psig the seam needs to be retested. Upon completion of the test and recording all information required, open the opposite end of the seam from the needle. Escaping air will confirm that the entire length of the seam was pressurized and therefore tested. If air does not escape, the channel is blocked. The blockage must be located and the test redone from that point on.

Upon completion of the air pressure test, the seam shall be marked and points requiring repair identified.

Procedures followed after for Air Pressure Test Failure

Should the seam fail the air pressure test, the following procedure shall follow by us:

Reposition the apparatus and retest the same section

While the seam air-channel is under pressure, traverse the length of the seam and listen for the leak.

While the seam air-channel is under pressure, apply a soapy solution observe for bubbles formed by escaping air.

Re-test the seam in progressively smaller increments, until the area of leakage is identified.

Repair the identified leak area by extrusion welding the excess material at the edge of the seam and then vacuum test.

In areas where the air channel is closed and the integrity of the weld is not suspect, vacuum testing is

acceptable.

DESTRUCTIVE SEAM TESTING

Destructive seam tests shall be performed at selected locations. The purpose of these tests shall be to evaluate bonded seam strength. Seam strength testing shall perform as work progresses.

LOCATION AND FREQUENCY

The frequency of sample removal is commonly no more than one sample per 500 linear feet of seam. Size of Samples: A sample segment twelve inches by twelve inches shall be cut with the seam centered lengthwise. Additional segments may be cut for independent lab testing, archival retain or other uses.

Sample Identification: The segment shall be marked with the appropriate destructive sample (O/S) number.

FIELD TESTING

Sample shall be tested in peel and in shear using the following procedure: Tense specimens of one-inch width shall be cut with a coupon cutter from the segments with a machine press and die.

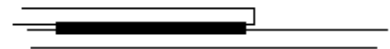
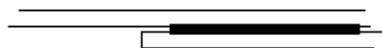
Five specimens shall be tested for peel. Fusion welds shall be tested from both sides.

Five specimens shall be tested for shear.

If specified, a field tensiometer will be supplied. Testing will occur at a rate of two inches per minute.

❖ **1.5mm HDPE Liner (Geomembrane)–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.

❖ **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

Item No. 07: PROVIDING & LAYING 300mm DRAINAGE MEDIA LAYER

The drainage media layer is placed over the Geo-textile to drain any leakage of water from vegetation layer. Material for High-Permeability Drainage Layer should meet the following specifications.

1. Drainage materials shall be placed on the liner system at grades indicated in the Drawing.
2. The drainage materials shall be granular material of 30 cm thickness with a hydraulic conductivity $> 1 \times 10^{-2}$ cm/sec. The tests for grain size analysis and permeability (SP-36, part 1) shall be carried out for selection of borrow area.
3. The material shall be rounded or sub-angular. Crushed stone or angular material shall not be used.
4. Recommended material should generally consist of particles that are round to sub-round, hard, durable, well-graded, coarse-grained material with a maximum particle size of 40 mm.

The material to be used in the drainage layer is laboratory tested prior to use. The drainage layer is field tested for the permeability and visual inspection for the presence of foreign and unwanted material.

Item No. 08: PROVIDING & LAYING VEGETATION SOIL (Brought from Outside)

A compacted earth layer of 600 mm thickness consisting of clay or murrum. The total compacted thickness is achieved in two lifts of 300 mm. The lift thickness of clay liner is maintained to about 350 to 400mm before compaction and 300 mm after compaction. After the soil is placed, a small amount of water is added to offset evaporative losses, and the soil is tilled one last time prior to compaction. The loose spread soil is inspected for presence of any foreign and unwanted material prior to compaction. In order to bond each lift of soil to the underlying and overlying lifts. The surface of a previously compacted lift is roughened so that the new and old lifts blend into one another. A track mounted vehicle or vibro-compactor is used for the spreading and compaction of the soil in given profile. Each compacted lift is tested for the compaction and moisture content.

Item No. 09: CONCRETING FOR RETAINING WALL AND DRAIN:

Same as Item No 03 of Road and Drain Work

Item No. 10: P/F SHUTTERING

Same as Item No 05 of Road and Drain Work

Item No. 11: PROVIDING, LAYING & PLACING OF H.Y.S.D BARS (TOR STEEL)

Same as Item No 04 of Road and Drain Work

1.1 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. Manufacturer of the concern material should provide "Manufacturers Test Certificate" and Quality Conformity Certificate.

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.

**SECTION – VI: CONSTRUCTION QUALITY ASSURANCE PLAN OF LANDFILL
Capping Work**

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

1) 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.

2) 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
- 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**

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

- Check for thickness
- Check the joints.

As given in specifications.

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% Retention Money 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.

SECTION – IX : GENERAL TERMS & CONDITIONS OF THE CONTRACT

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 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 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.

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.

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.
- 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 afford 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.

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 25th day of the reporting month and submitted to the Client/Consultant by end of the reporting month. All documents which are 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 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.
- 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.

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 or 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.
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.

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 is 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.

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.

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 sued or for the period for which they are needed.

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 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.

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 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 be involved. Unless the Client/Consultant is so 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 be 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

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.O 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.
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.

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 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 properly 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 create a hazard. The Owner/Consultant shall have the right to prohibit the use of such equipment or 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.

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.

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.

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" & "se.purchase1@vgelvapi.com" in excel format.
- d)** Please attach copy of cancelled cheque & PAN along with this form.

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 byCorporate Seal

Title

For and on behalf of the Employer

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:**
- a) Initial screening
 - b) Detailed screening

5.0 **Qualification Criteria:**

AA Class Contractor and Similar Work Executed

(a) Annual Turn Over

- i. Average Annual financial turnover during the last Four financial years i.e. from **2018-19, 2019-20, 2020-21 and 2021-22** updated to the current financial year shall be more than **Rs.533 Lakhs (x)**
- ii. 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:

- i. At least Three similar work having updated completion cost not less than Rs. 3.55 crores (40% of the amount put to tender of the proposed work) **OR**
- ii. At least Two similar work having updated completion cost not less than Rs. 4.44 crores (50% of the amount put to tender of the proposed work) **OR**
- iii. At least One similar work having updated completion cost not less than Rs. 7.11 crores (80% of the amount put to tender of the proposed work) **OR**
- iv. Such work must have been completed within last four financial years i.e. from **01/04/2018** till the due date of bid for the proposed work.
- v. A work would qualify as similar work only if it meets with definitions given in Appendix-A
- vi. For updating completion cost of the work to the current financial year, procedure narrated in **5(a) ii** shall mutatis mutandis apply.

[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 four financial years i.e. from **2018-19, 2019-20, 2020-21 and 2021-22**

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 / equipment 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 undertaking 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
 - m. RPFC 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.

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)	2021-22	1.0
-1	2020-21	1.1
-2	2019-20	1.21
-3	2018-19	1.33
-4	2017-18	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.

Chief Executive Officer
Vapi Green Enviro Limited

APPENDIX – A

Definition of similar work:

Bidder should have experience for construction of Capping Work 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

STRUCTURE AND ORGANISATION

1. Name of the Company :
Address :

Telephone No. :
Telex No. :
Email Address:.
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.*

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 2021-22	One year before i.e. 2020-21	Two year before i.e. 2019-20	Three year before i.e. 2018-19
Home				
Abroad				

7. Net profit tax
 - (a) Current period (2022-23) :
 - (b) During the last financial year (2021-22) :
 - (c) During the course of the Three financial years previous to last financial years i.e. (2018-19 to 2020-21) :

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 | | |
| (b) | Bank Credits | : | Rs. |
| (c) | Other (specify) | : | Rs. |
| | | : | 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)

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.	

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.*

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 furnish 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 arbitration	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
-------	----------------------------------	---	---------------------------

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.

Bill of Quantity and Price Bid

(A) Price Bid and Bill Of Quantity FOR CAPPING WORK`					
Sr.No.	Description of Item	Qty.	unit	Rate (Rs)	Amount (Rs)
1	PROVIDING & FILLING REGULATORY SOIL 300mm THICK	1259	cu.m		
	Providing & Filling Regulatory Soil layer as per required grading 300 mm thickness. (Sand Layer) with Slope as shown in drawing/ directed by engineer in-charge including wastage / overlapping etc as per IS Code.				
2	PROVIDING AND LAYING HDPE VENT PIPE- 150 mm DIA	342	m.		
	P/L HDPE pipe 150mm Dia.- 6 Kg/cm ² with required leak proof joints with liner system and pipe capping with perforations as shown in drawing or directed by engineer in-charge including wastage / overlapping etc as per IS Code.				
3	250 mm DIA AUGURING FOR VENT PIPE	190	m.		
	Auguring the Borehole in solid waste & fixing the HDPE vent as above (250mm Dia. & 5.0 Mtr. Deep) filling the gap between pipe & waste with gravel and linner as shown in drawing/ directed by engineer in-charge.				
4	PROVINDING & LAYING OF GEO - TEXTILE 250 micron	41938	sq.m.		
	Providing & Laying of geo textile (250 GSM non-Woven) on vent media/HDPE Sheet/Drainage media. This including, cutting and stitching of the joint with stitching machine. This includes all consumables require to carry out the activity, Do in Slope as shown in drawing/ directed by engineer in-charge including wastage / overlapping etc as per IS Code.				
4a	PROVINDING & LAYING OF 500 micron GEO – TEXTILE	41938	sq.m.		
	Providing & Laying of geo textile 500 GSM Non-woven on vent media/HDPE Sheet/Drainage media. This including, cutting and stitching of the joint with stitching machine. This includes all consumables require to carry out the activity, Do in Slope as shown in drawing/ directed by engineer in-charge including wastage / overlapping etc as per IS Code.				

5	LAYING OF GCL	41938	sq.m.		
	Providing & Laying of Geosynthetic Clay Liners including the rate of materials, installation, Laying Wastage, Overlapping and trenching for anchoring etc all Complete.				
6	LAYING AND JOINING OF 1.5mm THICK HDPE SHEET	41938	sq.m.		
	Laying and joining of 1.5mm thick HDPE sheet with proper double wedge welding and rectify the punctures if any by Extrusion Welding, giving proper testing of the seams and joints as per standard practice in presence of site in charge. Do in Slope as shown in drawing/ directed by engineer in-charge including wastage / overlapping etc as per IS Code.				
7	PROVIDING AND LAYING 300mm DRAINAGE MEDIA LAYER (GRAVEL)	12582	cu.m		
	Providing and laying gravel of 20 to 40mm size as a drainage media ($K > 10^{-2}$ cm/sec) as required grading and thickness as shown in drawing / Directed by engineer in-charge including wastage / overlapping etc as per IS Code.				
8	Providing and laying Vegetation soil (brought from out-side)	25163	cu.m		
	Providing and laying Vegetation soil brought from outside in layer 600mm and compacting using compactor till 95% proctor compaction test in slope as shown in drawing/ directed by by engineer in-charge including wastage / overlapping etc as per IS Code. During laying of soil ensure that any of liner system is not damaged.				
9	CONCRETING For Retaining Wall and Drain				
	Providing and laying in position machine mixed and machine vibrated reinforced cement concrete of different grades for reinforced cement concrete as per structural design and as per IS 456 -2000 using 20 mm or as specified size of black trap aggregates, using mechanically washing of sand with water including design of concrete mixes, weigh batched proportioning, necessary lift and lead as specified finishing concrete surfaces, curing etc. complete excluding shuttering. The conversion of weigh batched proportion to the volumetric one, if desired by the contractor, should be got approved from engineer before execution drain at all levels.				
a	P/L Mix M25	362	cu.m		
b	P/L Mix M10	86	cu.m		

10	P/F SHUTTERING	3969	sq.m		
	P/F shuttering at all levels, the material to be used for shuttering should be of ply wood. The shuttering should be cleaned and apply LDO before binding of reinforcement. The shuttering should be removed after proper setting and approval of site in charge. The nails and binding wires required for shuttering is in contractor scope.				
11	Providing, Laying and Placing of H.Y.S.D Bar (Tor steel)	25.30	MT		
	Providing and Laying H.Y.S.D. bar (Tor Steel) reinforcement for R.C.C. work including bending, binding & placing in position, wastage, overlapping etc. complete. Before placing reinforcement in position cement slurry should be applied by brush such that whole surface area of reinforcement is covered Quoted rates are inclusive of following activities A) Removing rust, scales, oil grease, paints etc. B) Wastage due to cutting bars to required lengths D) Providing concrete blocks to steel. E) No payment shall be paid for chairs, spacer pins, additional laps etc. F) No wastage shall be paid and payment shall be made on actual length as per standard weight basis. G) Steel is free issue item H) The reinforcement should be stake properly and covered with tarpaulin.				
12	Providing and laying of drainage 250mm dia HDPE pipe	95	m.		
	P/L HDPE pipe 250mm Dia.- 6 Kg/cm ² with required leakproof jointing as shown in drawing/ directed by engineer in-charge including wastage / overlapping etc as per IS Code.				
(A) Total Amount for CAPPING WORK Excluding GST In INR					

(B) PRICE BID AND BOQ FOR ROAD WORK AND DRAIN WORK					
Sr.No.	Description of Item	Qty.	Unit	Rate (Rs)	Amount (Rs)
1	Providing and Laying GSB	1414.50	cu.m		
	Sub base course of GSB layer machine crushed black trap including wastage as per IS Code. (MORTH Specification section 401) (Table 400-I Gade-I to Grade-IV of MORTH Specification Rev. V).				
2	Providing and Laying NP3 Hume pipe 300mm Dia	248.00	M		
	Providing & Laying 300mm dia. RCC NP3 class pipe line comprising of. (excluding cost of excavation & Refilling the trenches) R C C NP3 class pipe confirming to IS 458. Filling the joints of pipe line with C.M 1:1 joint as directed confirming to relevant standard. curing to the all cement incorporated works as per the relevant standards including wastage / overlapping etc as per IS Code.				
3	RCC - M-25 FOR ROAD	828.00	cu.m		
	Providing & laying design mix cement concrete for Road - M 25 This includes trimix flooring by using dewater pump and making broom marking of 150 mm wide keeping 150 mm gap between two broom mark etc. including machine mixing, ramming consolidating & curing etc. complete at all level rate. Rate inclusive of plain steel bar of 16mm dia at 200mm C/C with PVC 600mm one side embedment length. pipe enclosed at one side at expansion and contraction joints, as shown in drawing/ Directed by engineer in-charge as per MORTH specification				
4	Providing, Laying and Placing of H.Y.S.D Bar (Tor steel)	18.22	MT		
	Providing and Laying H.Y.S.D. bar (Tor Steel) reinforcement for R.C.C. work including bending, binding & placing in position etc. complete. Before placing reinforcement in position cement slurry should be applied by brush such that whole surface area of reinforcement is covered Quoted rates are inclusive of following activities : A) Removing rust, scales, oil grease, paints etc. B) Wastage due to cutting bars to required lengths D) Providing concrete blocks to steel. E) No payment shall be paid for chairs, spacer pins, additional laps etc. F) No wastage shall be paid and payment shall be made on actual length as per standard weight basis. G) Steel is free issue item H) The reinforcement should be stake properly and coverd with tarpaulin				
5	P/F SHUTTERING	828.00	sq.m		

	P/F shuttering at all levels, the material to be used for shuttering should be of ply wood . The shuttering should be cleaned and apply LDO before binding of reinforcement. The shuttering should be removed after proper setting and approval of site in charge. The nails and binding wires required for shuttering is in contractor scope.				
6	Providing and construction of RCC Chamber/ manhole	31	Nos		
	Providing and making RCC Rectangular inspection chamber or Manhole inside size 900mmx1200mm comprising of Excavation & refilling the trenches in all sorts of soil with proper compaction. Base PCC 1:4:8, 100mm thick. Brick masonry 150mm thick in M25 inside full plaster 20mm thick in C.M 1:4. making channel of CC 1:2:4 at bottom of inside manhole with neat cement finishing as mentioned in drawing. C.I pvc coated steps in the manhole having depth more than 750mm. Top slab of RCC M 20 having 150mm thick.Shuttering and concreting is included in this item.				
7	Providing and laying 200mm dia PVC pipe Downtake pipe with support and clamping	620	M		
8	Providing expansion joint	78	M		
	Providing compressible synthetic filler board of approved make of thickness 20 - 25mm in expansion joint and seal it with approved make sealent (minumum depth 20mm) as shown in drawing / directed by engineer incharge including wastage / overlapping etc as per IS Code.				
(B) Total for ROAD WORK AND DRAIN WORK Excluding GST in INR					

(C) BOQ FOR MISCELLANEOUS WORK					
Sr.No.	Description of Item	Qty.	unit	Rate (Rs)	Amount (Rs)
1	WATER TANKER	100	No		
	Providing tractor with tanker of 25.0 m ³ capacity with driver.Water to be fill from available source in company premises loading of tanker and spreading of water is in contractor scope.				
2	SUPPLY OF TRACTOR	60	Day(8 Hrs)		
	Supply of tractor with trolly and drivers. This includes all consumables to run the tractor. (8 hour working + 1 hour lunch break)				
3	SUPPLY OF J C B	100	Hr.		

	Supply of J C B with driver. This includes all consumables to run the J C B.				
4	RCC DISMENTALING	10	M3		
	Dismental of RCC including removal of debris as per the direction and stacking of valuable material as per requirement of site incharge. The dismentaling work should be carried out such that existing structure should not damage nor obstruct existing vehicle or man movment				
5	Supply of Mason	100	Day(8 Hrs)		
	Providing mason with required tools and tackles and necessary supervision (8 hour working + 1 hour lunch break)				
6	Supply of Labour	100	Day(8 Hrs)		
	Providing mason with required tools and tackles and necessary supervision (8 hour working + 1 hour lunch break)				
(C) Total FOR MISCELLANEOUS WORK Excluding GST in INR					

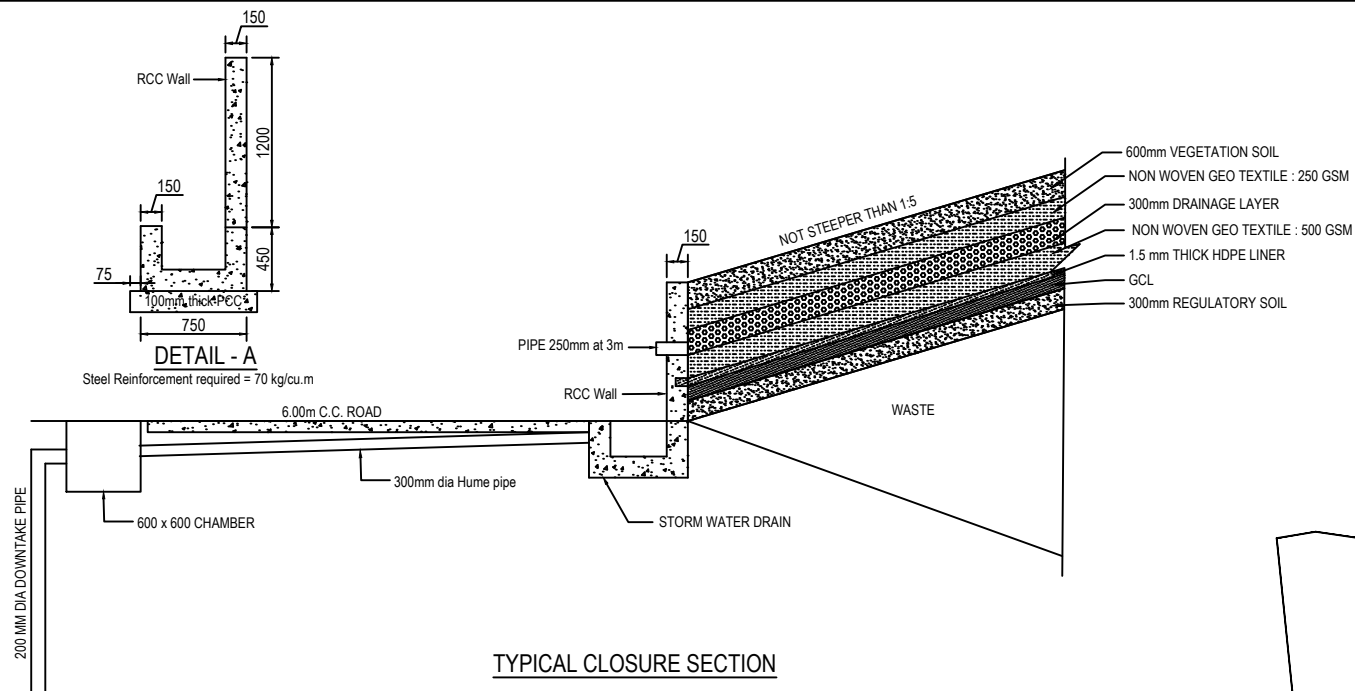
Sr. No.	Description	Amount in INR
A	Total Amount for CAPPING WORK Excluding GST In INR	
B	Total for ROAD AND DRAIN WORK Excluding GST in INR	
C	Total for MISCELLANEOUS WORK Excluding GST in INR	
	Total Basic Amount Rs.	

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,

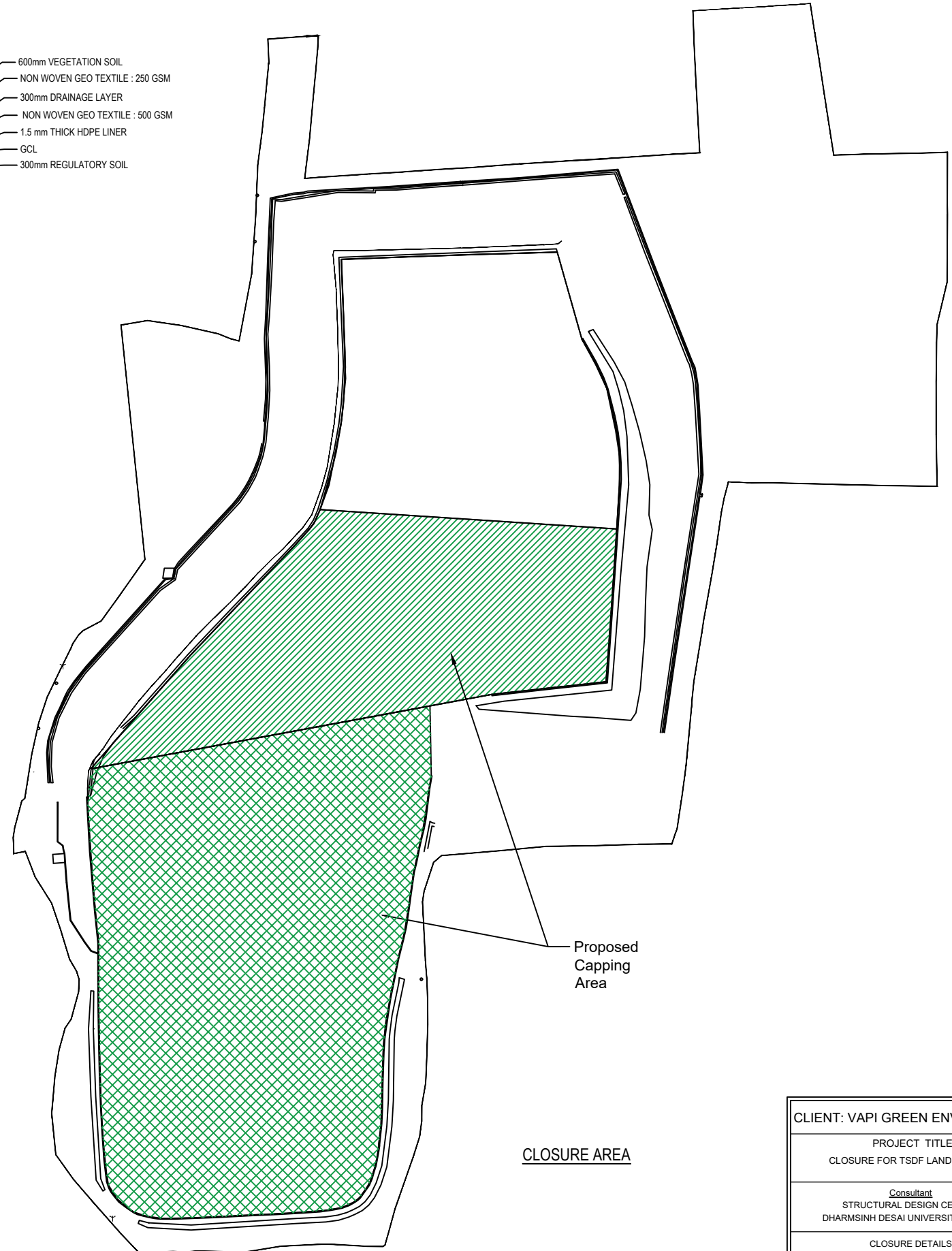
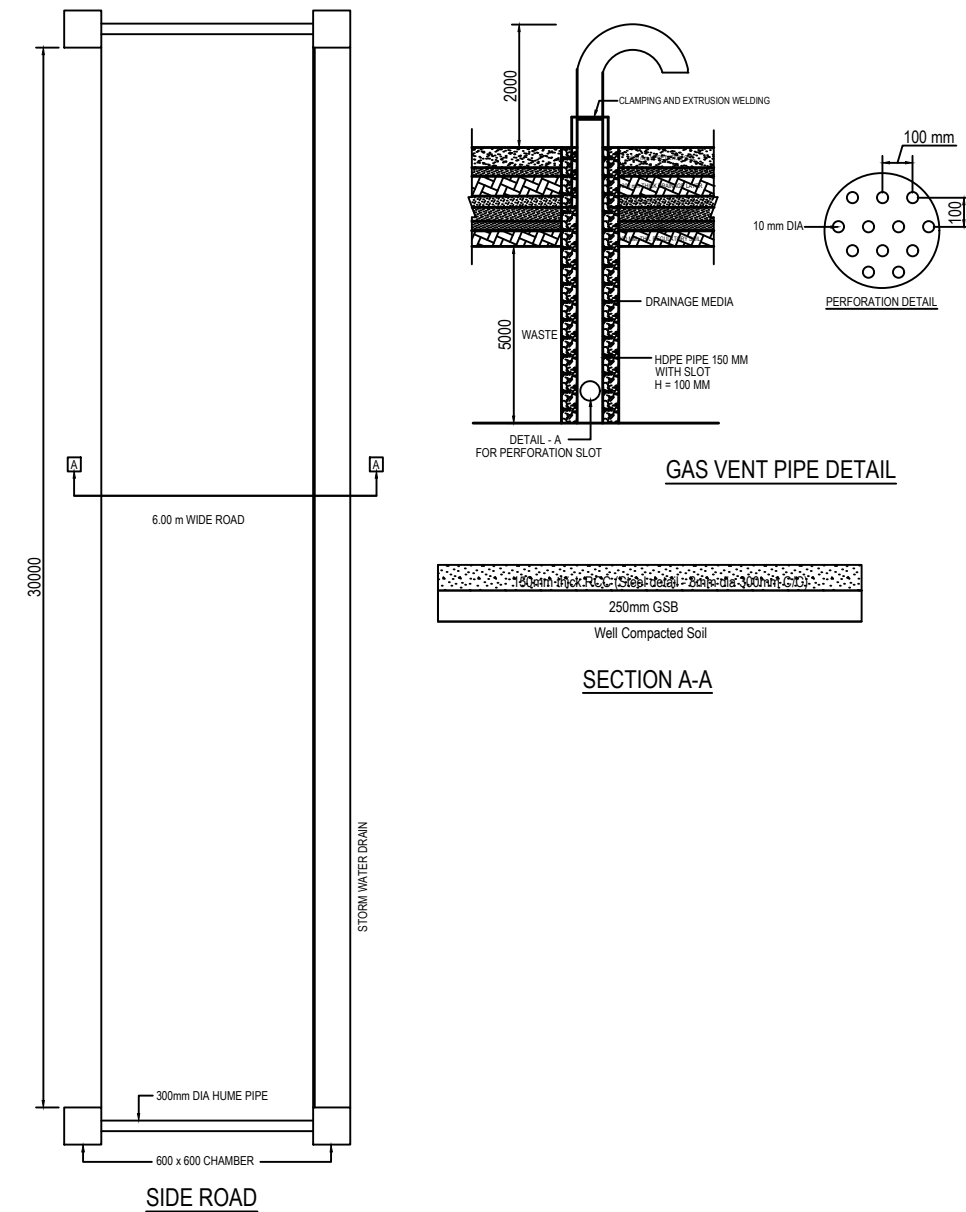
(2) Bidder has to fill rates in above prescribed format only. No change shall be allowed in our signed documents. If any bidder has changed any word or language or figure or quantity, the bids shall be directly rejected. No argument shall be considered on this regard,

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



TYPICAL CLOSURE SECTION

NOTE: All dimensions are in 'mm' if not specified



CLIENT: VAPI GREEN ENVIRO LTD.		
PROJECT TITLE: CLOSURE FOR TSDF LANDFILL SITE		
Consultant STRUCTURAL DESIGN CENTER, DHARMSINH DESAI UNIVERSITY, NADIAD		
CLOSURE DETAILS		
DESIGN : MDS	SCALE : N.T.S	DRAWING NUMBER: S1
CHECK : RKS	DT. 26-09-2022	