

Using online e-Tendering system of: MKCL SUGARMART (HTTPS://SUGARMART.SETS.CO.IN/)
Unit Name : VASANTDADA SUGAR INSTITUTE
Kindly go through the details, In case of any problems/ issues related to the reported data email to purchase@vsisugar.org.in

TENDER DETAILS	
Tender Code	2153
Mode	Quantity Contract
Is Over All	Yes
Tender Type	Open
Tender Category Type	JOBWORK
Section	VSI
Type Of Bid	Two Bid
Material Description	Construction of Foundation for Digesters in Bio Digester Demo plant at Manjari. Qty 1 Job
Estimated Cost [In Rupees]	595916.0
Estimated Cost In Words	five lakh ninety five thousand nine hundred sixteen Rupees
Submission Date	Monday, August 10, 2026 11:59:00 PM
Tender Validity	120 Days
Delivery Period	90 Days
Tender Document Fees [In INR]	590.0
Tender Document Fees In Words	five hundred ninety Rupees
Sugarmart Fees [In INR]	590.0
Sugarmart Fees In Words	five hundred ninety Rupees
Contact Email Id	purchase@vsisugar.org.in
Commencement Period	8 days from 'First order'
Basis Of Prices	Firm Price
Sample Required	Not Required
Deviation	No
EMD [In Rupees]	6000
EMD In Words	six thousand Rupees
BID OPENING DETAILS	
TECHNICAL BID	Will be declared later
PRICE BID	Will be declared later

TENDER DOCUMENTS
Total Number of documents : 1



**VASANTDADA SUGAR INSTITUTE
MANJARI (BK), TAL. HAVELI, DIST. PUNE**

Tender : Civil Work

TENDER DOCUMENT FOR

**Construction of Foundation for Digesters in Bio Digester Demo plant
at Manjari.**

BY

CIVIL ENGINEERING SECTION

VASANTDADA SUGAR INSTITUTE

MANJARI (BK), TAL. – HAVELI, DIST. – PUNE

2026 – 27

Telephone: - (020) 26902316, 26902286, 26902191

INDEX

1. Volume I Tender Notice and Form	003
2. Volume II General and Special Conditions of Contract.....	009
3. Volume III Technical Specifications	099
4. Scope of contract	140
5. Measurement Criteria	141
6. Approved Makes.....	147
7. Special Attention of contractor for Execution	151
8. Specification of materials.....	152
9. General Conditions of Tender.....	153
10. Bill Of Quantities (BOQ).....	154
11. Layout Drawings.....	156



**VASANTDADA SUGAR INSTITUTE
MANJARI (BK), TAL. HAVELI, DIST. PUNE**

Tender : Civil Work

TENDER DOCUMENT FOR

**Construction of Foundation for Digesters in Bio Digester Demo plant
at Manjari**

TECHNICAL BID: VOLUME I

BY

CIVIL ENGINEERING SECTION

VASANTDADA SUGAR INSTITUTE

MANJARI (BK), TAL. – HAVELI, DIST. – PUNE

Telephone: - (020) 26902316, 26902286, 26902191

2026 – 27

VOLUME I: TECHNICAL BID

CONTENTS	PAGE NO.
INDEX	
Index	4
Notice Inviting Tender	5
Form Of Tender	6
Appendix	7

NOTICE INVITING TENDER

e - TENDER NOTICE

Sealed tenders in prescribed e-Tender Document forms are invited for **Construction of Foundation for Digesters in Bio Digester Demo plant at Manjari** from the reputed / registered Government/PWD Civil contractors of **class- vii** and above or having bid capacity equivalent amount of work can apply for tender which is on percentage basis.

A) Terms & Conditions:

- 1) The **Tender form** can be obtained from MKCL website <https://sugarmart.sets.co.in> on payment of **Rs. 500.00 +GST (Non-refundable)** from **02/08/2026 to 10/08/2026**
- 2) Pre Bid Meeting will be held on **07/08/2026 (15 Hrs.)** at VSI office
- 3) Last Date of submission of tender is **10/08/2026**
- 4) Tender form fees not refundable
- 5) Vasantdada Sugar Institute should not pay any kind of interest on tender deposited or EMD Amount.
- 6) **Earnest Money Deposit of Rs. 6,000.00** will have to be deposited in the Form of RTGS/ NEFT payable at Bank of Baroda Branch Hadapsar drawn in favor of Vasantdada Sugar Institute”.

- B)** The Sealed Tender should be submitted to the MKCL Website <https://sugarmart.sets.co.in>. Within the period as mentioned above.
- C)** Negotiation will be carried out with lowest Tender only.
- D)** Tender to be submitted in three separate envelopes clearly indicating the name of the job.
Envelop no.1 – should content technical bid along with general terms, declaration & agreement.
Envelop no.2- should content price bid with declaration.
Envelop no.3- for EMD.

- E)** Individually sealed tender Envelop should be mention in bold letters as technical bid, commercial bid & EMD respectively the company name with address telephone no. etc. should be written it and should reach purchase offices on or before in stipulated time

F) Contractor have to submitted following documents

- i) Completion certificate of at least two similar type of works of same magnitude during last two years.
- ii) Bank Solvency Certificate of **Rs.5.0 lakhs**.
- iii) Income Tax return for last three years.
- iv) Company profile. **(Registration with Class VII)**
- v) GST Registration certificate
- vi) PAN card copy.
- vii) List of machinery
- viii) List of technical staff

- G)** Tenders with any deviation in technical specification or incomplete tenders and tender without or insufficient EMD and reference will be rejected.
- H)** Purchaser will not be responsible for the late receipt of tender after due date and time of closing on account of any reason or postal /courier or man reach delay.
- I)** The tenderer will have to submit the sealed tender as per the tender document only signing each and every page of tender document with company rubber stamp and duly filled in wherever applicable after submitting Final Price bid online & taking print.
- J)** Director General, Vasantdada Sugar Institute reserves the right to accept or reject the tender without any reason thereof.

This tender notice shall form part of the contract.

Director General
Vasantdada Sugar Institute

FORM OF TENDER

Director General
Vasantdada Sugar Institute
Manjari, Pune

Dear Sir,

Having examined the conditions of contract, specifications, tender drawings and bill of quantities relating to the works specified in the memorandum hereinafter set out and having examined the site of the works specified and having acquired the requisite information relating thereto as affecting the tender, I/We hereby offer to execute the works specified, within the time specified & at the rates mentioned in the attached bill of quantities and in accordance in all respects with the specifications, designs, drawings and instructions in writing referred to in volume 1, 2, 3, tender drawings & bill of quantities of the said memorandum.

Should this tender be accepted, I/We hereby agree to abide by and fulfill the terms and provision of the said Conditions of Contract annexed here to so far as they may be applicable or in default thereof to forfeit and pay to Vasantdada Sugar Institute the amount mentioned in the said conditions.

I/We have deposited Earnest Money Deposit in the form of Demand Draft drawn in favor of Vasantdada Sugar Institute as specified in appendix. Should I/We fail to execute the contract when called upon to do so, I/We do hereby agree that this sum shall be forfeited by Vasantdada Sugar Institute.

All information and documents as required to be submitted as per Information and Instructions to Bidders are enclosed.

Our bankers are: (With full address):

- 1.
- 2.

The names of partners of our firm are:

- 1.

Names of the partner of the firm authorized to sign

OR

Name of person having power of Attorney to sign the contract (Certified true copy of the Power of Attorney should be attached)

Yours faithfully,

Signature of Contractor

(Signatures of addresses of witnesses)

(i)

(ii)

APPENDIX:

1. Date of commencement of work at site	8 days after issue of LOI (Letter of intent)
2. Date of completion of work at site	The work is to be completed within (03 months) from the date of issue of the work order / PO
3. Earnest Money Deposit (EMD) by DD only	Rs. 6,000.00 (Rupees Six thousand only) & to be converted to Security Deposit
4. Performance Security Deposit	1% of the contract value (Including EMD).
5. Mobilization Advance	NA
6. Value of works for interim payment	Minimum 25 % of contract value
7. Period for honoring certificates for interim payment by the employer	15 days (after receipt of certificates of payment from the Architect / Civil Engineer from VSI)
8. Tax Deduction at Source (TDS)	TDS at the prevailing rates will be deducted from every payment
9. E S I C	ESIC at the prevailing rates on the labour component of the total bill amount will be deducted. Complete break up of Material & labour will have to be mentioned separately in the bill.
10. Permanent Account Number (PAN)	Quoting the PAN on every bill is mandatory.
11. E S I C registration No	Quoting the ESIC registration no on every bill is mandatory.
12. Provident Fund registration No.	Quoting the Provident Fund registration no on every bill is mandatory.
13. Processing of the bills	The processing of bills will depend upon meeting the above mentioned requisite.
14. Final bill	Within 30 days after completion of project & as per completion certificate issued by Architect.

15. Liquidated Damages	(1%) of the contract value per week of delay or part there of subject to maximum of 10% of the contract price.
16. Defects liability period	12 months
17. Retention money	5% of value of the tendered cost. 4% will be deducted from R.A. Bills, 50% will be refunded after virtual completion certificate & balance after defect liability period. (The completion certificate should be obtained by the Contractor from the Architect / Civil Engineer from VSI)
18. Parallel sales	All the parallel sales will have to be mentioned in the bill, if any.
19. Sales Tax Registration No.	All the suppliers / contractors dealing in parallel sale or manufacture of material will also have to quote their Sales Tax Registration Nos.
20. GST Registration no.	All the suppliers / contractors dealing in parallel sale or manufacture of material will also have to quote their GST Registration Nos.
21. Good for Construction (GFC) Drawings	Four sets of GFCs will be issued to the appointed Contractor. Every additional print will be charged extra.

We agree to the terms incorporated in the above Appendix

Signature of Contractor(s)

Date



**VASANTDADA SUGAR INSTITUTE
MANJARI (BK), TAL. HAVELI, DIST. PUNE**

Tender : Civil Work

TENDER DOCUMENT FOR

**Construction of Foundation for Digesters in Bio Digester Demo plant
at Manjari**

TECHNICAL BID: VOLUME II

BY

CIVIL ENGINEERING SECTION

VASANTDADA SUGAR INSTITUTE

MANJARI (BK), TAL. – HAVELI, DIST. – PUNE

Telephone: - (020) 26902316, 26902286, 26902191

2026 – 27

VOLUME II: TECHNICAL BID

SR. NO.	CONTENTS	PAGE NO.
INDEX		
1.	Instructions to Bidders	11
2.	General Conditions of Contract	14
3.	Special Conditions of Contract	41
4.	Performance of Work	45
5.	Procedure for measurement / billing of work in progress	53
6.	Taxes and insurance	55
7.	Labour & Labour laws	59
8.	Safety regulations and codes	61
9.	Article of Agreement Format	77
10.	Indemnity Bond Format	80
11.	Bank Guarantee Format	81
12.	Fixed Price Construction Agreement	84
13.	Performance Bond	85
14.	Performance of Bank Guarantee for Advance Payment	87
15.	Annexure 1 to 10	88 to 98

INFORMATION AND INSTRUCTIONS TO BIDDERS

1. The brief description of work to be carried out and its scope are given in the General & Special Conditions of Contract and Technical Specification of these documents. The Bidders are advised to visit the site and study all documents/drawings carefully before tendering and they shall be deemed to have fully acquainted themselves with the same.
2. The Bidder must obtain for himself on his own responsibility and at his own expenses all the information which may be necessary for the purpose of making a tender and for entering into a contract and must examine the Drawings and must inspect the site of the work and acquaint himself with all local conditions, means of access to the work, nature of the work and all matters pertaining thereto.
3. Access to the Site will be given during the Tender period by appointment on application to VSI / Architect the Bidder shall ascertain the location, size and condition of the areas available for his use as working areas and all other information affecting this Tender.
4. Vasantdada Sugar Institute will not be responsible and will not reimburse any expenses which may be incurred or losses to person or property suffered by any Bidder in connection with visits to and examination of the site and in the preparation of his tender for submission.
5. The Bidders shall indemnify and keep indemnified Vasantdada Sugar Institute all the time from and against all claims, losses and damages which may be suffered by Vasantdada Sugar Institute or any person employed by **Vasantdada Sugar Institute** in pursuance of visits to and examination of the site and in the preparation of tender for submission by the Bidders.
6. The Bidders should note that information, if any, as regards to the site and local conditions, as contained in these tender documents has been given merely to assist the Bidder and is not deemed to be complete.
7. The Bidder should note and bear in mind that Vasantdada Sugar Institute shall bear no responsibility for the lack of acquaintance of the site and other conditions or any information relating thereto, on their part. The consequences of the lack of any knowledge, as aforesaid, on the part of the Bidder shall be at their risk and cost and no charges or claims whatsoever consequent upon the lack of any information, knowledge or understanding shall be entertained or payable by Vasantdada Sugar Institute either during tender stage or during execution.
8. The rates quoted in the tender shall include all charges for clearing of site before commencement as well as after completion, scaffolding, equipment, storage sheds, watching by night as well as day including Sundays and Holidays, protection of the public and safety of adjacent roads, walls, houses, buildings and all other erections, matters or things and the Contractor shall take down and remove any or all such scaffolding, etc., as occasion shall require or when ordered so to do, fully reinstate and make good all matters and things disturbed during the execution of work and to the satisfaction of Vasantdada Sugar Institute / Architect. The rates quoted shall be deemed to be for the finished work. **The rates shall also be firm and shall not be subject to Octroi, LBT, local taxes, railway freights or any other conditions whatsoever. Bidders must include in their rates, VAT, sales tax, excise duty, octroi, LBT, works contracts and any other tax and duty or other levy levied by the Central Government or any State Government or local authority, if applicable and prevalent during the entire contract period.** No claim in respect of sales tax, excise duty, octroi or other taxes, duties or levies whether existing or levied in future shall be entertained by Vasantdada Sugar Institute.

The Contractor Should provide, maintain his site office with his own cost and remove the same after completion of the site work.

9. The Contractor shall not be entitled to any compensation for any loss suffered by him on account of delays, in commencing or executing the work, whatever the cause of delays may be, including delays arising out of modifications to the work entrusted to him or in any sub-contract connected therewith or delays in awarding contracts for other trades of the project or in commencement of completion of such works or in procuring Government controlled or other building materials or in obtaining water and power connections for execution of work or for any claim in respect thereof. Vasantdada Sugar Institute does not accept any liability for any sum besides the tender amount, subject to such variations as are provided for herein.
10. The Bidders shall before tendering carefully examine the Tender Documents including these Information and Instructions to Bidders, General Conditions of Contract, Special Conditions of

Contract, Specifications, drawings and other matters referred to therein, the Bill of Quantities, and if there should be or appear to be any ambiguity in / or discrepancy between any of these documents or between figured and measured dimensions and other aspects upon the Drawings, he shall immediately refer the matter to Vasantdada Sugar Institute / Architect for clarification, before the pre-bid meeting.

Time is the essence of the contract and the works must be completed within the time schedule as indicated in the Appendix to the Form of Tender. Any tender who disagrees with the time schedule of completion and stipulates a longer period is liable to be rejected.

11. i) The Bidder must use only the forms issued by Vasantdada Sugar Institute to fill the rates. Alternatively, the Bidder may submit one original and the photocopies duly signed and stamped.
- ii) Each page of the tender documents should be signed by the person or persons submitting the tender in token of his/their having acquainted himself/themselves with the General Conditions of Contract, Specifications, Special Conditions, etc., as laid down. Any tender with any of the documents not signed will be rejected.
- iii) The tender submitted on behalf of a firm shall be signed by all the partners of the firm or by a person who has the necessary authority on behalf of the firm to submit the Tender and to enter into the proposed contract. Otherwise, the tender may be rejected by Vasantdada Sugar Institute.
- iv) Tender shall contain full address, Telephone Nos., Fax No., E mail Ids for serving notices/ addendum's required to be served to the Tender in connection with the Tender.
- v) The Tender Form and the documents attached to it shall not be detached one from the other, and no alteration or mutilation (other than filling in all the blank spaces) shall be made in any of the documents attached hereto. Any alterations or erasures to the entries in the tender documents shall be made by a separate letter; otherwise it will not be entertained. The tender form must be filled in English and all entries must be made by hand and written in ink.
- vi) Rates should be quoted both in figures and words in columns specified. At the end of each page as well as end of each section, totals shall be given both in figure and words. All erasures and alterations made while filling the tender must be attested by initials of the Bidder. Overwriting of figures is not permitted and failure to comply with either of these conditions will render the tender void at Vasantdada Sugar Institute's option. No advice of any change in rate or conditions after the opening of the tender will be entertained. All documents of the tender are to be read in conjunction with each other and rates quoted by the Bidder shall take this aspect into consideration.
- 11 The Tender shall accompany the following information and documents:
- a) A detailed program for all Works in the form of a CPM chart showing the Bidder's proposed sequence of operations together with the estimated time for each activity, including preparation of shop drawings, supply and installation to ensure adherence to the overall completion period as indicated in the documents.
- b) Full details of any special methodology or technique, the Bidder proposes to use.
- c) The Bidder's proposals for supervising the work and supervisory personnel / other staff proposed to be deployed during the execution period.
- d) Schedules of labour requirements showing category-wise break-up of the labour force, for each month of execution period.
- e) **True copy of latest Income Tax and Sales Tax Clearance Certificates and license under Labour Regulations issued by the competent authorities in favor of the Bidder.**
- f) The Bidder shall attach to his tender a copy, duly authenticated by a notary, of the documents containing the constitution of the consortium, company or firm by which the Tender is submitted so as to indicate by what persons and in what manner a contract may be entered by the consortium, company or firm and what persons would be directly responsible for the due performance of the contract and can give valid receipt on behalf of the consortium, company or firm.

- g) List of all the works in hand at the time of tendering along with tendered cost, agreed completion date and percentage progress achieved for each of the said works.
 - h) List of proposed sub-contractors / associates, if any, along with their credentials in respect to the trades of works.
 - i) Information regarding any changes from the previous submission made by the Bidder for prequalification in respect of following aspects.
 - Details of business and technical organization.
 - Financial resources.
 - J) Copy of board resolution / Authority letter
 - k) Solvency Certificate
- 12 For certain items if alternatives have been provided for in the Bills of Quantities, Vasantdada Sugar Institute reserves the right to use either of the alternate items fully or partly, solely at his discretion. This is irrespective of Vasantdada Sugar Institute right to vary the quantity of any item(s) substantially no claim in this respect shall be entertained.
- 13 In case the Earnest Money Deposit has been asked-for, no tender will be considered which is not accompanied by EMD in the form of Demand Draft as specified in the appendix. The DD should be from a Nationalized Bank drawn in favor of Vasantdada Sugar Institute, which is to be lodged on the understanding that, in the event of the Bidder withdrawing his Tender before the expiry of ninety days from the date fixed for receiving the Tenders or such other extended dates as determined, the EMD will be forfeited, and on the understanding that if the Tender is accepted Initial Security Deposit referred would be furnished as stipulated. The Earnest Money Deposit will be returned to the unsuccessful Bidders within one month after the date fixed for receiving tenders or at such date as may have been requested by Vasantdada Sugar Institute and accepted by the Bidder. In the case of the successful Bidder, the Earnest Money Deposit shall be returned after the Initial Security Deposit for the whole work has been received by Vasantdada Sugar Institute to their full satisfaction as stated herein below. In case the successful Bidder fails to commence the work awarded to him on time stipulated by Vasantdada Sugar Institute, the EMD shall be forfeited.
- 14 The successful Bidder to whom the Contract is awarded shall deposit a sum as specified in the Appendix in the form of Bank Guarantee as Security Deposit. The Security Deposit shall be deposited within 14 days from the date of receiving of letter of intent / award failing which Vasantdada Sugar Institute at his discretion may revoke the letter of intent / award and forfeit the Earnest Money Deposit. The security deposit shall be submitted in the form of a Bank Guarantee from a Nationalized / scheduled bank, as per the format attached herewith drawn in favor of Vasantdada Sugar Institute the Bank Guarantee for Security Deposit shall be valid for 12 months from the date of issuing letter of intent.
- 15 Vasantdada Sugar Institute does not bind itself to accept, the lowest or any tender and reserves to itself the right to accept or reject any or all the tenders, either in whole or in part, without assigning any reasons for doing so. Vasantdada Sugar Institute also has the right to re-invite the tender at his sole discretion.

GENERAL CONDITIONS OF CONTRACT

1. Definitions & Interpretations

In construing these conditions, the Specifications, Bill of quantities and Contract Agreement etc. the following words shall have the meaning herein assigned to them except where the subject or context otherwise requires.

- i a) "Employer"/ Vasantdada Sugar Institute" means Vasantdada Sugar Institute having its registered office as mentioned in the Notice Inviting Tender of volume 1 of this technical bid.
- b) "Architect" means **M/s.....**, having its registered office atand their authorized nominees and representatives or such other firms/persons, as shall be nominated by Vasantdada Sugar Institute
- ii a) "Contractor" shall mean: -
In the case of a Partnership firm: ----- and ----- trading as partners in the name and style of ----- and having a place of business at ----- and shall include the partners for the time being of the said firm and the legal representatives of a deceased partner.
- b) In the case of individual Contractor: -
Shri _____ trading in the name and style of _____ and shall include his heirs, successors and legal successors and legal representatives.
- c) In the case of Company: -
_____ a company incorporated under the Companies Act, 1956 and having its registered office at _____ and office at _____ and shall include the said Company, its Directors, present and future, their Successors, administrators and assigns through its Authorized Signatory Mr. _____.
- iii. "Sub-Contractor" means the person, firm or company to whom any part of the Contract has been sublet by the Contractor with the written consent of Vasantdada Sugar Institute and includes the Sub-Contractor's legal and authorized representatives, successors and permitted assigns.
- iv. "Nominated Sub-contractor" refers to those specialists, tradesmen and others, nominated by Architect/ Vasantdada Sugar Institute for executing special works or supplying special equipment or materials, for which provisional sums are included in the contracts. Such agencies shall be deemed to be Sub-Contractors of the Contractor.
- v. "Site" shall mean the site of the contract works including any building and erections thereon and any other land (inclusively) as aforesaid allotted by Vasantdada Sugar Institute for the Contractor's use.
- vi. "Contract" shall mean the following documents, all duly signed, collective in that order of precedence.
- a) Notice Inviting Tender, Form of Tender & Appendix
 - b) General & Special Conditions of Contract & Articles of Agreement
 - c) Indemnity Bond
 - d) Technical Specifications & Bill of Quantities
 - e) Tender Drawings
 - f) Letter of acceptance of tender / award of work.
 - g) Relevant correspondence exchanged from receipt of tender to award of work.
- viii. "Net Prices": - If in arriving at the contract amount, the Contractor shall have added to or deducted from the total amount of the items in the Tender any sum, either as a percentage or other-wise, then the net price of any item in the tender shall be the sum arrived at by adding to or deducting from the actual figure appearing in the Tender as the price of that item and similar percentage or proportionate sum. The expression "net rates" or "net prices" when used with reference to the contract or accounts shall be held to mean rates or prices so arrived at.
- ix. "Works" means the permanent works described in the "Scope of Work" and/or to be executed in accordance with the Contract and includes materials, apparatus, equipment's, temporary supports, fittings, temporary supports and things of all kinds to be provided, the obligations of the Contractor hereunder and work to be done by the Contractor under the contract.
- x. Drawings" means the drawings prepared and/or approved by and issued by Architect / VSI. and referred to in the Specifications and any modification of such drawings and such other drawings as may be issued by from time to time.

- xi. "Bill of Quantities" means the Schedule of Quantities of items, materials & rates, summaries, etc. as finally accepted.
- xii. "Specification" means the technical specifications given in these documents including relevant specification where so required and where such a specification is not available, the specification approved by Architect/ VSI
- xiii. "Temporary Works" means all temporary works of every kind required in or about the execution, completion or maintenance of the works.
- xiv. "Materials" means the materials, apparatus, equipment's, fittings, fixtures and all such other material which are incorporated in the 'work'.
- xv. "Virtual Completion of the Works" means the completion of the whole of the works substantially in all respects as evidenced by issuance of a Certificate of Completion by Architect/ VSI.
- xvi. "Period of Maintenance/Defect Liability Period" shall mean the period of 365 days calculated from the date of completion of the works as certified by Architect/ VSI.
- xvii. "Urgent Works" means any urgent works, which in the opinion of Architect / Vasantdada Sugar Institute / **PMC** becomes necessary at the time of execution and/or during the progress of work to obviate any risk of accident or failure or to obviate any risk of damage to the structure or services or required to accelerate the progress of work which becomes necessary for safety & security or for any other reason, Architect / Vasantdada Sugar Institute find it necessary.
- xviii. "Market Rate" means the rate as decided by Architect / Vasantdada Sugar Institute on the basis of cost of materials at site inclusive of any tax, duty, octroi etc. at the time of execution of work.
- xix. Force Majeure" are risks due to riots (otherwise than among Contractor's employees) and civil commotion (in so far as both these are uninsurable), war (whether declared or not), invasion, act of foreign enemies, hostilities, civil war, rebellion, insurrection, military or usurped power, an act of Government, an act of God, such as earthquake, lightning, unprecedented floods, monsoon, tornado, and damage from aircraft.
- xx. Approved" means approved in writing; "Approval" means approval in writing.
- xxi. "Month" means calendar month.
- xxii. "Week" means seven consecutive calendar days.
- xxiii. "Day" means a calendar day beginning and ending at 00 Hours and 24 hours respectively.
- xxiv. "Contract Value" means the total value of the tender as accepted by Contractor and Vasantdada Sugar Institute.
- xxv. Interpretations/Marginal Note/ Heading/ Catch Lines.

The Marginal Notes, Headings and in the catch lines hereto and in the annexure hereto are meant only for convenience of reference and shall not in any way be taken into account in the interpretation of these presents and the annexure hereto. The Contractor will have to carry out and complete the said work in every respect in accordance with this contract.

Words imparting the singular only also include the plural and vice versa where the context requires.

2. Language(s)

The language in which the Contract documents shall be drawn up shall be English only.

3. Errors, Omissions and Descriptions.

- a) In case of errors, omissions and/ disagreement between written and scaled dimensions on the drawings or between the drawings and specifications etc., the following order of precedence shall apply:

- i. Between scaled and written dimension (or description) on a drawing, the latter shall be adopted.
 - ii. Between the written or shown description and dimensions in the drawings and the corresponding one in the specification, the former shall be taken as correct.
 - iii. Between the written description of the item in the specifications and descriptions in the Bill of quantities of the same item, the former shall be adopted.
 - iv. Between specifications and drawings, the latter shall prevail.
- b) In case of difference between the totals written in figures and words, the totals of words shall prevail.
 - c) Between the duplicate/subsequent copies of the tender and original tender, the original tender shall be taken as correct.
 - d) In all cases of omissions and/or doubts or discrepancies in any of the items or specifications, a reference shall be made to Architect / Vasantdada Sugar Institute whose elucidation, elaboration or decision shall be considered as authentic. The Contractor shall be held responsible for any error that may occur in the work through lack of such reference and precaution.

4. Scope of Contract

The Contract is for civil, carpentry, fabrication, painting, polishing, finishing, obtaining statutory approvals, and maintenance during Defect Liability Period as specified except in so far as the Contract otherwise stipulates the provision of all labour, materials, constructional plant, machinery temporary works and everything whether of a temporary or permanent nature required in and for such civil, carpentry, fabrication, painting, polishing, false ceiling, finishing, obtaining statutory approvals, and maintenance so far as necessary for providing the same as specified in or reasonably to be inferred from the Contract.

5. (i) Letter of Acceptance/Award

Before signing of the Contract, Vasantdada Sugar Institute shall issue by registered post or by otherwise depositing at the registered office of the Contractor, Letter of Acceptance / Award to enter into a Contract with the Contractor for the execution of the works in accordance with the contract.

Until a formal contract agreement is prepared and executed, the tender documents i.e. Volume I (Technical Bid : NIT, Form of tender & Appendix & Volume II (General & Special Conditions of Contract,) & Volume III (Technical specification) & the Bill of quantities set of drawings together with the relevant correspondence exchanged from receipt of the tender to acceptance and together with Vasantdada Sugar Institute letter of Acceptance/Award shall constitute a binding contract between the parties.

(ii) Contract Agreement

The Contractor shall be deemed to have visited the Site, thoroughly examined the tender documents, and by his independent observation and inquiry, acquainted himself with the local conditions, accessibility of the Site and the full extent and nature of all operations necessary for the full and proper execution of the Contract Documents, space for storage of materials, Constructional Plant, Temporary Works, restrictions on his plying of heavy vehicles in the area, supply and use of labour, materials, Plant, equipment and laws and regulations relevant thereto and other restrictions imposed by the local authorities.

The Contractor shall deem to have satisfied himself before tendering as to the correctness and sufficiency of his tender and that his tendered rates and prices shall cover all his obligations under the Contract Documents and all matters and things necessary for the proper execution and maintenance of the Works. No claim whatsoever on the grounds of want of knowledge or any misunderstanding or otherwise shall be entertained. On receipt of intimation from Vasantdada Sugar Institute of the acceptance of his/their tender, the successful Bidder shall be bound to implement the contract and within fourteen days thereof, the successful Bidder shall sign an agreement in accordance with the draft agreement.

6. Custody of Drawings & Specification

The Contract shall be executed in quadruplicate, Vasantdada Sugar Institute, Architect, the Engineer and the Contractor shall be entitled to one executed copy each for his use. The Contractor on the signing hereof shall be furnished by free of cost Two copies of each of the said Drawings, if any, and of the specification and Two copies of all further Drawings, if any, issued during the progress of the works. Any further copies of such Drawings required by the Contractor shall obtain by him from on payment of necessary charges to be fixed by Architect/ VSI. The Contractor shall keep one copy of all Drawings at the works site and Vasantdada Sugar Institute/ Architect shall at all reasonable time have access to the same. Before the issue of the final certificate to the Contractor, he shall forthwith return to Vasantdada Sugar Institute/ Architect all Drawings and Specifications.

7. Disruption of Progress

The Contractor shall give adequate but not less than 2 weeks written notice to Vasantdada Sugar Institute/ Architect whenever planning or progress of the Works is likely to be delayed or disrupted unless any further drawing or order, including a direction, instruction or approval, is required to be issued by Architect/ VSI. The notice shall include details of the drawing or order required explaining why and by when it is required and of any delay or disruption likely to be suffered if it is late.

8. Further Drawings and Instructions

The Contractor shall carry out and complete the said work in every respect in accordance with this Contract and with the directions of and to the satisfaction of Architect/ VSI. may in his absolute discretion and from time to time issue further drawings and/or written instructions, details, directions and explanations which are hereafter collectively referred to as "Architect's/ VSI Instructions" in regard to: -

- (a) The variation or modification of the design, quality, or quantity of items of works or the addition or omission or substitution of any item.
- (b) Any discrepancy in the Drawings or between the Bill of Quantities and/or Drawings and/or Specification.
- (c) The removal from the site of any material brought thereon by the Contractor and the substitution of any other material therefore.
- (d) The removal and/or re-execution of any works executed by the Contractor.
- (e) The dismissal from the works of any persons employed thereupon.
- (f) The opening up for inspection of any work covered up.
- (g) The amending and making good of any defects under clause 30 hereof.

The Contractor shall forthwith comply with and duly execute any such work as per Architect's/VSI instructions provided always that verbal instructions, directions and explanations given to the Contractor or his representative upon the works by Architect's/VSI shall, if involving a variation, be confirmed in writing by the Contractor within seven days, and if not dissented from in writing within a further seven days by Architect/ VSI, such shall be deemed to be Architect's /VSI instructions within the scope of the Contract.

9. Duties of Architect/VSI

The duties of Architect's/VSI generally are as below but not restricted to these only:

- Check workmanship of the items executed as per drawing and specification.
- After checking the bills on site by PMC & contractor jointly it will come to Architect/VSI for final certification.
- Extension of time limit.

Architect's/VSI may from time to time in writing delegate to Architects /VSI representative any of the powers and authorities vested in Architect/ VSI. and shall furnish to the Contractor a copy of all such written delegations of powers and authorities. Any written instruction or approval given by Architect's/VSI Representative to the Contractor within the terms of such delegation (but not otherwise) shall bind the Contractor and Employer as though it had been given by Architect/ VSI.

If the Contractor shall be dissatisfied by reasons of any decision of Architect's/VSI Representative he shall be entitled to refer the matter to Architect's/VSI who shall thereupon confirm, reverse or vary such a decision.

9A. Duties of Project Management Consultant (PMC)

The duties of IDA generally are as below but not restricted to these only.

- Watch, Monitor and supervise the works
- Review and demand test reports to materials to be used in the works
- Check workmanship of the items executed
- Check the measurements on site jointly with Contractor

- Order variation and quantities, items' etc.
- Record extra items of the work
- They should report Architect / VSI directly

10. Contractor's General Responsibilities

The Contractor shall provide at his cost everything necessary for the proper execution of the works according to the intent and meaning of the Drawings, Bill of Quantities and Specifications taken together with whether the same may or may not be particularly shown or described therein provided that the same can reasonably be inferred there from, and if the Contractor finds any discrepancy in the Drawings or between the Drawings, Bill of Quantities and Specifications, he shall immediately and in writing refer the same to who shall decide which is to be followed.

Rates quoted shall be deemed to allow for all construction details which may not have been specifically described in the bill of quantities shown on the Drawings or given in the Specifications. Minor extras that are essential for the execution of the Works and details of constructions not specifically shown in the Drawings shall be furnished to the Contractor by during the execution of the Works. In case of any difference of opinion between the Contractor and Architect/ Vasantdada Sugar Institute shall determine as to whether or not the items involved constitutes a construction detail or minor extra, which determination shall be final and binding.

The successful Bidder is bound to carry out any items of work necessary for the completion of the job even though such items are not included in the quantities and rates. Architect's/VSI will issue instructions in respect of such additional items and their quantities in writing with the prior consent in writing of Vasantdada Sugar Institute.

The Contractor must co-operate with the other contractors appointed by Vasantdada Sugar Institute so that the work shall proceed smoothly to the satisfaction of Architect/ VSI.

The Contractor must bear in mind that all the work shall be carried out strictly in accordance with the Specifications as given in these documents and also in compliance of the requirements of the local public authorities and to the requirements/satisfaction/direction of Architect's/VSI and no deviation on any account will be permitted.

The Contractor shall have to use materials of the makes/manufacturers as shall be approved in shop drawings by Architect/ VSI.

11. Safety of Site Operations

The Contractor shall take full responsibility for the safety, stability and adequacy of all site operations and methods of construction including all temporary works, provided that the Contractor shall not be responsible, except as may be expressly provided in the Contract, for the design or specification of the permanent works.

The penalty for not adhering to the safety measures will be attracting a deduction of 0.05 % of Purchase Order / Work Order Value per week. The responsibility of any mishaps happening due to negligence or non-adherence to safety measures will be solely the responsibility of the contractor. Vasantdada Sugar Institute / Architect / PMC will not be held responsible for it.

12. Watching & Lighting

The Contractor shall in connection with the Works provide and maintain at his own cost adequate lights, guards, fencing, warning signs and watch & ward staff when and where necessary or as directed by Architect/ VSI or as directed by duly constituted authority for the protection of the works or for the safety and convenience of the public or others.

13. Care of Works

From the commencement to the certified completion of the whole of Works, the contractor shall take full responsibility for the care thereof and of all Temporary Works and in case any damage, loss or injury shall happen to the works or to any part thereof or to any Temporary Works from any cause whatsoever.

The Contractor shall at his own cost repair and make good the same so that on completion, the works shall be in good order and condition and in conformity to every respect with the requirements of the Contract and Architect's/VSI. The Contractor shall also be liable for any damage to the Works occasioned by him including his subcontractors in the course of any operations carried out by him for the purpose of completing any outstanding work. The Contractor shall indemnify and keep indemnified Vasantdada Sugar Institute Architect's all the time, from all risks on this account.

14. (i) Contractor's Senior Representative for execution & co-ordination of works.

The Contractor shall have appointed on site at all times during working hours throughout the course of the Contract at least one competent senior representative who shall be empowered to make decisions binding on the Contractor in respect of all matters likely to arise in connection with the execution & coordination of the Works at site and shall keep Vasantdada Sugar Institute, Architect and PMC informed at all times about the name and designation of such representative. Contractor's Senior Representative shall have the power to take joint measurement and sign the measurement books/bills.

Any directions, explanations, instructions or notices given by Architect's/VSI to such representative shall be held to be given to the Contractor.

(ii) Contractor's Employees

The Contractor shall provide and employ after approval from Architect's/VSI on the site in connection with the execution, completion and maintenance of the Works all Architecting staff/technical assistants as are qualified, skilled and experienced in their respective trades, foremen and leading hands as are competent to give proper supervision, ensuring quality & output to the work they are required to supervise, and also such skilled, semi-skilled and unskilled labour as are necessary for the proper and timely execution, completion and maintenance of the works.

(iii) Removal of Contractor's Employees

The Contractor shall on the direction of Architect's/VSI immediately dismiss from the works any person employed thereon by him who may, in the opinion of Architect/ VSI, be incompetent or misconducts himself and such person shall not be again employed on the works without the permission of Architect/ VSI.

(iv) Unauthorized Persons

No unauthorized persons are to be allowed on the site. The Contractor shall instruct all such persons to keep out and shall take steps to prevent trespassing.

15. Compliance with Statutes, Regulations, etc.

The Contractor shall conform to the provisions of any Act of the legislature relating to the works, and to the regulations and bye-laws of any authority, and of any water, electric supply and other companies and/or authorities with whose systems the structure is proposed to be connected, and shall, before making any variations from the Drawings or Specifications that may be necessitated by so regulations, give to Architect's/VSI written notice, specifying the variation proposed to be made and the reason for making it and apply for instructions thereon. In case, the Contractor shall not within ten days of submission of such notice, receive such instructions, he shall proceed with the work conforming to the provisions, regulations, or bye-laws in question, and any variation.

The Contractor shall bring to the attention of Architect's/VSI all notices required by the said Acts, regulations or bye-laws to be given to any authority and pay to such authority, or to any public office all fees that may be properly chargeable in respect of the works, and lodge the receipts with Architect/ VSI.

The Contractor will be responsible for timely compliance of maintaining registers, documents, depositing contributions, paying fees, filing returns as specified under various Acts, Laws, and Legislations applicable to the execution of this Contract.

The Contractor shall comply with all the statutory requirements applicable in order to fulfill its obligations in terms of this Contract. The Contractor has represented to Vasantdada Sugar Institute that it has and shall during the course of execution of this Contract comply with all the applicable statutory requirements. The Contractor shall indemnify Vasantdada Sugar Institute from and against all claims, damages and penalties which may be suffered by Vasantdada Sugar Institute or any person employed by Vasantdada Sugar Institute by reason of any default and /or any non-compliance by the Contractor of any statutory requirement applicable to it.

In every case in which, by virtue of the provisions of the Payment of Wages Act, 1936, Vasantdada Sugar Institute is obliged to pay any amount of wages to a workmen employed by the Contractor in execution of the work or to incur any expenditure in providing welfare and health amenities required to be provided by the Contractor or to incur any expenditure on account of contingent liability of Vasantdada Sugar Institute due to the Contractor's failure to fulfill his statutory obligations under the aforesaid act or the rules made there under, Vasantdada Sugar Institute shall be at liberty to withhold from the bills of the Contractor the amount of wages as paid or the amount of expenditure so incurred on behalf of the Contractor, and without prejudice to the rights of Vasantdada Sugar Institute, Vasantdada Sugar Institute shall be at liberty to recover such amount or part thereof by deducting it from any sum due by Vasantdada Sugar Institute to the Contractor whether under the Contract, Order or otherwise. The decision of Vasantdada Sugar Institute regarding the amount actually recoverable from the Contractor as stated above shall be final and binding on him. Vasantdada Sugar Institute shall not be bound to contest any claim made against it under Section 20 (1) and Section 21 (4) of the

aforesaid Act except on the written request of the Contractor and upon his giving to Vasantdada Sugar Institute Indemnity for all the costs and claims for which Vasantdada Sugar Institute might become liable for contesting such claim.

The Contractor shall not employ any person below the age of 18 years. The Contractor shall indemnify Vasantdada Sugar Institute from and against all claims and penalties which may be suffered by Vasantdada Sugar Institute or any person employed by him by reason of any default on the part of the Contractor to observe and/or in the performance of the provisions of Employment of Children Act, 1938 or any amendment or modification of the same.

16. Setting out

The Contractor shall set out his works and shall be responsible for the true and perfect setting out of the same and for the correctness of the positions, levels, dimensions, and alignment of all parts thereof. If at any time any error in this respect shall appear during the progress of the works or within a period of two years from the completion of the works, the Contractor shall, if so required, at his own expense rectify such error to the satisfaction of Architect/ VSI.

17. Quality of Materials & Workmanship & Test

(i) All materials and workmanship shall be to the best of the respective kinds as described in the Bill of Quantities / List of Approved Makes or shall be in accordance with Vasantdada Sugar Institute/ Architect's instructions and shall be subjected from time to time to such tests as Vasantdada Sugar Institute/ Architect's may direct.

The Contractor shall upon the instruction of Architect's/VSI representative furnish him with documentation to prove that the materials & goods comply with the requirements of contract and for requirement stated above. Architect's/VSI may issue instruction in regard to removal of material from site or any work, if these are not in accordance with the Contract. The Contractor shall provide such assistance instruments, machinery, labour and materials as are normally required for examining, measuring, sampling and testing any material or part of work before incorporation in the Works for testing as may be selected and required by Architect/ VSI's representative.

(ii) Samples

All samples of adequate numbers, sizes, shades & pattern as per specification shall be supplied by the Contractor without any extra charge. Apart from adhering to any special provision made in the specifications regarding submission of samples, the contractor shall within 10 days of approval of shop drawings, provide to Architect/ VSI. Samples along with the detailed literature of all materials he proposes to use in the Civil and interior works irrespective of the fact that a specific make / material might have been stipulated. If certain items, proposed to be used, are of such nature that samples cannot be presented or prepared at the site, detailed literature/test certificate of the same shall be provided instead to the satisfaction of Architect/ VSI. Before submitting the samples/literature the contractor shall satisfy himself that the material / equipment for which he is submitting the samples/literature meet with the requirement of the specification. Architect's/VSI shall check the samples and give his comments and / or approval to the same. Only when Architect's/VSI approves the samples in writing, the contractor shall proceed with the procurement and installation of the particular material/equipment. The approved samples shall be signed by Architect's/VSI for identification and shall be kept on record at site office until the completion and acceptance of the work and shall be available at the site for inspection/comparison at any time. The contractor shall keep with him a duplicate of such samples to enable him to process the matter.

For items of work where the samples are to be made at the site, the same procedure shall be followed. All such samples shall be prepared at a place where it can be left undisturbed until the completion of the project.

Architect's/VSI shall communicate his comments / approval to the Contractor to the samples at his earliest convenience. Any delay that might occur in approving of the samples for reasons of its not meeting with the specifications or other discrepancies, inadequacy in furnishing samples of best qualities from various manufacturers and such other aspects causing delay on the approval of the materials/equipment's, etc. shall be to the account of the contractor. In this respect the decision of Architect's/VSI shall be final.

On or before delivery of the supplies of materials/equipment for permanent works at the site, the contractor shall specifically arrange to get the supply inspected by Architect/ VSI. if necessary at his / manufacturer's workshop/s and compared with the approved sample and his specific approval obtained before using the same in the work.

(iii) Cost of Tests

The cost of making any test shall be borne by the Contractor if such test is intended by or provided for in the Specification or Bill of Quantities.

(iv) Costs of Tests not provided for etc.

If any test is ordered by Architect's/VSI which is either

- (a) Not so intended by or provided for or
- (b) (In the cases above mentioned) is not so particularized, or

(c) Though so intended or provided for but ordered by Architect's/VSI to be carried out by an independent person at any place other than the Site or the place of manufacture of fabrication of the materials tested or any Government/ approved Laboratory, then the cost of such test shall be borne by the Contractor, if the test shows the workmanship or materials not to be in accordance to the provision of the Contract or Architect's/VSI.

18. Absence of Specification

If the specifications do not contain particulars of materials and works which are obviously necessary for the proper completion of the works, and the intention to include, which is inferred, all such materials and works shall be supplied and executed by the Contractor without extra charge. If the contractor requires additional information, request in writing to be made well in advance to commencement of the particular work to Architect's/VSI who will issue such detailed information as necessary within reasonable time.

19. Obtaining Information related to execution of work.

No claim by the contractor for additional payment will be entertained which is consequent upon failure on his part to obtain correct information as to any matter affecting the execution of the works, nor will any misunderstandings or the obtaining of incorrect information or the failure to obtain correct information relieve him from any risks or from the entire responsibility for the fulfillment of the contract.

20. Contractor's Superintendence

The Contractor shall give all necessary personal superintendence during the execution of the works, and as long, thereafter, as Architect's/VSI may consider necessary until the expiry of the "Defects Liability Period" stated hereto.

21. Access for Inspection

Vasantdada Sugar Institute, Architect, PMC, the engineer and their respective representatives shall at all reasonable times have free access to the work and/or to the workshops, factories or other places where materials are lying or from which they are being obtained and the Contractor shall give to Vasantdada Sugar Institute, Architect, and their representatives every facility necessary for checking measurements, inspection and examination and test of the materials and workmanship.

22. (i) Examination of work before covering up

No work shall be covered up or put out of view without the approval of Architect/ VSI and the Contractor shall afford full opportunity for Architect/ VSI to examine and measure any work, which is about to be covered up or put out of view. The Contractor shall give due notice to Architect/ VSI of any such work to be ready for examination and Architect/ VSI shall without unreasonable delay, unless he considers it necessary and advises the Contractor accordingly, attend for the purpose of examining and measuring such work.

(ii) Uncovering and making openings

The Contractor shall uncover any part or parts of the Works as Architect's/VSI may from time to time direct and shall reinstate and make good such part or parts to the satisfaction of Architect/ VSI. If any such part or parts have been covered up or put out of view after compliance with the requirements of sub-clause (i) of this Clause and are found to be executed in accordance with the contract the expenses of uncovering, reinstating and making good the same shall be borne by Vasantdada Sugar Institute but in any other case all such expenses shall be borne by the Contractor and shall be recoverable from him by Vasantdada Sugar Institute or may be deducted by Vasantdada Sugar Institute from any monies due or which may become due to the Contractor.

23. Assignment

The whole of the works included in the contract shall be executed by the Contractor and the Contractor shall not directly or indirectly transfer, assign or sublet the contract or any part/share thereof or any interest therein without the prior written consent of Vasantdada Sugar Institute and no undertaking shall relieve the Contractor from the full and entire responsibility of the contract or from active superintendence of the works during their progress.

24. Quantities

The Bill of Quantities (BOQ), unless otherwise stated shall be deemed to have been prepared in accordance with the Indian Standard Method of Measurement and quantities in BOQ are to be considered as estimated and not accurate.

25. Measurement of Works

Architect's/VSI may from time to time intimate to the Contractor that he requires the works to be measured, and the Contractor shall forthwith attend or send a qualified Representative to assist Architect's/VSI in verifying such measurements and calculations and to furnish all particulars or to give all assistance required by any of them.

Should the Contractor not attend or neglect or omit to send such Representative, then the measurement taken by Architect's/VSI or a person approved by them shall be taken to be correct measurements of the works. Such measurements shall be taken in accordance with the Mode of Measurements detailed in the Specifications.

Architect's/VSI shall verify joint measurements with the contractor and the measurements shall be entered in the measurement book / sheet by the Contractor representative.

The Contractor or his Representative may at the time of measurement take such notes and measurements as he may require.

All authorized extra works; omissions and all variations made without Architect's/VSI knowledge, but subsequently sanctioned by him in writing (with the prior approval in writing of Vasantdada Sugar Institute) shall be included in such measurements.

26. Claims

The Contractor shall send to Architect's/VSI once in every 15 days an account giving particulars as complete and fully detailed as required of all claims for any additional expenses claims, to which the Contractor may consider himself entitled and of all extra or additional/substituted work ordered by Architect's/VSI which he has executed during the preceding month subject of provisions under relevant clauses of contract hereof, and no claim for payment for any such work will be considered which has not been included in such particulars. Provided always that Architect's/VSI shall be entitled to authorize payment to be made for any such work notwithstanding the Contractor's failure to comply with this condition, if the Contractor has, at the earliest practicable opportunity notified Architect's/VSI in writing that he intends to make a claim for such work and thereafter send complete and detailed particulars of the claim to Architect's/VSI as directed by Architect's/VSI but not later than 10 days from the date of notification of his claim.

27. Variations

No alteration, omission or variation ordered in writing by Architect's/VSI shall vitiate this contract. In case Vasantdada Sugar Institute/ Architect's thinks proper at any time during the progress of the works to make any alterations in, or additions to or omissions from, the works or any alteration in the kind or quality of the materials to be used therein, Architect's/VSI shall give notice thereof in writing to the Contractor or shall confirm in writing within seven days of giving any such oral instructions. The Contractor shall alter, add to, or omit from, as the case may be, in accordance with such notice, but the Contractor shall not do any work extra to or make any alterations or additions to or omissions from the works or any deviation from any of the provisions of the Contract, stipulations, Specification or Contract Drawings without the previous consent in writing of Architect's/VSI and the value of such extras, alterations, additions or omissions shall in all cases be determined by Architect's/VSI in accordance with the provisions of Clause 28 hereof, and the same shall be added to or deducted from the Contract value, as the case may be.

28. Valuation of Variations

No claim for an extra shall be allowed unless it shall have been executed under authority of Architect's/VSI with the concurrence of Vasantdada Sugar Institute as herein mentioned. Any such extra is herein referred to as authorized extra and shall be made in accordance with the following provisions.

- (a) (i) The net rates or prices in the original tender shall determine the valuation of the extra work where such extra work is of similar character and executed under similar conditions as the work priced herein.
 - (ii) Rates for all items, wherever possible, should be derived out of the rates given in the Priced Bill of Quantities.
- (b) The net prices of the original tender shall determine the value of the items omitted, provided if omissions do not vary the conditions under which any remaining items of works are carried out, otherwise the prices for the same shall be valued under sub-clause © hereof.
- (c) Where the extra works are not of similar character and/or executed under similar conditions as aforesaid or where the omissions vary the conditions under which any remaining items or works are carried out, then the contractor shall within 7 days of the date of receipt of order to carry out the work, inform Architect's/VSI of the rate which he intends to charge for such items of work, supported by analysis of the rate or rates claimed and Architect's/VSI shall fix such rate or prices as in the circumstances in his opinion are reasonable and proper, based on the market rate.
- (d) Where extra work cannot be properly measured or valued, the Contractor shall be allowed day work prices at the net rates stated in the tender of the Priced Bill of Quantities or, if not so stated, then in accordance with the local day work rates and wages for the district; provided that in either case, vouchers specifying the daily time (and if required by Architect/ VSI, the workman's names) and materials employed be delivered for verification to Architect's/VSI at or before the end of the week following that in which the work has been executed.
- (e) It is further clarified that for all such authorized extra items where rates cannot be derived from tender, the Contractors shall submit rates supported by rate analysis worked on the **market rate basis of (material cost + labour + hire / running / transportation charges of equipment + wastages 3% of material cost) plus (15% towards establishment charges and contractor's overheads charges)**.

The measurement and valuation in respect of the Contract shall be completed within the "Period of Final Measurement" stated in the Appendix or if not stated then within six months of the completion of the Contract.

29. Work to be to the satisfaction of Vasantdada Sugar Institute / Architect.

The Contractor shall carry out all the works strictly in accordance with Drawings, detailed Specifications, and instructions of Architect/ VSI. If in the opinion of Vasantdada Sugar Institute / Architect changes have to be made in the works the Contractor shall carry out the same, and payment, if any, arising out of these shall be made as per the terms of the contract.

30. (i) Removal of Improper Work & Materials

Architect's/VSI shall, during the progress of the works, have power to order in writing from time to time the removal from the works within such reasonable time or times as may be specified in the order, of any materials which in the opinion of Architect/ VSI are not in accordance with the Specifications or the instructions of Architect/ VSI, the substitution of proper materials, and the removal and proper re- execution of any work executed with materials or workmanship not in accordance with the Drawings and Specifications or instructions, and the Contractor shall forthwith carry out such order at his own cost. In case of default on the part of the Contractor to carry out such order, Vasantdada Sugar Institute shall have the power to employ and pay other persons to carry out the same, and all expenses consequent thereon, or incidental thereto, as certified by Architect's/VSI shall be borne by the Contractor, or may be deducted by Vasantdada Sugar Institute from any monies due, or that may become due, to the Contractor.

(ii) Default of Contractor in Compliance

If the Contractor after receipt of written notice from Architect's/VSI requiring compliance within ten days fails to comply with such further drawings and/or Architect's instructions Vasantdada Sugar Institute may employ and pay other persons to execute any such work whatsoever that may be necessary to give effect thereto, and all costs incurred in connection therewith shall be recoverable from the Contractor by Vasantdada Sugar Institute on the Certificate of Architect's/VSI as a debt or may be deducted by him from any monies due to the Contractor.

(iii) Inspection & Testing during manufacture

Architect's/VSI shall be entitled during manufacture to inspect, examine and test on the Contractor's premises during working hours the materials and workmanship and check the progress of manufacture of all fabrication materials to be supplied under the Contract, and if part of the said materials is being manufactured on other premises the Contractor shall obtain for Architect's/VSI permission to inspect, examine and test as if the said Plant were being manufactured on the Contractor's premises. Such inspection, examination or testing if made shall not relieve the Contractor from any obligation under the Contract.

(iv) Dates for Inspection & Testing

The Contractor shall agree with Architect's/VSI the date on and the place at which any works will be ready for testing as provided in the Contract and unless Architect's/VSI attend at the place so named on the date agreed, the Contractor shall not proceed with the tests and which shall be deemed to have been made in Architect's/VSI shall forthwith forward to Architect's/VSI duly certified copies of the test readings. Architect's/VSI shall give the Contractor 24 hours' notice in writing of his intention to attend the tests.

(v) Facilities for Testing at Manufacturer's Works

Where the Contract provides for tests on the premises of the Contractor or of any sub-contractor the Contractor shall provide such assistance, labour, materials, electricity, fuel, stores, apparatus and instruments as may be requisite and as may be reasonably demanded to carry out such tests efficiently.

(vi) Certificate of Testing

As and when fabrication materials shall pass the tests referred in this, Architect's/VSI shall furnish to the Contractor a certificate in writing to that effect.

(vii) Rejection

If as a result of such inspection, examination or test of the works, Architect's/VSI shall decide that such material is defective or not in accordance with the Contract, he shall notify the Contractor accordingly stating in writing his objection and reasons therefore. The Contractor shall with all speed make good the defect or ensures that the material complies with the Contract. Thereafter, if required by Architect/ VSI, the tests shall be repeated under the same terms and conditions save that all reasonable expenses to which Vasantdada Sugar Institute may be put by the repetition of the tests shall be deducted from the Contract Sum.

(viii) Delivery of Materials & Equipment.

Unless Architect's/VSI shall otherwise direct, no material shall be delivered to site until Architect's/VSI shall have issued, in respect of such material, a certificate under Clause 30 (vi) (Certificate of Testing). Likewise, Fabrication Materials or Contractor's Equipment shall be delivered to Site only upon an authorization in writing applied for and obtained by the Contractor from Architect/ VSI.

The Contractor shall be responsible for the reception on site of all Materials and Contractor's Equipment delivered for the purposes of the Contract.

(ix) Inspection & Testing and Re-inspection & Re-testing

All deficiencies revealed by testing and inspection shall be rectified by the Contractor at his own expense and to the satisfaction and approval of Architect/ VSI. Rectified components shall be subject to retesting and re-inspection.

(x) Inspection Reports

The Contractor shall provide Architect's/VSI with five copies of reports of all inspections and tests.

31. Virtual Completion Certificate

The works shall not be considered as completed until Architect's/VSI has certified in writing that they have been completed virtually, all Civil and interior works installed and all statutory approvals obtained. The Defects Liability Period shall commence from the date of completion as certified by Architect/ VSI.

32. Defect Liability Period

Any defect, or other faults which may appear within the "Defects Liability Period" stated in the **Appendix** hereto or, if none stated, then within 12 calendar months From Final Completion Certificate as certified by Architect/ VSI, arising in the opinion of the Architect's/VSI from materials or workmanship not in accordance with the contract, shall upon the direction in writing of Architect/ VSI and within such reasonable time as shall be specified therein, be amended and made good by the Contractor, at his own cost and in case of default Vasantdada Sugar Institute may employ and pay other persons to amend and make good such defects, or other faults, and all damages, loss and expenses consequent thereon or incidental thereto shall be made good and borne by the Contractor and such damage, loss and expenses shall be recoverable from him by Vasantdada Sugar Institute or may be deducted by Vasantdada Sugar Institute, upon Architect's/VSI Certificate in writing, from any money due or that may become due to the Contractor, or Vasantdada Sugar Institute may in lieu of such amending and making good by the Contractor deduct from any monies due to the Contractor, a sum, to be determined by Architect's/VSI equivalent to the cost of amending such work and in the event of the amount retained under Clause 46 hereof being insufficient, recover the balance from the Contractor, together with any expenses Vasantdada Sugar Institute may have incurred in connection therewith. Should any defective work have been done or material supplied by any Sub-Contractor employed on the works who has been nominated or approved by Architect/ VSI, the Contractor shall be liable to make good in the same manner as if such work or material had been done or supplied by the Contractor and been subject to the provisions of this Clause and Clause 29 hereof. The Contractor shall remain liable under the provisions of this Clause notwithstanding the signing of any certificate or the passing of any accounts, by Architect/ VSI. However, the contractor has to carry out all comprehensive day-to-day maintenance during the Defect Liability Period at no extra cost to Vasantdada Sugar Institute.

33. Approval only by Completion Certificate

No certificate other than the completion certificate referred to in Clause 33(ii) hereof shall be deemed to constitute approval of any work or other matter in respect of which it is issued or shall be taken as an admission of the due performance of the Contract or of additional of varied work having been ordered by Architect's/VSI nor shall any other certificate conclude or prejudice any of the powers of Architect/ VSI.

Final Completion Certificate

On successful completion of entire works covered by the Contract to the full satisfaction of Vasantdada Sugar Institute/ Architect the Contractor shall ensure that the following works have been completed to the satisfaction of Architect's/VSI:

- (a) Clear the site of all scaffolding, wiring, pipes, surplus materials, Contractor's labour, equipment and machinery
- (b) Demolish, dismantle and remove all Contractor's site offices and quarters and other temporary works, structures and constructions and other items and things whatsoever brought upon or erected at the site or any land allotted to the Contractor by the Vasantdada Sugar Institute and not incorporated in the permanent works
- (c) Remove all debris from the site and the land allotted to Contractor and shall clear, level and dress, compact the site as required and said land to the satisfaction of Architect/ VSI.
- (d) Shall put Vasantdada Sugar Institute in undisputed custody and possession of the site and all land allotted by the Vasantdada Sugar Institute to the Contractor.
- (e) All defects/imperfections have been attended & rectified to full satisfaction of Architect's/VSI during the Defect Liability Period.

Unless the Contractor shall have fulfilled the provisions of the clause, the works shall not be deemed to have been completed. Upon the satisfactory fulfillment by Contractor as stated above, the Contractor shall be entitled to apply to Architect's/VSI for a Final Completion Certificate in respect of the entire work.

If Architect's/VSI is satisfied of the completion of the work relative to which the Completion Certificate has been sought, Architect/ VSI. shall within 14 (fourteen) days of the receipt of the application for Completion Certificate, issue a Completion Certificate in respect of the works for which the Completion Certificate has been applied.

This issuance of a Completion Certificate shall be without prejudice to Vasantdada Sugar Institute's rights and Contractor's liabilities under the Contract, including the Contractor's liability for the Defect Liability Period nor shall the issuance of a Completion Certificate in respect of the works or work at any site be construed as a waiver of any right or claim of Vasantdada Sugar Institute against the Contractor in respect of work or the works at the site and in respect of which the Final Completion Certificate has been issued.

34. Work by other Agencies

Vasantdada Sugar Institute/ Architect's reserves the right to use any portions of the site for the execution of any work not included in this contract which it may desire to have carried out by other persons simultaneously, and the Contractor shall allow all reasonable facilities for the execution of such work, but shall not be required to provide any plant or material for the execution of such work except by special arrangement with Vasantdada Sugar Institute. Such work shall be carried out in such manner as not to impede the progress of the works included in the Contract and the Contractor shall not be responsible for any damage or delay, which may happen to or occasioned by such work.

Vasantdada Sugar Institute reserves the right to let other contracts in connection with the Works. The Contractor shall afford other contractors reasonable facilities for storage of their materials and the execution of their work, and shall properly connect and coordinate his work and theirs. If any part of the Contractor's work depends for proper execution or results upon the work of any other contractor, the Contractor shall inspect and promptly report to Architect's/VSI any defects in such work that render it unsuitable for such proper execution and results. His failure to so inspect and report shall constitute an acceptance of the other contractor's work as fit and proper for the reception of his work, except as to the defects which may develop in the other contractor's work after execution of the work.

35. Insurance Policies.

35.1 The Contractor shall effect contractors all risk insurance policy (CAR policy) in the joint names of Vasantdada Sugar Institute and the Contractor, the name of the former being placed first in the policy covering the following:

- 35.1.1 The Works at the Contract Price together with the materials for incorporation in the Works at their replacement value.
- 35.1.2 All plants and equipment and other things brought to the site by the Contractor at their replacement value.
- 35.1.3 The insurance shall be against all losses or damages from whatever causes, other than excepted risks, for which the Contractor is responsible under the Contract. The insurance cover shall be for the period of the Contract and also for the Period of Maintenance, for loss or damage arising from a cause prior to commencement of the period of maintenance, and for any loss or damage, occasioned by the Contractor in the course of any operations carried out for the purpose of complying with his obligations.
- 35.1.4 Such insurance shall be effected with an insurer and in terms approved by Vasantdada Sugar Institute the Contractor shall, whenever required, produce the policy or policies and the receipts for payment of the current premiums.
- 35.1.5 The Contractor should be responsible for preparing of all claims and from the commencement of the Works until the date the Works are completed (as set forth in the Completion Certificate) and handed over to Vasantdada Sugar Institute the Contractor shall be responsible for any damage or loss from any cause whatsoever to the Works or to materials delivered to the Site but not yet incorporated into the Works. Vasantdada Sugar Institute taking of possession of the Works shall not in any way relieve the Contractor of his responsibilities during the period of the Contract including during the Guarantee period.

The Contractor should produce evidence of insurance coverage for all above before submitting invoices for payment.

If the Contractor has a blanket insurance policy for all his works and the policy covers all the items to be insured under this Contract, the Contractor may assign such policy/ policies in favor of Vasantdada Sugar Institute in lieu of taking out fresh policies in the joint names of the Contractor and Vasantdada Sugar Institute.

35.2 Third Party Insurance

- 1. Before commencing the execution of the Works, the Contractor shall insure against his liability for any material or physical damage, loss or injury which may occur to any property or life including that of Vasantdada Sugar Institute or to any person, including any employee of Vasantdada Sugar Institute, by or arising out of the execution of the Works or in the carrying out of the Contract. The Contractor shall indemnify Vasantdada Sugar Institute against all claims which may be made on Vasantdada Sugar Institute whether under Workman Compensation Act or any other statute in force during the tenure of the Contract or at common law in respect of any of the Employees of the Contractor or sub-contractor.

2. Such insurance shall be affected with an insurer and in terms approved by Vasantdada Sugar Institute and for at least the amount stated in the Appendix TF to Tender Form. The Contractor shall, whenever required, produce before the PM's Representative the policy or policies of insurance and the receipts of payment of the current premiums.
- 35.3 Workmen's Insurance**
Vasantdada Sugar Institute shall not be liable for any payment in respect of any damages or compensation payable according to law in respect or in consequence of any accident or injury or loss of life to any workman or other person in the employment of the Contractor or any sub-contractor, except an accident or injury resulting from any act or default of Vasantdada Sugar Institute, his employees, agents or servants. The Contractor shall insure against such liability with an insurer approved by Vasantdada Sugar Institute for sum of the established norms during the entire period till completion of Period of Maintenance.
- 35.4** Without prejudice to the other rights of Vasantdada Sugar Institute against the Contractor in respect of such default, Vasantdada Sugar Institute shall be entitled to deduct from any sums payable to the Contractor the amount of any damages,

compensation costs, charges and other expenses paid by Vasantdada Sugar Institute and which are payable by the Contractor under this clause.
- 35.5** The Contractor, in case of re-building or reinstatement after fire, shall be entitled to such extension of time for completion as the PM may deem fit, but shall, however not be entitled to reimbursement by Vasantdada Sugar Institute or any shortfall or deficiency in the amount finally paid by the insurer in settlement of any claim arising as set out herein.
- 35.6** Insurance by Sub-Contractor and Nominated Sub-Contractor Without prejudice to his liability under this clause the Contractor shall also cause all Nominated Sub-Contractor to effect, for their respective portions of the Works, similar policies of insurance in accordance with the provisions of this clause and shall produce or cause to produce to Vasantdada Sugar Institute such policies. The Contractor shall not permit a Nominated Sub-Contractor to commence work at the site unless the said insurance policies are submitted. In the event of failure of the Nominated Sub-Contractor to take out such a policy of Insurance before commencing the works at the site, the Contractor shall be responsible for any claim or damage attributable to the said Nominated Sub-Contractor.
- 35.7** Period of Policies
All the insurance covers mentioned above shall be kept alive during the complete period of the contract.
- 35.8** Remedy on Contractor's Failure to Insure
If the Contractor shall fail to effect and keep in force the Insurances referred to above, or any other insurance which he may be required to effect under the terms of the Contract, then and in any such case Vasantdada Sugar Institute on advice of Architect's/VSI may effect and keep in force any such insurance and pay such premium or premiums as may be necessary for that purpose and from time to time deduct the amount so paid by Vasantdada Sugar Institute as aforesaid from any moneys due or which may become due to the Contractor, or recover the same as debt due from the Contractor.

36. Commencement of Works

From the date when the acceptance letter is issued to the contractor, the contractor shall begin the works in his office/workshop and shall regularly proceed with and complete the same on or before the "Date of Completion" stated in the Appendix subject nevertheless to the provisions for extension of time hereinafter contained.

37. (i) Possession of Site

Save in so far as the Contract may prescribe the extent of portions of the Site of which the Contractor is to be given possession from time to time and the order in which such portions shall be made available to him and subject to any requirement in the Contract as to the order in which the Works shall be executed, Vasantdada Sugar Institute will within the duration as mentioned in the appendix from Architect's/VSI written order to commence the Works at site give to the Contractor possession of so much of the Site as may be required to enable the Contractor to commence and proceed with the programmed and otherwise in accordance with such reasonable proposals of the Contractor as he shall, by notice in writing to Architect/ VSI, make and will from time to time as the Works proceed give to the Contractor possession of such further portions of the Site

as may be required to enable the Contractor to proceed with the construction of the Works with due dispatch in accordance with the said programmed or proposals (as the case may be).

If the Contractor suffers delay or incurs expense from failure on the part of Vasantdada Sugar Institute to give possession in accordance with the terms of this clause Architect's/VSI shall grant an extension of time for the completion of the works and certify such sum as in his sole opinion, shall be fair & final to cover the expense incurred which sum shall be paid by Vasantdada Sugar Institute.

(ii) Way leaves, etc.

The Contractor shall bear all expenses and charges for special or temporary way leaves required by him in connection with access to the Site. The Contractor shall also provide at his own cost any additional accommodation outside the Site required by him for the purpose of the Works.

38. Time for Completion

The entire work is to be completed in all respects within the time stated in Appendix of Form of Tender or such extended time as may be allowed under clause 39 hereof. Time is the essence of the contract and shall be strictly observed by the contractor.

If required in the contract or as directed by Architect/ VSI, the contractor shall complete certain portion of the work before the completion of the whole of the work. However, the completion date for whole of the work shall not change for above.

39. Extension of Time for Completion

If in the opinion of Vasantdada Sugar Institute/ Architect's the works be delayed for reasons beyond the control of the contractor, Vasantdada Sugar Institute/ Architect's may make a fair and reasonable extension of time for completion of the contract works.

If the Contractor needs an extension of time for the completion of the work or if the completion of work is likely to be delayed for any reasons beyond the due date of completion stipulated in the contract, the Contractor shall apply to Vasantdada Sugar Institute for extension of time in writing at least 15 days before the expiry of the scheduled time and while applying for extension of time, Contractor shall furnish the reasons in detail and his justification, if any, for the delays. While granting extension, Architect's/VSI shall notify the contractor the period of time which will not qualify for levy of liquidated damages.

For the balance period in excess of original stipulated period and authorized extension of time granted i.e. period not qualifying for levy of liquidated damages, by Vasantdada Sugar Institute, the provision of liquidated damages as stated under Clause 42 will become applicable.

Further, the contract shall remain in force even for the period beyond the due date of completion irrespective whether the extension is granted or not.

40. (i) Rate of Progress

The whole of the materials, plant and labour to be provided by the Contractor and the mode, manner and speed of execution and maintenance of the Works are to be of a kind and conducted in a manner to the satisfaction of Architect/ VSI. Should the rate of progress of the Works or any part thereof be in the opinion of Architect's/VSI to slow to ensure the completion of the whole of the Works by the prescribed time or extended time for completion, Architect's/VSI shall so notify the Contractor in writing and the Contractor shall thereupon take such steps as considered necessary by Architect's/VSI to expedite progress so as to complete the Works by the prescribed time or extended time for completion. Such communications from neither shall relieve the contractor from Architect's/VSI fulfilling obligations under the contract nor will he be entitled to raise claims arising out of such directions.

ii) Work during Night or on Holidays

Subject to any provision to the contrary contained in the Contract, none of the permanent work shall be carried on during the night or on Holidays without the permission in writing of Vasantdada Sugar Institute. When the work is unavoidable or absolutely necessary for the saving of life or property or for the safety of the Works in which case the Contractor shall immediately advise Vasantdada Sugar Institute

The provisions of this clause shall not be applicable in the case of any work, which becomes essential to carry out by rotary or double shifts in order to achieve the progress & quality of the part of the works being technically required/continued with the prior approval of Vasantdada Sugar Institute.

All work at night shall be carried out without unreasonable noise and disturbance and with the approval of Vasantdada Sugar Institute and in addition that of the local authority, if so applicable. The Contractor shall indemnify Vasantdada Sugar Institute and keep indemnified all the time from and against any liability for damages on account of noise or other disturbance created while or in carrying out the work and from and against all claims, demands, proceedings, costs, charges and expenses whatsoever in regard or in relation to such liability.

41. Suspension of Work

The Contractor shall on the written order of Architect's/VSI suspend the progress of the Works or any part thereof for such time or times and in such manner as Architect's/VSI may consider necessary and shall during such suspension properly protect and secure the work so far as is necessary in the opinion of Architect/ VSI. The extra cost including all running wages to be paid on the Site, salaries, depreciation and maintenance of plant, Site on-costs and overhead costs of the Contract relatable to the works done or incurred by the Contractor in giving effect to Architect's/VSI instructions under this Clause shall, be borne and paid by Vasantdada Sugar Institute unless such suspension is:

(a) Otherwise provided for in the Contract

Or

b) Necessary by reason of inclement weather conditions affecting adversely the safety or quality of the Works.

Or

c) Necessary by reason of some default on the part of the contractor

Provided that the Contractor shall not be entitled to recover any such extra cost unless he gives notice in writing of his intention to claim to within 10 days of Architect's/VSI order. Architect's/VSI shall settle and determine such extra payment and/or extension of time under relevant Clause hereof to be made to the Contractor in respect of such claim as shall in the opinion of Architect's/VSI be fair and reasonable and Architect's/VSI decision shall be final and binding.

42. Liquidated Damages for Delay

If the Contractor fails to complete the works by the date stated in the Appendix or within any extended time under Clause 39 hereof and Architect's/VSI certifies in writing that in his opinion the same ought to have been reasonably completed by the original completion date or extended completion date, as the case may be. The Contractor shall pay Vasantdada Sugar Institute the sum named in the Appendix as "Liquidated Damages" for the period during which the said works shall so remain incomplete or **Vasantdada Sugar Institute** may deduct such damages from any monies due to the Contractor.

43. (i) Default of Contractor

If the Contractor being an individual or a firm commits any "act of insolvency", or shall be adjudged an insolvent or being an Incorporated Company shall have an order for compulsory winding up made against it or pass an effective resolution for winding up voluntarily or subject to the supervision of the Court and the Official Assignee or the Liquidator in such acts of insolvency or winding up, as the case may be, shall be unable within seven days after notice to him requiring him to do so, to show to the reasonable satisfaction of Architect's/VSI that he is able to carry out and fulfill the Contract and to give security therefore, if so required by Architect/ VSI.

Or if the Contractor (when an individual, firm or incorporated Company) shall suffer execution or other process of Court attaching property to be issued against the Contractor.

Or shall suffer any payment under this Contract (to be attached by or on behalf of any of the creditors of the Contractor).

Or shall assign or sublet this Contract without the consent in writing of Vasantdada Sugar Institute.

Or shall charge or in cumber this Contract or any payments due or which may become due to the Contractor hereunder.

Or if Architect's/VSI shall certify in writing to Vasantdada Sugar Institute that the Contractor.

1. Has abandoned the Contract, or
2. Has failed to commence the works, or has without any lawful excuse under these conditions suspended the progress of the works for fourteen days after receiving from Architect's/VSI notice to proceed with the work or
3. Has failed to proceed with the works with such due diligence and failed to make such due progress as would enable the works to be completed within the time agreed upon, or
4. Has failed to remove materials from the site or to pull down and replace work for seven days after receiving from Architect's/VSI written notice that the said materials or work were condemned and rejected by Architect's/VSI under these conditions, or
5. Has neglected or failed persistently to observe and perform all or any of the acts, matters or things by this contract to be observed and performed by the Contractor for seven days after written notice shall have been given to the Contractor requiring the Contractor to observe or perform the same.

Then and in any of the said cases Vasantdada Sugar Institute may, notwithstanding any previous waiver, after giving seven days' notice in writing to the Contractor, determine the Contract, but without thereby affecting the powers of Architect's/VSI or the obligations and liabilities of the Contractor, the whole of which shall continue in force as fully as if the Contract had not been so determined, and as if the works subsequently executed had been executed by or on behalf of the Contractor. And further, Vasantdada Sugar Institute by his agents or servants may enter upon and take possession of the works and all plants, tools, scaffoldings, sheds, machinery, steam and other power utensils and materials lying upon the premises or the adjoining lands or roads and use the same as his own property or may employ the same by means of his own servants and workmen in carrying on and completing the works or by employing any other Contractor shall not in any way interrupt or do any act, matter or thing to prevent or hinder such other Contractor or other person or persons employed for completing and finishing or using the materials and plant for the works. When the works shall be completed or as soon, thereafter, as convenient Architect's/VSI shall give a notice in writing to the Contractor to remove his surplus materials and plant and should the Contractor fail to do so within a period of fourteen days after receipt thereof by him, Vasantdada Sugar Institute may sell the same by public auction, and give credit to the Contractor for the net amount realized. Architect's/VSI shall, thereafter, ascertain and certify in writing under his hand what (if anything) shall be due or payable to or by Vasantdada Sugar Institute, for the value of the said plant and materials so taken possession of by Vasantdada Sugar Institute and the expense or loss which Vasantdada Sugar Institute shall have been put to in procuring the works to be completed and the amount, if any, owing to the Contractor and the amount which shall be so certified shall thereupon be paid by Vasantdada Sugar Institute to the Contractor or by the Contractor to Vasantdada Sugar Institute as the case may be, and the Certificate of Architect's/VSI shall be final and conclusive between the parties.

(ii) Default of Employer:

If the payment of the amount payable by Vasantdada Sugar Institute under Certificate of Architect's/VSI shall be in arrears and unpaid for thirty days after notice in writing requiring payment of the amount as aforesaid shall have been given by the Contractor to Vasantdada Sugar Institute, or if Vasantdada Sugar Institute interferes with or obstructs the issue of any such Certificate, or if Vasantdada Sugar Institute shall repudiate the Contract, or if the works be stopped for three months under the order of Architect's or Vasantdada Sugar Institute or by any injunction or other order of any Court of Law, then and in any of the said cases, the Contractor shall be at liberty to determine the Contract by notice in writing to Vasantdada Sugar Institute, through Architect/ VSI and he shall be entitled to recover from Vasantdada Sugar Institute, payment for all works executed and for any loss he may sustain upon any plant or materials supplied or purchased or prepared for the purpose of the contract.

In arriving at the amount of such payment the net rates contained in the Contractor's original Tender shall be followed or where the same may not apply reasonable valuation shall be made.

44. (i) Determination of Contract

Vasantdada Sugar Institute shall in addition to any other power enabling him to determine the Contract have power to determine the Contract at any time by giving not less than fourteen (14) days' notice in writing to the Contractor and on the expiry of such notice the Contractor shall (with the exception of this clause) forth with determine but without prejudice to the claims of either party in respect of any antecedent breach thereof.

(ii) Compliance with Architect's direction on determination

If the Contract shall be determined, the Contractor shall with all reasonable dispatch comply with the directions of Architect's/VSI in respect to:

- (a) Cancellation of outstanding commitments
- (b) Performance of further work required for the protection of work executed
- (c) The removal of Constructional Plant Temporary Works and materials from the Site
- (d) Any other matters arising out of the Contract with regard to which Architect's/VSI decides that directions are necessary or expedient.

(iii) Payment on determination

In the event of the Contract being determined the sum payable to the Contractor shall be such sum as would have been payable as if the contract had been determined by Vasantdada Sugar Institute and

- (a) The reasonable cost of complying with Architect's/VSI directions and
- (b) Such reasonable sum as may be agreed between the parties or in default of agreement settled by arbitration in respect of the Contractor's overheads including any sums properly and necessarily incurred as the direct result of such determination.

(iv) Architect's/VSI has a right to ascertain the happening of any contingency, including but not limited to the contingencies listed below, which would vest in Vasantdada Sugar Institute certain powers including, but not limited to, taking possession of the work so far as it has been performed, and to completing the work either by himself or by employing some other Agency, retaining property of the Contractor, such as materials, plant or money already due to the Contractor:

- (a) Failure of Contractor to proceed with or complete the works in the time or manner stipulated
- (b) Contractor's bankruptcy.
- (c) Failure of Contractor to commence the work within the stipulated period as mentioned in the contract.
- (d) Failure of Contractor to regularly proceed with the work for a certain fixed period.
- (e) Failure of Contractor to proceed to the satisfaction of Vasantdada Sugar Institute or Architect's/VSI.
- (f) Failure of Contractor to proceed with the work for any reason independent of prevention by Employer.
- (g) If in Architect's/VSI opinion, the Contractor is not exercising due diligence and proceeding with such dispatch as will not enable the works to be duly completed in time.
- (h) Failure of Contractor in complying with the orders and directions given by Architect's/VSI.
- (i) Failure of Contractor in complying with the Specification, stipulations, conditions or Drawings.
- (j) The Contractor being guilty of any default in the fulfillment of the contract.
- (k) The Contractor leaves the work unfinished.
- (l) Failure of Contractor, after due notice, to rectify defective work.
- (m) The Contractor renouncing materials from site, and,
- (n) Failure of Contractor to maintain the works
- (o) The Contractor become Insolvent

45. Security Deposit/ Retention money:

The security deposit of the contractor will be forfeited if he fails to comply with any of the conditions of the contract. The details will be remaining same as per an **Appendix**.

46. Certificates & Payment

(i) **Mobilization Advance:** No mobilization advance will be paid by Vasantdada Sugar Institute /Owner.

(ii) Interim Payments

- (a) The Contractor shall be paid by Vasantdada Sugar Institute from time to time by installments under Interim Certificate to be issued by Architect/ VSI to the Contractor on account of the works executed when in the opinion of Architect/ VSI, work to the approximate value named in the Appendix to form of tender "Minimum value of Work for Interim Certificate" (or less at the sole discretion of Architect/ VSI.) has been executed in accordance with this contract, subject, however, to a retention of the percentage of such value named in the **Appendix** to form of tender hereto as "Retention Percentage for Interim Certificates" until the total amount retained shall reach the sum named in the Appendix to form of tender as "Security Deposit".
- (b) The contractor shall normally be paid one bill in a month, which shall include work done, secured advance against material if any. If in the opinion of Architect/ VSI the progress of the work warrants a second payment in a month, the same shall be so arranged by Vasantdada Sugar Institute
- (c) The contractor shall be paid the amount of the interim bill within the days as specified in the Appendix after the certification from Architect is honored by Vasantdada Sugar Institute

However, the certification period of the bill by Architect/ VSI shall be subject to satisfactory submission of all information, supporting vouchers etc. by the contractor and as required by Architect/ VSI.

(iii) Final Bill

- (a) The Contractor shall submit final bill against commissioning and handing over including statutory approvals for the entire installation **within 30 days** from the date of virtual hand over with all relevant information and details.
- (b) Architect/ VSI **within 30 days** of submission of the final bill, shall issue a certificate of payment against the final bill to Vasantdada Sugar Institute who shall thereupon, within 30 days from the date of receipt of the certificate, shall release the balance, payment to the contractor after effecting all recoveries including advances and payments against interim certificates.
- (iv) Architect/ VSI shall have power to withhold Certification if the works or any parts thereof are not being carried out to his satisfaction.
- (v) Architect/ VSI may, by any Certificate, make any correction in any previous Certificate, which shall have been issued by him.
- (vi) No payment shall be made to the Contractor if the Contractor fails to insure the works and keep them insured till the issue of the Virtual Completion Certificate.

47. Settlement of Disputes and Differences

- a) The Contractor shall try to settle amicable all matters pertaining to this contract first with Architect/ VSI. The decision of Architect/ VSI may be in the form of a certificate, instruction or otherwise. The decision, opinion, direction, certificate for payment with respect to all or any of the matters hereof (which matters are hereinafter referred to as excepted matters) of Architect/ VSI shall be final and conclusive and binding on the Contractor and employer and shall be without appeal.
- b) All other disputes and differences of any kind whatsoever between the Contractor and Architect/ VSI arising out of or in connection with the contract or carrying out the works (whether during progress of work or within defects liability period and whether before or within 365 days of determination / abandonment / breach of the contract) shall then be referred by the Contractor to Vasantdada Sugar Institute giving interlaid full details of matter under dispute and the reasons thereof. Vasantdada Sugar Institute shall within a period of 60 days from the receipt of such reference from the contractor, give his decision in writing. If the Contractor is dissatisfied with the decision of Vasantdada Sugar Institute, he can refer the matter for arbitration by serving a written notice on Vasantdada Sugar Institute, through Architect/ VSI within a period of 10 days of such decision. The notice shall specify the matters with full details and amount, which are in dispute and referred for arbitration.

48. (i) Arbitration:

All claims, disputes and differences between the Contractor and Vasantdada Sugar Institute arising out of this contract shall be referred to arbitration under the provision of The Arbitration and Conciliation Act, 1996. The sole arbitrator shall be selected by the Contractor from a panel of 3 arbitrators suggested by Vasantdada Sugar Institute. The venue of arbitration shall be at "PUNE ". The arbitration proceedings shall be in English language. The arbitration award shall be final and binding upon the Parties.

It is agreed that the Contractor shall not delay the carrying out of the works by reason of any such matter, question or dispute being referred to arbitration, but shall proceed with the works with all due diligence and shall, until the decision of the Arbitrator is given, abide by the decision of the Engineer and no award of the Arbitrator shall relieve the Contractor of his obligations to adhere strictly to Architect/ VSI instructions with regard to the actual carrying out of the works. Vasantdada Sugar Institute and the Contractor hereby also agree that arbitration under this Clause shall be a condition precedent to any right of action under the contract.

(ii) Serving of Notice on the Contractor

Any notice to be given to the Contractor under the terms of the Contract shall be served by sending the same by registered post to/ or leaving the same at the Contractor's principal place of business (or in the event of the Contractor being a Company to/ or at its registered office).

(iii) Serving of Notice on Vasantdada Sugar Institute

Any notice to be given to Vasantdada Sugar Institute under the terms of the Contract shall be served by sending the same by registered post to / or leaving the same at Vasantdada Sugar Institute at **Construction of Foundation for Digesters in Bio Digester Demo plant at Manjari** to the attention of Mr. _____

49. Program of Works

(i) Detailed Program to be furnished

Within 10 days of receiving letter of Acceptance, the Contractor shall prepare and submit a detailed programmed of works in the form of a Bar Chart / Mile stone network showing all activities & the order of procedure in which he proposes to carry out the works. Within 15 days from the date of submission Architect/ VSI shall convey to the Contractor his comment/ approval on the program.

The contractor shall be required to submit the Bar chart for the various activities involved in this work including dependencies etc., and regularly monitor the progress of execution accordingly.

(ii) Program to be modified

If at any time it should appear to Architect/ VSI that the actual progress of the works does not conform to the approved programmed referred to in sub-clause (i) of this Clause, the Contractor shall produce a revised & detailed programmed showing the modifications to the original programmed necessary to ensure the completion of the works within the time for completion.

(iii) Cash Flow

The detailed program shall also show the estimated Cash flow required for each month to complete the works.

(iv) Progress Report / Photograph.

Four copies of daily progress reports containing the following shall be submitted by the Contractor to Vasantdada Sugar Institute/ Architect on or before the 2nd day.

- (a) Daily detailed progress report showing the progress of individual activities of programmed as achieved at his office/workshop/site till such period and being suitably marked on the approved network diagram, or as directed by Architect/ VSI, shall be provided by the Contractor indicating the actual state of progress during the course of the contract, together with other details of procurement & delivery schedules of materials/equipment's, as required by Architect/ VSI.
- (b) Labour report during installation in the form pre-scribed by Architect/ VSI.

- (c) Equipment & machinery report in the form prescribed by Architect/ VSI.
- (d) Supervisory staff reports in the form prescribed by Architect/ VSI.
- (e) Report should contain at least five progressive photographs to be taken from different corners of the site.

50. Urgent Repairs

If by reason of any accident or failure or other event occurring to in or in connection with the Works, or any part thereof, either during the execution of the Works or during the Period of Defect Liability/ Maintenance, any remedial or other work or repair shall, in the opinion of Architect/ VSI or Architect's representative be urgently necessary for security and safety of life or for the works or of adjoining property, and the Contractor is unable or unwilling at once to do such work or repair, Vasantdada Sugar Institute may employ his own or other workmen do such work or re-pair as Architect/ VSI or Architects representative may consider necessary. If the work or repair so done by Vasantdada Sugar Institute is in the opinion of Architect/ VSI, the Contractor was liable to do at his own expense under the Contract, all costs and charges incurred by Vasantdada Sugar Institute in so doing shall on demand be paid by the Contractor to Vasantdada Sugar Institute or may be deducted by Vasantdada Sugar Institute from any monies due or which may become due to the Contractor. Provided always that Architect/ VSI or Architects representative (as the case may be) shall, as soon after the occurrence of any such emergency, as may be reasonably practicable notify, the Contractor thereof in writing.

51. Contractor to Search

The Contractor shall, if required by Architect/ VSI in writing, search, test as shall be necessary to determine the cause of any defect, imperfection or fault under the directions of Architect/ VSI. Unless such defect, imperfection or fault shall be one for which the Contractor is liable under the contract, the cost of the work carried out by the Contractor in searching as aforesaid shall be borne by Vasantdada Sugar Institute. But if such defect, imperfection or fault shall be one for which the Contractor is liable as aforesaid, the cost of the work carried out in searching as aforesaid shall be borne by the Contractor and he shall in such case repair rectify and make good such defect, imperfection or fault at his own expense.

52. Interference with Traffic and adjoining properties

All operations necessary for the execution of the Works and for the construction of any Temporary Works shall so far as in compliance with the requirements of the Contract permits be carried on so as not to interfere unnecessarily or improperly with the public convenience or the access to use and occupation of public or private roads and footpaths or to or of properties whether in the possession of Vasantdada Sugar Institute or of any other person and the Contractor shall save harmless and indemnify Vasantdada Sugar Institute in respect of all claims, demands, proceedings, damages, costs, charges and expense whatsoever arising out of or in relation to any such matters in so far as the Contractor is responsible or become liable therefore.

53. (i) Contractor to keep site clear

During the progress of the works the Contractor shall keep the site reasonably free from all unnecessary obstruction and shall store or dispose of any constructional plant and surplus materials and clear away and remove from the site any wreckage, debris or temporary works which are no longer required.

(ii) Clearance of Site on Completion

On the completion of the Works the Contractor shall clear away and remove from the site all constructional plant, surplus materials, debris and temporary works of every kind and leave the whole of the site and works clean and in a workmanlike condition to the full satisfaction of Architect/ VSI/ local authorities not later than 30 days from the virtual completion of the works or by such other later date as fixed by Architect/ VSI.

54. Power, Water & other facilities

- (a) The Contractor shall make his own arrangements for the supply of good quality potable water at site, for his Labour at site, and all charges for water shall be borne by him. If Municipal water is not available and should it become necessary for Contractor to obtain water for construction purposes or to bring water from outside by tankers, Vasantdada Sugar Institute shall not be liable to pay any charges in connection therewith.
- (b) The rate quoted in the tender shall also include electric charges for power and construction water consumption. Contractor is responsible for availability of power and water at site for construction. No delay will be acceptable for non-availability of power and water.

55. (i) LABOUR

Engagement of Labour:

- a. The Contractor shall make his own arrangements for the engagement of labour, local or otherwise, and for their transport, housing and payment. All Labour engaged by the Contractor shall be and remain the employees of the Contractor and no claim shall lie against Vasantdada Sugar Institute in respect of any right or benefit due to them in their employment.
- b. The Contractor shall obtain a valid license under the Contract Labour (Regulation and Abolition) Act before the commencement of the Works and continue to have a valid license until the completion of work or expiry of Guarantee Period, if applicable.
- c. The Contractor shall pay the Labour employed by him directly or through Sub-Contractors, wages not less than the minimum wages notified under the Minimum Wages Act and other benefits such as PF, ESI etc.
- d. Vasantdada Sugar Institute shall, on a report from the competent authority have the power to deduct from the monies due to the Contractor any sum notified under the provisions of the relevant Act.

The Contractor shall indemnify Vasantdada Sugar Institute and keep Vasantdada Sugar Institute indemnified all the time against all or any payments to be made under and for the observance of any Act, Rules and Regulations aforesaid without prejudice to his right to claim indemnity from his Sub-Contractors.

Model Rules: The Contractor shall at his own cost comply with or cause to be complied with Model Rules for Labour welfare framed by the Government or other local bodies from time to time for the protection of health and for making sanitary arrangement for workers employed directly or indirectly on the works and in the workers' hutment area. In case the Contractor fails to make arrangements as aforesaid, Vasantdada Sugar Institute shall be entitled to do so and recover the cost thereof from the Contractor. The Contractor shall ensure all Labour engaged by him wear protective gear such as hard hats, shoes etc. at all times on Site.

Safety Code: The Contractor at his own cost arrange for the safety provisions stipulated by Government or local authorities or as required by Architect/ VSI in respect of all Labour directly or indirectly employed for performance of the works and shall provide all facilities in connection therewith. In case the Contractor fails to make arrangements and provide necessary facilities as aforesaid, Vasantdada Sugar Institute shall be entitled to do so and recover the costs thereof from the Contractor.

Child Labour: The Contractor shall not employ any labour under 18 years of age on the job.

The Contractor shall furnish to Architect/ VSI in writing every week in such detail and form as may prescribe showing the supervisory staff and the number of labour employed by the Contractor and Sub-Contractors on the Site separately for each category of labour indicating their working hours.

(ii) Supply of Water

The contractor shall be having regards to local conditions provide on the Site to the satisfaction of Architect/ VSI an adequate supply of drinking and other water for the use of the Contractor's staff, workmen.

(iii) Festivals & Religious Customs

The Contractor and sub-contractor's agents and employees shall in all their dealings with their workmen and labourers for the time being employed on or in connection with the works have due regard to all recognized festivals and religious and other customs.

(iv) Epidemics

In the event of any outbreak of illness of an epidemic nature, the Contractor shall comply with and carry out such regulations, orders and requirements as may be made by the Government or the local medical or sanitary authorities for the purpose of overcoming the same.

(v) Disorderly Conduct

The Contractor shall at all times take all reasonable precautions to prevent any unlawful, riotous or disorderly conduct by or amongst his or his subcontractor's employees and for the preservation of peace and protection of persons and property in the neighborhood of the works against the same but the contractor shall not interfere with member of any authorized Police Force who shall have free and undisputed access at all times to any part of the Works in the execution of their duties.

(vi) Accidents

The Contractor shall immediately on occurrence of any accident at or about the Site or in connection with the execution of the work report such accident to Architect/ VSI. The Contractor shall also report such accident immediately to the competent authority whenever such report is required to be lodged by law & take appropriate actions thereof.

(vii) Fair Wages

The Contractor shall in respect of all persons employed by him in factories, workshops or other places occupied or used by him for the execution of the Contract including the Works, pay rates or wages, emoluments and expenses and observe hours and conditions of labour not less favorable than those established for the trade or industry in the district where the work is carried out to which the organizations of employers and trade unions representatives or a substantial proportions of Vasantdada Sugar Institute and workers engaged in the trade or industry in the district are affiliated. In the absence of such established rates and conditions, the Contractor shall pay rates or wages and observe hours and conditions of labour which are not less favorable than the general level of wages, hours and conditions observed in the trades or Industries similar to those in which the Contractor is engaged.

The Contractor shall comply with the provision of all labour legislation including the latest requirements of all the Acts, Laws, any Regulation or Bylaws or any local or other statutory Authority applicable in relation to the execution of works, such as:

- a) Minimum wages Act, 1948 (Amended)
- b) Payment of Wages Act, 1936 (Amended)
- c) Workmen's Compensation Act, 1923 (Amended Act No 65 of 1976)
- d) Contract Labour Regulation & Abolition Act, 1970 and Central Rules 1971 (Amended)
- e) Apprentices Act 1961
- f) Any other Act including E.S.I.C or enactment relating thereto and rules framed there under from time to time
- g) Industrial Employment (standing order) Act, 1946 (Amended)
- h) Personal Injuries (Compensation Insurance) Act, 1963 and any modifications thereof & rule made there under from time to time.
- i) Employees' Provident Fund & Miscellaneous Provisions Act, 1952 and amendment thereof.

viii) Workmen's Compensation:

If, for any reason, Vasantdada Sugar Institute is obliged, by virtue of the provisions of the Workmen's Compensation Act, 1923, or any statutory modification or reenactment thereof to pay compensation to a workman employed by the Contractor in execution of the works, Vasantdada Sugar Institute shall be entitled to recover from the Contractor the amount of compensation so paid and without prejudice to the rights of Vasantdada Sugar Institute under the said Act. Vasantdada Sugar Institute shall be at liberty to recover such amount or any part thereof by deducting it from the security deposit or from any sum due by Vasantdada Sugar Institute to the Contractor under this Contract or other-wise. Vasantdada Sugar Institute shall not be bound to contest any claim made against it under the said Act, except on the written request of the contractor and upon his giving to Vasantdada Sugar Institute full security to the satisfaction of Vasantdada Sugar Institute for all costs for which Vasantdada Sugar Institute might become liable in consequence of contesting such claim.

(ix) Observance by Sub-Contractors

The Contractor shall be responsible for the observance by sub-contractors employed by him in the execution of this Contract of the provisions hereof and applicable laws, rules and regulations.

The Contractor shall adhere to all statutory requirements and laws of the land as mentioned above and their applicable rules, and such other laws, regulations and guidelines issued by any other judicial or quasi-judicial authority that may be applicable and/or issued from time to time, including any such directions arising out of a breach of any audit/ regulatory/ legal requirement which may arise out of any audit, assessment, under the provisions of this Agreement, or provide all statutory benefits to its employees as per the laws of the land.

56. Safety Code.

- **Safety Procedures:**

- i. The Contractor shall incorporate in his operation the requirements of all the "Safety Codes" issued by the Bureau of Indian Standards, National Building Code and regulations duplicated by local Authorities, the more stringent regulations shall be deemed to apply. If the Contractor fails to take safety measures and provide facilities at the Site of work to ensure safety of Works and injuries to workmen, Architect/ VSI shall have the powers to do provide the same and recover the cost thereof from the Contractor.
- ii. The Contractor shall provide safe means of access to all working places on the Site.
- iii. The Contractor shall properly design scaffolding, temporary access, ladders, ramps and hoisting arrangements, cranes etc. as applicable, to ensure safety of workmen as well as Works. All scaffoldings, ladders and other safety devices shall be maintained in safe condition.
- iv. All necessary personal safety equipment shall be kept available for the use of the persons employed on the Site maintained in a condition for immediate use. The Contractor shall take adequate steps to ensure proper use of equipment by those concerned.
- v. Adequate precautions shall be taken to prevent danger from electrical equipment.
- vi. No materials on the site of works shall be so stacked or placed as to cause danger or inconvenience to any person or the public.

- **Safety Codes / Guidelines:**

All consequences, damages or losses arising by reason of any violation of the safety requirements shall be met by the Contractor. The Contractor shall be bound to pay compensation to the person /for the injuries sustained or death owing to neglect of the safety precautions, should any claim proceedings be filed against Vasantdada Sugar Institute the Contractor hereby agrees to indemnify Vasantdada Sugar Institute against the same.

- i. All construction personnel, visitors and any other person on the project shall wear approved Hard Hats, Color-coded T – Shirts, Safety glasses with side shields, shoes and an identification badge. These badges must clearly be shown to the security. Persons without badge will not be allowed on project site. Visits are not allowed on the project site without a visitor's badge, which the contractor must obtain, for security.
- ii. Project Manager, and, or security are authorized to inspect all persons, vehicles and personal lunch boxes, packages and bundles entering or leaving the project.
- iii. Each Contractor shall appoint a safety person to monitor their work. All contractor safety monitors will report to Project Manager / Safety Manager. All contractors and sub-contractors will submit a weekly report stating all accidents. They are also liable to maintain an active list of all hazardous substance and be in possession of material safety data sheets.
- iv. First aid appliances including adequate supply of sterilized dressings and cotton wool shall be kept in a readily accessible place.
- v. All contractors must develop an emergency treatment and medical evaluation procedure. He will set up a working arrangement with local medical doctor to handle injury cases, and provide for other treatment by a specialist or local hospital. Project Manager must be notified immediately of all work injuries. An injured person shall be taken to a public/private hospital without loss of time, in cases where the injury necessitates hospitalization.
- vi. Job site must be kept free from scrap wood, paper, plastics, garbage, loose and broken materials. Housekeeping will be enforced and each contractor shall be responsible for their own work area. A housekeeping program shall be established and waste disposal will conform to local legislation. **Removal of debris and waste shall be carried out without fail on a daily basis.**
- vii. Suitable and strong scaffolds should be provided for workmen for all works that cannot safely be done from ground. All scaffolding shall have clear timber or steel planks with toe boards. It will have handrails extending 36" above the deck. A mid-rail must be provided at 18". All scaffolding shall be manufactured frames bracing connecting pins and other accessories.
- viii. No portable single ladder shall be over 8 meters in length. The width between the side rails shall not be less than 30 cm. (clear) and the distance between two adjacent rungs shall not be more than 30 cm. When a ladder is used an extra mason shall be engaged for holding the ladder. All ladders will be factory or shop built. They shall be tied off and extended 1.0m above the landing. Painted ladders are not allowed.

- ix. The excavated material shall not be placed within 1.5 meters of the edge of the trench or half of the depths of trench whichever is more. All trenches and excavations shall be provided with necessary fencing and lighting.
- x. All extension cords or electrical cable shall be free of cuts or scuffs. All cords shall have either male or female 3-prong sockets. Bare wire stuff into a receptacle will not be allowed. All sliced wire shall be done with a splice kit, not just turned and taped. All portable electrical equipment shall be inspected by a competent person.
- xi. All electrical hookups and connections to power panels, step down transformers and distribution boxes shall be done by a certified electrician. All electrical equipment will be grounded.
- xii. All gas bottles shall be stored upright secured by chain and separated by type. Empty bottles shall be stored in the same manner. Valve assembly caps shall be provided for all bottles. No gas bottles shall be rolled or dragged on the ground or concrete. They must be kept upright and moved on a cart and carried. No hoses shall be connected to the oxygen or acetylene bottles without a proper working gauges and flashback arrestor.
- xiii. Every opening in the floor of a building or a working platform shall be provided with suitable means to prevent the fall of persons or materials by providing suitable fencing or railing whose minimum height shall be one meter.
- xiv. No floor, roof or other part of the structure shall be so overloaded with debris or materials as to render it unsafe.
- xv. Welding works wherever carried out should be undertaken using complete protection equipment like, but not limited to glass cover for eye protection and should always be accompanied by a fire extinguisher. Such works should only be undertaken by trained technicians and should always be done in the presence of an extra person.
- xvi. Fire Extinguisher minimum 2 numbers per floor (ABC type of minimum 3 Kgs Each) to be provided by contractor at the period of execution of the site.
- xvii. (a) No paint containing lead or lead products shall be used except in the form of paste or readymade paint.
(b) Suitable facemasks shall be supplied for use to the workers when the paint is applied in the form of spray or surface having lead paint dry rubbed and scrapped.
- xviii. The Contractor to the painters shall supply overalls and adequate facilities shall be provided to enable the working painters to wash during the periods of cessation of work.
- xix. Hoisting machines and tackle used in the works, including their attachments, anchorage and supports shall be in perfect condition.
- xx. The ropes used in hoisting or lowering materials or as a means of suspension shall be of durable quality and adequate strength and free from defects.
- xxi. Those engaged in working at heights shall use safety belts.
- xxii. No workman shall walk under a load being lifted.
- xxiii. No kids / children would be permitted within the Project site. No minors (below the age of Eighteen years) would be permitted to work on the Project site.
- xxiv. Project Manager shall have the authority to shut a portion of the work in progress or all work of the project whether they deem that the work is being carried out in an unsafe manner, safety equipment is not being used and safety procedures are not followed.

57. Storage

The contractor shall make arrangements for his own stores outside of site. The contractor shall be responsible for the security of his goods.

58. Site Office & Temporary toilets

- a. The Contractor shall make arrangements for a site office & meeting room at the site as per the instruction by Architect/ VSI.
- b. The site office shall be equipped with necessary office furniture, display boards etc during the entire course of the project.
- c. The Contractor shall make separate toilet for his labours & other employees at site at a location as shown by Vasantdada Sugar Institute/ Architect & shall be responsible to maintain the same during the entire duration of the project.
- d. The contractor to have a computer having internet facility and an A4 Size printer.

59. Force Majeure

Force Majeure is defined as events which are Unexpected Risks and satisfy all of the following:

- a. No delay or failure in performance by either party shall constitute default or give rise to any claim for damages to extent, if such failure or delay is caused by Force Majeure. Force Majeure is an occurrence beyond the control and without the fault or negligence of parties and which they are unable to prevent by the exercise of reasonable diligence including but not limited to: acts of God or the public enemy, expropriation or confiscation: war whether declared or undeclared, rebellion, civil disturbances epidemics strikes not attributable to Contractor or its sub-contractors, sabotage and signs. The explosions, floods, earthquakes and other similar occurrences provided the notice of happening of such eventuality is given by the affected party within 10 days from the date of occurrence. Delays attributed to and within the control of Contractor 's Sub-contractor shall be deemed to be delays within the control of Contractor.
- b. Suspension of Obligations in the Event of Force Majeure: If either party is prevented or delayed in performing any its obligations under this Contract by Force Majeure, it shall, in so far as it is able, immediately notify the other party at the circumstances constituting the Force Majeure and of the obligations affected, and the party giving the notice shall thereupon be excused the performance or punctual performance as the case may be, of such obligations to the extent of the delay caused by the Force Majeure event as may mutually be agreed by the parties.
- c. Performance to Continue: Upon the occurrence of any circumstances of Force Majeure, the party claiming Force Majeure shall use all reasonable endeavors to continue to perform its obligations under PO and to minimize the adverse effects of such circumstances. Such party shall notify performance.
- d. No Liability: Each party shall be liable for its own costs, loss or damage (including indirect or consequential damages) caused by a Force Majeure event.
- e. Long Duration: If the performance of the work is prevented or delayed for an aggregate of more than ninety (90) days by one or more events of Force Majeure the parties shall meet to decide the measures to be taken.

59. **Indemnity Bond:** The Contractor shall submit an Indemnity Bond in pursuance of this Contract as per the Format enclosed hereunder which will also form a part of this Contract.

60. ADDITIONAL SPECIAL CONDITIONS FOR WORKS ANNEXURE

COMPENSATION FOR DELAY

Clause 1 - The time allowed for carrying out the work as entered in the tender shall be strictly observed by the contractor and shall be strictly observed by the contractor commence work is given to the contractor. The work shall throughout the stipulated period of the contract be proceeded with, with all due diligence (time being deemed to be the essence of the contract on the part of the contractor) and the contractor shall pay as compensation an amount equal to one percent of such smaller amount as the superintending engineer (whose decision in writing shall be final) may decide of the amount of the estimated cost of the whole work as shown by the tender for everyday that the work remains un-commenced or unfinished after the proper dates. And further to ensure good progress during execution of the work, the contractor shall be bound, in all cases in which the time allowed for any work exceeds one month to complete.

The programme for completion of work is attached in form of bar chart on page no. The contractor is supposed to carry out the work and keep the progress as per bar chart on page no. The contractor should complete the work as per phase period given below, which is arrived from the bar chart.

Sr. no.	Financial progress of work	Time allowed	Amount to be withheld in case of non-achievement of milestones
1	1/8 th of Contract cost	1.0 months	1% of Contract cost
2	3/8 th of Contract cost	1.5 months	2% of Contract cost (1% + 1%)
3	3/4 th of Contract cost	2.5 months	3% of Contract cost(1% + 1% + 1%)
4	100 % of contract cost	3.0 months	Rs. 5000.00 per day and maximum upto 10% of contract cost.

****Note:** the quantity of the work to be done within a particular time to be specified shall be fixed and inserted in the blank space kept for the purpose by the officer competent to accept the contracts after taking into consideration the circumstances of each case and abide by the programme of details process laid down by the Executive Engineer.

The following proportion will usually be found suitable in ¼, ½, ¾ of the time.

Reasonable progress of earth work 1/6, ½, ¾ of the total value of the work to be done.

Reasonable progress of masonry 1/10, 4/10, 8/10 of the total value of the work to be done.

In the event of the contractor failing to comply with these conditions he shall be liable to pay as compensation an amount equal to one percent or such smaller amount as the superintending engineer (whose decision in writing shall be final) may decide of the said estimated cost of the whole work for every day that the due quantity of work remains incomplete provided always that the total amount of compensation to be paid under the provisions of this clause shall not exceed 10 percent of the estimated cost of the work as shown in the tender. Superintending Engineer should be the final authority in this respect, irrespective of the fact that tender is accepted by Chief Engineer/Additional Chief Engineer/ Superintending Engineer/ Executive Engineer or Assistant Engineer/ Deputy Engineer.

ACTION WHEN WHOLE OF SECURITY DEPOSIT IS FORFEITED –

Clause 2 - In any case in which under any clause of this contract of the contractor shall have rendered himself liable to pay compensation amounting to the whole of this security deposit whether paid in one sum or deducted by installments or in the case of abandonment of the work owing to serious illness or death of the contractor or any other causes, the Executive Engineer, on behalf of the Governor of Maharashtra shall have power to adopt any of the following courses, as he may deem best to interest of Government.

a) To rescind the contract (for which recession notice in writing to the contractor under the hand on Executive Engineer shall be conclusive evidence) and in that case the security deposit of the contractor shall stand forfeited and be absolutely at the disposal of the Government.

b) To carry out the work or any part of the work departmentally debiting the contractor with the cost of work, expenditure incurred on tools and plant, and charges of additional supervisory staff including the cost of work-loss sustained by reason of his having purchased, or procured any materials, or entered into any engagements or made any advances on account of, or with a view to the execution of the work or the performance of the contract.

SPECIAL CONDITIONS OF CONTRACT

1. Scope of Work: The work to be carried out under the contract shall except as otherwise provided in these conditions, include all labour, material, tools, plants, equipment and transport which may be required in preparation of and for and in full and entire execution and completion of the works. The description given in the schedule of works / items / quantities and the Bills of Quantities shall, unless otherwise stated, be held to include wastage of materials, carriage and cartage carrying in, return of empties, hoisting, setting, fitting and fixing in position and all other labour necessary in and for the full and entire execution and completion as aforesaid in accordance with good practice and recognized principles.
2. No Tenders shall be accepted unless the full amount of the earnest money deposit is paid at the time of submitting the tender.
3. Fluctuations in the price of any materials or equipment or labour etc., shall not be taken into account either for compensation for damage or for extras. The validity of the tender shall be 30 days for acceptance.
4. Watch and ward in respect of all plans and machinery at site for use in work shall be the contractor's sole responsibility.
5. The contractor shall have to make his own arrangements to house his labour and staff and for their services and at no cost shall the premises be used for accommodating the workers. The premises shall also be kept clean at all times during the execution of work and to the complete satisfaction of Architect/ VSI. Failure to do so shall invoke a penalty as decided by Architect/ VSI.
6. The contractor shall ensure that all work related to carpentry, granite/ marble polishing work, etc. shall be executed and finished off-site in a workshop and that only fixing and touch-ups shall be undertaken at site.
7. All instructions regarding the execution of works shall be received from Architect/ Vasantdada Sugar Institute only. Any other instructions issued directly to the contractor by anyone else shall not be binding on the Vasantdada Sugar Institute.
8. During execution of works the contractor must check his work with the drawings. The contractor shall be responsible for all the errors in this connection and will have to rectify all defects at his own cost, failing which the Vasantdada Sugar Institute reserves all right to get the same rectify at the risk and cost of the contractor.
9. The contractor executing the work shall indemnify the Vasantdada Sugar Institute/ Architect against theft, mishaps in construction and injury to workman, damage to person, property etc. He shall make good the damage at his own expense.
10. The contractor shall provide all persons working at site during the course of the work and all visitors to the site with hard hats \ Helmets during their presence on site. This shall be done at the contractor's expense.
11. Vasantdada Sugar Institute shall have the power to omit or cancel, add or alter any item of work without assigning any reason whatsoever and no claim for compensation for damage will be entertained for such omissions, alterations, addition and cancellations other than taking in account the cost involved for such changes, to be plus or minus, and the cost shall be arrived at by Vasantdada Sugar Institute Architect taking into consideration the market rates, site conditions, etc.
12. Time is the essence of the work. All the works shall have to be completed within the stipulated time from the date of work order (Appendix). If the work is not completed within the aforesaid period, the contractor shall pay the Vasantdada Sugar Institute and Vasantdada Sugar Institute shall be entitled to deduct from the money due to the said contractor the sum will be as specified in the Appendix.
13. The contractor shall maintain satisfactory progress of work as well as maintain the desired standard of workmanship. He shall submit weekly progress reports to Vasantdada Sugar Institute/ Architect in the format approved by the Vasantdada Sugar Institute/Architect. If in the opinion of Architect/ Vasantdada Sugar Institute the progress is unsatisfactory and /or the workmanship is unsatisfactory, Vasantdada Sugar Institute/ Architect shall take possession of the work in as and where condition with 7 days' notice to that effect. Vasantdada Sugar Institute shall then complete the entire work and rectify all the defects at the contractor's costs and consequences.

14. In case Vasantdada Sugar Institute/Architect/ are not satisfied with the quality of materials used by the contractors, they reserve the right to reject such materials/work and direct the contractor to procure such supplies from agencies they deem fit.
15. It is agreed that if the works are delayed (1) by force majeure or (2) by reasons of any exceptionally inclement weather or (3) by reasons of loss or any damage by extensive fire not caused by an act or a default on the part of the contractor, by earthquake or civil commotion, strike or lockouts affecting any of the trade employed upon the works, then the Vasantdada Sugar Institute shall make fair and reasonable extension of time for completion of works. Upon the happening of any such event, causing delay, the contractor shall immediately give notice thereof in writing to the Vasantdada Sugar Institute and assist the contractor to the almost extent possible to meet the situation. If no such notice as mentioned above is given within 7 days of happening of such event, no consideration for extra time on this account will be given. No Claim for damage or compensation will be entertained on this account and the decision of Vasantdada Sugar Institutes/ Architects will be final and binding on all parties.
16. The contractor shall submit the bills for payment strictly in the format given below along with detailed statement showing the actual works carried out under deferent heads of items. Minimum value of the work for interim payment shall be as per Appendix.

BILL FORMAT:

Item No	Description of Item	Qty.	Unit	Rate	Amount	% work done	Amount of % work done

Note: All quantities in the bill should be cumulative. All measurements should be in the order of tender sequence and strictly in the format mentioned further.

MEASUREMENT FORMAT:

Item No.	Description of Item & Location against each measurement taken.	Nos .	Length .	Breadth / Width	Height	Quantity	Unit
----------	--	-------	----------	-----------------	--------	----------	------

15. The contractor shall clear the site of works as per the instructions of the Vasantdada Sugar Institute/ Architect. The site of works shall be cleared of all men, materials etc., belonging to the contractor. The site shall be delivered in clean and neat condition immediately after the job is completed. In case of failure by the contractor, Vasantdada Sugar Institute shall have the right to get the site cleared at the risk and cost of the contractor.
16. The contractor shall not without the written consent of Vasantdada Sugar Institute/ Architect assign the agreement or any portion of works.
17. **The quoted rates shall be all inclusive and cover the cost of all materials, labour, freight, insurance, all types of taxes, duties, excise, VAT, CST-LST, royalties, erection, construction, testing, of materials, samples brought for approval, setting up mock up samples for approval, temporary arrangements for lighting /fans tools and tackles, plant and equipment's, supervision, overhead, profit and any other expenditure incurred for completion of work as per drawings and specification**
18. Wherever required, the Vasantdada Sugar Institute/ Architect shall instruct for supply of samples of items or erection of mock- up, as the case may be, and upon approval of the same, the items shall be fabricated and completed by the contractor (with or without modification as Architect/ VSI shall instruct).
19. The final bill from the contractor shall not be entertained under any circumstances without full completion of all the items of works. Any work found defective or wrongly carried out, and instructed by Architect/ VSI to be rectified or replaced shall be rectified or replaced prior to submission of the final bill. It is to be expressly noted that no final bill will be held valid in the event of non - rectification of the defective or wrongly carried out items and the completion date shall not on this account be extended. Defects liability period will be effective from the day of satisfactory completion of all the items of work, as may be certified by Architect/ VSI.

20. While executing the work, considerable amount of shifting and re-shifting of several furniture items are likely to be involved. It is also likely that some of the items might be required to be temporarily shifted elsewhere in the premises on any other floors. These shall be done by the contractor and no payment against these works shall be separately paid for by Vasantdada Sugar Institute
21. The contractor shall acquaint himself with the site conditions, local traffic regulations, local authority regulation, availability of materials, labour tax structure, etc., and quote rates accordingly. No extra charge/increase in rates shall be allowed on any other accounts.
22. The contractor and / his authorized representative will attend all the meeting whenever called for and the decisions taken in the meeting will be binding on the contractor.
23. The contractor shall extend all necessary help to the agencies of associated works like A.C. works, fire detection works, Electrical works and works to be carried out by the landlords' agencies, in such a manner that they can carry out their works smoothly and the whole finished work must appear absolutely integrated. Nothing extra shall be paid on this account whatsoever.
24. All wood-cutting, shall be done by the contractors at their workshop and only assembling work shall be carried out at site.
25. Figured dimensions are in all cases to be followed and in no case they should be scaled. Large-scale details take precedence over small-scale drawings. In case of any ambiguity, conflict of interpretation, generally the provisions giving more rigorous interpretation shall prevail, and Architect/ VSI decisions in this regard shall be final and binding.
26. In case any municipal / local authorities' approval is necessary for executing the work then it shall be the contractor's responsibility to secure necessary approval and all expenses incurred thereof shall be borne by them.
27. In case the local authorities such as Ward Office raise objections in matters of water / electricity consumption debris disposal etc., the contractors shall solve the matter at their end, without involving or putting financial liability on Vasantdada Sugar Institute.
28. Vasantdada Sugar Institute, if possible, shall make arrangements to provide single electrical & water connection free of cost or the same shall be charged at actual. All additional piping connections from this point, water meters etc., shall be installed by the contractor at his own cost. In case of non-availability of adequate power & water supply, contractor shall make his own arrangements for meeting his power & water supply requirements at his cost as per clause 54 of general conditions of contract.
29.
 - a) The contractor shall be bound to carry out any extra items of work, and wherever possible, the rate for extra items shall be derived from the rate already quoted. Otherwise the rate shall be worked out on the market rate basis of cost of (material cost + labour + hire / running / transportation charges of equipment + wastages) plus (15% towards establishment charges / contractor's overheads & profit). Rate Analysis for the same, to be given by the contractor & to be approved by Architect/ Vasantdada Sugar Institute.
 - b) Rate for extra items (ready-made) directly bought by the contractor (bought-outs) shall be allowed with profits @ 5% of the cost.
 - c) Wherever applicable the basic rate difference in materials (mentioned in the tender) shall be payable without any profits, overheads etc., on said rate difference.
 - d) Variation and extra items, If any up to value of Rs. 2500/- shall be carried out under specific written instruction by Architect/ VSI. However, such items of value in excess of Rs. 2500/- shall be carried out under prior sanction by Vasantdada Sugar Institute. The contractor shall seek sanction for all extra items within seven days from the occurrence of such necessity.
30. The rates shall be entered in figure as well as in words.
31. The payments shall be made in the following manner:
 - a) Advance based on the contract amount or as per Appendix.
 - b) Earnest money, Security deposit and rest of the final bill amount shall be released after completion of work, and retention money retained from the running bills shall be retained for a period of 12 months in defects liability period. The contractor shall submit his running bills for payment concerning work executed or materials delivered on the site will be certified by Architect/ VSI for payment within 10 days from the date of submission of the bill.

c) No Escalation whatsoever on any account shall be payable.

Architect/ VSI will not certify any application for payment to any contractor if there are:

- A) Defective items of work still uncorrected.
- B) Any claims or liens filed against the contractor for failure to pay for materials, labour of sub -contract amounts due, or reasonable evidence that indicates probable filing of such claims.
- C) Damage to another contractor.
- D) Reasonable doubts that the contract cannot be completed.

- 22. When the works are complete in all respects, the Contractor shall intimate in writing to Architect/ VSI and to enable **Vasantdada Sugar Institute** to take the possession of the same. The works shall not be considered virtually complete until **Vasantdada Sugar Institute** and have jointly inspected the works and certified in writing that this has been completed.
- 23. All quantities mentioned in the BOQ are approximate and contractor will not claim any damages for increase/decrease in profit on account of variation in the final BOQ.
- 24. All disputes or difference of any kind whatsoever which shall at any time arise between the parties here to touching or concerning the works or the execution or maintenance thereof this contract or the construction remaining operation or effect thereof or the rights or liabilities of the parties of arising out to or in relation thereto whether during or after determination, foreclosure or breach of the contract. (Other than those in respect of which the decision of any person is by contract expressed to be final and binding) shall after written notice by either party to the contract to the other of them and to the appointing Authority who shall be appointed for the purpose by Vasantdada Sugar Institute be referred for adjudication to a sole Arbitrator to be appointed as hereinafter provided.
- 25. Appointing Authority:
The Appointing Authority will be Vasantdada Sugar Institute
The name of the arbitrator will be selected from any one of the following disciplines.
 - A) Retired High Court/ Supreme Court Judges, who have experience in handling Arbitration cases.
 - B) Member of the Council of Arbitration.
 - C) Fellow of Indian Institute of Architects.
 - D) Eminent retired Chief Engineers from State/ Center / P.W.D./ Public sector undertakings. For the purpose of appointing the sole Arbitrator referred to above, the Appointing Authority will send within thirty days of receipt by him of the written aforesaid notice, to the Contractor a panel of three names of persons who shall be presently unconnected with the organization for which the work is executed.
- 26. **Criteria for acceptance of work:** Part of element of concrete work shall be deemed to be acceptable, provided the three cubes tested for 28 days strength conform to the following:

i) Average of the three cubes strengths shall not be less the specified strength.

No individual strength cube shall be less than 90% of the specified strength.

- i) If any individual cube strength exhibits more than 133% of the specified strength, such cube shall be classified as freak and the criteria in (a) and (b) above, shall be applied for the remaining 2 cubes only and the acceptability determined.

Quantum of cubes and testing: A set of six cubes shall generally be cast per every 50 Cu. M. of concrete

OR

A set of six cubes on every day of concerning

OR

A set of six cubes on every important element as decided by the Architects/ RCC Consultants. The decision of the Architects/ RCC Consultants in this regard shall be final and binding.

4. PERFORMANCE OF WORK

4.1. EXECUTION OF WORK

All the WORK shall be executed in strict conformity with the provisions of the Contract Documents and with such explanatory detailed Drawings, Specifications and Instructions as may be furnished from time to time to the **CONTRACTOR** by the **ARCHITECT/ VSI**, whether mentioned in the CONTRACT or not. The **CONTRACTOR** shall be responsible for ensuring that WORK throughout are executed in the most substantial, proper and workmanlike manner with the quality of material and workmanship in strict accordance with the Specifications and to the entire satisfaction of the **ARCHITECT/ VSI**.

4.2. WORK IN MONSOON AND DEWATERING

4.2.1. The completion of the WORK will entail working in the monsoon also. The **CONTRACTOR** must maintain necessary labour force as may be required for the WORK and plan and execute the construction and erection according to the prescribed schedule. No extra rate will be considered for such WORK in monsoon.

4.2.2. During monsoon and other period, it shall be the responsibility of the **CONTRACTOR** to keep the construction work Site free from water logging at his own cost.

4.3. WORK ON SUNDAYS AND HOLIDAY/ ARCHITECT/ VSIYS

For carrying out WORK on Sundays and Holidays, the **CONTRACTOR** will approach the Architect/ VSI or his representative and the competent authorities under applicable law in advance and obtain required permission.

4.4. GENERAL CONDITIONS FOR CONSTRUCTION AND ERECTION WORK

4.4.1. The working time is forty-eight (48) hours per week. Overtime work is permitted in cases of need and the **CONTRACTOR is responsible** for the same. Shift working at two (2) or three (3) shifts per day may become necessary and the **CONTRACTOR** should take this aspect into consideration for formulating his rates for quotation. No extra claims will be entertained by Vasantdada Sugar Institute on this account. The overtime work and shift work shall be carried on with due process of law.

4.4.2. The **CONTRACTOR** must arrange for the placement of workers in such a way that the delayed completion of the WORK or any part thereof for any reason whatsoever will not affect their proper employment. Vasantdada Sugar Institute will not entertain any claim for idle payment whatsoever.

4.4.3. The **CONTRACTOR** shall submit to Vasantdada Sugar Institute reports at regular intervals regarding the state and progress of WORK. The details and Performa of the report will mutually be agreed.

4.4.4. Any setback to progress of works will be made good by increase of resources at no additional cost.

4.5. DRAWINGS

4.5.1. Where Drawings are attached with Tender, these shall be for the general guidance of the **CONTRACTOR** to enable him to visualize the type of WORK contemplated and Scope of Work involved. The **CONTRACTOR** will be deemed to have studied the Drawings and formed an idea about the WORK involved.

4.5.2. Detailed working Drawings on the basis of which actual execution of WORK is to proceed will be furnished by the **CONTRACTOR** from time to time during the progress of WORK. **CONTRACTOR** shall be deemed to have gone through the Tender Drawings and instructions thoroughly and carefully and in conjunction with all other connected Drawings and include the information in preparation of working drawings.

4.5.3. Copies of all detailed working Drawings relating to WORK shall be kept at the **CONTRACTOR's** office at the SITE and shall be made available to the Architect/ VSI at any time during the CONTRACT. The drawings and other documents issued by Vasantdada Sugar Institute shall be returned to Vasantdada Sugar Institute on completion of the work.

4.5.4. Where approval of Drawings for Manufacture / Construction/Fabrication has been specified, it shall be **CONTRACTOR's** responsibility to have these Drawings prepared as per the directions of Architect/ VSI and got approved before proceeding with Manufacture / Construction / Fabrication as the case may be. Any changes that may have become necessary in these Drawings during the execution of WORK shall have to be carried out by the **CONTRACTOR** to the satisfaction of Architect/ VSI at no extra cost.

4.5.5. A period of one (1) week from the date of receipt shall be required for approval of Drawings by the Architect/ VSI as the case may be.

4.6. SETTING OUT WORK

4.6.1. The Architect/ VSI shall furnish the **CONTRACTOR** with only the corners of the SITE and a level Benchmark and the **CONTRACTOR** shall set out the WORK and shall provide an efficient staff for the purpose and shall be responsible for the accuracy of such setting out.

4.6.2. The **CONTRACTOR** shall provide, fix and be responsible for the maintenance of all Stakes, Template, Level Marks, Profiles and other similar things and shall take all necessary precautions to prevent their removal or disturbance and shall be responsible for the consequence of such removal or disturbance should the same take place and for their efficient and timely reinstatement. The **CONTRACTOR** shall also be responsible for the maintenance of all existing Survey Marks, Boundary Marks, Distance Marks and Centre Line Marks, either existing or supplied and fixed by the **CONTRACTOR**. The WORK shall be set out to the satisfaction of the Architect/ VSI. The approval thereof or joining with the **CONTRACTOR** by the Architect/ VSI in setting out the WORK shall not relieve the **CONTRACTOR** of any of his responsibilities.

4.6.3. Before beginning the WORK, the **CONTRACTOR** shall at his own cost, provide all necessary reference and level posts, bamboos, flags, ranging rods, strings and other materials for proper layout of the WORK in accordance with the scheme for bearing marks acceptable to the **ARCHITECT/ VSI**. The center, longitudinal or face lines and cross lines shall be marked by means of small masonry pillars. Each pillar shall have distinct marks at the center to enable theodolite to be set over it. No work shall be started until all these points are checked and approved by the Architect/ VSI in writing but such approval shall not relieve the **CONTRACTOR** of any of his responsibility. The **CONTRACTOR** shall also provide all labour, material, instruments, equipment's and other facilities, as necessary, for the proper checking of layout and inspection of the points during construction.

4.6.4. Pillars bearing geodetic marks located at the SITE of work under construction should be protected and fenced by the **CONTRACTOR**.

4.6.5. On completion of WORK, the **CONTRACTOR** must submit the geodetic documents according to which the WORK was carried out.

4.7. RESPONSIBILITY FOR LEVEL AND ALIGNMENT

The **CONTRACTOR** shall be entirely and exclusively responsible for the horizontal and vertical alignment, the levels and correctness of every part of WORK and shall rectify effectually any errors or imperfections therein. Such rectification shall be carried out by **CONTRACTOR** at his own cost, when instructions are issued by the **ARCHITECT/ VSI**.

4.8. MATERIAL TO BE SUPPLIED BY CONTRACTOR

CONTRACTOR shall procure and provide the whole of the materials including building materials, tools, tackles, construction plant and equipment for the completion and maintenance of WORK and shall make his own arrangement for procuring such materials and for the transport thereof. Vasantdada Sugar Institute may give necessary recommendation to the respective authority if so desired by **CONTRACTOR** but assumes no further responsibility of any nature. **Vasantdada Sugar Institute** will insist on the procurement of materials as specified.

4.9 MATERIALS SUPPLIED BY Vasantdada Sugar Institute:

4.9.1 Vasantdada Sugar Institute shall have option to supply or not to supply certain important materials to the **CONTRACTOR**. If supplied by Vasantdada Sugar Institute, the sums due from **CONTRACTOR** for the value of materials supplied will be recovered in full from the running account bills.

4.9.2 The value of the materials as may be supplied to **CONTRACTOR** by **Vasantdada Sugar Institute** will be debited to **CONTRACTOR's** account at the rates mutually agreed. All materials so supplied to **CONTRACTOR** shall remain the absolute property of **Vasantdada Sugar Institute** and shall not be removed on any account from site, and shall be at all the times open for inspection to the Architect/ VSI till the value of materials is fully recovered from the **CONTRACTOR**.

4.10 **CONDITIONS FOR ISSUE OF MATERIALS:**

- i) Materials as per **Vasantdada Sugar Institute** 's option to be issued by **Vasantdada Sugar Institute** Will be supplied to **CONTRACTOR** by **Vasantdada Sugar Institute** It shall be the responsibility of **CONTRACTOR** to receive the materials and arrange for its transport, unloading and stacking at his store at his own cost.
- ii) **CONTRACTOR** shall bear all incidental charges for the storage and safe custody of materials at site after these have been issued to him.
- iii) Materials as per **Vasantdada Sugar Institute** 's opinion, to be issued by **Vasantdada Sugar Institute** shall be issued in standard sizes as obtained from the Manufacturers.
- iv) **CONTRACTOR** shall provide suitable arrangements at site for storing the materials, safeguarding against damage by rain, dampness, fire, theft etc. He shall also employ necessary watch and ward establishment for the purpose.
- v) It shall be the duty of **CONTRACTOR** to inspect the materials supplied to him at the time of taking delivery and satisfy himself that they are in good condition. After the materials have been delivered by **Vasantdada Sugar Institute**, it shall be the responsibility of **CONTRACTOR** to keep them in good condition and if the materials are damaged or lost, at any time, they shall be repaired and / or replaced by him at his own cost according to the directions of the **ARCHITECT/ VSI**.
- vi) **Vasantdada Sugar Institute** shall not be liable for delay in supply or non-supply of any materials which **Vasantdada Sugar Institute** has undertaken to supply where such failure or delay is due to natural calamities, act of enemies, transport and procurement difficulties and any circumstance beyond the control of **Vasantdada Sugar Institute**. In no case, **CONTRACTOR** shall be entitled to claim any compensation or loss suffered by him on this account.
- vii) It shall be the responsibility of **CONTRACTOR** to arrange in time all materials required for WORK. If, however, in the opinion of the Architect/ VSI. The execution of WORK is likely to be delayed due to **CONTRACTOR'S** inability to make arrangements for supply of materials which normally he has to arrange for the Architect/ VSI **shall** have the right at his own discretion to issue such materials if available with Vasantdada Sugar Institute or may procure the materials from the market or elsewhere and the **CONTRACTOR** will be bound to take such materials at the rates decided by the **ARCHITECT/ VSI**. This however does not in any way absolve **CONTRACTOR** from responsibility of making arrangements for the supply of such materials in part or in full, should such a situation occur nor shall this constitute a reason for the delay in the execution of WORK.
- viii) **CONTRACTOR** shall furnish to the Architect/ VSI wherever instructed, a statement showing his requirement of the quantities of the proposed materials to be supplied by **Vasantdada Sugar Institute** and the time when the same will be required by him for work, so as to enable the Architect/ VSI to make necessary arrangements for procurement and supply of the material.
- ix) **CONTRACTOR** should see that only the required quantities of materials are got issued. The surplus materials, if any, will not be taken back by **Vasantdada Sugar Institute** on any account.
- x) Materials supplied by **Vasantdada Sugar Institute** shall not be utilized for other purpose(s) than issued for.

4.11 MATERIAL PROCURED WITH ASSISTANCE OF Vasantdada Sugar Institute

Notwithstanding anything contained to the contrary in any or all the clauses of this CONTRACT where any materials for the execution of CONTRACT are procured with the assistance of **Vasantdada Sugar Institute** either by issue from **Vasantdada Sugar Institute**'s stock or purchases made under orders or permits or licenses issued by Government, **CONTRACTOR** shall hold the said materials as trustee for Vasantdada Sugar Institute and use such materials economically and solely for the purpose of CONTRACT and not dispose them off without the permission of **Vasantdada Sugar Institute** and return, if required by the **ARCHITECT/ VSI**, all surplus or unserviceable materials that may be left with him after the completion of CONTRACT or at its termination for any reason, whatsoever on his being paid or credited such price as the **ARCHITECT/ VSI**, shall determine having due regard to the condition of the materials. The price allowed to **CONTRACTOR**, however, shall not exceed the amount charged to him excluding the storage charges, if any. The decision of the Architect/ VSI shall be final and conclusive in such matters. In the event of breach of the aforesaid condition, **CONTRACTOR** shall, in terms of licenses or permits and/or for criminal breach of trust, be liable to compensate Vasantdada Sugar Institute at double rate or any higher rate. In the event of those materials at that time having higher rate or not being available in the market, then any other rate to be determined by the Architect/ VSI at his discretion shall be final and conclusive.

4.12 MATERIALS OBTAINED FROM DISMANTLING

If **CONTRACTOR** in the course of execution of WORK is called upon to dismantle any part for reasons other than those stipulated in clause 5.23 hereunder, the materials obtained in the work of dismantling etc., will be considered as Vasantdada Sugar Institute's property and will be disposed of to the best advantage of Vasantdada Sugar Institute.

4.13 ARTICLES OF VALUE FOUND

All gold, silver and other minerals of any description and all precious stones, coin, treasure, relics, antiquities and other similar things which shall be found in, under or upon SITE, shall be the property of **Vasantdada Sugar Institute** and **CONTRACTOR** shall duly preserve the same to the satisfaction of the Architect/ VSI and shall from time to time deliver the same to such person or persons indicated by Vasantdada Sugar Institute.

4.14 DISCREPANCIES BETWEEN INSTRUCTIONS

Should any discrepancy occur between the various instructions furnished to **CONTRACTOR**, his agents or staff or any doubt arise as to the meaning of any such instructions or should there be any misunderstanding between **CONTRACTOR's** staff and the **ARCHITECT/ VSI's** staff, **CONTRACTOR** shall refer the matter immediately in writing to the Architect/ VSI whose decision thereon shall be final and conclusive and no claim for losses alleged to have been caused by such discrepancies between instructions, doubts or misunderstanding shall in any event be admissible.

4.15 ALTERATIONS IN SPECIFICATIONS AND DESIGNS AND EXTRA WORK

(A) The Architect/ VSI shall have power to make any alterations in, omissions from, additions to or substitutions for, the schedule of rates, the original Specifications, Drawings, Designs, and Instructions that may appear to him to be necessary or advisable during the progress of WORK and **CONTRACTOR** shall be bound to carry out such altered extra/new items of Work in accordance with any instructions which may be given to him in writing signed by the **ARCHITECT/ VSI** and such alterations, omissions, additions or substitutions shall not invalidate CONTRACT and any altered, additional or substituted Work which **CONTRACTOR** may be directed to do in manner above specified as part of the Work shall be carried out by **CONTRACTOR** on the same conditions in all respects on which he agreed to do the WORK. The time for completion of WORK may be extended for the part of the particular job at the discretion of the **ARCHITECT/ VSI** for only such alterations, additions or substitutions of Work, as he may consider as just and reasonable. The rates for such additional, altered or substituted Work under this clause shall be worked out in accordance with the following provisions:

- a) If the rates for additional altered or substituted Work are specified in CONTRACT, the **CONTRACTOR** is bound to carry out the additional, altered or substituted Work at the same rates as are specified in CONTRACT unless the Architect/ VSI considers otherwise. In this case the rates will be determined by the Architect/ VSI as provided in sub-section (c) here below.

- b) If the rates for the additional, altered or substituted Work are not specifically provided in CONTRACT, the rates will be derived from the rates for similar class of Work as are specified in CONTRACT. The opinion of the **ARCHITECT/ VSI**, as to whether or not the rates can be reasonably so derived from the items in the CONTRACT will be final and binding on **CONTRACTOR**.
- c) If the rates for the altered, additional or substituted Work cannot be determined in the manner specified in the sub clause (a) & (b) above, then **CONTRACTOR** shall, within seven(7) days of the date of receipt of order to carry out WORK, inform the Architect/ VSI of the rate which it is his intention to charge for such class of Work, supported by analysis of the rate or rates claimed, and the Architect/ VSI shall determine the rate or rates on the basis of the prevailing market rates of materials labour cost at schedule of labour plus fifteen percent(15%) thereon to cover **CONTRACTOR's** supervision, over-heads and profit and pay the **CONTRACTOR** accordingly. The opinion of the **Architect/ VSI** as to the current market rates of materials and the quantum of labour involved per unit of measurement will be final and binding on **CONTRACTOR**.
- d) Notwithstanding anything mentioned in sub-sections a, b and c above, the Architect/ VSI **has** the right to determine rates for additional / extra works and these shall be binding on the **CONTRACTOR** who shall forthwith execute such works. The Architect/ VSI shall also have the option to employ another agency to execute such works and the **CONTRACTOR** shall provide full co-ordination.

4.16 ACTION WHERE NO SPECIFICATION IS ISSUED

In case of any class of Work for which there is no such Specification as is mentioned in the Tender Document such Work shall be carried out in accordance with Indian Standard Specifications and if the Indian Standard Specifications do not cover the same the work should be carried out as per Standard Engineering Practice, subject to the approval of the **ARCHITECT/ VSI**.

4.17 ABNORMAL RATES

CONTRACTOR is expected to quote rate for each item after careful analysis of cost involved for the performance of the completed item considering all Specifications and Conditions of Contract. This will avoid loss of profit or gain in case of curtailment or change of Specification for any item. In case it is noticed that the rates quoted by the Tenderer for any item are unusually high or unusually low it will be sufficient cause for the rejection of the Tender unless Vasantdada Sugar Institute is convinced about the reasonableness of the rates on scrutiny of the analysis for such rate to be furnished by the Tenderer on demand. In the alternative the rates for such items may be revised at the discretion of the Architect/ VSI and the revised rates will become applicable.

4.18 INSPECTION OF WORK

- 4.18.1 The Architect/ VSI will have full power and authority to inspect the WORK at any time wherever in progress either on the SITE or at the **CONTRACTOR's** Premises/Workshops wherever situated. Premises / Workshops of any person, firm or corporation where work in connection with the CONTRACT may be in hand or where materials are being or are to be supplied, and **CONTRACTOR** shall afford or procure for the **ARCHITECT/ VSI**, every facility and assistance to carry out such inspection. **CONTRACTOR** shall, at all time during the usual working hours and all other times at which reasonable notice of the intention of the Architect/ VSI **or** his representative to visit the WORK shall have been given to **CONTRACTOR**, either himself be present to receive orders and instructions, or have a responsible agent duly accredited in writing present for the purpose. Orders given to the **CONTRACTOR's** agent shall be considered to have the same force as if they had been given to **CONTRACTOR** himself. **CONTRACTOR** shall give not less than seven (7) days' notice in writing to the Architect/ VSI before covering up or otherwise placing beyond reach of inspection and measurement any Work in order that the same may be inspected and measured. In the event of breach of above the same shall be uncovered at **CONTRACTOR's** expense for carrying out such measurement or inspection.
- 4.18.2 The written instructions regarding any particular work will normally be passed by the Architect/ VSI **or** his Authorized Representative. A work order book will be maintained by the **CONTRACTOR** for each sector in which the aforesaid written instructions will be entered. These will be signed by the **CONTRACTOR** or his authorized representative by way of acknowledgement within Twelve (12) hours.

4.18.3 No material shall be dispatched from **CONTRACTOR's** stores before obtaining the approval in writing of the **ARCHITECT/ VSI**.

4.18.4 **CONTRACTOR** is to provide at all times during the progress of WORK and maintenance period proper means of access with ladders, gangways, etc. and the necessary attendance to move and adopt as directed for inspection or measurement of WORK by the **ARCHITECT/ VSI**.

4.19 **ASSISTANCE TO ARCHITECT/ VSI**

CONTRACTOR shall make available to the Architect/ VSI free of cost all necessary instruments and assistance in checking of setting out of WORK and in the checking of any WORK made by **CONTRACTOR** and taking measurement of WORK.

4.20 **TESTS FOR QUALITY OF WORK**

4.20.1 All workmanship shall be of the respective kinds described in the Contract Document and in accordance with the instructions of the Architect/ VSI and shall be subjected from time to time to such test at **CONTRACTOR's** cost as the **Architect/ VSI** may direct at the place of manufacture or fabrication or on the SITE or at an independent laboratory or at all or any such places. **CONTRACTOR** shall provide assistance / instrument, labour and materials as are normally required for examining, measuring and testing any workmanship as may be selected and required by the **ARCHITECT/ VSI**. The results of the tests in original will be forwarded directly to the Architect/ VSI by the testing authority with copies sent to **CONTRACTOR**.

4.20.2 All the tests that will be necessary in connection with the execution of WORK as decided by the Architect/ VSI shall be carried out at the field testing laboratory of **CONTRACTOR** at his costs. All the required tests on materials and works shall be done by the **CONTRACTOR** at his costs. In case it is directed to carry out tests at an independent laboratory **CONTRACTOR** shall arrange to do so at his cost as directed by the **ARCHITECT/ VSI**.

4.20.3 **Tests for determination of Strength of Concrete (Plain & Reinforced):**

The bill of quantities specifies various types of concrete. The Part of element of concrete work shall be deemed to be acceptable, provided the three cubes tested for 28 days' strength conform to IS code.

- a) **Cubes:** The size of cubes to be prepared and tested shall be 15 X 15 X 15 cm. (6" X 6" X 6"). The number of cubes to be collected from each sample as detailed below shall be six. Three cubes each as intended for testing at 7 and 28 days respectively and determining the strength. Cube tested at 7 days should give strength not less than 70% of the corresponding strength at 28 days. It shall however, be expressly understood that the results at 28 days only shall govern and the 7 days' tests are intended to obtain a fair idea only.
- b) **Equipment moulds, testing etc.:** It is the entire responsibility of the Contractor to prepare and get the cubes tested and provide for all material, labour, moulds, equipment facility and charges for testing etc. The Contractor's rate of concrete work shall be deemed to include for these and no extra whatsoever is admissible on this account.
- c) **Slump:** If, in the opinion of the RCC Consultants, slump one tests are required to be performed to establish workability, the same shall be carried out free of cost. Slump tests are. However, to service as guide only.
- d) **Quantum of cubes and testing:**
A set of six cubes on every day concreting if quantity of concreting is less than 50cum
OR
A set of six cubes shall generally be cast per every 50 Cu. M. of concrete if quantity is more than 50cum
OR
A set of six cubes on every important element as decided by the Architects/ RCC Consultants.
The decision of the Architects/ RCC Consultants in this regard shall be final and binding.

4.21 SAMPLES

CONTRACTOR shall furnish to the Architect/ VSI for approval when requested or if required by the Specifications, adequate samples of all materials and finishes to be used in WORK at contractors cost. Such samples shall be submitted before WORK is commenced and in ample time to permit tests and examination thereof. All materials furnished and finishes applied in WORK shall be fully equal to the approved samples.

4.22 ACTION AND COMPENSATION IN CASE OF BAD WORK

If it shall appear to the Architect/ VSI that any Work has been executed with unsound, imperfect or unskilled workmanship, or with materials of any inferior description, or that any materials or articles provided by **CONTRACTOR** for the execution of WORK are unsound, or of a quality inferior to that contracted for, or otherwise not in accordance with CONTRACT, **CONTRACTOR** shall on demand in writing from the Architect/ VSI or his authorized representative specifying the WORK, materials or articles complained of, notwithstanding that the same may have been inadvertently passed, certified and paid for, forthwith rectify or remove and reconstruct the Work, so specified and provide other proper and suitable materials or articles at his own charge and cost, and in the event of failure to do so within the period to be specified by the Architect/ VSI in his demand aforesaid, the Architect/ VSI may on expiry of notice period rectify or remove and re-execute the Work or remove and replace with others, the materials or articles complained of as the case may be at the risk and expense in all respects of **CONTRACTOR**. The decision of the Architect/ VSI as to any question arising under this clause shall be final and conclusive.

4.23. SUSPENSION OF WORK

- i) Subject to the provisions of the sub-para (ii) of this clause, **CONTRACTOR** shall if ordered in writing by the **ARCHITECT/ VSI**, or his representative, temporarily suspend the WORK or any part thereof for such period and such time as so ordered and shall not, after receiving such written order proceed with WORK therein ordered to be suspended until he shall have received a written order to proceed therewith. The **CONTRACTOR** shall not be entitled to claim compensation for any loss or damage sustained by him by reason of temporary suspension of WORK aforesaid. An extension of time for completion, corresponding with the delay caused by any such suspension of WORK as aforesaid will be granted to **CONTRACTOR** should he apply for the same provided that the suspension was not consequent to any default or failure on the part of **CONTRACTOR**.
- ii) In case of suspension of WORK ordered in writing by **ARCHITECT/ VSI**, for a period of more than two (2) months, **CONTRACTOR** shall have the option to terminate CONTRACT, provided that the **CONTRACTOR** shall exercise such option forthwith. The **CONTRACTOR** shall not be entitled to claim any damages or compensation on this account.

4.24. Vasantdada Sugar Institute MAY DO PART OF WORK

Upon failure of **CONTRACTOR** to comply with any instructions given in accordance with the provisions of this CONTRACT, Vasantdada Sugar Institute has the alternative right, instead of assuming charge of WORK to place additional labour force, tools, Equipment and materials on such parts of WORK, as Vasantdada Sugar Institute may designate or also engage another **CONTRACTOR** to carry out WORK in such cases, Vasantdada Sugar Institute shall deduct from the amount which otherwise might become due to **CONTRACTOR**, the cost of such WORK and materials with fifteen percent (15%) added to cover all departmental charges and should the total amount thereof exceed the amount due to **CONTRACTOR**, **CONTRACTOR** shall pay the difference to Vasantdada Sugar Institute In the alternative Vasantdada Sugar Institute shall recover such costs from Performance Bank Guarantee.

4.25. POSSESSION PRIOR TO COMPLETION

The Architect/ VSI shall have the right to take possession of or use any completed or partially completed WORK or part of WORK. Such possession or use shall not be deemed to be an acceptance of any WORK completed in accordance with CONTRACT. If such prior possession or use by the Architect/ VSI delays the progress of WORK, equitable adjustment in the time of completion will be made and the **CONTRACTOR** shall be notified accordingly.

4.26. **PERIOD OF DEFECTS LIABILITY / PERFORMANCE**

- 4.26.1. **CONTRACTOR** shall guarantee the installation WORK for a period of twelve (12) months from the date of completion of work. Any damage or defect that may arise or lie undiscovered at the completion of work, connected in any way with the Equipment or materials supplied by him or in the workmanship shall be rectified or replaced by **CONTRACTOR** at his own expense as deemed necessary by the Architect/ VSI or in default, the Architect/ VSI may cause the same to be made good by other workmen and deduct expenses (of which the certificate of Architect/ VSI shall be final) from any sums that may be then or at any time thereafter, become due to **CONTRACTOR** or from his Security Deposit, or the proceeds of sale thereof, or of a sufficient portion thereof.
- 4.26.2. If **CONTRACTOR** feels that any variation in work or in quality of materials or proportions would be beneficial or necessary to fulfill guarantee called for, he shall bring this to the notice of the Architect/ VSI in writing.
- 4.26.3. From the commencement up to completion of WORK, **CONTRACTOR** shall take full responsibility for the care for WORK including all temporary works and in case any damages, loss or injury shall happen to WORK or to any part thereof or to any temporary works from any cause whatsoever, shall at his own cost repair and make good the same so that at completion WORK shall be in good order and in conformity, in every respects, with the requirements of CONTRACT and the **ARCHITECT/ VSI's** instructions.
- 4.26.4. If at any time, before WORK is taken over, the Architect/ VSI shall: -

- a) Decide that any work done or materials used by **CONTRACTOR** or any **SUB-CONTRACTOR** is defective or not in accordance with CONTRACT, or that WORK or any portion thereof are defective, or do not fulfill the requirements of CONTRACT (all such materials being hereinafter, called 'Defects' in this clause), and (b) as soon as reasonably practicable gives to **CONTRACTOR** notice in writing of the said decision, specifying particulars of the defects alleged to exist or to have occurred, then **CONTRACTOR** shall at his own expense and with all speed make good the defects so specified.

In case the **CONTRACTOR** shall fail to do so, **Vasantdada Sugar Institute** may take, at the cost of **CONTRACTOR**, such steps as may in all circumstances, be reasonable to make good such defects. The expenditure so incurred by **Vasantdada Sugar Institute** will be recovered from the amount due to **CONTRACTOR**. The decision of the Architect/ VSI with regard to the amount to be recovered from **CONTRACTOR** will be final and binding on **CONTRACTOR**. As soon as WORK have been completed in accordance with CONTRACT (except in minor respects that do not affect their use for the purpose for which they are intended and except for maintenance thereof provided in clause 5.27.1 and have passed the tests on completion, the Architect/ VSI shall issue a certificate (hereinafter called Completion Certificate) in which he shall certify the date on which WORK have been so completed and have passed the said tests and Vasantdada Sugar Institute shall be deemed to have taken over WORK on the date so certified. If WORK has been divided into various groups in CONTRACT, Vasantdada Sugar Institute shall be entitled to take over any group or groups before the other or others and thereupon the Architect/ VSI shall issue a Completion Certificate which will, however, be for such group or groups so taken over only.

- 4.26.5. In order that **CONTRACTOR** could obtain a Completion Certificate he shall make good, with all possible speed any defect arising from the defective materials supplied by **CONTRACTOR** or workmanship or any act or omission of CONTRACT that may have been noticed or developed, after the WORK or group of WORKS has been taken over, the period allowed for carrying out such WORK will be normally one (1) month. If any defect be not remedied within a reasonable time, Vasantdada Sugar Institute may proceed to do WORK at **CONTRACTOR's** risk and expense and deduct from the Final Bill such amounts as may be decided by the **ARCHITECT/ VSI**.

If by reason of any default on the part of CONTRACTOR a Completion Certificate has not been issued in respect of every portion of WORK within one (1) month after the date fixed by CONTRACTOR for the completion of WORK, Vasantdada Sugar Institute shall be at liberty to use WORK or any portion thereof which has been completed. The CONTRACTOR shall be afforded reasonable opportunity for completing the WORK for the issue of Completion Certificate.

5. PROCEDURE FOR MEASUREMENT / BILLING OF WORK IN PROGRESS

- 5.1.1. All measurement shall be in metric system. All the WORK in progress will be jointly measured by the representative of the **ARCHITECT/ VSI**, and **CONTRACTOR's** authorized agent progressively. Measurements will be recorded by the Architect/ VSI or his authorized representative and signed by **CONTRACTOR** or his authorized representative in the measurement book to be provided by the **CONTRACTOR**.

For the purpose of taking joint measurements **CONTRACTOR's** representative shall be bound to be present whenever required by the **ARCHITECT/ VSI**. If, however, he is absent for any reason whatsoever the measurements will be taken by the Architect/ VSI or his representative and this will be deemed to be correct and binding on **CONTRACTOR**. In case of disputes as to the mode of measurement of any work the **Architect/ VSI**. **ARCHITECT/ VSI's** directions shall be followed.

- 5.1.2. **CONTRACTOR** will submit a Bill in approved Performa in quadruplicate to the Architect/ VSI **giving** abstract and detailed measurements for the various items executed during a month. The Architect/ VSI shall take or cause to be taken the requisite measurements for the purpose of having the same verified and the claim, as far as admissible, adjusted, if possible, before the presentation of the bill.

- 5.1.3. For interim certificates on running account bill, the accepted value of the certificates after recoveries will be paid by Vasantdada Sugar Institute within 15 days of date of certification.

5.2. RUNNING ACCOUNT PAYMENTS TO BE REGARDED AS ADVANCES

All running account payments shall be regarded as payments by way of advance against the final payment only and not as payment for Work actually done and completed and shall not preclude the requiring of bad, unsound and imperfect or unskilled Work to be removed and taken away and reconstructed or re-erected or be considered as an admission of the due performance of CONTRACT, or any part thereof, in the respect, or of the accruing of any claim by **CONTRACTOR**, nor shall it conclude, determine or affect in any way the powers of Vasantdada Sugar Institute under these conditions or any of them as to the final settlement and adjustments of the accounts or otherwise, or in any other way vary or affect CONTRACT. The Final Bill shall be submitted by **CONTRACTOR** within one (1) month of the date of physical completion of WORK, otherwise, the **ARCHITECT/ VSI's** certificate of the measurement and of total amount payable for WORK accordingly shall be final and binding on all parties.

5.3. PAYMENT OF CONTRACTOR'S BILL

The amount payable on the final bill shall be the value of the final bill less all payments made on the running account bills, the value of the retention money recovered on the running account bills and any amount payable to Vasantdada Sugar Institute by the contractor.

The Final Bill shall be presented by the **CONTRACTOR** along with a 'NO CLAIM CERTIFICATE' in a format acceptable to Vasantdada Sugar Institute along with such other documents as directed by Vasantdada Sugar Institute within 1 (one) month from the date of completion.

All payments shall be made in Indian Currency.

5.4. RECEIPT FOR PAYMENT

Receipt for payment made on account of WORK when executed by a firm must be signed by a person holding due power of attorney in this respect on behalf of **CONTRACTOR**, except when described in Tender as a Limited Company in which case the receipt must be signed in the name of the Company by one of its principal officers or by some other person having authority to give effectual receipt for the Company.

5.5. COMPLETION CERTIFICATE

- 5.5.1. When **CONTRACTOR** fulfils his obligations substantially under clauses 5.27.4 and 5.27.5 he shall be eligible to apply for Completion Certificate. In case Vasantdada Sugar Institute requires completion and hand over of the works in parts, the **CONTRACTOR** may apply for separate Completion Certificate in respect of each such portion of Work by submitting the completion Documents along with such application for Completion Certificate.

The Architect/ VSI shall normally issue to **CONTRACTOR** the Completion Certificate within one (1) month after receiving an application therefore from **CONTRACTOR** after verifying from the completion Documents and satisfying himself that WORK has been completed in accordance with and as set out in the construction and erection Drawings, and the Contract Document.

CONTRACTOR, after obtaining the Completion Certificate, is eligible to present the Final Bill for WORK executed by him under the terms of CONTRACT for the portion of work included in the Completion Certificate

- 5.5.2. Upon completion of WORK in all respects, **CONTRACTOR** shall be furnished with a certificate by the **ARCHITECT/ VSI**, of such completion, but no certificate shall be given nor WORK be deemed to have been executed until all scaffolding, surplus materials and rubbish is cleaned off SITE completely nor until WORK shall have been measured by the Architect/ VSI whose measurement shall be binding and conclusive. WORK will not be considered as complete and taken over by Vasantdada Sugar Institute, until all the temporary works, labour and staff colonies etc. constructed are removed and the worksite cleaned to the satisfaction of the **ARCHITECT/ VSI**.

If **CONTRACTOR** shall fail to comply with the requirement of this clause on or before the date fixed for the completion of WORK, Architect/ VSI may at the expense of **CONTRACTOR** remove such scaffolding, surplus materials and rubbish and dispose of the same as he thinks fit and clean off such dirt as aforesaid, and **CONTRACTOR** shall forthwith pay the amount of all expenses so incurred and shall have no claim in respect of any such scaffolding or surplus materials as aforesaid except for any sum actually realized by the sale thereof.

- 5.5.3. For the purpose of clause 6.6.1 the following Documents will be deemed to form the completion Document.

- i) The technical documents according to which WORK was carried out.
- ii) Three (3) sets of "As-Built" drawings showing therein the modifications and corrections made during the course of execution.
- iii) Substantial Completion Certificate for 'embedded' and 'covered' up WORK.
- iv) Certificate of final levels as set out for various work.

5.6. **FINAL DECISION AND FINAL CERTIFICATE**

Upon expiry of the period of liability and subject to the Architect/ VSI being satisfied the WORK has been duly maintained by **CONTRACTOR**, during such period as hereinbefore provided and the **CONTRACTOR** has in all respect duly made up any subsidence and performed on his obligations under CONTRACT, the Architect/ VSI shall give a certificate herein referred to as the final certificate to that effect and **CONTRACTOR** shall not be considered to have fulfilled the whole of his obligations until Final Certificate shall have been given by the Architect/ VSI notwithstanding any previous entry upon WORK and taking possession, working or using of the same or any part thereof by Vasantdada Sugar Institute .

5.7. **CERTIFICATE AND PAYMENTS ON EVIDENCE OF COMPLETION**

Except the final certificate no other certificate or payment against a certificate or on general account shall be taken to be an admission by Vasantdada Sugar Institute of the due performance of CONTRACT or any part thereof or occupancy or validity of any claim by **CONTRACTOR**.

6. **TAXES, DUTIES, OCTROI ETC.**

CONTRACTOR agrees to and does hereby accept full & exclusive liability for the payment of any and all taxes, duties, octroi, Works contract tax etc. now or hereafter imposed, increased, or modified, and all the sales taxes, Works contract tax, duties, octrois etc. now in force and hereafter increased imposed or modified from time to time in respect of WORK and materials and all contributions and taxes for unemployment compensation insurance and old age pensions or annuities now or hereafter imposed by any Central or State Government authorities which are imposed with respect to or covered by the wages, salaries, or other compensations paid to the persons employed by **CONTRACTOR** and **CONTRACTOR** shall be responsible for compliance with all obligations and restrictions imposed by the Labour Law or any other law affecting employer-employee relationship and **CONTRACTOR** further agrees to comply, and to secure the compliance of all Sub-Contractors, with applicable Central, State, Municipal and Local laws and regulations and requirements of any Central, State or Local Government agency or authority. **CONTRACTOR** further agrees to defend, indemnify and hold harmless from any liability or penalty which may be imposed by the Central, State or Local authorities by reason of any violation by **CONTRACTOR** or Sub-**CONTRACTOR** of such laws, regulations or requirements and also from all claims, suits or proceedings that may be brought against the Vasantdada Sugar Institute arising under, growing out of, or by reason of WORK provided for by this CONTRACT, by third parties, or by Central or State Government authority or any administrative Sub-division thereof.

All taxes, duties, levies, entry tax, octrois, sales tax, Works contract tax etc. as applicable from time to time shall be borne by the **CONTRACTOR** and are deemed to be included in the rates.

Sales Tax on Works contract, Tax deducted at source for Income tax and any other levies shall be deducted as per rules and regulations in force in accordance with acts prevailing from time to time at the prevailing rates by the Vasantdada Sugar Institute from the bills of the **CONTRACTOR**.

7. **INSURANCE:**

CONTRACTOR shall at his own expense carry and maintain insurance with reputable Insurance Companies to the satisfaction of the Vasantdada Sugar Institute as follows: -

7.1. **Employees' State Insurance Act**

CONTRACTOR agrees to and does hereby accept full and exclusive liability for compliance with all obligations imposed by the Employees' State Insurance Act, 1948, with subsequent amendments, and **CONTRACTOR** further agrees to defend, indemnify and hold the **Vasantdada Sugar Institute** harmless from any liability or penalty which may be imposed by the Central, State or Local authority by reason of any asserted violation by **CONTRACTOR** or Sub-Contractor of the Employees' State Insurance Act and also from all claims, suits or proceedings that may be brought against the **Vasantdada Sugar Institute** arising under, growing out of or by reasons of the WORK provided for by this CONTRACT whether brought by employees of **CONTRACTOR**, by third parties or by Central or State Government authority or any political sub-division thereof.

CONTRACTOR agrees to fill in with the Employees' State Insurance Corporation, in Declaration Form, and all forms which may be required in respect of **CONTRACTOR's** or **SUB-CONTRACTOR's** employees, required to be covered under the Employees State Insurance Act. **CONTRACTOR** shall deduct and secure the agreement of the Sub-Contractor to deduct the employees' contribution as per the rates applicable under the ESI act from time to time and arrange to remit the same to the **Vasantdada Sugar Institute** or such other agency as may be directed by the **Vasantdada Sugar Institute** at regular monthly intervals along with the employees' contribution stipulated in the act as applicable. **CONTRACTOR** agrees to maintain all records as required under the ACT in respect of employees and payments and **CONTRACTOR** shall secure the agreement of the Sub-**CONTRACTOR** to maintain such records. Any expenses incurred for the contributions, making contributions or maintaining records shall be to **CONTRACTOR's** or **Sub-Contractor's** account.

The **Vasantdada Sugar Institute** shall retain such sums as may be necessary from the Contract Value until **CONTRACTOR** shall furnish satisfactory proof that all contribution as required by the Employee's State Insurance Act have been paid.

7.2 **Workman's Compensation and Employer's Liability Insurance.**

Insurance shall be effected for all **CONTRACTOR's** employees engaged in the performance of this CONTRACT if they are not covered under the Employees State Insurance Act. If any part of WORK is sublet, **CONTRACTOR** shall require the **SUB-CONTRACTOR** to provide Workman's Compensation and employer's liability insurance for the latter's employees.

- 7.3 **Any other Insurance required Under Law or Regulations or by the Vasantdada Sugar Institute.**
CONTRACTOR shall also carry and maintain any and all other insurance, which he may be required under any law or regulation from time to time.

8. **DAMAGE TO PROPERTY:**

CONTRACTOR shall be responsible for making good to the satisfaction of the Vasantdada Sugar Institute any loss of article any damage to all structures and properties belonging to the Vasantdada Sugar Institute or being executed or procured or being procured by the Vasantdada Sugar Institute of other Agencies within the premises of all WORK of the Vasantdada Sugar Institute if such loss or damage is due to fault and / or the negligence or willful acts of omission of **CONTRACTOR**, his employee's agents, representatives or **SUB-CONTRACTORS**.

CONTRACTOR shall indemnify and keep the Vasantdada Sugar Institute harmless of all claims for damage to property arising under or by reason of this agreement if such claims result from the fault and / or negligence or willful acts or omissions of **CONTRACTOR**, his employees, agents, representatives or Sub-Contractors.

9. **EMPLOYEES PROVIDENT FUND ACT, 1952 AND SCHEME**

CONTRACTOR agrees to cover all the employees engaged by him or through Sub-Contractors under the employees' provident fund scheme and shall submit necessary records to the Vasantdada Sugar Institute in proof of compliance. If this is not complied with, the Vasantdada Sugar Institute has the right to pay and recover from the bills of the **CONTRACTOR**.

CONTRACTOR further agrees to defend, indemnify and hold the Vasantdada Sugar Institute harmless from any liability of penalty which may be imposed, by the central, state or local authority by reason of any asserted violation by **CONTRACTOR** or his Sub-Contractor of the provisions of the Employees Provident Fund Act, and the schemes there under.

10 **LIABILITY INSURANCE**

The **CONTRACTOR** shall be responsible for all injury or damage to persons, animals or things, and for all damage to property which may arise from any factor on the part of the **CONTRACTOR** or any Sub-Contractor or any nominated Sub- Contractor or any of their employees. The **CONTRACTOR** shall, at his own expense, effect and maintain until the issue of the Completion Certificate under this contract, with an insurance company approved by the Vasantdada Sugar Institute, a Personal Liability policy of Insurance.

The liability under this clause shall cover also, inter alia, any damage to structures, whether immediately adjacent to the works or otherwise, any damage to roads, streets, footpaths, bridges as well as damage caused to the buildings and other structures and works forming the subject matter of this contract. The **CONTRACTOR** shall also be responsible for any damage caused to the buildings and other structures and works forming the subject matter of this contract due to rain, wind, frost or other inclement of weather.

The **CONTRACTOR** shall indemnify and keep indemnified the Vasantdada Sugar Institute and hold him harmless in respect of all and any loss and expenses arising from any such injury or damage to persons or property as aforesaid and also against any claim made in respect of injury or damage, whether under any statutes or otherwise and also in respect of any award or compensation or damage consequent upon such claim.

The **CONTRACTOR** shall, at his own expense, effect and maintain till the issue of the completion certificate under this contract, with an insurance company approved by the Vasantdada Sugar Institute, an All Risks Policy of Insurance including earthquake risk in the joint names of the Vasantdada Sugar Institute and the **CONTRACTOR** (the name of the former being placed first in the policy) against all risk as per the standard All Risk Policy for **CONTRACTORS** and deposit such policy or policies with the Vasantdada Sugar Institute before commencing the works. CAR Policy to clearly indicate "Vasantdada Sugar Institute" as Principal and beneficiary of CAR Policy. Car Policy should have a clause of LOSS PAYEE.

Summary of Contractor's All Risk Insurance

Sr.No.	Description	Particulars
1	Type of Insurance Cover	Contractor's All Risk Insurance
2	Scope	a) Material: Physical Loss, damage, destruct b) Liability: Third Party Liability surrounding property, Contractor's plant & machinery.
3	Nature of Cover	Fire, Lighting, Riot, Strike, Theft, Burglary, Terrorism, Earthquake, Escalation in cost.
4	Material cost Construction cost	Imported: CIF + 10% Customs duty: Percentage Indigenous: Landed cost Construction Charges (Total contract value)
5	Transit Risk	Warehouse to warehouse
6	Status of Sub Contractor	Subcontractor need to be covered under the same insurance

In event of any damage, the contractor will make the thing good and will not wait for settlement of insurance claim.

The **CONTRACTOR** shall reinstate all damage of every sort mentioned in this clause so as to deliver up the whole of the works complete and perfect in every respect and so as to make good or otherwise satisfy all claims for damage to property of third parties.

The **CONTRACTOR** shall also indemnify and keep indemnified the Vasantdada Sugar Institute against all claims which may be made against the Vasantdada Sugar Institute, by any person in respect of anything which may arise in respect of the works or in consequence thereof and shall, at his own expense, effect and maintain, until the completion of the contract, with an Insurance Company approved by the Vasantdada Sugar Institute a policy of Insurance in the joint names of the Vasantdada Sugar Institute and the CONTRACTOR (name of the former being placed first in the policy) against such risks and deposit such policy or policies before commencement of the works. The minimum limit of the coverage under the Policy shall be Rs. 2.00 lakhs per person for any one accident or occurrence and Rs. 5 lakhs in respect of damage to property for any one accident or occurrence.

The CONTRACTOR shall also indemnify the Vasantdada Sugar Institute against all claims which may be upon the Vasantdada Sugar Institute, whether under the Workmen's Compensation Act or any other statute in force, during the currency of this contract or at common Law in respect of any employee of the CONTRACTOR or of any Sub-Contractor and shall at his own expense effect and maintain until the completion of the contract, with an insurance Company, approved by the Vasantdada Sugar Institute, a Policy of Insurance against such risks and deposit such policy or policies with the Vasantdada Sugar Institute from time to time during the currency of this contract.

In default of the CONTRACTOR insuring as provided above, the Vasantdada Sugar Institute may so insure and may deduct the premiums paid from any moneys due or which may become due to the **CONTRACTOR**.

The **CONTRACTOR** shall be responsible for any liability which may not be covered by the Insurance Policies referred to above and also for all other damages to any person, animal or defective carrying out of this contract, whatever, may be the reasons due to which the damage shall have been caused.

The **CONTRACTOR** shall also indemnify and keep indemnified the Vasantdada Sugar Institute against all and any cost, charges or expenses arising out of any claim or proceedings relating to the works and also in respect of any award of damages or compensation arising therefrom.

Without prejudice to the other rights of the Vasantdada Sugar Institute against CONTRACTOR in respect of such default, the Vasantdada Sugar Institute shall be entitled to deduct from any sums payable to the CONTRACTOR the amount of any damages, compensation costs, charges and other expenses paid by the Vasantdada Sugar Institute and which are payable by the CONTRACTOR under this clause.

The CONTRACTOR shall, upon settlement by the Insurer of any claim made against the Insurer pursuant to a policy taken under this clause, proceed with due diligence to rebuild or repair the works destroyed or damaged. In this event all the monies received from the Insurer in respect of such damage shall be paid to the CONTRACTOR and the CONTRACTOR shall not be entitled to any further payment in respect of the expenditure incurred for rebuilding or repairing of the materials or goods destroyed or damaged.

The CONTRACTOR, in case of re-building or reinstatement after fire, shall be entitled to such extension of time for completion as the Vasantdada Sugar Institute may deem fit, but shall, however, not be entitled to reimbursement by the Vasantdada Sugar Institute of any shortfall or deficiency in the amount finally paid by the insurer in settlement of any claim arising as set out herein. Any extension of time so granted shall be subject to no additional costs for the extended period.

Without prejudice to his liability under this clause, the CONTRACTOR shall also cause all nominated Sub-contractors to effect, for their respective portions of the works, similar policies of insurance in accordance with the provisions of this clause and shall produce or cause to produce to the Vasantdada Sugar Institute such policies. The CONTRACTOR shall not permit nominated Sub-contractors to commence work at the site unless the said insurance policies are submitted. In the event of failure of the Sub-contractors to take out such a policy of insurance before commencing the works at the site, the CONTRACTOR shall be responsible for any claim or damage attributable to the said Sub-contractors.

11. **LABOUR & LABOUR LAWS**

The CONTRACTOR shall make its own arrangement to organize and engage the required labour. CONTRACTOR shall ensure compliance of all applicable labour laws. CONTRACTOR shall execute an undertaking in the pro-forma of Annexure (14).

- . No labour below the age of eighteen (18) years shall be employed on WORK.
- . Minimum Wages Act - **CONTRACTOR** shall not pay less than what is provided under Minimum Wages Act to labourers engaged by him on WORK.
- . **CONTRACTOR** shall at his expense comply with all labour laws and keep the Vasantdada Sugar Institute indemnified in respect thereof.

Contract Labour (Regulation and Abolition) Act, 1970 - In addition to above, rules and regulations as contained in Contract Labour (Regulation and Abolition) Act, 1970 will also be applicable for this CONTRACT. The **CONTRACTOR** shall be liable for ensuring compliance of the provisions of the acts, registration obtaining license etc. of his workmen as well as those of Sub-**CONTRACTORS**. CONTRACTOR shall also file returns from time to time as required under all applicable laws.

- . **CONTRACTOR** shall secure full safety of the workers / employees engaged by him and shall take at his own cost, insurances and such other safety regulations for the said purpose.

12. **IMPLEMENTATION OF APPRENTICES ACT 1964**

CONTRACTOR shall comply with the provisions of the Apprentices ACT, 1964 and the Rules and orders issued thereunder from time to time. If he fails to do so, his failure will be a breach of CONTRACT. **CONTRACTOR** shall also be liable for any pecuniary liability arising on account of any violation by him of the provision of Act.

13. **CONTRACTOR TO INDEMNIFY THE Vasantdada Sugar Institute.**

CONTRACTOR shall indemnify every member, officer and employee of the Vasantdada Sugar Institute, against all actions, proceedings, claims, demands, costs and expenses whatsoever arising out of or in connection with the works and all actions, proceedings, claims, demands, costs and expenses which may be made against the Vasantdada Sugar Institute for or in respect of or arising out of any failure by CONTRACTOR in the performance of his obligations under the Contract Document. The Vasantdada Sugar Institute shall not be liable for or in respect of any demand or compensation payable by law in respect of or in consequence of any accident, death or injury to any workman or other person in the employment of CONTRACTOR or his Sub-contractors and CONTRACTOR shall indemnify and keep indemnified the Vasantdada Sugar Institute against all such damages and compensations and against all claims, damages, proceedings, costs, charges and expenses whatsoever in respect thereof or in relation thereto.

14. **PAYMENT OF CLAIMS AND DAMAGES**

Should the Vasantdada Sugar Institute have to pay any money in respect of such claims or demands as aforesaid the amount so paid and the costs incurred by the Vasantdada Sugar Institute shall be charged to and paid by CONTRACTOR and CONTRACTOR shall not be at liberty to dispute or question the right of the Vasantdada Sugar Institute to make such payments notwithstanding the same may have been made without his consent or authority or in law or otherwise to the contrary.

In every case in which by virtue of the provisions of Workmen's Compensation Act, or any other Act, the Vasantdada Sugar Institute is obliged to pay compensation to workmen employed by CONTRACTOR in execution of WORK, the Vasantdada Sugar Institute will recover from CONTRACTOR the amount of compensation so paid and without prejudice to the rights of the Vasantdada Sugar Institute under the said Act the Vasantdada Sugar Institute shall be at liberty to recover such amount or any part thereof by deducting it from the Security Deposit or from any sum due to CONTRACTOR whether under this CONTRACT or otherwise. The Vasantdada Sugar Institute shall not be bound to contest any claim made under the said Act, except on written request of CONTRACTOR and upon his giving to the Vasantdada Sugar Institute full security for all costs for which the Vasantdada Sugar Institute might become liable in consequence of contesting such claim.

15. **HEALTH AND SANITARY ARRANGEMENTS FOR WORKERS**

In respect of all labour directly or indirectly employed in WORK for the performance of **CONTRACTOR's** part of this CONTRACT, **CONTRACTOR** shall comply with or cause to be complied with all the rules and regulations of the local Sanitary and other Authorities and as framed by the Vasantdada Sugar Institute from time to time for the protection of health and sanitary arrangements for all workers and as required under various welfare statutes.

The **CONTRACTOR** shall provide rubbish chutes and bins at required places and arrange for periodical cleaning at his own cost.

The **CONTRACTOR** shall provide washing bay with water jet pumps at the locations shown by the Architect/ VSI for washing cars, tyres, vehicles and for other purposes, and maintain the same till the completion of work at his own cost.

No extra claims on these accounts are admissible.

SAFETY REGULATIONS AND CODES

STANDARD SPECIFICATION FOR HEALTH, SAFETY AND ENVIRONMENT (HSE) MANAGEMENT AT CONSTRUCTION SITES

1.0 SCOPE

This specification establishes the Health, Safety and Environment (HSE) management requirement to be complied by Contractors during construction.

Requirements stipulated in this specification shall supplement the requirements of HSE Management given in relevant Act(s)/legislations, General Conditions of Contract (GCC), Special Conditions of Contract (SCC) and Job (Technical) Specifications. Where different documents stipulate requirements, the stringent shall apply.

2.0 REFERENCES

The document should be read in conjunction with following:

- Vasantdada Sugar Institute (VSI)
- General Conditions of Contract (GCC)
- Special Conditions of Contract (SCC)
- Building and other construction workers (regulation of employment and condition of service) Act, 1996
- Job (Technical) specifications
- Relevant IS Codes (refer Annexure-I)
- Statutory requirements

3.0 Requirements of Health, Safety & Environment (HSE) Management System to Be Complied by Bidders

3.1 MANAGEMENT RESPONSIBILITY

3.1.1 HSE Policy & Objectives

The Contractor should have a document HSE policy & objectives to demonstrate commitment of their organization to ensure health, safety and environment aspects in their line of operations. The contractor should understand Vasantdada Sugar Institute HSE policy and site basic safety rules and follow the same at Vasantdada Sugar Institute construction site.

3.1.2 Management System

The HSE management system of the Contractor shall cover the HSE requirements including but not limited to what is specified under para 1.0 and para 2.0 above.

3.1.3 Indemnification

Contractor shall indemnify & hold harmless Vasantdada Sugar Institute & their representatives free from any and all liabilities arising out of non-fulfillment of HSE requirements.

3.1.4 Personnel deployment

Contractor as a minimum requirement shall designate/ deploy the following persons at site:

- | | |
|--|---|
| a) Up to 50 persons deployed by him at site | - Designate one safety supervisor |
| b) For 51 to 100 persons by him at site | -Deploy one qualified & experienced safety deployed Engineer/Officer in addition to the Safety Supervisor as described in (a) above |
| c) For more than 100 persons deployed by him at site (b) above | -Deploy an additional Safety Engineer/Officer for every 100 persons or part thereof, in addition to |

No work will be started at site until above safety personnel are mobilized at site. The contractor shall submit a safety organogram clearly indicating the lines of responsibility, reporting system and furnish Bio-Data/Resume/Curriculum Vitae with contract details of the safety personnel he intends to mobilize, at least 1 month before the intended mobilization.

Contractor should submit Vasantdada Sugar Institute project team every month man power deployment at Vasantdada Sugar Institute construction site.

3.1.5 Implementation & Monitoring

Contractor shall be fully responsible for planning, reporting, implementing and monitoring all HSE requirements and compliance of all laws & statutory requirements. The Contractor shall also ensure that the HSE requirements are clearly understood & faithfully implemented at all levels at site.

3.1.6 Awareness

The Contractor shall promote and develop consciousness about Health, Safety and Environment among all personnel working for the Contractor. Regular awareness programs and fabrication shop/work site meetings shall be arranged on HSE activities to cover hazards involved in various operations during construction.

3.1.7 Fire prevention & First-Aid

The contractor shall arrange suitable first aid measures such as First Aid Box (Refer Annexure-II for details), trained personnel to administer First Aid, stand-by ambulance or vehicle.

The contractor should communicate to his employees, sub-contractor and Vasantdada Sugar Institute project staff about emergency medical center contact nos.

Install fire protection measures such as: adequate number of steel buckets with sand water and adequate number of appropriate fire extinguishers to the satisfaction of Vasantdada Sugar Institute HSE requirements.

3.1.8 Documentation

The contractor shall evolve a comprehensive, planned and documented system for implementation and monitoring of the HSE requirements. This shall be submitted to Vasantdada Sugar Institute for approval. The monitoring for implementation shall be done by regular inspections and compliance to the observations thereof. The Contractor shall get similar HSE requirements implemented at his sub-contractors(s) work site/office. However, compliance of HSE requirements shall be the responsibility of the Contractor. Any review/approval by Vasantdada Sugar Institute shall not absolve contractor of his responsibility in relation to all HSE requirements.

3.1.9 Audit

Non-conformances HSE by Contractor (including his sub-contractors) as brought out during review/audit by his internal audit team as Vasantdada Sugar Institute's representative shall be resolved forthwith by Contractor. Compliance report shall be submitted to Vasantdada Sugar Institute.

3.1.10 Meetings

The Contractor shall ensure participation of his top most executive at site (viz. Resident Engineer/Site-in-Charge) in Safety Committee/HSE Committee meetings arranged by Vasantdada Sugar Institute. The compliance of any observations during the meeting shall be arranged urgently. He shall assist Vasantdada Sugar Institute to achieve the targets set by them on HSE during the project implementation.

3.1.11 Penalty

The Contractor shall adhere consistently to all provisions of HSE requirements. In case of non-compliance or repeated failure in implementation of any of the HSE provisions; Vasantdada Sugar Institute HSE may impose stoppage of work without any cost time implication to the Vasantdada Sugar Institute and/or impose a suitable penalty, up to a cumulative limit of 1.0% (one percent) of the contract value with a ceiling of Rs. 10 lacs (Rupees ten lacs). This penalty shall be in addition to all other penalties specified elsewhere in the contract. The decision of imposing stoppage work, its extents and penalty shall rest with Vasantdada Sugar Institute. The same shall be binding on the Contractor. The penalty does not make the contractor eligible to continue the work in unsafe manner.

3.1.12 Accident investigation

All accidents shall be investigated by a team of Contractor's senior personnel for establishing root cause and recommending corrective & preventive actions. Findings shall be documented and suitable actions taken to avoid recurrences shall be communicated to Vasantdada Sugar Institute. Vasantdada Sugar Institute shall have the liberty to independently investigate such occurrences and the Contractor shall extend all necessary help and cooperation in this regard.

3.2 HOUSE KEEPING

3.2.1 Contractor shall ensure that a high degree of housekeeping is maintained and shall ensure the followings:

- a. All surplus earth and debris are removed/disposed of from the working areas to identified location(s).
- b. Unused/surplus cables, steel items and steel scrap lying scattered at different places within the working areas are removed to identified location(s).
- c. All wooden scrap, empty wooden cable drums and other combustible packing materials, shall be removed from work place to identified location(s).

- d. Roads shall be kept clear and materials like pipes, steel, sand, boulders, concrete, chips and bricks etc. shall not be allowed on the roads to obstruct free movement of men & machineries.
- e. Fabricated steel structural, pipes & piping materials shall be stacked properly for erection.
- f. Water logging on roads shall not allow.
- g. No parking of trucks/trolleys, cranes and trailers etc. shall be allowed on roads, which may obstruct the traffic movement.
- h. Utmost care shall be taken to ensure over all cleanliness and proper upkeep of the working areas.
- i. Trucks carrying sand, earth and pulverized materials etc. shall be covered while moving within the facility area/ or these materials shall be transported with top surface wet.
- j. The contractor shall ensure that the atmosphere in facility area and on roads is free from particulate matter like dust, sand etc. by keeping the top surface wet for ease in breathing.
- k. At least two exits for any unit area shall be assured at all times.

3.3 HSE MEASURES

3.3.1 Construction Hazards

Contractor shall ensure that during the performance of the work, all hazards have been identified, assessed and eliminated.

A list of construction hazards along with their effects & preventive measures is given in Annexure-V.

Apart from attached list should prepare risk assessment study report of their activities and submit the same to Vasantdada Sugar Institute HSE dept. for verification

3.3.2 Accessibility

The Contractor shall provide safe means of access to any working place including provisions of suitable and sufficient scaffolding at various stages during all operations of the work for the safety of his workmen and Vasantdada Sugar Institute project team.

3.3.3 Personal Protective Equipment's (PPE's)

The Contractor shall ensure that all their staff and workers including their sub-contractor(s)'s have been issued & wear appropriate PPE's like safety helmets, safety shoes, full body harness, protective goggles, gloves etc. All these gadgets shall confirm to applicable IS Specifications/CE or other applicable international standards.

In case of non-compliance or repeated failure in implementation of PPE policy impose 1000Rs. as penalty

For shot blasting the usage of protective helmets (approved by the competent authority), gauntlet and protective clothing is mandatory.

3.3.4 Working at height

The contractor shall issue height permit for working above 3 meters' height after verifying and certifying the checkpoints as specified in the attached permit Format. He shall also undertake to ensure compliance to the conditions of the permit during the currency of the permit including adherence to personal protective equipment's.

The permit shall be issued initially for one week or expected duration of an activity and extended further for the balance duration. This permit shall be applicable in areas where specific clearance from Vasantdada Sugar Institute's PS Dept. /Safety Dept. is not applicable. Vasantdada Sugar Institute Field Engineers/Safety Officers/Area Coordinators may verify and sign this permit during the execution of the job.

In case work is undertaken without taking sufficient precautions as given in the permit, Vasantdada Sugar Institute Engineers may cancel the permit and stop the work till satisfactory compliance is arranged. Contractor is expected to maintain a register for issuance of permit and extensions thereof including preserving the used permits for verification during audits etc.

Contractor shall arrange (at his cost) and ensure use of Fall Arrester Systems by his workers. Fall arresters are to be used while climbing tall structures. These arresters should lock automatically against the anchorage line, restricting free fall of the user. The device is to be provided with a double security opening system to ensure safe attachment or release of the user at any point of rope. In order to avoid shock, the system should be capable of keeping the person in vertical position in case of a fall.

Contractor shall ensure that Life Lines are used by all personnel while working at height. One end of the life line shall be firmly tied with the worker and the other end with a fixed & rigid structure. The life line should be strong enough to take the load of the worker in case of a fall.

Contractor shall provide Roof Top Walk Ladders for carrying out activities on sloping roofs in order to reduce the chances of slippages.

Contractor shall ensure that a proper Safety Net System is used wherever the hazard of fall from height is present. The safety net shall be located not more than 9.0 meters below the working surface extending on either side up to sufficient margin to arrest or to reduce the consequences of a possible fall of persons working at different heights.

3.3.5 **Electrical installations**

The contractor shall ensure that electrical systems and equipment including tools & tackles are properly selected, installed, used and maintained.

The contractor shall deploy qualified & licensed electricians for proper & safe installation and for regular inspection power distribution lines/points including their earthlings. A copy of the license shall be submitted to Vasantdada Sugar Institute for records.

While working on electrical system, the contractor and his workmen shall ensure that the following safety measures are in place:

- The contractor should understand and strictly follow the Vasantdada Sugar Institute Lock out and Tag out procedure.
- Proper & valid Electrical line clearance is obtained for the equipment.
- The cables are properly insulated and are without any temporary joint.
- All Flammable / combustible materials should either be removed from the work place or should be properly protected.
- Suitable Earth leakage Circuit Breaker (ELCB) is provided for incoming and all outgoing feeders.
- Proper earthlings are provided to distribution board and other electrical equipment's like welding machines & grinding machines etc.
- Pipe sleeves are provided for road crossings of temporary cables laid by the contractor for his work.
- The power connection should not be overloaded and suitable overload protection should be provided.
- The tools used by the contractor personnel should be properly insulated and in good condition.
- The grinding machine & other power tools should have proper guard.

Electrical Apparatus:

The contractor should ensure that the portable electrical equipment like grinding machine, drilling machine etc. is in healthy condition. The contractor should take all precautionary safety action, as providing of earth leakage circuit breakers for their portable electric machines. In lieu of the above, double insulated portable equipment may be used.

All portable electrical apparatus shall be regularly examined, tested and maintained to ensure the apparatus and leads are in good order.

Ensure that all portable appliances are provided with 3 pin plug and socket connections and that all the metallic parts of the apparatus are effectively earthed. All loose wiring such as flexible cables for portables lamps, tools, and trailing cables and other portable and transportable apparatus shall be tested regularly at frequent intervals to ensure safety.

3.3.6 **Welding/ Gas cutting**

Contractor shall ensure that flash back arresters conforming to BS: 6158 or equivalent are installed on all gas cylinders while in use. All cylinders shall be mounted on trolleys. All welding machines shall have effective earthlings. To eliminate radiation hazard, Tungsten electrodes used for Gas Tungsten Arc Welding shall not contain Thorium.

3.3.7 **Ergonomics and tools & tackles**

The Contractor shall assign to his workmen, tasks commensurate with their qualification, experience and state of health. All lifting tools, tackles, equipment, accessories including cranes shall be tested periodically by statutory/competent authority for their condition and load carrying capacity. Valid test & fitness certificates from the authority shall be submitted to Vasantdada Sugar Institute for their review/acceptance before the lifting tools, tackles, equipment, accessories and cranes are used.

Contractor shall ensure installation of Safe Load Indicator (SLI) on all cranes / or lifting equipment (while in use) to minimize overloading risk. SLI shall have capability to continuously monitor and display the load on the hook, and automatically compare it with the rated crane capacity at the

operating condition of the crane. The system shall also provide visual and audible warnings at set capacity levels to alert the operator in case of violations.

3.3.8 Occupational Health

The contractor shall identify all operations that can adversely affect the health of its workers and issue & implement mitigation measures. For surface cleaning operations, sand blasting shall not be permitted even if not explicitly stated elsewhere in the contract.

3.3.9 Hazardous substances

Hazardous and/or toxic materials such as solvent coating or thinners shall be stored in appropriate containers, which shall be labeled with the name of the materials, the hazards associated with its use and necessary precautions to be taken. The contractor should maintain up dated copies of MSDS and communicated the same to his employees.

Where contact or exposure of hazardous materials/Noise pollution exceeds the specified limit or otherwise have harmful effects, appropriate personal protective equipment's such as gloves, earmuffs, goggles, aprons, chemical resistant clothing, respirator etc. shall be used.

3.3.10 Spills

Chemical and other spills shall be contained & cleaned up immediately to prevent further contamination.

3.3.11 Road Safety

The contractor shall ensure adequately planned road transport safety management system. The vehicles shall be fitted with reverse warning alarms. The contractor shall also ensure a separate pedestrian route for safety of the workers and comply with all traffic rules & regulations.

For pipeline jobs, the contractor shall submit a comprehensive plan covering transportation of pipes, movement of side booms, movement of vehicles etc.

Contractor shall ensure that all State traffic rules and regulations are complied with while motor vehicles are driven inside the refinery premises. In addition, the following points are also outlined for compliance:

- (i) Speed Limit: Speed limit within the facility is 15 KMPH except around the. In any case, vehicle drivers should take cognizance of road, weather and vehicle condition and adjust their driving accordingly. All vehicles must be mechanically sound and have an efficient exhaust with proper silencer, horn, breakers and fuel cap.
- (ii) Parking: Park vehicles only in approved area. Vehicles must be parked in such manner that they will not move while unattended. As a general rule, vehicles should not be parked at road bends; in front of firefighting equipment thereby blocking access to them.
- (iii) No vehicles should enter into any facility area without valid permission followed from the area-in-charge.
- (iv) Vehicles driven inside the facility premises should have effective brakes horns, lights, mufflers, flame arrestors etc.
- (v) Vehicles shall carry only the number of passengers or weight of load it is authorized to carry as per law. Loads carried in trucks shall be properly secured so that they will not accidentally fall off while vehicle is in motion.
- (vi) Tractors and trucks should not be used for transporting personnel.
- (vii) Vehicle drivers shall always check overhead and side clearance while driving vehicles.
- (viii) Any kind of repair work on Contractor's vehicle is not allowed inside the facility area.
- (ix) The contractors shall prominently display the name of their company on all the vehicles including tractor trolleys, trucks, open jeeps, cranes which are allowed by the Engineer-in-charge to enter inside the facility for carrying out the job. The display board shall be put on front and rear side of each of the vehicle.
- (x) Hand cart, tractor-trolley etc. should also bear the name of the contractor clearly.

3.3.12 Use of heavy equipment:

If hoists, cranes, derrick, mixer machine, pumps etc. are used by the contractor, the following are to be ensured by the contractor and his workmen:

- Testing of cranes for its capacity.
- Inspection & maintenance logs
- Crane operation logs
- Safety latch is provided on the hooks.
- The area is notified through display of Sign boards/ barricades
- Overhead power cables is removed or kept at a safe distance.
- The exhaust of machines should have a proper silencer
- No change of boom length beyond permissible limit.

3.3.13 Welfare measures

Contractor shall, at the minimum, ensure the following facilities at work sites.

- A crèche where 10 or more female workers are having children below the age of 6 years.
- Reasonable canteen facilities at appropriate location depending upon site conditions.
 - Rest rooms (separate for male workers and female workers)
 - Toilets, drinking water, adequate lighting at site and labour camps, commensurate with applicable Laws/Legislation
 - Provision of labour camp will be not allowed at facility area.

3.3.14 Environment Protection

Special Conditions of Contract on Environmental Management System

- 1 Contractor shall inculcate environmental awareness among their workmen/personnel and strive for enhancement of systems and skills for minimizing the environmental impact out of their activities/ services.
- 2 Contractor shall avoid wastage of water, electricity supplied to them from Vasantdada Sugar Institute's source of supply for execution of the job and closes the supply valves properly while not in a use.
- 3 Contractor shall clear and level the job-site and remove all metallic and non-metallic surplus materials, scrap and other waste materials generated out of his job, from time to time as well after completion of job to a specific location as per Engineer-in-charge.
- 4 Contractor shall ensure to avoid the idle running of all electrical equipment's e.g. welding machines etc. used for execution of the job.
- 5 Contractor's vehicles, trucks, tractor, cranes and other portable equipment's e.g. Air Compressor, DG Set, Dewatering pumps etc. used inside facility premises (where Hydrocarbon is used as fuel) for execution of the job must be mechanically sound and have an approved spark arrester and have exhaust complying pollution norms. Idle running of those vehicles and equipment's shall be avoided.

Contractor shall ensure proper storage and utilization methodology of materials that are detrimental to the environment. Where required, Contractor shall ensure that only the environment friendly materials are selected and emphasize on recycling of waste materials such as metals, plastics, glass, paper, oil & solvents.

3.3.15 Rules & Regulations

All persons deployed at site shall be knowledgeable of and comply with the environmental laws, Vasantdada Sugar Institute HSE rules & regulations relating to the hazardous materials, substances and wastes. Contractors shall not dump, release or otherwise discharge or dispose of any such materials without the express authorization of Vasantdada Sugar Institute.

3.4 TOOL BOX MEETING (Safety Talk)

Contractor shall conduct daily Safety talk with workers prior to start of work and shall maintain proper record of the meeting. A suggested format is given below. The safety talk is to be conducted by the immediate supervisor of the workers.

The topics during safety talk shall include

- Hazards related to work assigned on that day and precautions to be taken.
- Any forthcoming HSE hazards/events/instruction/orders, etc.
- Safety alerts / safety lesson learns etc.

The above record can be kept in local language; which workers can read. These records shall be made available to Vasantdada Sugar Institute whenever demanded.

3.5 TRAINING

Contractor shall ensure that all his personnel possess appropriate training to carry out the assigned job safely. The training should be imparted in a language understood by them and should specifically be trained about

- Potential hazards to which they may be exposed at their workplace
 - Measures available for prevention, recurrence and elimination of these hazards
- The topics during training shall cover, at minimum;
- Education about hazardous jobs and precautions required
 - Emergency and evacuation plan
 - HSE requirements
 - Firefighting and First-Aid
 - Use of PPEs

Record of the training shall be kept and submitted to Vasantdada Sugar Institute whenever demanded.

The contractor should attend Vasantdada Sugar Institute HSE awareness session before starting their activities at site

3.6 INSPECTON/ AUDIT

The contractor shall carryout daily HSE inspection and record observations at a central location. These inspection records shall be freely accessible to Vasantdada Sugar Institute representatives. He shall also carry out internal HSE audits as well as cooperate during HSE audits by Vasantdada Sugar Institute, which will be at least twice in month during the project execution period.

4.0 DETAILS OF HSE MANAGEMENT SYSTEM BY CONTRACTOR

4.1 ON AWARD OF CONTRACT

The Contractor shall submit a comprehensive Health, Safety and Environment policy and plans for approval by Vasantdada Sugar Institute prior to start of work. The Contractor shall participate in the pre-start meeting with Vasantdada Sugar Institute to finalize HSE Plans including the following:

- Job procedure to be followed by Contractor for activities covering handling of equipment's, scaffolding, electric installations etc. describing the risks involved, actions to be taken and methodology for monitoring each activity.
- Vasantdada Sugar Institute review/audit requirement.
- Organization structure along with responsibility and authority, records/reports etc. on HSE activities.
- Procedures for reporting & investigation of accidents and near misses.
- HSE Training programs.
- Reference to Rules, Regulations and statutory requirements.
- HSE reports

4.2 DURING JOB EXECUTION

4.2.1 Contractor shall implement approved Health, Safety and Environment procedure/plan including but not limited to as bought out under para 3.0 Contractor shall also ensure:

- To arrange workmen compensation insurance, registration under ESI Act, third party liability insurance etc. as applicable. Submit the same to Vasantdada Sugar Institute project for verification.
- To arrange all HSE permits before start of activities (as applicable), like permits for hot work, confined space, working at heights and its use and implement all precautions mentioned therein.
- To submit, timely, the completed checklist on HSE activities, Monthly HSE report, accident reports, investigation reports etc. as per Vasantdada Sugar Institute requirements. Compliance of instructions on HSE shall be done by Contractor and informed urgently to Vasantdada Sugar Institute.
- That his top most executive at site attends all the Safety Committee/HSE meetings arranged by Vasantdada Sugar Institute. Only in case of his absence from site that a second senior most person shall be nominated by him, in advance, and communicated to Vasantdada Sugar Institute.
- Display at site office and work locations caution boards, list of hospitals, emergency services available etc.
- Provide posters, banners for safe working to promote safety consciousness.
- Access, analyze & mitigate the construction hazard
- Carryout audits/inspection at his works as well as sub-contractor works as per approved HSE document & submit the reports for Vasantdada Sugar Institute review.
- Assistance& cooperation during HSE audits by Vasantdada Sugar Institute, and submit compliance report.
- Generation& submission of HSE record/report as per HSE Plan. And this specification.
- Apprise Vasantdada Sugar Institute on HSE activities at site.
- Carryout all dismantling activities safely, with approval of Vasantdada Sugar Institute representative.
-

5.0 EMERGENCY RESPONSE PLAN

5.1 Contractor has to adhere and respond to the on-site emergency plan and coordinate with the site main controller of Vasantdada Sugar Institute facility.

Contractor personnel shall stop their work and proceed to a safe area in the event an emergency arises in the area where they are working like, in case of fire, medical emergency etc. before re-commencement of the job they should obtain clearance of supervisor of area involved.

On site emergency plan have been prepared in the event of major accident occurring on site. The plan envisages handling emergency situation, which shall be communicated through siren, based on nature of emergency as mentioned below.

In case of major emergency, it is the responsibility of the contractor to head counts his personnel and takes them out with the help of concerned Vasantdada Sugar Institute Co-coordinator. Contractor must confirm the safe evacuation of his personnel to Vasantdada Sugar Institute Co-coordinator. In case of any missing person, it must be brought into the notice of Vasantdada Sugar Institute authorities immediately.

5.2 EVACUATION AND SHELTERING:

In case of emergency/major accident or disaster, following 2 Nos. of Muster points have been identified for assembling of people for head counting / transportation to a safe place. The contractor

site-in-charge shall co-ordinate with Site Main Controller for sheltering and evacuation and advises his workmen to rush to the identified locations of muster points as given in site evacuation plan.

6.0 RECORDS

The contractor shall maintain/ submit HSE records in the following reporting formats:

1. Monthly HSE Checklist cum compliance report
2. Accident/ Fire Report
3. Supplementary Accident & Investigation report
4. Monthly HSE Report (Monthly employee hrs. / LWCIR / TCIR etc.)
5. Work permit records
6. HSE Plan

ANNEXURE-I

IS – CODES FOR HSE

SP: 53	Safety code for the use, Care and protection of hand operated tools.
IS: 816	Code of practice for safety & health requirements in electric and gas welding and cutting operations
IS: 1179	Eye & Face precautions during welding, equipment etc.
IS: 1860	Safety requirements for use, care and protection of abrasive grinding wheels.
IS: 1989 (Part-I & II)	Leather safety boots and shoes
IS: 2925	industrial Safety helmets
IS: 3016	Code of practice for fire safety precautions in welding & cutting operation.
IS: 3043	Code of Practice for earthlings
IS: 3521	Industrial safety belts and harness
IS: 3738	Rubber boots
IS: 3996	Safety Code of scaffolds and ladders
IS: 4770	rubber gloves for electrical purpose
IS: 5216 (Part-I)	Recommendations on Safety procedures and practices in electrical works
IS: 5557	Industrial and Safety rubber lined boots
IS: 5983	Eye protectors
IS: 6519	Selection, care and repair of Safety footwear
IS: 6994 (Part-I)	Industrial Safety Gloves (Leather & Cotton Gloves)
IS: 7293	Safety Code for working with construction Machinery
IS: 9167	Ear protectors
IS: 11006	Flash back arrestor (Flame arrestor)
IS: 11016	General and safety requirements for machine tools and their operation
IS: 11226	Leather safety footwear having direct molded rubber sole
IS: 13367	Code of practice-safe use of cranes
IS: 13416	Recommendations for preventive measures against hazards at working place
IS: 818	Code of Practice for Safety and Health Requirements in Electric and Gas Welding and Cutting Operations – First Revision.
IS: 875	Code of practice for Structural safety of buildings: Masonry walls
IS: 1904	Code of practice for Structural safety of buildings: Shallow foundations
IS: 1905	Code of practice for Structural safety of buildings: Masonry walls
IS: 2750	Specification for Steel Scaffoldings.
IS: 3764	Safety Code for Excavation Work.
IS: 4082	Recommendations on staking and storage of construction materials at site
IS: 4130	Safety Code for Demolition of Buildings – First Revision.
IS: 5121	Safety Code for Piling and other Deep Foundations.
IS: 5916	Safety Code for Construction involving use of Hot Bituminous Materials.
IS: 7205	Safety Code for Erection on Structural Steel Works.
IS: 7069	Safety Code for Handling and Storage of Building Materials.
IS: 7293	Safety Code for Working with Construction Machinery.
IS: 7969	Safety code for handling and storage of building material
IS: 8989	Safety Code for Erection of Concrete Framed Structures.
IS: 11057	Code of practice for Industrial safety nets

ANNEXURE – II

DETAILS OF FIRST AID BOX

SL. NO.	DESCRIPTION	QUANTITY
1.	Small size Roller Bandages, 1-Inch-Wide (Finger Dressing small)	6 Pcs.
2.	Medium size Roller Bandages, 2 Inches Wide (Hand & Foot Dressing)	6 Pcs.
3.	Large size Roller Bandages, 4 Inches Wide (Body Dressing Large)	6 Pcs.
4.	Large size Burn Dressing (Burn Dressing Large)	4 Pkts.
5.	Cotton Wool (20 gms packing)	4 Pkts.
6.	Antiseptic Solution Dettol (100 ml.) or Savalon	1 Bottle
7.	Mercurochrome Solution Dettol (100 ml.) 2% in water	1 Bottle
8.	Sal-volatile (20 ml. Ammonia)	1 Bottle
9.	Pair of Scissors	1 Piece
10.	Adhesive Plaster (1.25 cm X 5 m)	1 Spool
11.	Eye pads in Separate Sealed Pkt.	4 Pcs.
12.	Tourniquet	1 No.
13.	Safety Pins	1 Dozen
14.	Tine. IODINE (100 ml.)	1 Bottle
15.	Ointment for burns (Sofrmycine 20 gms.)	1 Bottle
16.	Polythene Wash cup for washing eyes	1 No.
17.	Potassium Permanganate (20 gms.)	1 Pkt.
18.	Tine. Benzoine (100 ml.)	1 Bottle
19.	Triangular Bandages	2 Nos.
20.	Band Aid Dressing	5 Pcs.
21.	Iodex (25 gms.)	1 Bottle
22.	Tongue Depressor	1 No.
23.	Boric Acid Powder (20 gms.)	2 Pkts.
24.	Sodium Bicarbonate (20 gms.)	1 Pkt.
25.	Dressing Powder (Nebasulf) (10 gms.)	1 Bottle
26.	Medicinal Glass	1 No.
27.	Soap	1 No.
28.	Eye Ointment (Eye kul drops)	1 Bottle

Apart from these medicines if any contractor wants to use any other medicines than he should have his certifying surgeon prescription copy in first aid box.

ANNEXURE – III

INDICATIVE LIST OF STATUTORY ACTS & RULES

- Indian Explosives Act, 1984.
- The Motor Vehicles Act, 1988.
- The Factories Act, 1949.
- The Petroleum Act, 2002.
- Workmen Compensation Act,
- Static/Mobile Pressure Vessel Act,
- Indian Electricity Act,
- Water (Prevention & Control Pollution) Act, 1974.
- Water (Prevention & Control of Pollution) Cess Act-1977.
- The Mines & Minerals (Regulation & Development) Act-1947.
- The Air (Prevention & Control of Pollution) Act-1981.
- The Radiation Protection Rules-1971.
- The Indian Forest Act-1927.
- The Environment (Protection) Act-1986.
- The Hazardous Wastes (Management & Handling) Rules-1989.
- The Manufacture, Storage & import of Hazardous Chemicals Rules-1989.
- The Central Motor Vehicle Rule-1989.
- The Building and Other Construction Workers (Regulation of Employment and Condition of service) Act, 1996.
- Inspection of Electrical Installation (DG Sets) as per Provision of rule No. 46(1) of I.E

- Batteries Management and Handling Rules 2001

HAND BOOK ON HEALTH AND SAFETY AT WORK FOR CONTRACTORS WORKING IN THE PROJECTS

TABLE OF CONTENTS

SECTION

1. INTRODUCTION
2. RULES FOR GENERAL OPERATIONS
 - 2.1 Access
 - 2.2 Accident Reporting
 - 2.3 CONTRACTORS & Sub-contractors Tools & Equipment's.
 - 2.4 Hazardous Materials
 - 2.5 Dust and Fume Control
 - 2.6 Fire Hazards and Precaution
 - 2.7 Machinery Safety
 - 2.8 House-keeping / Hygiene
 - 2.9 Noise
 - 2.10 Overhead Working
 - 2.11 Working at Height
 - 2.12 Safety Clothes and Equipment
 - 2.13 Plant Services
 - 2.14 Supervision
 - 2.15 Warning signs and Notices
3. TOOLS
 - 3.1 Electrically Driven Portable Tools
 - 3.2 Compressed Air Tools
 - 3.3 Percussion Cartridge Tools
 - 3.4 Hoisting and Lifting.
 - 3.5 Movement of Plant and Equipment
 - 3.6 Industrial Trucks
4. CONTRACTORS GUIDELINES

SECTION - 1

INTRODUCTION:

This document defines the operations undertaken by **CONTRACTORS** and Sub-contractors on Project Site, which can give rise to hazards to those engaged in the work and others who may be working, standing or passing in the vicinity.

It is the Vasantdada Sugar Institute's endeavor to secure a high standard of safety at site. Therefore, **CONTRACTORS** and Sub-contractors must know their duties under common law, both for establishments, and their own employees and to conduct their business and methods of work to conform to the best practices.

Before the Vasantdada Sugar Institute allows any contracting or sub- contracting firm to carry out work on its premises, the Vasantdada Sugar Institute insists that **CONTRACTORS** and Sub-contractors understand their duties regarding safe practices for themselves, others and regulations covering the type of work they will be carrying out.

In furtherance to this policy, rules herein have been devised to bring to the notice of **CONTRACTORS** and Sub-contractors, some of the more common hazards, and appropriate preventive measures in connection with the erection, construction, cleaning, painting, alteration or demolition of plant, machinery and buildings.

The Vasantdada Sugar Institute is confident that the observance of these rules will be no hindrance to progress the work, but will assist in the avoidance of accidents.

IT IS IN A TERM OF ALL CONTRACTS BETWEEN THE Vasantdada Sugar Institute AND **CONTRACTORS** THAT THEY AND ANY SUB-CONTRACTORS, APPOINTED BY THEM COMPLY WITH THESE RULES AND THEIR CO-OPERATION IS THEREFORE OBLIGATORY IN CARRYING OUT THE PRECAUTIONS LAID DOWN.

Section -2: Details general rules which are applicable to most **CONTRACTORS** and Sub-contractors.

Section -3: Details specific rules which must be followed where applicable, where a particular type of work is to be undertaken.

Section -4: Details of guide lines for the **CONTRACTOR** and his Sub-contractors.

All **CONTRACTORS** Supervisors will make sure that the Engineering Services / Safety Manager on Project Site are notified as and when he and others (Sub-contractors) are reporting for work on that site.

SECTION 2 RULES FOR GENERAL OPERATIONS:

2.1 ACCESS:

Nothing shall be done or omitted to be done by **CONTRACTORS** or Sub-contractors or their employees to render unsafe or obstruct:

- any means of access to the places at which people are required to work.
- the passage of people and / or vehicles whether on a defined gangway or not, unless permission is obtained from the designated safety officer.
- access for emergency apparatus, such as firefighting equipment.
- **CONTRACTORS** and Sub-contractors shall nevertheless provide adequate fencing, lighting and warning signs to ensure safety at all times.

2.2 ACCIDENT AND INCIDENT REPORTING:

All notifiable accidents, dangerous occurrences and potential hazard situations shall be reported to the safety officer at site.

Injuries are to be treated by experienced medical staff available at site.

2.3 CONTRACTORS AND SUB-CONTRACTORS'S TOOLS AND EQUIPMENTS:

All **CONTRACTORS** and Sub-contractors' tools and equipment's must comply with statutory regulations and approved codes of practices.

2.4 HAZARDOUS MATERIALS:

The **CONTRACTOR** must inform the safety officer, prior to commencement of work, procurement of materials connected with the contract work of a hazardous nature. The **CONTRACTOR** will have to secure storage for any such material.

2.5 DUST AND FUME CONTROL:

CONTRACTORS and Sub-contractors must inform the safety officer at the Project site of all processes producing dust or fumes, and under the conditions as laid down in the Factories Act 1948, Sections 14 & 17 the safety precautions are to be fulfilled.

2.6 FIRE HAZARDS AND PRECAUTIONS:

When at site, all fire regulations, as well as regulations under Section 38 of the Factories Act 1948, must be observed at all times.

2.7 MACHINERY SAFETY:

CONTRACTORS and Sub-contractors working at the Project site must not remove or displace any guard, fencing or other safety equipment which is designed to protect personnel or machinery or any place where safety equipment has been provided without the written permission of the safety officer or his designated representative.

On completion of any work, any guards that had to be removed must be replaced immediately and whilst work is being carried out, machinery must not be operated. The requirement of the Factories Act Sections 21-26 must be followed:

2.8. HOUSE-KEEPING:

The House-keeping standards employed by **CONTRACTORS** and Sub-**CONTRACTORS**, must be acceptable to the Vasantdada Sugar Institute. Care must be taken by all responsible people to ensure that the standard of house-keeping for all establishments is known and understood.

2.8.1 Housekeeping and hygiene go hand in hand with safe working practices. **CONTRACTORS** and Sub-contractors must leave work areas in a clean, tidy and safe condition at the end of each working period.

2.8.2 **Special attention must be paid to potential fire hazards, trip points and equipment left in a hazardous condition.**

2.8.3 Contamination of any product (by drill swarf sawdust, oil, salient, paints and materials etc.) must be avoided at all costs, and the officers of the Vasantdada Sugar Institute are empowered to stop any activity, which could result in contamination.

2.9. **NOISE:**

CONTRACTORS and Sub-contractors working at the Project site must obtain permission from the safety officer if the processes being employed to carry out that work significantly increase the ambient noise level in the area being worked.

2.10. **OVERHEAD WORKING:**

No work may be carried out above the heads of people or over gangways or roads, until all precautions have been taken to ensure the safety of the persons below, and until permission is given by the safety officer. Each specific site of overhead working will require consent from the safety officer. This will be given after satisfactory inspection.

Work may be carried out in the vicinity of power cables only when permission is obtained from the safety officer and/or the **ARCHITECT/ VSI**.

Work connected with overhead safety includes the movement of long metal objects, machinery, jibs, masts, arms or other elevated parts.

2.11 **WORKING AT HEIGHT:**

All temporary structures erected by **CONTRACTORS** or Sub- Contractors for the purpose of allowing their staff to work at heights of more than 2 M. above floor level, must be constructed in accordance with the Safety Regulations laid down.

Whenever possible, ladders are to be made of wood and in good condition. Metal ladders must not be used where there is any possibility of the ladder coming into contact with an electrical conductor.

Roof working must be properly supervised.

2.12 **SAFETY CLOTHES AND EQUIPMEN:**

This will be supplied by **CONTRACTORS** and Sub-contractors who are working on sites and must be adequate for the well-being of their staff engaged in the type of work contracted for.

The equipment and its use must comply with the regulations and codes of practice as laid down that apply to the conditions of work being undertaken.

CONTRACTORS and Sub-contractors will be responsible for the use of any tools and equipment that is supplied by them, or their staff to the exclusion of all responsibility of the Vasantdada Sugar Institute. Tools will be maintained to the highest standard of safety. Whilst in the possession of such tools, the person so using said tools is responsible for the continued maintenance of safety standards.

It is the individual's responsibility to ensure that the tools he works with are suitable for the job, and in a safe condition prior to work commencement. All necessary tools and equipment to complete a contract should be supplied by the **CONTRACTOR**. Due provision must be made during contract preparation.

2.13 **PLANT SERVICES:**

Before using plant services such as electricity, permission to do so must be obtained from the **ARCHITECT/ VSI**.

2.14 **SUPERVISION:**

CONTRACTORS working at the Project site, must ensure that their staff are adequately supervised.

2.15 **WARNING SIGNS AND NOTICES:**

Suitable warning signs are to be displayed warning of potential hazards.

SECTION – 3

TOOLS

3.1 ELECTRICALLY DRIVEN PORTABLE TOOLS:

Permission is to be obtained from the nominated person before any **CONTRACTOR** or Sub-Contractor's electrical hand tools can be connected to the electricity supply.

Connection must be by 3-core and 3-pin plugs and sockets, except when tools are double insulated on a 2-wire supply. Where the supply is 3-phase, 4-core cable and 4-pin plugs and sockets with earth connections must be used.

Make-shift connections are prohibited.

The use of extension cables is discouraged, but sometimes necessary.

Portable electric lamps must be the 'Gripper' type with caged wire protection for the bulb and precautions as laid down under Section 36-37 of the Factories Act 1948, must be observed.

Hand tool voltages are to be 230V AC, 50 Hz and the equipment is effectively earthed.

In all cases, with the exception of double insulated tools, the metal work of the tools must be effectively earthed, also any flexible metallic cable coverings must be earthed.

3.2 COMPRESSED AIR TOOLS

CONTRACTORS and Sub-contractors must obtain permission to use any compressed air supply at the Project site.

CONTRACTORS and Sub-contractors must also provide suitable noise suppression for pneumatic hammers, drills etc.

3.3 PERCUSSION CARTRIDGE TOOLS

Permission to use percussion tools must be obtained from the designated safety representative prior to the use of these tools.

Also when using percussion tools, it is the individual duty to ensure that the charges used in said tools are correct. These tools are to be handled as dangerous weapons, never leave tools unattended, never leave tools charged or store charged, never point tools at personnel, always lock up when finished both tool and charges.

3.4 HOISTING AND LIFTING:

Permission must be obtained prior to the use of Plant and equipment, from the Architect/ VSI or other nominated responsible person.

Equipment must be adequate for the purpose required and anchorage approved by the site safety officer.

All equipment so used must have been examined by a competent person, and where necessary a certificate obtained in accordance with Sections 28 and 29 of the Factories Act 1948.

No object is to be left unattended whilst using lifting equipment.

3.5 MOVEMENT OF PLANT AND MACHINERY

Permission must be obtained prior to the movement of construction materials, plant or equipment in and around Project site.

3.6 POWERED INDUSTRIAL TRUCKS

Permission must be obtained prior to the use of lift-trucks by **CONTRACTORS** or Sub-contractors at the Project site.

Trucks must only be driven by competent licensed personnel, and must comply with statutory regulations.

SECTION 4

CONTRACTORS AND SUB-CONTRACTORS GUIDELINES

1. Safe working practices must be observed at all times.
2. It is the responsibility of the **CONTRACTORS** and Sub-Contractors staff to use appropriate personal protection. It is the **CONTRACTORS** and Sub-contractor's obligation to supply necessary protective equipment and clothing.
3. Certain areas are designated hazardous (eg. noisy areas) and warning signs must be obeyed.
4. Where the **CONTRACTORS** and Sub-contractors work presents a potential hazard, appropriate notices must be supplied and displayed, and the area made secure as far as is reasonably possible.
5. The Vasantdada Sugar Institute will not provide tools, materials, lifting or access equipment, fixings or raw materials, unless by previous arrangement and at **CONTRACTOR's** cost.
6. Any equipment brought to site by **CONTRACTORS** and Sub-Contractors must not be used by untrained persons, and the **CONTRACTOR** is liable for any consequent damage or loss to people, equipment or buildings.
7. **All welding, burning and grinding operations which could potentially cause fire must be reported to security.**
8. No alcohol is permitted at site, and anyone deemed to be under the influence of alcohol will be required to leave the site. Subsequent re-entry of such persons is at sole discretion of **ARCHITECT/ VSI**.
9. Vehicle parking will be in designated areas only.
10. No smoking is allowed in work areas.
11. No food is to be consumed or left in work areas.
12. Warning signs and speed restrictions must be observed.
13. Place of work to be left in a tidy and safe condition at the end of each work period.
14. Care to be taken against contamination of any product of paint, oil, etc.
15. All injuries must be reported to the Ambulance Authority or to Security staff who shall all be trained in First Aid.

The above has been received and read by **CONTRACTOR** / Sub-**CONTRACTOR**, we agree to comply with these Rules (See foot-note)

CONTRACTORS / Sub-contractors Authorized

Representative

Company

Date

Vasantdada Sugar Institute:

NOTE:

The **CONTRACTOR** will ensure that approved Sub-contractors receive and sign a copy of these Rules at the appropriate time.

Indian Standard Safety Codes to be followed by the CONTRACTOR during execution of work

S.No	IS No	Part No./Year	Description
1.	IS 3696	1 - 1987	Safety code for scaffold and ladders
2.	IS 3996	2 - 1991	Safety code for ladders
3.	IS 4014	2 - 1967	Code of practice for steel tubular scaffolding
4.	IS 4081	1986	Safety code for blasting and related drilling operations
5.	IS 4082	1977	Recommendation on stacking and storage materials at site (1st Revision)
6.	IS 4130	1991	Safety code for demolition of buildings 2nd revision
7.	IS 4138	1977	Safety code for working in compressed air
8.	IS 4756	1978	Safety code for funneling work
9.	IS 4912	1978	Safety requirements for floor and wall openings, railing and toe boards
10.	IS 5121	1990	Safety code for piling and other deep foundations
11.	IS 5916	1990	Safety code for constructions involving use of hot bituminous material
12.	IS 7272	1974	Recommendation for labour output constants for building work
13.	IS 7293	1987	Safety code for working with construction machinery
14.	IS 7969	1975	Safety code for handling and storage of building materials with amendment No.1
15.	IS 8989	1978	Safety code for erection of concrete framed structures
16.	IS 10067	1982	Material constants in building works
17.	IS 1029	1990	Safety code for dress divers in civil engineering works
18.	IS 10302	1995	Unified nomenclature of workmen for civil engineering
19.	IS 13415	1992	Protective barriers in and around buildings - code of safety
20.	IS 13416	1 - 1992	Preventive measures against hazards at work placed - recommendations falling materials hazards prevention
21.	IS 13416	2 - 1992	Preventive measures against hazards at work places - recommendations fall prevention
22.	IS 13416	3 - 1994	Preventive measures against hazards at work places - recommendations disposal of debris
23.	IS 13416	4 - 1994	Preventive measures against hazards at work places - recommendations timber structures
24.	IS 13416	5 - 1994	Preventive measures against hazards at work places - recommendations fire protection
25.	IS 13430	1992	Safety during additional construction and alteration to existing buildings - Code of practice.

ARTICLES OF AGREEMENTS

(On stamp paper of Rs.100/)

ARTICLE OF AGREEMENT made on this day / month of 2026 between Vasantdada Sugar Institute at **Construction of Foundation for Digesters in Bio Digester Demo plant at Manjari**, hereinafter called "Employer" (which expression shall include its successors and assigns wherever the context or meaning shall so require or permit, of the one part and (hereinafter called the "Contractor") (Which expression shall include its successors and assigns wherever the context or meaning shall so require or permit) of the other part.

WHEREAS Vasantdada Sugar Institute is desirous of the **Construction of Foundation for Digesters in Bio Digester Demo plant at Manjari**, (hereinafter referred to as the "Site") as mentioned, and has got drawings, specifications and the bill of quantities prepared by their Architects / Consultants M/s.

which have been signed or on behalf of the parties hereto.

AND WHEREAS the Contractor has agreed to execute upon and subject to the conditions set forth herein and to the conditions set forth in the general & special conditions of contract and in the tender drawings & the Bill of Quantities (all of which are collectively hereinafter referred to as "The said terms and conditions", the works, shown upon the said drawings and/or described" in the said specifications and included in the said bill of quantities at the respective rates therein set forth amounting to the sum as therein arrived at or such other sum as shall become payable there under (herein after referred to as the said "contract value").

NOW IT IS HEREBY AGREED AS FOLLOWS:

1. In consideration of the said Contract Value to be paid at the times and in the manner set forth in the said terms and conditions; the contractor shall upon and subject to the said terms and conditions execute and complete the works shown on the said drawings, and described in the specifications and/or bill of quantities.
2. Vasantdada Sugar Institute shall pay the contractor the said Contract Value or such other sum as shall become payable at times and in the manner specified in the said terms and conditions.
3. The said terms and conditions and Appendices thereto shall be read and construed as forming part of this Agreement and the parties hereto shall respectively abide by submit themselves to the said terms and conditions and perform the agreements on their part respectively in the said terms and conditions contained.
4. This contract is neither a fixed lump sum contract nor a piece work contract but is a contract to carry out the work in respect of the entire work as defined in the contract documents to be paid for according to the actual measured quantities at the rates contain in the bill of quantities or as provided in the said contract documents.
5. Vasantdada Sugar Institute reserves to itself the right of altering the Drawings and nature of the work by adding to or omitting any items of work or having portions of the same carried out without prejudice to this Contract.
6. Time shall be considered as the essence of this Contract and the Contractor hereby agrees to commence the work from date of Letter of Acceptance and to complete the entire work within Project duration in months as mentioned in Appendix A of Volume-I General Condition of Contract subject nevertheless to the provision for extension of time.
7. All payments by Vasantdada Sugar Institute under this contract will be made only at client's office i.e. Vasantdada Sugar Institute, at **Construction of Foundation for Digesters in Bio Digester Demo plant at Manjari**.
8. The Contractor shall comply with all statutory, rules and regulations that are applicable to the Contractor for the fulfillment of the terms of this Agreement or applicable in respect of its employees. The Contractor shall reimburse all costs, expenses and other liabilities, statutory or otherwise, which Vasantdada Sugar Institute may incur due to non-compliance of this Clause by the Contractor. Further the Contractor shall produce to Vasantdada Sugar Institute on demand all the registers, records, forms, and other documents maintained by the Contractor under any law in respect of itself or its employees.
9. The Contractor shall indemnify and keep indemnified all the time Vasantdada Sugar Institute its officers and employees from and against all claims, demands, actions, suits and proceedings, whatsoever that may be brought or made against Vasantdada Sugar Institute by or on behalf of any person, body,

authority whatsoever and whomsoever and all duties, penalties, levies, taxes, losses, damages, costs, charges and expenses and all other liabilities of whatsoever nature which Vasantdada Sugar Institute may be liable to pay, incur or sustain by virtue of or as a result of performance or non-performance or observance or non-observance by the Contractor of any of the terms and conditions of this Agreement or due to misappropriation / damages / destruction / theft / loss of any of the properties of Vasantdada Sugar Institute caused by the Contractor. Notwithstanding the above Vasantdada Sugar Institute shall have full power and right at its discretion to pay or defend or compromise any such suits, claims or demands brought or made whether pending or threatened, as it may consider necessary or desirable and shall be entitled to recover from the Contractor all sums or money including all legal costs, charges and expenses incurred by virtue of any such compromise which shall not be called into question by the Contractor but shall be final and binding on the Contractor.

10. The term Architect/ VSI in the said conditions shall mean the said **M/s**..... or in the event of his death or ceasing to be Architect/ VSI for the purpose of this Contract, such person as the Vasantdada Sugar Institute shall nominate for that purpose, not being a person to whom the Contractor shall object for reasons considered to be sufficient by an arbitrator appointed in accordance with said Conditions. Provided always that no persons subsequently appointed to be Architect/ VSI under this Contract shall be entitled to disregard or overrule any certificate or opinion or decision or approval or instruction given or expressed by for the time being.
11. The competent courts of Pune to the exclusion of all other courts have jurisdiction to entertain any suits arising out of this Contract.
12. That all parts of this Contract have been read by the Contractor and fully understood by the Contractor. The Contractor shall not be entitled for the payment for the quantities beyond the tendered quantities unless ordered for by specific written instructions from Vasantdada Sugar Institute / Architect.
IN WITNESS WHEREOF Vasantdada Sugar Institute and the Contractor have set their respective hands to these presents and two duplicates hereof the day and year first hereinabove written. (If the contractor is a partnership or an individual)

IN WITNESS WHEREOF Vasantdada Sugar Institute has set its hand to these presents through its duly authorized official and the Contractor has caused its common seal of to be affixed hereunto and the said two duplicates/has caused these presents and the said two duplicates hereof to be executed on its behalf, the day and year first hereinabove written (If the Contractor is a company).

Signature Clause

SIGNED AND DELIVERED by the hand of

Shri _____
(Name and Designation)

in the presence of

(1) _____

Address _____

(2) _____

Address _____

Witness

SIGNED AND DELIVERED BY _____ in the presence of (1) _____ Address _____ (2) _____ Address _____ Witness		If the party is a partnership firm of an individual should be signed by all or on behalf of all partners.
THE COMMON SEAL OF _____ Was hereunto affixed pursuant to the resolutions passed by its Board of Directors at the meeting held on _____ in the presence of (1) _____ (2) _____		
Directors who have signed these presences in token thereof in the presence of (1) _____ (2) _____		If the contractor signs under its common seal the signature clause should tally with the sealing clause in the Articles of Association.
SIGNED AND DELIVERED by the contractor by the hand of Shri. _____ And duly constituted attorney		If the Contractor is signing by the hand of power of attorney whether a company or individual.

FORMAT OF INDEMNITY BOND

This DEED OF INDEMNITY made on this the _____ day of _____ 2018 by _____ having its office at _____ hereinafter referred to as "Contractors" (which term or expression shall unless excluded by or repugnant to the subject or context be deemed to mean & include its hers/ legal representatives, executors, administrators and assigns) in favor of Vasantdada Sugar Institute, at **Construction of Foundation for Digesters in Bio Digester Demo plant at Manjari**. Hereinafter referred to as "Vasantdada Sugar Institute" (Which term or expression shall unless excluded by or repugnant to the subject or context to be deemed to mean & include its legal representatives, executors, administrators and assigns)

WHERE AS:

Vasantdada Sugar Institute is desirous of getting **Construction of Foundation for Digesters in Bio Digester Demo plant at Manjari**, (hereinafter referred to as the "Site") and therefore has invited tenders for the same.

AND WHEREAS **Vasantdada Sugar Institute** after considering the tenders received pursuant thereto by its letter No. _____ dt _____ accepted the tender given by _____ a registered _____ having its place of business at _____ (hereinafter referred to as the Contractor which expression shall unless repugnant to the context or meaning thereof deemed to include his/its heirs, legal representative, executors, administrators and assigns)

AND WHEREAS pursuant to acceptance of the Tender of the said Contractor Vasantdada Sugar Institute and the said Contractors have entered into an Agreement on _____ (hereafter referred to as "Tender/Contract")

AND WHEREAS it is one of the terms of the said Tender/ Contract that the contractors shall give an indemnity in the manner hereinafter

NOW THIS DEED OF INDEMNITY WITNESSETH AS FOLLOWS:

In pursuance of the said Tender/ Contract and for the consideration aforesaid we the Contractor hereby do indemnify and keep harmless Vasantdada Sugar Institute all the time against and from:

1. Any third party claims, civil or criminal complaints/ liabilities, site mishaps, fire hazards & other accidents including death of any person/s or disputes and/or damages occurring, or arising out of any mishaps at the site due to faulty work, negligence, faulty & unsound construction and/or for violating any laws, rules and regulations in force for the time being while executing/executed the said Works by us.
2. All claims , demands , actions , proceedings, losses, damages, liabilities, cost, charges, expenses or obligations that are occasioned or may occasion to Vasantdada Sugar Institute as result of our non-payment of any statutory duties levied / livable on the company or the company committing breach of any of the rules, regulations, orders, directives, instructions that may be issued by any authority under the Central Excise Act ,1944, Central Sales Tax Act, 1956, or any other statute or law for the time being in force.
3. Any damages, loss or expenses due to or resulting from any negligence or breach of duty on our part or any sub-contractor/s if any, servants or agents.
4. Any claim by our employee or of sub-contractor/s , if any, under the Employee's Compensation Act and Employees liability Act, 1939 or any other law, rules and regulations in force for the time being and any acts replacing and /or amending the same or any of the same as may be in force at the time and under any law in respect of injuries to persons or property arising out of and in the course of the execution of the contract work and /or arising out of and in the course of employment of any workmen/ employee.
5. Any non-compliance or improper compliance of statues, rules and regulations which are applicable to us and / or our employees, in respect of (a) Employees provident fund act, 1952, b) Employees State Insurance Act, 1948, c) Contract Labour (R & A) Act, 1971, d) Minimum Wages Act, e) Shops and Establishment Act, f) Payment of wages Act, g) Bonus Act, h) The Municipal Corporation Act and any other law which may become applicable in respect of the Tender/ Contract work.
6. Any act or omission of by us or our sub- contractor/s if any our/ their servants or agents which may involve any loss, damage, liability, civil or criminal action.

IN WITNESS WHERE OF THE PARTIES HAVE HERE TO SET THEIR RESPECTIVE HANDS ON THIS _____ DAY OF _____ MONTH OF 2015.

Signed & Delivered by

Contractor/s

In the presence of _____

BANK GUARANTEE FORMAT

This deed of guarantee executed at "**LOCATION**" on this _____ day of _____ 2018 by the _____ Bank, a Schedule / Nationalized Bank, registered under the _____ Act _____ having their Branch office at _____ and having their head office at _____ (hereinafter referred to as the "Guarantor", which expression shall unless repugnant to the context or meaning thereof includes its successors and assigns) in favour of Vasantdada Sugar Institute at **Construction of Foundation for Digesters in Bio Digester Demo plant at Manjari** India (hereafter referred to as Vasantdada Sugar Institute which expression shall unless repugnant to the context or meaning thereof include its successors and assigns)

WHEREAS

Vasantdada Sugar Institute is desirous of getting "**Construction of Foundation for Digesters in Bio Digester Demo plant at Manjari**" (hereinafter referred to as the "Site")

AND WHEREAS Vasantdada Sugar Institute is Desirous of executing the renovation work at the Site and has invited tenders for the same.

AND WHEREAS Vasantdada Sugar Institute after considering the tenders received pursuant thereto by its letter No. _____ dt _____ accepted the tender given by _____ a registered _____ having its place of business at _____ (hereinafter referred to as the "Contractor" which expression shall unless repugnant to the context or meaning thereof deemed to include its heirs, legal representative, executors, administrators and assigns)

AND WHEREAS pursuant to acceptance of the Tender of the said Contractor Vasantdada Sugar Institute and the said Contractors have entered into an Agreement on _____ (hereafter referred to as "Tender/Contract")

AND WHEREAS it is one of the terms of the said Tender /Contract that the Contractor shall deposit with Vasantdada Sugar Institute Rs. _____ being the _____ % of the accepted Tender / Contract value agreed by the Contractor at the time of submitting the Tender which shall not bear any interest and which shall be liable for forfeiture in the event of Contractor failing to observe any terms of Tender/ Contract or non-complying which the conditions of the Tender/ Contract.

AND WHEREAS at the request of Contractor Vasantdada Sugar Institute has agreed to accept a bank guarantee from the Guarantor in lieu thereof as hereafter contained.

NOW THEREFORE THIS DEED OF GURANTEE WITNESSETH THAT:

- I) In consideration of Vasantdada Sugar Institute agreeing in accepting this Guarantee in lieu thereof from the Contractor for the sum of Rs. _____ (Rupee _____), we the _____ bank, the said Guarantor hereinabove mentioned hereby unconditionally and irrevocably guarantee unto Vasantdada Sugar Institute that the said Contractor will diligently, efficiently and satisfactorily perform all their obligations under the various terms and conditions of the said contract and the tender conditions within the time stipulated therein to the full satisfaction of Vasantdada Sugar Institute and its Architects failing which Guarantor shall on demand by Vasantdada Sugar Institute without demur or protest and without recourse to the Contractor or anybody else pay unto Vasantdada Sugar Institute the sum of RS. _____ (Rupees _____ Only) at the residential address of Vasantdada Sugar Institute
- II) It is agreed that notwithstanding what is contained hereinabove Vasantdada Sugar Institute shall be entitled to invoke this guarantee if the contract with the Contractor is terminated either by Vasantdada Sugar Institute as provided in the contract/Tender conditions, and certificate issued by Vasantdada Sugar Institute to the effect that the contract is so terminated shall be conclusive and binding upon the Guarantor and shall not be called in question either inside or outside the court, arbitration, tribunal or any other authority.
- III) The guarantor hereby further covenants that-
 - 1) The Guarantor shall pay the aforesaid sum on demand made in writing by Vasantdada Sugar Institute without any demur or without any recourse to Contractor or anybody else and not withstanding any dispute or difference that may exist or arise between Vasantdada Sugar Institute and the Contractor.
 - 2) This guarantee shall be a continuing guarantee and shall not be revoked by the guarantor without prior consent in writing of Vasantdada Sugar Institute.

- 3) The notice of demand in writing issued by Vasantdada Sugar Institute shall be conclusive proof as regards the amount due and payable to Owner under this guarantee and it shall not be disputed by the Guarantor either inside or outside the court, tribunal or arbitration or other authority.
- 4) The decision of Vasantdada Sugar Institute on the breach of the terms and conditions of the said Contract/ Tender by the Contractor of their failure to perform obligations or discharge their duties under the said Tender/Contract shall be final and binding on the Guarantor and shall not be disputed by the Guarantor inside or outside the court, tribunal, arbitration or other authority.
- 5) The Guarantor shall also indemnify and keep Vasantdada Sugar Institute indemnified against all losses, damages, costs, claims and expenses whatsoever which Vasantdada Sugar Institute may suffer, pay or incur by reason of or in connection with any such default on the part of the Contractor in their performance, obligations including cost of any legal proceedings if any, which may be initiated against Vasantdada Sugar Institute
- 6) Any neglect or forbearance on the part of Vasantdada Sugar Institute in enforcing any of the terms and conditions of the said Tender/Contract or any indulgence shown by Vasantdada Sugar Institute to the Contractor or any variation in the said Tender/Contract made by mutual agreement between Vasantdada Sugar Institute and Contractor or any other act or deed on the part of Vasantdada Sugar Institute which but for this clause may have the effect of discharging the Guarantor under the law relating to the guarantees shall not discharge the Guarantor from its obligations herein and the Guarantor shall be discharged only by compliance by the Contractor of all their obligations, duties under the said Tender/Contract and recovery/repayment in full to Vasantdada Sugar Institute
- 7) That this guarantee shall not be affected by any infirmity or absence or irregularity in the exercise of the powers by or on behalf of the Contractor to submit the said tender and enter into the said contract or any change in the constitution or dissolution of the Contractor or change in the name of the said Contractor.
- 8) We, as guarantors hereby agree that without our concurrence or notice to us, the contractors, Vasantdada Sugar Institute shall be at liberty to vary alter or modify the terms and conditions of the said Tender/Contract and in particular to defer, postpone or revise the payments on such terms and conditions as may be considered necessary by Vasantdada Sugar Institute and the Contractor. We as guarantors agree that the liability under this guarantee shall be in no manner be affected by any such, variations, alterations, modifications, waiver, dispensation with or release of security and that no further consent of us as Guarantors is required for giving effect to any such variations, alterations, modifications, waiver, dispensation with or release of security liability.
- 9) It shall not be necessary for Owner to exhaust its remedies against the Contractor before invoking this guarantee and the guarantee herein contained shall be enforceable against the Guarantor notwithstanding any other security which Vasantdada Sugar Institute may have obtained or may obtain from the Contractor or may, at the time when this guarantee is invoked, be outstanding and unrealized.
- 10) To give effect to this guarantee, Vasantdada Sugar Institute may act as though we the Guarantor are the principal Debtors to Vasantdada Sugar Institute
- 11) The Guarantor undertakes to pay to Vasantdada Sugar Institute, the amount hereby guaranteed within 24 hours of being served with a written notice requiring the payment of the amount either by hand delivery or by Registered Post or by Speed Post.
- 12) The Guarantor hereby agrees that this guarantee shall be valid and be in force for a period of _____ months i.e., up to _____ (Date)
- 13) Notwithstanding anything to contrary contained hereinabove our liability under this guarantee is restricted to Rs. _____/- (Rupees _____ Only) and any claim arising under this guarantee shall be preferred by Vasantdada Sugar Institute within a period of six months from the aforesaid date of expiry of this guarantee.

IN WITNESS WHEREOF THE WITHIN NAMED GUARANTOR HAS CAUSED THESE PRESENTS TO BE EXECUTED ON ITS BEHALF BY THE HAND OF ITS DULY AUTHORISED OFFICIAL ON THE DATE AND AT THE PLACE FIRST HEREINABOVE WRITTEN.

Signed and delivered for

And on behalf of _____
(Bank) The guarantor herein by the land of

Shri _____ its duly authorized official

FIXED PRICE CONSTRUCTION AGREEMENT

This agreement is made on the day of2015 Vasantdada Sugar Institute, hereinafter called the "Vasantdada Sugar Institute" of the one part andhereinafter called the "CONTRACTOR" of the other part.

Whereas the Vasantdada Sugar Institute is desirous of **Construction of Foundation for Digesters in Bio Digester Demo plant at Manjari** (hereinafter called "the works") and has accepted a Tender by the **CONTRACTOR** for the execution, completion maintenance and guarantee of such works.

NOW THIS AGREEMENT WITNESSETH AS FOLLOWS:

1. In this Agreement words and expressions shall have the same meaning as are respectively assigned to them in the Conditions of Contract hereinafter referred to.
2. The following documents shall be deemed to form the "Contract Documents" and be read and construed as part of this Agreement, viz:
 - a) The said Tender
 - b) The Drawings
 - c) Conditions of Contract
 - d) Specifications
 - e) Priced Bill of Quantities and preambles thereto
 - f) Letter of acceptance
 - g) Notice Inviting Tender
 - h) Instructions to Tenderers
 - i) All correspondence dealing with the contract
 - j) All schedules and draft Performa in connection with the contract
 - k) Any other papers and documents covered by the definition of Contract
3. In consideration of the payments to be made by Vasantdada Sugar Institute to the CONTRACTOR, as hereinafter mentioned, the CONTRACTOR hereby covenants with the Vasantdada Sugar Institute to execute, construct, complete, maintain and guarantee the works in conformity in all respects with the provisions of the contract.
4. The Vasantdada Sugar Institute hereby covenants to pay to the CONTRACTOR the sum of Rs..... (Rupees only) or such other sum as shall become payable at the times and in the manner specified in the contract in consideration of the execution, completion, maintenance and guarantee of the works.

IN WITNESS WHEREOF THE PARTIES hereto have caused their respective seals to be hereunto affixed, the day and year first above written.

Signed, sealed and Delivered

By the said

By the said

Name
on behalf of the **CONTRACTOR**
in the presence of

Name
on behalf of the **Vasantdada Sugar Institute**
in the presence of

Name

Name

Address

Address

PERFORMANCE BOND

_____, as surety ("Surety"),
(Insert Proper Name of Surety) and _____ (Insert Proper
Name of Contractor) as principal ("Contractor"), enter into, execute this bond ("Performance Bond"), and
bind themselves in favor of _____ (Insert Proper Name of Vasantdada Sugar
Institute) as obligee ("Vasantdada Sugar Institute") in the penal sum of
_____ (Insert Penal Sum) as of the
_____ (Insert Date of Construction
Contract)

WHEREAS, the Contractor has executed a contract with the Vasantdada Sugar Institute of even date
herewith ("Contract") for construction of _____
(Insert Description and Location of the Construction Project) and,

WHEREAS, the Vasantdada Sugar Institute has required the Contractor to furnish this Performance Bond
containing the terms and conditions set forth herein as a condition to executing the Construction Contract
with the Contractor;

NOW THEREFORE, the Surety and the Contractor, both jointly and severally, and for themselves, their
heirs, administrators, executors and successors agree:

1. The Construction Contract is hereby incorporated herein and by reference made a part hereof the
Tender document to the same extent and effect as though it were copied verbatim herein. The
Surety and the Contractor are bound for the full performance of the Construction Contract including
without exception all of its terms and conditions, both express and implied.
2. If the Contractor is in default of the Contract and the Vasantdada Sugar Institute, by written notice to
the Contractor and the Surety, declares the Contractor to be in default and terminates the right of the
Contractor to proceed, the Surety shall thereupon promptly notify the Vasantdada Sugar Institute in
writing as to which of the actions permitted to the Surety in Paragraph 3 it will take.
3. Upon the default and termination of the Contractor and notice to the Contractor and Surety as
provided in Paragraph 2 above, the Surety shall within 30 days proceed to take one or, at its option,
more than one of the following courses of action:
 - (A) Proceed itself, or through others acting on its behalf, to complete full performance of the
Construction Contract including, without limitation, correction of defective and nonconforming work
performed by or on behalf of the Contractor. During such performance by the Surety the
Vasantdada Sugar Institute shall pay the Surety from its own funds only such sums as would have
been due and payable to the Contractor in the absence of the default and termination;
 - (B) Applicable law permitting, and with the prior written consent of the Vasantdada Sugar Institute,
obtain bids or proposals from contractors previously identified as being acceptable to the
Vasantdada Sugar Institute, for full performance of the Construction Contract. The Surety shall
furnish the Vasantdada Sugar Institute a copy of such bids or proposals upon receipt of same.
The Surety shall promptly select, with the agreement of the Vasantdada Sugar Institute, the best
responsive bid or proposal and shall promptly Tender the contractor submitting it, together with a
contract for fulfillment and completion of the Construction Contract executed by the completing
contractor, to the Vasantdada Sugar Institute for the Vasantdada Sugar Institute's execution.
Upon execution by the Vasantdada Sugar Institute of the contract for fulfillment and completion of
the Construction Contract, the completing contractor shall furnish to the Vasantdada Sugar
Institute a performance bond and a separate payment bond, each in the form of those bonds
previously furnished to the Vasantdada Sugar Institute for the project by the Contractor. Each
such bond shall be in the penal sum of the (1) fixed price for completion, (2) guaranteed maximum
price for completion, or (3) estimated price for completion, whichever is applicable. The
Vasantdada Sugar Institute shall pay the completing contractor from its own funds only such sums
as would have been due and payable to the Contractor under the Contract as and when they
would have been due and payable to the Contractor in the absence of the default and termination.
To the extent that the Vasantdada Sugar Institute is obligated to pay the completing contractor
sums which would not have then been due and payable to the Contractor under the Contract, the
Surety shall provide the Vasantdada Sugar Institute with such sums in a sufficiently timely manner
that the Vasantdada Sugar Institute can utilize such sums in making timely payment to the
completing contractor; or,

- (C) Take any and all other acts if any, mutually agreed upon in writing by the Vasantdada Sugar Institute and the Surety.
4. In addition to those duties set forth hereinabove, the Surety shall promptly pay the Vasantdada Sugar Institute all loss, costs and expenses resulting from the Contractor's default(s), including, without limitation, fees, expenses and costs for architects, engineers, consultants, testing, surveying and attorneys, liquidated or actual damages, as applicable, for delay in completion of the Project, and fees, expenses and costs incurred at the direction, request, or as a result of the acts or omissions of the Surety.
5. In no event shall the Surety be obligated to the Vasantdada Sugar Institute hereunder for any sum in excess of the Penal Sum.
6. The Surety waives notice of any changes to the Contract including, without limitation, changes in the contract time, the contract price, or the work to be performed.
7. This performance Bond is provided by the Surety for the sole and exclusive benefit of the Vasantdada Sugar Institute and, if applicable, together with their heirs, administrators, executors, successors or assigns. No other party, person or entity shall have any rights against the Surety hereunder.
8. Any and all notices to the Surety, the Contractor or the Vasantdada Sugar Institute shall be given by Certified Mail, Return Receipt Requested, to the address set forth for each party below:

SURETY:

CONTRACTOR:

Vasantdada Sugar Institute:

9. Any statutory limitation, which may be contractually superseded, to the contrary notwithstanding. any action hereon may be instituted so long as the applicable statute of limitations governing the Construction Contract has not run or expired.

CONTRACTOR

SURETY

SEAL
(TYPED NAME)

SEAL
(TYPED NAME)

By: _____
(Signature) (Signature)

By: _____

(Printer Name, Title and Address)

(Printer Name, Title and Address)

(Date of Execution)

(Date of Execution)

PROFORMA OF BANK GUARANTEE FOR ADVANCE PAYMENT

In consideration of the Vasantdada Sugar Institute, (hereinafter called the "Vasantdada Sugar Institute") having agreed to pay mobilization advance under the terms and conditions of letter of acceptance No..... dated made between M/s. in the state of (hereinafter called "the said **CONTRACTOR**" which expression shall unless the context required otherwise include its successors and assigns) for the work of construction of **Vasantdada Sugar Institute at Manjari, Pune** by "the said **CONTRACTOR**" on production of a Bank Guarantee for Rs. (Rupees).

We, (hereinafter referred to "as the Bank" at the request of M/s..... do hereby undertake to pay to the **Vasantdada Sugar Institute** an amount not exceeding Rs..... (Rupees..... only).

We, do hereby undertake to pay the amounts due and payable under this guarantee without any demur, merely on first demand from the **Vasantdada Sugar Institute** stating that the amount claimed is required to meet the recoveries due or likely to be due from the said **CONTRACTOR**. Any such demand made on the Bank shall be conclusive as regards the amount due and payable by the Bank under this guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding Rs. (Rupees only).

We undertake to pay to the **Vasantdada Sugar Institute**, any money so demanded notwithstanding any dispute or disputes raised by the **CONTRACTOR** in any suit or proceeding pending before any Court or Tribunal relating thereto, our liability under this present being absolute and unequivocal.

The payment so made by us under this guarantee shall be a valid discharge of our liability or payment there under and the **CONTRACTOR** shall have no claim against us for making such payment.

This Guarantee shall remain in force and effect so long as the said advance or any part thereof remaining outstanding and shall expire and become ineffectual only after the recovery of the entire sum of Rs. covered by the Guarantee.

The Guarantee shall come into force from the date **CONTRACTOR** receives from the **Vasantdada Sugar Institute** the said advance.

This Guarantee will not be discharged due to change in the constitution of the bank or the **CONTRACTOR**.

We, lastly undertake not to revoke this guarantee except with the previous consent of the **Vasantdada Sugar Institute** in writing.

This Guarantee shall be valid up tounless extended on demand by The **Vasantdada Sugar Institute**. Notwithstanding anything mentioned above our liability against this guarantee is restricted to Rs..... (Rupees only).

Witness:

For and on behalf of the Bank

Name:

Designation

Address:

Date:

ANNEXURE (1)

BAR CHART AND WORK SCHEDULE

ANNEXURE (2)

Schedule of Day work Rates

Notes:

The Tenderer shall fill in the rates at the spaces provided. These rates shall be subject to the approval of the Vasantdada Sugar Institute before signing of the contract.

1. General

- 1.01 Any sanctioned variation work on day work basis will be paid at the actual prime cost to the **CONTRACTOR** of his material, transport and labour for the work concerned plus 15% (fifteen percent) which percentage shall include for the use of all non-mechanical plant, power driven tools, scaffolding and for supervision, taxes, overheads and profits.
- 1.02 Where mechanical plant, is required for use in variation work prior approval must be obtained failing which no payment will be made for the use of such plant.
- 1.03 Vouchers specifying the time daily spent by workmen and plant and the materials employed shall be submitted to the office of the Vasantdada Sugar Institute not later than the next working day following that in which the work has been executed.
- 1.04 Day work rates will be applicable only to those items of variation work for which specific orders are issued to execute on date work basis. All other variation works will be carried out by fixing item rates for the same.

2. Day work Labour rates

- 2.01 The time for workmen (doing physical work) shall be included in prime cost, but the time for foremen and supervisors will be regarded as included in cost of supervision and will not be paid for.
- 2.02 Only time spent exclusively on the variation work will be allowed. A "day" is defined as a working day from 9.00 a.m. to 6.00 p.m. (with 1 hr. break). Fractions of a day will be paid for "Pro-rata".
- 2.03 The following labour rates shall be the **CONTRACTOR's** prime cost for labour:
 - a) Skilled : Mason, Carpenter, Fitter, Welder Operators Electrician etc. Rs. / day.
 - b) Semi Skilled : Steel Bender, Painter etc. Rs. / day.
 - c) Un-skilled : Labourer, helper, assistant etc. Rs. / day.
- 2.04 Labour rates for overtime shall be paid at 1.5 times the basic rates in para 2.03 above. Work done before 9.00 a.m. and after 6.00 p.m. Monday to Saturday and on all days Sundays and gazette holidays shall be considered as overtime work.

3. Day work rates for mechanical Plant and Equipment

- 3.01 Where mechanical plant or equipment is required for use on variation work to be valued on day work rates, it will be paid at the rates tabulated below plus 15% (fifteen percent) which percentage shall include for idling time, fuels, lubricants, operators, supervision, taxes, overheads and profit.
- 3.02 The rates for self-propelled vehicles shall include for wages of operators/drivers and attendants necessary for normal operation of such vehicles.
- 3.03 Only time spent exclusively on the variation work will be allowed. A "day" is defined as a working day from 9.00 a.m. to 6.00 p.m. (with 1 hr break). Fractions of a day will be paid for "pro-rata". Over time payment will be as item 2.04.

3.04 The following rates shall be the **CONTRACTOR**'s prime cost for mechanical plant and equipment:

Type	Make	Capacity	Prime Cost / day
a) Concrete Mixer			
b) Lorry			
c) Hydraulic Hammer			
d) Pneumatic Drill			
e) Electric generator			
f) Water Pumps			
g) Crane			
h) Backhoe			
i) Mechanical Shovel			
j) Weigh batcher			

3.05 The Tenderer will fill in the blank spaces above. For any equipment other than listed above, the prime cost will have to be submitted for approval well in advance of its intended use on variation works on day work basis.

4. Day work Material Rates

4.01 The following rates shall be the **CONTRACTOR**'s prime cost for materials including delivery to site:

Type	Unit	Prime Cost / unit
a) Cement, OPC, PPC 43 Grade	50 Kg bag	
b) Sand	m ³	
c) Fine aggregate	m ³	
d) Coarse aggregate	m ³	
e) M.S. Rod Reinforcement	Tonne	
f) H.T.S. Rod Reinforcement	Tonne	
g) Bricks	1,000 pieces	
h) Structural Steel	Tone	
i) Roof and Wall Cladding sheet	Sqm	

4.02 The Tenderer will fill in the blank spaces above. For any material not listed above, the prime cost will have to be submitted for approval well in advance of their intended use on variation works to be done on day work basis.

Signature of Tenderer

ANNEXURE (3)

Alternative Prices

NOTE:

The Tenderer shall furnish the alternative prices if he so desires in the following format. These prices shall be subject to the approval of the Vasantdada Sugar Institute before signing of the Contract.

1. The following are our prices for the Alternative work items listed hereunder.

Such proposed alternative work items and amounts are NOT part of our Stipulated Tender prices stated on the Tender Form.

2. The **PROJECT MANAGER** reserves the right to accept any or all alternatives and adjust the Tender Price by the amount or amounts stated. All necessary modifications to the Work are included in the amount(s) stated and no other cost adjustments will apply.

3. **CONTRACTOR's Voluntary Alternatives:**

The base Tender is based on the specified materials or equipment and the following voluntary alternatives and prices are offered for the **PROJECT MANAGER's** consideration.

Specification	Item Description	Supplier Name & Location	Price Saving
a)			
b)			
c)			
d)			
e)			
f)			

4. The Tenderer may submit alternate design for structural steel works to effect cost saving without affecting the engineering and safety requirements.

The Tenderer may supply above information on a separate sheet if he so desires.

ANNEXURE (4)

CONTRACTORS ORGANISATION CHART, PLANT AND EQUIPMENT, MOBILISATION SCHEDULE, DRAWINGS AND PLANS FOR TEMPORARY FACILITIES

The Tenderer shall submit the documents with full details on the following subjects along with the Tender.

The evaluation of Tender will take into consideration the detailed information provided by the Tenderer.

1. Organization chart (Pyramid type)
2. Curriculum Vitae of Senior Staff
3. List of Plant and equipment
4. Mobilization Schedule
 - a) Staff
 - b) Labour
 - c) Plant and equipment (description, year of manufacture, capacity, present condition, owned or hired, availability for the work etc.)
 - d) Materials
5. Drawings and Plans for Temporary Facilities
 - a) Field Office
 - b) Labour Shed
 - c) Workshops / Fabrication yard
 - d) Material Stacking yards

ANNEXURE (5)

METHODOLOGY AND QUALITY CONTROL

The Tenderer shall submit methodology and Quality Control for the following aspects of work along with the Tender.

The evaluation of Tender will take into consideration the detailed information provided by the Tenderer.

1. Excavation / back filling
2. Concrete production / Transportation and Placing plan / Procedure.
3. Inspection procedures
4. Plan for formwork system (in elaborate details)
5. Plan for Re-bar fabrication and installation
6. Concrete curing plan
7. Construction / Expansion joints
8. Plan for concrete levelling and finishes
9. Plan for anti-termite treatment
10. Plan for water proofing treatment
11. Plan for Structural steel fabrication, erection and testing
12. Plan for Roof and wall cladding system
13. Maintenance plan

ANNEXURE (6)

PROCUREMENT PLAN

The Tenderer shall submit procurement plan for the following materials along with the Tender.

The evaluation of Tender will take into consideration the detailed information provided by the Tenderer.

1. Cement
2. Aggregate, Sand
3. Reinforcement bar
4. Structural steel
5. Roof and wall cladding metal sheet.
6. Water proofing treatment

ANNEXURE (7)

LIST OF SUB-CONTRACTORS AND DETAILS OF WORKS TO BE SUBLET

ANNEXURE (8)

LIST OF CORRESPONDENCE

ANNEXURE (9)

PROGRAMME SCHEDULE

ANNEXURE (10)

On Rs 300 Non-Judicious stamp paper

Pro-Forma of Undertaking:

I,R/o authorized signatory of M/s. **Ltd**, a Company incorporated under the Companies Act, 1956 and having its Registered office at (hereinafter referred to as the "Company"), do hereby solemnly declare and affirm as under:

1. That Company has agreed to render certain services to Vasantdada Sugar Institute, (VSI) vide agreement(s) dated -----
2. That Company has entered into the said agreement(s) with Vasantdada Sugar Institute for rendering certain services more fully described in the said agreement(s). Company is well aware of all applicable laws, rules and regulations without limitation to the provisions of the following Legislations and Rules framed there under:
 1. Contract Labour (Regulation & Abolition) Act, 1970,
 2. Minimum wages Act,
 3. Payment of Wages Act,
 4. ESI Act
 5. Provident Fund Act,
 6. Building and other construction workers (Regulation of Employment and conditions of Service) Act, 1996
 7. Building and other construction workers welfare Cess Act, 1996
 8. Maternity benefit Act,
 9. Inter State Migrant Workers Act
 10. Any other applicable laws/ rules / regulations / bye-laws
3. Company and its sub-contractors shall pay the wages as stipulated and applicable to all its employees every month. That Company and its sub-contractors has covered all the **eligible** employees under the EPF Act and ESI Act and shall the deposit the contributions under allotted code numbers every month, and it shall file applicable returns from time to time. The Company shall produce the voucher / receipts/ returns in proof of it as and when called for.
4. Company on its behalf and on behalf of its sub-contractors further declare and undertake that Company shall indemnify Vasantdada Sugar Institute and shall keep Vasantdada Sugar Institute indemnified from and against all costs, claims, suits, losses, damages, demands, liabilities, causes of action, proceedings, awards or judgments including and without limitation to legal costs incurred by or brought or made against Vasantdada Sugar Institute.

VERIFICATION

Verified that the contents of para 1 to 4 of the above are true and correct to the best of my knowledge and belief and nothing has been concealed there from and know affirming false affidavit is an offence.

Verified on this _____ day of _____ at _____ (place).

DEPONENT

Identified by me:

(Advocate)

Notarized before me:

Notary Public Govt., of India



**VASANTDADA SUGAR INSTITUTE
MANJARI (BK), TAL. HAVELI, DIST. PUNE**

Tender : Civil Work

TENDER DOCUMENT FOR

**Construction of Foundation for Digesters in Bio Digester Demo plant
at Manjari**

TECHNICAL BID: VOLUME III

BY

CIVIL ENGINEERING SECTION

VASANTDADA SUGAR INSTITUTE

MANJARI (BK), TAL. – HAVELI, DIST. – PUNE

Telephone: - (020) 26902316, 26902286, 26902191

2025 - 26

VOLUME III: TECHNICAL SPECIFICATIONS

SR. NO.	CONTENTS	PAGE NO.
INDEX		
1.	GENERAL ITEMS FOR EXECUTION	101
2.	GENERAL SPECIFICATION	102
3.	GENERAL SPECIFICATION FOR WORKMANSHIP & MATERIALS	104
4.	LIST OF I.S.CODES FOR THE REFERENCE	108
5.	TECHNICAL SPECIFICATIONS	110
1..	Demolition work.	
2.	Anti-Termite treatment.	
3.	Excavation	
4.	Dewatering	
5.	Backfilling	
6.	Rubble Soling	
7.	Concrete	
8.	Reinforcement	
9.	Formwork- Shuttering	
10.	Brick Masonry	
11.	Coursed Rubble Masonry	
12.	Plastering	
13.	Waterproofing	
14.	Flooring	
15.	Plumbing & Sanitary works	
16.	Painting	
17.	Doors	
18.	Aluminum Windows	
19.	Fabrication & Structural Steel Work	
20.	Rolling Shutter.	
21.	Finishing	
22.	Miscellaneous	
6.	MODE OF MEASUREMENTS	139

1.0 GENERAL ITEMS FOR EXECUTION

1. Excavation in all types of soils and disposal of surplus earth.
2. Back-filling with approved material including compaction etc.
3. (a) Plain cement concrete.
(b) Reinforced cement concrete
4. Anti-termite treatment.
5. Rubble Soling
6. Rubble Masonry
7. Masonry work.
8. Internal plaster and external plaster
9. All finishing works such as door frame & shutters windows, flooring, window sills, skirting, Pantry counter, etc as per the schedule of quantities or Bill of Quantities.
10. Painting
11. Water proofing treatment in toilets, Underground tank, Overhead tank, Terrace.
12. Plumbing & Sanitation work for external as well as internal work as mention in Bill of Quantity.
13. Structural steel work
14. Railing work
15. All the items to be executed as per the relevant IS specifications.
16. All other works required to be carried out to complete the building as per drawing and specifications & Bill of Quantity or Schedule of Quantity.
17. The tender rates should include supply of all materials unless mentioned otherwise including the cost of transportation, loading, unloading, stacking and storing and all types of taxes, duties, levies etc. required for execution of work.
18. The tender rates shall hold good for all works of every section at all levels, leads and heights including multiple staging/scaffolding wherever required etc. complete. Nothing extra shall be payable unless or otherwise specified
19. Contractor shall ensure for safety that wherever required during excavation, shoring, strutting etc. shall be carried out as directed at no additional cost.
20. Prior to submission of the bid it is advised that Contractor must visit site and acquaint with prevailing site conditions, nothing shall be paid extra on this account.
21. Lowest of rates quoted under various subheads for similar items covered under scope of tender shall be payable with stringent requirements to be followed.
22. Nothing extra shall be paid on account of royalty on earth work and construction cess and same shall be to the account of contractor.

2.0 GENERAL SPECIFICATIONS

- These specifications are for work to be done, item to be supplied and materials to be used in the works as shown and defined on the drawings and herein to the satisfaction of Name of the Vasantdada Sugar Institute/ Architects.
- The workmanship is to be the best possible and of a high standard. The contractor shall take all steps immediately to make up deficiency if any noticed by Name of the Vasantdada Sugar Institute/ Architects. Use must be made of special tradesmen in all aspects of the work and allowance must be made in the rates for the same.
- The materials to be provided by the contractor shall be in accordance with the samples already got approval from Name of the Vasantdada Sugar Institute/ Architects by the contractor and in conformity with specification and approved is list of manufacture and brand. The contractor shall produce all invoices, vouchers or receipts for any materials if called upon to do so by Name of the Vasantdada Sugar Institute/ Architects.
- A sample of all materials is to be submitted to Name of the Vasantdada Sugar Institute/ Architects for their approval before the contractor orders or delivers the material to the site. Samples together with their packing are to be provided free of charge by the contractor and should any materials be rejected they will be removed from the site at the contractor's expense. All samples will be retained by Name of the Vasantdada Sugar Institute/ Architects for comparison with materials which will be delivered at site. Also the contractor will be required to submit specimen finishes colours, Glass, etc., for approval of Name of the Vasantdada Sugar Institute/ Architects before proceeding with the works.
- The contractor shall be responsible for providing and maintaining temporary coverage required for the protection of finished work. He is also to clean out all wood shavings, cut ends and other waste from all parts of the works before covering of infillings are constructed.
- Contractor shall maintain uniform quality and consistency in workmanship throughout the execution of the work.
- The contractor shall provide: All materials, labour, maintenance, fixing, carrying, cleaning, making good, etc. temporary canvas, plastics and any other requisite protection of the works, all the necessary equipment's, labour and removal of the same at the completion of the work. Vasantdada Sugar Institute/ Architects will be the sole judge in deciding as to the suitability of the tools or plants that may be brought on the works by the contractors, for the proper execution of the work.
- The head masons and the supervisors on the works shall always carry with them a two feet rule, a measuring tape (15 mts.) a spirit level, a plumb bob and a square and shall check that the work is being done according to the drawings and specifications. Vasantdada Sugar Institute/ Architects or its representative will use any OR all measuring instruments / tools belonging to the Contractors in checking the works executed.
- All measuring tapes shall be of steel and scaffolding and ladders that may be required for taking measurements shall be supplied by the Contractors.
- The Contractor shall place at the disposal of Name of the Vasantdada Sugar Institute and Architects and the advice of himself and his firm, and their staff or Foreman of trades or other skilled person employed by him or them for the conduct of the works comprised in the Contract.
- The Contractors are to take care in loading and unloading materials for the works, so that the roads and footpaths are not obstructed, damaged or the traffic impeded, and they must conform with the Police Regulations for carrying, loading and unloading all materials, plant, earth, debris, etc. to and from the buildings.
- Vasantdada Sugar Institute/ Architects shall have full powers and authority to issue such instructions as to the order of proceeding with or carrying out the work as he may deem necessary for the guidance of the Contractor and contractor shall be bound by such instructions of Vasantdada Sugar Institute/ Architects or any person authorized by Vasantdada Sugar Institute/ Architects to give such instructions.
- The levels and measurements of the existing site, as shown in the drawings, are believed to be correct, but the Contractor should verify them for himself. No claim or allowance whatsoever will be entertained hereafter on account of any errors or omission in the description of the site turning out different from what was expected or shown in the drawings.
- All floors, paving, staircase, etc. are to be scrubbed, all glasses to be cleaned on both sides of windows/curtain wall including its members, screens, doors, sky-lights, roof lights, etc., all gully, gutters, pipe heads, etc. to be cleaned out and the premises left clean, perfect and water tight upon completion. However, a proper care

needs to be taken during such cleaning works that the original finishing such as polishing, painting, anodizing, powder coating etc. are not scratched/damaged. In case of any such damage, the contractor shall have to reinstate the same as original as per the instructions of Name of the Vasantdada Sugar Institute/, without any cost to Name of the Vasantdada Sugar Institute.

- The Contractor shall work in co-ordination with all electrical, Air-Conditioning/HVAC, Fire Fighting/Detection, Security System and any other contractors working for other works involved in the project and provide all necessary assistance to them for successful completion of the project.
- Any loss or damage caused due to fault or negligence on the part of Contractors labours, staff etc. during working in the premises will be made good by contractor at no extra cost or the damage and repair cost will be reimbursed in full to Name of the Vasantdada Sugar Institute.
- The contractor shall be responsible to provide and maintain temporary coverage required for the protection of finished work. He is also required to clean out all wood shavings, cut ends and other waste from all parts of the works before covering of infillings are constructed.
- The contractor shall be responsible for providing and maintaining any boxing or other temporary coverage's required for the protection of dresses or finished work if left unprotected. He is also to clean out all shavings, cut ends and other waste from all parts of the work before coverings or in-fillings are constructed.
- Templates, boxes and moulds shall be accurately set out and rigidly constructed so as to remain accurate during the time they are in use.
- All unexposed surfaces of timber e.g. backing fillets, backs of door frames, cupboard framing, grounds, etc., are to be treated with two coats of approved timber preservative before fixing or covering.
- All the contractors should consider the below mentioned points before quoting for the job.
 - A) All vitrified tiles/granite/marble samples to be approved prior to fix the same wherever mentioned.
 - B) The expenses for paying Municipal Taxes for dumping materials on/off site, etc. to be borne by the contractor.
 - C) Expenses of bearing ward officer's sanction, etc. To be borne by the contractor.
 - D) Contractor should be responsible for the security of the materials on site.
 - E) Contractor should be responsible for lifting of the material to the respective floors and expenses of the same should be borne by him.

3.0 GENERAL SPECIFICATIONS FOR MATERIAL & WORKMANSHIP

- a. All materials brought on the site of works and meant to be used for the said project site, shall be as per the approved makes mentioned & shall be deposited with architect before the order for the materials is placed with the suppliers / manufacturers and should be prior approved from Vasantdada Sugar Institute/ Architects before execution.
- b. The workmanship is to be the best available and of a high standard, use must be made of a special tradesman in all aspects of the work and allowances must be made in the rates for so doing.
- c. Workmanship: All works shall be to true line, level, plumb and square corners, edges and arises in all cases shall be unbroken and finished neat. Only first class workmanship will be accepted. Contractor shall maintain uniform quality and consistency in workmanship throughout the execution of the work.
- d. Skilled head masons / tradesman for the respective trades shall be employed by the contractors to check the work in progress and to instruct and extract the right kind of workmanship from the men employed on the works. Instructions given to such Head masons by Vasantdada Sugar Institute/ Architects or his Representative shall be carried out with a view to get the work executed in a neat and workman like manner, according to the specifications.
- e. Vasantdada Sugar Institute/ Architects may order for the inspection of any finished work as he chooses and in a manner he decides, and the contractors shall bear all expenses in this connection. If the results of such inspection prove that the material used and/or workmanship is not of the standard required, the work will be rejected and removed forthwith and be replaced by works of the accepted standard of quality and material.
- f. The contractor shall produce all invoices vouchers or receipts for any materials if called upon to do so by Name of the Vasantdada Sugar Institute/ Architects.
- g. Samples together with their packing are to be provided free of charge by the Contractor and should any materials be rejected; they will be removed from the site at the Contractor's expense. All samples will be retained by Name of the Vasantdada Sugar Institute/ Architects for comparison with materials, which will be required to submit specimen finishes of colours, fabrics, etc., for the approval of Vasantdada Sugar Institute/ Architects before proceeding with the work.

4. MATERIALS

GENERAL:

The contractor under this contract commits himself to use best quality material and assume full responsibility for the quality of all material incorporated or brought for incorporation in the work. The work shall be executed in accordance with the best engineering practice and as per instruction of Vasantdada Sugar Institute/ Architects. All materials shall conform to respective Indians Standards.

Contractor must allow in his rates for all the wastage in all the materials.

1. WATER

Water shall be potable. Fresh, clean and free from impurities & should be from an approved source. Contractor can provide and maintain sufficient storage accommodation for the water as and where directed by Vasantdada Sugar Institute/ Architects.

2. EARTH:

For filling and terracing earth shall be free from all rubbish organic or vegetable growth including roots, seeds etc. and be approved by Vasantdada Sugar Institute/ Architects. All clods shall be broken down. Black cotton clayey soil shall not be used for any filling work under any circumstances.

Rates Quoted Shall Include:

Clearing shrubs, roots vegetation's from site, surface dressing marking layout of building and fixing permanent grid points with MS/Wooden posts etc.

Excavation either straight including curved in trenches, foundation rafts etc. cutting and dressing sides and bottom to the true dimensions.

Refilling back selected excavated earth in plinth sides of foundation in 200mm thick layers ramming and consolidating dressing the filled up area.

Any dewatering due to rains, subsoil water etc.

Plain cement concrete (PCC) dimensions shall be measured for payment.

Earth work in excavation in foundation trenches including disposal of excavated material within Company premises to be levelled and neatly dressed.

3. SAND:

Sand shall be river or from any other source approved by the consulting Vasantdada Sugar Institute/ Architects and shall be dry, clean, sharp, coarse and free from salt, earth and such other impurities. It shall be washed with clean water. The soluble contents shall not exceed 0.5% by weight if tested by settlement in water. For concrete work, the sand shall be coarser than for masonry work. Sand shall be used after screening as directed by Vasantdada Sugar Institute/ Architects.

4. BRICKS:

The bricks be 1ST class bricks and or uniform size (9" X 4.5" X 3"). Alternatively bricks as per IS: 1077-1976, Clues 5.1 the standard size of which is (19cm X 9cm X 9cm), and which shall be table moulded from approved kilns of quality approved by Vasantdada Sugar Institute/ Architects shall be used.

It shall be evenly burnt for getting brick which are sound, hard and with sharp edges and corners, and which shall be given the sound when strike with a metal. It shall be free from grit and other impurities such as lime, iron and deleterious salts. No brick with 24 hours' immersion in water shall absorb more than 20% its weight.

5. NEERU:

Neeru shall be made out of the best quality of hydraulic line slacked lime slacked with fresh water and heated. The lime shall be reduced to fine powder by grinding in a mortar mill with 160 turns.

6. COARSE AGGREGATE

This shall be machine crushed from hard (granite) trap stone, grading of aggregate shall be within the limits to produce a dense mix. And shall conform to IS: 383 & IS: 515; mix will work into position without segregation and without excessive quantity of water being required it also shall be strong and durable and shall be free any clay films and other adherent/coating. It shall be washed with clean water if required by Vasantdada Sugar Institute/ Architects. This shall be well graded between the limit as specified in the items of the work and the grading tests shall be carried out. Aggregates shall be screened. If required by Vasantdada Sugar Institute/ Architects to obtain proper proportion to his approval. The quality shall confirm to IS: 383-1970.

7. CEMENT:

High strength ordinary Portland cement conferring to IS: 8112 – 1976. Twenty bags of the cement shall be taken to weight one tone. It shall be stored in a dry place or in a higher ground on water tight platform and shall be protected from moisture while in store. Cement which is moisture before use in any way will not be allowed to be used at all.

Cement of approved brand / make should be used. Vasantdada Sugar Institute/ Architects may at his discretion reject the cement brought on site and which he may consider damaged or of doubtful quality for any reason whatsoever.

Record of the cement brought to the site and composed and balance in the work must be maintained properly,

8. SCAFFOLDING:

Scaffolding shall consist of the sal wood bullies and necessary batons and planks. All members before installation shall be checked for their strength and stiffness and tide up properly. Steel scaffolding may be used as directed by Vasantdada Sugar Institute/ Architects. When necessary, during the construction scaffolding and planks may be supported on/in the wall these shall be fixed and tied together. In case of finishing the work such as plastering, painting and distempering, no part of the scaffolding should touch the structure. Time from work shall be replaced from time to time with new timber as necessary and directed.

9. FORM WORK :

All props. Planks, plates braces, tiles, bolts wedge etc. shall be provided and all form work shall be sufficiently strong and sound for the purposes. Form work shall be thoroughly cleaned with wire brush etc. after use oiled (clear/ fresh) or greased each time before use. Wooden form work shall be replaced from time to time with new timber as necessary and steel plate shall be got repaired from time to time. For all exposed work, all the forms of fresh and raw steel shall be used as per pattern given by Vasantdada Sugar Institute/ Architects for the various members of the structure.

For wooden formwork, type of the timber shall be provided as specified in the bills of the quantities. All the form of work provided by the contractor shall be approved by Vasantdada Sugar Institute/ Architects before use and the contractor shall be allowed to use approved form work only.

10. REINFORCING STEEL:

Steel work shall comply with the IS specification No. 1786-1985 and high strength reinforcement shall comply with IS specification 1786. The surface of reinforcement bars shall free from rust, Oil, Grease, Dirt, Paint or other deleterious matter.

11. MARBLE MOSAIC TILES :

These tiles shall be of uniform size & thickness as mentioned in the BOQ & of approved make as directed. The chips incorporated in colour must be marble chips but before they are so incorporated. They must be washed and made free from all dust. The size of chips shall vary from 6 mm to 12 mm. The top layer of the marble mosaic tiles must be 8 to 10 mm thick. It must be made compact by machine vibrating before pressure is applied to the tile.

The sand cement shall be in proportion of one-part cement to the three parts of sand. The mix must be completely affected in a maximum machine. The wetting process during the mix must be through in order to ensure maximum strength. The minimum time of curing is 7 days in pond and maturing period for 40 days is to be observed before tiles shall be permitted to leave the factory. The colour must be permanent and fast to the action of light, alkali and weather. It should be chemically inert and must not have any adverse chemical to cause such action lead and zinc compounds shall not be used. Pigments containing more than 2,5 % water or double matter, carbon pigments and minerals blacks, particularly of the ground coal type shall not be used.

12. TIMBER

Timber shall be seasoned and of the best teak available or as specified in the schedule of quantities and of the best description. Perfectly dry well seasoned uniform in colour, free from sap wood and warps. There should not be any other defects and any appearance of rot. It shall not be placed in position covered in the wall or ground unless it has been approved by Vasantdada Sugar Institute/ Architects. Timber shall be considered as well seasoned in case its moisture free. The Material should be FSC certified as per the requirement of IGBC (LEED)

13. FLUSH DOORS:

Flush doors shall be of kiln seasoned timber, of solid core construction with frame, lock rail and well balanced backings aid shall be faced with high quality commercial or teak veneering as specified. The flush doors shall be specified make with 37 mm minimum, teak wood lipping glued and machine pressed along with core.

14. HARD-BOARD

Hardboards shall be of type specified.

15. INSULATING BOARD

Insulating board tile for suspended ceilings and walls shall be as specified and approved and shall be fix according to manufacturer's instruction.

16. ALUMINUM WINDOWS & DOORS

Aluminum doors and windows shall be made from extruded aluminum sections and shall be specified make. The contractor shall submit the fabrication drawing for approval to the Vasantdada Sugar Institute/ Architects before fabrication. Weight of Aluminum section per Sqm shall be calculated based on approved drawing and payment shall be released accordingly

Single leaf door,

Double leaf door,

Fixed portion of composite door

Aluminum windows/glazing sections should be procured from approved manufacturer as approved by the Engineer - in -charge, having weight of aluminum section as mentioned (approx.). approved structural silicone sealant to be applied on exposed to weather openings. Weight of aluminum section per Sqm shall be calculated based on approved drawing and payment shall be released accordingly. Toughening of glass should be included for Structural Glazing work.

Add or Deduct for weight of the aluminum sections being higher or lower than the specified weight.

a) Frameless glazing.

b) Frameless door with complete hardware fittings such as stainless steel door handle/floor spring / locks etc. all of approved design/make including provision of accessories. (appx opening size 2mx2.1 m) Above item using 6mm Bronze/grey/green reflective hard coated toughened glass.

Above item using 6mm clear reflective high performance Low-E toughened glass.

Deduct for plain glass in place of reflective glass in above item at sr .no.a) Extra over item of curtain/structural glazing above for providing and fixing of open able window/door including providing and fixing of two point locking handles of approved design, heavy duty aluminum approved quality hinges with concealed 4 points peg stay of aluminum or heavy duty friction stay of Earl Bihari or approved equivalent make suitable to withstand the required wind pressure and shutter loads all fittings and fixtures to be concealed except hinges/stay and handle, complete in all respects. with necessary hardware and fittings. such as friction hinges, lockable handles etc. of approved make. Providing & fixing sill and jamb flashing using 2mm thick 50-micron polyester powder coated aluminum sheet of approved color cut and bent in shape as shown on drawing and fixed to curtain wall & structure with Stainless steel screws complete.

17. Aluminum Metal Cladding

(Rate should be quoted considering enclosed particular specifications and provision of open able access panels for services wherever required.) Visible surface area shall be measured for payment. With weather silicon Dowcorning/GE sealant, non-streaking /staining weather sealant. Using Reynobond or approved equivalent. On curved or straight/sloping/curved surfaces including sill and jambs.

18. HOLDFASTS FOR DOORS & WINDOWS

Holdfasts for steel or timber frame shall be as per specified makes.

19. NAILS ETC.

Nails and staples shall be of hard drawn galvanized wire & shall be of specified makes.

20. BOLTS NUTS ETC.

Bolts, Nuts, and holdfast, shall be of mild steel painted with Bitumen based paints as specified before fixing. The threads of bolts, nuts and washers shall be truly fitting and shall be painted with zinc chromate before fitting the nuts.

21. SCREWS:

Screws shall be of make as approved and specified.

22. PAINTS

Filler, primer enamels, paints and various and external finishing application to cement plaster shall be of an approved best quality, property brand similar shall be bituminous based. Distemper shall be either water bound or oil bound as stated in the schedule of quantities. These shall be approved brand in sealed drums of the packages.

23. GLASS

The glass shall be of specified make and shall be free from, sparks or bubbles. In case of wire glass, the approved make glass shall be provided.

24. Putty to steel casements shall be special rapid hardening obtained from the suppliers of the casements and be suitable for fixing to steel. The colour of the putty used shall be same as the colour of windows in all the cases. Putty to wood casements shall be made of whiting chalk and linseed oil and shall be of a proper consistency. It should not fall away from the glass and timber and should harden quickly. Cinder shall be added in making the putty on proportion as required and as directed. Putty shall be provided all around between the glass for full length and putting at intervals shall not be allowed to any case.

25. METAL LATHING

Expanded metal Hi-rib weld mesh or similar metal lathing shall be an approved manufacture and of the quantity specified in the bills of quantities.

26. MANHOLE COVERS

Manhole cover should be light or heavy duty pattern with double seal as approved and as specified in the bills of Quantities.

27. RAIN WATER DOWN TAKE PIPES

Rain water down takes pipes and all fittings shall be of make as approved with proper spigots and sockets, distance pieces etc and shall be fixed with stout staples or bottle. Jointing shall be done with rich cement mortar and tested for water tightness.

28. SPECIAL MATERIALS

If materials of a particular brand are specified in the schedule of quantities these shall be procured accordingly from approved manufactures. These shall include materials like bitumen, bituminous compounds, waterproofing compounds and hardening compounds, special paints acoustic and insulation boards and other finishing materials. The responsibility for the use of these materials lies with the contractor and he should avail himself of the necessary guarantee as may be required by Vasantdada Sugar Institute/ Architects and give the same to Vasantdada Sugar Institute/ Architects

5.0 LIST OF I.S. CODE FOR THE REFERENCE

Materials used shall confirm to appropriate standards specified by the Indian standards institution/Bureau of Indian standards and unless otherwise specified, these standards will form a part of these specifications in particular.

Vasantdada Sugar Institute/ Architects wants to clarify that the IS codes mentioned in the technical specifications & in the list given below are for reference only.

The following or latest standards should be referred to-

AGGREGATES

IS: 383-1970	Coarse and fine aggregate from natural sources for concrete
IS: 515-1959	natural and manufactured aggregates for use in mass concrete
IS: 1607-1960	Sand for plaster
IS: 2386	Methods of test for aggregate for concrete.
Part-I-1963	Particle size and shape.
Part-II-1963	Estimation of deleterious materials and organic impurities.
Part-III-1963	Specific gravity, density, voids, absorption and bulking.
Part-IV-1963	Mechanical properties.
Part-V-1963	Soundness.
Part-VI-1963	Measuring mortar making properties of fine aggregates.
Part-VII-1963	Alkali aggregate reactivity.
Part-VIII-1963	Petrographique examineur.

CEMENT:

IS: 8112-1976	High strength ordinary Portland cement.
---------------	---

CONCRETE:

IS: 516-1959	Methods of tests for strength of concrete.
IS: 1199-1959	Methods of sampling and analysis of concrete.

REINFORCEMENT CONCRETE:

IS: 456-1978	Code of practice for plain and reinforcement concrete for general building Construction.
IS: 432	Mild steel and medium tensile steel bars and
IS: 1786-1985	High strength Deformed steel bars and wires for concrete reinforcement.

BRICK MASONRY

IS: 1077-1076	Common burnt clay building bricks.
IS: 2212-1962	Code for practice of brick work.

DOORS & WINDOWS

IS: 1003	Timber paneled and glazed shutters.
Part-I-1977	Doors shutters.
Part-II-1966	Windows and ventilators and shut.
IS: 1948-1961	Aluminum doors, windows and ventilators.
IS: 2191	Wooden flush door shutters (Cellular and hollow core type).
Part-I-1973	Plywood face panels.
IS: 2202 Part-I-1991	Wooden flush door BWP type (solid core).

FLOOR AND FLOOR FINISHING

IS: 777-1970	Glazed Earthenware tiles.
IS: 1443-1972	Code of practice for laying and finishing of cement concrete (Flooring tiles)
IS: 3365-1956	Floor polishing machines.

WATER SUPPLY PIPES AND DRAINAGE

IS: 651-1971	Specification for salt glazed stoneware pipes and fittings.
IS: 778-1971	Gunmetal gate, globe and check valves for general purpose.
IS: 780-1969	Sluice valves for water work purpose.
IS: 781-1977	Cast copper alloy screw-down bib taps and stop valves for water service
IS: 172-1971	Code of basic requirements for water supply, drainage and sanitation.
IS: 1726-	Cast iron manhole covers and frames.
Part-I-1974	General requirements.
Part-IV-1974	Specific requirements for MD circular type.
Part-V-1974	Specific requirements for MD rectangular type
Part-VI-1974	Specific requirements for LD rectangular type

	Sec 1:	Single seal
	Sec 2:	Double seal
	Part-VII-1974	Specific requirements for LD square type
	Sec 1:	Single seal
	Sec 2:	Double seal
IS:	1742-1972	Code of practice for doubling drainage.
IS:	2065-1972	Code of practice for water supply in buildings.
	IS: 2556-	Vitreous sanitary appliances (Vitreous Chin)
	Part-I-1974	General requirements.
	Part-II-1973	Specific requirements of wash down water closets.
	Part-III-1972	Specific requirements of squatting pans.
	Part-IV-1974	Specific requirements of wash basins.
	Part-VIII-XV	Wash down water-closets, bibs foot rests, shower-rose, foot traps for squatting pans, integrated squatting pans. Universal water closets.
IS:	2963-1964	Non-ferrous waste fittings for wash basins and sinks.
IS:	311-1965	Waste plug and its accessories for sinks and wash basins.
IS:	4127-1967	Code of practice for laying of glazed stoneware pipes.
IS:	5531	Specification of cast iron special for asbestos cement for water, gas and Sewage

STRUCTURAL STEEL:

IS:	2062-1992	Steel for general structural purpose.
-----	-----------	---------------------------------------

MISCELLANEOUS:

IS:	1020-1963	Conversion tables for ordinary use.
-----	-----------	-------------------------------------

6.0 TECHNICAL SPECIFICATIONS

Demolition Work

The demolition work should be started with propping up of the surrounding area and removing the false ceiling and other supports fixed onto the wall. The wall shall be gently removed by using chisel and hammer without disturbing the existing infrastructure and structure. This material shall be packed in gunny/plastic bags and to be cleared from the site within 24 hours.

All RCC works should be demolished by concrete cutting machine or Vibrating Hammers. Internal reinforcement should be cut by Gas welding.

Cutting and chipping of existing floor: The existing floor shall be cut only by mechanical cutters and then chipped gently by the chisel. The operation shall be done after taking prior permission from the client.

Anti-termite Treatment

The bottom surface and sides (up to a height of 30 cm from the bottom) of the excavations made for column pits, trenches and basements shall be treated with the approved make anti termite compound at 5 liters' / sq. meter of surface area. After the column foundations, wall foundations and retaining walls of the basement come up, the backfill in immediate contact with the foundation structure shall be treated with the chemical emulsion at the rate of 15 liters' / sq. meter of the vertical surface of the sub-structure for each side. The earth is usually refilled in layers and the treatment shall be carried out in similar stages. The chemical emulsion shall be directed towards the concrete or masonry surfaces of the columns and walls so that the earth in contact with these surfaces is well treated with the chemical. After the earth filling is completed in the plinth area and before the dry rubble packing or sub grade is laid, the entire surface of the filled earth shall be treated with the chemical emulsion at the rate of the 5 liters' / sq. meter.

Providing and injecting chemical emulsion for preconstruction anti-termite treatment and creating a chemical barrier under and around the column pits, wall trenches, top surface of plinth filling junction of wall and floor along the external perimeter of the building, expansion joints, surrounding of pipes, conduits etc. complete (plinth area of the building at ground floor only shall be measured).

Above item in two operations under plinth and backfilling (perimeter of basement retaining wall to be measured at ground level)

Plinth area dimensions shall be measured for payment.

Note: The anti-termite treatment shall be got carried through an approved and registered agency and strictly in accordance with IS:6313 Part-II:1981. (Bidder to state the name of specialized firm). (Contractor shall furnish 10 years guarantee against defects).

Checks & Controls at Site:

The Contractor shall take the following precautions at site.

Chemical should be brought in sealed containers Concentration percentage shall be clearly indicated on the container. Date of expiry shall also be indicated on the containers.

The material so brought shall be safely and securely stored (away from other materials) and shall be under the control of Engineer-in-Charge. The quantity required or particular day based on area shall be issued on written requisition, records of which shall be safety and securely kept.

If any portion in original container remains unused the same duly sealed shall be returned to store and reissued against when used.

The empty can should immediately be punctured and crushed so that the can cannot be used for any other purpose. Such destroyed can shall be returned to store for a counter check of inventory and the actual quantum of chemical used.

Excavation

The excavation shall be done to the lines / levels defined and to the correct size of foundation concrete. This shall also include temporary piling or sheathing, bracing and shoring used to carry out excavation works without interruptions. Cables, wires, dust lines, water supply and drainages pipe encountered within the area of excavation or in the reasonable distance of excavation should be properly protected & taken care-of. The furnishing, creating and maintaining of substantial barricades around excavation area, "Red" lamps (in the night) & notice boards should be maintained to ensure safety. The contractor shall immediately after beginning of excavation, put proper fencing all around the excavated pit as directed by Vasantdada Sugar Institute/ Architects at his own expenses and shall

keep the same till all plinth work is completed. Contractor should get the excavation work inspected and approved by Vasantdada Sugar Institute/ Architects before any further works in excavation areas allowed to commence.

The contractor must take every precaution to maintain the earth surrounding the site in perfectly safe condition for the excavation, no excavated material or any other heavy load will be allowed to be imposed on the ground adjacent to any excavation. The contractor should carry-out the excavation work to the level space and dimensions as shown or figured on the drawings or as required by Vasantdada Sugar Institute/ Architects to receive the concrete work.

The term excavation as herein used shall include excavations, removal and transportation of the excavated materials to the dump areas, refilling the excavated earth in trenches. It shall also include dumping of excavated materials in regular heaps & provide natural drainage. As a rule, all softer materials shall be laid along the center of the heaps & the harder and more weather resisting materials forming the casing on the sides and the top. It is intended that the contractor shall use heavy road rollers for consolidation with water sprinkling as directed, where consolidation is specified

Dewatering

Where water has entered within excavated area due to stream flow, seepage, springs, rain or any other cause, the contractor shall take adequate measures such as bailing, pumping, construction of diversion channels, drainage channels, bunds and other necessary works, to keep the foundation trenches/pits dry and to keep the green concrete/masonry against damage by erosion or sudden rise of water level. The method to be adopted in this regard and other details thereof shall be left to choice of the contractor but subject to the approval of Vasantdada Sugar Institute/ Architects. Approval of Vasantdada Sugar Institute/ Architects shall, however, not relieve the contractor of his responsibility for the adequacy of dewatering and protection arrangements and the safety of the works. Pumping from inside of any foundation enclosure shall be done in such a manner as to preclude the possibility for the movement of water through any fresh placed concrete. Pumping shall be permitted during placing of concrete or any period of at least 24 hours thereafter, provided it is done from a suitable sump separated from the concrete work by a watertight wall or similar means. At the discretion of the contractor and at his cost, cement grouting or other approved methods may be used to prevent or reduce seepage and to protect the excavation area. The contractor shall take all precautions in diverting channels and in discharging the drained water so as not to cause damage to the works or to adjoining property.

Backfilling

To the extent available, selected surpluses soil from the excavation shall be used as backfill. Fill material shall be free from clods, salts, sulphates, organic or other foreign materials. All clods of earth shall be broken or removed.

If any selected fill is required to be borrowed, the contractor shall make arrangement for bringing the material from outside. The material sources shall be subject to the prior approval of Vasantdada Sugar Institute/ Architects. Use of surplus selected soil from excavated material for backfilling can be permitted only up to the original ground level. Above this level, only selected borrowed material shall be used.

Rubble Soling

Rubble used for Soling should be Dry type stone size varying to 150mm to 230 mm. The rubble should be spread evenly on levelled back filling soil / Hard Murum. Watering should be done after laying down the rubble soling for sub base soil. Proper compaction & ramming to be done on Rubble as per the level mentioned in the drawings. After consolidation all hollows and interstices shall be filled up with quarry spoils, stone chips etc. and blending with stone grit, watering & consolidating by long hammer should be done.

Rubble stone:

The rubble stone shall be hard, tough, sound & durable with close texture and should be free from cracks. Weathered and disintegrated stones shall be rejected. The stone for soling shall be of height equal to the thickness of soling with a tolerance of 10mm.

Concrete

The ordinary concrete mix shall generally be specified by volume. For cement, which normally comes in bags and used by weight, volume shall be worked out taking 50kg of cement as 0.035 cubic meter in volume, shaking ramming or hammering shall not be done. Proportioning of sand shall be used as per its dry volume and in case it is damp, allowance for bulking shall be made as per IS: 2386 (Part III). Ingredients required for ordinary concrete containing one kg bag of cement for different proportions of mix shall be as given in Following Table:

Grade of concrete	Total qty of dry aggregates by volume per 50 kg cement (to be taken as the sum of individual volume of fine & coarse aggregates (max)	Proportion of fine aggregate to coarse aggregate.	Quantity of water per 50 Kg of cement max**
M10	300 Ltrs	Generally 1:2 for fine aggregates to coarse aggregates by volume but subject to upper limit of 1:1.5 and lower limit of 1:2.5	34 Ltrs
M15	220 Ltrs	1 : 3 : 6	32 Ltrs
M20	160 Ltrs	1 : 1.5 : 3	30 Ltrs
M25	100 Ltrs	1 : 1 : 2	27 Ltrs

* The proportions of the aggregate shall be adjusted from upper limit to lower limit progressively as the grading of the fine aggregates becomes finer and the maximum size of coarse aggregates becomes larger.

** The amount of water should be kept minimum required for proper workability. The quantity given in col.4 is not to be exceeded.

For all works concrete shall be mixed in a mechanical mixer, which along with other accessories shall be kept in first class working condition and so maintained throughout the construction. Mixing shall be continued till materials are uniformly distributed and a uniform colour of the entire mass is obtained and each individual particle of the coarse aggregate shows a complete coating of mortar containing its proportionate amount of cement. In no case shall the mixing be done for less than 2 minutes after putting all ingredients into the mixer. Mixers, which have been out of use for more than 30 minutes, shall be thoroughly cleared before putting in a new batch. Unless otherwise agreed to by Vasantdada Sugar Institute/ Architects, the first batch of concrete from the mixer shall contain only two thirds of the normal quantity of coarse aggregate. The mixing plant shall be thoroughly cleaned before changing from one type of cement to another.

Vibrators to be used at the time of concreting as per the required needle of dia like 25mm, 50 mm etc. Immediately after compaction, concrete shall be protected against harmful effect of weather, including rain, running water, shocks, vibration, traffic, rapid temperature changes and premature drying out. It shall be covered with wet sacking, Hessian or other similar absorbent material approved by Vasantdada Sugar Institute/ Architects soon after the initial set, and shall be kept continuously wet for a period of not less than 21 days from the date of placement. Masonry work over the foundation concrete may be started after 48 hours of its laying but curing of concrete shall be continued for a minimum period of 21 days. If necessary, chemical curing may be done without any extra cost. The cost shall be borne by the contractor.

Works strength tests shall be made in accordance with IS 516. Each test shall be conducted on ten specimens, five of which shall be tested at seven days and the remaining five at 28 days. The cubes shall be made at the rate of one set for every 50 cubic meter of concrete or a part thereof for each grade. However, if in each grade concreting done in a day is less than 15 cubic meter, the number of cubes can be reduced to 6 with the specific permission of Vasantdada Sugar Institute/ Architects.

Similar works tests shall be carried out whenever the quality and grading of materials is changed irrespective of the quantity of concrete poured. The number of specimens may be suitably increased as deemed necessary by Vasantdada Sugar Institute/ Architects, when procedure of tests given above reveals a poor quality of concrete and in other special cases.

All work shall be carried out under the supervision of a qualified and competent Engineer who will supervise proportioning, placing and compacting of concrete at all stages.

All necessary labour, materials, equipment, etc. for sampling, preparing test cubes, curing, etc., shall be provided by the Contractor. Testing of materials and concrete may be arranged by Vasantdada Sugar Institute/ Architects in an approved laboratory at the cost of the contractor.

Machine mixing consolidating by rodding, vibrating and temping, hoisting all lifts, leads and curing.

Preparing test cubes, getting tested the same as instructed including fees, cost etc.

Working up or hacking of concrete surface for providing keys for further concrete finishes.

All concrete surface shall be fairly even free from honey combing, loose concrete.

Forming hole, openings and re-concreting at later stage if required.

Leaving construction, expansion, dummy joints wherever directed.

Building in or embedding ends of precast joints and other units as shown.

Cement shall be PPC/OPC 43 grade unless specified otherwise.

(Reinforcement to be paid separately.)

Reinforcement

All reinforcing bars shall be accurately placed in the exact position shown as per the drawings, and shall be securely held in position during placing of concrete by annealed binding wire not less than 1 mm in size and conforming to IS:280, and by using stays, blocks or metal chairs, spacers, metal hangers, supporting wires or other approved devices at sufficiently close intervals. Bars will not be allowed to sag between supports nor displaced during concreting or any other operation over the work. All devices used for positioning shall be of non-corrodible material. Wooden and metal supports will not extend to the surface of concrete, except where shown on the drawings and the same shall be removed before the concreting starts. Placing bars on layers of freshly laid concrete as the work progresses for adjusting bar spacing will not be allowed. Pieces of broken stone, brick or wooden blocks shall not be used. Layers of bars shall be separated by spacer bars, pre-cast mortar blocks or other approved devices.

Reinforcement after being placed in position shall be maintained in a clear condition until completely imbedded in concrete. Special care shall be exercised to prevent any displacement of reinforcement in concrete already placed.

To protect reinforcement from corrosion, concrete cover shall be provided as indicated in the drawings. All bars protruding from concrete to which other bars are to be spliced and which are likely to be exposed for an indefinite period shall be protected by a thick coat of neat cement grout.

In the case of columns and walls, vertical bars shall be kept in normal position with timber templates having slots accurately cut in for bar position. Such templates shall be removed after the concreting has progressed up to a level just below them.

Bars crossing each other, where required, shall be secured by annealed binding wire of size not less than 1 mm and conforming to IS:280 in such a manner that they do not slip over each other at the time of fixing and concreting.

As far as possible, bars of full length shall be used. In case this is not possible, overlapping of bars shall be done as directed by Vasantdada Sugar Institute/ Architects. Overlapped bars should not touch each other, but be kept apart by 25 mm or 1.25 times the maximum size of the coarse aggregate in the concrete between them, whichever is greater. Where this is not feasible, overlapping bars shall be bound with annealed steel wire, not less than 1 mm thickness twisted tight. The overlaps shall be staggered for different bars and located at points along the span where shear & bending moment is maximum. Bars of less than 3.0 M length shall not be used as main reinforcement.

Rates Quoted shall include:

All reinforcement work (TMT high yield strength bars) Fe-500D in any position including cutting, bending, hoisting and fixing at any level.

Removing rust, oil scales, oil grease, paints etc.

Wastage due to cutting bars to required lengths.

Cost of 16 gauge annealed binding wires.

Providing concrete cover blocks to steel

No allowance shall be made for rolling margins wastages.

No wastage shall be paid and amount shall be made on actual length as per standard weight basis specified by ISI.

FORMWORK – SHUTTERING

All centering, formwork and temporary works shall be constructed according to drawings and specifications prepared by the Contractor and approved by Vasantdada Sugar Institute/ Architects. The design criteria and loading for these works shall be as per the relevant specifications, listed below:

- 1) Before placing concrete, the surface of all forms shall be coated with suitable non-staining form releasing agents such as raw linseed oil so as to prevent adhesion of concrete and to facilitate removal of forms.
- 2) The form releasing agent shall cover the forms fully and evenly without excess over drip. Care shall be taken to prevent form releasing agents from getting on the surface of the construction joints and on reinforcement bars. Special care shall be taken to thoroughly cover form strips for narrow grooves, so as to prevent swelling of the forms and the consequent damage to concrete prior to or during removal of forms.
- 3) Immediately before concrete is placed, care shall be taken to see that all forms are in proper alignment and the supports and fixtures are properly secured and tightened.

Where forms for continuous surfaces are placed in successive units, the forms shall lap and fit tightly over the completed surface so as to prevent leakage of cement slurry from the fresh concrete and to maintain accurate alignment of surface.

1. Forms shall be left in place until their removal is authorized and shall then be removed with care so as to avoid injury to concrete.
2. Removal of forms shall never be started until the concrete is thoroughly set and adequately hardened such that it can carry its own weight, besides the live load which is likely to come on the work during construction. The length of time for which the forms shall remain in place shall be decided by Vasantdada Sugar Institute/ Architects, with reference to weather conditions, shape and position of the structure or structural member and nature and amount of dead and live loads.

3. In normal circumstances and where ordinary Portland cement is used, forms can be allowed to be struck as under:

- | | |
|--|------------------|
| 1) Beam sides, walls, unloaded columns | - after 24 hours |
| 2) Slabs and arches (props left under) | - after 4 days |
| 3) Props to slabs and arches | - after 14 days |
| 4) Beam soffit (props left under) | - after 8 days |
| 5) Props to beams | - after 21 days |
| 6) Lean concrete (sides) | - after 2 days |

Note: Time shall be measured from last batch concreted in respect to the structural member under consideration.

In no case shall forms be removed until there is an assurance that removal can be accomplished without damaging the concrete surface. Heavy loads shall not be permitted till the concrete has reached its design strength. The forms shall be removed with great caution and without jerking the structure.

BRICK WORK

Bricks shall be of regular and uniform size, shape and colour, uniformly well burnt throughout but not over burnt. They shall have plane rectangular faces with parallel sides and sharp straight and right angled edges. They shall be free from cracks or other flaws. They shall have a frog of 10 mm depth on one of their flat faces.

They shall give a clear metallic sound when struck. They shall show a fine grained, uniform homogeneous and dense texture on fracture and be free from lumps of lime, laminations, cracks, air holes, soluble salts causing efflorescence or other defects which may in any way impair their strength, durability, appearance or usefulness for the purpose intended. They shall not have any parts under-burnt. They shall not break when thrown on the ground on their flat face in a saturated condition from a height of 60 cm.

Size of bricks

- (a) The size of the conventional bricks shall be 250mm x 125mm x 75mm. Only bricks of one standard size, shall be used on one work unless specially permitted by Vasantdada Sugar Institute/ Architects. The following tolerances are permitted in the standard conventional size adopted on a particular work. Length – plus or minus 3 mm (about 1/8") Breadth – plus or minus 1.5 mm (about 1/16") Depth - plus or minus 1.5 mm (about 1/16")
- (b) When metric bricks are used they shall comply with I.S.: 1077 – 1976

Absorption

After immersion in water, absorption by weight shall not exceed 20% of the dry weight of the brick as per IS: 1077-1976

Mortars

Cement and sand shall be mixed in specified proportions mentioned in the BOQ. Cement shall be proportioned by only weight, by taking its unit weight as 1440 kg / cubic meter and the same shall be proportioned by volume after making due allowance for bulking. The required quantity of water shall then be added and the mortar mixed to produce workable consistency.

The mixing shall be done intimately in a mechanical mixer unless only in special cases where hand-mixing is permitted by Vasantdada Sugar Institute/ Architects. If hand mixing is done, the operation shall be carried out on a clean water tight platform and cement and sand shall be first mixed dry in the required proportion to obtain a uniform colour and then the mortar shall be mixed for at least two minutes after addition of water. The mortar so prepared shall be used within 30 minutes of adding water. Only such quantity of mortar shall be prepared as can be used within 30 minutes. The mortar remaining unused or mortar, which has partially hardened or is otherwise damaged, shall not be re-tempered or remixed. It shall be destroyed or thrown away.

Soaking of Bricks

Bricks shall be soaked in water for a minimum period of one hour before use so that they become saturated and do not absorb water from the mortar. Soaked bricks shall be removed from the tank sufficiently in advance so that they become skin dry at the time of laying. Such soaked bricks shall be stacked on a clean place. Care should be taken so that they do not get spoiled by dirt, earth, etc.

Laying of Bricks

All brick shall be laid in English bond and true to line, plumb, level and joints. The bricks used on the face shall be of uniform size and with true rectangular face. Brick shall be laid with frogs up, on a full bed of mortar. While laying, bricks shall be slightly pressed so that the mortar gets into all the surface joints of bricks to ensure proper adhesion. All bricks shall be properly flushed and packed with mortar so that no hollow spaces are left.

Before laying bricks in foundation, a layer of not less than 12 mm of mortar shall be spread to make the surface on which the brickwork will be laid even. Immediately thereafter, the first course of bricks shall be laid.

The brickwork shall be built in uniform layers, corners and other advanced work shall be raked back. Brickwork shall be done true to plumb. During construction, no part of it shall rise more than half a meter above the general construction level, to avoid unequal settlement and improper joining. Under ideal conditions, the height of brick works constructed shall not exceed a meter in a day.

Brick works should be finished in staggered manner where ever future extensions are contemplated.

Joints

The thickness of joints shall not exceed 10 mm and this thickness shall be uniform throughout.

Joining with existing structure

When fresh masonry is to be placed against existing surfaces of structures, the latter shall be cleaned of all loose material, roughened and wetted as directed by Vasantdada Sugar Institute/ Architects so as to have a good bond with the new work.

Curing

Recently finished work shall be protected from rain by suitable coverings. Masonry work in cement or composite mortar shall be kept constantly moist on all faces for a minimum period of seven days. The top of the masonry work shall be left flooded with water at the close of the day during hot weather. All finished or partly completed work shall be covered or wetted in such manner as will prevent rapid drying of the brick work.

Scaffolding

The scaffolding shall be sound and strong to withstand all loads likely to come upon it and will be double or single as is warranted for the particular work. The holes, which provide resting space for horizontal members, shall not be left in masonry under one meter in width or immediately nearer the skew backs of arches. The holes left in the masonry work for supporting the scaffolding shall be filled and made good with 1:4:8 cement concrete.

Rates Quoted shall include:

Work in English bond or any other bond or design as directed by Vasantdada Sugar Institute/ Architects.

Embedding Electrical conduits, boxes, holdfasts of doors, windows, sanitary and water supply pipes and fixtures or inserts.

Raking out joints for plastering or painting.

All scaffolding, ladders, platforms, staging, tools and plant required in the execution of work.

Hacking and roughening of concrete or other surfaces in contact with brick / masonry for bondage.

Leveling up and preparing tops of walls for damp proof courses, precast units etc.

COURSED RUBBLE MASONRY

STONES

All stones to be used shall be of trap, basalt, granite, quartzite or any other approved quality and it shall be sound, hard, free from voids / flaws / cracks etc. Use of stones with stained surfaces shall not be allowed. In case the stains can be washed off, the stone usage shall be allowed only after cleaning. Unsound, weathered and disintegrated stones shall be rejected outright, stones shall be such that they will not

absorb water more than 1% by weight after being kept under water for 24 hours' minimum size of stone shall not be less than 15 cm on any face. The quality and physical properties of stone shall satisfy the requirements laid down in relevant I.S. Codes.

Stones are to be wetted before use. All stones, chips, etc. shall be cleaned and freed from dust or mud to ensure a good bond with mortar and shall be wetted before being laid for this purpose. The stones that are immediately to be used shall be kept sprinkled with good clean water. There shall be good collection of stones within easy reach of mason to enable proper selection of stones for the individual locations. While laying, the stones shall be kept continuously replenished.

Dressing of stones: The stones shall be set in the work as received from quarry, after merely knocking off weak corners and edges with a mason's hammer and after clearing scales of foreign matter if any.

Laying: The stones shall be laid carefully on their natural flatbed so as to have minimum joints as far as possible. They shall be solidly bedded in mortar with close joints. No joint shall exceed 40 mm nor shall it be less than 12 mm in thickness. Chips of stones shall be wedged into the works, wherever necessary to avoid thick beds or joints of mortar and to give masonry of maximum density.

No dry work or hollow space shall be allowed. Every stone, whether large or small shall be set flush in mortar, shaken and hammered down by a mallet to sink into it and to bring out all excess water and locked air inside eds. The smaller stones used in the filling shall be carefully selected to fit snugly into the interstices between the large ones.

Mortar to be added to fill the intervening spaces shall be well worked by trowel and steel bar. Disturbing the mortar during the period of setting shall be avoided. If it is necessary to move a stone after it has been placed in position, it should be lifted clearly and then placed. Care shall always be taken to see that the joints in already laid masonry are not disturbed while handling or moving stones.

Mortar joints of top and side of a layer shall be pressed and brushed over by a coir brush as soon as masonry is laid, so as not to leave any loose mortar. No traffic should be allowed on freshly laid masonry.

Bonding and Bond Stones: For ensuring good bond, masonry shall be finished uneven at the end of the day's work or at top surface of the work done in each shift. No mortar shall be allowed to remain over the masonry at its top, at the close of the day's work. All mortar on the top shall be removed.

The work shall be built square, plumb curved or bettered as may be required by the design. It shall be carried to in a workman like manner with the laid of moulds, templates, center etc. that will be provided by the contractor at no extra cost.

Quantity of mortar: Every effort shall be made to see that proper quantity of mortar is used in the masonry. The quantity of mortar will be 30-40 percent of the masonry laid.

Curing of Masonry: All masonry shall be kept well-watered on the top and sides for a period of minimum 14 days from the date of construction. The top of all masonry is to be kept well-watered, watering should be done carefully, so as not to disturb or wash out mortar. Where watering is done by manual labour, night shift, if necessary, shall be arranged for constant watering. Masonry shall on no account be allowed to present a dry surface during curing period. Should the mortar perish, i.e. become dry through neglect of watering such work shall be demolished and rebuilt at no extra cost. If the curing arrangements of the contractor are not satisfactory, Vasantdada Sugar Institute/ Architects may in his discretion engage labour and provide material, equipment for curing and recover expenditure thus involved from the contractor.

Weak or Defective Masonry: if any portion of masonry is found to be defective either in materials or in construction, it shall be removed and rebuilt by the contractor without extra cost.

In the alternative at the discretion of Vasantdada Sugar Institute/ Architects, such masonry shall be sufficiently grouted at contractor's cost in a manner specified by Vasantdada Sugar Institute/ Architects and to his entire satisfaction.

Height of Course: The stones shall be laid in horizontal courses not less than 200 mm (8 inches) in height. The stones in each course shall be of equal height and all courses of the same height unless otherwise specified but no courses shall be thicker than any course below it.

Dressing: The face stones shall be squared on all joints and beds. The beds shall be hammered or chisel dressed, true and square for at least 75 mm (3 inches) back from the face and the joints for at least 40 mm (1.5 inches). The face of the stones shall be hammer-dressed and bushing shall not project more than 30 mm (1.25").

Thickness of Joints: No pinning will be allowed on the face. All side joints shall be vertical and bed horizontal and no joint shall be more than 10 mm in thickness.

Bond stones and headers: In walls thicker than 1.2 m (4 ft.) vertical header bond stones shall be inserted every one and half meter apart in each direction. They shall be at least 500 sq.cm. in face area and shall have a tail of at least 0.6m. They shall run through the height of two courses. Their position shall be staggered in the successive course, so that any two courses shall be bonded with such vertical bond stones. Through stones shall be inserted about every one and half meter in every course and shall run right through the wall when not more than 600 mm thick when the work is more than 600 mm a line of 2 or more headers shall be laid from face to back, which shall have a length of at least thrice the height of each course, and face area not less than 500 sq.cm.

Break of joint Stones shall break joint by at least ½ the height of the course

POINTING

The joints in masonry to be pointed shall be raked square for a minimum depth of 4 cm within 24 hours of laying the masonry. In special circumstances; this period may be relaxed to 48 hours. The refilling and pointing shall be done within 3 days of raking of the joints so as to ensure good adhesion between the two mortars. If the raking is not done within the period specified above, Vasantdada Sugar Institute/ Architects may engage labour for raking joints and recover the cost thereof from the contractor.

Flush Pointing: The joints shall be filled with cement mortar which shall be thoroughly rammed and caulked into the joints. No lines shall be pressed on the joint but the joints shall instead be merely rubbed smooth with the 'Nayala' as soon as the mortar has begun to set. The extra mortar on the edge shall be carefully scraped off to give a neat appearance. Pointing shall be carried out as rapidly as possible and not touched again after the mortar has once begun to set.

Pressed Pointing: The joint shall be pressed with special trowel called 'Nayala' as soon as the mortar has begun to set and the hollow spaces refilled with fresh mortar to consolidate the joints shall be rubbed with Nayalas till they are about 5 mm deep into the masonry. After rubbing, the extra mortar of the edges of the joint shall be rubbed with Nayalas till they are about 5 mm deep into the masonry. After rubbing, the extra mortar of the edges of the joint shall be carefully scraped off with the nose of the trowel to give a neat finish.

WEEP HOLES

Weep holes of suitable sizes as directed by Vasantdada Sugar Institute/ Architects shall be provided in the walls as and where directed through the full width of masonry. The sides of weep holes shall be formed as uniform as possible, by using flat faces of stones around the holes. The holes shall have the bedding at the specified grade. The opening of each weep hole on the file side shall be covered by graded materials by the seeping water. For payment calculations, no deduction will be made for the holes in calculating the volume of masonry for payment, nor any extra payment be made for providing the hole or providing and laying the graded filter material as stated herein.

PLASTERING

All joints in the face work that is to be plastered shall be raked out to depth equal to not less than the width of the joints or as directed by the Engineer. The raking shall be done taking care not to allow by chipping of masonry. In new work the raking out shall be done when the mortar in the joints is still green.

Smooth surfaces of concrete, old plaster, etc. must be suitably roughened to provide necessary bond for the plaster. All dirt, soot, oil paint or any other material that might interface with satisfactory bond shall be removed. In the case of stone masonry, scrubbing on the walls to receive the plaster shall not be more than 12 mm (1 1/2") & Mix of Mortar should be 1: 4. The surface to be plastered shall be cleaned and scrubbed with fresh water and kept wet for 6 hours prior to plastering. It shall be kept damp during the progress of the work. The plastering shall be commenced unless the Engineer passes the preparatory work in writing.

In all plaster work the mortar shall be firmly applied with somewhat more than the required thickness and well pressed into the joints and on the surface and rubbed and levelled with a flat wooden rule to give required thickness. Long straight edges shall be freely used to give perfectly plane and even surface. All corners must be finished to their true angles or rounded as directed by the Engineer. The surface shall be finished to plane or curved surface as shown on the plan or directed by the Engineer, and shall present a neat appearance. The mortar shall adhere to the masonry surface intimately when set and there should be no hollow sound when struck. Cement plastering should be done in squares or strips as directed. Plastering shall be done from top downward.

Plastering to Ceiling

Projecting burns of mortar formed due to the gaps at joints in shuttering shall be removed. The surface shall be scrubbed clean with wire brushes. In addition, concrete surface shall be poke marked with a pointed tool at spacing of not more than 50 mm center to center, the pokes being made not less than 3 mm deep, to ensure a proper key for the plaster. The mortar shall be washed off and surface cleaned of all oil, grease etc., and well wetted before the plaster is applied.

SANDFACED PLASTER

The cement mortar for sand faced plaster shall have washed Khara salis or similar type of approved sand with slightly larger proportion of coarse material. The proportion of cement to sand shall be 1:4. The water is added gradually to make the mixture homogeneous. The thickness of finishing coat shall not exceed 7 mm. After application, the surface should be finished with a wooden flat, lined with cork and tapped gently to retain a coarse surface texture. When the finishing coat has hardened, the surface shall be kept moist continuously for 14 days.

Base Coat

The first coat of plaster shall be of cement mortar of 1:4 mix and applied evenly. The finished thickness of the first coat shall be 12 mm for brick masonry or concrete surface and 14 mm for rubble stone masonry. The plaster shall be laid by throwing the mortar (by using a strong whipping motion) on the prepared surface with a trowel in an in a uniform layer, and pressed to form a good bond. The surface shall be roughened.

Second Coat

The second coat shall be the rough coat mixture consisting of aggregate, which may vary in size from 5 to 8 mm and may consist of specially graded mixture mixed with fine sand and cement. The proportion of cement to sand and aggregate shall be 1:1.5:3. It shall be flung upon the first coat with large trowels to form an even protective coat. The second coat must be applied while the first coat is still soft and plastic. The work shall generally conform to clause 16.5 of IS: 166. The thickness of the coat shall be about 12 mm.

Scaffolding

Scaffolding shall be double and shall be erected with steel sections or pipes of adequate strength so as to be safe for construction operations. The contractor shall take all measures to ensure the safety of the work and working people. Any instructions of Vasantdada Sugar Institute/ Architects in this respect shall also be complied with. The contractor shall be entirely responsible for any damage to property or injury to persons resulting from ill erected scaffolding, defective ladders and materials or otherwise arising out of his default in this respect. Proper scaffolding shall be provided to allow easy approach to every part of the work. Overhead work shall not be allowed.

WATERPROOFING

The treatment shall be laid directly over the R.C.C. Slab; the detailed operations are as follows: -

- 1) After the RCC slab has been cleaned, two coats of epoxy based waterproofing paint shall be applied as per the manufacturers' specifications which penetrates in the minutes of crevices and fill up all the porosity in the structure. In case of construction joints between different R.C.C. members, the chemicals shall be injected at joints to make them monolithic. The treatment will be extended up to 300 mm height of parapet walls also.
- 2) A layer consisting of concrete 1:2:4 admixed with water proofing chemicals shall be laid to necessary gradient for proper flow of water towards the drain. The treatment will be extended up to 300 mm height of parapet walls also. The average thickness of this concrete shall be 125 mm with a minimum thickness of 75 mm at the drain.
 - i. After doing the proper curing for about 3 days, one additional slurry coat consisting of cement slurry mixed with water proofing chemicals should be provided to fill in the joints.
 - ii. The top is then finished as per the specification of Vasantdada Sugar Institute/ Architects.
 - iii. The proportion of the chemicals to be used in respect of ordinary Portland cement shall be 1% by weight i.e. 1 Kg. Of chemicals shall be mixed with 100 Kg. Ordinary cement and the quantity of cement used shall be a minimum of 5 bags per 9.29 sqm of the area treated.

Note: The above treatment is to be carried out by a specialized agency with the approval of the Consultant and shall be guaranteed fully effective for a period of ten years. Notwithstanding this, the responsibility of the effectiveness of the treatment shall be fully, entirely and unqualifiedly be that of the main contractor for the work.

EXTERNAL TREATMENT TO THE UNDERGROUND WATER TANK STRUCTURE.

The underground structure shall be treated with the following treatment during the initial state of construction of ensure 100% water tightness.

The concrete grade of the water tank shall be minimum M20 / M25 and all the construction joints shall be provided with 150mm long 15mm dia nozzles @ 1.0m c/c. These shall then be grouted with non-shrink grout

chemical as per the manufacturer's specification. The external surface of the tank shall be coated with two coats of acrylic polymer based chemical and the surface plastered with cement sand mortar 1: 4 with 3mm thick neat cement float. The internal surface of the tank shall be finished with 25 mm thick I.P.S. with neat cement float. Suitable waterproofing compound shall be added.

Toilet Block Waterproofing

- a. Treatment to include filling in the depressions with waterproof brickbat coba and top surface finished rough to receive flooring tiles.
- b. Epoxy treatment shall be carried out on the walls up to a height as specified (minimum up to 1.0 m) above finished floor level. The thickness of the water proofing plaster on walls will be 10 to 18 mm. The treated surface of the walls will be left rougher to receive dado tiles over them. The toilet block waterproofing shall be carried out only after the required finishing and sanitary works are completed. Rate quoted shall include for making good of walls at required height, for tucking the treatment on vertical surface.
- c. The area of treatment to the walls shall be measured by calculating the perimeter of unfinished walls and multiplying the same by the height of the treatment above finished level.

WATER PROOFING GUARANTEE CLAUSE

The waterproofing treatment to terrace / roof slab, balconies, canopies, chajja, basement, the impregnation treatment, toilet blocks, etc. shall be executed through approved waterproofing agency. A written guarantee on non-judicial stamp paper shall be submitted by the Contractor for a minimum period of **ten years** through the waterproofing agency. Contractors and the waterproofing agency shall be jointly responsible for waterproofing treatment until the expiry of the guarantee period. The chemicals proposed to be used by the contractor, the methodology, and the manufacturers' specifications and the detail of the authorized applicator shall be submitted along with the tender.

FLOORING

Indian Patent Stone Flooring

Cement concrete: The cement concrete shall generally conform to specifications for ordinary concrete. The coarse aggregates shall be carefully selected. These should be sufficiently tough and hard stone pieces broken in a manner that can provide particles of approximately cubical shape affording good interlocking. The maximum size of coarse aggregate shall be 12 mm. The fine aggregate shall consist of properly graded particles. The proportion of mix shall be M 15 (1:2:4). The least amount of mixing water that will produce a workable mix and will allow finishing without excessive trowel ling shall be used.

The sub-grade in all cases shall be formed to proper levels and slopes, well compacted cured. The top surface shall be kept slightly rough.

The surface of the sub-grade shall be cleaned off all loose material and moistened immediately before laying the concrete floor. The concrete flooring shall be laid in alternate bays not exceeding 6.25 sq.m. (about 64 sq.ft.) each. The edge of each panel into which the floor is divided should be supported by flat bars of steel or wood duly oiled to prevent sticking. Their depth shall be the same as that proposed for the finished floor as mentioned in the item. The bars should be removed before filling the adjoining panels. At least 48 hours shall elapse before the concreting in the adjacent bays is commenced.

The concrete shall be laid immediately after mixing. While being placed the concrete shall be vigorously sliced and spaded with suitable tools to prevent formation of voids or honey comb pockets. The concrete shall be brought to the specified levels by means of a heavy straight edge resting in the side forms and drawn ahead with a sawing motion in combination with a series of lifts and drops alternating with small lateral shifts. While concreting the adjacent bays care shall be taken to ensure that the edges of previously laid bays are not broken by careless or hard tamping.

Immediately after laying the concrete, the surface shall be inspected for high or low spots and any needed correction made up by adding or removing the concrete. After striking off the surfaces to the required grade concrete shall be compacted with a wooden float. The blows shall be fairly heavy in the beginning but as consolidation takes place, light rapid strokes shall be given to complete the ramming. The floating shall be followed by steel trowel ling after the concrete has hardened sufficiently to prevent excess of fine material from working to the surface. The finished surface shall be brought to a smooth and even surface free from defect and blemishes and tested with straight edges. No dry cement or mixture of dry cement and sand shall be sprinkled directly on the surface of the concrete to absorb moisture or to stiffen the mix. After the concrete has been rammed and has dried sufficiently to allowed rendering to be worked up, surface shall be rendered with a thin coat of 1:1 cement mortar with fine sand and uniformly floated. If so directed by Vasantdada Sugar Institute/ Architects, approved mineral colour pigment conforming to Appendix-B of IS 657 shall be added to the cement mortar to give the required colour and shade the to the flooring, When the cement mortar rendering is sufficiently stiff, lines shall be marked on it with stings or by any other device to give the appearance of tiles 30 x 30 cm or of any other size laid diagonally or square as directed by Vasantdada Sugar Institute/ Architects. The junctions of floor and walls shall be rounded off if so directed, without any extra payment.

After the concrete in the bays has set, the joints of the panels shall be filled with cement cream or with suitable bitumen paste compound or as directed by Vasantdada Sugar Institute/ Architects. Vertical edge of the bays shall be nearly marked on the surface of the concrete with a pointed trowel after filling the joints.

When the rendering is somewhat stiff, neat cement may be sprinkled on sparingly through a paper pot on the surface and rubbed lightly to give smooth polished ordinary cement colored surface. If colored flooring is required, the approved colored cement shall be used. Surface shall be protected from direct sun when it is green.

Curing shall start the next day after finishing and shall continue for 14 days.

Marble Granite Stone Slab/Granite, Vitrified Tile, Ceramic Tile Flooring

Machine cut marble stone / granite stone slabs shall be of 20, 25, 30 mm thickness as specified in the items description. Colour shall be uniform and the slabs free from all defects. Tiles used at site shall be machine-cut.

In machine-cut tiles, edges shall be protected from any damage in transit. No breakage shall be permitted. All edges shall be sharp, perfectly rectangular. Edges shall be polished for exposed corners faces as per the drawing and specifications.

At its thinnest part, no stone shall be thinner than 20 mm. The flagstones shall be hard, sound, durable and wear resistant. Uniformity of size shall generally be maintained for the flags used in any one room. The stones flags shall be without any soft veins cracks or flows and shall have a uniform colour. They shall have even natural surfaces free from broken flakes on top and shall be true and square to ensure uniform width of joint. Samples of stone slabs to be used shall be got approved by Vasantdada Sugar Institute/ Architects and the slabs to be used shall conform to the approved sample.

Bedding:

Bedding shall be of cement-sand-mortar mix in a ratio of 1:6 specified otherwise in the BQQ/drawings. The base of cement or lime concrete shall be laid and compacted to a reasonable true plain surface and to the required slopes and level. The amount of water added shall be the minimum necessary to give just sufficient plasticity for laying and satisfactory bedding. Before spreading mortar, the sub-floor or base shall be cleaned off all dirt, scum and of loose material and then well wetted without forming any pools of water on the surface. In case of RCC floors, the top shall be left a little rough. The mortar shall then be evenly and smoothly spread over an area that will be getting covered within half an hour. The thickness of the mortar bedding shall be provided as required as per the site condition but in no case shall be less than 12 mm.

Laying:

Laying of marble / granite stone slab flooring shall be as follows:

Before laying, the stone slab shall be thoroughly wetted with clean water. Neat cement grout (pigmented to match the shade of the stone slab) of honey like consistency shall be spread on the mortar bed over as much areas could be covered with the slabs within 15 to 20 minutes. Each stone slab shall be gently tapped with a wooden mallet till it is firmly and properly bedded. If there is a hollow sound on gentle tapping, the slabs shall be removed and reset properly. The joints shall be as thin as possible and limited to 2 mm at the maximum. The stone slab shall be laid so as to give continuous parallel long joints with cross joints at right angles to them. The edges of the adjoining slabs shall be in one plane. The edges shall be neatly rounded off where ever the slabs cover open edges of floor or window sills.

Laying shall start after due consideration is given to following points and approved by Vasantdada Sugar Institute/ Architects.

- (a) Datum levels of floors in rooms, adjacent rooms, passages, etc.
- (b) Slopes, if provided, the flooring should be given by adjusting thickness of mortar.
- (c) Tiles in openings and doors are equally placed.
- (d) Passage may be laid first to achieve evenness in doors.
- (e) Tiles in rooms shall be symmetrical and equal cut tiles shall be around the edges.
- (f) In case of differently colored tiles in passages and rooms, a dividing strip shall be provided and colour changed tiles shall be provided under the shutter.
- (g) In case there are any other architectural or structural features, the same shall be considered and the pattern should be adjusted accordingly.
- (h) Tiles may be allowed to go about 10 mm under plaster or dado. Surplus cement slurry from the joints shall be cleaned, once the tiles are laid, the following day the joints shall again be cleaned, washed and wire brushed.

Grouting of joints shall be carried out with colored (pigmented cement) cement or grey cement that matches the colour of tiles. Grout shall be worked into joint. Excessive grouts shall be cleaned off.

The floor shall be kept wet for a period of 7 days No traffic shall be allowed on the bedding and bedded tiles for at least 2 days.

Polishing

Polishing and grinding shall be done only after 14 days. Machine cutting or grinding shall be carried out. At first, the grinding shall be with rough stone of grade 48 to 60. All chips shall be visible and grinding shall be uniform. It shall be cleaned with water. All pin-holes and opened out joints shall be grouted with matching colored cement grouts supplied by the tile manufacturer. It shall be cured for a period of 7 days by keeping it moist.

Second coat / grinding shall be done with carborundum stone of grade 120. The same procedure shall be repeated for the first coat till the curing is complete.

The final cutting / grinding shall be with a fine stone of 220-320 grades and shall be done with sample water.

Tin oxide powder shall be spread and polished by machine fitted with Hessian bobs. The floor shall be washed, cleaned and dried with a soft cloth or linen. Corner of tiles should be hand polished by using rubbing stone, where ever they are slightly low and have been left unpolished.

In case of wax polishing, wax polish shall be applied to the surface. It shall be rubbed with machine. Then clean saw-dust shall be speared over the floor and rubbed with polishing machine. This will remove wax, leaving a glossy surface underneath.

Marble stone/other stone slab flooring for treads:

The method of laying, bedding etc. for marble / other stone flooring in treads shall be similar to that for marble stone slab / granite stone slab flooring as specified above. Nosing of the treads shall be rounded as directed. Final polishing on tread nosing may be done by hand.

Skirting / dado or cladding of polished stone slab:

The backing for skirting / dado or cladding shall be cement plastered 12 mm to 20 thick and shall be done in a single coat. Thickness of joints shall not exceed 1.5 mm. Final polishing may be done by rubbing. The top of skirting or dado shall be jointed neatly with the plaster above as directed. The joints between the two slabs shall be filled with neat white cement and matching colored grout of appropriate consistency.

Laying of Vitrified Tile Flooring:

The V.T. shall be selected and matched. Before laying the tiles shall be soaked in water as per manufacturer's specifications. The tiles shall be smeared with epoxy nonskid adhesive before laying them on the surface.

Necessary edge, hole cutting and chamfering and meter joints shall be done wherever required. The tiles shall be laid with 2.5mm PVC Tile spacer. The joints shall be filled with Roffe or Bell filler of matching colour as specified by Vasantdada Sugar Institute/ Architects. All damaged tiles shall be replaced with utmost care. The finished floor shall not be used for a minimum of 2 days. The finished material shall be protected against wear and tear and other works using heavy duty PVC sheets and 40mm thick Plaster of Paris. This shall be cleared with acid as soon as the place is ready for occupation. The debris shall be removed as soon as the related interior works are over. The pricing shall also include hacking of surface if necessary, chipping the existing flooring and levelling it with Cement mortar (1:3) to accommodate the tile laying and carting away of debris. (Tiles should be strictly as per samples approved by the Vasantdada Sugar Institute/ Architects).

Wall Dado: Wall dado shall be laid as per design & these should be as per the sizes specified in the BOQ / drawing. The tiles shall be selected and matched before laying over a 1:3 cement scratch plaster. Necessary edge, hole cutting and chamfering and meter joints shall be done wherever required. Any design or pattern shall be done without extra cost. The joints shall be filled with Roff or Bell fillers of matching colour specified by Vasantdada Sugar Institute/ Architects. All damaged tiles shall be replaced with utmost care. All corners to be protected with aluminum angles. The pricing shall also include hacking of wall surface if necessary, chipping the existing wall surface and levelling it with Cement scratch plaster (1:3) to accommodate tile laying and carting away of debris. Only best quality granite and marble of the basic rate specified and of approved shade shall be used (Basic rates wherever mentioned are ex-godown and excluding taxes). The granite / marble shall be from the same lot and without colour / shade variations or any other defect.

Granite wall cladding: Providing and fixing Granite wall cladding using 19mm thick pre polished slab as per Vasantdada Sugar Institute/ Architects specs fixed to the wall surface by means of 1:3 cement mortar used as a bonding agent, with necessary clamps, screws and cement grout. The vertical and horizontal joints between each panel of granite should have groove (as per architect's details.). Necessary edge and hole cutting, chamfering, meter joints and granite joints shall be filled with cement paste mixed with pigment to match the colour of the granite. All damaged granite shall be replaced with utmost care. The finished granite surface shall be protected against wear and tear by cladding it with PVC sheet and gum tape. The final surface shall be wax polished. The pricing shall include hacking the existing wall or other places. All edge chamfers, cutting, moulding of granite shall be mirror polished and no extra cost shall be paid for the same.

China Mosaic Flooring

The item refers to the provision of china mosaic surface (broken glazed tile pieces) set in cement mortar over waterproofing treatment well compacted and finished and laid in the required positions with white cement float as mentioned in the item.

Materials

a. Broken glazed tile pieces

These shall be obtained from broken glazed tiles of approved shade & the sizes of pieces should be suitable to obtain the correct pattern of flooring as shown on the drawings or as directed by Vasantdada Sugar Institute/ Architects.

b. Cement

Cement in cement float shall be white cement or colored as specified in the item.

c. Mortar bedding

Cement mortar bedding shall be laid as described in the item description, the thickness of bedding should be about 20mm laid to the required slopes shown on the drawings or directed by Vasantdada Sugar Institute/ Architects.

d. Broken glazed tile pieces.

These pieces shall be thoroughly wetted before fixing them. White cement grout of honey like consistency shall be spread over the mortar bedding when the mortar is plastic. Cement float glazed tile pieces shall be fixed piece by piece to the pattern as required. The fixing shall be done by keeping the joints between the pieces as thin as possible. The flooring shall be laid to correct level and slopes and compacted by striking the surface with hand thappies and straight screed tamper. The junctions of the flooring and the parapet wall shall be rounded and the flooring shall be extended up to the wall for 15 cm or as specified. Surplus cement grout that may have come out of the joints on compacting shall be cleaned off after the flooring has been laid or the day's fixing work is completed, the flooring laid shall be kept moist and allowed to mature undisturbed for 10 days to allow the bedding and flooring to set properly.

Cleaning

Once the floor has set, it shall be carefully washed clean and dried. When dry, the floor shall be covered with oil free dry sawdust, which shall be removed only after the construction work is completed.

Flooring

Note: All marble/stone /ceramic tiles shall be got approved prior to procurement. Basic rates wherever indicated are cut to size delivered on site including taxes. The flooring rates quoted by the contractor should be inclusive of transportation, loading, unloading, handling and wastages. Only clear flooring area will be measured for payments.

Rates Quoted shall include:

Cleaning and leveling sub-grade, sub-floor and preparing the same.

Laying floors to required slope, alternate bays in any size and shade making patterns as per design providing wooden side forms.

Making expansion joints, curing all complete.

Finishing the edges of electric fittings, boxes etc.

Cleaning paint splashes, dirt, glass joinery including washing the floors and leaving the premises neat and clean.

Materials or samples shall be approved by the Architect/Vasantdada Sugar Institute before fixing.

Cutting, rubbing and polishing floors where applicable.

Work in narrow widths at all heights and locations unless otherwise mentioned

PLUMBING AND SANITARY WORKS

Providing and fixing GI pipes and GI specials of approved ISI make cut to required lengths as per site conditions. The lines shall be concealed and protected using 1 coat of anti-corrosive paint. The chasing of walls should be done as per the layout & should be filled with cement mortar. The pipes of various diameter should be used as specified in drawings, BOQ etc. The open lines shall be finished with 1 coat of primer and 2 coats of enamel paint. Both the lines shall be anchored to the wall using proper GI clamps. The lines shall be pressure tested to a maximum of 11 kgs / sq.cm. for any leakage.

All sanitary ware shall generally conform to IS: 2556 Part I to XV unless stated otherwise.

All sanitary ware and CP fittings shall be new and of approved make, type and colour. All samples of materials with catalogues shall be submitted and got prior approved before use. Approved samples along with other approved materials shall be neatly displayed on a board and such a display board of samples shall always be in exhibition in the site office.

In cases where the materials are supplied by the clients, all such materials shall be inspected and received in good condition and thereafter, it will be totally under the safe custody of the Bidder/contractor till they are handed over satisfactorily after installation, testing and commissioning.

Wherever multiple choices of fixtures are mentioned, the final choice will be as per the joint decision taken by the Vasantdada Sugar Institute/ Architects.

Indian W.C

Indian W.C pan shall be Madurai / Orissa pattern in white vitreous chinaware size as specified in the schedule of work. Each W.C shall be provided with a 100 mm dia vitreous chinaware P or S trap with or without vent horn, as required.

The water closet shall be provided with an exposed or concealed type C.P brass flush valve or flushing cistern as specified in the schedule of work. Flush valves shall have a suitable flow regulating facility. Discharge connection to the W.C shall be by means of approved type of flush bend.

Foot rests

Indian W.C shall be provided wherever specified, with a pair of vitreous china foot rests at proper distance (where specified) on either side of the W.C.

Foot rests shall be set in cement mortar 1:2 mix. Edges shall be finished neatly with white cement.

Orissa W.C

Orissa W.C shall be in white glazed vitreous chinaware of size specified. The W.C shall be provided with a 100 mm white vitreous chinaware P or S trap with or without vents as required.

Each W.C shall be provided with an exposed or concealed type brass flush valve or flushing cistern generally as for Indian W.C.

European W.C

European W.C shall be wash down or symphonic, floor or wall mounted in white glazed vitreous chinaware with integral P or S trap as required. Wall hung W.C shall be supported by C.I or G.I floor mounted chair. The W.C shall be provided with an exposed or concealed type brass flush valve or flushing cistern as specified in the schedule of work.

Each W.C shall be provided with a solid plastic seat. The seat shall be fixed to the W.C with CP brass or S S pillar bar hinges. Rubber buffers shall be provided for the cover.

Urinals

Urinals shall be as specified in the BOQ / drawings in white glazed vitreous chinaware of size as per the approved product number of approved make / brand.

Urinals shall be provided with:

- i) spreader
- ii) CP dome waste
- iii) CP P-trap with unions.
- iv) CP wall flange and pipe.

All exposed pipes and fittings shall be of C.P brass. The urinals shall be fixed with C.P brass screws.

Urinal flushing shall be through one of the following methods as specified in the schedule of work:

- i) Small urinal flush valve with push button.
- ii) Auto flush valve with DC long life battery or AC supply.

Auto flush shall be concealed in wall and flush pipe shall be of copper or G.I except the exposed parts which shall be C.P brass.

Waste pipe for urinals shall be any one of the following: -

- 1. G.I pipes, heavy quality as per I.S 1239
- 26. Lead pipes
- 27. Copper pipes
- 28. HDPE pipes as per IS 4984

as specified in the schedule of work or shown on drawings.

Urinal partitions shall be white glazed vitreous chinaware complete with CP brass screws, anchor fasteners etc. as required.

Lavatory Basin

Lavatory basins shall be ivory glazed vitreous china or poly marble or any other material and of size, shape and type specified in the schedule of work.

Each basin shall be complete with:

- I. C.I or galvanized steel supporting brackets & clips as required.
- II. CP waste and overflow.
- III. Pop-up waste or rubber plug with CP chain as specified.
- IV. CP P-trap with cleanout, unions, CP pipe to wall and wall flange
- V. CP control angle valve/s with CP connections.
- VI. Mixing or CP fittings as specified.

Sinks

The sink shall be of size specified in with glazed vitreous chinaware or stainless steel AISC 304 as specified.

Each sink shall be complete with:

- i) C. I or galvanized steel brackets & clips as required.
- ii) Waste fitting with brass / rubber plug & chain.
- iii) P-trap with clean out, unions, CP pipe to wall & wall flange.
- iv) CP control valve/s with CP connections.
- vi) Mixing or CP fittings with spout as specified.
- vii)

Mirrors

Mirrors shall be of approved make and sample & should be plate glass electro coated copper 6 mm thick & should be clear, distortion-less (at all angles) non-wavy. The size shall be as specified in the schedule of work.

Mirrors shall be provided with backing of 12 mm thick marine plywood fixed with CP brass semi round headed screws and cup washers or CP brass clamps as specific or instructed by Architect.

Semi Circular Channels

The channels shall be in white glazed vitreous chinaware with or without dead ends. They shall be laid to proper lines and levels and shall be set in a bed of 12mm thick cement sand mortar 1:2. The joints shall be finished with white cement paste and finished neat.

Towel rods & racks

They shall be of approved make & size as specified in schedule. The towel rod shall be provided with a pair of CP brass brackets fixed to the wall with CP brass screws with round head, using cup washers, screwed on to fill-plugs embedded in wall. The brackets shall be of concealed type.

Soap trays

The soap trays shall be of white glazed vitreous chinaware or stainless steel and of size specified in schedule. Soap trays shall be fixed flush with the finished wall surface (tile surface) by cutting recess in wall and set in cement mortar 1:2. The wall surface shall be reinstated to original condition.

Soap Solution dispensers

They shall be chromium plated brass with CP brass brackets and CP brass cap. They shall be of approved make. They shall be fixed to the wall with CP brass screws, screwed on to fill-plugs embedded in wall.

Toilet paper roll holder

Toilet paper roll holder shall be of white glazed vitreous chinaware or stainless steel of size specified in schedule. It shall be of recessed type with wooden rod with spring at one end for holding the paper roll. The rate shall include cutting recess in the wall, fixing the holder with cement mortar 1:2 and rectifying the wall surface to original conditions.

Installation of Sanitary ware

All sanitary ware and CP fittings shall be installed in accordance with the interior requirements. Neat workmanship and maintaining exact position and level of each fixture shall be the sole objective of the installation. Care shall be taken to fix inlet and outlet pipes at correct positions. Faulty positioning shall be made good without any damage to the finished floor or wall tiling and any damage to the finished surfaces shall be made good at the Bidder / contractor's cost.

In order to ensure quality of workmanship and compliance with interior requirements, one or two mock-up installations shall be done and got approved. Fixtures used in the mock-up may be reused with the approval of Vasantdada Sugar Institute/ Architects.

All fixing accessories like bolts, nuts, brackets etc. may be supplied along with the ware as defined in the mode of measurement and schedule of work. All such accessories shall be CP brass or galvanized or stainless steel as approved by Vasantdada Sugar Institute/ Architects. All exposed pipes and bends shall be of CP brass.

The Indian W.C shall be fixed in level in a neat manner. The W.C and trap shall be set in brick bat 1:2:4 concrete mix. Joints between W.C and flush pipe shall be made with a putty or white lead and linseed oil and caulked well or with approved rubber joints. The joint between W.C and trap shall be made with 1:1 cement mortar and shall be rendered leak proof.

The Orissa W.C shall be fixed in level in a neat manner. The W.C & trap shall be set in brick bat concrete 1:2:4. Joint between W.C & flush pipe shall be made with putty of white lead in linseed oil and caulked well or with approved rubber joint. Joint between W.C & trap shall be made with 1:1 cement sand mortar and shall be rendered leak proof.

Wall-hung European W.C shall be mounted on C.I chairs which are fixed to the wall and floor using Anchor fasteners. The bolts and nuts used for fixing the chairs shall be stainless steel and the fixing bolts for the W.C and chairs could be CP brass or stainless steel. Floor-mounted W.C shall be fixed with Anchor fasteners using stainless steel bolts and nuts. The gap between the WC and floor or wall shall be neatly sealed with water proof non-hardening sealant of approved colour. The sealant should not extrude beyond the foot print or WC outline.

All W. C's shall be aligned and levelled with the floor and wall tiles so as to present an integrated look. Utmost care and skill shall be exercised to achieve a good installation in keeping with the interior designs.

Urinals shall be fixed to the wall using Anchor fasteners and stainless steel bolts and nuts. The urinals shall be held in line and level according to the interior designs and tile modules. Partitions, wherever required shall be provided, shall also maintain line and level as shown on drawings. Supply spreader and drain piping and P-trap shall be of CP brass and installed in a neat manner. No unseemly bends or wooden support pieces shall be permitted.

Wall-mounted lavatory basins and sinks shall maintain line and level as specified by the interior drawings and also with the tile modules. The supply connections shall be of CP brass from the angle stop valves to the pillar taps or single level fixture and shall display good workmanship. Drain connections shall have a CP P-trap with unions and exposed CP drain pipe and a wall flange. In the case of counter mounted basins and sinks, extreme care shall be taken to provide independent and adequate support for the basin and aligning it with the opening in the counter slab. Supply and drain connections shall be same as that for the wall mounted basins. The crevices between basin and wall or counter shall be neatly sealed with a non-hardening sealant of approved colour.

All accessories like the mirror, soap trays etc. shall be neatly fixed as per interior designs. Good workmanship is the essence of all sanitary installation for achieving the interior design objectives.

Cast Iron Pipes & Fittings

Cast iron pipes shall be of 'LA' class conforming to IS 1536 suitable for lead jointing with spigot and socket joints and if flanged, they shall be of 'A' class conforming to IS 1537. Pipes shall be in maximum lengths available.

Fittings shall conform to IS 1538. Spigot-sockets shall be suitable for lead jointing.

Pipe Installation

Shop drawings for the routing of pipes shall be prepared generally on the basis of layout drawings issued. The shop drawings shall reflect the site conditions, structural beams and columns, obstructions by way of any construction elements or any other service pipes, ducts etc. The drawings should clearly indicate openings required in brick or concrete walls, drain valves at low points, air valves at high points, isolating valves, if any, and invert levels at every 15m intervals. The drawings should also indicate typical details of hangers, supports, brackets etc. After approval of the drawings, pipe routes shall be marked with a distinct colour of paint on the site and got it approved by Vasantdada Sugar Institute/ Architects.

All openings and chases in brick walls shall be made neatly and refilled to a reasonable finish. However, final finishing will be done by the civil contractor. Openings in concrete walls shall, however, be made only with the approval of Vasantdada Sugar Institute/ Architects. Pipe penetrations, through wall or floor, shall be sealed with an approved fire resistant sealant.

Good workmanship and neat pipe layout are the pre requisites of these specifications. Horizontal pipes shall be truly horizontal with necessary slopes and hangers or supports as specified and shown on drawings. Vertical pipes shall be truly vertical and shall be laid away from the walls at least by 10mm or as required by Vasantdada Sugar Institute/ Architects. All pipe runs shall be parallel to the ceiling or walls for presenting a neat appearance. Pipes buried in wall shall be laid in machine-made cases with galvanized steel anchors.

All pipes before and after testing shall be protected with wooden or brass plugs to prevent ingress of dust, sand or any extraneous matter.

Pipe supports; hangers & clamps

Pipe supports, clamps, suspenders shall be pre-fabricated and galvanized (after fabrication). Application of support systems shall follow the guidelines in the above specifications. Any other types of support, suspension or clamping to meet the site conditions shall be got approved before use.

All fittings shall be screwed type unless specified otherwise. However, flanged joints shall be provided at the following positions:

- i) Pairs of flanges for isolation and removal of equipment.
- ii) Mating flanges for equipment flange connections.
- iii) Mating flanges for valves, strainers, as the case may be.

EXTERNAL DRAINAGE: Trenches for drainage shall be carried out to the required level only. No refilling will be allowed for the purpose of making up bed of the trenches. Any excess excavation shall not be paid for, and shall be made good with well rammed and consolidated cement concrete M75 at the cost of the contractor, and for which no extra cost will be paid. The trenches shall be filled in and the earth shall be well rammed and properly consolidated. The surplus earth shall be placed or spread elsewhere, or near the site, or carted away free of charge as may be directed by Vasantdada Sugar Institute/ Architects. The Contractor shall at his own expense and without extra

charge make provision for all shoring, pumping, dredging soil or sub soil and bailing out or draining out water or rain water and the trenches shall be kept free of water.

When trenches are opened for laying the drainage, water pipes, or any other work & if the depth is over 1.2 M (or even less in low bearing soil) then the sides shall be closely and securely supported by suitable shoring.

MANHOLES: - Manholes shall be circular and of conical shape with internal 600 MM dia opening at the top and internal 1 M to 1.2 M dia depending on the depth at the bottom. The required depth shall be provided at all junctions and change of directions. (Manholes can be rectangular only when the depth is less than 1.5 M. The size shall be 0.9 M x 0.45 M internal measurement) They shall be built in 230 MM brick wall in cement mortar 1:6 with cement plaster 1:4 smooth finish 20 MM thick from inside and rough finished from outside on a base of 230 MM cement concrete M100 projecting 150 MM beyond the brick work on all sides. Proper cement concrete channel shall be provided at the bottom and the branches from various pipes discharged in the channel with easy slope. The top of all the manholes shall be provided with cast iron circular air and water tight frame. In the case of any damage to the covers due to traffic or any other reason during construction or in the maintenance period, they shall be replaced immediately by the contractor at his own cost and if the damage is repeated, Vasantdada Sugar Institute/ Architects may demand heavier types than what are supplied and the contractor has to comply with the same without asking for extra charges. The frame and covers shall be painted with Black Bitumen Anti-Corrosive paint and space between cover and frame to be filled with bitumen. In deeper manholes, i.e. where depths are more than 1 M necessary cast iron manholes steps shall be provided, cost of which is to be included in the cost of manholes and nothing extra shall be paid. Portland cement shall be thoroughly mixed dry with sand in the proportion of 1 to 3 with approved water-proofing compound added as per manufacturer's specifications. Water shall be then added gradually to make the mixture homogenous. Cement mortar shall be mixed which can be used within half an hour. The joints between the stones or bricks will be raked out to a depth of 12 MM and the surface shall be thoroughly watered and the mixture of sand and cement applied evenly on all surfaces that needs to be plastered. The surface shall be finished off with a thin layer of cement floating. The plaster work shall be kept thoroughly wet for a period of seven days. Thickness of plaster shall be 20 MM thick.

Stoneware Pipes and Fittings: All the stoneware pipes, bends, gully traps and sewer traps, etc., shall be of the best salt glazed variety, of a uniform thickness, free from air holes, blisters, cracks, hard sound and free from other imperfection and external and internal surfaces shall be smooth and perfectly glazed and perfectly straight. They shall be of best approved Indian make & of approved quality. The diameter mentioned shall be their internal diameter and the thickness. A piece of stoneware pipe after 48 hours' immersion in water shall absorb not more than 4 % of its own dry weight. If Vasantdada Sugar Institute/ Architects for his own satisfaction takes test to determine the yielding point of any or every pipe by any known method in Engineering Practice, the contractor has to pay for the same without demanding extra. The internal diameter of the socket shall be sufficiently large to allow a joint of 6 MM thickness all-round. Joints in stoneware pipe shall be made perfectly air sealed and neatly finished, the spigot and socket should be thoroughly cleaned specially at the inner side of the pipes. Cracked pipes whether at the socket or on the body, shall be rejected. The socket ends of pipes shall always face upstream of effluent flow. The drains shall run in perfectly straight lines between manholes as shown on plans. No trenches shall be filled in until the foundations have been tested and alignment of the drain and connections into and from the manholes and their positions are examined and certified by the local authority and Vasantdada Sugar Institute/ Architects. The pipes shall be laid in perfect straight line to a desired slope.

While laying drain pipes, the center of each manhole or water gully must be marked by peg or otherwise as may be determined by Vasantdada Sugar Institute/ Architects.

The pipes are to be laid beginning at the lower end. No pipe is to be laid until the trenches have been excavated to its required depth as directed by Vasantdada Sugar Institute/ Architects. All pipes are to be laid perfectly true, both in line and in gradient. The pipes in a trench shall be laid dry and all joints of the pipes must be made thoroughly sound and water tight, and any one of them which may be proved to be leaking, shall be immediately made tight by filling it with water to a height as Vasantdada Sugar Institute/ Architects may determine. Any additional precautionary measures or appliances that may be found necessary to ensure tightness of the manholes or water gullies and the joints of pipes shall be adopted by the contractor without any extra charge, the responsibility of making them completely water-tight rests upon the contractor. Vasantdada Sugar Institute/ Architects may inspect the joints after the pipe joints in underground work have thoroughly set, and if he has any doubt, he may require the contractor to cut open and clean away the cement of any joint that he may select and to make good the same at contractor's cost without asking for extra.

Whenever a pipe enters or exits a manhole, brick on edge must be cut to a proper form and laid around the upper half of the pipe so as to form an arch. There shall be a joint of cement mortar 12 MM thick all-round the pipe between the pipe and the bricks. The ends of all pipes shall be properly built in and neatly finished off with cement mortar. The Gully Traps shall be 150 MM x 100 MM and of best quality. They shall be encased in bricks and cement masonry (1:6) with cement plaster (1:4) forming an inspection chamber with cast iron full size frame and cover 230 MM x 300 MM. The sewer trap of required size shall be installed in the last manhole.

Spigot and socked 150 MM C.I. pipes shall be heavy pattern (weighing not less than 46 Kgs per meter run) for the portion going below the floor and embedded in the walls. These shall be embedded and laid over 150 MM thick

cement concrete and laid to a slope and connected to the drain. On no account lime or lime concrete is to come in direct contact with cast iron pipe or fittings.

The pipes shall be carefully laid to the level and gradient shown on the plans and sections and great care shall be taken to prevent any material entering the pipes. The pipe between manholes shall be laid truly in straight line without vertical or horizontal undulations.

Cement shall be slightly moistened and on no account it should be soft or sloppy and it shall be carefully inserted by hand into the joint. When the current has been inserted it shall be punched and caulked in to the joints and more cement added until the space of the joint has been filled completely with tightly caulked cement. The joint shall be finished off neatly outside the socket at an angle of 45 degrees. Any surplus cement projecting inside the joints is to be removed and to guard against any projections sack or gunny bag shall be drawn past each joint after completion. The contractor shall be responsible that each section of pipe is properly cleaned out on completion of the work.

Cast Iron Pipe Work: All cast iron pipes, fittings shall be of approved make and shall conform to IS codes and should be free from flaws, air bubbles, cracks, sand holes and other defects, truly cylindrical and in uniform thickness. They shall not be brittle, but shall allow of ready cutting, chipping and drilling and shall be 10 MM thick, and of the diameter (diameter mentioned shall be the internal diameter) mentioned in the Schedule of Quantities and shall be of the longest length available & shall be fixed against the wall on special iron nails and bobbins fixed to the wall by means of round headed nails painted with two coats of approved paint. All the joints shall be caulked with tarred gasket of hemp or spun yarn and cement mixed with linseed oil to render perfectly air and water tight joint.

150 MM C. I. socket and spigot pipe shall be of the heavy duty (weighing not less than 46 Kg / M run) for the portion going below the floor or embedded in the wall. This shall be laid to slope and shall be encased in cone 300 MM x 300 MM and connected to the Municipal or other drain line.

The C. I. Nahani traps of approved make shall be 115 MM in height and 350 MM long and shall be embedded in the concrete floors with c. c. M-100 all-round. They shall be connected by means of 75 MM lead pipes of specified weight and thickness with thimbles, tail pieces and inspection caps fixed to the lead pipes by lead wiped joints or by 75 MM C. I. Nahani plug bend to suit the thickness of wall. The Nahani trap shall be provided with C. P. brass grating.

The lead used caulking joints of cast iron pipes shall be pure soft pig or bar lead free from all impurities and the rates of pipe shall be inclusive of all that is mentioned above. All vertical soil waste vent pipes shall be arranged straight in manner. The joints in the rainwater pipes shall be filled in with gasket of hemp or spun yarn and cement mixed with linseed oil, for underground usage the thickness and weight of cast iron pipe shall not be less than those shown above. All cast iron pipes and fittings shall be treated with two coats of approved compounds to prevent oxidation and two coats of anti-corrosive paint should be applied afterwards.

All cast iron pipes, fittings etc. shall be best E. L. C. & of approved make of the diameter mentioned which shall be their internal diameters. The thickness of the pipes shall be as follows: -

Diameter	Thickness
50 MM	3 MM
65 MM	3 MM
75 MM	5 MM
100 MM	5 MM
150 MM	6 MM

Cast Iron soil pieces shall be 100 MM diameter, 5 MM thick, and coated (internally) with Dr. Angus Smith's solution. The fittings for soil pipes shall also be treated similarly. The 100 MM soil pipes shall be in the longest available lengths and shall be fixed to the walls on tapered hard timber 50 MM x 50 MM x 50 MM gutties plugged to the stone or brick-walls or C.I. taper bobbins so as to keep the pipes 20 MM clear of the bricks walls. They shall be with socket and spigot ends, fixed in perfectly vertical and horizontal lines with all necessary fittings. The joints between C. I. pipes shall be filled in with cement mixed with linseed oil, gasket and caulked nicely.

Asbestos Cement Pipe Work: All A.C. pipes, fittings shall be of approved make and conforming to I. S. S. and free from flaws, air bubbles, cracks, sand holes and other defects, truly cylindrical and in uniform thickness. They shall not be brittle, but shall allow of ready cutting, chipping and drilling, and shall be 5 MM thick, and of the diameter (diameter mentioned shall be their internal diameter) mentioned in the Schedule of Quantities and shall be of the longest length available shall be fixed against the wall on special iron nails and bobbins fixed to the wall by means of round headed nails painted with three coats of approved paint. All the joints shall be caulked with tarred gasket of hemp or spun yarn and red lead putty to render perfectly air and water-tight joints.

Lead Pipes: (for soil waste and vent pipes) shall be used only for short branch soil waste or vent connections.

Joints of lead pipes shall solder wiped joints. All joints of fittings shall be made perfectly air and water -tight. Joints between lead and brass shall be wiped joints. Joints between lead pipe and wrought iron pipes fittings shall be made with heavy soldering ferrules, screwed to the iron pipe fittings.

Joints between lead and cast iron pipes shall be made with soldering or flanged thimbles soldered and caulked with lead in the usual manner.

Cast brass clearing eyes shall be provided at all points, intersection and changes of direction and these shall be secured by means of wiped solder joints.

Rainwater Pipes: Rainwater pipes shall be of Cast Iron conforming in every respect Indian Standards as may be revised up-to-date. They will be maintained perfectly straight from the tip to bottom of the building. The inlet shall be provided with lead connector with C. I. grating of approved design. Rainwater pipes will terminate at 150 MM above ground level by means of a shoe. All the above fixtures shall be included in the rate of rainwater pipes.

Water Supply Pipes and Fittings: All water supply pipes shall be of 'C' class quality and as required by the Bye Laws of Local Corporation or I. S. S.

Water pipes shall be of Galvanized iron specified internal I's etc. in perfect straight lines, both vertical and horizontal. The pipes in the interior of the building shall be fitted with M. S. seamless fittings and covered with asbestos twine & asbestos magnesia powder and shall be embedded in chases filled in with cement concrete. The pipes laid under the floor shall be painted with bitumen and embedded in concrete. The pipes, where exposed on the surface, shall be coated with aluminum paint as specified. The pipes running underground shall be laid after excavating trenches to a minimum depth of 0.6 M and the trenches shall be refilled after the pipes are laid to position.

These shall be measured in Running Meter and the rate shall be inclusive of all fittings, paint and coverings and cost of crust and chase and filling them with concrete, if inside the building and cost of excavating trenches and refilling, if laid underground.

Inspection chamber to be provided in Brick Masonry of 230 mm thick intercepting trap chamber 90 x 45 centimeter including 1:4:8 cement concrete foundation, 1:2:4 cement concrete channels / half round

glazed stoneware pipe channel, salt glazed stoneware intercepting trap with rodding pipe set in 1:4:8 cement concrete block, plastering inside and outside Cast iron lid with frame to be fixed in cement concrete

PAINTING

PLASTERED OR CONCRETE SURFACES

Wherever scaffolding is necessary, it shall be erected in such a way that as far as possible no part of scaffolding shall rest against the surface to be painted. A properly secured and well-tied suspended platform (JHoola) may be used for painting. Where ladders are used, pieces of old gunny bags shall be tied at top and cotton to prevent scratches to the walls and floors. For painting of ceilings, proper stage scaffolding shall be erected, where necessary.

Preparation of surfaces:

The surface shall be thoroughly cleaned off all dirt, dust, mortar dropping and other foreign matter, before paint is applied. New plaster surfaces shall be allowed to dry for at least 2 months, before applying paint. All unnecessary nails shall be removed. Pitting in plaster shall be made good with putty. The surface shall then be rubbed down again with a fine grade sand paper and made smooth.

The surface shall be allowed to dry thoroughly before the regular cost of paint is allowed. The surface affected by mounds moss, fungi, and algae lichens, efflorescence shall be treated in before applying paint.

Oil-Bound Distempering

Preparation of Surfaces:

Any unevenness shall be made good by applying putty, made of plaster of Paris mixed with water on the entire surface including filling up the undulation and then sand papering the same after it is dry.

Primer Coat:

The primer where used as an undercoated surface shall be alkali resistance primer or distemper primer as specified in the item. These shall be of the approved specified makes. Alkali resistance primer shall be applied before distempering the walls, in case the wall surface plaster has not dried completely. Distemper primer shall be applied in case the distempering is done after the wall surface have dried completely.

Application:

Primer shall be applied with a brush on the clean dry and smooth surface. Horizontal strokes shall be given first and vertical strokes shall be applied immediately afterwards. The surface shall be finished as uniformly as possible

leaving no brush marks. It shall be allowed to dry for at least 48 hours, before oil bound distemper or paint is applied.

Preparation of oil bound distemper

The distemper shall be diluted with water or any other prescribed thinner in a manner recommended by the manufacturer. Only sufficient quantity of distemper required for days' work shall be prepared.

Application of distemper coat

After the primer coat has dried for at least 48 hours, the surface shall be lightly sand papered to make it smooth for receiving the distemper, taking care not to rub out the printing coat. All loose particles shall be dusted off after rubbing. Minimum two coats of distemper shall be applied with brushes in horizontal strokes followed to immediately by vertical, which together shall constitute one coat. The subsequent coats shall be applied after a time interval of at least 24 hours between consecutive coats to permit the proper drying of the preceding coat.

The finished surface shall be even and uniform without patches, brush marks, distemper, drops, etc. Sufficient quantity of distemper shall be mixed to finish one room at a time. The application of a coat in each room shall be finished in one operation and no work shall be started in any room, which cannot be completed the same day.

15 cm. Double bristled distemper brushes shall be used. After each day's work, brushes shall be thoroughly washed in hot water with soap solution and hung down to dry. Old brushes that are dirty and caked with distemper shall not be used on the work.

Water Proof Cement Paint

Preparation of Surfaces:

The surfaces shall be thoroughly wetted with clean water before the waterproof cement paint is applied.

Preparation of Paint:

Portland cement paints are made readily by adding paint powder to water and stirring to obtain a thick paste, which shall then be diluted to a brush able consistency. Generally equal volumes of paint powder and water make a satisfactory paint. In all cases the manufacturer's instructions shall be followed. The paint shall be mixed in such quantities as can be used up within an hour of mixing as otherwise the mixture will set and thicken, affecting flow and finish.

The lids of cement paint drums shall be kept tightly closed when not in use, as by exposure to atmosphere, the cement paint rapidly air set due to its hygroscopic qualities.

Application of Paint:

No painting shall be done when the paint is likely to be exposed within 48 hours after application to a temperature of below 7 degrees Centigrade.

Work shall be carried out in the shed as far as possible when weather conditions are such as to cause the paint to dry rapidly. This helps in the proper hardening of the paint film by keeping the surface moist for a longer period.

To maintain a uniform mixture and to prevent segregation, the paint shall be stirred frequently in the bucket.

For undercoated surfaces, the surface shall be treated with minimum two coats of water-proof cement paint. Not less than 24 hours shall be allowed between two coats and the second or subsequent coat shall not be started until the preceding coat has become sufficiently hard to resist marking by the brush being used. In hot dry weather the preceding coat shall be slightly moistened before applying the subsequent coat.

The finished surface shall be even and uniform in shade without patches, brush marks, paint drops, etc.

Cement paints shall be applied with a brush with relatively short stiff hog or fiber bristles. The paint shall be brushed in uniform thickness and shall be free of excessively heavy brush marks. The laps shall be well brushed out.

Curing

Painted surfaces shall be sprinkled with water two or three times a day. This shall be done between coats and for at least two days following the final coat. The curing shall be started as soon as the paint has hardened so as not to be damaged by the sprinkling of water, say about 12 hours after its application.

PAINTING WOOD AND METAL SURFACES

General Requirement:

The material required for the execution of painting work shall be obtained directly from approved manufacturers and brought to the site in maker's drums, with seals unbroken. All paints shall conform to relevant Indian Standards as mentioned

All materials not in actual use shall be kept properly protected. Lids of containers shall be kept closed and surface of paint in open or partially open containers covered with a thin layer of turpentine to prevent formation of skin. Materials, which have become stale or fat due to improper and long storage, shall not be used. The paint shall be stirred thoroughly in its container before pouring into small containers. While applying also, the paint shall be continuously stirred in the smaller container. No left over paint shall be put back into stock tins. When not in use, the containers shall be kept properly closed.

If for any reason thinning is necessary, in case of ready mixed paint, the brand of thinner recommended by manufacturer shall be used.

Painting except the priming coat shall generally be taken in hand after all other construction works are practically finished. The rooms shall be thoroughly swept out and the entire building cleaned up at least one day in advance of the paintwork being started. The surface to be painted shall be thoroughly cleaned and dusted. All rust, dirt scales, smoke and grease shall be thoroughly removed before painting is started.

No painting on exterior or other exposed parts of the work shall be carried out in wet, humid or otherwise unfavorable weather and all the surfaces must be thoroughly dry before painting work is started.

Brushing of Paint:

The brushing operations are to be adjusted to the spreading capacity advised by the manufacturers of the particular paint. The painting shall be applied evenly and smoothly by means of crossing and laying off, the

later in the direction of the grain of wood. The crossing and laying off consists of covering the area over with paint, brushing the surface hard for the first time over and then brushing alternatively in the opposite directions two to three times and then finally brushing lightly in a direction at right angles to the same. In this process, no brush marks shall be left after the laying off is finished. The full process of crossing and laying off will constitute out one coat.

Spraying:

Where so stipulated, the painting shall be done with spray. Spray machine used may be (a) high pressure (small air aperture) type or (b) a low-pressure (large air gap) type, depending on the nature and location of work to be carried out. Skilled and experienced workmen shall be employed for this class of work. Paints used shall be brought to the requisite consistency by adding a suitable thinner.

Spraying should be done only when dry conditions prevail. During spraying, the spray gun shall be held perpendicular to the surface to be coated and shall be passed over the surface in a uniform sweeping motion. Different air pressures and fan adjustment shall be tried so as to obtain the best application with the minimum wastage of paint. The air pressure shall not be kept too high as otherwise the paint will clog up and will be wasted.

Spots that are inaccessible to the spray pattern shall be touched up by brush after spraying.

At the end of the job, the spray gun shall be cleaned thoroughly so as to be free from dirt. Incorrect adjustments shall be set right, as otherwise they will result in variable spray patterns, runs, sags and uneven coats.

Each coat shall be allowed to dry completely and lightly rubbed with very fine grade of sand paper and loose particles brushed off before next coat is applied. Each coat shall vary slightly in shade and shall be got approved 'from Vasantdada Sugar Institute/ Architects before next coat is applied.

Each coat except the last coat shall be lightly rubbed down with sand paper or fine pumice stone and cleaned off dust before the next coat is applied.

No hair marks from the brush or clogging of paint puddles in the corner panels, angles of mouldings, etc. shall be left on the works. In painting doors and windows, the putty round the glass panes shall also be painted but care shall be taken to see that no paint stains etc. are left on the glass. Tops of shutters and surfaces in similar hidden locations shall not be left out in painting.

In painting steel work, special care shall be taken while painting over bolts, nuts, rivets, overlaps etc.

The additional specifications for primer and other coats of paints shall be according to the detailed specifications under the respective headings.

Brushes and containers:

After the work is over, the brushes shall be completely cleaned off from paint and linseed oil by rinsing with turpentine. It shall be hung in a thinner or linseed oil in a container, if it is to be used the next day. On no account shall brushes be made to stand on bristles. A brush in which paint has dried up is ruined and shall on no account be used for painting work. The containers, when not in use, shall be kept closed and free from air so that paint does not thicken and also shall be kept guarded from dust. When the paint has been used, the containers shall be washed with turpentine and wiped dry with soft clean cloth, before they can be used again.

Steel and other Metal Surfaces

Preparation of Surfaces:

The surface before painting shall be cleaned of all rust, scale, dirt and other foreign matter sticking to it with wire brushes, steel wool, scrappers, sand papers etc. The surfaces shall then be wiped finely with mineral turpentine, which shall also remove grease and perspiration of hand marks. The surface shall then be allowed to dry.

Application of primers and paints:

After preparation of the surface, the priming coat shall be applied immediately.

Wood and wood Based Materials:

Preparation of Surface:

All woodwork shall be dry and free from any foreign matter. Nails shall be punched to provide a firm key for stopping. Mouldings shall be carefully smoothened with abrasive paper and projecting fibers shall be removed. Prior to painting, flat portions shall be smoothened off with abrasive paper. Any knots, resinous, streaks or bluish sap wood shall be treated with two coats of pure shellac knotting, applied thinly and extended about 25 mm beyond the actual area requiring treatment.

Plywood and Block Board:

This shall be treated in the same manner as described above.

Hard Boards:

The surface shall be dusted off and painted with a coat of plastic emulsion paint thinned with water or with a coat of shellac varnish as specified. The surface shall then be rubbed down with fine grade abrasive paper and followed with required under-coating and finishing coat.

Particle Board:

The surface shall be filled with thin brush able filler and finished as mentioned above.

Insulation Boards:

Two thin coats of wood based paints shall be applied by spraying.

Priming coat:

The dirt or any other extraneous material shall be removed from the surface to be painted. In case the surface is unsatisfactorily finished, it shall be rubbed down to bare wood and the surface should be repainted. Primer shall be applied by brushing.

Application for transparent wood filler:

The filler shall be applied with brush or rag in such a way that it fills up all the pores and indentations and levels up the surface. It shall be allowed to dry for 24 hours and then shall be cut and rubbed with flint paper so that the surface of the wood is laid bear with the filler in the pores and crevices of the wood.

Stopping

All holes, cracks, crevices, etc. shall be stopped carefully to true and level surface with putty before the main undercoat is applied and after the application of the priming coat, stopping shall be prepared as below:

Bees' wax, resin and lac (orange in colour) in the proportion of 1:1:16 by weight shall be melted down together in a suitable pot using slow heat, the mix being kept well stirred. Coloring materials to produce the required shade shall be added into molten mixture and stirred. Stopping shall on cooling be rolled into stick forms for use.

Application of Paints:

This shall conform to specifications as mentioned above

Applying wood preservatives:

The preservatives of specified quality shall be applied in two coats. It shall be applied liberally with a stout brush on a new surface and not doubled with rags or cotton waste. The first coat shall be allowed to soak in for at least 24 hours before the second coat is applied. The excess of preservative, which does not soak into the wood, shall be wiped off with a clean dry piece of cloth.

WHITE WASHING

General

The item refers to whitewashing over old and new concrete, stone masonry brick plastered surfaces and asbestos cement sheets.

White wash shall be prepared from fresh burnt white stone lime or shell lime. This lime shall be of A class type. Surkhi lime or lime of equivalent quality may be used. The lime shall be dissolved in a tub with sufficient quantity of water (about 4.5 liters per Kg. of lime) and shall be thoroughly mixed and stirred until it attains the consistency of thin cream. The white wash shall be taken out in small quantities and strained through a clear course cloth. Clean gum dissolved in hot water shall then be added in suitable proportion of 2 gm of Arabic gum to a little of lime to prevent the white-wash coming off easily when rubbed. Rice may be used instead of gum.

Scaffolding:

This may be double or single according to requirements. If ladders are used, pieces of old gunny bags or cloth rags shall be tied on their tops to avoid damage or scratches to the wall. Proper stage scaffolding shall be created when whitewashing ceiling. The contractor shall be responsible for taking all necessary precautions so as to avoid accidents.

Preparation of Surface:

The surface shall be prepared by removing all mortar dropping and foreign matter and thoroughly cleaned with wire or fiber brush or other means as may be ordered by Vasantdada Sugar Institute/ Architects to produce an approved clean and even surface. All loose pieces and the scales shall be scraped off and holes filled with mortar. The old colour wash must be entirely removed before the white-wash is applied, in case the surface has been previously colour washed. In the case of surface which has once been white-washed, the old loose white-wash shall be

broomed down. Architects & Designers may order scraping of the surface in case the loose whitewash cannot be removed by brooming.

After cleaning the surface as specified above, the unwanted nails shall be removed and all nail holes, cracks and crevices stopped with mortar. The mortar should then be cured.

Application of White-wash:

On the surface so prepared, the whitewash shall be laid. Each coat shall be laid on with a brush. The first stroke of the brush shall be from the top downward, another from bottom upwards over the first stroke, and similarly, one stroke from the right and another from the left over the first brush before it dries. This will form one coat. Each coat must be allowed to dry and shall be subject to inspection before the next coat is applied. When dry, the surface shall show no signs of cracking. It shall present a smooth and uniform finish free from brush marks and it should not come off easily when rubbed with a finger.

No portion in the surface shall be left out initially, to be patched up later on.

For new work, the white washed surface shall present a smooth and uniform finish.

For old work, patches and repairs shall be white washed first. Thereafter, the whole surface shall be white washed with the required number of coats.

Doors, windows, floors and other articles of furniture, etc. shall be protected from being splashed upon. Splashing and droppings, if any, shall be removed and the surfaces cleaned.

PLASTIC EMULSION PAINTING ON WALL & CEILING

General

Plastic emulsion paint are not suitable for application on external wood and iron surfaces and surfaces which are liable to heavy condensation and are to be used generally on masonry or plastered surfaces. Suitable primer as specified by the manufacturer shall be provided.

Paint

Plastic emulsion paint of approved brand / manufacturer and of the approved shade shall be used.

Preparation of Surface

The surface shall be thoroughly cleaned of dust, old white / colour wash by washing and scrubbing. The surface shall then be allowed to dry for at least 48 hours. It shall then be sand papered to give a smooth and even surface. Any unevenness shall be made good by applying putty (made of plaster of Paris mixed with water) on the entire surface including filling up the undulation and then sand papering the same after it is dry.

Application

The number of coats shall be as stipulated in the item. The paint will be applied in the usual manner with brush or roller.

The paint dries by evaporation of the water content and the next coat can be applied after the water gets evaporated. The time of drying varies from one hour (for absorbent surfaces) to 2 to 3 hours (for non-absorbent surfaces).

The thinning of emulsion is to be done with water and not with turpentine. Thinning with water will be particularly required for the undercoat, which is applied on the absorbent surface. The quantity of thinner to be added shall be as per manufacturer's instructions.

The surface on finishing shall present a flat velvety smooth finish. If necessary, more coats should be applied till the surface presents a uniform appearance.

Precautions

Old brushes, if they are to be used with emulsion paints, should be completely cleared of turpentine or oil paints, by washing them in warm soap water.

Brushes should be quickly washed in water immediately after use and kept immersed in water during break periods to prevent the paint from hardening on the brush.

In the preparation of walls for plastic emulsion painting, no oil base putties shall be used in filling cracks, holes etc.

Splashes on floors etc. shall be cleaned out without delay, as they will be difficult to remove after hardening.

Washing of surfaces treated with emulsion paints shall not be done within 3 to 4 weeks of application.

Other Details:

These shall be as per specification for "Painting" mentioned above depending upon their applicability.

SYNTHETIC PLASTERING "RENOVA" IN PLAIN / STONE OR METALLIC FINISH.

Synthetic plaster reinforced by using fibers and based on chemicals which are superior type of cladding material having acid and alkali resistant properties, can be applied to any hard based plain surface both internally and externally. It does not require any further application or treatment once it is applied on the surface.

It is available in ready-mix for any desired colour which can be applied by a trowel, which will avoid cracks formation as well as provides a waterproofing coating on the surface treated.

An average 20 mm thick cement plaster shall be provided as rendering coat, which shall be roughened lightly with wire brush so as to form very mild keys on the rendered surface. The surface shall be allowed for curing for a period of minimum 14 days before the application of synthetic plaster.

Synthetic plaster then be applied in five coat (i.e. one coat of plaster by trowel and subsequent four coats of chemical overcoats by brush) in approved colour and finish as specified

The item shall be measured in square meter. The rate shall include erecting and removal of scaffolding, all labour, materials, equipment's, plants, tools and all incidental expenses to complete the treatment to the satisfaction of Architect.

The synthetic plaster treatment shall be executed through an approved agency and written performance guarantee shall be submitted by the Contractor for a minimum period of ten years through the agency. The contractor and the agency shall be jointly responsible for the performance of the treated surface until the expiry of the guarantee period.

Grit plaster

Grit plaster shall be maximum 6 mm thick prepared from granite chips of approved size and shade. 3 parts of the chips shall be mixed with one-part cement and properly dry mixed before water is added. After getting the necessary consistency the same shall be applied to the wall by means of steel trowel. After the plaster is applied on the wall the same shall be washed by means of clean water and sponge so as to remove the laitance and the layer of cement slurry on the surface. The washing shall be done after allowing sufficient time so that the chips do not come off during the washing. The grit plaster sample shall be approved by Vasantdada Sugar Institute/ Architects before commencing the work, and necessary changes in the mix shall be made as per the direction of Vasantdada Sugar Institute/ Architects. The plaster shall be properly cured for 5 days. Necessary pigments may be added as per the direction of Vasantdada Sugar Institute/ Architects.

DOORS

Timber

First class Indian teak wood of class as specified in the item shall be used. The timber shall be of high quality and well-seasoned. It shall have uniform colour free from defects such as cracks, dead knots, shakes, sapwood etc. It should not have hard knots and the aggregate area of such knots shall not be more than 1% of the area of the piece. The timber shall be close grained having not less than 2 growth rings per cm. The maximum permissible percentage of moisture content for well-seasoned timber used in building work shall be as specified in the IS: 287.

Glass panels:

Unless otherwise specified, glass pane used in glazed or paneled-&-glazed shutters, shall be of specified make. The glass shall be free from flaws such as speaks, bubbles, smoke waves, air holes, etc. and shall conform to the relevant IS: 1761.

Unless otherwise specified, glass panes used in shutters of bath room and lavatories shall be frosted and of thickness as mentioned above and shall be free from any flaws.

Where ever specified, special quality glass such as plate glass, wired glass flat glass etc. shall be used. They shall conform to relevant IS standards as regards quality.

Putty for glazing in wooden frames of doors and windows

Putty shall be prepared by mixing one part of white lead with three parts finely powdered chalk and then adding boiled linseed oil and mixing the whole thing into a homogeneous stiff paste. It shall be free from impurities like dust, grit, etc. and shall conform to IS: 419.

Fittings

The item of wood work of joinery generally includes fittings such as hinges and screws for fixing of door shutters and is explicitly so mentioned in the item.

Hinges

Hinges shall be of iron, brass, aluminum or any other material as specified. They shall present a neat appearance and shall operate smoothly. All hinges shall be preferably of steel and their riveted heads shall be well formed and smooth. Hinges shall be of the type specified and shall conform to the relevant Indian Standard Specifications.

WORKMANSHIP

Wood Work

The work shall be carried out as per detailed drawings and/or as directed by Vasantdada Sugar Institute/ Architects. The wooden members of the frame shall be planed smooth and accurate to the full dimensions. Rebates, rounding, mouldings, etc. as shown in the drawing shall be done before the members are joined into frames.

Jointing in timber frames must be made carefully and accurately. They shall be strong, neat and shall fit without edging or filling. The joints shall be pinned with hard wood or bamboo pins of 10 to 15-dia after the members of the frame are pressed together in a suitable vice-mechanism.

The door and window frame shall have rebate to house the shutters and the depth of such rebate shall be 1.25 cm.

Wood work shall be painted, oiled, polished or otherwise treated as specified. All portions of timber abutting against masonry or concrete portion of building shall be coated with boiling coal tar or other type of approved wood preservatives primer, before placing them in final position.

Before any surface treatment is applied in, the wood work shall be got approved by Architects & Designers.

Fixing in Position

The frames shall be fixed only after acceptance by Vasantdada Sugar Institute/ Architects. In case of door frames without sills, the vertical members shall be buried in floor for the full thickness of the floor and the door frame shall be temporarily braced at the sill level so as to prevent warping or distortion of frame during construction.

Paneled, Glazed or Paneled-&-Glazed Shutters:

The work shall be carried out as per detailed drawing. The wooden members shall be planed smooth and accurate. They shall be cut to the exact shape and sizes without patching or plugging of any kind. Mouldings, rebates, rounding, etc. shall be done, as shown in the drawing, before the pieces are assembled into the shutter.

Joinery work:

The thickness of the styles and rails shall be as specified in the item of work. The minimum thickness of panels shall normally be 15 mm (where the clear width of panel is not more than 300 mm) and 20 mm (where the clear width of the panel is more than 300 mm). However, 12mm and 15 mm thickness respectively may be allowed by Architect instead of 15 mm and 20 mm as specified above. Solid wood panel for door and window shutters shall be made out of one or more strips of timber planks of not less than 125 mm width. It is preferable to use strips of not more than 200 mm width to reduce chances of warping, splitting or other defects. The timber strips shall be joined together with continuous tongue-&-groove joints, glued together and reinforced with metal dowels. The grooving of the solid panel shall normally run along the longer dimensions of the panel unless otherwise directed. The corners and edges of panels shall be finished as shown in the drawing and these shall be feather tongued into styles and rails. Sash bars shall have metered joints with the styles.

Styles and rails of shutters shall be made out of single piece. Lock and intermediate rails exceeding 200 mm in width (if permitted by Vasantdada Sugar Institute/ Architects) may be made out of one or more pieces of timber but the width of each pieces shall not be less than 125 mm. In case more than one piece of timber is used, these shall be joined with a continuous tongue-&-groove joint glued together and reinforced with metal dowels (rust proof) at regular intervals of 20 cm or pinned with not less than three 40 mm rust proof pins of the lost head type.

The tennons shall pass clear through styles. The styles and rails shall have a 12 mm groove to receive the panel. In case of the double shutters, the rebate at the closing junction of the two shutters shall be of depth not less than 2 cm. Shutter shall not be painted or otherwise treated before these are passed by Vasantdada Sugar Institute/ Architects and fixed in position.

Glazing

The glazing work shall be done in accordance with the specifications mentioned above.

Hold Fast

Hold fasts used for fixing doors and window frames shall be made of 40 x 3 mm flat iron and shall be 40 cm long. It shall have two holes on one end for fixing to frame with long screws, and at the other end, the flat iron shall be split and bent at right angles in the opposite direction. The hold fast shall be tightly fixed to the frame by means of bolts, the bolt hole in frame being plugged suitably and finished neat. The hold fast shall be embedded into masonry by concrete block of 200 x 250 x 400 mm size.

FLUSH DOOR SHUTTERS

The door shall be of flush type solid core with single or double shutter as the case may be.

Shutters

The shutters shall be decorative or non-decorative type of the exterior or interior grade as described in the item and as shown in the drawings. It shall conform to the relevant specifications for the type and grade given in I.S. 2202/1983, specifications for Wooden Flush door shutter (solid core type). The flush door should be both side water proof phenols bonded. The finished thickness shall be as mentioned in the item. Face veneers or laminates used shall be of the pattern and colour approved by the engineer.

Fixtures and Fastenings

These shall be as shown in table on the drawings or as indicated in the specifications. They shall be of oxidized brass and shall be of good workmanship, wherever not specified. However, these needs to be got approved by Vasantdada Sugar Institute/ Architects. All fixtures and fastenings shall be sound and strong. The size, shape, design and finish shall be as shown on drawings and approved by Architects & Designers.

Unless otherwise specified each leaf shall be hung with three hinges of specified makes. Each door shall be furnished with aldrop and latch, brass flush bolts, door closer or floor spring, handle, as per the detail drawing. The fixtures shall comply with the relevant Indian standards. Samples of all fixtures and fastening shall be got approved by Vasantdada Sugar Institute/ Architects.

All the fixtures shall be fixed to the joinery in a secure and efficient manner. Metal sockets shall be provided to all bolts where they enter stone, concrete etc.

Teakwood lipping Patti to be provided on the edges of the shutter & to be fixed by approved adhesive with the help of nails & to be finished in French polish or paint as specified in detail drawing.

ALUMINUM WINDOWS – Open able.

Open able Windows to be installed with Aluminum section sub-frame of Jindal or as per the specified make, of size 38mm x 62mm. The frame to be anodized by approved colour with anodic film of minimum 15 microns' thickness. Hold fast to be fabricated to the frame with a coat of anti-corrosive primer for the hidden surface buried under masonry wall. Aluminum sections to be used should be as per the drawing confirming 4505 for vertical member, 4541 for horizontal member, 4423 for glazing clip. For shutters standard section of overall size of 44 mm x 64 mm should be used. Glass to be used of 5mm thick of approve shade & to be fixed firmly in the frame with help of neoprene gaskets. Hinges to be fixed firmly with the sub frame & shutter by means of machine screws & to be coated same as other sections.

ALUMINUM WINDOWS – Sliding

Sliding windows should be either installed along with the sub frame or directly on the window sill as shown in the drawing. The aluminum extruded sections shall be anodized of approved colour with anodic film minimum 15 microns & weight should be confirming as per IS specification for that section as shown in drawing. Three track sliding window having height up to 1.5 meter should have outer frame of overall size of 92 x 45 mm. Bottom sections to be provide with drain sections & the track should be weighing 1.35 kg per running meter. The sections will be changed proportionally as per the size of the window. Plain glass to be provided as per the approved shade & colour of 5 mm thick & should be fixed with neoprene gaskets. Shutters to be installed with nylon encased stainless steel rollers with approve locks & Handles.

FABRICATION & STRUCTURAL STEEL WORK

Fabrication Drawings and Approval:

The fabrication drawings shall be prepared on the basis of design drawings supplied by the Structural Engineer. The fabrication drawings showing details of connection are required to be supported by the calculations showing adequacy of the connections. The fabrication drawings and calculations shall be prepared by qualified consulting engineer and fabricators. All changes required to be made by Vasantdada Sugar Institute/ Architects shall be incorporated at no extra cost.

Workmanship:

Workmanship shall be equal to the best in current fabrication practice. The methods followed in cutting, straightening, finishing and shaping, bindings of members and making holes for rivets, bolts or pins etc. and any other operations shall be performed in such a way as not to adversely affect the structural members in any way. The machinery and equipment's as well as the method of working, shall be approved by Vasantdada Sugar Institute/ Architects. The fabrication work shall be carried out by the qualified operators.

Welding

Welding and weld procedure qualifications should be done in accordance with applicable provisions of the IS standards. Qualified welders should be engaged to do the works.

PAINTING

Surface Preparation

Mild Steel surface to be painted shall be prepared in thorough manner with a view to ensuring complete removal of mill scale. Primary coat shall be applied after the surface preparation is complete. All slag from welds shall be removed before painting. Care shall be taken to brush the surface clean prior to painting. Surface shall be maintained dry and free from dirt and oil. Working outdoors in frosty or humid weather shall be avoided. The undercoat and finishing coat shall be of the same manufacturer. Successive coats of paints shall be of different shades and colours and each shall be allowed to dry thoroughly before the next is applied. Particular care shall be taken with the priming and painting of edges corners, welds and rivets.

Priming

The rates quoted by the Contractor shall include the following.

- I. Applying one coat of red oxide zinc chromate primer paint coating to all surfaces of mild steel prior to erection.
- II. Applying one coat of red oxide zinc chromate primer paint and two coats of finishing paint as specified in schedule to all surfaces which will be inaccessible after erection, except surfaces coming in contact with concrete. It should be noted that all steel work such as Trusses; Purlins etc. are considered inaccessible.
- III. After steel has been erected, all burrs and abraded spots, scratched surfaces, field welds, bolt heads and nuts shall receive one coat of primer paint. Before the paint is applied the surface shall be dry and free from dust, scale and grease. No paint shall be applied to bolt or field welds.
- IV. All steel material (except surface coming in contact with concrete) shall receive one coat of primer paint after erection, after having been thoroughly cleansed of dust and foreign matter. No paint shall be applied when humidity is such as to cause condensation on the surfaces to be painted. Paint shall be stirred frequently to keep the pigment in suspension.

Final Paint:

The final painting of structural steel shall be as specified by Architects & Designers or as specified in the schedule. The contractor shall be responsible for safety and protection of all materials from loss or damage of any nature until the completion of work & for surplus materials until they are returned and accepted by the Client.

Connection

a. **H.S.F.C. Bolts:**

The Contractor shall obtain the prior written approval of Vasantdada Sugar Institute/ Architects for the method proposed to be adopted for tightening the Height Strength Friction Grip bolts. For preliminary assembly and before use of these bolts, he shall use his own erection bolts.

b. **Bolting / Riveting:**

In general, bolts and rivets will conform to the relevant Indian Standards. The methods of establishing connections use of equipment, etc. shall be as approved by Vasantdada Sugar Institute/ Architects.

c. **Welding:**

Welding where specified, shall be performed by the shielded electric arc, gas or other approved methods, using coated electrodes and / or low hydrogen electrode conforming to IS: 814. The welding process and the qualification of the welding operators shall conform to IS: 817 and IS: 823 and shall be got approved before commencement of any work of welding.

All field assembly and welding shall be executed in accordance with the requirements for shop fabrications excepting which manifestly apply to shop conditions only. Where the steel has been delivered painted, the paint shall be removed before field welding for a distance of at least 50 mm on either side of the joints. All welds should be free from defects like holes, lack of penetration, slag intrusion etc. All welds shall be without over lap edges and free from porosity. The weld metal shall be deposited in successive layers, where a thick weld is required. Each layer except the last, shall be preened moderately before the next layer is applied. The contractor shall be responsible for the quality of the work performed by his welders.

If required, Vasantdada Sugar Institute/ Architects may test the welds by non-destructive tests. Any defective welds shall be made good by the Contractor at no extra cost and the cost of non-destructive testing for such defective welds shall be borne by the Contractor.

d. **Specification for pin and pinned connections:**

Pin Material:

Rolled steel pins and rollers, including those made from slabs shall comply with requirements of IS: 226 – Specification and structural steel and IS:2062 – Specification for structural steel (fusion welding quality) or IS:961 – Specification for high tensile structural steel.

Forged steel pins shall have a tensile strength of 44 to 50 kg / sq.mm. or 57 to 63 kg/sq.mm. to conform to IS:1875 – Specification for carbon steel billets, blooms and slabs for forging. Steel casting for cast steel pins shall conform to grade 1 to 3 IS: 1030.

Pin Holes:

Pin holes shall be bored true to gauge, smooth, straight, at right angle with the axis of the member and parallel with each other unless otherwise required, in built up members the boring shall be done after the members have been welded. The specified dia of pin shall be its minimum dia. Hole dia can be maximum + 0.5 mm more than pin dia.

Pins:

The pins shall be parallel throughout and shall have a smooth surface free from flaws. At ends of pins there shall be slot facilitating in driving the pin.

Pins of more than 175 mm. in length of diameter shall be forged and annealed. Coffey pins shall be provided on both sides of the pin.

Supplying, carrying, fabricating and erecting in position mild steel structure, preparation and getting reviewed by BORI / Consultants, of fabrication drawings and supply of necessary prints, straightening if required, cutting to required size, bolting and/or welding of joints, painting with one coat of red oxide zinc chromate primer, fixing in line or level with temporary staging complete for rolled steel sections in purlins, side runners, beams, mono rails, single columns etc. for all depths and heights. (All structural steel work shall be in compliance with latest IS code 800/2062/814/823/ 1367/1601/2016).

- Do - same as item No.1 above but using rolled sections and plates in fabricating built up and compound structural steel beams, columns, roof trusses, trussed girders, trussed purling's etc.

Supplying, fabricating and fixing in position M.S. inserts, fabricated from bolts, nuts, angles, holding down bolts, anchor plates, cleats, splicing or the like. The unit price includes the cost of cutting, bending, drilling and bolting etc. with all tools, tackles and labour as per drawing and design. The unit price also includes the cost of providing and applying two coats of synthetic enamel painting over a coat of primer, both of approved quality and making good the concrete surfaces, if required.

Steel work welded in built up sections/frames including cutting hoisting, fixing in position by suitable means and applying zinc chromate steel primer complete

In railings, gratings, frames, grills, ladders, guard bars, brackets, gates and similar

In covers over cable trenches of MS chequered plate with stiffeners of MS section flats etc. welded to the plate complete as per drawing, including applying a coat of steel primers and making lifting arrangement with MS ring as per drawing and/or as directed.

In pipes/tubular members

Welded wire mesh of 50x50x13 G including welding with structural steel framework and door opening.

Providing and fixing UV stabilized UPVC rain water (SWR) pipe with one end plain and other end socketed with injection moulded /fabricated fittings such as tees, bends, doors etc. and provided with square grooved and along with V shaped rubber ring including making good wall and flooring wherever necessary. The wall thickness of the pipe and other technical characteristics shall be conforming to IS: 13592/92 Type A. The jointing to be completed with rubber lubricant.

110 mm OD

160 mm OD

200 mm OD

265 mm OD

ROLLING SHUTTERS

Perforated Rolling Shutter: Curtain Panel: Panels shall be made of 0.50 mm CRCA steel coated with Zinc Aluminum / Galvanized Conforming to IS:277 and IS: 513 to make them totally anti corrosive and colour bonded which shall give the curtain a good sheen finish.

The coils shall be fed on to the roll forming machine to give the panel rolling, the desired corrugation. Each panel will be 720mm wide and to make the height of the door curtain, the panels shall be lock seamed with one another. Then the panels shall be cut to the width of the floor. The door shall be fabricated wither forwarded or reversed, as specified (depending upon whether the door, curtain has to be fixed inside the opening or outside the opening). Door fabrication should also include all fixtures, locking arrangements, electric wiring for motor drive & motor of adequate capacity. The shutter should be both manually geared as well as electrically operated unless otherwise specified.

Extra for providing and making grill in item of rolling shutter. (Area of grill to be measured for payment) Extra for providing mechanical device chain and crank operation for operating rolling shutters exceeding 10.00 Sq.m and below 20 Sq.m in area.

Extra over for providing Electrically operated Mechanical device for operating rolling shutters exceeding 10.00 sq.m and below 20 sq.m in area.

Providing and fixing mild steel angle nosing made up of angle fixed in concrete with lugs all complete including painting with two or more coats of synthetic enamel paint over a coat of zinc chromate steel primer as shown on drawing.

Finishing

Rates Quoted shall include:

Materials or samples shall be approved by the Vasantdada Sugar Institute/ Architects before fixing.

Finishing the edges of electric fittings, boxes etc.

Use of scaffolding, trestles, ladders etc. necessary for execution of work and for inspection.

Provision of chicken wire mesh 300mm wide at junctions of brick work and concrete.

Materials or samples of different colours and shades shall be approved by the Architect/Vasantdada Sugar Institute before applying.

Finishing the edges of electric fittings, boxes etc.

Cleaning painting splashes, dirt, glass, joinery including washing the floors, windows and cleaning premises neat and clean.

Putting, sand papering and dusting of surface in between coats where applicable.

Work on cornices, narrow widths, bands etc.

Use of scaffolding, ladders, etc. necessary for execution of work and for inspection.

Miscellaneous

Rates Quoted shall include:

Providing and fixing 150mm wide chicken wire mesh 24 gauge and 20 mesh at junction of RCC and masonry works, including fixing in position and nails of 25mm length required gauge and at required distance as directed by the Engineer.

For all work of dismantling of R.C.C. concrete of any mix including cutting of reinforcement at all levels and heights and disposal of debris as directed. (Reinf. steel shall be property of client)

Making cutout/openings in brick wall of any size and making good the same

a) 230 mm thick wall

b) 115 mm thick wall

Chipping of concrete of any mix at any level and position and removal of rubbish out of complex as directed.

a) up to 10 mm deep

b) up to 25 mm deep

c) up to 50 mm deep

Dismantling of brick work with /without plaster at all levels and heights and disposal of debris out of complex as directed.

Cutting and removal of structural steel at all heights and levels and placing at ground level as directed

False Ceiling

Rates Quoted shall include:

a) Providing 4 mm thick commercial plywood at spot light location in ceiling above tiles to avoid sagging.

b) Cut outs for AC Diffusers/Grills/Trap doors with frame and opening and locking arrangement etc.

c) Tiles spares (at 600x600 mm light locations) to be submitted with Vasantdada Sugar Institute/client. No deduction for same in measurements.

Note: For light, fitting, grills diffusers, trap doors etc. cutouts have to be made with the frame.

Steel shall be roll formed.

Fire Rated Ceiling / Doors

All components shall be installed to manufacturer's instructions to meet the performance criteria of stability, insulations and integrity in accordance with BS 476: Part 22: 1987.

FIRE RATED GLASS (VIEWING PANELS IN FIRE RATED DOORS)

PANIC EXIT DEVICES

Providing and fixing of Briton/ Monarch/ Von Duprin fire rated single / double leaf panic exit devices tested in accordance with BS EN 1125: 1997 & BS EN 179: 1997, EN 1670 (Corrosion Resistant), & BS 476 Part 22 (for fire rating) with 5 years' warrantee.

Single Leaf

Double Leaf

DOOR CLOSER

2 HR. FIRE RATED DOOR (3 CRITERIA)

With 2nd Class Teak Wood Frame & Laminate

With hard frame & commercial ply facing.

MODE OF MEASUREMENT

Note: Measurements shall be recorded only up to two digits after decimal point

(p) Demolition (Floor , walls)	Square Meter
(q) Demolition , Concrete	Cubic Meter
(r) Demolition (Door , Windows , Frames)	Numbers
(s) Demolition (Steel Reinforcement)	Kilo Grams
(t) Anti-Termite Treatment	Square Meter
(u) Excavation	Cubic Meter
(v) Dewatering	Hour
(w) Backfilling	Cubic Meter
(x) Rubble Soling	Cubic Meter
(y) Concrete	Cubic Meter
(z) Reinforcement	Kilo Grams
(aa) Formwork - Shuttering	Square Meter
(bb) Brick work	Square Meter
(cc) Coursed Rubble Masonry	Square Meter
(dd) Plastering	Square Meter
(ee) Waterproofing	Square Meter
(ff) Flooring	Square Meter
(gg) Cladding , Dado	Square Meter
(hh) Skirting	Running Meter
(ii) Plumbing – Internal , External Pipes	Running Meter
(jj) Sanitary ware	Numbers
(kk) C. P. Fittings	Numbers
(ll) Painting	Square Meter
(mm) Doors with Frame & Shutters	Numbers
(nn) Aluminum Windows	Square Meter
(oo) Structural Steel	Kilo Grams
(pp) Rolling Shutter	Square Meter

Scope of Contract

Civil work:

As per mentioned in the BOQ.

MEASUREMENT CRITERIA

Sl. No.	Description of Item	Unit
	CIVIL WORKS	
	IMPORTANT NOTES:	
1.	The tender rates should include supply of all materials unless mentioned otherwise including the cost of transportation, loading, unloading, stacking and storing and all types of taxes,duties,levies etc. required for execution of work.	
2.	The tender rates shall hold good for all works of every section at all levels, leads and heights including multiple staging/scaffolding wherever required etc. complete. Nothing extra shall be payable unless or otherwise specified	
3	Contractor shall ensure for safety that wherever required during excavation, shoring, strutting etc. Shall be carried out as directed at no additional cost .	
4	Prior to submission of the bid it is advised that Contractor must visit site and acquaint with prevailing site conditions, nothing shall be paid extra on this account.	
5	Lowest of rates quoted under various subheads for similar items covered under scope of tender shall be payable with stringent requirements to be followed.	
6	Nothing extra shall be paid on account of royalty on earth work and construction cess and same shall be to the account of contractor.	
I.	Anti-termite Treatment	
1.	Providing and injecting chemical emulsion for preconstruction anti-termite treatment and creating a chemical barrier under and all-round the column pits, wall trenches, top surface of plinth filling junction of wall and floor along the external perimeter of the building, expansion joints, surrounding of pipes, conduits etc. complete (plinth area of the building at ground floor only shall be measured).	
2.	-Do- Above item in two operation under plinth and backfilling(perimeter of basement retaining wall to be measured at ground level)	Rmt
	Note:	
	The anti-termite treatment shall be got carried through an approved and registered agency and strictly in accordance with IS:6313 Part-II:1981. (Tenderer to state the name of specialized firm). (Contractor shall furnish 10 years guarantee against defects).	
	Checks & Controls at Site:	
	The Contractor shall take the following precautions at site.	
a)	Chemical should be brought in sealed containers Concentration percentage shall be clearly indicated on the container. Date of expiry shall also be indicated on the containers.	
b)	The material so brought shall be safely and securely stored (away from other materials) and shall be under the control of Engineer-in-Charge. The quantity required or particular day based on area shall be issued on written requisition, records of which shall be safety and securely kept.	
c)	If any portion in original container remains unused the same duly sealed shall be returned to store and reissued against when used.	
d)	The empty can should immediately be punctured and crushed so that the can cannot be used for any other purpose. Such destroyed can shall be returned to store for a counter check of inventory and the actual quantum of chemical used.	

II.	Earth Work	
	Rates Quoted Shall Include:	
a)	Clearing shrubs, roots vegetation's from site, surface dressing marking layout of building and fixing permanent grid points with MS/Wooden posts etc.	
b)	Excavation either straight including curved in trenches, foundation rafts etc. cutting and dressing sides and bottom to the true dimensions.	
c)	Refilling back selected excavated earth in plinth sides of foundation in 200mm thick layers ramming and consolidating dressing the filled up area.	
d)	Any dewatering due to rains, subsoil water etc.	
e)	Plain cement concrete (PCC) dimensions shall be measured for payment.	
	Earth work in excavation in foundation trenches or drains (Not exceeding 1.5 m in width or 10 sqm on plan) in Gravelly silty sand/ soil mixed with boulders including refilling in layers watering and ramming the excavated earth excluding boulders in foundation, plinth and under floors and disposal of surplus earth /boulders within factory complex of Vasantdada Sugar Institute disposed earth to be neatly leveled and dressed	
a)	Up to 2 m	Cum
b)	From 2 m to 4 m	Cum
	Earth work in excavation in over areas(exceeding 30 cm. in depth,1.5 m in width as well as 10 sqm on plan) in Gravelly silty sand/ soil mixed with boulders including refilling in layers watering and ramming the excavated earth excluding boulders in foundation, plinth and under floors and disposal of surplus earth /boulders within factory complex of Vasantdada Sugar Institute ,disposed earth to be neatly leveled and dressed	
a)	Up to 2 m	Cum
b)	above 2 m to 4 m	Cum
c)	above 4 m to 6m	Cum
	Earth work in excavation in foundation trenches including disposal of excavated rock as directed within factory complex of Vasantdada Sugar Institute and disposed earth to be levelled and neatly dressed.	
	Extra for every additional lift of 2 m or part thereof	
III.	RCC/Concrete Works	
	Rates Quoted Shall Include:	
a)	Machine mixing consolidating by rodding, vibrating and temping, hoisting all lifts, leads and curing.	
b)	Preparing test cubes, getting tested the same as instructed including fees, cost etc.	
c)	Working up or hacking of concrete surface for providing keys for further concrete finishes.	
d)	All concrete surface shall be fairly even free from honey combing, lose concrete.	
e)	Forming hole, openings and re-concreting at later stage if required.	
f)	Leaving construction, expansion, dummy joints wherever directed.	
g)	Building in or embedding ends of precast joints and other units as shown.	
h)	Cement shall be PPC/OPC 43 grade unless specified otherwise.	
	(Reinforcement to be paid separately.)	
	Extra for using cement concrete of M-30 grade instead of M-25 grade in RCC work.	Cum
	Deduct for M-20 conc. In place of M-25	Cum
	Note: Slab to be vacuum dewatered only by adopting approved system.	
	Making expansion joint in between slab/column /beam and wall as shown in the drawing with the following specifications.	
	Note:	
	All expansion joint works to be executed through approved specialized agency.	
	Making isolation joint between wall and non-suspended slab as shown in the drawing with the following specifications.	

IV.	Reinforcement	
	Rates Quoted shall include:	
a)	All reinforcement work (TMT high yield strength bars) in any position including cutting, bending, hoisting and fixing at any level.	
b)	Removing rust, oil scales, oil grease, paints etc.	
c)	Wastage due to cutting bars to required lengths.	
d)	Cost of 16 gauge annealed binding wires.	
e)	Providing concrete cover blocks to steel	
f)	No allowance shall be made for rolling margins wastages.	
g)	No wastage shall be paid and amount shall be made on actual length as per standard weight basis specified by ISI.	
V	Brick Work	
	Rates Quoted shall include:	
a)	Work in English bond or any other bond or design as directed by the Architect.	
b)	Embedding Electrical conduits, boxes, hold fasts of doors, windows, sanitary and water supply pipes and an fixtures or inserts.	
c)	Raking out joints for plastering or painting.	
d)	All scaffolding, ladders, platforms, staging, tools and plant required in the execution of work.	
e)	Hacking and roughening of concrete or other surfaces in contact with brick / masonry for bondage.	
f)	Leveling up and preparing tops of walls for damp proof courses, precast units etc.	
	Providing and laying half brick 115 mm thick wall in C.M. 1:4 with 75mm thick R.C.C.1:2:4 band (Patti) at every 1m intervals with 2 No 8 mm dia. Tor steel bars including scaffolding, raking of joints for plastering, watering etc.	Sq.m
	Deduct for not providing Reinforcement in above item	Sq.m
VI.	Steel Work	
	Extra for providing and making grill in item of rolling shutter.(Area of grill to be measured for payment)	Sqm
	Extra for providing mechanical device chain and crank operation for operating rolling shutters exceeding 10.00 Sq.m and below 20 Sq.m in area.	Sq.m
	Extra over for providing Electrically operated mechanical device for operating rolling shutters exceeding 10.00 sq.m and below 20 sq.m in area.	Sq.m
	Providing and fixing mild steel angle nosing made up of angle fixed in concrete with lugs all complete including painting with two or more coats of synthetic enamel paint over a coat of zinc chromate steel primer as shown on drawing.	Kgs
	Providing and fixing special type non rusting inserts of high tensile steel (The design of inserts shall be provided by consultant).	
a)	1.00 Ton capacity	Each
b)	1.5 ton capacity	Each
VII.	Structural Steel	
	Supplying, carrying, fabricating and erecting in position mild steel structure, preparation and getting reviewal of fabrication drawings and supply of necessary prints, straightening if required, cutting to required size, bolting and/or welding of joints, painting with one coat of red oxide zinc chromate primer, fixing in line or level with temporary staging complete for rolled steel sections in purlins, side runners, beams, mono rails, single columns etc. for all depths and heights. (All structural steel work shall be in compliance with latest IS code 800/2062/814/823/ 1367/1601/2016).	M.T.
	- Do - same as item No.1 above but using rolled sections and plates in fabricating built up and compound structural steel beams, columns, roof trusses, trussed girders, trussed purling etc.	M.T.
	Supplying, fabricating and fixing in position M.S. inserts, fabricated from bolts, nuts, angles, holding down bolts, anchor plates, cleats, splicing's or the like. The unit price includes the cost of cutting, bending, drilling and bolting etc. with all tools, tackles and labour as per drawing and design. The unit price also includes the cost of providing and applying two coats of synthetic enamel painting over a coat of primer, both of approved quality and making good the concrete surfaces, if required.	MT

	Steel work welded in built up sections/frames including cutting hoisting, fixing in position by suitable means and applying zinc chromate steel primer complete	
a)	In railings, gratings, frames, grills, ladders, guard bars, brackets, gates and similar	MT
b)	In covers over cable trenches of MS chequered plate with stiffeners of MS section flats etc. welded to the plate complete as per drawing, including applying a coat of steel primers and making lifting arrangement with MS ring as per drawing and/or as directed.	MT
c)	In pipes/tubular members	MT
d)	Welded wire mesh of 50x50x13 G including welding with structural steel framework and door opening.	Sqm
	Providing and fixing UV stabilized UPVC rain water (SWR) pipe with one end plain and other end socketed with injection moulded/fabricated fittings such as tees, bends, doors etc. and provided with square grooved and along with V shaped rubber ring including making good wall and flooring wherever necessary. The wall thickness of the pipe and other technical characteristics shall be conforming to IS: 13592/92 Type A .The jointing to be completed with rubber lubricant.	
a)	110 mm OD	Meter
b)	160 mm OD	Meter
c)	200 mm OD	Meter
d)	265 mm OD	Meter
	The pan shall be stiffened by using small ribs. by means of galvanized polymer coated self-drilling self-tapping fasteners (12-14x55) thru the crust. The sheets shall be in custom lengths for a maximum of 12 mts.	Sqm
VIII.	Waterproofing Works	
	Note :	
	The above treatment is to be carried out by a specialized agency with the approval of the Consultant and shall be guaranteed fully effective for a period of ten years. Notwithstanding this, the responsibility of the effectiveness of the treatment shall be fully, entirely and unqualifiedly be that of the main contractor for the work.	
IX.	Wood Work	
X.	Aluminum Work	
	Note:	
(1)	Architectural drawings showing elevation of doors shall be issued by Architect. The contractor shall submit the fabrication drawing for approval to the Architect before fabrication.	
(2)	Weight of Aluminum section per Sq.m shall be calculated based on approved drawing and payment shall be released accordingly.	
a)	Single leaf door	Sq.m
b)	Double leaf door	Sq.m
c)	Fixed portion of composite door	Sq.m
	Aluminium windows/glazing should be procured from approved manufacturer as approved by the Architect, having weight of aluminium section as mentioned (approx.) approved structural silicone sealant to be applied on exposed to weather openings.	
	Notes:	
i)	Architectural drawings showing elevation of windows/glazing shall be issued by Architect. The contractor shall submit the fabrication drawing for approval to the Architect before fabrication.	
ii)	Weight of aluminium section per sq.m shall be calculated based on approved drawing and payment shall be released accordingly.	
5	Extra for toughening of glass	Sqm
6	Add or Deduct for weight of the aluminium sections being higher or lower than the specified weight.	Kgs.
	a)Frameless glazing.	Sq.m
	b) Frameless door with complete hardware fittings such as stainless steel door handle/floor spring /locks etc. All of approved design/make including provision of accessories.(appx opening size 2mx2.1 m)	Sq.m
a)	Above item using 6mm Bronze/grey/green reflective hard coated toughened glass.	Sq.m

b)	Above item using 6mm clear reflective high performance Low-E toughened glass.	Sq.m
d)	Deduct for plain glass in place of reflective glass in above item at sr.no.a)	Sq.m
	Extra over item of curtain/structural glazing above for providing and fixing of openable window/door including providing and fixing of two point locking handles of approved design, heavy duty aluminium approved quality hinges with concealed 4 points peg stay of aluminium or heavy duty friction stay of Earl Bihari or approved equivalent make suitable to withstand the required wind pressure and shutter loads all fittings and fixtures to be concealed except hinges/stay and handle, complete in all respects. with necessary hardware's and fittings. Such as friction hinges, lockable handles etc. of approved make	Sq.m
	Providing & fixing cill and jamb flashing using 2mm thick 50-micron polyester powder coated aluminium sheet of approved color cut and bent in shape as shown on drawing and fixed to curtain wall & structure with Stainless steel screws complete.	Sqm
	Aluminium Metal Cladding	
	(Rate should be quoted considering enclosed particular specifications and provision of openable access panels for services wherever required.)visible surface area shall be measured for payment.	
	With weather silicon Dowcorning/GE sealant, non-streaking /staining weather sealant.	
	using Reynobond or approved equivalent.	
	a) On curved or straight/sloping/curved surfaces including cill and jambs.	Sqm
XI.	Flooring	
	Note: All marble/stone /ceramic tiles shall be got approved prior to procurement. Basic rates wherever indicated are cut to size delivered on site including taxes. The variation in approved F.O.R. site cost and 5% on account of wastages on difference amount shall be payable	
	Rates Quoted shall include:	
a)	Cleaning and leveling sub-grade, sub-floor and preparing the same.	
b)	Laying floors to required slope, alternate bays in any size and shade making patterns as per design providing wooden side forms.	
c)	Making expansion joints, curing all complete.	
d)	Finishing the edges of electric fittings, boxes etc.	
e)	Cleaning paint splashes, dirt, glass joinery including washing the floors and leaving the premises neat and clean.	
f)	Materials or samples shall be approved by the Architect/Vasantdada Sugar Institute before fixing.	
g)	Cutting, rubbing and polishing floors where applicable.	
h)	Work in narrow widths at all heights and locations unless otherwise mentioned.	
	Extra for nosing in treads of	RM
	Extra for flooring in steps and treads not exceeding 30cm in width.	Sqm
XII.	Finishing	
	Rates Quoted shall include:	
a)	Materials or samples shall be approved by the Architect / Vasantdada Sugar Institute before fixing.	
b)	Finishing the edges of electric fittings, boxes etc.	
c)	Use of scaffolding, trestles, ladders etc. necessary for execution of work and for inspection.	
d)	Provision of chicken wire mesh 300mm wide at junctions of brick work and concrete.	
e)	Materials or samples of different colours and shades shall be approved by the Architect/Vasantdada Sugar Institute before applying.	
f)	Finishing the edges of electric fittings, boxes etc.	
g)	Cleaning painting splashes, dirt, glass, joinery including washing the floors, windows and cleaning premises neat and clean.	
h)	Putting, sand papering and dusting of surface in between coats where applicable.	
I)	Work on cornices, narrow widths, bands etc.	
j)	Use of scaffolding, trestles, ladders, cradles etc. necessary for execution of work and for inspection.	

	Miscellaneous	
	Providing and fixing 150mm wide chicken wire mesh 24 gauge and 20 mesh at junction of RCC and masonry works, including fixing in position and nails of 25mm length required gauge and at required distance as directed by the Engineer.	Sqm.
	Dismantling of R.C.C. concrete of any mix including cutting of reinforcement at all levels and heights and disposal of debris as directed. (Reinf. steel shall be property of client)	Cum
	Making cutout/openings in brickwall of any size and making good the same	
	a) 230 mm thick wall	Sqm
	b) 115 mm thick wall	Sqm
	Chipping of concrete of any mix at any level and position and removal of rubbish out of complex as directed.	
	a) up to 10 mm deep	Sqm
	b) up to 25 mm deep	Sqm
	c) up to 50 mm deep	Sqm
	Dismantling of brick work with /without plaster at all levels and heights and disposal of debris out of complex as directed .	Cum
	Cutting and removal of structural steel at all heights and levels and placing at ground level as directed	MT
	False Ceiling	
	Rates Quoted shall include:	
	a) Providing 4 mm thk. commercial plywood at spot light location in ceiling above tiles to avoid sagging.	
	b)Cut outs for AC Diffusers/Grills/Trap doors with frame and opening and locking arrangement etc.	
	c)Tiles spares (at 600x600 mm light locations) to be submitted with Vasantdada Sugar Institute/client. No deduction for same in measurements.	
	Note	
1.	For light, fitting, grills diffusers, trap doors etc. cutouts have to be made with the frame.	
2.	Steel shall be roll formed.	
	Fire Rated Ceiling / Doors	
	All components shall be installed to manufacturer's instructions to meet the performance criteria of stability, insulations and integrity in accordance with BS 476 : Part 22 : 1987.	Sqm
	FIRE RATED GLASS (VIEWING PANELS IN FIRE RATED DOORS)	
	PANIC EXIT DEVICES	
	Providing and fixing of Briton/ Monarch/ Von Duprin fire rated single / double leaf panic exit devices tested in accordance with BS EN 1125: 1997 & BS EN 179: 1997, EN 1670 (Corrosion Resistant), & BS 476 Part 22 (for fire rating) with 5 years warrantee.	
a)	Single Leaf	Each
b)	Double Leaf	Pair
	DOOR CLOSER	
	2 HR. FIRE RATED DOOR (3 CRITERIA)	
a)	With 2nd Class Teak Wood Frame & Laminate	Sqm
b)	With hard frame & commercial ply facing.	Sqm

APPROVED MAKES**Civil, Interior, electrical & UPS wiring, Raceways, plumbing,**

Sr.no.	Component	Approved Make
CIVIL WORKS		
1	Steel (TMT 500 D) / Steel Structure	TISCO, SAIL, JINDAL
2	Flush Doors	Anchor , Sitaboard, Jwala, Prakash, Swastik
3	Waterproofing Cement Paint	Supersnocem, Durocem, Asian, paints
4	Sheet Glass	SAINT – Gobain, Modifloat
5	Glazed/ Ceramic Tiles (1st quantity)	Asain, Kajaria, Johnson, Bell, Ceramic
6	Aluminium fittings	Crown, Everite, NU-LITE, Classic, Nitco, Hindustan
7	Bitumen impregnated fibre board for expansion joint	Shalimar Tar Products
8	Chemical used for anti-termite treatment Chloropyrifos emulsifiable concentrate 1% as per standard IS : 8944	MONTARI IND LTD. or DURSANT C-DE NOCIL LTD.
9	Extruded aluminium sections	Jindal
10	Rolled steel door	AGEW
11	Brass powder coated hardware	JORODS, Earl – Bihari, Palladium, Golden,
12	Expansion joint board	Llyod Insulations, Shalimar Tar Products
13	Door spring	Ozone/ Dorma
SANITARY/PLUMBING & EXTERNAL DEVELOPMENT WORKS		
Sr.No	Component	Approved Make
1	Vitreous China Sanitaryware	Hindware / Parryware / Hindustan Sanitary ware/ Toto / Jaquar
2	CP Fittings	Jaquar/GEM/Parko/MARC
3	CP Accessories, waste fittings	ESS ESS / Lotus / Orient
4	Tower rail	Lauret / Parko / Dripless/ Jaquar
5	Liquid soap dispenser	KIMBERLI /Clark / Parko / Dripless
4	Soil waste & RW pipes & fittings	
4.01	a) Sand Cast	RIF
4.02	b) PVC Pipe	FINOLEX / SUPREME / PRINCE
4.03	GI Pipes/MS Pipes	TATA / Jindal Hissar
4.04	GI Fittings	RM Engineering works / KS Engineering Works / Jindal / Tata
5	Ball valves (Bronze)	Leader / Zoloto / RC
6	Gunmetal valve & cocks	Leader / Zoloto / Sant
7	CI S/S Pipes	Kesoram / Electro steel
8	CI Double flanged Sluice valve/non-return valve	Kirloskar / IVC
9	Butterfly valve	AUDCO / C & R / IVC
10	Clear water pumps	Crompton / Kirloskar
11	Motor	Crompton Greaves / Kirloskar / Siemens / Bharat Bijlee
12	Sump Pumps	Grundfos
13	RCC pipe	India Hume Pipe (Np2)
14	Manhole cover	RIF
15	PVC moulded tank	Sintex

INTERIOR WORKS		
Sr.no.	Item Description	Approved Makes / Brands
1	Adhesives	Fevicol SH, Araldite of Ciba Geigy,
2	Aluminum Composite Panel (ACP)	Aluco bond, Euro Bond
3	Aluminum Sections	Jindal, Indal, Bhoruka or As per existing
4	Anchor Fastener	Fischer, Hilti
5	Artificial Leather	National Leather Cloth Mfg. Co., Bhor, Baron, Stanley Leather, Spinney beck
6	Blinds	Vista Levolor, Hunter Douglas, Louverline
7	Boards :	
7.01	Commercial Block Board	Anchor, Kenwood, Guna, Unitex
7.02	Marine Block Board	Anchor, Kenwood, Guna, Unitex
7.03	Calcium Silicate Boards	Ramco, Hilux
7.04	Cement Board	Bison, Eternit, Everest
7.05	Gypsum Boards	India Gypsum, Boral
7.06	High Density Fiber Board	Novopan, Duratuff
7.07	Medium Density Fiber Board	Nuwud, Duratuff, Merino-Century, Euro
7.08	Plain Fiber Cement Board	E-Board, E-board ply plus
7.09	Plain Particle Board	Novopan, Eco board, Bhutan board,
7.1	Pre-laminated Particle Board	Novopan, Bhutan board, Eco board, Green Lami-board
7.11	Pre-primed, self-embossed, reinforced design board	E-board classic, Eternit, Everest
7.12	Soft Board	Jolly Board, Nucon
7.13	White Board	Glass type
7.14	Writing Board	White Mark, Alko Sign, Fixograph, Altop, Alcon
8	Carpet	Roya, Shaw, Mohak
9	Castors	Pitroda, Rexello
10	Cavity Flooring	Titan, United Installations
11	Cement	
11.01	Normal Cement (OPC / PPC 43 grade)	ACC, Gujarat Ambuja, Ultratech, Birla
11.02	White Cement	JK Cement, Birla
12	Ceilings :	
12.01	Metal False Ceiling	Armstrong
12.02	Mineral Fibre Ceiling	Armstrong, India Gypsum
12.03	Stretch Ceiling	Barrisol, Lexan
13	Compactors / Lockers	Godrej, Steelage, Safeguard, Svil, Kompress, Merino
14	Drawer Channels	Efficient Gadgets, Mepla, Blum, Hafele Hateiz, Earl Behari
15	Fabric protection	Scotchguard of Birla 3M.
16	Film Works	3M, LUMAR
17	Fire Doors	Shakti-met, Pro-mat, Godrej, Abacus
18	Floor Spring / Door Closer	Ozone, Dorma
19	Geysers	Racold, Solidray
20	Glass	Modifloat, Saint Gobain
21	Glass Mosaic Tiles	Glass Italia, Bissaza
22	Glass wool	Fiber Glass Pilkington, Twiga
23	Hand Dryers	Askcon, Automats, Kimberly Klerk

24	Handles	Kich, Neki, Dorma, Ozone
25	Hand Rails	Neki, Ozone
26	Hinges :	
26.01	Brass Oxidized Hinges	Magnum, Gard, Unionm, Icon
26.02	Stainless Steel Hinges	Magnum, Gard, Union, Dorma, Hafele, Mepla, Magnum,Icon
27	Kitchen Accessories	Ebco
28	Laminates :	
28.01	Laminates 1mm & 1.5mm	Greenlam, Royaltouch, Uro
28.02	Metallic Laminate	Metallino, Merino, Greenlam
29	Light Weight Concrete Blocks	Siporex, Aerocon, BILT,
30	Locks :	
30.01	Dead Locks	Neki, Dorset, Ozone
30.02	Mortise Locks	Neki, Dorset, Ozone
31	Magnetic Ball Catches	Union, Ebco, , Dorset, Hettich
32	Mirrors	Modi Float, Asahi, Saint Gobain
33	Paints :	
33.01	Cement Paint	Snowcem, Nitcocem, Sandtex, Berger
33.02	Fire Retardant Paint	Fire Tard, Promat
33.03	Paint	I.C.I. (Dulux – Duco),Asian Paints, Nerolac, Berger
33.04	Texture Paint	Spectrum, Jotun, Oikos
34	Patch Fittings, Point Fittings	Dorma, Hafele', Casma, Mepla, Ozone
35	Paver Tiles	Pioneer, Ultra, Eurocon, Duracrete
36	Pest Control	PCI
37	Pipes :	
37.01	Cast Iron Pipes	Neco, BIC, BLC
37.02	Galvanized Iron Pipes	Tata, Zenith, Jindal
37.03	PVC Pipes	Finolex , Supreme, Prince
37.04	PPR Pipes	Supreme, Prince
38	Plywood :	
38.01	Commercial Plywood (Full gurjan)	Greenply, ArchidPly, Samrat, Century, Uro, Sharon, Kenwood,Goyal
38.02	Marine Plywood	Greenply, ArchidPly, Samrat, Century, Uro, Sharon, Kenwood,Goyal
38.03	Flexible Plywood	Anchor-Flex, Century, Greenply
39	Revolving Doors	Dorma, Manusa, Kaba
40	Robe Hook	Jaquar, Neki, Technocrat
41	Sanitary Fittings	Jaquar, American Standards, Hans Grohe
42	Sanitary Fixtures	Hindware, Parryware, American Standards, Toto, Duravit
43	Screws	Phillips, GKW
44	Sensors for urinals	AOS, Askon
45	Silicon Sea lent	Dow Corning
46	Sinks	Franke', Nirali, Blanco German sinks, SS Utilities
47	Soap Dish Holders	Jacquar, Neki,
48	Soap Dispensers	Jacquar, Kimberley Clark, Askon, D-line

49	Sound Soak Panels	Anutone, Armstrong
50	Stainless Steel Sheets	Rimex, Jindal, Selam
51	Tiles :	
51.01	Ceramic Tiles	Kajaria, Bell, Nitco, Johnson, Asian
51.02	Vitrified Ceramic Tiles	Bell, Marbonite, Euro, Restile, Kajaria, Nitco, Asian
52	Toilet Paper Holder	Jacuar, Neki, , Kimberley Clark, D-line
53	Towel Rail	Jacuar, Neki, , D-line
54	Tower Bolt / Stoppers	Godrej, Union, Ebco, Dorma, D-line, Ozone
55	Veneers	Anchor, Century, Archid, Green-Deco, Green-ply, Uro, Truwud , Euro
56	Vinyl Flooring	Armstrong, Wonder Floor, Tusker, Floor master, , LG, DG
57	Water Proofing Compound	Roffe, Fosroc, Ciko, Sika, Kemperol
58	Wood Preservatives	Bison by British paints, Woodguard, Termiseal.
59	Natural Wooden Flooring	Pergo, Domino, Ego
60	Metal Partitions	Rinac, Clestra
61	Aluminium Coving	Rinac, Clestra
62	Drop Seal	Enviroseal or Equivalent

Electrical,

1.	M.V Panel	Accusonic Controls / Acquiline Control / Classic Electricals
2.	1.1kV grade AYYF Cables	Polycab /Vishal
3.	PVC insulated (FR) wires (ISmark)650V grade	Polycab/Finolex
4.	Telephone cable / wires	Polycab/Finolex
5.	Cable termination, Glands, Lugs	Dowell's or equivalent
6.	PVC conduit (Heavy gauge) (I.S.I. mark) & Accessories	Precision/ Presto-Plast
7.	M.C.B., ELCB & D.B.	Legrand or equivalent
8.	Metal clad plug and socket	Legrand or equivalent
9.	Switches / Sockets & Modular Plates	Legrand – Mylicn or equivalent
10.	Holders & Ceiling Rose	Anchor / Vinay
11.	Lighting fittings & Fixtures	Etamax/Wipro/Bajaj
12.	Exhaust Fan	Almonard/Bajaj

Special Attention of contractor for Execution

Procurement of Material

- 1) Only Aluminum wall form shuttering allowed for all RCC items.
- 2) Institute will not supply any material for execution of work such as cement Tor Steel, Asphalt / Ready mix concrete etc. The contractor has to arrange the same from his own source.
- 3) More than two approved makes have been mentioned but preference will be given for make at first number only. In case of non-availability of first make, preference for 2nd, 3rd make will be given. The contractor should approach civil Engineer with documentary evidence for non-availability of first make. Considering the factual position permission to use 2nd / 3rd make shall be given.
- 4) The quality of the material brought to the site by the contractor should be verified through the various tests provided as per relevant Indian standards at the cost of the contractor.
- 5) The price variation will be considered only for Cement, Reinforcement steel bars and Structural steel considering the basic rates as mentioned below

Sr. no.	Item	Basic Rate
1	CEMENT RATE PER M. TON	Rs. 6,000/-
2	TOR STEEL TMT FE 500 PER M. TON	Rs.61,000/-
3	STRUCTURAL STEEL PER M. TON	Rs.62,575/-

If there is variation in rate more or less than 5% (+/-) difference will be paid or deducted from bill. (Wholesale market rates are only considered on the basis of production of documentary evidence from the manufactures i. e. Tax invoice).

- 6) The contractor shall construct shed / sheds at his own cost and as per direction of Engineer-in-charge for storing the material brought by him and provide do locking arrangement, one lock shall be in the charge of departmental person and material shall be taken for use in presence of the departmental person only.

SEPCIFICTION OF MATERIALS

Sr. No.	Name of material	Make
1	Cement 43 Grade	A.C.C./ Birla Super/ Ultratech
2	Sand	River sand (Good quality)
3	Crush Sand	VSI grade (Wash sand)
4	Metal	3/4 "(Good quality)
5	Reinforcement steel	TMT Fe 500 (Tisco)
6	Structural steel	SAIL, Rashtriya Ispat Nigam, TATA
7	Barbed wire	G.I. wire & Barbs of 12 Gauge , distance between two Barbs @ 3" c/c TATA Make
8	RCC Pipes	ISNP 2 Class
9	Apex paint	Asian Paint

General Conditions of Tender

Name of Work: Construction of Foundation for Digesters in Bio Digester Demo plant at Manjari.

Online e-tenders (percentage rate) are invited from reputed / registered contractors for the above said work as per following details....

1. Estimated Cost: Rs. 5,95,915.59 + GST
2. Time for completion : 3 months from the date of work order
3. Earnest Money: Rs. 6,000.00 (Rupees Six thousand only) in favor of Vasantdada Sugar Institute.
4. Retention Money: 5% of value of the tendered cost. 4% will be deducted from R.A. Bills, 50% will be refunded after virtual completion certificate & balance after defect liability period. (The completion certificate should be obtained by the Contractor from the Architect / Civil Engineer from VSI)
5. GST will be paid as per declared by the government
6. Sealed tenders shall be submitted to the office of the Vasantdada Sugar Institute, Manjri, Pune on upto 5.00 pm
7. The work is to be completed within given time period of 3 months otherwise 1% of contract value per week will be deducted as penalty and maximum penalty will be 10% of acceptance tender amount.
8. Defect liability period: 12 months after completion
9. Minimum value of interim bill: 25 % of contract amount

We are pleased to quote our best rate for Construction of Foundation for Digesters in Bio Digester Demo plant at Manjari

Our Quoted rates are % Below / Above to estimated cost

(Rupees

..... Only)

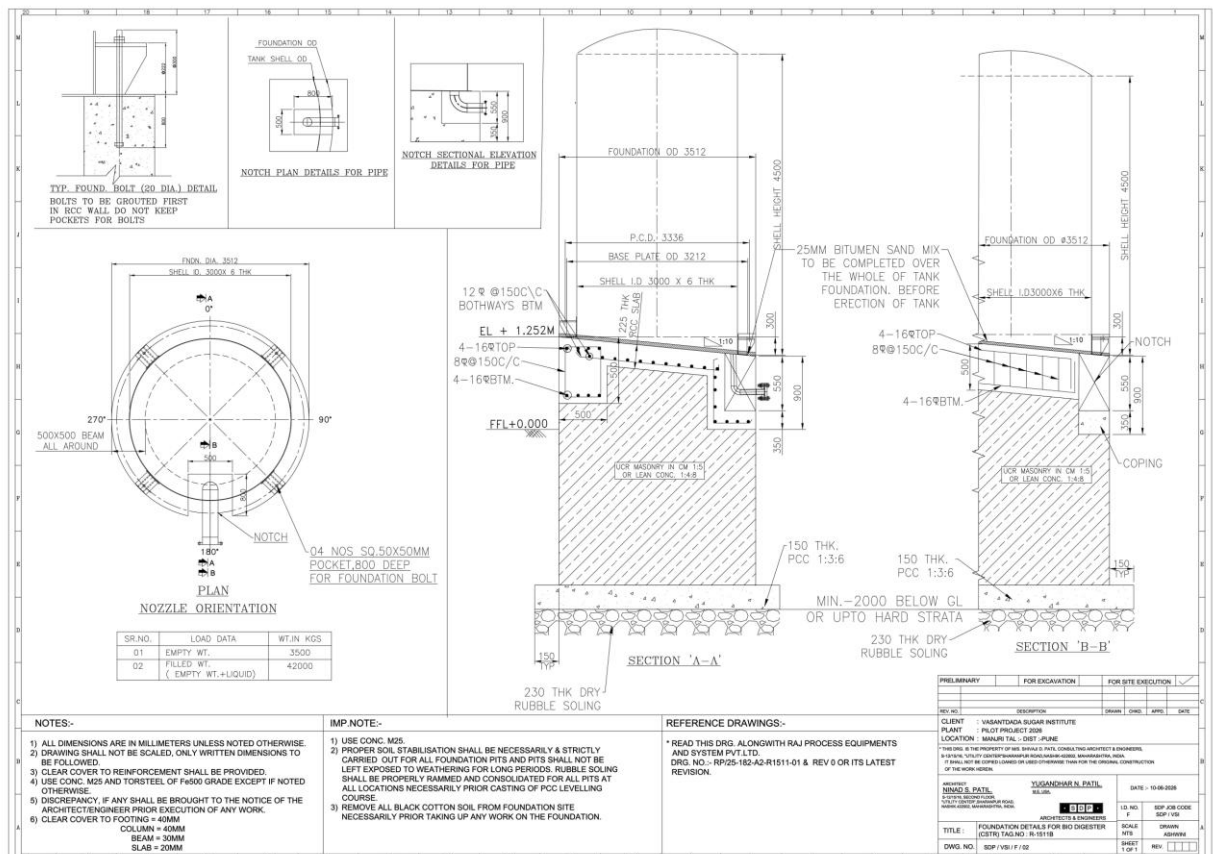
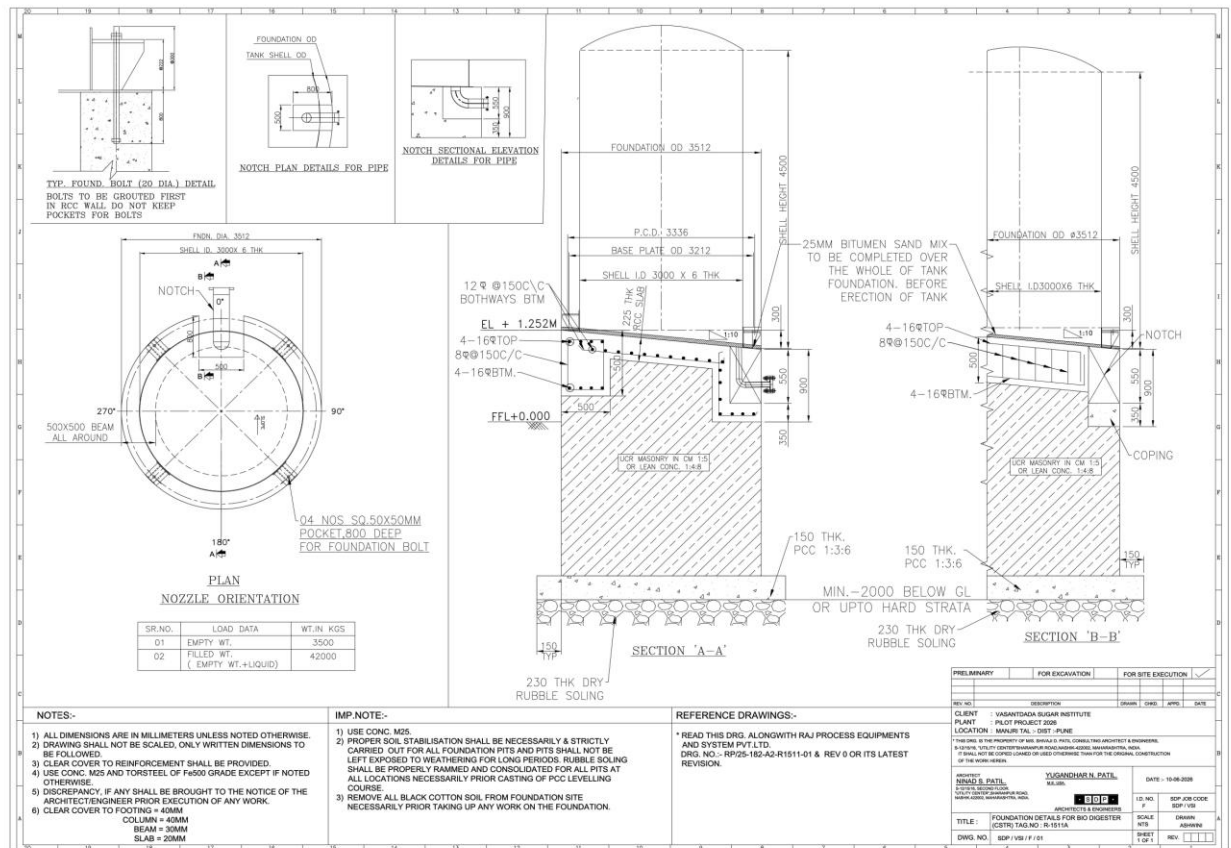
Thanking you

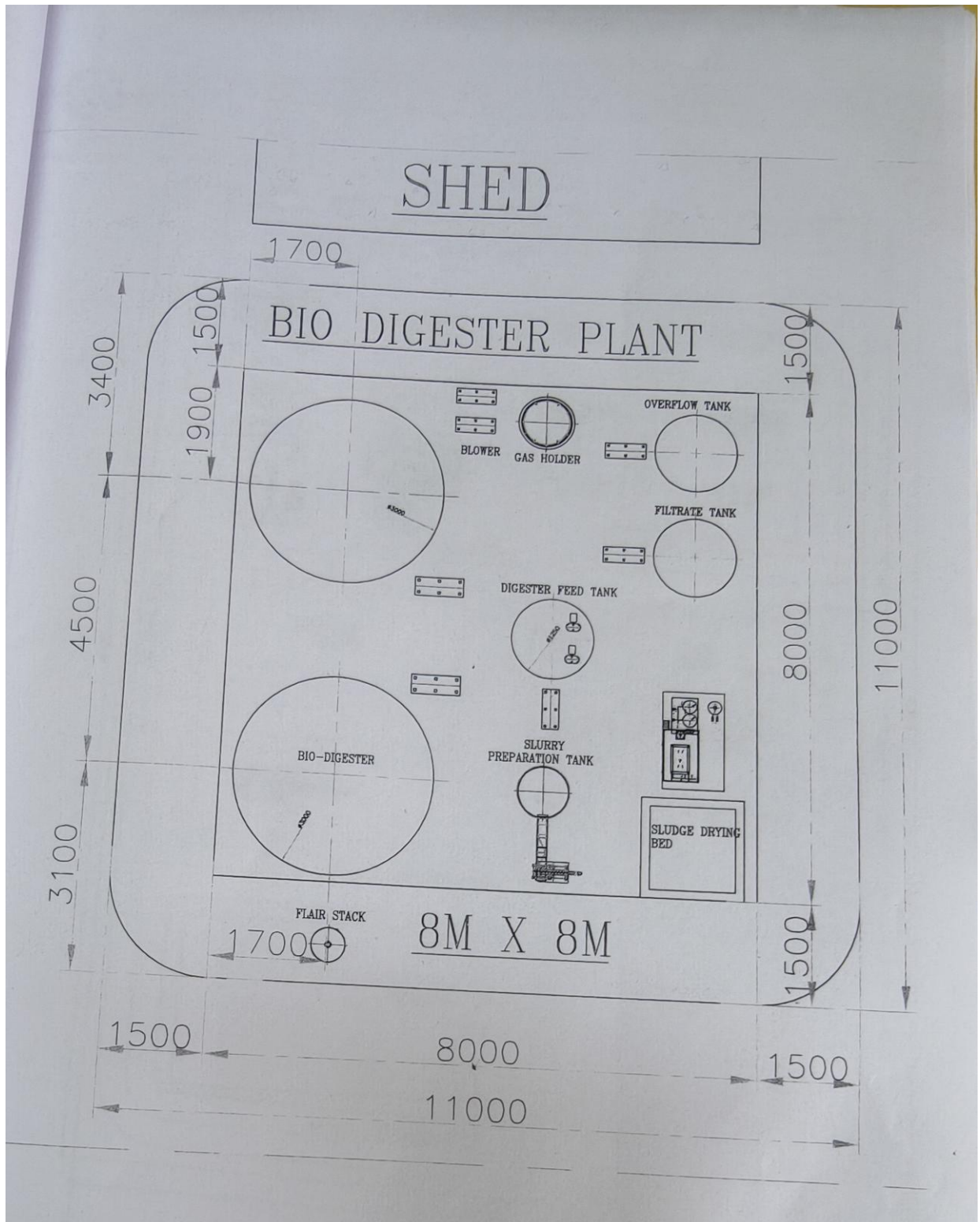
Contractor's Signature

Director General

Abstract Sheet					
Name of work:- Construction of Foundation for Digesters in Bio Digester Demo plant at Manjari.					
Sr No	Item Description	Qty	Unit	Rate	Amount
1	Excavation for foundation in earth, soil of all types, sand, gravel and soft murum , including removing the excavated material up to a distance of 50 m. beyond the building area and stacking and spreading as directed, dewatering, preparing the bed for the foundation and necessary back filling, ramming, watering including shoring and strutting etc. complete. (Lift upto 1.5 m.) By Mechanical Means	45.000	Cum	215.18	9683.10
2	Providing and laying Cast in situ/Ready Mix cement concrete in M15 of trap/ granite/quartzite/gneiss metal for foundation and bedding / steps including steel centering, formwork, laying/pumping, compacting, roughening them if special finish is to be provided, finishing uneven and honeycombed surface and curing etc. complete. The Cement Mortar 1:3 plaster is considered for rendering uneven and honeycombed surface, only. Newly laid concrete shall be covered by gunny bag, plastic, tarpaulin etc. (Wooden centering will not be allowed.),with fully automatic microprocessor based PLC with SCADA enabled reversible Drum Type mixer/concrete Batch mix plant (Pan mixer) etc. complete. With fine aggregate (Crushed sand VSI Grade	4.000	Cum	6977.57	27910.28
3	Providing uncoursed rubble masonry of trap / granite / quartzite / gneiss stones in cement mortar 1:6 in foundation and plinth of inner walls / in plinth of external walls including bailing out water manually , striking joints on un exposed faces and watering etc.complete.	60.000	Cum	5845.62	350737.20
4	Providing sand faced plaster externally in cement mortar using approved screened sand, in all positions including base coat of 15 mm thick in cement mortar 1:4 using waterproofing compound at 1Kilogramper cement bag curing the same for not less than 2 days and keeping the surface of the base coat rough to receive the sand faced treatment 6 to 8 mm thick in cement mortar 1:4 finishing the surface by taking out grains and curing for fourteen days scaffolding etc.complete.	30.00	Sqm	677.32	20319.60
5	Providing and applying two coats of exterior acraylic emulsion paint confirming to corresponding I.S. of approved manufacture and of approved colour to the plastered surfaces including cleaning ,preparing the plaster surface, applying primer coat ,scaffolding if necessary , and watering the surface for two days etc complete.	30.000	Sqm	271.31	8139.30

6	Providing and laying Cast in situ/ Ready Mix cement concrete in M-25 of trap/ granite/ quartzite/ gneiss metal for R.C.C. beams and lintels as per detailed designs and drawings or as directed including steel centering, formwork, cover blocks, laying/pumping, compaction and roughening the surface if special finish is to be provided and curing etc. complete. (Excluding reinforcement and structural steel). with fully automatic micro processor based PLC with SCADA enabled reversible Drum Type mixer/ concrete Batch mix plant (Pan mixer) etc. complete. With fine aggregate (Crushed sand VSI Grade)	6.000	Cum	13302.42	79814.52
7	Providing and laying Cast in situ/ Ready Mix cement concrete M-25 of trap/ granite / quartzite/ gneiss metal for R.C.C. slabs and landings as per detailed designs and drawings including steel centering, formwork, cover blocks, laying/pumping, compaction finishing the formed surfaces with cement mortar 1:3 of sufficient minimum thickness to give a smooth and even surface or roughening if special finish is to be provided and curing etc. complete, (Excluding reinforcement and structural steel). with fully automatic micro processor based PLC with SCADA enabled reversible Drum Type mixer/ concrete Batch mix plant (Pan mixer) etc. complete. With fine aggregate (Crushed sand VSI Grade)	2.500	Cum	15032.15	37580.38
8	Providing and fixing in position TMT - FE - 500 bar reinforcement of various diameters for R.C.C. pile caps, footings, foundations, slabs, beams columns, canopies, staircase, newels, chajjas, lintels, piers, copings, fins, arches etc. as per detailed designs, drawings and schedules. including cutting, bending, hooking the bars, binding with wires or tack welding and supporting as required complete.	0.600	MT	93381.73	56029.04
9	Providing and applying Bitumen VG30/VG40 layer at 2 Kilogram. per One Square Meterr over the terrace, structural slab including cleaning the surface for waterproofing as directed complete	22.000	Sqm	259.19	5702.18
			Total Amount Rs.		5,95,915.59





TECHNO-COMMERCIAL BID

BID DOCUMENTS

S No.	Document Name	Document Details
1	Company profile *	
2	GST Registration Certificate *	
3	PAN CARD *	Soft copy of Pan Card
4	List of Plant & Machinery *	
5	List of Technical Staff *	
6	Income Tax return certificate for last three years *	
7	Solvency certificate *	Bank solvency certificate of Rs. 5.00 lac
8	Completion certificate of at least two similar type of works of same magnitude during last two years *	
9	PWD Registration/ZP Registration Certificate *	Class VII and above
* - Indicates Mandatory Document to Fill (to participate in tender)		

ITEM DETAILS

S. No.	Item Code	Item Name	Category	Qty. Req.	Unit	Version	Specification	Drawing	Documents Req. from Vendors	Comments
1	01-03-057 *	JOB WORK ITEMS<>GENERAL JOB WORK<>CONSTRUCTION OF FOUNDATION FOR DIGESTERS IN BIO DIGESTER DEMO PLANT AT MANJARI.	JOBWORK	01.00	JOB	0	No	No	No Documents Selected	N.A.
* - Indicates Mandatory Item to Quote (or to participate in tender)										

PRICE BID**BID DOCUMENTS**

S.No.	Documents Name	Document Details
1	Soft Copy of Quotation *	

FORMULA DETAILS

Category Name	Formula
JOBWORK	PERCENTILECOST

Price Schedule : JOBWORK

Sr. No.	Percentile Cost(in Number)	Total
---------	----------------------------	-------