GUJARAT BIOTECHNOLOGY UNIVERSITY

Name of Work: Construction of Compound wall for 23 Acre land allotted to GBU, Gandhinagar

Gujarat Biotechnology University
GIFT City road, Nr. GIFT City,
Shahpur Village, Gandhinagar - 382355
Phone:9909957407
Email: info-gbu@gujarat.gov.in
Website: https://gbu.edu.in/index.php

Tender Notice

Tender Notice :-GBU/CONSTRUCTION-01/2023
Date: 24/03/2023

GBU/ADM/CONS/2023-24/01 Date:24/ 03 /2023

To,
XXXX
XXXX
XXX

Sub: Request for proposal Construction of Compound wall for 23 Acre land allotted to GBU, Gandhinagar.

Dear Sir,

Online E- tenders are invited for the work as described in the enclosed BOQ. The bids can be filled in through (n) procure website: https:// www.nprocure.com period from 24.03.2023 to 14.04.2023.

Bidders to submit tender Fee & EMD Rs. **15000/+ 18% GST- (i.e. Rs 17700/-) & 7,50,000/-** respectively in the form of Demand draft of Nationalized Bank/scheduled bank to be drawn in favour of Gujarat Biotechnology University, payable at Gandhinagar.

The sealed cover of physical documents shall be super scribed: **"Construction of Compound wall for 23 Acre land allotted to GBU, Gandhinagar"**.

The Pre-bid meeting is scheduled on 03.04.2023 at 4:00PM. The bidder shall submit their quires at info-gbu@gujarat.gov.in latest by 02.04.2023.

Agencies having adequate experience in the work of similar type and scale will only be considered.

**Similar Project shall mean: Projects involving construction works for any building and/or infrastructure project.*

Terms & Conditions:

1) The rates quoted shall include all taxes, levies, transportation and delivery at site.
2) The agency at his own cost shall replace any rejected material.
3) The rates quoted shall be valid for at least 12 months from the last date for the submission of tender.
4) Order may not be placed for all items.
5) Order for part quantity shall be acceptable to agency
6) The complete work shall be done as directed by engineer in charge/ person appointed by GBU to the satisfaction of site requirement.
7) The electricity and water if required for the work shall be responsibility of bidder. Necessary arrangement for DG set and water may be done by bidder for the work, if the electricity and water is not available at site of work. Contractor shall make his

own arrangement to carry the same at required site location, under strict supervision and prior permission of GBU.

8) Successful bidder shall submit security deposit @5% of contract value and it will be retained for a period up to 18 months after completion of the work. Agency shall carry out defect found in the work during this warranty period at his own cost.
9) Bids shall be accompanied by two separate Demand Drafts of tender fee and EMD. Bids shall be filled in through above mentioned website in online format, only.
10) Tender fee & EMD shall be submitted along with supporting documents for period from 24.03.23 to 14.04.2023 by 18.00hrs through Speed Post/ courier/ Hand delivery at GBU
11) If tender fee & EMD is not received till last date, by 18.00 hrs, bid shall be rejected.
12) Only the agencies that have executed this type of work having experience of such work and examined the site shall fill in the bids.
13) EMD of unsuccessful bidders shall be returned without interest after approval of the tender of the work.
14) The work completion period 90 days from the date of issue of work order / as mentioned in the work order.
15) Tenders shall be opened on 24.03.2023 at 12:30 pm in the GBU office, if possible. Financial bids of only those bidders shall be opened who are technically qualified.

Thanking You,

Yours faithfully,

Registrar,
Gujarat Biotechnology University,
Gandhinagar.

(To be submitted by Tenderer)

TENDER FORM

Date:

To,

The Registrar,
Gujarat Biotechnology University,
GIFT City Road, Nr. GIFT City,
Shahpur Village,
Gandhinagar - 382355

Sub: -- Request for proposal for Construction of Compound wall for 23 Acre land allotted to GBU, Gandhinagar.

Dear Sir,

Having examined the drawings, specifications designs and schedule of quantities relating to the work specified in the memorandum hereinafter set out and having visited and examined the site of the works specified in the said memorandum and having acquired the requisite information relating thereto as affecting the tender. I/We hereby offer to execute the works specified in the said memorandum at the rates mentioned in the attached Schedule of Quantities and in accordance in all respects with the specifications, design, drawings and instructions in writing referred to in conditions of tender, the Articles of Agreement, Special Conditions, Schedule of Quantities and Conditions of Contract and with such materials as are provided for by, and in all other respects in accordance with such conditions so far as they may be applicable.

Thanking You.

Yours faithfully,

_____

(Director/Partner/Authorized Signatory)

(To be submitted in a separate envelope along with Technical Bid)

1. Experience of Similar kind of work :
   (With supporting documentary proof)

2. Resource Mobilization and allocation :
   For this specific project
   (With supporting documents)

3. Completion time and period as :
   envisaged by bidder

4. Experience of co-coordinating with :
   nominated/specialized contractors:

6. Quality accreditation certificate :

7. Any other specific information :
which you feel will help in better
evaluation of your offer, as may
be deemed fit.

N.B: Please give Annexure number of each evidence.

PREQUALIFICATION CRITERIA

1. Only single bidder is permitted. No Joint venture/ consortium is permitted.
2. The Bidder should be registered with Government of Gujarat in class '**Special Building Category-II'** and above or '**Class B**' and above with R&B, or other state government or central PWD.
3. Bidder should have positive net worth of 2 crore in each of last 3 financial year preceding bid due date (submit CA certificate for Net worth online and physically in technical bid for financial year 2021-2022, 2020-2021 and 2019-2020.)
4. The Bidder should be register firm
   The bidder must meet the following criteria (Technical Capacity":)

   it has experience of having completed at least 1 (one) Eligible Similar Project in the last 5 (five) years preceding the Bid Due Date as the contractor for construction of the Similar Project having total project cost of each such assignment being at least 80% (i.e. INR 200 Lakh) of Estimated Contract Price which is INR 250 Lacs

   OR

   it has experience of having completed at least 2 (two) Eligible Similar Project in the last 5 (five) years preceding the Bid Due Date as the contractor for construction of the Similar Project having total project cost of each such assignment being at least 50% (i.e. INR 125 Lakh) of Estimated Contract Price which is INR 250 Lacs

   OR

   it has experience of having completed at least 3 (three) Eligible Similar Project in the last 5 (five) years preceding the Bid Due Date as the contractor for construction of the Similar Project having total project cost of each such assignment being at least 40% (i.e. INR 100 Lakh) of Estimated Contract Price which is INR 250 Lacs

   Similar Project shall mean- Projects involving construction works for any building and/or infrastructure project.

   The Bidder shall provide the documentary evidence in support of its credential such as agreement copy/work order / Letter of Award, and/or client certificate or statutory auditor's certificate or Chartered Accountant's certificate, as the case may, be for demonstrating the Technical Capacity. Such documentary evidence shall be duly signed by the authorized signatory of the Bidder.

5. Bidder shall attach GST Number and PAN Number
6. The Bidder must have an average annual Turnover greater than INR 2 Crore (Rupees Two Crore only) for the last 3 (three) preceding financial years and should have positive net worth as on 31st March 2021. This must be duly certified by a CA.
   The Bidder shall provide documentary evidence by way of Statutory Auditor's /Chartered Accountant's certificate for demonstrating the Financial Capacity. Such documentary evidence shall be duly signed by the authorized signatory

7. Bidder must submit notarized copy of declaration of bidding firm or partners are not blacklisted or Bared by any government department, corporation or organizations.

For the purposes of this RFP, net worth (the "Net Worth") shall mean:

In case of a company, it shall mean the aggregate value of the paid-up share capital and all reserves created out of the profits and securities premium account, after deducting the aggregate value of the accumulated loses, deferred expenditure and miscellaneous expenditure not written off, as per the audited balance sheet, but does not include reserves created out of revaluation of assets, write back of depreciation and amalgamation.

The Bidder shall provide documentary evidence by way of Statutory Auditor's /Chartered Accountant's certificate for demonstrating the Financial Capacity as specified in this Clause. Such documentary evidence shall be duly signed by the authorized signatory of Bidder.
Bidder must submit all supporting documents of matching the criteria in absence of the same bidder is liable to reject.

Note: Bidders have to full fill all the above criteria failing which they will be disqualified.
Decision of GBU shall be final and binding on all concerned

THE CONDITIONS OF CONTRACT

1) In constructing these Conditions, the Specification Schedule of Quantities and Contract Agreement, the following words shall have the meanings herein assigned to them expect where the subject or context otherwise requires.

   a) **"Employer"," GBU" Or Owner**: shall mean Gujarat Biotechnology University and shall include its assigns and successors.
   b) **"Contractor"**: shall mean (Name & Address) and shall include his (their) legal representative's assigns or successors.
   c) **"Site"**: shall mean the Site of Contract Works, i.e. at Gujarat Biotechnology University, nr. GIFT City, GIFT city road, Gandhinagar including and building and erections thereon and any other land (inclusively), as aforesaid, allotted by the employer for the Contractors use.
   d) **"This Contract"** : shall mean Articles of Tender Agreement, Letter of Intent the Special Conditions, the Conditions the appendix, the Schedule of Quantities and Specifications, Drawings etc. attached hereto and duly signed.
   e) **"Notice in writing":** written notice shall mean a notice in written, typed or printed characters sent (unless delivered personally or otherwise proved to have been received), by registered post to the last known private or business address or registered office of the addressee and shall be deemed to have been received within 24 hours of dispatch when in the ordinary course of post, it would have delivered.
   f) **"Act of Insolvency":** shall mean any Act of Insolvency as defined by the Presidency Towns Insolvency Act, or the Provincial Insolvency Act or any amending such original.
   g) **"Net Prices":** If in arriving at the Contract amount the Contractor shall have added to or deducted from the total of the items in the Tender any sum either as a percentage or otherwise, 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 a similar percentage of proportion by the Contractor of any prime cost items and provisional sums of money shall be deducted from the total amount of the Tender. The expression "net rates" or to the Contract or accounts shall be held to mean rates or prices so arrived at.
   h) **"Work"**: The expressions works, or work shall mean the works by or by virtue of contract contracted to be Executed whether temporary or permanent and whether original, altered, substituted or additional by the Contractor

2) **<u>SCOPE OF CONTRACT</u>**

   The Contractor shall carry out and complete the said work in every respect in accordance with this Contract and of with the directions of and to the satisfaction of Owner/Architect. The Architect 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 Architects instructions.

   GBU intends to develop a compound wall with approximate length of 900 running meter.

In regard to: -

a) The variations or modification of the design quality or quantity of works of the additions or omission or substitution of any work.
b) Any discrepancy in the drawings or between the Schedule of Quantities and/or drawings and/or Drawings and or specification.
c) The removal from the Site of any materials brought thereon by the Contractor and the substitution of any other material thereof.
d) The removal and/or re-execution of any works executed by the Contractor.
e) The dismissal from the works of any person employed thereupon.
f) The opening up for inspection of any work covered up.
g) The amending and making good of any defects under clause 19 hereon.

The Contractor shall for which comply with and duly execute any work, comprised in such Architects instructions, provided always that the verbal instructions, directions, and explanations given to the Contractor or his representative upon the works by the Architect 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 the Architect, such shall be deemed to be Architects instructions within the scope of the Contract.

VARIATION TO BE APPROVED BY THE EMPLOYER

Notwithstanding anything herein contained the Architect or his representative shall not, without prior concurrence in writing of the Employer, issue any instructions, verbal or in writing, which will result in the Employer having to pay the Contractor an additional amount and all instructions issued to the Contractor should forth with brought to notice of the Employer. The Contractor shall submit through the Architect, a statement of variations giving quantity and rates duly supported by analysis of rates, vouchers, etc. The rates on scrutiny and final acceptance by the Employer shall form a supplementary tender; the Employer shall not be liable for payment of such variations until these statements are sanctioned by him.

In case of the item executed as per the actual requirement of the site is less than that of the tendered quantity that results in any saving, Engineer-in charge/ person designated by authority shall have the right to utilize the said saving to his discretion in terms of getting any other works that he finds deemed fit for the cause of the project. The contractor shall have no right to dispute this right of Engineer-in-Charge and/or claim any additional compensation for the same.

3) **DRAWINGS AND SCHEDULE OF QUANTITIES AND AGREEMENT**

The Contract shall be executed in triplicate and the Architects, the Employer and the Contractor shall be entitled to one executed copy each for his use. The Contractor on the

signing hereto shall be furnished by the Architects free of cost, one copy of each of the said Drawing and of the Specifications and one copy of all further drawings issued during the progress of the works, any further copies required by the Contractor shall keep one copy of the drawing on the work the Architects or his representatives shall at all reasonable times have access to the same before the issue of the final Certificate to the Contractor, he shall forthwith return to the Architect all Drawings and Specifications.

4) **CONTRACTOR TO PROVIDE EVERYTHING NECESSARY AT HIS COST**

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

5) **AUTHORITIES NOTICES AND PATENTS**

The Contractor shall confirm to the provisions of any Act of the legislature relating to the works, and to regulations and bye-laws of any authority, and of any water electric supply and other companies and/or authorities with and whose the systems the Structure is proposed to be connected, and shall before making any variations from the Drawing or Specifications that may be necessitated by so confirming, give to the Architect written notice, specifying the variations proposed to be made and the reason for making it and apply for instructions thereon. In case the Contractor shall not within ten days receive such the provisions, regulations, or bye-laws in question, and variations so necessitated shall be debit with under respective Clause mentioned hereafter.

The Contractor shall bring to the attention of the Architect 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 said work, and lodge the receipt with the Architect.

The Contractor shall indemnify the Employer against all claims in respect of patent rights, and shall defend all actions arising from such claims, and shall himself pay all royalties, license fees, damages, cost and changes of all and every sort that may be legally incurred in respect thereof.

6) **SETTING OUT OF WORK**

The Contractor shall set out the works and shall be responsible for the true and perfect setting out of the same and for the correctness of the positions, dimensions, and the alignment of all the parts thereof, if at any time any error in this respect shall appear during the progress of the work or within the period of one year from the completion of the works, the Contractor shall, if required at his own expenses, rectify such error to the

satisfaction of the Architect/ Owner.

7) **MATERIALS & WORKMANSHIP TO CONFIRM DESCRIPTION**

All materials and workmanship shall so far as procurable be of the respective kinds described in the Schedule of Quantities and/or Specifications and in accordance with the Architects instructions and the Contractor shall upon the request of the Architect furnish him with all the invoices, accounts, receipts and other vouchers to prove that the materials comply therewith. The Contractor shall at his own cost arrange for and/or carry any test of any material which the Architects may require.

8) **CONTRACTORS SUPEREINTENT AND REPRESENTATIVE ON THE WORKS**

The Contractor shall give all the necessary personal superintendence during the execution of the works, and as long thereafter as the Architect may consider necessary until the expiration of the Defect Liability Period stated in the Appendix hereto. The Contractor shall, during the whole time of works are in progress employ competent representatives who shall be in constantly attendance at work while the men are at work, any directions, explanations, instructions, or notices given by the Architect to such representative shall be held to be given to the Contractor.

9) **DISMISSAL OF WORKMEN**

The Contractor shall at the instruction of the Employer, immediately dismiss from the works, any person employed thereon by him who may in the opinion of the Architect be incompetent or misconduct himself and such person shall not be again employed on the works without the permissions of the Architect / Owner.

10) **ACCESS TO WORK**

The Employer, the Architect and their responsible representatives shall at all reasonable times have free access to the works and/or to the workshops, factories or other places where materials are lying or from which they are being obtained. The Contractor shall give every facility to the Employer, the Architect and their representatives necessary for inspection and examination and test of the materials and the workmanship. No persons not authorized by the Employer or the Architect except the representative of Public Authorities shall be allowed on the works at any time.

11) **ASST. ENGINEER / SITE ENGINEER**

The term “Assistant Engineer / Site Engineer” shall mean the person appointed and paid by the Employer and acting under the orders of the Employer to inspect the works in the absence of the Architect, the Contractor shall afford the Assistant Engineer / Site Engineer, every facility and assistance for inspecting the works and materials and for checking and measuring time and materials. Neither Assistant Engineer / Site Engineer nor any representatives or the Architect shall have power to set out works or to revoke, alter, enlarge or relax any requirements of the Contract, or to sanction any day work,

additions, alterations, deviations of omissions, or any extra work whatever except in so far as such authority may be specially conferred by a written order of the Architect with the prior concurrence in writing of the Employer.

The Assistant Engineer / Site Engineer, or any representative of the Architect, or the Employer shall have power to give notice to the Contractor or to his representative of non-approval of any work or materials and such work shall be suspended or the use of such materials shall be discontinued until the decision of the Architect is obtained. The work will be from time to time examined by the Architect, the Assistance Engineer, or the Architects representative, but such examination shall not in any way exonerate the Contractor from the obligations to remedy any defects which may be found to exist at any stage of the works or after the same is completed, subject to the limitations of this Clause, the Contractor shall take instructions only from the Architect.

12) **ASSIGNMENT AND SUBLETTING**

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 under-let the contract or any part share thereof of any interest therein without the prior written consent of the Employer and no undertaking shall relieve the Contractor from the full and entire responsibility of the Contractor from active super intendance of the works during their progress.

13) **Alterations, Omissions or Variations**

No alterations, omissions or variations shall vitiate this contract, but in case the Architect thinks proper at any time during the progress of the works to make any alterations in, or additions to or omissions from, the work or any alteration in the kind or quality of materials to be used therein and shall give notice thereof in writing under his hand to the Contractor, 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 deviations or additions to or omissions from the contract, stipulation specifications or contract drawings without the previous consent in writing of the Architect and the values of such extras, alterations, additions or omissions shall in all cases be determine by the Architect with the prior approval in writing of the Employer in accordance with the provision of the Clause 17 hereof, and these and the same shall be added to or deducted from the Contract Amount, as the case may be accordingly.

14) **SCHEDULE OF QUANTITIES**

The Schedule of Quantities shall be deemed to have been prepared in accordance with the Standard Method or Quantities Measurement.

Any error in the description or in quantity or in omission of items from the Schedule of

Quantities shall not vitiate as ascertained but shall be rectified and the value thereof, as ascertained under Clause 1 / hereof, shall be added to or deducted, from the Contract Amount (as the case may be), provided that no rectification of errors, if any, shall be allowed in the Contractor's Schedule of Rates.

15) **SUFFICIENCY OR SCHEDULE OF QUANTITIES**

The Contractor shall be deemed to have satisfied himself before tendering as to the correctness and sufficiency of his tender for the works and the prices stated in the Schedule of Quantities and or the Schedule of Rates and prices which rates and prices shall cover all his obligations under the Contract, and all matters and things necessary for the proper completion of works.

.

16) **MEASUREMENT OF WORK**

The Architects may from time to time intimate to the Contractor and the Employer that he requires to be measured, and the Contractor shall for with attend or send a qualified agent to assist the Architect or the Architects representative or the Asst. Engineer / Site Engineer in taking such measurements and calculations and to furnish all the particulars or to give all assistance required by any of them. Should the Contractor not attend or neglect or omit to send such Agent then the measurement taken by the Architect or a person approved by him shall be taken to be a correct measurement of the works. Such measurements are detailed in the specifications. The Contractor or his Agent may at the time of measurement take such notes and measurement as he may require. All authorized extra works, omissions and all variations made without the Architects knowledge, if subsequently sanctioned by him in writing (with the prior approval in writing of the Employer) shall be included in such measurement.

17) **PRICES FOR EXTRAS, ETC ASCERTAINMENT OF**

The Contractor may, when authorized, and shall, when directed in writing by the Architects with the approval of the Employer, add to, omit from, or vary the works shown upon the Drawings, or included in the Schedule of Quantities; both Contractors shall make no addition, omission or variation without such authorization or direction. A verbal authority or direction by the Architects shall, if confirmed by them in writing within seven days, be deemed to have been given in writing. No claim for an extra shall be allowed unless it shall have been executed under provisions of Clause hereof or by the authority of the Architects with the concurrence of the Employer 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 therein.

II) Rates for all items, wherever possible, should be derived out of the rates given in the Priced Schedule of Quantities.

III) Rate for varied/deviated or extra items to be worked out on the rates quoted in the tender for the similar items only. Wherever it is not possible to base the rates for varied/deviated or extra items on the tender quoted rates then the rate analysis as per CPWD/SOR Rate Analysis is to be submitted by the Contractors with 15% towards Contractors overheads. Labour and material constants shall be considered from CPWD/SOR Rate Analysis. Market rates of materials & labour shall be considered duly supported by original bills with payment details / Quotations to be approved by Owner / Architect. 1 % of the derived cost of the item shall be allowed for water and electricity charges and 15 % for contractor's profit and overheads. For items not available in above-mentioned documents, industry accepted standards shall be adopted at the discretion of Architect subject to approval of Owner.

b) The net prices of the original tender shall determine the value of the items omitted, provided if omissions vary the conditions under which only remaining items of works are carried out, the prices for the same shall be valued under sub-clause (c) 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 of works are carried out , if the amount of the whole of the Contract Works or to any part thereof shall be such that in the opinion of the Architect the net rate or price contained in the Priced Schedule of Quantities or tender or for any item of the work involves loss or expense beyond that reasonably contemplated by the Contractor or is by reason of such omission or additions rendered unreasonable or inapplicable, the Architect shall fix such other rate or price as in the circumstances he shall feel reasonable and proper, with the prior approval in writing of the employer.

d) Where extra work cannot be properly measured or valued the Contractor shall be allowed day work prices as the net rates stated in the tender or the Priced Schedule of Quantities or, if not so stated, then in accordance with local day work rates and wages for the district, provided that in either case vouchers specifying the daily time (and if required by the Architect, the workman's name) and materials employed to be delivered for verification to the Architect or his representative at or before the end of the week following that in which the work has been executed. The measurement and valuation in respect of the Contract shall be completed within the "period of final measurements" stated in the Appendix or if not stated then within six months of the completion of the Contract works as defined in Clause 21 hereof.

18) **UNFIXED MATERIALS WHEN TAKEN INTO ACCOUNT TO BE THE PROPERTY OF THE EMPLOYER**

Where in any certificate (or which the Contractor has received payment), the Architect has included the value of any unfixed materials intended for and/or placed on adjacent to the works, such materials shall become the property of the Employer and they shall not be removed except for use upon the works, without the written authority of the Architect. The Contractor shall be liable for any loss of or damage to such material.

19) **REMOVAL OF IMPROPER WORKS**

The Architect / Owner shall, during the progress of the works, have power to order in writing from time to time the removal from the work within such reasonable time or times as may be specified in order, of any materials which in the opinion of the Architect / Owner are not in accordance with the specifications or the instructions of the Architect the substitution of proper materials, 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 forth with carry out such order at his own cost. In case of default on the part of the Contractor to carry out such order, the Employer shall have the power to employ and pay other persons to carry out the same; and all expenses consequent thereon, or incidental thereof, shall be deducted by the Employer from any one due, or that may become due, to the Contractor.

20) **DEFECTS AFTER VIRTUAL COMPLETION**

Any defect, shrinkage, settlement or other faults which may appear within the Defect Liability Period of twelve months after the virtual completion of the works, arising in the opinion of the Architect from materials or workmanship not with accordance with the Contract, shall upon directions in writing of the Architect, and within such reasonable time as shall be specified therein, be corrected/rectified and made good by the Contractor, at his own cost, and in case of default the Employer may employ and pay other persons to amend and make good such defects, loss and expenses consequent thereon or incidental thereto shall be made borne by the Contractor and such damage, loss and expenses shall be recoverable from him by the Employer, upon the Architects Certificate in writing, from any money due or that may become due to the Contractor, or the Employer, may in lieu of such amending and making good by the Contractor deduct from any money due to the Contractor a sum, to be determined by the Architect equivalent to the cost of amending such work and in the event of the amount retained under Clause 32 hereof being insufficient recover the balance from the Contractor, together with any expenses the Employer 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 was been nominated or approved by the Architect as provided in Clause 12 and 22 hereof, the Contractor shall be liable under the provisions

of this Clause and Clause 2 hereof, the Contractor shall remain liable under the provision of this Clause notwithstanding the signing of any Certificate or the passing of any accounts, by the Architect.

21) **CERTIFICATE OF VIRTUAL COMPLETION & DEFECTS LIABILITY PERIOD**

The work shall not be considered as completed until the Architect has certified in writing that they have been virtually completed. The Defect Liability Period shall commence from the date of such Certificate.

22) **NOMINATED SUB-CONTRACTORS**

All Specialist, Merchants, Tradesmen and others executing any work of supplying and fixing any goods for which prime cost prices or provisional sums are included in the Schedule of Quantities and / or Specifications who may be nominated or selected by the Architect / Owner and hereby declared to be Sub-Contractors employed by the Contractors and are herein referred to as nominated Sub-Contractors. No nominated Sub-Contractor shall be employed on or in connection with the works against whom the Contractor shall make reasonable objection or (save where the Architect and Contractor shall otherwise agree) who will not enter into a Contract providing: -

a) That the nominated Sub-Contractor shall indemnify the Contractor against the same obligations in respect of the Sub-Contract as the Contractor is under in respect of this Contract.
b) That the nominated Sub-Contractor shall indemnify the Contractor against claims in respect of any negligence by the Sub-Contractor, his servants or agents or any misuse by him or them or any scaffolding or other plant, the proper of the Contractor or under any workmen's compensation Act in force.
c) Payment shall be made to the nominated Sub-Contractor within fourteen days of his receipt of the Architects Certificate provided that before any Certificate is issued, the Contractor shall upon the request furnish to the Architect proof that all nominated Sub-Contractor accounts included in the previous Certificate have been duly discharged; in default whereof the Employer may pay the same upon a Certificate of the Architect and deduct the amount thereof from any sums due to the Contractor. The exercise of this power shall not create private of Contract as between Employer and Sub-Contractor.

23) **OTHER PERSONS EMPLOYED BY THE EMPLOYER**

The Employer reserves the rights to use premises and portions of the site for the execution of the work not included in this Contract, which it may desire to have carried out, by other persons, and the Contractor shall allow all reasonable facilities for the execution of such work except by special arrangement by the Employer. 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 damages or delay which may happen to or occasioned by such work.

24) **INSURANCE IN RESPECT OF DAMAGE TO PERSONS AND PROPERTY**

The Contractor shall be responsible for all injury to persons, animals or things, and for all structural and decorative damage to property which may arise from the operation or neglect of himself or any nominated Sub-Contractor or any employee of either, whether such damage or injury arises from carelessness, accident or any other cause whatever in any way connected in the carrying out of this Contract. This Clause shall be held to include internal any damage to buildings, whether immediately adjacent or otherwise, and any damage to the roads, streets, foot-paths, bridge or ways as well as all damage caused to the buildings and works forming the subject of this Contract by frost, rain, wind or other inclemency of weather. The Contractor shall indemnify the Employer and hold it harmless in respect of all and any expenses arising from such injury or damage to persons or property as aforesaid and also in respect of any claim made in respect of injury and damage under any Act of any Legislature of otherwise and also in respect of any award of compensation or damages consequent upon such claims.

The Contractor shall reinstate all damage of every sort mentioned in this Clause, so as to deliver up the whole of the Contract Works complete and perfect in every respect and so as to make good or otherwise satisfy all claims for damages to the property of third parties.

The Contractor shall indemnify the Employer against all claims which may be made against the Employer by any member of the Public or third party in respect of anything which may arise in respect of the works or in consequence thereof and shall at his own expenses arrange to effect and maintain, until the virtual completion of the Contract, with an approved offices, a Policy (CAR) of insurance in the name of the Employer and the Contractor against such risks and deposit such policies with the Architect from time to time during the currency of this Contract. The Contractor will also similarly indemnify the Employer whether under the Workmen's Compensation Act or play other statute in force during the currency of this Contract or at Common Law in respect of any Employee of the Contractor or any Sub-Contractor and shall at his own expense effect and maintain, until the virtual completion of the Contract, with an approved office, a Policy of Insurance in the joint name of the Employer and the Contractor against such risks and deposit such policy or policies with the Architect from time to time during the currency of the Contract.

The Contractor shall be responsible for any liability which may be excluded from the Insurance Policies above referred to and also for all other damages to any person, animal or property arising out of incidental to the negligent or defective carry in out of this Contract. He shall also indemnify the Employer in respect of any cost, charges or expenses arising out of any claims or proceeding and also in respect of any award of compensation and damages arising there from.

The Employer shall with the concurrence of the Architect, be entitled to deduct the

amount of any damage, compensation, cost, charges and expenses arising from or accruing from or in respect or, any such claims or damage from any or all sums due or to become due to the Contractor without prejudice to the Employers other rights in respect thereof.

25) **FIRE INSURANCE**

a) The Contractor shall, within seven days from the date of Commencement of Works, insure the works at his cost and keep them insured until the virtual completion if the work, against loss or damages by fire with an Office to be approved by the Architect in the joint name of the Employer and the Contractor (the name of the former being placed first in the Policy), for appropriate value decided by the employer of the contract amount. The Contractor shall deposit the policy and receipts for the premium with the Owner within Sixty days from the Commencement of the works, unless otherwise instructed by the Architect. In default of the Contractor insuring as provided above, the Employer of the Architect on his behalf, may so insure the works and may deduct the premier paid from any money due or may become due to the Contractor without prejudice to the other rights of the Employer in respect of such default. In case it becomes necessary to suspend the works, the Contractor shall as soon the claim under the Policy is settled, or work reinstated by the Insurance Office, should they elect to do so, proceed with all due diligence with the completion of the works in the same manner as though the incident had not occurred and in all respects under the same conditions of the Contract. The Contractor, in case of rebuilding of reinstatement after fire, shall be entitled to such extension of time for completion as the Architect deemed fit.

b) The amount so due as aforesaid shall be the total value of the works duly executed and of the Contract and of the Contract materials and goods delivered upon the Site for use in works and including the date not more than seven days prior to the date of the said Certificate less the amount to be retained by the Employer (as hereinafter provided) and less any installments previously paid under this Clause. Provided that such Certificate shall only include the value of the materials and goods as and from time to time as they are reasonably property and not prematurely brought upon the Site and then only if properly Stored and/or protected against weather.

26) **DATE OF COMMENCEMENT AND COMPLETION**

The Contractor shall be allowed admittance to the a Site on the Date of Commencement stated in the Appendix hereto, or such later date as may be specified by the Owner/Architect and he shall there upon and forth with begin the works and shall regularly proceed with and complete the same (except the painting or other decorative work as the Architect may desire to delay) on or before the Date of Commencement stated in the Appendix subject never the less to the provision for extension of time

hereinafter contained.

27) **DAMAGES FOR NON-COMPLETION**

If the Contractor fails to complete the works by the date stated in the Appendix or within any extended time or under the Clause hereof and the Owner/Architect certifies in writing that in his opinion, the same ought reasonably to have been completed, the Contractor shall pay the Employer the sum named in the Appendix as "Liquidated Damages" for the period during which the said works shall so remain incomplete and the employer may deduct such damages from any money due to the Contractor.

28) **RECOVERIES**

a) In case of any damage to equipment/machinery or structure/building of GBU or any public property due to negligence's of contractor or any other reasons attributed to contractor the decision of Engineer in Charge regarding the amount of recovery shall be final.
b) If the contractor fails to execute the work as per direction of Engineer in Charge within the time frame given by GBU time to time, shall get the work done through any other contractor at the risk and cost of the contractor.

29) **DELAY AND EXTENTION OF TIME**

If in the opinion of the Architect/GBU the work be delayed (a) by force majeure or (b) by reason of any exceptionally inclement weather of (c) by reason of proceedings taken or threatened by or dispute with adjoining or neighboring owners or public authorities arising otherwise then through the Contractor own default or (d) by the works and delay of the other Contractors or tradesmen engaged or nominated by the Employer or the Architect and not referred to in the Schedule of Quantities and/or specification or (e) by reasons of the Architect instructions as per Clause 2 here if or (f) by reason of civil commotion, local combinations of workmen or strike or lock-out affecting any of the building trades or (g) in consequence of the Contractor not having received in due time necessary instructions from the Architect for which he shall specifically applied in writing or (h) from other causes which the Architect may certify as beyond the control of the Contractor or (i) in the event, the value of work exceeded the value of the Priced Schedule of Quantities owing to variation, the Architect may with the previous approval in writing of the Employer make a fair and reasonable extension of time for the completion of the Contract Works; in case of such strike or lockout, the Contractor shall as soon as may be, give written notice thereof to the Architect, but the Contractor shall nevertheless constantly use his endeavor to prevent delay and shall do all that may reasonably be required to the satisfaction of the Architect to proceed with the work.

Compensation for the delay: The time limit allowed for carrying out the work as entered in the tender shall be strictly observed by the contractor and shall be reckoned from the date on which the order to commence the work is given to the contractor. The work

throughout the stipulated period of the contract proceeds with due diligence (time being deemed to be essence of contract) and for delay, deduction of 0.1% of contract amount per week for the first month. For the second month, there will be a deduction of 0.5% of the contract value every week. For the third month, there will be deduction of 1% of the contract value every week. The maximum deduction will be up to 10% of the contract value from the running bill. If the contractor has not shown any intention to complete the work as per schedule after bidder has been informed of LD deduction. The client may at its discretion terminate the contract and hand it over to suitable agency at risk and cost of prime bidder.

The penalty will be invariably deducted from the bills of the contractor and no refund will be given unless the competent authorities approve the reduction the reasons for delay attributable to GBU with the prior approval.

30) **FAILURE BY CONTRATOR TO COMPLY WITH ARCHITECT/ GBU INSTRUCTIONS**

If the Contractor after receipt of written notice from the Architects requiring compliance within ten days fails to comply with such further drawings and / or Architects instructions, the Employer 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 the Employer on the Certificate of the Architect as a dept. or may be deducted by him from any moneys due to the Contractor.

31) **TERMINATION OF CONTRACT BY THE EMPLOYER**

If the Contractor being a individual or a Firm, commits any act of insolvency or shall be adjudged an insolvent or being an Incorporate Company, shall have an order for compulsory winding up, voluntarily or subject to the supervision of the Court and the Official Assignee or the Liquidator in such acts of insolvency and winding up, as the case may be, shall be unable within seven days after notice to him requiring him to do so, to show the reasonable satisfaction of the Architect that he is able to carry out and fulfill the Contract and to give security thereof, of so required by the Architect.

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

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

Or shall assign or sublet this Contract without the consent in writing of the Employers first obtained.

Or shall charge or encumber this Contractor or any payment due of which may become due to the Contractor hereunder.

Or if the Architect shall certify in writing to the Employer that the Contractor:

i) The Performance Security has been encashed and appropriated and the Contractor fails to replenish or provide fresh Performance Security within a Cure Period of 30 days; or

ii) Has abandoned the Contract, or

iii) 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 the Architect notice to proceed or

iv) 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

v) Has failed to remove materials from the Site or to pull down and replace work for seven days after receiving from the Architect written notice that the said materials or work were condemned and rejected by the Architect under these Conditions, or

vi) 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 to observe or perform the same.

Then and in any of the said cases the Employer may, notwithstanding any previous waiver, after giving seven days' notice in writing to the Contractor, determined the Contractor, but without thereby affecting the powers of the Architect or obligations of liabilities of the Contractor, the whole of which shall continue in force as fully as if the Contract has not been so determined, and as if the work subsequently executed had been executed by or on behalf of the Contractor. And further, the Employer by his agent or servants may enter upon and take possession of the work and all plant, tools, scaffoldings, shed, machinery, steam and other power utensils and materials lying upon the premises or on the adjoining land 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 things to prevent or hinder such other Contractor or other person employed for completing or finishing or using the materials and plant for the work. When the work shall be completed or as soon as thereafter as convenient the Architect shall give a notice to the Contractor to remove his surplus materials and plant and should the Contractor fail to do so within the period of fourteen days after receipt thereof by him, the Employer may sell the same by public auction, and give credit to the Contractor for the net amount realize. The Architect shall thereafter ascertain and certify in writing under his hand what (if anything) shall be due or payable to, or by the Employer, for the value of the said plant and materials so taken possession by the Employer and the expenses and loss which the Employer 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 thereupon be paid by the Employer to the Contractor or by the Contractor to the Employer, as the case may be and the Certificate of the Architect shall be final and conclusive between the parties

The termination payments payable in case of occurrence of Force Majeure is as follows:

If Termination is on account of any of the Force Majeure Events, the Authority shall return the Performance Security to the Contractor . The Contractor shall only be entitled to payment of unpaid and due Fee on proportionate basis for the executed work/Services rendered in accordance with term hereof prior to Termination Date. The Contractor shall take appropriate Insurance Cover for hedging risks associated with the events of Force Majeure.

32) **PROCUREMENT AND SUPPLY TO BE APPROVED BY EMPLOYER**

All procurement and supply for the works for items which are not covered in the Schedule of Rates provided by the employer shall be carried out using prudent practices and soliciting competitive rates from eligible and competent suppliers of procurement the rates of procurement and final order will be approved by the employer or the Architect/Consultant appointed by the Employer in this regard.

All procurement shall be of materials that meet all the necessary quality and safety standards necessary for completing the works. The Contractor shall be solely responsible for the quality of the procured items and remedy any defects in the procured items/replace them without recourse to the Employer.

33) **CERTIFICATE AND PAYMENTS**

Running Amount bill payment shall be made only at the end of the month to contractor on submission of bill by the contractor in prescribed format. Completion of each activity will be checked by Architect / PMC and after getting approval of each activity contractor will proceed ahead to next stage. The RA bill submitted will be paid after deduction of 5% as security amount from each bill, which will be paid to the bidder after the project completion as per the terms in the contract.

All R.A. bills shall be scrutinized by Architect/ PMC and Then Engineer-in- charge appointed by GBU for quality and quantity and shall be processed based on the approval granted by him. The amount due shall be released only after due approval is received. Though all necessary efforts shall be made to expedite the approval process, minimum approximate time for the approval process shall be of 4 weeks.

And when the works have been virtually completed and the Architect shall have certified in writing that they have been completed the Contractor shall be paid by the Employer in accordance with the Certificate to be issued by the Architect the sum of money after Virtual Completion and the Contractor shall be entitled to the payment of the Final Balance in accordance with the Final Certificate to be issued in writing by the Architect at the expiration of the period referred to as the Defect Liability Period from the date of Virtual Completion or as soon after the expiration of such period as the works shall be finally completed and all defects made good according to the true intent and meaning and hereof whichever shall last happen provided always that the issue of the Architect of any certificate during the progress of the work or at or after the completion shall not relieve the Contractor from his Liability under Clause 2 and 20 nor relieve the Contractor of his inability in case of fraud, dishonesty or fraudulent concealment relating to the works or materials or to any matter dealt with in the Certificate, and in case of all the defects and insufficiencies in the works or material which a reasonable examination would not have disclosed.

No Certificate of the Architect shall of itself be conclusive evidence that any works or materials to which it relates are in accordance with the Contract, neither will the Contractors have a claim for any amounts which the Architects might have certified in any interim bill and paid by the Employer and which subsequently be discovered as not payable and in this respect the Employer decision shall be final and binding.
The Architect/GBU shall have power to withhold any Certificate if the work or any parts thereof are not being carried out to his satisfaction. The Architect/GBU may by any certificate make any correction in any previous certificate, which shall have been issued by him. Architect shall issue no Certificate of payment if the Contractor fails to insure the work and keep them insured till the issue of Virtual Completion Certificate.
Payments upon the Architects Certificate shall be made within 45 days of honouring Certificates depending on availability of fund, after such Certificates have been delivered to the Employer.

34) **DELAY PAYMENT**

No interest shall be paid for delayed payment due to reasons whatsoever.

35) **MATTERS TO BE FINALLY DETERMINED BY ARCHITECT/ EIC**

The decision opinion, direction, certificate (except for payment) with respect to all or any of the matters under Clause 2(a), 2(b), 4,7,12,19,28 (a, b, c, d, f) hereof (which matters are herein referred to as the Accepted matters) shall be conclusive and binding on the parties hereto and shall be without appeal. Any other decision opinion, direction, certificate or valuation of the Architect or any refusal by the Architect to give any of the same, shall be subject to the right of Arbitration and review under Clause 35 hereof in the same way in all respects (including the provision as to opening the reference) as it were the decision of the Architect/EIC.

36) **SETTLEMENT OF DISPUTES BY ARBITRATION**

i. Disputes to be referred to Tribunal: The disputes relating to this contract, so far as they relate to any of the matter of this tender, Whether such disputes arise during the progress of the work or after the completion or abandonment thereof, shall be referred to the Arbitration Tribunal, Gujarat State.

ii. The provision of Section-21 of the GPWD dispute Arbi. Tribunal Act –92 & order issued by the Govt. in connection with this Act will now apply for Arbitration (As per Government in N. & W.R.D. letter No. SUT/1090/2679/K2 dtd. 9/2/94 .

iii. The provision of Arbitration Act shall in so far as they are inconsistent with the provision of this act cease of to apply to any dispute arising from a works contract and all arbitration proceedings in relation to such dispute before an arbitrator, court of authority shall stand transferred to the Tribunal.

iv. The awards declared by the arbitrator should be speaking award, giving reasons and calculations for every item of claims. The decision will have to be implemented by all the departments of the State Government and Public Sector Enterprises of Gujarat.

(Resolution F. D. No. PB/1088/735/KT/Sachivalaya/ Gandhinagar 5th October 1988.)

v. In case of dispute leading to the contractor or Government of Gujarat approaching to Court of Law, it shall be within the jurisdiction where the site of work is situated.

vi. The reference to arbitration proceeding under this clause shall not

a. affect the right of both the parties under the contract to take possession of all or any tools plants materials and stores in or upon the works of site thereof belonging to the contractor or procured by him and intended to be used for the execution of the work or any part thereof.

b. Preclude the Engineer-in-charge from utilizing the materials purchased by the contractor in any work or from removing such materials to other places, during the period the work is stopped or suspended in pursuance of notice given to the contractor.

c. Entitle the contractor to stop the progress of the work or the carrying out the additional or altered work in accordance with the provisions of clause 14.

37) **RIGHT OF TECHNICAL SCRUTINY OF FINAL BILL**

The Employer shall have right to cause a technical examination of the works and the final bill of the Contractor including all supporting vouchers abstracts, etc., to be made at the time of payment of the final bill. If as a result of this examination or otherwise any sum is found to have been overpaid or over certified, it shall be lawful for the Employer to recover the same. Such final bills shall be scrutinized by registered chartered accountants as appointed by GBU.

38) **EMPLOYER ENTITLED TO RECOVER COMPENSATION PAID TO WORKMEN**

If, for any reason, the Employer is obliged, by the virtue of the provision of the Workmen's Compensation Act, 1923, or any Statutory modification or re-enactment thereof to pay compensation to a workman employed by the Contractor in execution of the works, the Employer shall be entitled to recover from the Contractor the amount of compensation so paid, and without prejudice to the rights of the employer, under the said Act. The employer shall be at liberty to receive such amount or any part thereof by deducting or from the Security Deposit or from any sum due to the Contractor under this contract or otherwise. The Employer it under the said Act, except on the written request of the Contractor and upon his giving to the Employer full security to the satisfaction of the Employer for all costs for which the Employer might become liable in consequence of contesting such claim.

39) **ABANDONMENT OF WORKS**

If at any time after the acceptance of the Tender, the Employer shall for any reasons whatsoever not require the whole or any part of the works to be carried out, the

Architect shall give notice in writing to the Contractor who shall have no claim to any payment of compensation or otherwise whatsoever on account of any profit or advantage which he might have derived from the execution of the whole works.

40) **RETURN OF SURPLUS MATERIALS**

Notwithstanding anything to the contrary contained in any or all the Clauses of this Contract, where any material for the execution of the Contract is procured with the assistance of the Employer by purchases made under orders or permits of licenses issued by the Government, the Contractor shall hold the said materials economically and solely for the purpose of the Contract and not dispose them without the prior written permission of the Employer and return it to the Employer, if required by the Employer at the price to determine by the Architect having due regard to the condition of the materials, the price to be determined not to exceed the purchase price thereof inclusive of Sales Tax, Octroi Duty and other such levies paid by the Contractor in respect thereof. In event if the breach of the aforesaid condition the Contractor shall, in addition to being liable to action for contravention of the terms of license or permit and / or original breach of trust, be liable to Employer for all such moneys, advantages or profits resulting or which in the usual course would have results to him by reason of such breach.

41) **RIGHTS OF EMPLOYER TO TERMINATE CONTRACT IN EVENT OF DEATH OR CONTRACTOR IF INDIVIDUAL**

Without prejudice to any of the rights or remedies under this contract, if the Contractor, being an individual dies, the Employer shall have the option of terminating the Contract without incurring any liability for such termination.

42) **IDLE LABOUR**

Whatever the reason may be, no claim for idle labour, additional establishment cost of hire and labour charges of tools, plants, equipment etc. would be entertained under any circumstances.

43) **BID PRICES**

The Bidder shall fill in a single rate for a Procurement Fees for providing procurement services with respect to bought out items. Procurement of items (lighting fixtures, CP fittings etc. as indicated in schedule B) shall be carried out by the Bidder with prior approval of the Employer / independent Architect and the contractor entitled to the Procurement Fee on such procurement fees will be payable on items which are procured directly by the Employer.

All royalties, sales tax, toll tax, local tax, development charges, VAT tax, welfare cess and any other taxes including works contract tax etc. and also any statutory variation in future towards above mentioned taxes & any other taxes if levied in future by statutory

authority applicable to this contract shall be borne by the contractor and GBU shall not entertain any claim whatsoever in this respect. The rates will be "Including the GST".

44) **Performance Security**

44.1 The Contractor shall as security for the due and faithful performance and discharge obligations relating to works set out in terms of this Contract, procure and furnish to the Authority a Performance Security, in the form of a bank guarantee from a scheduled commercial bank in India acceptable to the Authority for an amount equivalent to 5% of contract value i.e Rs. _____/- (Rupees _____). The Contractor shall provide such Performance Security within 5 days (five days) from the issue of work order. Such Performance Security shall be in the form set forth in the Appendix hereto. Until such time the Performance Security is provided by the Contractor pursuant hereto and the same comes into effect, the Bid Security shall remain in force and effect, and upon such provision of the Performance Security pursuant hereto, the Authority shall release the Bid Security to the Contractor. No interest shall be payable by the Authority against the Performance Security;

44.2 Upon occurrence of a Contractor Default, the Authority shall, without prejudice to its other rights and remedies hereunder or in law, be entitled to encash and appropriate from the Performance Security the amounts due to it for and in respect of such Contractor Default. Upon such encashment and appropriation from the Performance Security, the Contractor shall, within 15 (fifteen) days thereof, replenish, in case of partial appropriation, to its original level the Performance Security, and in case of appropriation of the entire Performance Security by the Authority, provide a fresh Performance Security, as the case may be, failing which the Authority shall be entitled to terminate this Contract in accordance with Clause 31. Upon replenishment or furnishing of a fresh Performance Security, as the case may be, as aforesaid, the Contractor shall be entitled to an additional Cure Period of 30 days for remedying the Contractor Default, and in the event of the Contractor not curing its default within such Cure Period, the Authority shall be entitled to encash and appropriate such Performance Security as Liquidated Damages, and to terminate this Contract in accordance with Clause 31.

44.3 The Performance Security shall remain in force and effect for the entire Term, subject to Clause 44.1 above, the Performance Security shall be released after 3 months of completion of project and defect liability period. In case the Contractor does not adhere to the terms and conditions of the warranty during the Warranty Period upon Expiry Date the Performance Security will be liable to be forfeited by the Authority. "Expiry Date" shall mean the date falling on the last date of the Term, or the earlier termination of this Contract.

SAFETY CODE

1) There shall be maintained a readily accessible place first aid appliances including adequate supply of sterilized dressings and cotton wool.

2) An injured person shall be taken to public hospital without loss of time, in case where injury necessitates hospitalization.

3) Suitable and strong scaffolds should be provides for workmen for all works that cannot safety be dome from ground.

4) 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 mazdoor shall be engaged for holding the ladder.

5) The excavated material shall not be placed within 1.5 meters of the edge of the trench or half of the depth of trenches whichever is more. All trenches and excavations shall be provided with necessary fencing and lighting.

6) Every opening in the floor of a building or in a working platform be provided with suitable means to prevent the fall of person or materials by providing suitable fencing or railing whose minimum height shall be one meter.

7) No floor, roof or other part of the structure shall be so overloaded with debris or materials as to render it unsafe.

8) Workers employed on mixing and handling material such as asphalt, cement mortar or concrete and lime mortar shall be provided with protective footwear and rubber hand-gloves.

9) Those engaged in welding works shall be provided with welder's protective eye-shields and gloves.

10) i) No paint containing lead or lead products shall be used except in the form of paste or ready-made paint.

    ii) Suitable facemasks should be supplied for use by Worker when the paint is applied in form of spray or surface having lead paint dry rubbed and scrapped.

11) Overall shall be supplied by the Contractor to the painters and adequate facilities shall be provided to enable the working painters to wash during the period of cessation of work.

12) Hoisting machines and tackle used in the works, including their attachments, anchorage and supports shall be in perfect condition.

13) The ropes used hoisting or lowering material or as a means of suspension shall be of durable quality and adequate strength and free from defects.

14) The entire work site shall be adequately lighted Temporary fencing around excavated areas; opening may be provided, if advised for safety reasons.

15) AGENCY SHALL FOLLOW ALL SAFETY GUIDELINES OF COVID-19 AS PUBLISHED BY GOVERNMENT OF GUJARAT FROM TIME-TO-TIME.

APPENDIX: IRREVOCABLE CONFIRMED BANK GUARANTEE PROFORMA

Bank Guarantee No.

To,
Gujarat Biotechnology University,
GIFT City road, Nr. GIFT City,
Shahpur Village, Gandhinagar - 382355

We are aware the M/s_____ having their registered office at _____ have offered to work for Construction of Compound wall for 23 Acre land allotted to GBU, Gandhinagar and further that you have accepted their offer and entered into a contract with them in that regard. We herewith guarantee to pay to you the maximum of Rs._____ (Rupees_____ only) in the event of the failure of M/s_____ to fulfill any or all of their contractual obligations or in the event of their committing any breach of the conditions of your Contract, read with all appendices and annexure, as determined by you and entirely in your unquestioned opinion.

Within ten days of the receipt of demand from you, we shall, without demur, pay you the sum or sums mentioned in your demand up to a total sum not exceeding Rs._____. We do recognize your authority to demand a total of the above sum, without having to assign any reason or to offer any proof or to substantiate the grounds of your demand. We admit our liability to make payment to you as and when demanded.

We confirm that this guarantee shall remain in force for a period of 16 (sixteen) months that is until_____ or any extension of this period. We moreover affirm that this is an irrevocable confirmed guarantee and shall not be withdrawn nor cancelled before the aforementioned date.

Insofar as you do not en-cash this guarantee wholly at one time, it shall remain valid and in force in the sum equal to the difference between the total amount of Rs._____ and the amounts paid to you against your demands.

We undertake to renew this guarantee or to extend the period of its validity within one month before its expiry, upon being called upon by you to do so. If, for any reason whatever and under circumstance whatsoever, this guarantee is not renewed or extended, we undertake to pay you the full amount of the guarantee on demand and without demur.

Signature, seal and designation

Duly authorized bank representative

UNDERTAKING FOR CLOSURE OF CONTRACT

To,

Gujarat Biotechnology University,
GIFT City road, Nr. GIFT City,
Shahpur Village, Gandhinagar - 382355

Dear Sir,

Whereas, we M/s _____ the contractor have successfully completed the work regarding "_____" and the final bill of the contractor have been finalized and certified by Architect/ Project Management Consultant and also approved by the Project Manager/ Engineer in Charge for a total value of Rs. _____ (Rupees _____ Only).

Now, we the contractor hereby agrees that the final bill is acceptable to us and we shall not claim any further amount relating to extra item under any head including escalation of cost, additional item, change in scope of work, liquidated damages or under any other pretext/ context as all our claims/ demands, if any, have been covered under the final bill. Accordingly, the contract is closed for all-purpose except to the extent of our defect liability and performance guarantee and/or warranty as per requirement of the contract.

We further undertake that over and above our liability under defect liability clause under agreement for the above work, we shall also be liable for performance of the bought out items included in the above final bill.

This undertaking is executed and delivered to you in good faith without any pressure, coercion, obligation or influences whatsoever and accordingly we have signed this understanding having fully aware of the meaning, contents and interpretation of this undertaking.

Thanking you,

Date:

Place:

Yours faithfully,

Authorized Signatory

Construction Agency/ Contractor

TECHNICAL SPECIFICATIONS

A. GENERAL

The scope of work covers execution and completion of the foundations and supper structure of the Construction of Compound wall for 23 Acre land allotted to GBU, Gandhinagar, GIFT City Road, Nr. GIFT City, Shahpur Village, Gandhinagar - 382355, in accordance with drawings and specifications prepared by and under direction and to the satisfaction of Architect & GBU

GBU intends to develop the compound wall in continuation with the existing boundary wall for the remaining area. The approximate length of the boundary wall is 900mt.

Contract:
The form of Contract shall be according to the printed form "Condition of Contract". The following clauses shall be considered as an extension and not in limitation of the obligation of the Contractor.

1) Contractor to inspect Site:
The Contractor shall visit and examine the construction site and satisfy as to the nature of the existing roads or other means of communications, the character of the soil and the excavation , the extent of magnitude of the work and facilities for obtaining materials and shall obtain generally his own information on all matters affecting the execution of the work. No extra charge made in consequence of any miss-understanding or incorrect information on any of these points or on grounds of insufficient description will be allowed. All expenses incurred by the Contractor in connection with obtaining information for submitting this tender including his visits to the site or efforts in compiling the tender shall be borne by the Tenderer and no claim for reimbursement thereof shall be entertained.

2) Access to Site:
The Contractor is to include in his rates for forming access to the Site with all temporary roads gangways required for the works.

3) Setting Out:
The Contractor shall set out the building in accordance with the plans. All grid / center lines shall be pegged out to satisfaction of the Architects. The Contractor shall be responsible for the correctness of the lining out and any inaccuracies are to be rectified at his own expense. He will be responsible for taking ground levels of the Site before setting out and recording them without any extra charge. The Contractor shall construct and maintain proper benches at the intersection of all main walls, columns, etc., in order that the lines and levels may be accurately checked at all times.

4) Treasure Trove:
Should any treasure, fossils, minerals, or works of art of antiquarian interest to found during excavation or while carrying out the works, the Contractor shall give

immediate notice to the Architects of any such discovery and shall make over such finds to the Employer.

5) Access for Inspection:

The Contractor is to provide at all times during the progress of the work and the maintenance period proper means of access, with ladders, gangways, etc., and the necessary attendance to move and adapt as directed for the inspection of measurement of the works by the Architects or their representatives.

6) Attendance upon all Trades:

The general Contractor shall be required to attend on all the Tradesmen or Sub-Contractors appointed by the Employer for Water Supply and Sanitary, Electrical Installation, Lifts, Air-conditioning, Security Equipment, Hardware, Telephone and other special Contractors. The rates quoted shall be inclusive of attendance and also allow the Contractors appointed by the Employer, use of his scaffolding and retain until such times the relevant Sub-contractor works are complete.

7) Water Supply:

Water shall be arranged in accordance with Clause 30 of Special Conditions of Contract. The general Contractor shall allow the use of water for any other works on the Site done by other Contractors appointed by the Employer and the Architects shall apportion the cost.

8) Electric Supply:

Shall be arranged in accordance with Clause 30 of the Special Conditions of the Contract. He shall also allow other Contractors to use the facilities when requested but consumption charges will be apportioned by the Architects.

9) Gate-Keeper and Watchmen:

The Contractor from the time of being placed in possession of the Site must make arrangements for watching lighting and protecting the work, all materials, workmen and the public by day and night on all days including Sundays and Holidays at his own cost

10) Sheds for Materials:

The Contractor shall provide for all necessary sheds of adequate dimensions for shortage and protection of materials like cement, lime, timber, and such other materials including tools and equipment which are likely to deteriorate by the action of Sun, Wind, Rain or other natural causes due to exposure in the open.

All such sheds shall be cleared away and the whole area left in good order on completion of the Contract to the satisfaction of the Architects.

All materials, which are stored on the site such as bricks, aggregates, etc., shall be stacked in such a manner as to facilities rapid and easy checking of quantum of such materials.

11) Cost of Transporting:

The Contractor shall allow in his cost for all transporting, unloading stacking and storing of supplies of goods and materials for this work on the Site and in the places approved from time to time by the Architects. The Contractor shall allow in his price for transport of all materials controlled or otherwise to the site.

12) **W.C. & Sanitary accommodation and Office Assessors and accommodation**:

The Contractor shall provide at his own cost and expense adequate closet and sanitary accommodation complying in every respect to the rules and regulations in force of the local authorities and other public bodies, for his workmen of nominated sub-contractors and others contractors working in the building, the assistant engineer and other employer's agent connected with this building project and maintain the same in good working order.

The Contractor shall also provide at his own expenses adequate office and shall maintain the same in a satisfactory condition and shall provide light, fan and attendant, etc., for the same and shall remove them after completion of works. He shall arrange to supply at his own expenses, office furniture with drawing assessors for the official use of the assistance engineer and at all times maintain in good working order a dumpy level and a Theodolite at Site, to enable the Assistant Engineer to check the lines and levels of work.

13) Materials, Workmanship & Samples:

Materials shall be of approved quality and the best of their kind available and shall generally conform to I.S. Specifications. The Contractor shall take prior approval from Owner/Architect and order all the materials required for the execution of work as early as necessary and ensure that such materials are on Site well ahead of requirement for use in the work. The work-involved calls for high standard of workmanship combined with speed and to the entire satisfaction of the Architects.

14) Rates for Non-Tender Items:

Rates of items not included in Schedule of Quantities shall be settled by the Architects/ PMC/GBU as mentioned in the variation Clause of the Contract Conditions.

15) Rate to include:

The rates quoted shall be for all heights and depths and for finished work.

16) **To ascertain from Contractors for other trades**.

The Contractor shall ascertain from other Contractors as directly by the Architects all particular relating to their work with regards to the order of its execution and the position in which cases, holes and similar items will be required, before the work is taken in hand as no claims for extra will be allowed for cutting away work already executed in consequence of any neglect by the Contractors to ascertain these particulars beforehand.

Before ordering materials, the Contractors shall get the samples approved from the Architects well in time.

17) Testing of work and material:

The Contractors shall, if required by the Architects, arrange to test materials and / or portions of the works at his own cost in order to provide their soundness and efficiency. If after any such test the work or portion of works is found in the opinion of the Architect to be defective or unsound, the Contractor shall put down and re-do the same at his own cost. Defective materials shall immediately the removed from the site.

18) Foremen and Tradesmen:

All tradesmen/technical staff shall be experienced men properly equipped with suitable tools for carrying out all the work of carpentry and joinery and other specialist trades in a first class manner and where the Architects deemed necessary, the Contractor shall provide any such tools, special or ordinary which are considered necessary for carrying out the work in a proper manner.

All such tradesmen shall work under an experience and properly trained foremen, who shall be capable of reading and understanding all drawings, pertaining to this work and the Contractor shall also comply with other conditions set out in Clause 9 of the Conditions of the Contract.

19) Work Program / Weekly Progress Report:

The Contractor shall prepare and submit to Architects for approval, a bar chart showing the program of construction of various items, fitted within the period stipulated for completion, within 15 days of the communication of the acceptance of the tender. The Contractor shall also furnish necessary particulars to the assistance engineer for compiling weekly/monthly progress reports in the format furnished by the Architects/ PMC.

20) **Clearing of Site:**

Site cleaning and making the site accessible for execution of the work shall be in the scope of bidders. In case of the bidder requiring removal/breakage of any feature/asset of GBU, the same can be cleared only after getting written clearance from GBU. The same may be restored by the bidder at his cost if demanded by GBU at any point of time.

The Contractor shall after completion of the work clear the site of all the debris and left-over materials at his own expense to the entire satisfaction of the Owner / Architects and Municipal or other public authorities.

21) Photographs:

The Contractor shall at his own expense supply to the Owner & Architects with triplicate copies of photographs not less than 15 cm. x 10 cm. (6” x 4”) of the works taken from two approved portions of each segment, at intervals of not more than 8 days during the progress of the work and at every important stage of construction.

22) Preparation of site for occupation and use on Completion:

The whole of the work shall be thoroughly inspected by the Contractor and all deficiencies and defects put right. On completion of such inspection, the Contractor

shall inform the Architects in writing that he has finished the work and it is ready for the Architects inspection.

On Completion, the Contractor shall clean every part of the site neat and clean and ready for immediate occupation and to the satisfaction of the Architects / PMC.

23) **Contractor to provide Notice Board:**

The Contractor shall provide notice board on proper supports 2 m. x 1.5 m. (6' x 4' – 6") in a position approved by the Architects. He shall allow for painting and lettering stating name of the work, name of Architects, Structural Consultants, General Contractor and Sub-Contractor. All letters except that of the name of the work shall be in letters not exceeding 5 cm. in height and all to the approval of the Architects.

24) Protection:

The Contractor shall properly cover up and protect all work through the duration of work until completion, particularly masonry, risers, moldings, steps, terrace or special floor finishes, staircases and balustrades, door and glass, paintwork and all finishing.

25) Co-ordination Contract:

The contractor will coordinate with the supplier of equipment/machineries/ fountains like of Roads & Utilites contractor / or any other agency which are related to complete these project with no extra cost to GBU.

B. DETAIL SPECIFICATIONS

SECTION – A: MATERIALS

1) Material shall be of best-approved quality, make as approved and they shall comply with the respective Specification.
2) All material shall got approved before supply and the approved make shall be supplied as directed.
3) If directed, materials shall be tested by GBU for its specification and quality.
4) It shall be obligatory for the Contractor to furnish certificate, if deemed by GBU, from manufacturer or the material supplier that the work has been carried out by using their material and as per their specified procedure.
5) All materials and parts supplied by the Employer / any other Specialist Firms shall be properly stored and the Contractor shall be responsible for its quality and performance.
6) Unless otherwise shown in the documents or mentioned in the "Schedule of Quantities" or special specification, the quality of materials, workmanship, dimensions, etc., shall be as specified as hereunder.
7) All equipment and facilities for carrying out field tests on materials shall be provided by the Contractor without any extra cost.
8) The work shall be done in such a manner that no damage to the existing structure or property may occur; else the same shall be rectified by the contractor at his own cost.

9) The material shall be provided with the warranty as per manufacturer's specification or as defined by GBU for the respective items.
10) Material shall comply with the respective Indian Standard Specification.
11) Samples of all materials shall be got approved before placing order and the approved sample shall be deposited with the Architect & PMC/Owner.
12) In case of non-availability of materials in metric sizes the nearest size in FPS units shall be provided with prior approval of the Architects for which neither extra will be paid not any rebates shall be recovered.
13) As directed, materials shall be tested in any approved Testing Laboratory and the test certificates in original shall be submitted to the Architect / PMC and repeated testing including charges for repeated tests, if ordered, shall be borne by the Contractor.
14) It shall be obligatory for the Contractor to furnish certificate, if deemed by the Architects/ PMC, from manufacturer or the material supplier that the work has been carried out by using their material and as per their recommendations.
15) All materials supplied by the Employer / any other Specialist Firms shall be properly stored and the Contractor shall be responsible for its safe custody until they are required on the works and till the completion of the work.
16) Unless otherwise shown on the Drawings or mentioned in the "Schedule of Quantities" or special specification, the quality of materials, workmanship, dimensions, etc., shall be as specified as hereunder.
17) All equipment and facilities for carrying out field tests on materials shall be provided by the Contractor without any extra cost.

a) **Cement**: Cement shall comply in every respect with the requirements of the latest publications of IS: 6909 and unless otherwise specified Sulphate Resisting Cement shall be used for all kinds of RCC works and Ordinary Portland cement for other works.

b) **Fine Aggregate**: Sand shall confirm to IS: 383 and relevant portion of IS:515. It shall pass through pass through a I.S. sieve 4.75 mm. (3/16 B.S.) test sieve, leaving a residue not more than 5%.

c) **Reinforcement**:
   a. Reinforcement of mild steel, tested quality confirming to I.S.: 432-1966 and any other I.S. applicable
   b. TMT bars confirming to IS:1786 latest revision
   c. Hard drawn Fe 415 steel wire fabric confirming to IS: 1566; 1967.

   All finished bars shall be free from cracks, surface flaws, and laminations, jagged and imperfect edges.

d) **Paints**: Lime for lime wash, dry distemper, oil bound distemper cement primer, oil paint, enamel paint, flat oil paint, plastic emulsion paint, anti-corrosive primer, red lead, water-proof cement paint shall be from an approved manufacturer and shall conform to the latest Indian Standard for various paints. Ready mixed pains as received from the manufacturer without any admixture

shall be used, except for addition of thinner, if recommended by the manufacturer.

SECTION – B: Standards

REINFORCEMENT AND FORM WORK.

Indian Standards to be followed are:

Sr.No.	Standard	Purpose
1.	IS 226	Specification for structural steel standard quality
2.	IS 228	Methods for chemical analysis of steels
3.	IS 280	Specification for mild steel wire for general engineering purpose

CEMENT

Cement complying to IS 269 shall be used unless otherwise specified cement. However, cement conforming to any of the following Indian Standards may be used if approved by the CC.

Sr.No.	Standard	Purpose
1.	IS 269	Ordinary Portland cement
2.	IS 455	Portland slag cement
3.	IS 1489	Portland pozzolana cement
4.	IS 6909	Super Sulphate cement
5.	IS 8041	Rapid hardening cement
6.	IS 8042	White Portland cement
7.	IS 8043	Hydrophobic Portland cement

PLASTERING AND POINTING

The Indian Standards to be followed are:

Sr.No.	Standard	Purpose
1.	IS 383	Specification for coarse and fine aggregates for natural sources for concrete.
2.	IS 412	Specifications for expanded metal steel sheets for general purposes.
3.	IS 1542	Specifications for sand for plaster

PAINTING

Indian Standards to be followed for the work are:

Sr.No.	Standard	Purpose
1.	IS 75	Specification for linseed oil, raw and refined.
2.	IS 345	Specification for wood filter, transparent, liquid.
3.	IS 348	Specification for French polish.
4.	IS 427	Specification for distemper - dry colour (as required)
5.	IS 428	Specification for distemper oil emulsion colour (as required)
6.	IS 533	Specification for gum spirit of turpentine (oil of turpentine).
7.	IS 1477	Code of practice for painting or ferrous metals in buildings: Part 1 Pre treatment Part 2 Painting
8.	IS 2338	Code of practice for finishing of wood and wood based materials: Part 1 Operation and workmanship Part 2 Schedule
9.	IS 2395	Code of practice for painting concrete, masonry & plaster surfaces
10.	IS 2932	Specification for enamel synthetic exterior (a) under coating and (b) finishing
11.	IS 2933	Specification for enamel exterior, (a) under coating and (b) finishing
12.	IS 3140	Code of practice for painting asbestos cement building products
13.	IS 3537	Specification for ready mixed paint finishing interior for general purposes to IS colours.
14.	IS 3631	Specification for ready mixed paint for finishing exterior (I) Alkyd, (ii) non-Alkyd, for general purposes to IS colours.
15.	IS 4597	Code of practice for finishing of wood and wood based products with nitrocellulose and cold catalyzed materials
16.	IS 5410	Specification for cement paints
17.	IS 6005	Code of Practice for phosphate of Iron and steel
18.	IS 6278	Code of practice for white washing and colour washing

C. ITEM SPECIFICATION

Item No 1

Excavation for foundation up to 1.5mt.depth including sorting out and stacking of useful materials and disposing of the excavated stuff up to 50 meter lead.

Hard or Dense soil

1.0 GENERAL

1.1 Any soil or Dense / hard which generally yields to the application of pickaxes and shovels phawarh as takes or any such ordinary excavating implement or organic soil gravel silt sand turf loan clay peat etc fall under this category

1.2. Excavation for structures shall consist of the removal of material for the construction of Buildings, in accordance with the requirements, of these specifications and the lines and dimensions shown on the drawings or as indicated by the Engineer-in-charge. The work shall be include all necessary sheeting, shoring, bracing, draining and pumping and the removal of all logs, stumps, shrubs and other deleterious matter and obstruction necessary for the foundations, trimming bottoms of excavations; back filling and clearing up the site and the disposal of all surplus material.

1.3. The depth to which the excavation is to be carried out shall be is shown on the drawings, unless the type of materia1s.encountered is such as to required changes, in which case the depth shall be as ordered by the Engineer-in-charge.

1.4. Excavation shall be taken to the width of the lowest step of the footing. The contractor at his own expense shall put up necessary shoring, strutting and planking or cut slopes to a safer angle or both with due regard to the safety of personal and works and to the satisfaction of the Engineer-in-charge.

1.5. Where water is met with in excavation due to stream flow, seepage, springs, rain or other reasons, the contractor shall take adequate measures such as bailing pumping, to keep the foundation trenches dry when so required and to protect the green concrete/ masonry against damage by erosion or sudden rising of water level. The methods to be adopted in this regard and other details thereof shall be left to the choice of the contractor but subject to approval of the Engineer-in-charge. Approval of the Engineer-in-charge shall, however not relieve the contractor of the responsibility for *the* adequacy of dewatering, and production arrangements and for the quality and safety of the works.

1.6. Pumping from the interior of any foundation enclosure shall be done in such a manner as to preclude the possibility of movement of water through any fresh concrete. No pumping shall be permitted during the placing of concrete or for any period of at least 24 hours thereafter, unless it is done from a suitable sump separated from the concrete work by a water tight wall or other similar means.

1.7. The bottom of the foundation shall be levelled both longitudinally and transversely or stepped as directed by the Engineer-in-charge. Before foundation concrete is laid, the surface shall be slightly watered and rammed. In the event of excavation having been made deeper than that shown on the drawings or as otherwise ordered by the Engineer-in-charge, the extra depth shall be made up with concrete or masonry of the foundation grade, at the cost of the contractor. Ordinary filling shall not be used for the purpose to bring the foundation to level if there are any slips or blows is the excavation, these shall be removed by the contractor at his own cost.

1.8. Near towns, villages and all frequented places, trenches and foundation pits shall be securely fenced, provided with proper caution sings and marked with red lights at night to avoid accidents. The contractor shall take adequate protective measures to see that the excavation operations do not affect or damage adjoining structures

1.9. Back filling shall be done with approved materials after concrete or masonry is fully set and carried out in such a way as not to cause undue thrust on any part of the structure. All space between foundation masonry or concrete and the sides of excavation shall be refilled to the original surface, making due allowance for settlement in 250mm.loose layers, which shall be watered and compacted.

1.10. All the excavated materials shall be the property of the Government. Where the excavated material is to be used in the filling of plinth, it shall be directly deposited at the required location, within 100 meters lead.

1.11. All useful materials not intended for use in the filling, shall be stacked neatly on Government land as directed by the Engineer-in-charge within 100 meters lead. Unsuitable and surplus materials not intended for use shall be disposed off as directed by the Engineer-in-charge

2.0 CLEANING SITE

2.1 The site on which the structure is to be built be cleaned and all obstructive loose stone materials and rubbish of all king bush wood and trees shall be removed as directed The material so obtained shall be property of the Government and shall be conveyed and stacked as directed within 50m lead. The roots of the trees coming in the sides shall be cut and coated with hot asphalt.

3.0 WORKMAN SHIP

3.1. After the site has been cleared the limits of excavation shall be set out true to lines, curves, slops, grades and sections as shown on the drawings or as directed by the Engineer-in-charge. The contractor shall provide all labour, survey instruments and materials such as strings, pegs, nails, bamboos, stones, lime, mortar, concrete etc. required in connection with the setting out of works and the establishment of bench mark, centre line stones and other marks and stakes as long as in the opinion of the Engineer-in-charge, they are required for the work.

3.2. The excavation in foundation shall be carried out in true line and level and shall have the width and depth as shown in the drawings or as directed. The contractor shall do the necessary shoring and shutting or providing necessary slopes to a safe angle, at his own cost. The payment for such precautionary measures shall be paid separately if not specified. The bottom of the excavated area shall be levelled both longitudinally and transversely as directed by removing and watering as required no earth filling will be allowed for bringing it to level. If by mistake or any excavation is made deeper or wider than that shown on the plan or directed. The extra depth or width shall be made up with concrete of same

proportion as specified for the foundation concrete at the cost of the contractor. The excavation up to 1.5m depth shall be measured under this item.

3.3. The rate of side clearance is deemed to be included in the rate of earth work for which no extra will be paid.

4.0. SETTING OUT

4.1. After clearing the site the centre lines will be given by the Engineer-in-charge. The contractor shall assume full responsibility for alignment, elevation and dimension of each and all parts of the work Contractor shall supply labours materials etc. required for setting out the reference marks and bench marks and shall maintain them as long as required and directed.

5.0. DISPOSAL OF THE EXCAVATED STUFF

5.1. The excavated stuff of the selected type shall be used in filling the trenches and plinth or levelling the ground in layers including ramming and watering etc.

5.2. The balance of the excavated quantity shall be removed by the contractor from the site of work to a place as directed with lead up to 50 M and all lift.

6.0 MODE OF MEASUREMENT & PAYMENT :

6.1. Excavation for structures shall be measured in cubic meters for each class of materials encountered, limited to the dimensions shown on the drawing or as directed by the Engineer-in-charge. Excavation over increased width cutting of slopes, shoring, shuttering and planking shall be deemed as convenience for the contractor in executing the work and shall not be measured and paid for separately.

The contract under rate for the items of excavation for structures shall be paid in full for carrying out the required operations including:

1. Setting out and fixing bench marks and centre lines stones.
2. Construction of necessary shoring and bracing and their subsequent removal.
3. Removal of all logs, stumps, grubs and other deleterious matter and obstructions for placing the foundations including trimming of bottoms of excavations;
4. Foundation sealing, dewatering including pumping;
5. Back filling, clearing up the site and disposal of all surplus material within all lifts and lead up to 100 meters;
6. All labour, materials, tools equipment, safeguards and incidentals necessary to complete the work to the specification.

6.2. Excavation shall be for soil such as vegetation or organic soil, turf, sand, silt, loam, clay, mud, black cotton soil, soft shale or soft murrum, a mixture of these and similar material which yields to the ordinary application of pick and shovel, or other ordinary digging equipment Removal of gravel or any other nodular material having diameter in anyone

direction not exceeding 75mm. occurring in such strata shall be deemed to be covered under this category. The classification of excavation shall be decided by the Engineer–in--charge and his decision shall be final and binding on the contractor.

6.2. The excavation work shall be measured for its length breadth and depth, limiting dimensions to those specified on plan or as directed. The rate shall be for a unit of one cubic meter.

6.3. The payment will be made on Cubic Meter basis of the finished work.

Note: - All general technical specifications of R & B technical booklet shall be followed for the work throughout.

Item No 2.

Providing and laying cement concrete 1:4:8 (1 cement: 4 coarse sand: 8 Hand broken stone aggregates 40 mm nominal size) and curing etc complete excluding cost of formwork in (A) Foundation & Plinth.

Materials

Water

1.1 Water shall not be salty brackish and shall be clean reasonably clear and free objectionable quantities of silt and traces of oil j\injurious alkalis salts organic matter and other deleterious material which will either weaken the mortar of concrete or cause efflorescence or attack the steel in R C C container for transport storage and huddling of water shall be clean, Water shall confirm to the standard specified in I S 455 -1978

1.2 If required by the Engineer in charge it shall be tested by comparison with distilled water compression shall be made by means of standard cement tests for soundness time of setting and mortar strength as specified in I S 269-1976 Any indication of unsoundness charge in time of setting by 30 minutes or more or decrease of more than 10 percent strength of mortar prepared with distilled water sample when compared with the result obtained with mortar prepared with distilled water shall be sufficient cause for rejection of water under test.

1.3 Water for curing mortar concrete or masonry should not be too acidic or too alkaline

1.4 It shall be free of elements which significantly affect the hydration reaction or otherwise interface with the hardening of mortar or concrete during curing or those which produce objectionable stains or other unsightly deposits on concrete or mortar surfaces

1.5 Hard and bitter water shall not be used for curing

1.6 Potable water will generally found suitable for curing mortar or concrete

2.0 Cement

2.1 Cement shall be ordinary Portland slag cement as per IS 1624 -1974 or Portland slag cement as per IS 455-1976

2.2 Cement shall be stored above the ground level in perfectly dry and water tight sheds. Wherever bulk storage containers are used, their capacity should be sufficient to cater to the requirements at site and should be cleaned at least once every 3 to 4 months. The aggregate shall be stored in such a way as to prevent admixture of foreign materials. Different size of fine or coarse aggregate shall be stored in separate stock-piles sufficiently away from the each other to prevent intermixing the materials.

3.0 Sand

Sand shall be natural sand, clean well graded, hard strong durable and gritty particular free from immures amounts of dust, clay, kankar modules, soft: or flaky particles shall alkali salts, organic matter, learn mica or other deleterious substance and shall be got approved from the Engineer-in-charge. The sand shall not contain more than 8 percent of slit as determined by field test. if necessary the sand.
Coarse Sand: The fineness modules of coarse sand shall not be less than 2.5 and shall not exceed 3.0. The sieve analysis of coarse sand be as under:

I. S. Sieve Designation	**% by wt. passing**
4.75 mm	100
2.36mm	90 to 100
1.18 mm	70 to 100
600 MC	30 to 100
300 MC	85 to 70
150 MC	00 to 50

Fine Sand: The fineness module shall not exceed 1.0 the sieve analysis of fine sand be as under:

IS. Sieve Designation	% by wt. passing
4.75 mm	100
2.3 6mm	. 100
1.18 mm	75 to 100
600 MC	40 to 85
300 MC	05 to 50
150 MC	00 to 10

4.0 Stone Coarse aggregate for Nominal mix concrete:
Coarse aggregate shall be machine crushed stone of black trap and hard, strong, dense, durable, clean and free from disintegrated pieces, organic and other deleterious matter. .

The aggregate shall be generally be cubical in shape unless special stones of particular quarries are mentioned. Aggregate shall be machine crushed from the best black trap. Aggregate shall have no deleterious reaction with cement. The size of the coarse

aggregate for plain cement concrete and ordinary reinforced cement shall generally as per the table given below

IS Sieve designation	% passing for single sized aggregate of nominal size		
80mm			
63 mm	100	-	-
40mm	85-100	100	0
20mm	0-20	85-100.	100
16mm	-	-	85-100

IS Sieve designation	% passing for single sized aggregate of nominal size		
12.5 mm			
10mm	0.5	0.20	0.30
4.75 mm	-	0.5	0.5
2.35 mm	-	-	-

Note: This percentage may be varied somewhat by the Engineer-in-charge when considered necessary containing better and strength of concrete.

The grading test shall be taken in the beginning and at the change of source of material as indicated in I.S. 383-1970 and I.S. 456-1978. Aggregate shall be stored separately and handled in such a manner so as to prevent the intermixing diff aggregate if the aggregate are covered with dust, they shall be washed with water to make them clean.

1.6 All materials shall be stored as to prevent their deterioration of their quality and fitness for the work. Any material which has deteriorated or has been damaged or is otherwise considered defective by the Engineer-in-charge shall not be used in the work.

Workmanship

Before starting concreting, the road of foundation trenches shall be cleared of all loose materials, levelled, watered & rammed as directed

Mixing: The concrete shall be mixed in a mechanical mixes. If Quantity of cement concrete is very small, after taking prior permission of Engineer in charge. Mixing shall be done on a smooth watertight platform large enough to allow efficient turning over the ingredients of concrete before and after adding water, Mixing platform shall be so arranged so that no foreign material shall get mixed with concrete nor does the mixing water flow out. Cement in required number of bags shall be placed in a uniform layer on top of the measured quantity of fine and coarse aggregate, which shall also be spread in a layer of uniform thickness on the mixing platform, Dry coarse and fine aggregate and cement shall then be mixed thoroughly by turning over to get a mixture of uniform colour. Enough water shall then be added gradually and the mass turned over till a mix of required consistency is obtained. In hand mixing quantity of cement shall be increased by 10 per cent above that specified.

11. For mass concrete work. : The concrete shall be mixed in a mechanical mixer. The method of transporting and placing concrete shall be approved by the Engineer-in charge. Concrete shall be so transported and placed so that no contamination, segregations or loss of its constituent material takes place. All form work and reinforcement contained in its' shall be cleaned and made free from standing water, dust, snow or ice immediately before placing of concrete. No concrete shall be placed in any part of the structure until the approval of the Engineer-in-charge has been obtained.

12. Unless otherwise agreed to by the Engineer-in-charge, concrete shall not be dropped into place from a height exceeding 2 meters. When chutes are used they shall be kept clean and used in such a way as to avoid segregation. When concreting has to be resumed on a surface which has hardened, it shall be roughened, kept clean, thoroughly wetted, and covered with a 13 mm. thick layer of mortar composed of cement and sand in the same ratio as in the concrete mix itself. This 13mm. layer of mortar shall be freshly mixed and placed immediately before placing of new concrete. Where concrete has not fully hardened, all laitance shall be removed by scrubbing the wet surface with wire or bristle brushes, care being taken to avoid dislodgement of any particles of coarse aggregate. The Surface shall then be thoroughly wetted, all free water removed, and the coated with neat cement grout. The first layer of concrete to be placed on this surface shall not exceed 150mm. in thickness, and shall be well rammed against old work particular attention being given to corners arid Close spots.

Form work if required: Form work shall include all temporary or permanent forms required for forming the concrete. Together with all temporary construction required for their support. Forms for concrete shall be constructed of metal or timber suitably lined and be of substantial and rigid construction true to shape and dimensions shown on the drawings. Where metal forms are used, all bolts and rivets shall be countersunk and well ground to provide a smooth plane surface. Where timber is used it shall be well season.

14. The Engineer-in-charge shall be informed in advance by the contractor of his intention of strike any formwork. While fixing the time for removal of formwork, due consideration shall be given to local conditions, character of the structure. The weather and other conditions that influence the setting of concrete and of the materials used in the mix. Vertical forms of beams, columns and walls may be removed after 2 days. All form work shall be removed without causing any damage to the concrete.

15. The unit rate concrete shall include the cost of all materials, tools and plant required for mixing, placing in position, compacting, finishing as per direction of the Engineer-in-charge, curing and all other incidental expenses for producing concrete of specified strength to complete the structure or its components as shown on the drawings and according to these specifications. They shall also include the cost of making, fixing and removing of all centering and forms required for the work.

16. The payment will be made on Cubic Meter basis of the finished work.

2.1. General

Before stating concrete the bed of foundation trenches shall be cleared of all loose materials levelled watered and rammed as directed.

Proportion of Mix

The proportion of cement sand and coarse aggregate shall be one part of cement.4 (four) parts of sand and 8 (Eight) parts of stone aggregates and shall be measured by volume.

Mixing:

2.3.1. The concrete shall be mixed in a mechanical mixer at the site of work Hand mixing may however be allowed for smaller quantity of work if approved by the Engineer-in-charge. When hand mixing is permitted by the Engineer-in-charge in case of break-down of machineries and in the interest of the work. It shall be carried out on a water tight platform and care shall be taken to ensure that mixing is continued until the mass is uniform in colour and consistency. However in such case 10% more cement than otherwise period 1 1/12 to 2 minutes. The quantity of water shall be just sufficient to produce a dense concrete of required workability for the purpose.

Mixers which have been out of use for more than 30 minutes shall be thoroughly cleaned before putting in a new batch. Unless otherwise agreed to be the Engineer in-charge, the first batch of concrete from the mixer shall contain only two thirds of normal quantity of coarse aggregate. Mixing plant shall be thoroughly cleaned before changing from one type of cement to another. .

Transporting & Placing the Concrete:

The concrete shall be handed from the place of mixing to the final position in not more than 15 minutes by the method as directed and shall be placed into its final position compacted and finished within 30 minutes of mixing with water i.e. before the setting commences.

The concrete shall be laid in layers of 15 cms to 20 cms.
The concrete shall be rammed with heavy iron rammers and rapidly to get the required compaction and to allow all the interstices to be filled with mortar.

Curing:

After the final set, the concrete shall be kept continuously wet if required by pounding for a period of not less than 7 days from the date of placement. Hard and bitter water shall not be used for curing

Mode of Measurement & Payment:
The concrete shall be measured for its length breadth and depth, limiting dimensions to those specified on plan or as directed.

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

Note :- All general technical specifications of R & B technical booklet shall be followed for the work throughout.

Item No 3

Providing and laying controlled cement concrete M-200 and curing complete excluding the cost of form work and reinforcement (A) Foundations, footings, base of columns and mass concrete..

MATERIALS

1.0. Materials : Water shall conform *to* M-l. Cement shall conform to M-3. Sand shall conform to M-6. Grit shall conform toM-8. Graded stone aggregate 20 mm. nominal size shall conform to M-12.

2.0. General:

2.1. The concrete mix is not required to be designed by preliminary tests. The proportion of the concrete mix shall be 1 : 2 :4 (1 cement: 2 coarse sand ; 4 graded stone aggregate 10 mm. nominal size) by volume. Concrete work shall have exposed concrete surface or as specified in the item.

2.2. The designation ordinary M-100, M-150, M-200, M-250 specified as per. I.S. Corresponding approximately to 1 : 3 : 6,1 : 2 : 4, 1 : 1 1/2 : 3 and 1:1:2 nominal mix of ordinary concrete by volume respectively.

2.3. The ingredients required for ordinary concrete containing one beg of cement of 50 Kg. by weight (0.0342 Cu. M.) fordifferent proportions of mix shall be as under:

Grade of Concrete	Mix By' volume	total quantity of dry aggregate by volume per 50 kg of cement	Proportion of fine aggregate to coarse aggregate	Quantity of water per 50 kg of cement(litter)

M-I00	1:3:6	300	General 1:2 for fine aggregate to coarse aggregate by volume but subject to a upper limit of 1:1.5 and lower limit 1:3	34
M-200	1:2:4	220		32
M-200				30
M-200	1:1:2	100		27

2.4. The water cement ratios shall not more than those specified in the above table. The cement content of the mix specified in the Table shall be increased if the quantity of water in a mix has to be increased to overcome the difficulties of placement and compaction so that the water-cement-ratio specified in the Table is not exceeded.

2.5. Workability of the concrete shall be controlled by maintaining a water-cement-ratio that is bound to give a concrete mix which is just sufficiently wet to be placed and compacted without difficulty with the means available.
2.6. The maximum size of coarse aggregate shall be as large as possible within the limits specified but in no case greater than one fourth of the minimum thickness of the member, provided that the concrete can be placed without difficulty so as to surround all reinforcement thoroughly and to fill the comers of the form.
2.7. For reinforced concrete work, coarse aggregates having a nominal size of 20 mm. are generally considered satisfactory.
2.8. For heavily reinforced concrete members as in the case of ribs of main beams, the nominal maximum size of coarse aggregate should usually be restricted to 5 mm. less than the minimum, clear distance between the main bars, or 5 mm. less than the minimum cover to the reinforcement whichever is smaller.
2.9. Where the reinforcement is widely spaced as in solid slabs, limitations of size of the aggregate may not be important and the nominal maximum size may sometimes be as great as OF greater than the minimum cover.
2.10. Admixture may be used in concrete only with approval of Engineer-in-charge based upon the evidence that with the passage of time, neither the compressive strength of concrete is reduced nor are other requisite qualities of concrete and steel impaired by the use of such admixtures.

3.0. Workmanship:
3.1. Proportioning : Proportioning shall be done by volume, except cement which shall be measured in terms of bags of 50Kg. weight. The volume of one such bag being taken as 0.0342 Cu. metre. Boxes of suitable sizes shall be used for measuring
sand aggregate. The size of the boxes (internal) shall be 35 cms. x 25 cms. and 40 Cms. deep. While measuring the aggregate and sand, the box shall be filled without shaking ramming or hammering. The proportioning of sand shall be on the basis of its dry volume and in case of damp sand, allowances for bulkage shall be made.

3.2 Mixing:
3.2.1. For all work, 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. Measured quantity of aggregate, sand, cement required for each batch shall be poured into the drum of the mechanical mixer while it is continuously running. After about half a minute of dry mixing, measured quantity of water required for each batch of concrete mix shall be added gradually and mixing continued for another one and a half minute. Mixing shall be. continued till materials are uniformly distributed and uniform colour of the entire mass is obtained and each individual particle of the coarse aggregate shows complete coating of mortar containing its proportionate amount of cement. In no case shall the mixing be done for less than 2 minutes after all
ingredients have been put into the mixer.

3.2.2. When hand mixing is permitted by the Engineer-in-charge for small jobs or for certain other reasons, it shall be done on the smooth watertight platform large enough to allow efficient turning over the ingredients of concrete before and after adding water. Mixing platform shall be so arranged that no foreign material gets mixed with concrete nor does

the mixing water flow out. Cement in required number of bags shall be placed in a uniform layer on top of the measured quantity of fine and coarse aggregate, which shall also be spread in a layer of uniform thickness on the mixing platform. Dry coarse and fine aggregate arid cement shall then be mixed thoroughly by turning over to get a mixture to uniform colour. Specified quantity of water shall then be added gradually through a rose-can and the mass turned over till a mix of required consistency is
obtained. In hand mixing, quantity of cement shall be increased by 10 percept above that specified.

3.2.3. Mixers which have been out of use for more than 30 minutes shall be thoroughly cleaned before putting in a new batch. Unless otherwise agreed to by the Engineer-in-charge the first batch of concrete from the mixture shall contain only two thirds of normal quantity of coarse aggregate. Mixing plant shall be thoroughly cleaned before changing from one type of cement to another. .
3.3. Consistency:
3.3.1. The degree of consistency which shall depend upon the nature of the work and methods of vibration
of concrete, shall be determined by regular slump tests in accordance with I.S. 1199-1959. The slump of 10 mm. to 25 mmshall be-adopted when vibrators are used and 80 mm. when vibrators are not used.

3.4 Inspection:
3.4.1. Contractor shall give the Engineer-in-charge due notice before placing any concrete in the forms to permit him to inspect and accept the false work and forms as to their strength, alignment, and general fitness but such inspection shall not relieve the contractor of his responsibility for the safety of men, machinery, materials and for results obtained. Immediately before concreting, all forms shall be thoroughly cleaned.
3.4.2. Cantering design and its erection shall be got approved from the Engineer-in-charge. One carpenter with helper shall invariably be kept present throughout the period of concreting. Movement of labour and other persons shall be totally prohibited for reinforcement laid in position. For access to different parts, suitable mobile platforms shall be provided so that steel reinforcement in position is not disturbed. For ensuring proper cover, mortar blocks of suitable size shim be cast and tied to the reinforcement. Timber, cache or metal pieces shall not be used for this purpose.
3.5. Transporting and laying:
3.5.1. The method of transporting and placing concrete shall be as approved. Concrete shall be so transported and placed that no contamination segregation or loss of its constituent material takes place.
All form work shall be cleaned and made free from standing water, dust, show or ice immediately before placing of concrete.34No concrete shall he, placed in any part of the structure untill the approval of the Engineer-in-charge has been obtained.
3.5.2. Concreting shall proceed continuously over the area between construction joints. Fresh concrete shall not be placed against concrete which has been in position for more than 30 minutes unless a proper construction joint is formed. Concrete shall be compacted in its final position within 30 minutes of its discharge from the mixer. Except where otherwise agreed to by the Engineer-in-charge concrete shall be deposited in horizontal layers to a compacted depth of not more than 0.45 metre

when internal vibrators are used and not exceeding 0.30 metre in all other cases.
3.5.3. Unless otherwise agreed to by the Engineer-in-charge, concrete shall not be dropped into place from a height exceeding2 metres. When trucking or chutes arc used they shall be kept close and used in such a way as to avoid segregation. When concreting has to be resumed on a surface which has hardened, it shall be roughened, swept clean, thoroughly wetted and covered with a 13 mm. thick layer of mortar composed of cement and sand in the same ratio as in the concrete mix itself. This13 mm. layer of mortar shall be freshly mixed and placed immediately before placing of new concrete. Where concrete has not fully hardened, all laitance shall be removed by scrubbing the wet surface with wire or bristle brushes, care being taken
to avoid dislodgernent of any panicles of coarse aggregate. The surface shall then be thoroughly wetted, all free water removed and then coated with neat cement grout. The first layer of concrete to be placed on this surface shall not exceed 150mm. in thickness and shall be well rammed against old work, particular attention being given to corners and close spots.
3.5.4. All concrete shall be compacted to produce a dense homogeneous mass with the assistance of vibrators unless, otherwise permitted by the Engineer-in-charge for exceptional cases, such as concreting under water, where vibrators cannot be used. Sufficient vibrators in serviceable condition shall be kept at site so that spare equipment is always available in the event of breakdowns. Concrete shall be judged to be compacted when the mortar fills the spaces between the coarse aggregate and begins to cream
up to form an even surface. Compaction shall be completed before the initial setting starts i.e. within 30 minutes of addition of wafer to dry mixture. During compaction, it shall be observed that needle vibrators are not applied on reinforcement which is likely to destroy the bond between concrete and reinforcement.
3.6. Curing: Immediately after compaction, concrete shall be protected from weather, including rain, running water, shocks, vibration, traffic, rapid temperature changes, frost and drying out process. It shall be covered with wet sacking, hessian or other similar absorbent material approved, soon after the initial set and shall be kept continuously wet for a period of not less than 14 days from the date of placement. Masonry work over foundation concrete may be started after 48 hours of its laying but curing of concrete shall be continued for a minimum period of 14 days.
3.7. Sampling and Testing of concrete:
3.7.1. Samples from fresh concrete shall be taken as per I.S. 1199-1959 and cubes shall be made, cured and tested at 7 days or 28 days as per requirements in accordance with I.S. 516-1959. A random sampling procedure shall be adopted to ensure that each concrete batch shall have a reasonable chance of being tested i.e. the sampling should be spread over the entire period of concreting and cover all mixing units. The minimum frequency of sampling of concrete of each grade shall be in accordance with following :

Quantity of concrete in the work	No of samples	Quantity of concrete in the works	No. of samples
1-5Cmt.	1.	16-30Cmt.	3
6-15Cmt.	2.	31-50	4

51 and above 4 + one additional for each additional 50 M. or part thereof.

NOTE : At least one sample shall be taken from each shift. Ten test specimens shall be made from each sample, five for testing at 7 days and the remaining five at 28 days. The samples

of concrete shall be taken on each day of the concreting as per above frequency. The number *of* specimens may be suitably increased as deemed necessary by the Engineer-in-charge when procedure of tests given above reveals a poor quality of concrete and in other special cases.

3.7.2. Tire average strength of the group of cubes cast for each day shall not be less than the specified cube strength of 150Kg/Cm at 28 days. 20% of the cubes cast for each day may have value less than the specified strength provided the lowest value is not less than 85% of the specified strength. If the concrete made in accordance with the proportions given for a particular grade docs not yield the specified strength, such concrete shall be classified as belonging to the appropriate lower, grade concrete made in accordance with the proportions given for a particular grade shall not, however, be placed in a higher-grade on the ground that the test strength are higher than the minimum specified.

3.8. Stripping:

35

3.8.1. The Engineer-in charge shall be informed in advance by the contractor of his intention lo strike the form work. While fixing the time for removal of form work, due consideration shall be given to local conditions, character of the structure, the weather and other condition that influence the setting of concrete and pf the materials used in the mix. In normal circumstances (generally where temperatures are above 20 ° C) and where ordinary concrete is used, forms may be struck after expiry of periods specified in item No. 9.1 (A) for respective item of form work.3.8.2. All form work shall be removed without causing any shock or vibration as would damage the concrete. Before the soffit and struts are removed, the concrete surface shall be exposed, where necessary in order to ascertain that the concrete has sufficiently hardened. Centring shall be gradually and uniformly lowered in such manner as to permit the concrete to take stresses due to its own weight uniformly and gradually. Where internal metal ties are permitted, they or their removable parts shall be extracted without causing any damage to the, concrete and remaining holes filled with mortar. No permanently embedded metal part shall have less than 25 mm. cover to the finished concrete surface. Where it is intended to re-use the formwork, it shall be cleaned and made good to the satisfaction of the Engineer-in- charge. After removal of form work and shuttering, the Executive Engineer shall inspect the work and satisfy by random checks that concrete produced is of good quality.

3.8.3. Immediately after the removal of forms, all exposed bolts etc., passing through the cement concrete member and used for shuttering or any other purpose shall be cut inside the cement concrete member to a depth of at least 25 mm. below the surface of the concrete and the resulting holes be filled by cement mortar. All fine caused by form joints, all cavities produced by the removal of form ties and all other holes and depressions honeycomb spots, broken edges or corners and other defects shall be thoroughly cleaned, saturated with water and carefully pointed and rendered true with mortar of cement and fine

Aggregate mixed in the proportions used in the grade of concrete that is-being finished and of as dry consistency as is possible to use. Considerable pressure shall be applied in filling and pointing to ensure thorough Riling in all voids. Surfaces which are pointed shall be kept moist for a period of 24 hours.

If rock pockets/honeycombs in the opinion of the Engineer in- charge are of such an extent or character to affect the strength of the structure materially or to endanger the, life of the

steel reinforcement, he may declare the concrete defective and require the removal and replacement of the portions of the structure affected.

4.0. Mode of measurement and payment:

4.1. The consolidated cubical contents of concrete work as specified in item shall be measured. The concrete laid in excess of section shown on drawings or as directed shall not be measured. No deduction shall be made for(a) Ends of dis-similar materials such as joits, beams, posts, girders, rafters, purlin trusses, corbels and steps etc up to 500 Sq.Cm. in section.

(b) Opening up to 0.1 Sq. M.

4.2. The rate includes cost of all materials, labour, tools and plant required for mixing, placing, position, vibrating and compacting, finishing, as directed, curing and all other incidental expenses for producing concrete lied strength The rate excludes the cost of form work.

4.3. The rate shall be for a unit of one cubic metre.

Note :- All general technical specifications of R & B technical booklet shall be followed for the work throughout.

Item No- 4

Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth consolidating each deposited layer by ramming & watering.

1.0. Workmanship

1.1. The earth to be used for filling shall be free from salts, organic or other foreign matter All clods of earth shall be broken.

1.2. As soon as the work in foundation has been completed and measured the site of foundation shall be cleared of all debris, brick bats, mortar dropping etc., and filled with earth in layers not exceeding 20 cms. Each Payer shal4 be adequately watered, rammed and consolidated before the succeeding layer is laid .The earth shall be rammed with iron rammers where feasible and with the but ends of crow-bars, where rammer Cannot be used.

1.3. The plinth shall be similarly tilled with earth in layers not exceeding 20 ems adequately watered and consolidated by ramming with iron or wooden rammers When filling reaches finished level the surface shall be flooded with water for at least 24 hours and allowed to dry and then rammed and consolidated.

1.4. The finished level of filling shall be kept to shape intended to be given to floor.

1.5. In case off large heavy duty flooring like factory flooring :the consolidation may be done by power rollers, where so specified The extent of consolidation required shall also be as specified.

1.6. The excavated stuff of the selected type shall be allowed to be used in filling the trenches and plinth. Under no circumstances black cotton soil be used for filling the plinth.

2.0. Mode of Measurements & **Payment**

2.1. The payment shall be made for filling in plinth and trenches, No deduction shall be made for shrinkage or voids, if consolidated as instructed above.

2.2. The rate shall be for a unit of one cubic metre.

Note: - All general technical specifications of R & B technical booklet shall be followed for the work throughout.

Item No 5

Filling foundation and plinth with murrum or selected soil in layers of 20 cm. thickness including watering, ramming and consolidation etc. complete.

1.0. Materials

1.1. Murrum shall be clean, of good binding quality and of approved quality obtained from approved pots/ quarries of disintegrated rocks which contain silicon material and natural mixture of clay of clarions origin The size of murrum shall not be more than 20 mm

2.0 Workmanship

2.1. The relevant specifications of item No. 4.12 shall be followed except that the murrum or selected soil shall be filled in foundations and plinth in 20 cms layer including consolidating, ramming, watering, dressing etc. complete

3.0. Mode of Measurements & **Payment**

3.1 The relevant specifications of item No 4.12 shall be followed.

3.2. The rate includes cost of collecting and carting murrum/or selected earth of approved quality with all lead and labour required for filling in trenches and plinth.

3.3. Rate shall be for a unit of one cubic meter

Note :- All general technical specifications of R & B technical booklet shall be followed for the work throughout.

Item No 6

Providing & laying R.C.C. Coping in ordinary cement concrete M-200 and curing complete excluding cost of form work and cost of reinforcement steel etc complete (For compound wall)

1.0. Materials

1.1. Water shall conform to M-1. Cement shall conform to M-3. Sand shall conform to M-6. Stones aggregate 40 mm. nominal size shall conform to M-12.

2.0. Workmanship

2.1. General

2.1.1. Before stating concrete the bed of foundation trenches shall be cleared of all loose materials, levelled, watered and rammed as directed

2.2. Proportion of Mix :

2.2.1. The proportion of cement. sand and coarse aggregate shall be one part of cement; 3 parts of sand and 6 parts of stone aggregates and shall be measured by volume.

2.3. Mixing :

2.3.1. The concrete shall be mixed in a mechanical mixer at the site of work. Hand mixing may however be allowed for smaller quantity of work if approved by the Engineer-in-charge When hand mixing is permitted by the Engineer-in-charge in case of break-down of machineries and in the interest of the work, it shall be carried out on a water tight platform and care shall be taken to ensure that mixing is continued until the mass is uniform in colour and consistency. However.in such case 10% more cement than otherwise period 1. 112 to 2 minutes, The quantity of water shall be just sufficient to produce a dense concrete of required workability for the purpose.

2.4.. **Transporting** & **Placing the Concrete :**

2.4.1. The concrete shall be handed from the place of mixing to the final position in not more than 15 minutes by the method as directed and shall be placed into its final position, compacted and finished within 30 minutes of mixing with water i.e. before the setting commences..

2.4.2. The concrete shall be laid in layers of 15 cms. to 20 cms

2.5.1. The concrete shall be rammed with heavy iron rammers and rapidly to get the required compaction and to allow all the interstices to be filled with mortar,

2.6. Curing :

2.6.1. After the final set, the concrete-shall be kept continuously wet if required by pounding for a period of not less then 7 days form the date of placement.

2.7. Mode of Measurement & **Payment :**

2.7.1. The concrete shall be measured for its length, breadth and depth, limiting dimensions to those specified on plan or as directed

2.7.2. The rate shall be for a unit of one cubic metre

Note :- All general technical specifications of R & B technical booklet shall be followed for the work throughout.

Item No 7

Providing and laying controlled cement concrete M-200 and with curing complete excluding the cost of form work but excluding the cost of reinforcement for R.C.C work in (B) Columns. [II] Having cross sectional area more than 0.08 and upto 0.12 Smt.

1.0. Materials

1.1. Water shall conform to M-1. Cement shall conform to M-3. Sand shall conform to M-6. Grit shall conform
to M-8. Course aggregate shall conform M-12.

2.0. General

2.1. The relevant specification of item No. 5.4.1 of R&B Booklet. of ordinary concrete shall be followed except that the concrete mix shall be designed form preliminary tests. The proportioning of cement and aggregates shall be done by weight and necessary precautions shall be taken in the production to ensure that the required work cube strength is attained and maintained. The controlled concrete shall be in grades of M-100, M-150, M-200, M-250, M-300, M-350 & M-400 with prefix controlled added to it. The letter M refers to mix and the numbers specify 28 days works cube compressive strength of 150 mm. cubes of the mix expressed in Kg.ICmt.

2.2. The proportion of cement, sand and coarse aggregate shall be determined of weight. The weight batch machine shall be used for maintaining proper control over the proportion of aggregates as per mix design. The strength requirements of different grades of concrete shall be as under :

Grade Concrete	Compressive strength of 15 ems. cubes in Kg.ICmt. at 28 days, conducted in accordance with I.S. 516-1959. Preliminary test Min	Work test Min.
M-150	200	150
M-200	260	200
M-250	320	250
M-300	380	300
M-350	**440**	350
M-400	500	400

in all cases, the 28 days compressive strength specified in above be the criteria for acceptance or rejection of the concrete. Where the strength of a concrete mix as indicated by tests, lies in between the strength of any two grades specified in the above table, such___ concrete shall be classified in for purpose as concrete_____ belonging to the lower of the grades between which its strength lies.

3.0. Workmanship

3.1. The proportions for ingredients chosen shall be such that concrete has adequate workability for conditions prevailing on the work question and can be property compacted with means available except where it can be shown to the satisfaction of the Engineer-in-charge, that supply of properly graded aggregate of uniform quality can be maintained till the completion of worts, grading of aggregate shall be controlled by obtaining the coarse aggregates in different sizes and bending them in the right proportions as required. Aggregates of different sizes shall be stocked in separate stock piles. The required quantity of material shall be stack piled several hours, preferably a day before use. The grading of coarse and fine aggregate shall be checked as frequently as possible, the frequency for a given job being determined by Engineer-in-charge to ensure that the suppliers are maintaining the uniform grading as approved for samples used in the preliminary tests.

3.2. In proportioning concrete, the quantity of both cement and aggregate shall be determined by weight. Where the weight of cement is determined by accepting the maker's weight per bag, a reasonable number of bags shall be weighted separately to check the net weight. Where cement is weighted form bulk stocks at site and not by bags, it shall be weighed separately from the aggregate. Water shall either be measured by volume in calibrated tanks or weighed. All measuring equipment shall be maintained in clean, and serviceable condition. Their accuracy shall be periodically checked.

3.3. It is most important to keep the specified water cement ratio constant and at its correct value. To this end, moisture content in both fine and coarse aggregates shall be determined by the Engineer-in-charge according to the weather conditions. The amount of mixing water shall then be adjusted to compensate for variations in the moisture content. For the deamination of moisture content in the aggregates. I.S. 2386 (Part-III) shall be referred to. Suitable adjustments shall also be made in the weights of aggregates due to variation in their moisture content. Minimum quantity of cement to be used in controlled concrete shall not be less than 220 kg./ M-3 in plain concrete and not less than 250 kg/M-3 in reinforced concrete.

4.0. Mode of measurement & payment

4.1. The relevant specifications of item No.5.4.1 shall be followed, except that the controlled concrete R.C.C.' work as specified in item shall be measured under this item. The rate excludes cost of form work.

4.2 The rate shall be *for* a unit one cubic metre

Note :- All general technical specifications of R & B technical booklet shall be followed for the work throughout.

Item No 8

Providing and laying controlled cement concrete M-200 and with curing complete excluding the cost of form work but excluding the cost of reinforcement for R.C.C work in (A) Beams. [I] Having cross sectional area 0.05 to 0.08 Smt.

1.0. Materials & **Workmanship**

1.1. The relevant specifications of item No. 5.8.1 of R&B booklet shall be followed for controlled Concrete work for work as specified in item for M-200 and relevant specifications of item 9.7 and 9.1 shall be followed for the form work and centring work for cement work.

2.0. Mode of measurements & payment

2.1. The relevant specification of item No. 5.8.1. of R&B booklet shall be followed except that the item includes the cost of farm works and centring work for concrete work.

2.2. The rate shall be *for* a unit one cubic metre.

Note :- All general technical specifications of R & B technical booklet shall be followed for the work throughout.

Item No9

Providing thermo Mechanically treated bars (TMTBARS) confirming to IS1786/ Fe500/500D for R.C.C. works including bending , binding& placing in position complete upto floor two level

1.0. Material

1.1. Fe-500 TMT Bar

Fe-415 TMT Bar reinforcement for R C C work shall conform to I S 432 (Part – II) 1966 and shall be of tested quality. It shall also comply with relevant part of I.S. 456-1978.

Grade Designation	Bar Type Conforming to governing IS specification	Characteristic strength, fy MPa	Elastic modulus GPa
Fe 500	IS 1786 High yield strength	500	200

	deformed bar		

1.2. All steel shall be procured from original producers, no re-rolled steel shall be incorporated in the work. Only new steel bars shall delivered to the site, Every bar shall be inspected before assembling in the work and defective brittle or burnt bar shall be discarded. Cracked ends of bars shall be discarded.

1.3. For the purpose of payment the bar shall be measured correct upto 10 mm length and weight payable worked out at the rate specified below.

1	6mm	0.22 Kg / Rmt	8	20mm	2.47 Kg / Rmt.
2	8 mm	0.39 Kg/ Rmt.	9	22 mm	2.98 Kg / Rmt.
3	10 mm	0.62 Kg / Rmt.	10	25 mm	3.85 Kg / Rmt.
4	12 mm	0.89 Kg / Rmt.	11	28 mm	4.83 Kg / Rmt.
5	14 mm	1.21 Kg / Rmt.	12	32 mm	6.31 Kg / Rmt.
6	16 mm	1.58 Kg / Rmt.	13	36 mm	7.99 Kg / Rmt.
7	18 mm	2.00 Kg / Rmt.	14	40 mm	9.86 Kg / Rmt.

2.0. BINDING WIRE

2.1. Binding wire shall be of good quality approved by the Engineer in Charge.

3.0. WORKMANSHIP

3.1. Steel shall be clean and free from loose and loose mill scale at the time of fixing in position and subsequent concreting.

3.2. All the reinforcement shall be clean and free form dirt, paint, grease, mill scale or loose or thick rust at the time of placing. Steel shall be clean and free from rust and loose mill scale at the time of fixing in position and subsequent concreting.

3.3. High yield strength Fe-415 steel bars shall be either cold twisted other rolled and shall conform to I.S. 1786 – 1966 and I.S. 1139-1966 respectively and treated as per specifications

3.4. The work shall consist of furnishing and placing reinforcement to the shape and dimensions shown as on the drawings or as directed.

3.5. Reinforcing steel shall conform accurate to the dimensions given in the bar bending schedules shown on relevant drawings. Bars shall be bent cold to specified shape and dimensions or as directed, using a proper bar bender, operated by hand or power to attain proper radius of bends. Bars shall not be bent or straightened in a manner that will injure the material. Bars bent during transport or handling shall be straightened before being used on the work. They shall not be heated to facilitate bending. Unless otherwise specified, a 'U' type hook at the end of each bar shall invariably be provided to main reinforcement. The radius of the band shall not be less then twice the diameter or the round bar and the length

of the straight part of the bar beyond the end of the curve shall be at least four times the diameter of the round bar. In case of bars which are not round and in case of deformed bars, the diameter shall be taken as the diameter or circle having an equivalent effective area. The hooks shall be suitably encased to prevent any splitting of the concrete.

3.6. All the reinforcement bars shall be accurately placed in exact position shown on 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 by using stay blocks or metal chair spacers, metal hangers, supporting wires or other approved devices at sufficiently close intervals, bars shall not be allowed to sag between supports nor displaced during concreting or any other operations of the work. All devices used for positioning shall be of non-corrodible material. Wooden and metal supports shall not extend to the surface of concrete, except – where shown on drawings. Placing bars on layers of freshly laid concrete as the work progresses for adjusting bar spacing shall not be allowed. Pieces of broken stone or brick and 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 clean condition until completely embedded in concrete. Special cars shall be exercised to prevent any displacement of reinforcement in concrete already placed. To prevent reinforcement form corrosion, concrete cover shall be provided as indicated on drawings. All the bars protruding from concrete and to which other bars are to be sliced and which are likely to be exposed for a period exceeding 10 days shall be protected by a thick coat of neat cement grout.

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

3.8. As far possible, bars of full length shall be used. In case this is not possible. Over lapping of bars shall be done as directed. When practicable, overlapping bars shall not touch each other, but be kept apart by 25 them where not feasible, overlapping bars shall be bound with annealed wires not less than 1 mm. thick twisted tight. The overlaps shall be staggered for different bars and located at points, along the span where neither shear non bending moment is maximum.

3.9. Whenever indicated on the drawings or desired by the Engineer-in-charge, bars shall be jointed by couplings which shall have a cross-section sufficient to transmit the full stresses of bars. The ends of the bars that are joined by coupling shall be upset for sufficient length so that the effective cross section at the base of threads is not less than the normal cross-section of the bar. Threads shall be standard threads. Steel for coupling shall conform to I.S. 226.

3.10. When permitted or specified on the drawings, joints of reinforcement bars shall butt-welded so as to transmit their full stresses. Welded joints shall preferably be located at points when steel will not be subject to more than 75 percent of the maximum permissible stresses and welds so staggered that at any one section not more than 20 percent of the rods are welded. Only electric are wielding using a process which excludes air from the molten metal and conforms to any or all other special provisions for the work shall be

accepted. Suitable means shall be provided for holding bars securely in position during welding. It shall be ensured that no voids are left in welding and when welding is done in tow or three stages, previous surface shall be cleaned properly, Ends of the bars shall be cleaned of all loose scale, rust, stages, paint and other foreign matter before welding. Only competent welders shall be employed on the work. The M.S. electrodes used for welding shall conform to I.S. 814. Welded pieces of reinforcement shall be tested. Specimen shall be taken from the actual site and their number and frequency of test shall be as directed.

4.0 MODE OF MEASUREMENTS & PAYMENT

4.1. For the purpose of calculating consumption, wastage shall not be permitted beyond 5 percent. Excess consumption over 5% will be charged at penal rate.

4.2. Reinforcement shall be measured in length including overlaps, separately for different diameters as actually used in the work. Where welding or coupling is resorted to, in place lap joints, such joints shall be measured for payment as equivalent length of overlap as per design requirement. From the length so measured, the weight of reinforcement shall be calculated in tones on the same basis of as per table given above even though steel is supplied to the contractor by the department on actual weight. Length shall include hooks at the ends. Wastage and annealed steel wire for binding shall not be measured and the cost of these items shall be deemed to be included in the rate for reinforcement.

4.3. The rate for reinforcement includes cost of steel binding wires, its carting from Department Store to work site with all leads and lifts (in case of it is supplied by department), cutting, bending, placing in position, binding and fixing in position as shown on the drawings and as directed. It shall also include all devices for keeping reinforcement in approved position, cost of joining as per approved method and all wastage and spacer bars.

4.4. The rate shall be for a unit of one Kg.

Note :- All general technical specifications of R & B technical booklet shall be followed for the work throughout.

Item No 10

Brick work using common burnt clay building bricks having crushing strength not less than 35kg/Sqcm. in foundation and plinth. In cement mortar 1:6 (1 cement : 6fine sand) (B) Conventional

1.0 MATERIAL

Common burnt clay Bricks

1.1 Common burnt clay bricks shall confirm to the requirement of IS:1017,except that the minimum compressive strength when tested flat shall not be less than 35 kg/sqm and that the size may be according to local practice with a tolerance of 5 percent.

2.0 Water

2.1 Water shall not be salty brackish and shall be clean reasonably clear and free objectionable quantities of silt and traces of oil j\injurious alkalis salts organic matter and other deleterious material which will either weaken the mortar of concrete or cause efflorescence or attack the steel in R C C container for transport storage and huddling of water shall be clean, Water shall confirm to the standard specified in I S 455 -1978

2.2 If required by the Engineer in charge it shall be tested by comparison with distilled water compression shall be made by means of standard cement tests for soundness time of setting and mortar strength as specified in I S 269-1976 Any indication of unsoundness charge in time of setting by 30 minutes or more or decrease of more than 10 percent strength of mortar prepared with distilled water sample when compared with the result obtained with mortar prepared with distilled water shall be sufficient cause for rejection of water under test.

2.3 Water for curing mortar concrete or masonry should not be too acidic or too alkaline

2.4 It shall be free of elements which significantly affect the hydration reaction or otherwise interface with the hardening of mortar or concrete during curing or those which produce objectionable stains or other unsightly deposits on concrete or mortar surfaces

2.5 Hard and bitter water shall not be used for curing

2.6 Potable water will generally found suitable for curing mortar or concrete

3.0 CEMENT

3.1 Cement shall be ordinary Portland slag cement as per IS 1624 -1974 or Portland slag cement as per IS 455-1976

3.2 Cement shall be stored above the ground level in perfectly dry and water tight sheds. Wherever bulk storage containers are used, their capacity should be sufficient to cater to the requirements at site and should be cleaned at least once every 3 to 4 months. The aggregate shall be stored in such a way as to prevent admixture of foreign materials. Different size of fine or coarse aggregate shall be stored in separate stock-piles sufficiently away from the each other to prevent intermixing the materials.

4.0 Sand

4.1 Sand shall be natural sand, clean well graded, hard strong durable and gritty particular free from immures amounts of dust, clay, kankar modules, soft: or flaky particles shall alkali salts, organic matter, learn mica or other deleterious substance and shall be got approved from the Engineer-in-charge. The sand shall not contain more than 8 percent of slit as determined by field test. if necessary the sand.
Coarse Sand: The fineness modules of coarse sand shall not be less than 2.5 and shall not exceed 3.0. The sieve analysis of coarse sand be as under:

I. S. Sieve Designation	**% by wt. passing**
4.75 mm	100
2.36mm	90 to 100
1.18 mm	70 to 100
600 MC	30 to 100
300 MC	85 to 70
150 MC	00 to 50

4.2 Fine Sand: The fineness module shall not exceed 1.0 the sieve analysis of fine sand be as under:

IS. Sieve Designation	% by wt. passing
4.75 mm	100
2.3 6mm	. 100
1.18 mm	75 to 100
600 MC	40 to 85
300 MC	05 to 50
150 MC	00 to 10

4.3 Materials shall be stored as to prevent their deterioration of their quality and fitness for the work. Any material which has deteriorated or has been damaged or is otherwise considered defective by the Engineer-in-charge shall not be used in the work.

5.0 Workmanship

5.1 The compression test of bricks shall be taken in the beginning and at the change of source of material as indicated in I.S. 383-1970 and I.S. 456-1978. Bricks shall be stored separately in form of stacks and handled in such a manner so as to prevent braking of bricks and covered by clay and other impurities

5.2. Cement and sand shall be mixed in proportions of 1:6 (1 cement ; 6 coarse sand) Cement and sand shall be proportioned by volume after making due allowance for bulking. The require quantity of water shall then be added and the mortar mixed to produce workable consistency. before mixing platform shall be thoroughly cleaned before changing from one type of cement to another.

5.3. The mixing shall be done intimately, The operation shall be carried out on clean water tight platform, and cement sand shall be first mixed dry in the required proportion to obtain uniform colour and then the mortar shall be mixed for at least two minutes after addition of water. In case of cement mortar, that has suffered because of evaporation of water the same shall be re-tempered by adding water as frequently as needed to restore the requisite consistency but its re-tempering shall be permitted only within thirty minute from the time of addition to water at the time of initial mixing.

5.4. Bricks shall be socked in water for a minimum period of one hour before use. When bricks are soaked they shall be removed from the tanks sufficiently in advance so that at the

time of laying they are skin-dry. Such soaked bricks shall be stacked on a clean place when they are not spoilt by dirt, earth etc.

5.5. All brick work shall be laid in English bond, even and true to line, plumb level and all joints accurately kept. The bricks used on the face shall be selected whole of uniform size and with true rectangular face.

5.6. Bricks shall be laid frogs up, if any on a full bed of mortar, where laying bricks shall be slightly pressed so that the mortar gets into all the surface pores of bricks to ensure proper adhesion. All joints shall be properly flushed and packed with mortar so that no hollow spaces are left.

5.7. Before laying bricks in foundations, a layer of not less than 12 mm of mortar shall be spread to make the surface on which the work shall be laid even.
Before laying the bricks the bed of foundation trenches shall be cleared of all loose materials leveled watered and rammed as directed.

5.8. The brick work shall be built in uniform layer, corners and other advanced work shall be racked back. Bricks work shall be done true up to, plumb or in specified manner. No part if it, during construction, shall rise more than one meter above the general construction level to avoid unequal settlement and improper jointing.

5.9. Teething may be done where future extension is contemplated but shall be used as an alternative to raking back.

5.10. The thickness of joints shall not exceed 12 mm.

5.11. When fresh masonry is to be placed against existing surface of structures, these shall be cleaned of all loose material, roughened and wetted as directed by the Engineer-in-charge so as to effect a good bond with the new work. .

5.12. Green work shall be protected from rain by suitable covering. Masonry work is cement of 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.

5.13. During hot weather, all finished or partly finished work shall be covered or wetted in such manner as will prevent rapid drying of the brick work.

6.0 Proportion of Mix

6.1. The proportion of cement and sand shall be one part of cement. 6 (Six) parts of sand and shall be measured by volume.

6.2. It shall be carried out on a water tight platform and care shall be taken to ensure that mixing is continued until the mass is uniform in colour and consistency.

6.3. The scaffolding shall be sound and strong to withstand all loads to come upon it. The holes which provide resting space for horizontal members shall not be left in masonry under one meter in width or immediately near the skew backs or arches. The holes left in the masonry work for supporting the unfolding shall be filled and made good.

7.0 Mode of Measurement & Payment :

7.1. The unit rate concrete shall include the cost of all materials, tools and plant required for mixing, placing in position, compacting, finishing as per direction of the Engineer-in-charge, curing and all other incidental expenses for producing brick work of specified strength to complete the structure or its components as shown on the drawings and according to these specifications. They shall also include the cost of making, fixing and removing of all scaffolding and forms required for the work.

7.2. The Brick work shall be measured for its **length breadth** and **depth**, limiting dimensions to those specified on plan or as directed. The rate shall be for a unit of one cubic meter.

7.3. The payment will be made on Cubic Meter basis of the finished work.

Item No 11
Brick work using common burnt clay building bricks having crushing strength not less than 35kg/Sqcm.in superstructure above plinth level upto floor two level. (B) Conventional.

Specification of Item of Brick work Foundation & plinth level shall be followed for the execution of this item except the work shall be carried out in above plinth level up to two floors**.**

1.0 Mode of Measurement & Payment :

1.1. The unit rate concrete shall include the cost of all materials, tools and plant required for mixing, placing in position, compacting, finishing as per direction of the Engineer-in-charge, curing and all other incidental expenses for producing brick work of specified strength to complete the structure or its components as shown on the drawings and according to these specifications. They shall also include the cost of making, fixing and removing of all scaffolding and forms required for the work.

1.2. The Brick work shall be measured for its **length breadth** and **depth**, limiting dimensions to those specified on plan or as directed. The rate shall be for a unit of one cubic meter.

1.3. The payment will be made on Cubic Meter basis of the finished work.

Note :- All general technical specifications of R & B technical booklet shall be followed for the work throughout.

Item No12
Providing 15 mm. thick cement plaster in single coat on fair side of brick wall for interior plastering up to floor two level Cement mortar 1:6 (1 cement : 6 fine sand)

1.1. Water shall conform to M-1. The cement mortar of proportion 1:3 shall conform to M-13.

2.0. Workmanship
2.1. Scaffolding :
Wooden bullies, bamboos, planks, trestles and other scaffolding shall be sound. These shall be properly examined before erection and use. Stage scaffolding shall be provided for ceiling plaster which shall be independent of the walls.
2.2. Preparation of back-ground :
2.2.1. The surface shall be cleaned of all dust, loose mortar droppings, traces of algae, efflorescence and other foreign matter by water or by brushing. Smooth surface shall be toughened by wire brushing if it is not hard and by hacking if it is hard. In case of concrete surface, if a chemical retarder has been applied to the form work, the surface shall be roughened by wire brushing and all the resulting dust and loose particles cleaned off and care shall be taken that none of the retarders if left on the surface. Trimming of projections on brick concrete surfaces where necessary shall be carried out to get an even surface.
2.2.2. Raking of joints in case of masonry where necessary shall be allowed to dry out for sufficient period before carrying out the plaster work.

2.2.3. The work shall not be soaked but only damped evenly before applying the plaster. If the surface becomes dry, such area shall be moistened again.

2.2.4. For external plaster, the pestering operation shall be started from top floor and carried downwards. For internal piaster, the plastering operations may be started wherever the building frame and cladding work are ready and the temporary supports of the ceiling resting on the wall of the floor have been removed. Ceiling plaster shall be completed before starting plaster to walls.

2.3. Application of plaster :
2.3.1. The plaster about 15 x 15 cms. shall be first applied horizontally and vertically at not more than 2 metres
intervals over the entire surface to serve as gauge. The surfaces of these gauges shall be truly in plane of the finished plastered surface. The mortar shall then be applied in uniform surface slightly more than the specified thickness, then brought to a true surface by working a wooden straight edge reaching across the gauges with small upward and sideways movements at a time. Finally, the surface shall be finished off true with a trowel or wooden float according as a smooth or a smooth or a sandy granular texture is required Excessive troweling or overworking the float shall be avoided. All comers, arises, angles and junctions shall be truly vertical or horizontal as the case may be and shall be carefully finished. Rounding or chamfering, corners, arises junctions etc. shall be carried out with proper templates to be size required.
2.3.2. Cement plaster shall be used within half an hour after addition of water. And mortar or plaster which is partially set shall be rejected and removed forthwith from the site.
2.3.3. In suspending the work at the end of the day, the plaster shall be left out clean to the line both horizontally and vertically. when recommencing the plaster, the edges of the old

work shall be scraped clean and wetted with cement putty before plaster is applied to the adjacent areas to enable the two to properly join together. Plastering work shall be closed at the end of the day on the body of the wall and nearer than 15 cm. to any corners or arises. It shall not be closed on the body of features such as plaster bands and cornices not at the corners or arises. Horizontal joints in plaster worts shall not also occur on parapet tops and copings as these invariably lead to leakage. No portion of the surface shall be left out initially to be packed up later on.

2.3.4. Each coat shall be kept damp continuously till the next coat is applied or for a minimum period of 7 days. Moistening shall commence as soon as plaster is hardened sufficiently. Soaking of walls shall be avoided and only as much water as can be readily absorbed shall be used, excessive evaporation on the sunny or windward *side of* building *in hot air or dry weather* shall be prevented by *hanging* mailings *or gunny bags on the outside of* the plaster and keeping them wet.

3.0. Mode of measurements & **payment**

3.1. The rate shall include the cost of all materials, labour and scaffolding etc. involved in the operations described under workmanship.

3.2 All plastering shall be measured in square metres unless otherwise specified. Length breadth or height shall be measured correct to a centimetre.

3.3. Thickness of the plaster shall be exclusive of the thickness of the key i.e. grooves or open joints in brick work, stone work etc. or space between laths. Thickness of plaster shall be average thickness with minimum 10 mm. at any point on this surface.

3.4. This item includes plastering up to floor two level.

3.5. The measurement of wall plastering shall be taken between the walls or partition (dimensions before plastering being taken) for length and from the top of floor or skirting to ceiling for height. Depth of cover of cornices if any shall be deducted.

3.6. Soffits of stairs shall be measured as plastering on ceilings. following soffits shall be measured separately.

3.7. For jambs, soffits, sills etc. for openings not exceeding 0.5 sq. met each in area for ends of joints beams, posts, girders, steps etc. not exceeding 0:5 sq. mt each in area and for openings exceeding 0.5. sq. mt and not exceeding 3.00 sq. mt. in each area deductions and additions shall be made in the following manners.

(a) No deductions shall be made for ends of joints, beams, posts etc. and openings not exceeding 0.5 sq. mt each and no addition shall be made for reveals, jambs, soffits, sits etc. of these openings, for finish to plaster around ends of joints, beams posts etc.

(b) Deduction for openings exceeding 0.5 sq mt but not exceeding 3 sq.mt. each shall be made as follows and no addition shall be made for ravels, jambs, soffits, sills etc. of these openings.

(i) When bath faces of all wall are plastered with same plaster, deduction shall be made for one face only.

(ii) When two faces of wall are plastered with different types of plasters or if one face is plastered and the other pointed, deductions shall be made from the plaster or pointing on the side of frame for door, window etc. on which width of reveals is less than that on the other 'side but no deductions shall be made on the other side. Where width of reveals on

both faces of all are equal, deductions of 50% of area of opening on each face shall be made from areas of plaster and I or pointing as the case may be.

3.8. For openings having door frames equal to or projecting beyond the thickness of wall, full deduction for opening shall be made from each plastered face of the wall.

3.9. In case of openings of area above 3 sq. mt. each, deduction shall be made for openings but jambs, soffits sand sills all be measured.

3.10. The rate shalt be for a unit of one sq. metre.

Item no 13

20mm thick sand faced cement plaster on walls upto height 10 metres above ground level consisting of 12mm thick backing coat of C.M. 1:3 (1-cement : 3- sand) and 8mm thick finishing coat of C.M. 1:1 (1- cement : 1-sand) etc. complete. (tipni/ Gutka)

1.0. Materials & **workmanship**

1.1. The relevant specifications of item No. 12 shall be followed except that the thickness of cement plaster shall be 20 mm. The plastering work shall be in single coat on rough side of half brick wall tor interior plastering up to floor two level, finished even and smooth in C.M. 1:3.

2.0. Mode of measurements & **payment**

2.1. The relevant specifications of item No. 12 shall be followed.

2.2. The rate shall be for a unit of one sq. metre.

Note :- All general technical specifications of R & B technical booklet shall be followed for the work throughout.

Item No 14

Providing & Fixing hinged MS gate with vertical and horizontal sections as per design size, locking arrangement by providing & fixing aldrop on both sides, vertical stoppers etc complete as per drawing & directed by E.I.C.

1.0. STRUCTURAL STEEL

1.1. MS pipes and sections

The MS pipes shall be of size and weight as per design drawing, confirming to Indian Standard.

1.2. All structural steel shall confirm I S 226 – 1985. The steel shall be free from the defects mentioned in IS 226-1975 and shall have a smooth finish. The material shall be free from loose mill scale rust pits or other defects affecting the strength and durability. All criteria for standard fabrication and quality control practices shall be strictly followed.

1.3 All fabricated sections shall be applied two coats of approved make primer for protection against rusting.

Mode of Measurement :-

The rate shall be for a unit of Kg (Kilograms).

Note :- All general technical specifications of R & B technical booklet shall be followed for the work throughout.

Item No 15

Providing formwork of ordinary timber planking so as to give a rough finish including cantering, shuttering and propping etc. height of propping and cantering below supporting floor to ceiling not exceeding 4.00 mt and removal of the same for in situ reinforced concrete and plain concrete work in (A) Foundations, footings, bases of columns etc. and mass concrete.

1. Materials

1.1. The shuttering to be provided shall be of ordinary timber plank and shall conform to M-26.

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

1. Workmanship

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

2.2. Clearing and Treatment of forms: -

2.2.1. All rubbish, particularly chipping shaving and saw dust shall be removed from the interior of the formbefore the concrete work is placed and the form in contact with concrete shall be cleaned and thoroughly wetted or treated. The surface shall be then coated with soap solution applied before concreting is done. Soap solution for the purpose shall prepared by dissolving yellow soap in water to get consistency of paint. Alternatively a coat of raw linseed oil shall be applied after thoroughly cleaning the surface. Care shall be taken that the coating does not get on construction joint surface and reinforced bars.

2.3. Stripping time:

2.3.1. In normal circumstances and where ordinary cement is used forms may be struck after expire of following periods.

(a)	Sides of walls columns and vertical faces of beams	……24 to 48 hours.
(b)	Beam soffits, (props. left under ……..	7 days
(c}	Removal of props slabs :	
(i)	Slabs spanning up to 4.5. m……..	7 days
(ii)	Spanning over 4.5 mm …….	14 days
(d)	Removal of props t beams and Arches	
(i)	Spanning upto 6 mm ……	14 days
(ii)	Spanning over 6 m …..	21 days.

2.4. Procedure when removing the form work :

2.4.1. All form work shall be removed without such shock or vibrations as would damage the reinforced Concrete surface. Before the soffits form work and struts are removed, the soffits and the concrete surface shall be exposed where necessary in order to ascertain that the concrete has sufficiently hardened.

2.5. Centring:

2.5.1. The centring to be provided shall be got approved It shall be sufficiently strong to ensure absolute safety of the form work and concrete work before, during and after pouring concrete. Watch should be kept to see that behaviour or centring and form work is satisfactory during concreting. Erection should also he such that it would allow removal of forms in proper sequence without damaging either the concrete or the forms to be removed.

2.5.2 The props of centring shall be provided on firm foundation or base of sufficient strength to carry The loads without any settlement.

2.5.3. The cantering and form work shall be inspected and approved by the Engineer-in-charge before concreting. But this will not relieve the contractor of his responsibility for strength, adequacy and safety of form work and centring. If there is a failure of form work or centring, contractor shall be responsible for the damaᵍes to property.

2.6. Scaffolding :

2.6.1. All scaffolding, hoisting arrangements and ladders etc., required for the facilitating of concerting shall be provided and removed on completion of work by contractor at his own expense. The scaffolding, hoisting arrangements and ladders etc. shall be strong enough to with sand all live, dead and impact loads expected to act and shall be subject to the approval of the Engineer-in-charge. However contractor shall be soley responsible for the safety of the scaffolding, hoisting arrangement, ladders, work and workman etc.

2.6.2. The scaffolding, hoisting arrangements and ladder shall allow easy approach to the work spot and afford easy inspection.

2.6.3. The rete is applicable to all condition of working and height up to 4 mts. The rate shall include the cost of materials and labour for various operations involved such as:

(a) Splayed edges, notching, allowance for overlaps and passing at angles, battens centering, shuttering propping, bolting, wedging easing,. striking and removal.

(b) Filleting to form stop chamfered edges or splayed external angles not exceeding 20 mm. width to beams, columns and the like.

(c) Temporary openings in the forms for pouring concrete, if required removing rubbish etc

(d) Dressing with oil to prevent adhesion of concrete with shuttering and.

(e) Raking or circular cutting.

2.7. Re-lase :

2.7.1. Before re-use, all from shall be inspected by Engineer-in-charge and their suitability ascertained. The forms shall be scarred, cleaned and joints are gone over, repaired where required. Inside surface shall be retreated to prevent adhesion of concrete.

3.0.0. Mode of Measurements & **Payment**

3.1. From work shall be measured as the area in square metres to shuttering in contract with concrete except in the case of inclined member and portion of curved profile and upper side in which case on area of underside shall be measured for payment.

3.4. From work to secondary beams shall be measured up to the sides of main beams but no deduction shall be made form the form work of the main beam at the inter section point. No deduction shall be made form the form work of a column at inter section of beams.

3.5. The rate is for the completed item.

Note :- All general technical specifications of R & B technical booklet shall be followed for the work throughout.

Item No 16

Providing formwork of ordinary timber planking so as to give a rough finish including cantering, shuttering and propping etc. height of propping and centering below supporting floor to ceiling not exceeding 4.00 mt and removal of the same for in situ reinforced concrete and plain concrete work in (G) Columns, pillars, posts and struts (1) Square, rectangular, polygonal in plan

1.0. Materials and Workmanship

1.1. The relevant specification of item No. 15 shall be followed except that the work is for columns ,pillars, posts and struts, square, rectangular, polygonal in plan.

2.0. Mode of measurement and payment

2.1. The relevant specification of item No. 15 shall be followed.

2.2. The rate shall be for a unit of one sq. metre.

Note :- All general technical specifications of R & B technical booklet shall be followed for the work throughout.

Item No 17

Providing formwork of ordinary timber planking so as to give a rough finish including centering, shuttering and propping etc. height of propping and centering below supporting floor to ceiling not exceeding 4.00 mt and removal of the same for in situ reinforced concrete and plain concrete work in (H) (1) Sides and soffits of beam,haunchings, cantilevers, girders, bracings and lintels not exceeding 1.0 mt in depth.

1.0. Materials and Workmanship

1.1. The relevant specification of item No. 15 shall be followed except that the work is for sides andsoffits of beams, haunting cantilevers, girders, and lintels not exceeding 1 M. in depth.

2.0. Mode of measurement and payment

2.1. The relevant specifications of item No. 15 shall be followed.

2.2. The rate shall be for a unit of one sq. metre.

Note :- All general technical specifications of R & B technical booklet shall be followed for the work throughout.

Item No 18

Providing. and fixing 50mmx50mmx6mm angle welded metal section with five horizontal lines G.I. barbed wire fencing, weighting 9.38 kg per 100 mts including fixing concentrino razor blade 12 G wire loop of 610 mm dia on top of wall, applying priming coat and painting two coats with necessary fixtures and hardware etc. complete as directed by Engineer-in-charge.

1.0. Materials

(1) Water shall conform to M-1. (2) Cement shall conform to M-3. (3) Sand shall conform to M-6. (4) Brick bats aggregate shall conform to M-14. (5) Oil paint shall conform to M-44. (6) Barbed wire shall, conform to M-78.

2.0. Workmanship

2.1. The M.S. angles 50 mm. x 50 mm. x 6 mm shall be filled in with concrete 1:2:4 and rammed properly so as it gets fixed in concrete block. The concrete shall be cured for 7 days to allow it to set. All specification of concrete work as above shall be followed. Support angles shall be at distance of not less than 2.50 meter centre to centre. It will receive razor blade structure inside its shape of part hexagon. The angle structure shall be protected with barbed wire having five horizontal row throughout.

2.3. The barbed wire shall be stretched and fixed **concertina razor blade 12 G wire loop of 610 mm dia on top of wall** . The M.S. Angle posts shall be painted with 3 coats of oid paint of approved tint and shade.

2.4 The complete structure shall be applied with approved make primer coat followed by two coats of enamel paint.

3.0. Mode of measurements **and payment**

3.1. The work shall be measured for the finished work from center to center of the posts.

3.2. The rate shall include the cost of labour and materials involved in the operations described above.

3.3. The rate shall be for a unit of One running meter.

Note :- All general technical specifications of R & B technical booklet shall be followed for the work throughout.

Item No 19

Providing 150mm thick weep holes in brick masonry including 150mm Q PVC pipe to pass the water & fixed as per directed by EIC/ PMC.

1. **Material;**
   PVC pipe as per ISI standard quality 150mm Q 6kg.
2. **Workmanship.**
   Placing the pipe in BB masonry wall in position to pass the water in fixed specified interval.
   Workmanship as per standards and directed by EIC/ PMC.

3.Mode of measurements:

3.1 The rate shall include the cost of all materials, labour, scaffolding, protective measures etc. involved in all the operations described above.

3.2. The rate shall be for a unit of Numbers.

Note :- All general technical specifications of R & B technical booklet shall be followed for the work throughout.

Item No 20

Finishing wall with weather proof exterior emulsion paint on wall surface (two coats) emulsion paint on wall surface (two coats) to give an required shape even shade after thoroughly brushing the surface to remove all dirt, and remains of loose powdered materials etc complete.

General

All detail specification of the above Item No-all be followed for the work except application of the work as specified in the item description with use of proper exterior paint as approved by GBU. Sample preparation shall be done prior to application for approval of EIC/PMC. The final surface should exhibit proper uniform shade to match with other surfaces else it shall be reworked. The rate is for painting of all exterior walls of building having height about 15M or more. Contractor shall arrange for proper scaffolding work to make platform for painting as required. On completion of the work, the site shall be cleared of debris and stains etc to make it as per original as directed. All general specifications of the tender document shall be followed strictly. The work shall be carried out as directed by EIC/PMC.

The measurement of the work shall be on Square meter basis of dimension of the area of work done.

Note :- All general technical specifications of R & B technical booklet shall be followed for the work throughout.

Item No 21

Painting two coats (including priming coat) ready made over new steel and other metal surfaces with synthetic enamel paint, brushing, interior to give an even shade including cleaning the surface of all dirt, dust and other foreign matter.

General

All detail specification of the above Item No-1 shall be followed for the work except application of the work as specified in the item description with use of proper enamel paint as approved by GBU in terms of make grade etc. Sample preparation shall be done prior to application for approval of EIC/ PMC. The final surface should exhibit proper uniform shade to match with other surfaces else it shall be reworked. On completion of the work, the site shall be cleared of debris and stains etc to make it as per original as directed. All general

specifications of the tender document shall be followed strictly. The work shall be carried out as directed by EIC/ PMC.

1.0. Materials

The enamel pain shall conform to ISI.

2.0. Workmanship

2.1. General: The materials required for work of painting work shall be obtained directly from approved manufactures or approved dealer and brought to the site in maker's drums, kegs. etc. with seal unbroken.

2.1.2. 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. The materials which have become state or flat 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 smaller container. No left over paint shall be-put back into stock tins. When not in use the containers shall be kept properly closed.

2.1.3. If for any reasons, things is necessary, the brand of thinner recommended by the manufacturer shall be used.

2.1.4. The surface to be painted shall be thoroughly cleaned and dusted. All rust, dirt and grease shall be thoroughly removed before painting is started. No painting on exterior or other exposed part o the work shall be carried out in wet, damp or otherwise unfavourable weather and all the surfaces shall be thoroughly dry before painting work is started.

2.2. Application of paint:

2.2.1. Brushing operations are to be adjusted to the spreading capacity advised by the manufacture of particular paint. The paint shall be applied evenly and smoothly by means of crossing and laying off. 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 alternately in opposite directions two or 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 one coat.

2.2.2. 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 Engineer-in-charge before next coat is started.

2.2.3. Each coat the last shall be lightly rubbed down with sand paper of fine pumice stone and cleaned of dust before the next coat is applied. No hair marks from the brush of clogging of paint puddles in the corners of panels, angles of mouldings etc. shall be left on the work.

2.2.4. Special care shall be taken while painting over bolts, nuts, rivets, overlaps etc. Approved best quality brushes shall be used.

3.0. Mode of measurements and payment

The measurement of the work shall be on Square meter basis of dimension of the area of work done.

Note :- All general technical specifications of R & B technical booklet shall be followed for the work throughout.

Item No 22

Providing and fixing steel made notice board having size 4'x2' and 20G including painting fixing with two props of 30mm round pipe/ 35mm thick M.S angle as per directed. Rates are inclusive of all necessary labour ,material etc complete as per instruction given by E.I.C.

The notice board of specified size shall be prepared with content as approved by GBU. The draft content shall got approved prior to procurement. It shall be placed at location specified by GBU. The letter shall be clear and visible with proper background color. The structure shall be painted complete.

The rate shall be for unit of one notice board.

D. LIST OF MATERIALS OF APPROVED BRAND AND THEIR MANUFACTUERS

1) **Paints: waterproof paint;**
   Synthetic Enamel/ Epoxy Paint, Asian, Garware, British Paint, Berger, ICI, Nerolac equivalent GBU approved make.

2) **Cement**
   Ultra Tech, Ambuja, Sanghi, Binani, Laxmi or equivalent GBU approved make.

3) **Structural Steel**:
   RINL, TATA, SAIL, TMT- Electrothurm, Punjab, Tata.

(Note: - Where other materials are proposed to be used, these should be approved by GBU).

Signature of Agency **Registrar**

Construction of Compound wall for 23 Acre land allotted to GBU, Gandhinagar						
S.No.	**SOR G 21**	**Description**	**Qty**	**Unit**	**Rate**	**Amount**
		Sub- Head - I , Earth Work				
1.1	04001B	Excavation for foundation upto 1.5 m depth including sorting out and stacking of useful materials and disposing off the excavated stuff upto 50 Meter lead.(B) Dense or Hard soil	869	cum		0
1.2	04002A	Excavation for foundation for depth from 1.5 m to 3.0 m including sorting out and stacking of useful materials and disposing off the excavated stuff upto 50 Meter lead.(A) Loose or soft soil	211	cum		0
1.3	4006	Filling available excavated earth (excluding rock) in trenches. plinth, sides of foundations etc. in layers not exceeding 20 cm. in depth consolidating each disposited layer by ramming and watering.	8069	cum		0
1.4		Supplying and stacking of good earth at site including royalty and carriage upto 5 km lead complete (earth measured in stacks will be reduced by 20% for payment).	7200	cum		0
1.5	04007A	Filling in plinth with sand under floors including watering ramming, consolidating and dressing complete	3	cum		0
		TOTAL				**0**
		Sub - Head - II , Concrete Work	0			
2.1	05004A	Providing and laying cement concrete 1:4:8 (1- Cement : 4- coarse sand : 8- hand broken stone aggregates 40 mm nominal size) and curing complete excluding cost of formwork in (A) Foundation and Plinth	88	cum		0
2.2	05021A	Providing and laying damp proof course 25mm thick cement concrete 1:2:4 (1-Cement : 2 coarse sand : 4 stone aggregate 10 mm nominal size) and curing complete	4	sqm		0

2.3	5022	Extra for providing and mixing water proofing material in Cement concrete in mix proportion recommended by the manufacturers	1	per 50 Kg of Cement		0
2.4	0511DA	Providing and laying cement concrete work 1:2:4 (1- Cement : 2- Coarse sand : 4- graded stone aggregates 20 mm nominal size) and curing complete excluding cost of formwork and reinforcement for reinforced concrete work in (D) Columns, Pillars posts and struts upto floor two level	9	cum		0
		TOTAL				**0**
		Sub - Head - III , RCC Work				
3.1	09001AA	Providing formwork of ordinary timber planking so as to give a rough finish including centering shuttering strutting and propping etc.Height of propping and centering below supporting floor to ceiling not exceeding 4 M.and removal of the same for in situ reinforced concrete and plain concrete work in. (A) Foundations Footings Bases of Columns etc.and Mass concrete	578	sqm		0
3.2	09001B1A	Providing formwork of ordinary timber planking so as to give a rough finish including centering shuttering strutting and propping etc. Height of propping and centering below supporting floor to ceiling not exceeding 4 M.and removal of the same for in situ reinforced concrete and plain concrete work in. (B) Flat surfaces such as soffits of supspened floors slabs Landings and the like. (1) Floors etc. upto 200 mm in thickness.	21	sqm		0

3.3	09001H1A	Providing formwork of ordinary timber planking so as to give a rough finish including centering shuttering strutting and propping etc. height of propping and centering below supporting floor to ceiling not exceeding 4 M.and removal of the same for in situ reinforced concrete and plain concrete work in. (H) (1) Sides and soffits of Beams Beam Haunchings cantilevers Girders Bressumers and Lintels not exceeding 1 M. in Depth.	1077	sqm		0
3.4	09001G1A	Providing formwork of ordinary timber planking so as to give a rough finish including centering shuttering strutting and propping etc.height of propping and centering below supporting floor to ceiling not exceeding 4 M.and removal of the same for in situ reinforced concrete and plain concrete work in. (G) Columns PillarsPosts and struts. (1) Square Rectangular Polygonal in plan.	874	sqm		0
3.5	05014C	Providing TMT Bar FE 500D reinforcement for R.C.C. work including bending, binding and placing in position complete upto floor two level	100598	kg		0
3.6	05025AA	Providing and laying controlled cement concrete M.250 and curing complete excluding the cost of formwork and reinforcement for reinforced concrete work in (A) Foundations, footings, Base of columns and Mass concrete	410	cum		0
3.7	05025BA	Providing and laying controlled cement concrete M.250 and curing complete excluding the cost of formwork and reinforcement for reinforced concrete work in (B) Walls, fromtop of foundation level upto floor two level	141	cum		0
3.8	05025CA	Providing and laying controlled cement concrete M.250 and curing complete excluding the cost of formwork and reinforcement for reinforced concrete work in © Slabs,landing,shelves,Balconies, Lintels, Beams, Girders and Cantilever upto floor two level.	154	cum		0

3.9	05025DA	Providing and laying controlled cement concrete M.250 and curing complete excluding the cost of formwork and reinforcement for reinforced concrete work in (D) Columns, Pillars posts and struts, upto floor two level.	96	cum		0
3.10	05034B3	Providing and laying controlled cement concrete M.250 exposed work with curing etc. complete including the cost of formwork but excluding the cost of reinforcement for R.C.C. work in (B) COLUMNS: (iii) Having crosssectional area more than 0.12Sq.M and upto 0.18 Sq.M	227	cum		0
		TOTAL				**0**
		Sub- Head IV - Brick Work				
4.1	06001BA	Brick work using common burnt clay building bricks having crushing strength not less than 35 kg./Sq.Cm. in foundation and plinth in Cement Mortar 1:5. (1- Cement : 5 -fine sand)(B) Conventional	88	cum		0
4.2	06006B	Extra for brick work in superstructure above plinth level upto floor two level (B) Conventional	12	cum		0
4.3	06009BA	Half brick masonry in common brunt clay building bricks having crushing strength not less than 35 Kg/Sq.Cm. in Cement mortar 1:3 (1-Cement : 3-coarse sand) with 2 Nos of 6mm Mild steel round bars after every three course embedded in Cement Mortar in foundation and plinth (B) Conventional	10	sqm		0
4.4	06010B	Extra for half brick masonry in superstructure above plinth level upto floor two level. (B) Conventional	10	sqm		0
		TOTAL				**0**
		Sub Head - V Stone /Marble / stone Work				

5.1	8.2	Providing and fixing 18mm thick gang saw cut mirror polished premoulded and prepolished) machine cut for kitchen platforms, vanity counters, window sills , facias and similar locations of required size of approved shade, colour and texture laid over 20mm thick base cement mortar 1:4 (1 cement : 4 coarse sand) with joints treated with white cement, mixed with matching pigment, epoxy touch ups, including rubbing, curing, moulding and polishing to edges to give high gloss finish etc. complete at all levels.				
a	8.2.2	Granite of any colour and shade				
	8.2.2.2	Area of slab over 0.50 sqm.	6	sqm		0
5.2	8.4	Extra for fixing marble /granite stone over and above corresponding basic item, in facia and drops of width upto 150 mm with epoxy resin based adhesive including cleaning etc. complete.	8	metre		0
		TOTAL				**0**
		Sub- Head - VI Wood Work & PVC Work				
6.1	10011	Provoding and fixing flush door shutters, solid core construction with frame of first class hardwood with cross board and face veneer or plywood face panels, including anodised alluminium butt hinges with necessary screws. (B) Non-decorative type and block board core anodised alluminium butt hinges in flush door shutters (2) 35 mm thick.	4	sqm		0
6.2	NS	Providing and fixing 250x16mm Stainless steel (Grade 316) satin finish sliding door bolts superior quality with necessary SS screws etc. complete:Heavy Duty (Make - kich or equivalent).	4	each		0
6.3	NS	Providing and fixing Stainless steel (Grade 304) tower bolts superior quality with necessary SS screws etc. complete:Heavy Duty (Hafele or equivalent)				
a		300x10 mm	4	each		0
b		150 x 10 mm	4	each		0

6.4	NS	Providing and fixing 25mm dia , 300 mm long in cranked / square shape stainless steel (Grade 316) satin finish pull handle with necessary screws etc. complete (Make - kich or equivalent).	4	each		0
6.5	NS	Providing and fixing Stainless steel Grade 304 hanging floor door stopper size 6" of superior quality with necessary stainless steel screws etc. complete (Heavy duty) make Hafele or equivalent.				
		Single rubber stopper	4	each		0
6.6	9.127	Providing & Fixing decorative high pressure laminated sheet of plain / wood grain in gloss / matt / suede finish with high density protective surface layer and reverse side of adhesive bonding quality conforming to IS : 2046 Type S including cost of adhesive of approved quality.				
	9.127.1	1.00 mm thick	0	sqm		0
		TOTAL				**0**
		Sub- Head - VII , Steel Work				
7.1	11001AA	Steel work, riveted in built up sections framed work including cutting, hoisting, fixing in position and applying a priming coat of red lead paint. (A) In beams and joists, channels angles Tees, flats, with connecting plates or angle cleats as in main and cross beams. Hip and jack rafters, purlins conneted to common rafters and the like.	261	Qtl		0
		TOTAL				**0**
		Sub- Head - VIII FLOORING				
8.1	14012AA	Providing and laying polished Kota stone slab flooring over 20mm (Average) thick base of cement mortar 1:6 (1-cement : 6-coarse sand) or L.M. 1.1.5 (1-Lime putty :1.5 - coarse sand) laid over and jointed with grey cement slurry mixed with pigment to match the shade of slab including rubbing and polishing etc. complete. (A) 25mm thick	11	sqm		0

8.2	14013A	Providing and laying polished kota stone slab 25mm thick in risers of steps,skirting Dedo and pillars laid on 10mm thick cement mortar 1:3 (1- Cement : 3 coarse sand) and jointed with gray cement slury mixed with pigment to match the shade of slab including rubbing and polishing etc. complete.	2	sqm		0
8.3	14009BA	Providing and layingCeramic tiles 6mm thick in skrting risers of steps and dedo on 10mm thick cement plaster 1:3 (1-cement : 3-coarse sand) and jointed with white cement slurry	11	sqm		0
8.4	14008AA	Providing and laying white glazed tiles 6mm thick in flooring treads of steps and landing laid on a bed of 12mm thick cement mortar 1:3 (1-cement : 3-coarse sand) finishing with flush pointing in white cement	5	sqm		0
		TOTAL				**0**
		Sub- Head - IX ROOFING				
9.1	12.22	Making khurras 45 x 45 cm with average minimum thickness of 5 cm cement concrete 1:2:4 (1 cement: 2 coarse sand : 4 graded stone aggregate of 20 mm nominal size) over P.V.C. sheet 1mx1mx400 micron, finished with 12 mm cement plaster 1:3 (1 cement : 3 coarse sand) and a coat of neat cement rounding the edges and making and finishing the outlet complete.	2	each		0
9.2	15012	Providing and fixing on wall face C.I. Rain water pipe including filling the joints with spun yarn soaked in neat cement slurry and cement mortar 1:2 (1- Cement : 2-fine sand) (A) 75 mm dia.	4	metre		0
9.3	15013	Providing and fixing M.S Holder bat clamps of approved design to C.I. or S.C.I. pipes embedded in and including cement concrete blocks 100mm x 100mm x 100mm. size of 1:2:4 (1-Cement : 2- coarse sand :4- graded stone aggregate of 20mm nominal size) and cutting holes and making good the wall etc, complete. (A) 75mm dia.	6	each		0
		TOTAL				**0**

		Sub- Head - X FINISHING				
10.1	17001C	Providing 10mm thick cement plaster in single coat on brick/concrete walls for interior plastering upto floor two level and finished even and smooth in (iii) Cement mortar 1:6 (1-cement:6-sand)	22	sqm		0
10.2	17002C	Providing 15mm thick cement plaster in single coat on Rough (Similar)side of single or half brick walls for interior plastering upto floor two level and finished even and smooth in (iii) Cement mortar 1:6 (1-cement:6-sand)	22	sqm		0
10.3	17001A	Providing 10mm thick cement plaster in single coat on brick/concrete walls for interior plastering upto floor two level and finished even and smooth in (i)Cement mortar 1:3 (1- cement:3-sand)	615	sqm		0
10.4	19032.00	Applying two coats of putty & two coats of primer of approved brand and manufacture on new wall surface to give an even shade including thoroughly brushing the surface free from mortar dropping and other foreign matter and sand papered smooth	58	sqm		0
10.5	18031	Wall painting (two coats) with plastic emulsion paint of approved brand and manufacture on undecorated wall surface to give an even shade including throughly brushing the surface free from mortar droppings and other foreign matter and sand papered smooth.	58	sqm		0
10.6	18027	Finishing wall with water proofing cement paint of on wall surfaces (Two coats) to give an approved brand and manufacture and of required shape even shade after thoroughly brushing the surface to remove all dirt andremains of loose powered materials.	622	sqm		0
10.7	19001	Applying priming coat over new steel and other metel surface after and including preparing the surface by throughly cleaning, oil,grease, dirt and other foreign matter and scoured with brushes fine steel wood, scrapers and sand paper with ready mixed priming paint brushing red lead.	1233	sqm		0

10.8	19005	Painting two coats (excluding priming coat) on previously printed steel and other metal surface with synthetic enamel paint, brushing to give an even shade including cleaning the surface of all dirt, dust and other foreign matter	1233	sqm		0
10.9	DSR21	Providing and fixing G.I. chain link fabric fencing of required width in mesh size 50x50 mm including strengthening with 2 mm dia wire or nuts, bolts and washers as required complete as per the direction of Engineer-in-charge				
		Made of G.I. wire of dia. 4 mm, PVC coated to achieve outer dia not less than 5 mm in required colour and shade	1	Sq m		**0**
		TOTAL				**0**
		Sub- Head - XI , Aluminium Work				
11.1	11032	Providing and fixing extruded aluminum window having extruded aluminum Colour Powder Coated section frame main outer size 127mm x 38.10mm x 1.35mm ,@ Wt.1.384 Kg/mt,horizontal Four track member size 122.20mm x 31.75mm x 1.10mm @ Wt. 1.205 Kg/mt,vertical member of size 122.20mm x 31.75mm x 1.50mm ,@ Wt. 1.398 Kg/mt with sliding shutters of horizontal member size 40mm x 18mm x 1.29mm @ wt.of 0.456Kg/mt,vertical member of size 40mm x 18mm x 1.29mm @ wt.of 0.456Kg/mt,@ with 5 mm thick transparent bronze colour tinted float glass with powder coated aluminum fittings and fixtures and transparent silicon sealant glass fixing to frame as per details etc complete for window.	5	sqm		0
		TOTAL				**0**
		Sub- Head - XII , Water Proofing				

12.1	15011A	Providing and fixing five courses water profing treatment with bitumen felt consisting of second and fourth course of blown / bitumen or/ and residual bitumen applied hot at 1.2 kg.per Sq.M.of area for each course and first course with fibre base bitunen saturated under lay type land third course with fibre base self finished felt type 2 grade 1 and fifth and final course of stone grit 6mm and down size or pea sizes gravel spread at 0.008 Cu. Metre / Sq. metre including preparation of surface excluding grading complete.	37	sqm		0
12.2	05011BA	Providing and laying cement concrete work 1:2:4 (1- Cement : 2- Coarse sand : 4- graded stone aggregates 20 mm nominal size) and curing complete excluding cost of formwork and reinforcement for reinforced concrete work in (B) Slabs, landing, shelves, Balconis ,Lintels, Beams, Girders and Cantilever upto floor two level.	2	cum		0
		TOTAL				**0**
		Sub- Head - XIII , Plumbing Work				0
13.1	23010	Providing and fixing wsh down water closet (European type, W.C. Pan) with integral P or S trap including jointing the trap with soil pipe in Cement Mortar 1:1 (1-Cement : 1-fine sand) (Seal and cover to be measured and paid for separately)(A) vitreous China Pattern :(i) in white colour	1	each		0
13.2	23013	Providing and fixing 12.5 Litres low level flushing cistern with a pair, of C.I. or Mild brackets, complete with fittings such as lead valve less syphon, 15mm nom.nal size brassball valve with polythene float, C.P brass handle unions and couplings for connections,with inlet, outlet and overflow pipes, 40mm dia.porcelain enamelled flush bend including cutting holes in walls and making good the same connecting the flush bend with cistern and closet (overflow pipe to be measured and paid for separately)(A) Vitreous China (I) In white colour	1	each		0

13.3	23015	Providing and fixing in position with clamps etc. 32mm nominal internal diameter galvanised steel tube flush pipe for high level flushing cistern including connecting the flush pipe with cistern and closet and making good the walls and floors.	1	metre		0
13.4	23016	Providing and fixing G.I. inlet connection for flush pipe with W.C. Pan	1	each		0
13.5	23017	Providing and fixing plastic seat and cover for wash down water closer with C.P. brass hinges and rubber buffers. (B) Black plastic seal and cover.	1	each		0
13.6	23018	Providing and fixing washbasin with single hole for pillar tap with C.I. or M.S. brackets painted white including sutting holes and making good the same but excluding fittings.(A) Vitreous China:(ii) Flat Back washbasin 550 mm x v 400mm size. (i) In white colour	1	each		0
13.7	23005CA	Providing and fixing cast iron spigot and socket soil, waste and ventilating pipes of the following nominal size.(C) 100mm dia.	4	each		0
13.8	17.60	Providing and fixing cast iron (Spun) Nahni trap of the following nominal diameter of self cleaning design with C.I. screaed down or higned grating including cost of cutting and making good the walls and floor 100mm inlet and 50mm outlet.(C) 100mm dia.	1	each		0
13.9	23004C	Providing and fixing to wall ceiling and floor 10.0 Kg. F/Cm2 working pressure poluthene pipes of the following outside Dia. Low densidy, complete with special falnge compression type fittings, wall clipsetc including making good the wall ceiling and floor.(C) 32mm	380	metre		0
13.10	23001AA	Providing and fixing to wall, ceiling and floor galvanised Mild steel tubes (Medium grade) of the following nominal bore, tube fitting and clamps including making good the wall ceiling and floor.(A) 15mm	6	metre		0

13.11	23001BA	Providing and fixing to wall, ceiling and floor galvanised Mild steel tubes (Medium grade) of the following nominal bore, tube fitting and clamps including making good the wall ceiling and floor.(B) 20mm	3	metre		0
13.12	23028A1	Providing and fixing screw down bib taps of following size.(A) Brass screw down bib tap polished bright. (i) 15mm dia.	1	each		0
		TOTAL				**0**
		Sub- Head - XIV -Carriage of materials				
		Carriage of materials from Source to site of work by mechanical transport including loading unloading stacking complete				
14.1		Bricks for an average distance of 30 KM	44	per 1000 Nos		0
14.2		Sand/Stone aggregate below 40mm for an average distance of 30 KM	925	cum		0
14.3		Stone aggregate above 40mm for an average distance of 30KM	925	cum		0
14.4		Good earth for an average distance of 40 KM	7200	cum		0
		TOTAL				**0**

Note :-

- The rates quoted shall be inclusive of all taxes (GST)/ carting complete.
- The material shall get approved by Architect/ GBU EIC, before procurement.
- The quantity may vary as per GBU requirements
- The electricity if required for the current work shall be provided by GBU. Necessary arrangement for DG set may be done by bidder for the work. Contractor shall make his own arrangement to carry the same at required site location, under strict supervision and prior permission of GBU.

- The quantity if varied, the rates shall be paid for the actual work done on proportional basis of the specified item
- Agency shall maintain all precautions for Covid-19 as per government guidelines as applicable from time to time.

Signature of the Contractor with stamp **Registrar**