PART.II
Technical Specification & Commercial Conditions
Notice Inviting Tender

Tender Notice No: GETCO/CE (Proj.)/SE(C)/W 47 / 12-13 / For Civil Works.

Sealed percentage rate tenders are invited in two separate sealed covers Super scribed technical bid and price bid “Construction of C.R. Bldg, Foundation, Cable Trench, Compound Wall, Road, Staff quarter, etc. at 66 KV Baliyasan. S/S.Ta. & Dist. Mehsana. under MEHSANA Tr. Circle.” from Registered Contractors in appropriate class with GETCO/Central/State Government/ Railway/Semi. Govt. and who has executed civil works successfully as mentioned in Qualification requirement criteria given in the tender document.

Tenderer should download the tender documents from this Website and submit the same as per instructions therein only by RPAD/Speed post

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Name of Work</th>
<th>Estimated Cost Rs.</th>
<th>Time Limit</th>
<th>Tender Fee Rs.</th>
<th>E.M.D. Rs.</th>
<th>Appropriat e class</th>
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<tbody>
<tr>
<td>W 47/ 12-13 V38</td>
<td>Construction of C.R. Bldg, Foundation, Cable Trench, Compound Wall, Road, Staff quarter, etc. at 66 KV Baliyasan. S/S.Ta. &amp; Dist. Mehsana. under MEHSANA Tr. Circle</td>
<td>1,25,33,393/-</td>
<td>05 Months</td>
<td>3600.00</td>
<td>1,25,340.0</td>
<td>Class-C &amp; above</td>
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1) Last date of submission of tender: (Technical and Price bids): (Only by RPAD / Speed post) **11.01.2013**(During working Hrs. up to 15.00 Hrs.)
2) Due date of opening of Tech. bid: **11.01.2013** (at 16.00 Hrs.)
3) Validity of tender: 180 Days from the date of opening of Technical Bid.

Bidders are requested to remain in touch with our Web site for extension in date, corrigendum etc. for the above tenders till opening of technical bid,

No tender shall be accepted / opened in case of receipt after due date and time of tender, irrespective of delay due to postal services or any other reasons and the Corporation shall not assume any responsibility for late receipt of tender.

The tenders are to be submitted by the intending bidders with forwarding letter on their letter head showing list of documents attached with the tender duly signed by Authorised Person of their firm, affixing stamp of their firm, in single envelop with two separate sealed and super scribed envelopes as listed below:


Envelope No.2: Price Bid.
Technical and post qualification bid details specification (envelope No.1) will be opened first and subject to evaluation based on the qualification criteria contained in the individual bid document.

Price bids (Envelope No.2) of bidders who are assessed and declared as substantially technically responsive on evaluation of the technical bid will be opened for further commercial evaluation.

The Earnest Money Deposit and tender fee will be accepted by Demand Draft on any Nationalized Bank only situated at “VADODARA”, drawn in favor of “GUJARAT ENERGY TRANSMISSION CORPORATION LTD.” Tender without EMD and tender fee shall be rejected. Two separate demand draft for Tender fee and EMD should be submitted with technical bid.

The Corporation reserves the rights to reject any or all tenders or accept any tender without assigning any reason thereof.

The GETCO reserves the right to award the work to one or more bidders, considering their technical and financial capacity OR to reject any or all tenders or accept any tender without assigning any reason thereof.

Chief Engineer (Project)
GETCO, H. O., Vadodara.390007
SECTION – A
INSTRUCTIONS TO THE BIDDERS
(A) INSTRUCTIONS TO THE BIDDERS

(A1) SCOPE OF WORK:

Major works covered in this work are “Construction of C.R. Bldg, Foundation, Cable Trench, Compound Wall, Road, Staff quarter, etc. at 66 KV Balyasan, S/S.Ta. & Dist. Mehsana, under MEHSANA Tr. Circle.” as per specifications and terms mentioned here under.

1. The site of proposed work is situated at Balyasan, Ta- & Dist- Mehsana. The ground is generally in level. GETCO will arrange for area grading upto required FGL. The works shall be carried out as per tenders specifications & detailed work order.

2. Any activity not specifically mentioned in the tender but necessary in the opinion of engineer in charge of work must be carried out for successful completion of the job, on getting approval of competent authority of GETCO.

3. Before taking up construction activity; the agency has to cut the trees which obstruct the working, of any diameter, bushes, vegetations, i.e. roots, plant, shrubs, grass etc including stacking and crediting to GETCO as directed with no extra cost.

4. Site visit: The bidder is advised to visit the site and examine the site condition. Where in the work is proposed to be carried out and to get himself fully acquainted at his own responsibility for all information that may be necessary for quoting the tender bid and entering into contract. All cost and liabilities arising out of the site visit shall be at bidder account.

(A2) Earnest money Deposit:

1. Bidders are requested to pay an earnest money deposit (1% of estimated cost) by demand draft only on any Nationalized Bank at Baroda for the amount as specified in the tender notice. Payment of EMD in form of Cheque or any other form shall not be accepted.

2. The EMD shall be submitted along with submission of Technical bid only. In no case it shall be submitted with sealed cover of Price Bid.

3. Tenders not accompanied by EMD shall be rejected.

4. If during the tender validity period, i.e. 180 days, the tenderer withdraws his tender, the EMD shall be forfeited and the tenderer may be disqualified from tendering for further works of GETCO.
5. The EMD will be returned promptly to the unsuccessful tenderer. The EMD will be returned to the successful tenderer after he furnishes the Security Deposit for performance and duly enters into the contract. If he fails to furnish the SD or to execute the contract for the work offered to him, his EMD shall be forfeited and the tenderer may be disqualified from tendering for further works for GETCO.

(A3) COMPLETION PERIOD: The time limit for the completion of the above work will be 05 (Five) Calendar months from the commencement of the work, which will be reckoned on the 10th day of issuance of L.O.I.

(A4) SECURITY DEPOSIT:
As per prevailing rules of the Corporation, 5% of the contract value shall be paid as ‘Security Deposit’. Out of this, 50 % of S. D. shall be paid at H. O. Vadodara within 10 days from receipt of letter of intent either
a) In form of FDR (Auto Renewal) in favor of "Gujarat Energy Transmission Corporation Ltd. " of any Nationalized Bank OR
b) In form of Bank Guarantee of any Nationalized Bank as per the approved format of the Corporation.
The balance 50 % Security Deposit shall be recovered from first two R.A. Bills in equal installments.
Alternatively 100 % S. D. in form of FDR (Auto Renewal) or B. G. may be submitted on receipt of LOI. The security deposit will be refunded only after the completion of 1 year guarantee period of work completed or finalization of final bill whichever is later.
If Security Deposit is not paid within 10 days of issue of LOI, EMD paid will be forfeited and Corporation will not deal with party for the period of two years.

(A5) Other Instructions:
1 Tenders must be submitted in the enclosed schedule of work & quantities. Those received in any other form will not be accepted. They should be accompanied by a covering letter in which the bidder should give all information as called for in the specifications & any other point which he would like to be considered along with the tender.

2 The Schedule-B shall be filled up with the quoted % above or below & shall be submitted in sealed envelope superscripted– PRICE BID for “Name of work:-
“Construction of C.R. Bldg, Foundation, Cable Trench, Compound Wall, Road, Staff quarter, etc. at 66 KV Bailyasan. S/S.Ta. & Dist. Mehsana. under MEHSANA Tr. Circle.” The Quoted % above or below shall be written both in words, & figures & the units in words. If any discrepancy occurs between words & figures, then words shall prevail.
The tender documents shall be written legibly & free from erasure, overwriting or conversions of figures, crossing out, initializing, dating & rewriting, shall be avoided. In case of any deviation in figure and words the rates quoted in words will prevail. The bidder must sign and affix seal of their company in all the documents of tender Including Schedule-B.

3 The bidders shall note that no deviations from the technical specifications or commercial conditions with this bid are acceptable & it will be presumed that the bidder agrees entirely with the specifications & general terms & conditions of the contract.

4 The Corporation reserves the right to accept any tender irrespective of whether it is lowest or not or to reject all the tenders without assigning any reasons there of. Tenders departing from the technical Specification or the method of bidding in a radical manner may also be rejected.

5 On acceptance of the tender the name(s) of the accredited representative(s) of the tenderer who would be responsible for taking instructions from the Engineers of the Corporation shall be communicated to the Chief Engineer (Projects), Gujarat Energy Transmission Corporation, Head Office, Vadodara. 390007.
6 All royalties, sales tax, toll tax, local tax, development charges, Works Contract taxes, VAT & any other taxes etc. in respect of this contract shall be payable by the contractor & Gujarat Energy Transmission Corporation will not entertain any claims whatsoever in this aspect. Any statutory variation in future towards the above mentioned taxes and imposing any new tax that shall also be payable by the contractor & Gujarat Energy Transmission Corporation shall not entertain any claim of whatsoever nature, during or after the completion of this tendered work. Proof of such payments made by the Contractor to the appropriate departments shall be produced to Gujarat Energy Transmission Corporation failing which appropriate amount shall be withheld on getting information / instruction from the concerned departments.

6A. Service tax shall be reimbursed on production of proof of such payments made by the contractor to the appropriate department.

6B. Welfare Cess

- As per the Welfare Cess Act, the welfare cess @ 1% is applicable on supply and erection items for supply, erection, testing & commissioning of substation, transmission lines, EPC/Turnkey projects and civil works.
- Contractor shall get registered under Welfare Cess Act before commencement of work. Office of the Factory Inspector is authorized at present as a registering authority.
- The welfare cess@1% is considered in the price schedules so, the bidders are requested to quote accordingly.
- GETCO shall pay the welfare cess by way of reimbursing to contractors on production of documentary evidence of payment.
- The contracts for which supply or part supply of material are in the scope of GETCO, then contractors shall deposit welfare cess on estimated cost of supplied items to GETCO on progressive basis of utilization. As this part of welfare cess is on GETCO account, the same shall be reimbursed to the contractor on receipt of request letter along with documentary evidence of payment. For calculation of welfare cess on supply part, valuation as per MR shall be taken and informed to the contractor for payment. This will be over and above the A/T value.

The modality of payment/ reimbursement of welfare cess will be as under.

- On receipt of A/T, the contractor / bidder will get them registered under Welfare Cess Act and submit the documentary evidence to the concern office.
- Before release of payment of first R.A.Bill, the contractor has to submit the documentary evidence of registration. Only thereafter, the bill will be processed for payment.
- Before release of payment of subsequent R.A.Bills, the contractor has to submit the documentary evidence of payment of welfare cess of previous R.A.Bill.
- Before release of payment of Final Bill, the contractor has to submit the documentary evidence of payment of welfare cess of previous R.A.Bill as well as of this final bill.
- If the R.A.Bill happens to be first and final bill, then before release of payment, contractor has to submit documentary evidence of registration under Welfare Cess Act and evidence of payment of welfare cess.
- The welfare cess shall be reimbursed to the contractor on submission of copy of documentary evidence of payment by observing due formalities.

7. The successful contractor will have to sign an agreement as per the Gujarat Energy Transmission Corporation rules on stamped paper & the necessary stamp duty charges shall be borne by the contractor.

8. The bidder shall visit the site and carefully study the work to be carried. The Corporation will not pay any extra or rate for any reason in case the contractor claims, after acceptance of contract, to have misjudged the site condition.

9. The percentage quoted shall include cost towards of all materials, & machinery including equipments, fixtures, labour, constructional equipments, fuel, scaffolding, staging,
ramps, walkways, approach and haul road, temporary works, etc. bearing permanent or
temporary nature necessary for the completion of the work in all respects, except for
those items specifically mentioned to be furnished by the Corporation. The contractor
must also arrange for the transport of materials & include all such costs in the rates
quoted by him for finished work.

10. During the execution of the work if it is found that the work is not progressing as per the
Scheduled Progress Program, approved by the Corporation & planned by the
Contractor, due to the reasons attributable to the Contractor; suitable action shall be
taken as per relevant clauses mentioned in General Conditions of Contract..

11. The contract or any part thereof shall not be subject to change without the written
permission of the Chief Engineer (Projects), Gujarat Energy Transmission Corporation,
Head Office, Vadodara or his authorized representatives.

12. Tender shall remain open for acceptance for a period of 180 days from the date of
Technical bid opening & during this period no bidder shall be allowed to withdraw his
tender. Any such withdrawals, during the said period will entail forfeiture of the earnest
money deposited with the tender. The GETCO will take further action as deemed fit like
not to deal with bidder in GETCO works.

13. Further information required, if any, can be had from the office of the Chief Engineer
(Projects), Gujarat Energy Transmission Corporation, Head Office, Vadodara. But it
must be clearly understood that the tenders must be received complete in every
respects by the due date & time

14. The notice inviting tender, general instructions to the contractors & all documents of this
tender shall form part of the contract.

15. The works under this contract shall be completed in all respects within stipulated period
from the date of commencement order issued by field office. However, interim mile
stones to be jointly fixed after issue of LOI.

16. Bidders must quote firm price only, till completion of work under contract, & this is to be
confirmed by bidder while submitting his offer. No escalation towards labor and
material / fuel shall be paid in this execution of contract.

17. Contractor shall pay minimum wages to his laborers as per the Minimum Wages Act,
1948 & rules there under as applicable from time to time in pursuant to the State
Government notification. The concerned contractor shall submit the details of the
payment with due certificate of LWO/IRO of the Corporation

18. Once the offer submitted will not be returned back for any reason thereof in any
case.

19. Each tender shall contain the name, residence & place of business of person or
persons making the tender & shall be signed by the tenderer with his usual signature
with seal of the company.

20. Tender by partnerships shall furnish the full names of all partners. It shall be signed with
the partnership name by one of the members of the partnership or by an authorized
representative followed by the name & designation of the person signing.

21. An attested copy of the constitution of the firm with the name of partners shall be
furnished. Whenever, whether in submission of the tender or later in other matters, the
signatures are made by one person on behalf of Directors or a firm or a corporation, an
attested copy of the resolution of the partners or of law shall be supplied by the tenderer
authorizing Witnesses & sureties shall be persons of status & probity, &their names,
occupation & address shall be stated below their signatures. All signatures shall be
dated.

22. Tenders by corporation shall be signed with the legal name of the corporation followed
by the name of the state of incorporation & by the signature & designation of the
president, secretary or other person authorized to bind it in the matter with rubber seal of
the company.

23. The GETCO reserves the right to delete any item of Schedule-B for which contractor
shall not have any right to claim on this account.
24. The Bidders shall study the Conditions of site & shall resort to dewatering, where necessary, by appropriate methods & maintain reasonably dry areas to work at and no extra claim will be entertain on this account.

25. The Contractor shall prepare all required roads to execute various items of this Contract & arrange all transport of materials & all such costs shall be taken care of while quoting the rates.

No extra payments shall be admissible towards such costs. On completion, this shall be cleared if asked by GETCO at no extra cost.

26. Gujarat Energy Transmission Corporation shall not entertain idle charges for any site conditions or any circumstances.

27. The Contractor shall take all requisite & necessary care to observe that no damage is occurred to the Existing structures, if any. For any damage to the Existing Structures of Gujarat Energy Transmission Corporation the Contractor shall be held responsible.

28. The submission of any bid connected with these document and specification shall constitute on agreement that bidder shall have no cause of action or claim against the GETCO for rejection of his bid. The owner shall always be at liberty to reject or accept split any bid or bids at his sole discretion and any action will not be called into question and the bidder shall have no claim in that regards against the owner.

29. **Recoveries:**

(I) In case of any damage to equipment/machinery or structure/building of GETCO or any public property due to negligence's of contractor or any other reasons attributed to contractor the decision of E.I.C. regarding the amount of recovery shall be final and binding.

(II) If the contractor fails to execute the proportionate work as per direction of E.I.C. within the time frame given for completion of part / whole of the work GETCO shall get the work done through any other contractor and the cost of execution of such work along with 15% overhead charges shall be recovered from contractor.

30. Notwithstanding anything contained to the contrary in the specification or tenders in subsequent exchange of correspondence, the conditions of contract shall be binding on the contractor and any change or variations expressed or implied, however made in the said conditions shall not be valid or operative unless expressly sanctioned by the Corporation. The contractor shall be deemed to have fully informed himself and to have special knowledge of the provisions of the conditions of contract herein contained.

31. Submissions of tender by a contractor implies that he has read the instructions and condition of contract herein contained and has made himself aware of the scopes and specifications of the work to be done.

32. These rules and directions shall form part of the contract.

33. **Drawings:** Drawings required for the works are available with the E.E. (Civil) of Circle Office, **Mehsana / Corporate Office, Vadodara.** They are indicative and for tender purpose only. Bidders shall have to execute the work as per construction drawings issued from time to time by GETCO.

34. **Electricity Connection:** The electric power, at site, will be made available at one mutually agreed points, free of cost (connection only) by Gujarat Energy Transmission Corporation only. Further distribution will have to be carried out by the contractor as per requirements at their own cost. The necessary consumption charges will be recovered as per the tariff rate of Gujarat Energy Transmission Corporation from time to time as per Corporation's rules.

35. The contractor has to make his own arrangement of water for construction activity at his own cost. The contractor shall be allowed to draw water from bore well / open well by making his own arrangement such as drilling, pump with all electrical accessories, pipe line & electricity to run the bore well /open well from the electric power point provided by DISCOM to them. Water shall be free of cost to the contractor. The electrical consumption charges to run the bore well / open well shall be borne by the contractor.
In those cases where in bore well has been constructed at the cost of GETCO as per contract, even then no water charges shall be charged, however electricity connection & electricity charges till the completion of work shall be to contractor accounts.

In no case, GETCO is bound to supply water if the ground water sources are not available at site within premises.

**Tenders received after time:** The tenders received after time and date specified in the tender notice, will not be accepted. Once the offer submitted by the contractor before due date of submission, the contractor will not be allowed to submit revised / additional / modified / other even before due date. However, if the issue and receipt of tender is extended by the Corporation due to any reason, the contractor may submit the revised offer before due date of submission, if he wish to submit.

The work shall be completed within the period stipulated in the contract. However it may be noted that drawings shall be released progressively & site clearance arranged accordingly to the progress of work at site. Therefore the contractor has to organize & coordinate the works to suit these. In the event of any delay due to the above or due to any other reason not attributable to the contractor, reasonable extension in the completing the work may be given at the discretion & as decided by the Corporation but no compensation or idle charges will be paid to the contractor under any circumstances.

The price bid/proposals will be opened in the presence of the bidder’s representatives who choose to attend at the date and time and venue to be notified by the GETCO, after conclusion of the Technical Evaluation and Post Qualification process.

GETCO will not issue any material required for the work. All the materials – tools & tackles, labour etc. will have to be arranged by the contractor.
SECTION- B
Qualification Requirement
Qualification Requirement

1. **Registration**: Bidder quoting for the bid shall have registration in appropriate class with GETCO/Central/State Government / Railway/Semi. Govt. Organizations.

2. **Experience**: Bidder should have experience of similar work including RCC frame structure building under single contract as main contractor for minimum of **50% value** of estimated cost of the tender with GETCO/ GEB / Central / State Government / Railway / Semi- Government / Public Sector Organization within last 5 years. Attested xerox copy of work orders executed from GETCO/ GEB / Central / State Government / Railway / Semi- Government / Public Sector Organization and satisfactory completion certificate from respective department should be submitted.

3. **Solvency**: Latest bank solvency certificate from any Nationalized/Scheduled Bank of a sum of minimum 20 % of the estimated cost shown in the tender.

4. **Provident Fund Code**: Separate provident fund code number towards firm registered with Regional P. F. Commissioner.

5. **Profit & Loss Account Statement**: The Bidder should submit certified Xerox audited copy of the Balance sheet with profit and loss account of last three Years.

6. **Nature of Firm**: Attested copy of **Partnership Deed, Power of Attorney**, if any, for signing the bid documents in case of partnership firm & self affidavit for proprietorship firm. All such documents shall have to be NOTARISED.

7. **VAT Registration**: The Bidder shall be registered under the “GUJARAT VALUE ADDED TAX – ACT”. The certified Xerox copy of such registration under Gujarat VAT Act indicating “TIN” shall have to be submitted along with the bid by the bidder.

8. **I.T. PAN CARD**: The bidder should submit the attested zerox copy of PAN Card of their firm.

9. **Service tax registration**: The bidders should submit the certified copy of service tax registration FormST-2 of their firm.

Signature of Contractor

Chief Engineer (Projects)
GETCO, H. O., Vadodara. 390007
SECTION – C
GENERAL CONDITIONS OF CONTRACT
1. Definitions:

(a) The Contract means the documents forming the tender and acceptance thereof, together with the documents referred to therein or individual work order in the case of term contract, including these conditions, schedules and/or additional conditions attached to the form of tender or individual work, order, rate schedule, the specifications and the drawings and all these documents as applicable taken together shall be deemed to form the contract.

(b) The “Tender Document” means the form of tender, the applicable schedules and/or additional conditions and the specifications and/or drawings as issued to the contractors for the purpose preparing tender.

(c) The expression “works” or “work” when used in the conditions of contract shall, unless there be something in the subject or context repugnant to such construction means, the works or the work contracted to be executed under or in virtue of the contract whether original or altered.

(d) The “Contractor” means the individual or firm or company, whether incorporated or not, undertaking the works and shall include his or its legal personal representative, successors and permitted assignees.

(e) “Corporation” means the Gujarat Energy Transmission Corporation Ltd. and the “Accepting Officer” means the officer who is authorized to sign and signs the contract on behalf of the “Corporation.”

(f) The letter “EE” means Executive Engineer who in the case of measurement and lump sum contract, direct the contractor and the letters “ACE” means “Add Chief Engineer” and “CE” means “Chief Engineer” who administers and in the case of the term contracts directs the contract.

(g) The “Engineer-in-charge” means all officers of the Corporation appointed by the Chief Engineer to supervise the works or part of the works.

(h) “Approved” and “Directed” means the approval or direction of the Chief Engineer to Supdt. Engineer or the person deputed by him for the particular purpose.

(i) “B.S.” means the “British Standard” as issued by the British Standards institution. “A.S.” means the American Standards as issued by the American Standard Institutions and “I.S.” means the “Indian Standards” as issued by the Indian Standards Institutions. Wherever the above-mentioned abbreviations are preferred to, in the specifications and/or work orders, they mean the addition with all amendments current at the date of issue of tender documents of work orders.

In the case of measurement and terms of contracts “Specifications” means those contained in Gujarat Energy Transmission Corporation Ltd. schedule together with any amendments etc. embodied in the tender documents, “Drawings” refer to those accompanying the tender documents and/or any work orders referred therein.

(j) The “Contract Sum” means the sum accepted or the sum calculated in accordance with the prices accepted in the tender and/or the contract rate as payable to the contractor for the full and entire executing and completion of works.

(k) “The date of completion” is the date or dates of completion of the work or any part of the works set out or ascertained in accordance with the individual work orders and the tender documents or any subsequent agreed amendments thereto.

2. Security Deposit

The contractor shall, within 10 days of the issue of Letter Of Intent, pay 2.5% of contract value out of 5% as Security Deposit; the remaining 2.5% will be recovered from first two running account bills in equal installments. The Bank Guarantee from schedule bank in lieu of cash or government securities towards Security Deposit will be accepted providing amount of Security Deposit payable exceeds Rs. 10,000/- Security Deposit can also be paid as fixed deposit.
receipt as prescribed in Schedule “C”. All damages, costs, charges, expenses and other sums which may be or may become due or payable by the contractor to the Corporation under the terms of the contract may be deducted from the cash in the proceeds of sale of the Securities/Bank Guarantee to deposited (which the officer or person to whom the same may be endorsed as aforesaid is hereby authorized to sell / to encash for that purpose) or from the interest of any such securities of from any sums due or which may become due to the contractor by the Corporation or from the whole or the balance unpaid as aforesaid of the encash securities so deposited being repaid or transferred and returned as may be to contractor after the date on which the final bill is paid or after the expiry of the date up to which the contractor has to maintain the work in good order whichever is later.

“For Water Proofing Treatment:—
The contractor shall submit performance guarantee of the waterproofing item at the rate of 20% of cost of item of work order in the form of FDR of Schedule Bank / Nationalized Bank in favor of GETCO (A/c Agency) for a period of 5 years from actual date of completion of work on non-judicial stamp paper of appropriate value in approved format of GETCO. In the event of unsatisfactory performance of waterproofing work, the agency shall carry out necessary remedial/rectification works that may be necessary in the opinion of GETCO at no extra cost, failing which FDR shall be encashed by GETCO. The FDR shall be released only after satisfactory completion of performance period of 5 years.”

“For Anti-termite Treatment:—
The contractor shall submit performance guarantee of the anti-termite treatment item at the rate of 20% of cost of item of work order in the form of FDR of Schedule Bank / Nationalised Bank in favour of GETCO (A/c Agency) for a period of 5 years from actual date of completion of work on non-judicial stamp paper of appropriate value in approved format of GETCO. In the event of unsatisfactory performance of anti-termite treatment work, the agency shall carry out necessary remedial/rectification works that may be necessary in the opinion of GETCO at no extra cost, failing which FDR shall be encashed by GETCO. The FDR shall be released only after satisfactory completion of performance period of 5 years.”

3. Compensation for the delay

The time limit allowed for carrying out the work as entered in the tender shall 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 shall through out the stipulated period of contract the proceeds with due diligence (time being deemed to be essence of contract) and for delay, the contractor shall pay compensation, an amount equal to half percent per one week for the contract amount of work or such smaller amount as per the decision of the Competent Authority of the GETCO. However, the total amount of compensation to be paid by the contractor, under the provision of the clauses shall not exceed 10 percent of the amount of contract value as decided by the competent authority of the GETCO. The penalty will be invariably deducted from the bills of the contractor and no refund will be given unless the competent authorities approves the reduction the reasons for delay attributable to GETCO as well as to party will be brought out clearly while putting the proposal for waiver reduction in penalty.

4. Action when whole of Security Deposit is forfeited

In any case in which under any clause or clauses of this contract the contractor shall have tendered himself to pay compensation amounting to the whole of his security deposit (whether paid one sum or deducted by installments) or in the case of abandonment for the work owing to
serious illness or death of the contractor or any other cause, the Executive Engineer on behalf of the Corporation, shall have powers to adopt, (a) below and any of the following courses under (b) and (c) as he may deem best suited to the interest of the Corporation.

(a) To rescind the contract (for which rescission notice of 10 days) in writing to the contractor under the hand of the Executive Engineer shall be conclusive evidence and in that case the security deposit of the contractor shall stand forfeited and absolutely at the disposal of the Corporation.

(b) To employ labour paid by the Corporation, to supply materials to carry out of the works or any part of the works debiting the contractor with the cost of the labour and the price of the materials (as to the correctness of which cost and price the certificate of the Executive Engineer shall be final and conclusive against the contractor) and crediting him with value of the work done, in all respects in the same manner and at the same rates as if it had been carried out by the contractor under the terms of this contract and in that case the certificate of the Executive Engineer as to the value of the work done shall be final and conclusive against the contractor.

(c) To order that the work of the contractor be measured up and to take such part thereof, as shall be unexecuted, out of his heads and to give it to another contractor to complete, in which case, any expenses, which may be incurred in excess of the sum, which would have been paid to the original contractor, if the whole work had been executed by him as to the amount of which excess expenses the certificate in writing of the Engineer-in-charge shall be final, conclusive and shall be borne and shall be paid by the original contractors and shall be deducted from any money due to him by the Corporation under the contract or otherwise from his security deposit of the proceeds sale thereof or a sufficient part thereof.

In the event of the above courses being adopted by the Executive Engineer the contractor shall have no claim to compensation for any loss sustained by him by reason of his having purchased or procured any materials or entered into any engagements or made any advances on account of or with a view to the execution of the work or the performance of the contract. And in case the contract shall be rescind under the provision aforesaid, the contractor shall not be entitled to recover or be paid any sum for any works thereof actually performed by him under this contract unless and until the Executive Engineer shall have certified in writing the performance of such works and the amount payable to him in respect thereof and he only be entitled to be paid the amount so certified.

5. Notice for unsatisfactory progress

If the progress or a particular portion of the work is unsatisfactory the Executive Engineer whose decision shall be final, shall notwithstanding that the general progress of work is satisfactory; be entitled to take action under Clause 4(c) after giving the contractor 10 days notice in writing and the contractor will have no claim for compensation for any loss sustained by him owing to such actions.

6. Action in the case of Default by Contractor

If any case in which any of the powers conferred upon the Executive Engineer by Clauses 4 and 5 hereof, shall have exercised and the same shall not have been exercised, the non exercised thereof shall not constitute a waiver of any of the conditions hereof and such powers shall not withstanding be exercisable in any further case of default by the contractor for which, by any clauses hereof, he is declared liable to pay compensation amounting to the whole of his security deposit and liability of the contractor for past and future compensation shall remain unaffected in the event of the Ex. Engineer taking action under sub clause (a) or (c) of Clause 4 he may, if he so desires, take possessions of all or any tools, plants, materials, and stores in such upon the work or the site thereof belonging to the contractor, or procured by him and intended to be used for the execution of the work of any part thereof paying for allowing for the same in account at the contract rates, or in the case of a contract rates not being applicable to current
market rates to be certified by the Executive Engineer whose certificate thereof shall be final. In
the alternative, the Executive Engineer may by notice in writing to the contractor or his clerk of
works, foremen or other authorized agent, require him to remove such tools, plants, materials or
stores from the premises within a time to be specified in such requisition to decisions to the
contractor failing to comply with any such requisition, the decision of the Executive Engineer as
to the expenses of any such removal and the amount of the proceed and expense of any such
sale, be final and conclusive against the contractor.

7. Extension of Time Limit

If the contractor shall desire an extension of the time limit for completion of the work on the
ground of his having been unavoidably hindered in its execution or on any other ground, he
shall apply in writing to the Executive Engineer and the Executive Engineer may, if in his opinion
there are reasonable grounds for granting extension, recommend such extension as he may
think necessary or proper. The decision of the competent authority in this regard shall be final
and binding to the contractor. Any delay attributed to Corporation shall be compensated only by
way of extending the limit.

8. Completion Certificate

On completion of the work the Contractor shall be furnished with Completion Certificate by the
Executive Engineer of such completion but no such certificate shall be given nor shall the
work considered to be complete until works are taken over and/or duly tested and put to
operative as the case may be, nor until the work shall have been measured by the Engineer-In-
Charge or where the measurement have been taken by his subordinated until they have
received the approval of the Executive Engineer the said measurement being binding and
conclusive against the contractor.

9. Effect of the Certificate

No payment shall be made for any work estimated to cost less than Rs.1,000/- till after the
whole of said work shall have been completed and certificate of completion given. But in the
case of works estimated to cost more than Rs.1,000/- Contractor shall on submitting a monthly
bill thereof, be entitled to receive payments. Proportionate to the part of the work then approved
and passed by the Engineer-in-charge, whose certificate of such approval and a passing of the
sum requiring bad, unsound, imperfect or unskillful work to be removed and taken away and
reconstructed or rejected nor shall any such payment be considered as admission of the due
performance of the contract or any part thereof in any respect of the accruing of the claim nor
shall conclude, determine or effect in any way the powers of the Engineer-in-charge as to the
final settlement and adjustment of the accounts otherwise or in any other way, vary or affect the
contract. The final bill shall be submitted by the contractor within one month of the date fixed for
completion of work. Otherwise the certificate of Engineer-in-charge of the measurement and of
total amount payable for the work shall be final and binding on all parties.

10. Payment to Contractors

The rates for several items of works estimated to cost more than Rs.1,000/- agreed to within
shall be valid only when the item concerned is accepted, having been completed full, in
accordance with the sanctioned specification. In case, where the items of the work, are not
accepted, as so completed the Engineer-in-charge, may make payment on account of such
items at such reduced rates, as he may consider reasonable in the preparation of final or
running accounts bills.
11. Bills

The Bill shall be submitted by the contractor each month on or before the date fixed by the Engineer-in-charge, for all works, executed in the previous month and the Engineer-in-charge shall take or cause to be taken the requisite measurement for the purpose or having the same verified and the claim so far as it is admissible, shall be adjusted, if possible, within ten days from the presentation of the bills. If the contractor does not submit the bill, within the time fixed, as aforesaid, the Engineer-in-charge may depute a subordinate to measure up the said work in the presence of the contractor or his duly authorized agent, whose counter signature in the measurement shall be sufficient warrant and the Engineer-in-charge may prepare a bill from such list which shall be binding on the contractor in all respects. GETCO shall make effort for the payment of bills (RA & final bills) as early as possible, however no interest is payable on bill amount if there is delay in payment of GETCO for whatever reason.

12. Supply of Materials to Contractor

If the specification of the estimated work provides for use of any special description of material to be supplied from the Corporation’s Stores or if it is required that the contractor shall use certain stores to be provided by the Engineer-in-charge (such material and stores and the prices to be charged thereof as here in after mentioned being so far as practicable for the convenience of contractor but not so as in any way to control, the meaning or effect of the contract specified in otherwise or from the security deposit or the proceeds of sale thereof if the deposit is held in Government Securities the same or a sufficient portion thereof, shall be sold for the purpose. All materials supplied to the contract shall remain the absolute property of Corporation and shall on no account be removed from the site of the work and shall at all time be open to inspection by the used by him or for any wastage in or damage there to. The contractor shall be responsible for the loss, destruction or deterioration of the materials, stores or articles supplied to him by the Corporation even if such loss, destruction or deterioration has occurred under any circumstances whatsoever beyond his control as if the materials, stores or articles so supplied were his property.

13. Works to be executed in accordance with specifications, drawings, orders etc.

The contractor shall execute in whole and every part of work in the most substantial and workmanlike manner and both as regarding materials and in every other respect in strict accordance with the specification. The Contractor also shall confirm exactly, fully and faithfully to the designs, drawings and instructions in writing relating to the work signed by the Engineer-in-charge and lodged in his office and to which the contractor shall be entitled to have access for the purpose of Inspection at such office, or in the site of the work, during office hours and the contractor shall, also if he so requires, be entitled at his own expenses to make or cause to be made copies of the specification, and of all such designs, drawings and instructions as aforesaid.


The Executive Engineer shall have powers to make any alteration, or addition to the original specification designs, and instructions that may appear to him to be necessary or advisable during the progress of the work and the contractor shall be bound to carry out the work in accordance with any instructions in this connection which may be given to him in writing, signed by the Engineer-in-charge and such alterations shall not invalidate the contract. Any additional work which the contractor may be directed to do in the manner above specified as part of the work shall be carried out by the contractor on the same conditions in all respect on which he agreed to do the main works, and at the same rates as are specified in the tender for the main work. Where, however, the works is to be executed according to the designs, drawing and specifications recommended by the contractor and accepted by the competent authority, the
alteration above referred to shall be within the scope of such designs, drawings, and specifications appended to the tender.

15. Rates for works not entered in Estimate or Schedule of Rate of the District

If the additional and altered work includes any class of work for which no rate is specified in this contract, then such class of work shall be carried out at the rates entered in the Schedule of Rates of the Division or at the rate mutually agreed upon between the Executive Engineer and the contractor, whichever are lower. If the additional or altered work for which no rate is entered in the Schedule of Rates of the Division is ordered to be carried out before the rates agreed upon then the contractor within seven days of date of receipt by him of the order to carry out the work inform the Executive Engineer for the rate which in his intension to charge for such class of work and if the Executive Engineer does not agree to this rate he shall be noticed in writing be at liberty to cancel his order to carry out such class of work and arrange to carry it out in such manner as he may consider advisable provided always that if the rates shall have been determined as lastly here in before mentioned then in such case he shall only be entitled to be paid in respect of the work carried out or expenditure incurred by him prior to the date of the determination of the rate as aforesaid according to such rate or rates as shall be fixed by the Executive Engineer. In the event of dispute, the decision of the Superintending Engineer of the Circle will be final.

16. Extension of Time Limit in consequence of Addition or Alteration.

The time limit for the work shall be extended in the proportion that the increase in its cost occasioned by alterations or additions bears to the cost of the original contract work and the certificate of the Engineer-in-charge as to such proportions shall be conclusive. No compensation shall be payable for Alternation in or Restriction of Work to be carried out. If at any time, after the execution of the contract documents the Engineer-in-charge shall, for any reason whatsoever, require the whole or any part of the work, as specified in the tender, to be stopped for any period or shall not require he whole or part of the work to be carried out at all or to be carried out by the contractor, he shall give notice in writing of the fact to the contractor who shall thereupon suspend or stop the work totally or partially as the case may be in any such case, except as provided here under the contractor shall have no claim to any payment or compensation what so ever on account of any profit or advantage which he might have derived from the execution, of the work in full but which he did not so derive in consequence of the full amount of work not having been carried out or on account of any loss that he may be put to on account of materials purchased or agree to be purchased or for unemployment of labour recruited by him. He shall not also have any; claim for compensation by reason of any alterations having been made in the original specification, drawings, designs and instructions which may involve any curtailment of the work as originally contemplated.

17. No claim to compensation on account of loss due to delay in supply of materials by Corporation.

The contractor shall not be entitled to claim any compensation from Corporation for the loss suffered by him on account of delay in the supply of materials entered in Schedule-A where such delay is caused by: Difficulties relating to supply of railway wagons
I. Force Majure
II. Act of God
III. Any other reasonable cause beyond the control of Corporation including Shortage of materials to be supplied by the Corporations & difficulties in time by reaching at the site of any materials equipment. In the case of such delay in the supply of materials, Corporation shall grant such extension of time for the completion of the works as shall appear to the Executive Engineer to be reasonable in accordance with circumstances of the case. The decision in the Executive Engineer as to the extension of time shall be accepted as final by the contractor.
18. Time Limit for Compensation Claims

Under no circumstances, whatsoever, shall the contractor be entitled to any compensation from Corporation on any account unless the contractor has claimed in writing to the Executive Engineer within one month of the cause thereof.

19. Action and Compensation payable in case of Bad Work

If at any time, before the security deposit is refunded to the contractor, it shall appear to the Executive Engineer or his subordinate in charge of the work that any work has been executed with unsound, imperfect or unskillful workmanship or with materials of inferior quality or that any materials or articles provided by him for the execution of the work are unsound or of a inferior quality to that contracted for or are otherwise not in accordance with the contract, it shall be lawful for Engineer-in-charge to intimate this fact in writing to the contractor and then notwithstanding the fact that the work, materials or articles complained of, may have been inadvertently passed, certified and paid for, the contractor shall be bound forthwith to rectify or remove and reconstruct the work so specified in whole or any part, as the case may require or if so required shall remove the materials or articles so specified and provided other suitable materials or articles at his own charge and cost, and in the event of his failing to do so within a period to be specified by the Engineer-in-charge in the written intimation aforesaid the contractor shall be liable to pay compensation at the rate of one percent on the amount of the estimate for every day, not exceeding ten days during which the failure so continue and in the event of any such failure as aforesaid the Engineer-in-charge may rectify or remove and re-execute the work or remove and replace the materials or articles complained of, as the case may be, at the risk and expense in all respects of contractor should the Engineer-in-charge consider that any such inferior work or materials as described above may be accepted, or made use of, it shall be within his discretion to accept the same as such reduced rates as he may fix thereof. Provided that in the case of any work of which visible check is not possible, if the Engineer-in-charge or his subordinate in charge of the work feels that such work has been executed with unsound, imperfect or unskillful workmanship or with materials of inferior quality, he shall take sample tests at random, cost of which shall have to be borne by the contractor and if after taking such test, part of such work is found to be defective in any respect or to have been executed with materials of inferior quality, then the contractor shall be paid for the whole work such amount as may be fixed by the office of the Engineer-in-charge on the basis of the lowest quality of work found by him in such samples tests.

Explanation: I

Sample Test shall mean:
(i) In relation to poles fixed as line supports, the token of one pole out of every 100 poles after taking it out from its foundation for inspection.
(ii) In relation to any other work, such test as may be considered necessary, by the Engineer-in-charge or his subordinate in charge of the work.

Explanation: II

Cost of the sample test shall mean cost incurred for the purpose of taking Samples & test and for restoring tested work to its original condition.

20. Work to be opened to Inspection, Contractor or Responsible Agent to be present
All works under execution or in course of execution in pursuance of the contract shall at all times be open to the inspection and supervision of the Executive Engineer and his subordinate and contractor shall at all times, during the usual working hours and at all other times at which reasonable notice of the intention of the Executive Engineer or his subordinates to visit the works shall have been given to the contractor, during which period either he should be present to receive order and instruction, or have a responsible agent duly accredited in writing, present for that purpose. Orders given to the contractor’s duly authorized Agent shall be considered to have the same force and effect as if they had been given to the contractor himself.

21. Notice to be given before work is covered up.

The contractor shall give not less than 5 days notice in writing to the Executive Engineer or his subordinates in charge of the work, before covering up or otherwise placing beyond the reach of measurement of any work, in order that the same may be measured and correct dimensions thereof, taken before the same is so covered up or placed beyond the reach of measurement and shall not covered up or placed beyond the reach of measurement and work without the consent in writing of Executive Engineer or his subordinate in charge of work. If any work shall be covered up or placed beyond the reach without such notice having been given or consent obtained, the same shall be uncovered at the contractor’s expense, and in default thereof, no payment or allowance shall be made for such work, or for the materials, with which the same, was executed.

22. Contractor’s Liabilities

The Contractor shall supply, at his own cost, all materials (except such special materials, if any as may be supplied form the Corporation stored in accordance with the contract) plant, tools, appliances, implements, ladders, cordage, tackles, scaffolding and any temporary works which may be required for the proper execution of the work., in the original, altered or substituted form and whether included in the specification or other document forming part of the contract or referred to in these conditions or not and which may be necessary for the purpose of satisfying or complying with the requirements of the Engineer-in-charge as to any matter on which under these conditions, he is entitled to be satisfied or which he is entitled to require together with carriage thereof to and from the work, the contractor shall also supply without charge, the requisite number of persons for setting out works, and counting, weighting and assisting in the measurement of, examinations at the time and from time to time of the work or materials, failing this, the same may be provided by the Engineer-in-charge at the expenses of the contractor and the expenses may be deducted from any money due to the contractor under the contract or from his security deposit or the proceeds of sale thereof or of a sufficient portion thereof the contractor shall provide all necessary fencing and light required to protect the public from accident and shall also be bound to bear expenses of defense of every suit, action or other legal proceedings of law that may be brought by any person for injury sustained. Owing to neglect of the above precautions and to pay any damage and costs which may be awarded in any such suit, action or proceedings to any such persons or which may with the consent of the contractor be paid in compromising any claim by any such person.

23. Contractor Liable for all Damages

Compensation for all damage done intentionally or unintentionally by contractor’s laborer, whether in or beyond the limit of Corporation’s property, shall be estimated by the Executive Engineer, or such other office, as he may appoint and the estimate of the Executive Engineer, subject to the decision of the Superintending Engineer, on appeal, shall be final and the contractor shall be bound to pay the amount of the assessed compensation demand, failing which, the same will be recovered from the contractor as damages or deducted by the Engineer in charge from any sums that may be due to or become due from Corporation to the contractor under this contract or otherwise. The contractor shall bear the expenses of defending any action or other legal proceedings that may be brought by any person for injury sustained by him owing
to neglect of precautions to prevent the spread of fire and he shall also pay any damage and costs that may be awarded by the court if in consequence.


The contractor shall not assign or sublet, without the written approval of the Engineer-in-charge and if the contractor assign or sublet his contract, or attempt to do so or become insolvent or commence any proceedings to be adjudicated as insolvent or make any composition with creditors, attempt to do so, the Engineer-in-charge may, by notice in writing rescind the contract. Also, if any bribe, gratuity, gift, loan, perquisite, reward or advantage pecuniary or otherwise shall either directly or indirectly be given, promised or offered by the contractor or any of his servants, or agents, or any person to the employee of Corporation in any way relating to his office or employment or if any such officers or persons shall become in any way directly or indirectly interested in the contract, the Executive Engineer may, by 10 day’s notice in writing, rescind the contract. In the event of a contract being rescinded the Security Deposit of the contractor shall there upon stand forfeited and be absolutely at the disposal of Corporation and the same consequences shall ensure as it the contract has been rescinded under clause 4 thereof and in addition the contractor shall not be entitled to recover or be paid for any work thereof actually performed under the contract.

25. Compensation

All sums payable by a contractor by way of compensation under any of these conditions shall be considered as a reasonable compensation to be applied to the use of Corporation, without reference to the actual loss or damage sustained and whether any damage has not been sustained.

26. Change in the constitution of firm to be notified

In the case of tender by partners of a firm, any change in the constitution of firm shall be forthwith notified by the contractor to the Executive Engineer for his information.

27. Works under direction of Superintending Engineer.

All works to be executed under the contract shall be executed under the direction and subject to the approval of the Superintending Engineer of the Circle, Engineer-in-charge for the time being who shall be entitled to direct at what point or points and in what manner they are to be commenced and from time to time carried on.

28. Decision of Superintending Engineer to be final.

Except where otherwise specified in contract and subject to the power delegated to him by Corporation under the Corporation’s rule, then in force the decision of the Superintending Engineer of the Circle / EIC. for the time being shall be final, conclusive and binding on all of the specification, designs, drawings and instructions herein before mentioned and as to the quality of workmanship or material used on the or as to any other question, claim, right matter or thing whatsoever in any way arising out of or relating to the contract, designs, drawings, specifications, estimates, instructions, orders or these conditions or otherwise concerning, the works or the execution or failure to execute the same, whether arising during the progress of the work or after the completion or abandonment thereof.

29. Arbitration

‘ALL QUESTIONS, DISPUTES OR DIFFERENCES, WHATSOEVER WHICH MAY AT ANY TIME ARISE BETWEEN THE PARTIES TO THIS CONTRACT IN CONNECTION WITH THE CONTRACT OR ANY MATTER ARISING OUT OF OR IN RELATION THERE TO, SHALL BE
The reference to arbitration proceedings under this clause shall not:

a) Affect the right of the Engineer-in-charge to take possession of all or any tools, plants, materials and stores, in or upon the work or site thereof or 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 place, during the period the work is stopped or suspended in pursuance of notice given to the contractor under General Conditions.

c) Entitle the contractor to stop the progress of the work or carrying out the additional or altered work in accordance with the provision of General Conditions for the work where there is no specification.

d) Preclude the Corporation from getting the work done by another agency. Neither party is entitled to bring a claim to arbitration latest by the thirty days after the expiration of the defects liability period.

The provisions of the Arbitration & conciliation Act, 1996, Gujarat Public Works Contract Disputes Arbitration Tribunal Act, 1992 and rules made there under shall apply to the arbitration proceeding under this clause.

30. Stores to be obtained from Corporation

The Contractor shall obtain from the Corporation Stores, such articles as are mentioned in Schedule ‘A’ which may be required for the work or any part of the work or in making up any articles required there fore or in connection therewith, unless he has obtained permission in writing from the Executive Engineer or obtained such stores and articles from elsewhere. The value of such stores and articles as may be supplied to the contractor by the Engineer-in-charge will be debited to the contractor in his account at the rate shown in the Schedule “A” attached the contractor and if they are not entered in said schedule they shall debited to him at cost price which for the purpose of this contract shall include cost of carriage and all other expenses whatsoever which may have to be incurred in obtaining delivery of the same at the stores aforesaid and further overhead charges 15%. The Contractor shall be responsible for the loss destruction or deterioration of the materials, stores or articles supplied to him by the Corporation, even if such loss destruction or deterioration has occurred under any circumstances whatsoever beyond his control as if the material, stores or articles so supplied were his property. The contractor shall be responsible for returning the residual materials after completion of the contract and if fails to return, the balance material supplied to him by the Corporation, the cost of the residual materials will be recovered form the contractor at the market rate or stock issue rate whichever be higher at the time of materials account plus 15%.

31.1 Lump Sum in Estimate

When the estimate on which tender is made, includes lump sums in respect of parts of the works the contractor shall be entitled to payment in respect of the items of works involved or the part of the work in question at the same rates as are payable under this contract or such items or if the part of work in question is not in the opinion of the Engineer-in-charge capable to measurement the Engineer-in-charge may at his discretion pay the lump sum amount entered in the estimate and the certificate in writing of the Engineer shall be final and conclusive against the contractor with regard to any sum or sums payable to him under the provisions of the clause.

32. Lump Sum Tenders
Whenever lump sum tenders have been invited for building or other structures of the same type, design, the contractor shall submit his bill stated in Clause No.11 and the Engineer-in-charge not below the rank of Executive Engineer shall certify by general measurement or by other method considered suitable to him, the value of work done and the contractor shall be paid monthly a sum equal to 90% of the total value the work so certified, since the last payment, after deducting a part or whole of the secured advance if not already paid for the materials utilized on the works. An additional secured advance for any fresh materials brought on site will also be paid if certified by the officer not below the rank of Executive Engineer. After the work is completed final bill would be paid on the certification of officer not below the rank of Executive Engineer, that the work is done according to drawing and specifications attached to the tender. If any additions and alteration have been carried out, detailed measurements in respect thereof shall be recorded and extra payment or deductions are regulated as per item rates quoted by the contractor while submitting the tender and if there are any items in the additions and alterations for which the contractor has not quoted a rate, the payment shall be as per Clause 15 above.

33. Action where no specifications.

In the case of any class of work for which there is no such specifications as is mentioned in clause 1, such work shall be carried out in accordance with the divisional specifications and in there event of there being no divisional specifications, the work shall be carried out in all respects in accordance with the instructions and requirements of the Engineer-in-charge / consultant of the Corporation etc.

34. Industrial Labour Laws

1. **Wages to be paid and time of payment etc. by the Contractor:-**

   a) The contractor shall pay minimum wages as fixed under Minimum Wages Act whichever is higher. The wages of every contract labour employed by him under this contract shall be paid by him before the expiry of 7th day of the last day of the month in respect of which the wages are payable (i.e. wages of a month have to be paid by him in the first week of the next month). The payment shall be disbursed in presence of Management Representative during the working hours in factory premises and the contractor shall get the entries certified in the register of wages by the Representative of the Corporation. Any default will result in cancellation of contract forthwith or else the contractor shall be punishable to the extend of Rs.100/- fine per each day.

   b) The contractor shall give his telephone number and address to the Corporation so that in case of labour trouble etc., the contractor can be contacted. The contractor shall arrange to have his office outside the factory premises and the contractor keep himself present through out the working hours.

**Labour Laws :-**

   a) Persons below the age of 18 years shall not be employed for the work.
   b) No female worker shall be employed in the night shift between 7.00 p.m. to 6.00 a.m.
   c) Contractor shall maintain a valid labour license under the Contract Labour (Regulation and Abolition Act) for employing necessary manpower to be required by him. In the absence of such license the contractor shall be liable to be terminated without assigning any reason thereof.
   d) The contractor shall at his own expense comply with all labour laws and keep the Corporation indemnified in respect thereof. Some of the major liabilities under various labour and industrial laws which the contractor shall comply with are as under :
   i. Payment of contribution of wages of employer’s contributions towards Provident Fund, Family Pension Scheme, Deposit Linked Insurance Scheme, Administrative Charges
etc. at the rates made applicable from time to time by Government of Gujarat / Government of India or other Statutory Authorities.

ii. Payment of deposit in respect of each contract labour of the rate of RS. 30/- with the office of the Commissioner of Labour as per the Contract Labour Act (Regulation & Abolition).

iii. License Fee as prescribed under the contract Labour Act (Regulation and Abolition) and Rules framed there under depending upon the number of workmen employed by the contractor.

iv. Paid leave facility and wages as per the provision of the Factories Act at the rate of one day for every 20 days of working.

v. Identity cards as prescribed under the factories Act with photo affixed thereto, the same for identification.

vi. Payment of retrenchment compensation, notice pay and other liabilities as per Industrial Disputes Act. Any payment to the contractor’s employees arising out of any claim of disputes under the Industrial Disputes Act – 1947 or any other laws.


viii. Payment of crèche if the female labour employed is more than 30 numbers

ix. Maternity leave as per the provision of the Maternity Benefit Act.

The above are some of the major liabilities of the contractor in addition to other liabilities prescribed under the various Labour Laws in force from time to time from Statutory Authorities like State Government / Government of India which the contractor shall have to comply with.

2. Provident Fund and Family Pension Scheme

The contractor shall submit along with his bill (month wise) a statement regarding deductions against employees provident fund and family pension scheme in respect of each concerned employees’ Provident Fund and Family Pension scheme at the rate of 12 % (or at the rates made applicable by the Government from time to time) of the wages. Contractor’s contribution and his workers contribution towards provident fund and family pension scheme shall be deposited by the contractor with regional Provident Fund Commissioner, Ahmedabad.

3. Deposit Linked Insurance Scheme:--

The contractor shall have to deposit ½ % of the wages in respect of employees who is a member of the Provident Fund as the contribution to the Deposit Linked Insurance Scheme with Regional Fund Commissioner, Ahmedabad.

4. Administrative Charges:--

Administrative charges for maintaining Provident Fund Account shall be deposited by the contractor with Regional Provident Fund Commissioner, Ahmedabad at the rates applicable.

5. Paid Leave Facility

Paid leave facility at the rate of one day for every 20 days worked by the contract laborer shall be provided by the contractor to his workers. He shall maintain Leave records/ Leave Cards for individual laborer which shall be duly verified and approved/ certified by the authorized officer of the Corporation.

6. Workmen’s Compensation Fund and Employers Liability Insurance:--

The contractor shall cover all his employees under Workmen’s Compensation Fund and under the Liability Insurance. The contractor shall employ adequate number of experienced staff at site for daily supervision and for maintenance of various registers and records required under the law and contract. No payment for supervision shall be admissible.
7. Contractor to Indemnify to the Corporation

The contractor shall indemnify and keep indemnified the Corporation and every officer and employees of the Corporation and also Engineer-In-Charge and his staff against all actions, proceedings, claims, demands, costs and expenses whatsoever arising out of or in connection with the matters referred in above clauses and elsewhere and against all actions, proceedings, claims, demands, costs and expenses which may be made against the Corporation by any workman/employee of the contractor or any sub contractor and/or from any liability may arise to any workman/employees of the contractor or any sub contractor under any laws, rules or regulation having the force of law including but not limited to claims against the owner under workman’s compensation Act, 1923. The employee’s Provident Act 1952, and/or the contract Labour (Abolition and Regulation) Act 1979. The Corporation shall not be liable for or in respect of or in consequence of any accident or injury to any workmen or other person in the employment of the contractor or his sub-contractors, and the contractor shall indemnify and keep indemnified the Corporation against all such damage and compensation and against all claims, demands, proceedings costs, charges and expenses whatsoever in respect thereof or in relation thereto.

8. Workmen’s Compensation And Employer’s Liability Insurance :-

Insurance shall be affected for all the contractor’s for all the contractor’s employees engaged in the performance of this contract. If any of the work is sublet to the sub-contractor, the contractor shall require that he or his sub-contractor to provide workmen’s compensation and employer’s liability insurance for the latter’s employees unless such employees recovered under the contractor’s insurance.

9. The Corporation reserves the right to terminate this rate contract at any time during it tendency without giving notice of termination or any reasons thereof.

10. The Corporation will be entitled to deduct directly from the bills, to be paid to the Subcontractor and Labourers any sum or sums payable by contractor and which sum/sums the Corporation is required to pay as a principal employer on account of contractor’s default in respect of all liabilities referred to in above clauses.

11. Nothing in the contract document stated shall any wise constitute any workmen/employees of the contractor or any sub-contractor as or to be workmen/employee of the power, or place obligation or liability in respect of any such workmen/employee upon the Corporation.

NOTE: - The prevailing Act at the time of execution of work over and above act specified herein shall be binding to the contractor.

35. No Claim for Variation in Quantities of Work

Quantities shown in the tender are approximate and no claim shall be entertained for quantities of work actually executed, being either more or less up to any extent than those entered in the tender or less than those entered in the tender or estimate.

36. No Claim for Compensation for Delay in starting work

No compensation shall be allowed for any delay caused into starting of work on account of acquisition of land and in the case of clearance for works or any delay in according sanction to estimates.

37. No Claim for Compensation for delay in execution of work
No compensation shall be allowed for any delay, in execution of the work on account of water standing in borrow pits or compartment. The rates are inclusive for hard or cracked soil, excavation in mud, sub-soil water or water standing in borrow pit and no claim for an extra rate shall be entertained unless otherwise expressly specified & mentioned in the tender.

38. **Entering upon or commencing any portion of work**
The contractor shall not enter upon or commence any portion of work except with the written authority or instructions of the Executive Engineer or his subordinate in charge of the work, failing such the contractor shall have no claim to ask for measurement or payment for work.

39. **Method of Payment**
Payment to contractors shall be made by A/c payee Cheque provided the amount exceeds Rs.50/-. Amount not exceeding Rs.50/- will be paid in cash. Generally payment may take 30 to 60 days after passing of bills depending on availability of fund.

40. **Acceptance of conditions on tendering for work.**
Submission to tender or acceptance of work order shall imply acceptance of these conditions of tender by contractor.

41. **Employment of Scarcity Labour**
If government declares a state of scarcity or famine to exist in any village situated within 20kms of the work, the piece worker / contractor shall employ upon such part of the work as are suitable for unskilled labour; any person certified to him by the Executive Engineer or by any person to whom Executive Engineer may have delegated this duty in writing to be in need of relief and shall be bound to pay such person wage not below the minimum, which Government may have fixed in this behalf from time to time. Any implementation of this clause shall be decided by the Superintending engineer / Engineer-in-Charge whose decision shall be final and binding on the piece worker/contractor.

42. **Employment of Technical Persons**
The contractor who are registered under class ‘A’, ‘B’ and ‘C’ or such contractors who executes the works of Rs.5 lakhs and above shall employ the technically qualified personnel possessing minimum a Diploma of reconciled Technical institution, for executing the work of the Corporation.

**Date:**
(Signature of Contractor)

**Address:**

**Seal:**

**Chief Engineer (Projects)**
GETCO, Head Office, Vadodara.
GENERAL CONDITIONS OF CONTRACT

1.0 Contactor to inform himself fully:

The contractor shall be deemed to have carefully examined the work & site conditions, the general conditions, the special conditions, specifications, schedules, drawings shall be deemed to have visited the site of the works & to have fully informed himself regarding the local conditions. Copy of Appendix V attached with tender shall have to be filled up before quoting the rate, for confirmation of site visit. If there shall have any doubts as to the meaning of any portion of these general conditions or special conditions of the scope of work of the specifications or any other matter concerning the contract, he shall in good time before submitting his tender, send for the particulars thereof & submit them to the Engineer in writing in order that such doubt may be removed.

2.0 Data to be furnished by Contractor:

Prior to the commencement of work the contractor shall submit a bar chart showing detailed programme for completing the work within time limit to the S. E. for approval within a week of the date of LOI. No change in the approved plan & layout shall be carried out without specific written approval of the Executive Engineer in charge.

3.0 Errors, Omissions & Discrepancies:

In all cases of errors, omissions, doubts or discrepancies in the dimensions, or discrepancies in the drawings & items of work on specifications, reference shall be made to the Executive Engineer whose elucidation & elaboration shall be considered as authoritative. The contractor shall be held responsible for any error that may occur in the work thorough lack of such reference.

4.0

1. Temporary structures may be erected by the contractor for storage sheds, offices, and residential etc. for non-commercial use on land, handed over to him at his own expense & with the permission of the Corporation. In any circumstances for constructing temporary structures contractor’s use, Corporation free supply of materials shall not be made. If it is found that Corporation’s free supply material are used for the works other than approved drawings, it will be recovered at penalized rate.

2. The contractor shall preserve all existing vegetation such as trees on or adjacent, to the works site which, do not interfere with the construction as determined by the Corporation.

3. The contractor shall take all possible precautions in felling trees authorized for removal to avoid any unnecessary damage to vegetation & trees not to be felled & to structures or to workmen, & shall be responsible for any damage if it occurs in such operations.

4. All produce from cutting of trees grass etc. shall be the property of Corporation & shall be stacked at the directed places. No claim shall be made for such tree felling / cutting & stacking of trees/produce or grass etc. by the contractor.

5. The land shall as herein before mentioned be handed over to Corporation / Owner of Land immediately after the completion of the work under this contract. Also no land shall be held by the contractor longer than the Corporation shall deem fit & necessary & the contractor shall, on due notice by the Corporation, vacate & return the land which the Engineer In Charge may certify as no longer required by the contractor for purposes of the work.
5.0 Start of Work:

The contractor shall not enter upon or commence any portion of the work except with the written permission of the authority of the Corporation, failing which the contractor shall have no claim to ask for measurement of or payment for work & shall be responsible for any claims or damages that may arise due to such unauthorized commencement or entry. No compensation shall be allowed for any delay caused in starting the work on account of any delay in clearance of the work site.

6.0 Work to execute to the satisfaction of the Corporation’s Engineers:

The contractor shall proceed with the work with diligence & expedition & the whole of the work herein specified as well as the mode of execution shall be under the supervision & the direction & shall be carried on to the entire satisfaction of the Corporation’s site Engineers, who shall have full powers to order the contractor to alter, enlarge or diminish the form, dimensions, positions, or quantities of any of the work or to make use of materials & workmanship of different descriptions & qualities from this herein specified. In the case of any class of work for which there are no Technical Specifications, these shall be carried out in accordance with the latest IS Codes & in the event of being no relevant IS Code, the works shall be carried out in accordance with the directions & instructions of the Corporation’s Engineers at site.

7.0 Workmanship etc.:

The work shall be executed in thoroughly substantial manner with workmanship of best quality & strictly in accordance with the specifications & with the drawings, or with such other drawings or written instructions as may from time to time be furnished to the contractor, in accordance with terms of this contract & shall be completed in every respect with workmanship implied & necessary according to the fair interpretation & meaning of the same & should there be any discrepancy between the drawings & specifications or any difference or dispute as to the dimensions to be worked out or the mode of doing periodical quantity of the work to be executed or with respect to any subject arising out of this contract, the decision of the Corporation’s authorized Engineers shall be final & binding on all parties.

8.0 Samples of descriptive Data:

Samples of descriptive data requiring approval shall be submitted by the Contractor to the Corporation’s Engineers in good time before the use of such material to permit its inspection & testing & there-by the approval. The samples shall be properly marked to show the name of material, manufacture place or origin & the place where it is intended to be used etc. Failure of any samples to pass specified tests requirements. It shall be sufficient cause for the refusal to consider any further samples from that source.

9.0 Baselines & Grades:

The Corporation near to the site of work shall furnish one permanent Bench Mark. Semi permanent baselines & cross lines shall be established at sufficiently spaced intervals with benchmarks by the Contractor at his own cost & risk. The contractor shall provide at his expense, all the required pillars, equipments, materials, & labour for the establishment of the grade lines & bench marks, for that the Contractor shall be responsible for their further maintenance during the execution of the actual work till the complete period of construction. The contractor shall be responsible for the proper execution of work to such lines & levels & grades as may be specified in the drawings, established, or indicated by the Corporation’s Engineers. All the survey work, if required, shall be checked by the Corporation’s engineers. However this shall not absolve the contractor for the correctness of survey/ temporary or permanent Benchmarks.
10.0 **Contactor not to dispose off soil etc.:**

The contractor shall not sell or otherwise dispose off or remove except for the purpose of this contract the sand, ballast, earth, rock or other substances or materials that may be obtained from any execution made for the purpose of this contract or produce upon the site at the time of delivery of the possession of the land but also such substances materials & produce shall be the property of the Corporation & shall be disposed off in the manner & place as directed by the Corporation's Engineers.

11.0 **Gold, silver, Minerals, Oil Relics, etc. found on the Site:**

All gold silver, oil relics, or other minerals, of any description & all precious stones, coins, treasures relic, antiquities, & other similar things that shall be found in or upon the site shall be the property of the Corporation. The contractor shall return the gathered things as above to the authorized representative of the Corporation.

12.0 **Fencing, lighting & ventilation:**

The contractor shall be responsible for the proper lighting, fencing, guarding & taking of all the necessary safety measures for all works comprised in the contract & or the proper provision of temporary roadways, footways, guards fences, caution notices etc. as far as the same may be rendered necessary by reasons for the work for the accommodation & protection of workmen foot passenger or other traffic & of the Corporation & occupiers of adjacent villages, property of the public & shall remain responsible for any accidents that may occur on account of his failure & timely precautions. All the works & approaches shall be adequately illuminated with electric lights to the satisfaction of the Corporation's Engineers. The power & lighting connections, wiring equipment shall be subject to the inspection & passing by Electrical Inspector to GOG authorized under the Indian Electricity Act. Any additions alterations or omissions shall be got approved from the Corporation’s Engineers got certified from the Electrical Inspector. Work spots such as faces of excavation of borrow pits; filling area etc. shall be adequately illuminated with floodlights to the satisfaction of the Corporation’s Engineers.

13.0 **Explosive procurement & storage:**

Explosives, petrol, oils, fuels, &other inflammable materials shall be stored strictly in accordance with the rules of the Explosive Department.

The contractor shall at his own expense construct & maintain proper magazines which are required for the storage of explosive & arrange for storage facilities for oils, petrol, fuels etc. for use in connection with the work. The contractor shall at his own cost obtain the necessary license for the storage & use of explosives, oils, petrol, diesel etc. The Corporation shall not take any responsibility whatsoever in connection with the storage or use of explosives on the site, any accident occurs in the connection at site or nearby village or vicinity. All operations of the contractor in which or for which explosives are employed shall be at the risk of the contractor & upon his own responsibility.

14.0 **Liability for accidents to persons:**

14.0.1 The contractor or subcontractor shall indemnity the Corporation against any claims which may be made under the workman’s compensation Act, 1923, or any statutory modification or other wise for or in respect of any damages or compensation payable in consequence of any accident or injury caused, by fault of contractor or subcontractor & sustained by any workmen or other person on the employment of the contractor or subcontractor. In every case in which by virtue of the provisions of subsection (1) of section 12 of the workman’s Compensation Act, 1923, the Corporation
is obliged to pay compensation to a workman employed by the contractor or subcontractor in execution of the work, the Corporation will recover from the contractor the amount of compensation so paid, and without prejudice to the rights of the Corporation under subsection 12 of the said Act, such amount will be paid back to the Corporation in 30 days, failing which the Corporation will be at liberty to recover such amount of any part thereof by deducting it from the dues by the Corporation to the contractor under this contract or otherwise. The Corporation shall not be bound to contract any claim made against either of them under section 12, subsection (1) of the said Act, except on written request from the contractor & upon his giving to the Corporation full security for all costs for which the Corporation might become liable in consequence for entertaining such claims.

14.0.2 The contractor and/or subcontractor named in the contract shall indemnity the Corporation against all claims based upon injury or death to any person in the employment of the contractor or subcontractor, or to the third parties under paragraph (a) 2 or condition no.47 to the extent of any sums recovered under the insurance policy.

14.0.3 On occurrence of the accident which result on the death of workman employed by the contractor or subcontractor, which is so serious as to be likely to result in the death of any workman, the contractor shall within 24 hours of happening of such event intimate in writing to the Engineers of the Corporation the fact of such accidents. The contractor or subcontractor shall indemnity the Corporation against all loss or damage sustained, by the Corporation resulting directly or indirectly from his failure to give intimation in the manner aforesaid including penalties or fine if any, payable by Corporation as a consequence of Corporation’s failure, to give notice under workman’s compensation Act or otherwise to confirm to the provisions of the said Act in regard to such accident.

Liability for damage to woks & materials:

14.0.4 The contractor shall during, the progress of the work, properly protect the works & the existing Ash Disposal pipelines & materials placed at his disposal or acquired for him by the Corporation, & shall remain answerable & liable for all accidents, damages. Loss etc. & shall be made good in the most complete & substantial manner by & at the sole cost of the contractor & to the reasonable satisfaction of the Corporation’s Engineers. If the contractor fails to make good such losses, damages within the specified time given by the Corporation, the Corporation shall be at liberty to recover the amount towards such expenses fixed by the Corporation’s Engineers & shall be recovered from the amount due under this contract to the contractor.

14.0.5 Further the contractor shall, at all times, protect & preserve all materials, machinery, equipments, Ash Disposal pipelines, allied structures such as spillway chambers, ADP, haul road and ramps etc., materials &so acquired by himself or Corporation for the execution of the work. All reasonable requests of the Corporation’s Engineers to enclose or especially protect any of the above shall be expeditiously complied with at no extra cost.

14.0.6 If the Engineer considers that the work, asked for in the aforesaid Para, is not sufficiently & satisfactorily protected by the contractor, on requests made for, the Corporation shall be entitled to arrange for such protection at his unfettered discretion & recover the cost thereof from the contractor.

14.0.7 Until the work shall be or deemed to be taken, over as aforesaid, the contractor shall also be liable for & shall be deemed to have indemnified the Corporation in respect of all damage or injury to any person or any property of the Corporation or of others in villages near by, occasioned by the negligence of the contractor or his workmen, or his subcontractor, or by defective /ill methods of working.

14.0.8 Materials, tools, machinery brought on the site of work: All materials, tools & tackles, machinery etc. of the contractor brought to & delivered upon the site for the work shall be the time of their being so brought shall be deemed to be the property of the Corporation in it’s possession to be used for the purpose of the work & for that purpose only & shall not on any account be removed or taken away by the contractor or any other person without the permission of the Corporation’s Engineers in charge, but the contractor shall be fully responsible for & loss, destruction thereof or damage
thereto. The Corporation may have a lien on such materials, tools, tackles, machinery for any sum or sums which may at any time prior to the completion of the works be or owing to the Corporation by the contractor, under in respect of & dispose of any such materials, tools. Tackles, machinery in such a manner as the Corporation may think fit & to apply the proceeds in or towards the satisfaction of such sum or sums due or owing as aforesaid but subject to such lien & power of sale & disposal such surplus materials, tools, tackles, machinery shall belong to the contractor & may be removed & disposed off by him as he may think fit.

15.0 Access to site & work on site:

The Engineer or his authorized representative may if he considers fit from time to time enter upon any lands which may be in the possession of the contractor under this contract, for the purpose of executing any work not included in this contract & may execute by other contractors at his opinion & the contractor shall in accordance with the requirements of the Engineer, afford all reasonable facilities for execution of the works including occupation of lands by structure or other wise for any other contractor employed by the Corporation & his workmen or for the execution on or near site of the works not included in the contract. The contractor shall not be entitled for any extra claims on such executions.

16.0 Inspection of Works:

The Corporation’s Engineers or their authorized representatives shall have at all times power to inspect the works, wherever in progress, either on site, on the contractor’s premises in connection with this contract. Further, the contractor shall not allow any person other than Corporation's Engineers or their authorized representatives to the work sites. The contractor shall, during working hours, maintain supervisors of sufficient training & experience to supervise the work as a whole. All orders & directions given to such supervisors or other staff shall be deemed to have been given to the contractor. Further the Corporation may by due notice, desire a high ranking member of the supervisor staff of the contractor to be present on any specified inspection & the contractor shall comply with such directions.

17.0 Action & compensation payable in case of Bad Work:

If at any time before the refund of Security Deposit to the Contractor it appears to Gujarat Energy Transmission Corporation’s Executive Engineers or subordinate and / or any authorized officer of the Corporation that the work has been executed with unsound, imperfect or unskilled workmanship or with materials of inferior quality or any materials or articles provided by him are unsound or of quality inferior to that contracted as specified in the Technical Specifications or other wise not in accordance with the contract, it shall be lawful for the Gujarat Electricity Corporation to intimate that the works, materials, articles which may have been inadvertently passed, certified & paid to the Contractor. The Contractor shall be bound to rectify or remove & reconstruct the said work so specified at his own charge & cost & in the event of being failure to do so within specified period by the Corporation, the Contractor shall be liable to pay compensation at the rate of 1% per day on the amount of the estimate for the specified work. For the period up to 10 days this shall be attended by the Contractor else the Corporation shall get these rectifications at the risk & expense in all respects of the Contractor.

18.0 Cleaning up:

18.0.1 The contractor shall at all time keep the construction areas & his labour colony & storage areas free from accumulation of waste, or rejected materials.
18.0.2 Prior to the completion of the work the contractor shall remove all rubbish from & about the premises, & tools, tackles, machinery, left out materials consumable, rejected materials, scaffolding etc. which are not the part of the permanent work/structure. The premises will be left fully satisfactorily to the Corporation’s Engineers/representatives; thereafter only the completion certificate will be issued.

19.0 Contractor’s inventory of equipments & machinery:

The contractor shall prepare & maintain an inventory of all machinery, equipments, temporary rolling stock, and plant purchased or hired for the use of this contract’s execution.

19.1 Progress Schedule:
Contractor shall furnish a Construction Schedule on receipt of LOI or Work Order which ever is earlier, in quadruplicate, indicating the date of start, the monthly progress expected to be achieved & anticipated completion of each major items of the work under this contract & procurement of equipments, machinery & other materials. The schedule should be such as is practicable of achievement the whole work in the time limit & of the particular items on due date specified in the contract & shall have the approval of the Corporation’s Engineers. Detailed schedules for each working season showing the progress month by month to be achieved is to be submitted to the Corporation. The Corporation is empowered to ask for more detailed progress schedule week by week for any item or for all items & the contractor shall comply when asked for.

19.2: The Corporation shall have, at all times the right without in any way violating this contract, or forming grounds for claim to alter the order of the works or any part thereof & the contractor shall after receiving such direction proceed in the order directed. The contractor shall revise the progress schedule accordingly & submit to the Corporation in four copies.

19.3: The contractor shall furnish sufficient machinery, equipment, labourers & materials shall work for such hours & shifts as may be necessary to maintain/achieve the progress of the scheduled, after getting written permission of Engineer In Charge.

19.4 The progress schedules shall be in the form of bar charts, statements &/or reports as may be necessary & directed by the Corporation’s representatives.

19.5.1 Unsatisfactory Progress: In the case of unsatisfactory progress by the contractor not proceeding as per the Scheduled Programme approved by the Corporation, suitable actions shall be taken in accordance with Clauses No. 3 & 4 of the booklet prescribed by the Corporation for "Tender & Contract for Works".

Recoveries:
Recoveries due from the contractor, up to the end of the month previous to the one in which the bill is prepared shall be made from bills approved for payment every month or at other periods when the bills are prepared, for the enlisted, but not limited to, in the order of priorities & extents. (a) Deduction on account of security deposit @2.5% in two parts, in first two RA bills.
(b) Penalty, if Leverage,
Expenditure, in full, incurred by the Corporation on contractor’s behalf in labour, machinery, equipment etc.,
(c) Charges for services such as water & power supply, etc. in full,
(d) Hire charges for Corporation’s or Government machinery if any,
(e) Other recoveries not specifically mentioned but recoverable.

20.0 Date of completion:

The contractor shall complete the whole work & hand over to the Corporation on or before the date specified in the work order. Provided always that if in the opinion of the Corporation the completion of the works shall be delayed by any change of original design or by the order of the Corporation, of any altered, modified substituted or additional works or materials omitted or by strikes, lock outs or stoppages of labour, or
revolution, riots, civil or political disturbance or by the contractor not being given possession of the site or by the Corporation taking possession of & using the site or part thereof or the works or part thereof or any part of the work or delayed supply of material by the Corporation or by the not receiving any orders, drawings, instructions or directions in time or by the suspensions if the works or by fire, flood exceptionally bad weather tempest, storm or by from unforeseen circumstances(& whether the same shall be due to any act or omission of the Corporation or it's representatives) the Corporation may in the unfettered discretion thinks fit either forthwith or at a later time & from time to time not withstanding that the prescribed or extended time for completion has expired or work have been completed, extend the date for the completion of the works to such a date as deemed fit as practical & acceptable.

21.0 Subletting of contract:

There will be generally no objection on the component parts if the work, being given over to responsible subcontractors but Corporation shall under no circumstances recognize these subcontractors & the responsibility of executing the work in the accordance with the conditions of contract will entirely rest on the main contractor. However written consent of EIC shall be obtained before subletting. The main contractor will therefore always have the very responsible member, preferably a technical hand present on the works with power to sign all work orders issued on the site of work & to take requisite actions in the interest of efficient execution of work.

22.0 Other contracts for the suspension stoppage or curtailments of work:

If during the tendency of the contract the Engineer shall for any reason (which shall be unquestioned) whatsoever require the whole or any part of the work as specified in the contract to be suspended for any period or shall not require the whole or any part of the work as specified in the contract to be carried out at all by the contractor, he shall give notice in writing of the fact to the contractor who shall thereupon suspend or stop the work totally or partially as the case may be. In any case except as provided hereunder, the contractor shall have no claim to any payment or compensation whatsoever on account of any profit or advantage which he might have derived from the execution of the work in full but he did not so derive in consequence of the full amount of the work not having being carried out, or on account of any loss that he may be put on account of materials purchased or agreed to be purchased or for unemployment of labour recruited by him. He shall not also have any claim for compensation but reason of any alterations having been made in the original specifications, drawings, designs & instructions that may involve any curtailment of the work as originally contemplated. Where however, materials have already been purchased or agreed to be purchased by the contractor, before receipt of the aforesaid notice, the contractor shall be paid for such materials at the rate determined by the Corporation, provided they would have been useful for the work curtailed or stopped are not in excess of requirements are of approved quality & cannot be used on other contract works or otherwise by the contractor &/or shall be compensated for the loss if any, that he may put to, on respect of materials agreed to be purchased by him, the amount of such compensation to be determined by the Corporation, whose decision shall be final. The Corporation may order the contractor to suspend any work on account of bad weather; rain or storm & such other adverse climate conditions & the contractor shall comply with the same. The contractor shall not be entitled to any compensation for such suspensions of work.

23.0 Other contractors:

Apart from this work, the other works connected with this work will be simultaneously going on either departmentally or through any other contractors. The contractors shall co-operate with others to their fullest extent & shall allow each other every facility &
coordination for the execution of their works simultaneously & satisfactorily, during their action of machinery or execution of any other co-ordination works, the contractor will have to co-operate as directed buy the Corporation’s Engineers in the charge of the works. In such cases the contractor shall not be entitled for any compensation on account of reduction or stoppage of labour force/machinery/equipments etc. In the matter of dumps, haul, roads, drainage, diversion & the like, each contractor shall take into considerations the needs & the requirements of the other contractors if any working in the vicinity. Further no contractor shall take or cause to be taken any stops or action that may cause disruption, discontent or disturbance to the work, labour arrangements etc. to other contractors. Any action, by any contractor, which the Corporation in the unquestioned discretion may consider as infringement of the above code, would be considered as a breach of the contract conditions & the Corporation may take such action as may deem fit against the contractor & the action taken shall be considered as final & binding.

24.0 **Speed of work:**

The contractor shall at all times maintain the speed of work to confirm to the latest operative progress schedule but the Corporation may at any time with sufficient notice in writing direct the contractor to slow down or to accelerate any part or the whole work for any reason (which shall not be questioned whatsoever) & the contractor shall comply with such orders of the Corporation. The compliance of such orders shall not entitle the contractor to any claim or compensation.

25.0 **Contract document & matters to be treated as confidential:**

All documents, correspondence, decision & other matters concerning the contract shall be considered as of confident & restricted nature by the contractor & he shall not divulge or allow access there to any unauthorized persons of any kind.

26.0 **Access to the contractor’s book:**

Whenever it is considered necessary by the Corporation to ascertain the actual cost for execution of any particular item of work, the Corporation may do so by directing the contractor to produce the original invoices.

27.0 **Interest on money due to the contractor:**

The contractor shall not be entitled to receive the interest on the payment due to him upon measurements or otherwise or on any balance payable to the contractor. Also, contractor shall not be allowed to relate it with the progress of work at site in any case.

28.0 **Measurements to be provisional & subject to correction:**

Every measurement for running payment on account of work done shall be subject to adjustment or final measurements. In case there is disagreement between such intermediate & final measurements, the latter shall prevail.

29.0 **R. A Bills:**

The contractor shall submit his R/A bill every month, which shall be processed in reasonable time after checking and recording the MB. The contractor shall be responsible to submit R/A bills well in time and shall depute his representative for joint checking of the measurements; so that the bills can be processed in time. The contractor shall take due care in this regard, failing to which consequences will be up to him.
Welfare Cess

- As per the Welfare Cess Act, the welfare cess @ 1% is applicable on supply and erection items for supply, erection, testing & commissioning of substation, transmission lines, EPC/Turnkey projects and civil works.
- Contractor shall get registered under Welfare Cess Act before commencement of work. Office of the Factory Inspector is authorized at present as a registering authority.
- The welfare cess@1% is considered in the price schedules so, the bidders are requested to quote accordingly.
- GETCO shall pay the welfare cess by way of reimbursing to contractors on production of documentary evidence of payment.
- The contracts for which supply or part supply of material are in the scope of GETCO, then contractors shall deposit welfare cess on estimated cost of supplied items to GETCO on progressive basis of utilization. As this part of welfare cess is on GETCO account, the same shall be reimbursed to the contractor on receipt of request letter along with documentary evidence of payment. For calculation of welfare cess on supply part, valuation as per MR shall be taken and informed to the contractor for payment. This will be over and above the A/T value.

The modality of payment/ reimbursement of welfare cess will be as under.

- On receipt of A/T, the contractor / bidder will get them registered under Welfare Cess Act and submit the documentary evidence to the concern office.
- Before release of payment of first R.A.Bill, the contractor has to submit the documentary evidence of registration. Only thereafter, the bill will be processed for payment.
- Before release of payment of subsequent R.A.Bills, the contractor has to submit the documentary evidence of payment of welfare cess of previous R.A.Bill.
- Before release of payment of Final Bill, the contractor has to submit the documentary evidence of payment of welfare cess of previous R.A.Bill as well as of this final bill.
- If the R.A.Bill happens to be first and final bill, then before release of payment, contractor has to submit documentary evidence of registration under Welfare Cess Act and evidence of payment of welfare cess.
- The welfare cess shall be reimbursed to the contractor on submission of copy of documentary evidence of payment by observing due formalities.

30.0 Breach on part of Corporation not to annul contract:

No breach or non-observance on the part of the Corporation of any the agreements contained herein, shall annul this contract of discharge the contractor from the observance & performance thereof, or of any part thereof, but on application by the contractor & in the unfettered discretion of the Corporation an extension of time may be given to the contractor in respect of such breach or non-observance by the Corporation.

31.0 Labour conditions:

31.1 The contractor shall comply with the labour laws laid as may be current & shall furnish the returns & information as may be specified from time to time.
31.2 The contractor shall as far as possible obtain his requirements of labour, skilled & unskilled from the local areas.
31.3 The contractor shall pay wages as per the latest circulars applicable at the times for the minimum wages to be paid to unskilled, semiskilled & skilled labour prescribed by the Govt. of Gujarat.
31.4 The Corporation shall have the authority to remove from the work site any person, who may be considered unfit or undesirable & no responsibility shall be accepted by the Corporation for any delay or extra expense caused towards the completion of the work by such removal.

31.5 If Govt. declares a state of scarcity or famine to exist in any village situated within 10 Km. of the work site then the piece worker or contractor shall employ upon such parts of work, as are suitable for unskilled labour any person certified by the Corporation or by any person to whom the Corporation has authorized, & shall pay the minimum wages as fixed by the Govt. of Gujarat in this behalf. Any dispute that may arise in the implementation of the clause the decision of the Supdt. Engineer (civil) shall be final & binding.

31.6 The contractor shall provide reasonable facilities to the labour employed by him. The usual facilities are weather proof shelter for rest & meal, supply of whole some drinking water, facilities for obtaining food, reasonable washing & sanitary facilities, special facilities for women workers, suitable residential accommodation, general sanitation & health measures etc.

31.7 The implementation of any & all provisions of this clause in no way entitles the contractor to claim in this contract.

32. Local Laws:

31.1 All local laws in force at the time entering into the contract & those enacted there after shall be binding on the contractor & he shall abide by the same. All import duties, sales tax & other local taxes shall be borne by the contractor & they shall be deemed to have covered by this quoted rate.

33. Performa returns:

The contractor shall maintain proforma, charts & details regarding machinery, equipments, materials labour, personnel & other matters as may be specified by the Corporation time to time.

34. Maintenance:

The contractor shall maintain the works under contract for a period of one year from actual date of completion and during this period all maintenance expenditure incurred shall be borne by the contractor.

35. Insurance:

The contractor shall procure, or arrange for the Subcontractor to procure insurance coverage in amounts approved by the Corporation & sufficient to protect against the following risks arising out of the work. Accidents & professional & non-professional sickness of all labourers & personnel engaged in the work as required by Law pursuant to Workmen’s Compensation Act, 1923 or Revised version thereof. Injury or death to third parties including without limitation injury or death caused by any of the construction aids or vehicles or rented machinery, equipments used by the contractor or subcontractor whether at the site or elsewhere. Damage to contractors tools machinery construction equipments form works, scaffolding materials etc. due to floods, earthquake or any such cause. Damage to the existing permanent structures of the Corporation & nearby villages, equipments of the Corporation or of the co-contractors working in the area for other works.

All the above conditions referred for the insurance cover, shall be in effect from the date of commencement of the work until the Corporation has accepted the work. In the policies covering the insurances referred to above, the Corporation, contractor & the subcontractor shall be as co-ensured where possible.
The cost of insurance shall be borne by the contractor.

36. Liens:

Final payment to the contractor shall not be made until the contractor shall deliver to the Corporation receipts in full in lieu thereof, & in either case, an affidavit that so far he has knowledge or information the releases & materials for which in lien could be filed. If any lien remains unsatisfied after all the payments are made, the contractor shall refund to the Corporation all money that the latter may be compelled to pay in discharging such a lien, including all costs & a reasonable attorney.
SECTION –D
TECHNICAL SPECIFICATIONS:
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<td>IS: 456, IS: 269</td>
<td>Govt. Approved Lab</td>
<td>The tests for cement Coarse aggregates &amp; Fine aggregate shall be conducted during Mix design for Concrete. Mix design shall be subject to approval by GETCO</td>
<td>B</td>
</tr>
<tr>
<td>(ii)</td>
<td>Compressive Strength</td>
<td></td>
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<tr>
<td>(iii)</td>
<td>Initial &amp; final setting time</td>
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<tr>
<td>B</td>
<td>COARSE AGGREGATES</td>
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<tr>
<td>(i)</td>
<td>Determination of Particle size (Sieve Analysis)</td>
<td>As per mix Design requirement</td>
<td>IS: 383, IS: 2386, IS: 456</td>
<td>Govt. Approved Lab</td>
<td>In case of change of source of coarse &amp; Fine aggregates, mix Design should be revised.</td>
<td>B</td>
</tr>
<tr>
<td>(ii)</td>
<td>Flakiness Index</td>
<td></td>
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<tr>
<td>(iii)</td>
<td>Crushing Value</td>
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<td>(iv)</td>
<td>Specific Gravity</td>
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<td>(v)</td>
<td>Bulk Density</td>
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<tr>
<td>(vi)</td>
<td>Absorption Value</td>
<td></td>
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<tr>
<td>(vii)</td>
<td>Moisture Content</td>
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<tr>
<td>(viii)</td>
<td>Soundness of Aggregate</td>
<td></td>
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<tr>
<td>(ix)</td>
<td>Presence of deleterious materials</td>
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<tr>
<td>C</td>
<td>FINE AGGREGATE</td>
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<td></td>
</tr>
<tr>
<td>(i)</td>
<td>Gradation /Determination of Particle size</td>
<td>As per mix Design requirement</td>
<td>IS: 383, IS: 2386, IS: 456</td>
<td>Govt. Approved Lab</td>
<td>In case of change of source of coarse &amp; Fine aggregates, mix Design should be revised.</td>
<td>B</td>
</tr>
<tr>
<td>(ii)</td>
<td>Specific Gravity and density.</td>
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<td>(iii)</td>
<td>Moisture content</td>
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<tr>
<td>(iv)</td>
<td>Absorption Value</td>
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<tr>
<td>(v)</td>
<td>Bulking</td>
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<td>(vi)</td>
<td>Silt Content Test</td>
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<tr>
<td>(vii)</td>
<td>Presence of deleterious materials</td>
<td></td>
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<tr>
<td>D</td>
<td>BRICKS</td>
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</tr>
<tr>
<td>(i)</td>
<td>Dimensional tolerance</td>
<td>As per relevant IS.</td>
<td>GETCO Specs. IS: 3495) (Part I to IV)</td>
<td>Govt. Approved Lab</td>
<td>To be approved by GETCO</td>
<td></td>
</tr>
<tr>
<td>(ii)</td>
<td>Compressive Strength</td>
<td></td>
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<tr>
<td>(iii)</td>
<td>Water Absorption</td>
<td></td>
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<td>(iv)</td>
<td>Efflorescence</td>
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</tbody>
</table>

**E**  
**WATER**

| (i) | Cleanliness (Visual Check) | Random | IS: 456, IS: 3025 and Specification. The Water used for mixing concrete shall be fresh, clean and free from oil, acids and alkalis, organic materials, or other deleterious materials IS: 456, IS: 3025 and GETCO Specification | Contractor / GETCO | Each source to be Approved by GETCO |
| (ii) | Chemical and physical properties of water for checking its suitability for construction proposes. | One sample per Source | Govt. Approved Lab |   |   |

**F**  
**REINFORCEMENT STEEL**

| (i) | Identification & size | Random | IS: 432, IS: 1139, IS: 1786 & GETCO Specification | Contractor should produce manufacturer’s Certificate. i.e from approved Manufacturer. | Approved by GETCO |
| (ii) | Chemical Analysis Test | One sample per Heat |   | Govt. Approved Lab |   |
| (iii) | Tensile Test |   |   |   |   |
| (iv) | Yield stress/proof stress | One sample per Each size |   |   |   |
| (v) | Percentage Elongation | One sample per Each size |   |   |   |
| (vi) | Bend/Re-bend Test | One sample per Each size |   |   |   |
| (vii) | Reverse Bend Test for HYSD Wire | One sample per Each size |   |   |   |

**2**  
**WORKS**

**GANTRY/EQUIPMENT FOUNDATION/CABLE TRENCH**

**A**  
**BEFORE EXCAVATION**
|   | Checking of pegs location as Per line and alignment Checking of pit making as per Drawing & RL | 100% on each Location 100% on each Location | IS: 4091,IS: 3764 & GETCO approved Drawing/specification | Contractor Approved by GETCO. | C |
|   |   |   |   |   |   |
| B | EXCAVATION |   |   |   |   |
|   | (i) Dimensional conformity Each location | IS: 4091,IS: 3764 & GETCO approved Drawing/Specification. | Contractor Contractor | Approval by GETCO. (1) Foundations will not be placed on filled up soil (2) Minimum depth Of foundation will be 750 mm in Virgin soil. | B |
|   | (ii) Verticality/slopes & Squareness of each pit Each location |   | Contractor | Joint inspection By GETCO. And Contractor |   |
|   | (iii) Verification of classification of foundation wherever applicable. Each location |   | Joint inspection By GETCO. And Contractor |   |   |
| C | P.C.C. Padding For all locations | IS:456,GETCO Approved foundation Drawing & specification | Joint inspection By GETCO. And Contractor | Approval by GETCO. | C |
| D | SHUTTERING (Form work) |   |   |   |   |
|   | Check for materials, breakage Or damage Check for plumb, alignment Parallelism, squareness and equidistance from stub Dimensional check Check for level & height Check for rigidity of frame/tightness Cleaning and oiling Diagonal bracing if required as Per drawings/site conditions. Checking of joints to avoid undue loss of cement slurry | 100% | IS: 456,GETCO Specification/approved drawings. | Joint inspection By GETCO. And Contractor | Approved by GETCO. | C |
| E | PLACEMENT OF REINFORCEMENT STEEL. |   |   |   |   |
|   | Check the steel bars for rust,cracks,surface flaws,laminate etc. (Visual check) Check as per the bar bending Schedule before placement of Concrete. |   | IS: 456,GETCO Specification/ | Joint inspection By GETCO. | Approved by GETCO. | B |
| Check cutting tolerance for bars as per check List/drawings. Check whether all bent bars and lap lengths are as per approved bar bending schedule. | 100% | approved drawings. | And Contractor |
| Check whether all joints & crossing of bars are tied properly with right gauge & annealed wire as per specification. | IS:2911 & GETCO Approved pile Foundation Drawings/Specification. |
| Check for proper cover distance spacing of bars, spacers, & chairs after the reinforcement cage has been put inside the formwork. | Joint inspection By GETCO. And Contractor |
| Check whether lapping of bars are tied properly with right gauge and annealed wire as per specification. | Checklist to be prepared and signed jointly by GETCO and Contractor |

| **PILE FOUNDATION** (Additional Tests) |
| Check of centre line of pile group | Each pile group |
| Check pile location | Each pile |
| Temporary casing tube & permanent line also check Thickness of liner material (if applicable) | Each pile |
| Bentonite slurry (if applicable) | Each pile |
| Pile depth, level, size and alignment | Each pile |
| Chipping of pile head | Each pile |
| Pile load testing | As per GETCO GBOQ/Specification IS: 2911 |
| Anchor bolts if applicable | 100% on each Location |
| Level, centre to centre distance Of bolts. | GETCO Approved pile foundation Drawings/specification |
| Visual check for galvanizing | 100% on each Location |

| **CONCRETING** |

---

43 Quality Assurance
<table>
<thead>
<tr>
<th></th>
<th>APPROVAL OF MIX DESIGN.</th>
<th>For each grade of Concrete.</th>
<th>IS: 456 &amp; GETCO Approved specifications</th>
<th>Contractor</th>
<th>Approval by GETCO</th>
<th>A</th>
</tr>
</thead>
<tbody>
<tr>
<td>b</td>
<td>Batching, mixing &amp; placing of concrete and compacting Placing concrete, and compacting</td>
<td>Each Mix. 100%</td>
<td>IS: 456 &amp; GETCO Approved drawings And specifications</td>
<td>Contractor</td>
<td>Approval by GETCO</td>
<td>B</td>
</tr>
<tr>
<td>c</td>
<td>CONCRETE TESTING</td>
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<tr>
<td></td>
<td>Slump test Check for quantities for cement, fine aggregate, coarse aggregate and water while batching</td>
<td>One sample per foundation 100% on all locations</td>
<td>IS:456,IS:516,IS:1199 And GETCO Specifications</td>
<td>Contractor</td>
<td>Results to be recorded and signed Jointly</td>
<td>B</td>
</tr>
<tr>
<td>d</td>
<td>CONCRETE CUBE TESTING</td>
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<td></td>
<td>Compressive Strength Sample (Consisting of minimum 3 cubes) (i) For Footing column &amp; plinth beam shall be tested for 28 days strength. (ii)For slab,2 sample to be collected for 7 days &amp; 28 days strength test.</td>
<td></td>
<td>IS:1199,IS:456, IS:516</td>
<td>Govt. Approved lab</td>
<td>To be witnessed &amp; Approved by GETCO</td>
<td>A</td>
</tr>
<tr>
<td>H</td>
<td>BACKFILLING</td>
<td></td>
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<tr>
<td></td>
<td>Check for thickness of Layer &amp; watering Visual check for correction/ramming Compaction test (Percentage of Max dry density</td>
<td>100%</td>
<td>GETCO Specifications.</td>
<td>Govt. Approved lab</td>
<td>To be witnessed &amp; Approved by GETCO</td>
<td>C</td>
</tr>
<tr>
<td>I</td>
<td>BRICK-WORK</td>
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<td></td>
<td>PLASTERING</td>
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</tr>
<tr>
<td>J</td>
<td>Plastering thickness and evenness</td>
<td>Random</td>
<td>GETCO Specification</td>
<td>Contractor. Approved by GETCO</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Mortar mix proportion</td>
<td>Random</td>
<td>GETCO Specification</td>
<td></td>
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<thead>
<tr>
<th></th>
<th>CURING FOR CONCRETE, MASONRY, PLASTERING ETC.</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>K</td>
<td>100% on all locations</td>
<td>IS 5613 &amp; GETCO Specification</td>
<td>Contractor. Approval by GETCO</td>
<td>C</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>SITE SURFACING</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>L</td>
<td>Leveling</td>
<td>100%</td>
<td>GETCO Specification</td>
<td>Contractor Approval by GETCO</td>
</tr>
<tr>
<td></td>
<td>Soil Sterilization Spraying of chemicals</td>
<td>100%</td>
<td>GETCO Specification</td>
<td>B</td>
</tr>
<tr>
<td></td>
<td>Grading of 20/40/60 mm Stone</td>
<td>One sample</td>
<td>IS383 &amp; 2386 Specs.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Compacted thickness of 20/40/60 mm stone layers as applicable</td>
<td>Random</td>
<td>GETCO Specification</td>
<td></td>
</tr>
</tbody>
</table>
GENERAL GUIDELINES FOR IMPLEMENTATION:

1. Details of categories of check codes A, B & C including accepting and deviation dispositioning authorities are indicated at annexure-I.

2. GETCO specification shall mean GETCO technical specification, approved drawings data sheets and Law provisions applicable for the specific contract.

3. Acceptance criteria and permissible limits shall be as per relevant Indian Standards and/or prevalent code of practice/GETCO specifications.

4. It is clarified that the tests indicated at column 2 of this FQP i.e. Against column “component operation & Description of test “, are only generally required to be conducted. However GETCO reserves the right to carry-out any additional tests at any stage if the situation so warrants.

5. SE (TR) of circle shall approve testing laboratory before accepting the test results from the lab.

6. SE (TR) of circle shall approve the sources for cement, coarse aggregate, fine aggregate & water before actual utilization.

7. All the testing & measuring equipments used by the contractor for testing are required to be calibrated. A Copy of valid calibration report shall be retained by GETCO based on the joint inspection.

8. Classification of foundations shall be approved by GETCO based on the joint inspection report & Soil investigation reports.

9. Zone-IV fine aggregate shall be used for nominal mix. Reinforced cement concreting work.

Zone-IV fine aggregate shall be avoided for design mix reinforced cement concreting work unless tests have been done to ascertain the suitability of proposed with the prior approval GETCO sit.

10. Bricks should be free from cracks, flaws and modules of free lime. They should have smooth rectangular faces with sharp corners and should be uniform in colour.

11. Cement

In case of cement is in the scope of the contractor, the same shall be procured from sources approved by GETCO site and got tested on sample basis for specified acceptance tests as specified in the FQP at a reputed third party lab approved by GETCO site.

The samples of cement for site testing shall be taken within three week of the delivery and all the tests shall be commenced within one week of sampling. If the cement remains in store for a period of more than Six months. All the site tests are required to repeated before usage.

The source and grade of cement shall be as per approved design mix.

12. Reinforcement steel & structural steel used in cable trenches & foundations

In case supply of steel is in the scope of the contractor, the same shall be procured from the main producers as per approved list given in E-2 (Technical specification)

The results of testing of cement and reinforcement steel referred in 12.1 and 13.1 above shall be got approved from GETCO site before cement and reinforcement steel are put to use. However, in exceptional cases due to exigencies of work, GETCO site may authorize the contractor to use cement and reinforcement steel even before the test results are received. However, in all such cases, if the test
results subsequently received are found to be not complying with the specified acceptance criteria, the contractor shall have to dismantle and recast all such foundations cast with such non-conforming materials at his own cost. Confirmation to this effect shall be obtained from the contractor by the project authorities beforehand in all such cases.

13. The contractor shall submit welding procedure specification (WPS) including the type of electrode used for approval of GETCO site before starting the welding work. The welder with proper certificate shall be deployed.

14. Approval / acceptance of individual test results by GETCO in the course of execution of contract will neither relieve the contractor from his contractual obligations and responsibilities, nor does it limit the owner’s right under the contract.

15. In case, requirement of special items like super sulphated cement, corrosive resistant reinforcement Steel (CRS) etc. arise due to site conditions, the specific approval of GETCO may be obtained before using the same and all the tests as per relevant standards shall be carried out.

16. All the materials shall be stored by the contractor in a manner affording convenient access for identification and inspection at all the times. Storage of material shall be in accordance with IS: 4032 (latest edition).
ANNEXURE-I

GUJARAT ENERGY TRANSMISSION CORPORATION LIMITED

Accepting and deviation dispositioning authorities for different categories of checks as envisaged in field quality plant

<table>
<thead>
<tr>
<th>Category</th>
<th>type of Check</th>
<th>100%Checking/ witnessing by</th>
<th>counter check/ surveillance check by</th>
<th>Accepting Authority, if Test results Are within Permissible Limit</th>
<th>Deviation Dispositioning Authority</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Critical</td>
<td>Executing deptt. Plus EE (civil) circle with Contractor Engineer</td>
<td>SE(TR) Plus EE(C)</td>
<td>SE(TR) Plus EE(C)</td>
<td>CE, Corporate Office</td>
</tr>
<tr>
<td>B</td>
<td>Major</td>
<td>Executing deptt. plus DE(C)</td>
<td>EE(C)</td>
<td>EE(C)</td>
<td>SE(TR) Plus EE(C)</td>
</tr>
<tr>
<td>C</td>
<td>Minor</td>
<td>Executing deptt. plus JE(C)</td>
<td>DE(C)</td>
<td>DE(C)</td>
<td>EE(C) Plus DE(C)</td>
</tr>
</tbody>
</table>
(D) TECHNICAL SPECIFICATIONS:

(E1) General Conditions:
1. The contractors shall at their own expense make all necessary provisions for housing, water supply, and sanitary arrangements for their employees as well as for works and shall pay direct to the authorities concerned, all rates and taxes.
2. The contractor shall make their own arrangements for the necessary approach, road, for transport of their materials and be responsible for the compensation on account of damage to crop etc. & shall till completion of work.
3. All the royalty charges, Octroi and other duties & all taxes will be paid by the contractor and no extra be claimed on this account.
4. Godowns or sheds hired or constructed for storing of controlled materials and more particularly of cement shall be such as would prevent the materials from getting damaged in any way.
5. It will be absolutely incumbent on the contractors to have on the site of work only such of the materials as have been duly passed by the Engineer-in-charge. Materials that have been rejected must on no account be allowed to remain on the site, and in spite written order to do so, any such rejected material is on the site beyond a period of 48 hours notice, the Engineer-in-charge shall have the right to remove it, at the risk and cost of the contractors and even to destroy it.
6. It must be distinctly understood that conditions of contract and of claims in respect of extra work, will not be allowed unless the works to which they relate is clearly without the spirit and meaning of the specifications or unless such works are ordered in writing by the Engineer-in-charge and claimed for in specified manner.
7. On completion of the work, the site shall be cleared by the contractor within the stipulated period, and ground brought to original state and they shall not be entitled for any extra claim on this account.
8. General Specifications of the relevant Indian standard specification shall also apply.
9. Damage to work clause:
   The works whether fully constructed or not and all materials, machinery plant tools, temporary buildings and other things connected there shall be at the risk and in the sole charge of the contractor, until the works have been delivered, completed to the satisfaction of the Engineer-in – charge and certificate from him to the effect is obtained. Until such delivery, the contractor shall at their own cost, take all the precautions reasonably necessary, to keep all the aforesaid works, materials, machinery, plant tools. Temporary buildings and other things connected with the works, free from any loss or damage and in the event of the same or any part thereof being lost or damaged, shall forthwith within the possible speed, reinstate and made good such loss or damage at contractor’s own cost.
10. Any components or part of the work shall not be given to any sub-contractor without approval of the competent authority of the Corporation. The whole responsibility of the execution of the work, as per the terms and conditions of the contract, will entirely rest of the main contractor. The main contractor shall always keep his responsible representative, preferably a technical hand, on work site with powers to sign M.R.s. and take necessary decision and implement the instructions issued in the interest of efficient execution of the works.
11. The Engineer-in-charge will fix the hours of work, and no work shall be executed beyond that period, during night time or in absence of the Engineer-in-charge of his authorized agent. The box measures shall be filled only in the presence of the engineer-in-charge or his authorized agent.
12. Contractor will be asked to present the sample of materials, and the approved samples will be preserved at the site of work, and no charge in the approved sample will be allowed, without the written permission of the Engineer-in-charge.
13. In any work is not executed according to the specifications, and the directions of the Engineer-in-charge, the same will be rejected, and the contractor has to execute the same without any financial implication to the Corporation.
14. Contractor will have to communicate the name of his authorized agent, who shall be present on the works, and shall be authorized to sign the material requisitions, receive instruction given verbally or on the order book, on behalf of the contractor.
15. The contractor will have to sign the conditions of contract, and execute the agreements, send the list of previous works executed, solvency certificate and pay up the security deposits, failing to that, the tender will be rejected and earnest money deposited will be forfeited. The value of the stamp paper and stamp duty charges shall be borne by the contractor.
16. Tenderer must return the form of tender, with the specifications and the schedule of quantities, and rates and other schedules only signed on each page. Any tender not bearing signature of the tenderer on all the documents accompanying the tender is liable to be rejected.
17. Before submitting his tender, unit rates, which shall be for the finished work complete, including charges involved in testing, maintenance for a period of 12 months, the tenderer shall closely examine the specifications and carefully study the drawings and all documents, which form a part of the contract, to be entered into by the accepted tenderer.
18. The Tenderer must visit the site of works and see for himself the site conditions regarding water, labour conditions rates approach road during all seasons and all other matters affecting the works before submitting the tender.
19. The submission of tender by a contractor implies that, he has read these instructions, the conditions of contract etc. and has made himself aware of the scope and specifications of the work to be done, and of conditions and rates at which stores will be issued to him, and local conditions and other factors bearing on the executions of the work. The Corporation will not therefore, after acceptance contractor’s rate, pay any extra charge for lead or for any other reason. In case the contractor is found later on, to have misjudged the site conditions.
20. The tender document shall be written legibly and free from erasure, overwriting or conversions of figures. Correction where unavoidable, shall be made by crossing out, initialing, dating and rewriting.
21. The Corporation or its officers, who accept tender, shall have the right of rejecting all or any of the tenders, and will not be found to accept the lowest offer not to assign any reasons whatever, for the rejection of any tender or all tenders.
22. The tender notice to tenderers shall form a part of the contract.
23. The entire work is to be completed, within the stipulated time limit from the date of issue of letter for commencement of the work by field office. The contractor will not be eligible for any extra for the idle period of works, or waiting period that may be required to suit other consideration, and no claims for compensations on account of such, will be considered. However in case of delay due to circumstances beyond the control of contractors, either in date of commencement or due to, waiting during construction, extension in time may be considered for completion of works, without any penalty to the Corporation.
24. The contractor shall keep full time qualified Civil Engineers at the site, who shall be fully authorized to receive and comply with such instructions, as given by the Executive engineer. The name of such Engineer with his qualifications and experience shall be intimated by the contractor.
The Executive Engineer shall have the right to demand the removal of any technical personnel, skilled or unskilled workmen, who in his opinion are considered to cause bad workmanship in the execution of works or to cause indiscipline.
25. The department reserves the right to make any change in the design and the plans of the works and the contractor shall be bound to carry out them at the rates tendered. No claim or compensation will be allowed on this account.
26. Bills shall be submitted by the contractor monthly on or before the date fixed by the Executive Engineer, for all works executed in the previous months.

27. Should this tender be accepted I /We hereby agree to abide by and fulfill all the terms and provisions of the “Tender & contract for works” as applicable, and in default thereof to forfeit and pay to the Corporation the sums of money due.

28. The contractor shall keep instruction book on site, for taking site instruction from time to time. This book shall be made available on site whenever asked for.

29. The contractor shall pay wage to the workers, as per minimum wages act as declared by the Government time to time.

30. The contractor shall follow all labour laws of Govt.

31. Contractor shall arrange for testing of material to be used in the work or finished product, if desired by the Executive Engineer. The provision shall be made in the unit rate quoted for this.

32. The full value of the “Earnest Money Deposit” paid herewith, shall be forfeited to the Corporation, if the contractor fails to deposit the full amount of specified security deposit, within stipulated time.

(E2) Use of Materials:

I. The contractor shall have to use the best quality of materials in the work, as per the specifications and relevant I.S. codes. In case Corporation desires to carry out any field test/laboratory test for any materials required for the work, the contractor shall arrange for the same at his own cost.

Further, for any finished works such as masonry, plastering, cube testing for all important concreting work etc., if any testing is required same shall be arranged by the contractor at his own cost. The contractor shall have to maintain the regular records for such testing and shall submit along with each R.A. bills.

II. No collection of materials shall be made before it is got approved from the Engineer-in-charge.

III. Materials, if and when rejected by the Engineer-in-charge shall be immediately removed from site of work.

IV. All installations pertaining to water supply and fixtures thereof as well as drainage lines and sanitary fittings shall be deemed to be completed only after giving satisfactory tests by the contractor.

V. Approval to the samples of various materials given by the EIC shall not absolve the contractor from the responsibility of replacing defective material brought on site or materials used in the work found defective at a later date. The contractor shall have no claim to any payment or compensation whatsoever on account of any such material being rejected by E.I.C.

VI. Approval to any of the executed item for the work does not in any way relieve the contractor of his responsibility for the correctness, soundness and strength of the structure as per the drawing and specification.

VII. Cement and steel will have to be consumed of following makes only.

<table>
<thead>
<tr>
<th>Sr.No</th>
<th>Name of manufacturer of cement</th>
<th>Sr.No</th>
<th>Name of manufacturer of cement</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Narmada Cement Co.Ltd.</td>
<td>7</td>
<td>Sanghi Cement</td>
</tr>
<tr>
<td>2</td>
<td>Saurashtra Cement &amp; Chemicals.</td>
<td>8</td>
<td>Laxmi Cement</td>
</tr>
<tr>
<td>3</td>
<td>J.K. Cement</td>
<td>9</td>
<td>Ambuja Cement Co.Ltd.</td>
</tr>
<tr>
<td>4</td>
<td>Shree Digvijay Cement Co.Ltd.</td>
<td>10</td>
<td>Siddhi Cement</td>
</tr>
<tr>
<td>5</td>
<td>Binani Cement</td>
<td>11</td>
<td>L&amp;T (Ultra tech) Cement</td>
</tr>
<tr>
<td>6</td>
<td>Vikram Cement</td>
<td>12</td>
<td>Jay Pee Cement</td>
</tr>
</tbody>
</table>
Name of manufacturer/Supplier of structural steel & TMT bars.

<table>
<thead>
<tr>
<th>Sr.No</th>
<th>TMT Bars</th>
<th>Sr.No</th>
<th>Structural steel</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Steel Authority of India</td>
<td>1</td>
<td>Steel Authority of India</td>
</tr>
<tr>
<td>2</td>
<td>Tata Iron &amp; Steel Co. Ltd</td>
<td>2</td>
<td>Tata Iron &amp; Steel Co. Ltd</td>
</tr>
<tr>
<td>3</td>
<td>Ispat</td>
<td>3</td>
<td>Essar steel Ltd.</td>
</tr>
<tr>
<td>4</td>
<td>M/S Nilkanth Concast Pvt. LTD.</td>
<td>4</td>
<td>Ispat</td>
</tr>
<tr>
<td>5</td>
<td>Electrotherm.</td>
<td>5</td>
<td>Shah Alloys Ltd,Ahmedabad</td>
</tr>
<tr>
<td>6</td>
<td>M/S Hans Inspat Ltd.(BarnalaTMT)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Kamdhenu TMT Sariya</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>ASR Multi Metals Pvt.LTD.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Gellant TMT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>National TMT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>RINL,VIZAG (Visakhapattam)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

In addition to above following manufacturer /supplier are approved for structural steel.

<table>
<thead>
<tr>
<th>Sr.No</th>
<th>Name of Supplier/ manufacturer M/S</th>
<th>Item description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Mahavir Rolling Mills</td>
<td>All size of M.S. Angles, Flats</td>
</tr>
<tr>
<td>2</td>
<td>Electrotherm (India) ltd.A’bad</td>
<td>All size of M.S. Angles</td>
</tr>
<tr>
<td>3</td>
<td>Ambika Alloys &amp; steels India Ltd. Visnagar</td>
<td>M.S.Angles Size 50x50x6mm to 100x100x6mm</td>
</tr>
<tr>
<td>4</td>
<td>Unique structure &amp; Tower Ltd Raipur</td>
<td>M.S.Channel up to 125 x 65 mm, M.S.Angle 35x35 to 110x110mm</td>
</tr>
<tr>
<td>5</td>
<td>Ambika iron &amp; steel Re-Rolling Mills,Visnagar</td>
<td>M.S.Angles 25x25x2 to 65x65x6mm,Flat size 20x5 to 100x12mm</td>
</tr>
<tr>
<td>6</td>
<td>Mid India Power &amp; steel Ltd.Gandhidham</td>
<td>M.SBeam up to 150x150mm M.S.Angles 65x65 M.S.Channel up to 125x65mm</td>
</tr>
<tr>
<td>7</td>
<td>Goyal Energy &amp; steel Pvt.Ltd.Raipur</td>
<td>M.S.Equal angle 40x40x4/5/6 to 75x75x10mm.</td>
</tr>
<tr>
<td>8</td>
<td>Varsana Ispat Ltd. Gandhidham</td>
<td>M.S.Angle up to 65x65mm ISMB up to 150x150mm</td>
</tr>
</tbody>
</table>

Special condition for use of cement in work:

1). The rate in Schedule-B is inclusive of cement cost. Contractor has to purchase fresh 43-53 grade cement confirming to as per IS: 8112 and of approved brand by G. E. T.C.O.

2). Contractor has to construct pucca go-down at site of work so that cement bags can be properly preserved to avoid damage due to any kind of water.
3). Contractor has to bring sufficient of cement bags and at no time less than 200 (two hundred.) bags to maintain progress of work. The work should not suffer for want of cement.

4). Cement should give the required strength.

5). To bring sufficient and timely cement at site is full responsibility of contractor. Nothing extra will be paid on account of any reason to maintain progress of work and to complete the work in schedule time.

6). Contractor has to submit material account for consumption of cement used with every bill. In case of not submitting the same, bill will not be passed. Party has to submit the copy of cement/purchase bill along with each RA Bill/Final Bill.

7). No negative variation will be allowed for consumption in cement then prescribed as per booklet of technical specification of Corporation/mix design and nothing will be paid extra for over consumption.

8). Contractor is fully responsible for safety of cement at site; nothing will be paid extra on account of safety.

9). If Corporation’s authorized representative wants to check cement stock at site, contractor has to allow for the same at any time.

10). Contractor has to maintain day-to-day cement consumption / balance account at site.

11). As far as possible contractor has to maintain supply of cement of only approved brand and grade throughout the work.

12). Minimum cement consumption considered for cement concrete having grade of M-15/M-20/M-25 is 300 Kgs/320-Kgs/340Kgs respectively. Contractor has to use minimum cement as above. Contractor should not use less than the prescribed quality of cement even in the case of mix design recommends lower quantity.

13). Contractor will be allowed to carry out work only after physical verification of cement brought at site.
(E3) CEMENT CONSUMPTION SCHEDULE:
The proportion of cement with coarse aggregate and the fine aggregate for cement concrete works & with sand in case of cement mortar will be in accordance with the under mentioned schedule showing the consumption of cement in bags. The Engineer-in-charge will adjust the proportion of cement irrespective of the mix mentioned in the description of the items, to ensure the consumption of the cement as per prescribed schedule. The tendered rate will be considered to have been based on the consumption of cement in this schedule and nothing extra will be paid on this account.

a. If the quantity of cement shown as utilized in the work, is observed to be less than permitted as below then work will be accepted at reduce rate at the discretion of EIC, if deemed fit.

Table showing the cement required to be consumed in civil work items.

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Item Description</th>
<th>Unit</th>
<th>Cement to be consumed in Bags</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Masonry Works</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B.B. Masonry in C.M. 1:6</td>
<td>1 CMT</td>
<td>1.4</td>
<td></td>
</tr>
<tr>
<td>U.C.R. Masonry in C.M. 1:6</td>
<td>1 CMT</td>
<td>1.7</td>
<td></td>
</tr>
<tr>
<td>U.C.R. with pointing in C.M. 1:2</td>
<td>1 CMT</td>
<td>2.0</td>
<td></td>
</tr>
<tr>
<td>115 mm thick B. B. Partition in C.M. 1:4</td>
<td>1 SMT</td>
<td>0.2</td>
<td></td>
</tr>
<tr>
<td>--do- but with both sides plaster in C.M. 1:3; 12 mm thick</td>
<td>1 SMT</td>
<td>0.46</td>
<td></td>
</tr>
<tr>
<td>2. Cement Concrete works without finishing</td>
<td>1 SMT</td>
<td>0.46</td>
<td></td>
</tr>
<tr>
<td>C.C. 1:1 ½ : 3</td>
<td>1 CMT</td>
<td>8.12</td>
<td></td>
</tr>
<tr>
<td>C. C. 1 : 2 : 4</td>
<td>1 CMT</td>
<td>6.27</td>
<td></td>
</tr>
<tr>
<td>C. C. 1 : 3 : 6</td>
<td>1 CMT</td>
<td>4.42</td>
<td></td>
</tr>
<tr>
<td>C.C. 1 : 4 : 8</td>
<td>1 CMT</td>
<td>3.00</td>
<td></td>
</tr>
<tr>
<td>C.C. 1 : 5 : 10</td>
<td>1 CMT</td>
<td>2.47</td>
<td></td>
</tr>
<tr>
<td>3. Flooring</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25 mm thick I.P.S. in C.C. 1:2:4</td>
<td>1SMT</td>
<td>0.25</td>
<td></td>
</tr>
<tr>
<td>--do- 40 mm thick</td>
<td>1SMT</td>
<td>0.35</td>
<td></td>
</tr>
<tr>
<td>--do- 50 mm thick</td>
<td>1 SMT</td>
<td>0.45</td>
<td></td>
</tr>
<tr>
<td>--do- 75 mm thick</td>
<td>1SMT</td>
<td>0.60</td>
<td></td>
</tr>
<tr>
<td>--do- 100 mm thick</td>
<td>1SMT</td>
<td>0.75</td>
<td></td>
</tr>
<tr>
<td>Cement for fixing marble Mosaic Tiles</td>
<td>1SMT</td>
<td>0.13</td>
<td></td>
</tr>
<tr>
<td>--do- White glazed tiles with 12 mm thick coating cement plaster for leveling.</td>
<td>1SMT</td>
<td>0.25</td>
<td></td>
</tr>
<tr>
<td>Terrazzo floor finishing 20 mm thick with mm thick back coating cement plaster.</td>
<td>1SMT</td>
<td>0.25</td>
<td></td>
</tr>
<tr>
<td>Kotaah stone flooring</td>
<td>1SMT</td>
<td>0.20</td>
<td></td>
</tr>
<tr>
<td>4. Bedding Below Flooring</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>110 mm thick C. C. 1 : 4 : 8</td>
<td>1 SMT</td>
<td>0.35</td>
<td></td>
</tr>
<tr>
<td>-- do – C. C. 1 : 5 : 10</td>
<td>1SMT</td>
<td>0.28</td>
<td></td>
</tr>
<tr>
<td>5. Plastering &amp; Pointing</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12 mm thick C.P. in C.M. 1 : 3</td>
<td>1SMT</td>
<td>0.13</td>
<td></td>
</tr>
<tr>
<td>20 mm thick C.P. in C.M. 1:3</td>
<td>1SMT</td>
<td>0.19</td>
<td></td>
</tr>
<tr>
<td>20 mm thick sand faced in two layers.</td>
<td>1SMT</td>
<td>0.20</td>
<td></td>
</tr>
<tr>
<td>Cement Pointing 1 : 1</td>
<td>1SMT</td>
<td>0.07</td>
<td></td>
</tr>
<tr>
<td>6. Ground Sink 750 x 750 mm with dwarf wall</td>
<td>1NO</td>
<td>0.75</td>
<td></td>
</tr>
<tr>
<td>115 mm thick 40 mm IPS with 110mm. thick 1: 5: 10 bedding,</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. RCC water tank 1000 liter. (1.2x1.2x0.9M with free Corporation)</td>
<td>1NO</td>
<td>0.75</td>
<td></td>
</tr>
<tr>
<td>-- do – size (2x2x0.9 M with free</td>
<td>1NO</td>
<td>13.0</td>
<td></td>
</tr>
</tbody>
</table>
Corporation) (3000 Liters)

8. Kitchen Platform with 75 mm thick slab with 2 partitions with 12 mm smooth plaster.

<table>
<thead>
<tr>
<th>Size</th>
<th>1NO</th>
<th>1.50</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000 x 675 mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3000 x 675 mm</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

9. 75 mm quarter round vata in C.M. 1:2.

<table>
<thead>
<tr>
<th>Size</th>
<th>100RMT</th>
<th>4.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>100 mm – do –</td>
<td></td>
<td>5.0</td>
</tr>
<tr>
<td>150 mm – do –</td>
<td></td>
<td>7.0</td>
</tr>
</tbody>
</table>

10. Fixing W.C. Pan

<table>
<thead>
<tr>
<th>Size</th>
<th>1NO</th>
<th>0.50</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nahni trap</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

12 50mm thick RCC shelf in C.C. 1:1 ½ : 3

<table>
<thead>
<tr>
<th>Size</th>
<th>1SMT</th>
<th>0.60</th>
</tr>
</thead>
<tbody>
<tr>
<td>13 - do - precast cover 300 mm, wide 50 mm</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

14 Manhole chambers with 230 mm, thick masonry in C.M. 1:6 and depth up to av. 1000 mm incl. cement plaster in C.M. 1:3 inside, top and outside up to 150 mm depth.

<table>
<thead>
<tr>
<th>Size</th>
<th>1NO</th>
<th>2.5</th>
</tr>
</thead>
<tbody>
<tr>
<td>900 x 450 mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>600 x 450 mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>600 x 600 mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>900 x 900 mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>450 x 450 mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>300 x 300 mm with 110 mm partition wall.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

15 RCC hume pipe with filling joints in C.M. 1:1 thick and bed concrete 1:4:8 below joints 150 mm.

<table>
<thead>
<tr>
<th>Dia</th>
<th>1RMT</th>
<th>0.45</th>
</tr>
</thead>
<tbody>
<tr>
<td>750 mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>650 mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>450 mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>300 mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>225 mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>150 mm</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

16. Porcelain Pipes (S.W.G. Pipes)

<table>
<thead>
<tr>
<th>Dia</th>
<th>1RMT</th>
<th>0.06</th>
</tr>
</thead>
<tbody>
<tr>
<td>100 mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>150 mm</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

17 150 mm Dia half round gutter in C.C. 1:3:6

<table>
<thead>
<tr>
<th>Dia</th>
<th>RMT</th>
<th>0.15</th>
</tr>
</thead>
<tbody>
<tr>
<td>2500 mm Dia x 300 mm deep of hollow masonry in C.M. 1:6 with C.C. 1:4:8 bedding</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

& RCC slab cover, for soak pit.

**Note:**
1. Consumption figures mentioned against each item is for theoretical consumption. This consumption may vary + 5%.
2. In the case of plaster to masonry walls, an extra quantity of 1 Cft to mortar for every 100 sq. ft. of area may be allowed at the discretion of EIC.

**General:** Please refer latest edition of relevant Indian Standard Specification of Code i.e. B.I.S. General relevant I.S. of B.I.S. shall prevail for all items including materials, measurements etc. The Item wise detailed specifications are intended for full description of items covered by Schedule “B”. The specifications are not however intended to cover every detail and the works shall be executed according to the spirit of the specifications below and the best prevailing P.W.D. practice. The clarification to any clause in detailed specifications shall be sought from the latest edition of relevant I.S. specification and codes. Where these specifications are at variance with the specification laid down in the I.S. Books stated above, the former will be applicable. As regarded matters not covered
by any of the above specification, the decision of the Executive Engineer-in-charge shall be treated as final and shall be binding upon the contractor. The contractor is expected to get clarified any doubt about specification, etc. before tendering by discussing with Executive Engineer.

(E4) TECHNICAL SPECIFICATIONS OF VARIOUS ITEMS:

Tolerance:
Single pile 50mm in alignment group of piles – 75mm

Concrete:
* Grade M-30 or M-25 as specified. Aggregate size – 20mm down.
* Designed water cement ratio shall be maintained.
* Minimum cement content shall not be less than 370 kg. Per cu.mt. for M-25 & 396 kg. For M-30 cement concrete and slump of concrete should not be less than 150mm.

Concrete Placing:
The concreting shall be done by tremie with minimum diameter 200mm of pipe – when concreting is carried out under water, casing/liner should be installed to the full depth of the bore hole or 2m into non-collapsible stratum, so that fragments of ground can not drop from the sides of the hole into concrete, as it is placed. This Shall be done strictly as per the directive of GETCO Engineer-in-Charge.

The hopper and tremie shall be a closed system embedded in the placed concrete by 1.50m concrete so that water can not pass. The pile should be concreted wholly by tremie only and uninterrupted.

The quantity of concrete used shall be compared with calculated quantity at various depths, as per drawing to have check against fall of debris, or side caving.

Reinforcement:
Reinforcement cage shall be prepared as per design & drawing, with cover blocks and shall be placed centrally, so that sides of pile bore are not disturbed.

The length of cage shall be determined as per the actual depth of bore including socketing length of pile into rock if any.

Sufficient care shall be taken to avoid any lifting or tilting of reinforcement cage, at the time of concreting.

Boring operation:
Boring operation shall be done by rotary or percussion type drilling rigs using direct mud/bentonite circulation or reverse circulation methods to bring the cuttings out.

Pile bore log shall be maintained and shall be compared with soil investigation report and design & drawing.

The size of cutting tool should not be less than the pile diameter by more than 75mm.

Proper cleaning of pile bore after lowering the reinforcement and before concreting shall be done. On completion of bore as per required depth as per
design, the bottom of the bore shall be flushed to remove debris till clear water comes out.

When liner is used and the pile bore is filled with water or drilling mud, the bottom part may be concreted using tremie so that the liner is effectively sealed against ingress of ground water.

For execution of piling work relevant latest IS Code of materials and working method shall be followed.

A. CONCRETE
I PROPORTION:
The Proportion of fine, coarse aggregates and cement shall be as specified in item of tender where nominal mix is to be used. Proportion of materials shall be carried out such that the proportion of materials is readily verifiable. Material must be measured in boxes of steel or wooden, approved by EIC. Box to be used for which aggregate, its size etc. shall be clearly marked on box. No ramming of boxes will be permitted. Slight variation in proportion for technical requirement will have to be carried out without any extra cost. Boxes shall be filled in presence of authorized agent of Corporation and work shall be carried out during working hours fixed by Corporation or approved by Engineer-in-charge.

Where strength of concrete is specified instead of nominal mix, contractor will have design mix for the specified strength as provided in IS code for design mix. Proportion shall be used on weight of ingredients of concrete using specified size of the coarse aggregate in item. If ordered, contractor will have to get economical design from Gujarat Engineering Research Institute or other approved institution. Where permitted, in case of small works, proportional of weight basis can be converted to volumetric for use at site with maintaining same quality of aggregates as used in designing the mix. Design mix shall be got approved and minimum cement if specified shall have to be used. Any charge in source of aggregate will require redesigning of the concrete mix. The engineer shall have right to inspect the source of materials used and contractor will have to arrange for testing of material, if ordered, without any extra cost.

II MATERIALS:
Coarse aggregate & fine aggregate i.e. black Trap metal, Grit, sand etc. shall confirm to IS 353 for aggregate form natural source. Aggregates shall be strong, hard, durable, free from foreign materials and adherence. If found necessary, contractor shall have to arrange testing of aggregate according to IS 2386 & IS 576. Coarse aggregate shall be of specified size in the item viz 40 mm, 20 mm, 10 mm etc. Where gradation is to be done in mix design, it shall be properly graded. Coarse aggregates shall be free from mica, shale etc. The pieces shall be angular in shape having granular or crystalline surface, triangular, flaky & laminated should not be used. If ordered by Engineer-in-charge, aggregates shall have to be screened or washed. Samples of coarse aggregates to be used shall be got approved and source of approved quality material shall not be changed without prior approval.

Sand shall be clean river sand of quality approved as per IS confirming to gradation zones. Sand shall have fineness modulus of not less than 2.2 or more than 3.2. When sufficient quantity of aggregates are to be collected, they shall be stacked separately in piles to avoid inter mixing. Mixing or earth, organic materials and other foreign materials shall be avoided. Rakers shall be used for lifting of coarse aggregates. Coarse aggregate having specific gravity of less then 2.6 shall not be used.
Cement shall be ordinary Portland cement unless otherwise specifically specified. One bag of cement is considered 50 kg. of cement. If cement is to be procured by contractor from outside, certified report that cement confirms to the provision of I.S. shall be furnished if demanded. If necessary, testing will have to be carried out, in approved laboratory without any extra cost. For compressive strength and initial setting time test as per I.S.456.

Water to be used for mixing and curing shall be potable water free injurious and deleterious materials confirming to IS 3025, proper storing facility at site shall be provided by contractor and see that water do not get contaminated – The suitability of water for making concrete shall be ascertained. Water shall confirm to the test as given in I.S.3025.

(III) MIXING
Ingredients i.e. cement, sand and coarse aggregates shall be measured by weigh batcher or volumetric boxes as specified or approved. Boxes for each component shall be prepared for such quantity that will be required for one bag of cement.
All ingredients shall be mixed in mechanical mixer. Ingredients shall be first mixed dry for 1 minute and than required quantity of water is added as per design and mixed for minimum 1 ½ minutes till concrete is uniform. Entire concrete in the mixing drum shall be discharged in pre operation before raw materials for second batch is feed into the drum.
Concrete which can be laid before initial setting time of cement shall be prepared. Party set or tempered concrete shall not be used. Mixer machine, weigh batcher etc. shall be cleared after completion of work. Mechanical mixture shall comply to I.S.1791.

For checking consistency and workability of concrete, slump test shall be carried out as per IS 1199 if desired by Engineer-in-charge.

(IV) LAYING
Before laying of concrete, shuttering and reinforcement shall be got checked. Where inserts are to be provided, they shall be fixed properly at places shown. Concrete shall be laid on cleaned surface. Concrete shall be laid such that ingredients do not get separated and on segregation of concrete is caused. Concrete shall be consolidated properly with vibrators or other approved method according to the requirement of jobs. Joints in concrete shall be left as shown or as directed by Engineer-in-charge. Where concrete is to be place from height, necessary chute shall be provided.

(V) CURING
Concrete work shall be cured for minimum period of 15 days. Horizontal surface shall be cured by ponding and vertical surface shall be kept wet by tying gunny cloth or gunny bags and keeping them wet by spraying or sprinkling water. Where structure is at higher-level contractor shall arrange for pumping arrangement for water. Watertight sump may be prepared on site or storing of water for curing and other uses.
Curing is important for gaining strength of cement structure. Hence full proof arrangement is required to be made. If curing is found sufficient, the same shall be arranged by department as risk and cost of contractor and charges as per rules shall be recovered from contractor’s bills.

(IV) FINISHING
Concrete work where specified in item as exposed surface shall be plastered 12mm thick in CM 1:3 as per specifications of plastering item. Any finishing required to make surface in level of flush to adjoining surface shall be made by contractor with mortar specified portion of concrete.
Cement required to plastering of finishing shall be drawn separately. In plastering of slab bottom, chhajas etc. wherever patta, groove, bend etc. are shown same shall be executed in this item without any extra cost. Where slopes is to be given for drainage and is not provided properly will have to be done without any extra cost. Edges of beam, pillars, etc. where chamfering is shown or instructed shall be done without extra cost. If concrete surface is found honey combed and same is rejected by Executive Engineer, it shall have to be dismantled and recast by contractor without any extra cost at his risk and cost.
(VII) SHUTTERING:
The form work shall be rigid, sufficiently strong and well anchored to bear the load which it has to take without any distortion. It shall be backed sufficient so as not to budge of twist. Form work shall be of steel plates or plywood. Where exposed surface is desired, plywood shuttering will have to be provided. All surface coming in contact with concrete shall be applied with shuttering oil after cleaning properly. Props supporting from work shall rest on pucca platform. Adjustment of height shall be done with wooden wedges. Spacing of props shall be as instructed by Engineer-in-charge of work.
Form work shall be got checked from the Executive Engineer or his authorized agent and on clearance only, further work should be done. Necessary opening, in form work, for providing hooks, kada or other inserts will have to be made by contractor, as instructed, without any extra cost. Removal of from work shall be carried out slowly and at the specified period as under. In case it is ordered to contractor to keep for more period, considering quality of cement or other factors, same will have to be done by contractor. Minimum period of de-shuttering shall be as under.
1. Vertical surface 24 hours.
2. Slab up to 4.5M span 8 days
More than 4.5M span 14 days
3. Beam soffits (bottom) 20 days
Removal of shuttering shall be done only on getting clearance from Ex. Engr. in change of work.
Various IS. specifications for scaffolding materials and code of practice shall be followed.

(VIII) MEASUREMENT & PAYMENTS:
Unless otherwise specified separately, item of concrete work shall be inclusive of shuttering work required for the same with scaffolding, ladders etc., No separate payment should be made for keeping holes, pockets, keeping inserts in position etc.
Payment of concrete work shall be made on Cu. Mt. basis. No deduction will be made for reinforcements, opening of less than 1/20 Sq. Mt. in area where measurement is in sq.m. and 1/150 cu.m. where concrete is to be measured in CU. M.
Rate quoted for the item shall be inclusive of all materials, ingredients, labour, mixer & other machinery, scaffolding, laying in position and fixing of all inserts curing other requirements for the complete execution of item.

B. WATER SUPPLY
G.I. piping
G.I. pipe be used for water supply shall be of class ‘c’ confirming to I.S. Specifications. It shall be fixed with suitable clamps, for concealing with necessary groove in wall and finishing with C.M. When pipe is to be laid underground necessary excavation shall be done to level required. Pipe shall be given 3 coats of coal tar. For joining pipes specials of approved quality (extra thick) shall be used. If item provide painting of pipe same shall be painted with approved brand quality and tint enamel paint. All specials shall be provided as instructed.
Skilled plumber shall be employed on job. Pipes shall be laid as per detailed drawings or as directed on site. Generally shortest route shall be followed. At connection of pipe with special, joint shall be made water tight with hemp rope and zinc white or Teflon tape.
On completion of laying of pope and before sealing of concealed pipe and underground pipe, leak proof test shall be given.
All the piping work shall be measured in running meter and rate quoted shall be inclusive of all special required and all operations required for cutting, threading, joining, excavation, making groove in wall, sealing grout, backfilling, providing clamps with screws, painting etc. complete.

C. WOOD WORK GENERAL FOR DOORS WINDOWS, CUP BOARD etc.
The timber shall be of best quality Bulsat teak or equivalent teak approved by Executive Engineer. Decision of Executive Engineer in this connection will be final. If desired by Executive Engineer, contractor shall have to arrange testing of wood samples selected
by department at random, in the laboratory as instructed by department. Sample of wood approved shall be preserved and contractor shall procure wood of the approved quality only. The source of wood shall be informed to the Engineer-in-charge.

The timber to be used for wood work shall be well seasoned, closed grains, uniform texture, free from knots, rots, soft, cracks, mend, spongy spots etc. The size of frame and all members shall be final size after planning and finishing. Undersized wooden members shall not be accepted. Wood of inferior quality, undersize shall be liable to rejection.

When frames or other members are ready they shall be got checked from Engineer-in-charge and got approved for quality and workmanship. Primer coat of paint shall be applied only after clearance by Engineer-in-charge. If the wooden members are found warped, shrunk or with bad workmanship within guarantee period, the same shall have to be replaced by contractor without any extra cost and to the satisfaction of engineer-in-charge.

Before fixing, the frame of door it shall be provided with six nos. M.S. flat 37mm x 6mm and 300 mm long hold fasts fixed to the frame, with screws as directed. Hold fast shall be with split end and bent at right angle to hold fast. Holes shall be provided at other end of hold fast for fixing of screws. Sample of holdfast shall be got approved from Engineer-in-charge. Windows and cupboard shall be provided with 4 Nos. or 2 Nos. of hold fast according to the size of frame and as instructed by Engineer-in-charge in addition to horns projecting minimum 75 mm on both sides of top & bottom members. The side of frame to be embedded in the wall or in touch with wall or floor, shall be applied uniform thick coat of coal tar.

The frame shall be rebated on one side (or both sides) 12 mm deep and of full thickness of shutter and to have a return bead on the other to be chamfered or rounded as directed by Engineer-in-charge. Wherever M.S. Bars of 16 mm diameter are specified in frame as grill in windows or ventilator, they shall be provided at 100 m c/c and shall be locked in frame for minimum 40mm deep. If M.S. flat is to be provided the flat of size 50 x 10 mm, 1 or 2 Nos. as specified, they shall be provided.

**Shutters**

The thickness of shutter and members of shutter frame shall be as per details given in drawing or supplied at site. Size specified shall be after planning & finishing without painting. Where single plank is specified single plank shall be used. The joint shall be tongue and groove joint. Shutter shall be single or double shutter as per drawing and details given or as directed at site. For paneled doors the panel to be raised feather tongued into style and rails with beaded edges on both sides. Thickness of styles & rails shall be 37 mm and that of panel shall be 30 mm.

The arrangement of panels shall be as directed by the Engineer-in-charge and his decision will be final. The shutter styles, top, bottom, lock and frieze rods to be molded on both sides. The sample of shutter shall be got approved before taking work on full scale. Size of bottom, top & lock rail and ledges shall be as instructed by Engineer-in-charge.

**Joints :**

All jointing shall be brought on all faces and finished off by hand with sand paper with slightly rounded edges. The joints shall be pinned with hard wood pins and put together with fevicol. Joining shall be by means of mortise and tenon or dovetailed joints as approved. Any joinery work, which shall split, fracture, shrink or shows flap or other defects shall be removed and replaced with sound material at the contractor’s expenses.

**Fixtures and fastening :**

Oxidized iron, brass or aluminum fixtures as specified in item shall be provided in best workmanship, maintain level and line with approved quality and size screws. Screw shall be never hammered but driven with screwdriver. The fixture to be used shall be got approved first and approved samples of all fixtures shall be kept on site easily available for inspection.
1. **For main door.**

1. 300 mm long 16 mm dia aldrop 1 No.
2. 300 mm long flat latch. 1 No.
3. 100 mm long but hinges or 150 mm long or suitable parliamentary hinges. 3 Pairs.
4. 150 mm long tower bolts. 2 Nos.
5. 100 mm long handles (150 mm long). 2 Nos.
6. Door catchers 2 Nos.
7. Magic eye. 1 Nos.

2. **Internal door.**

1. 250 mm long 16 mm dia aldrop 1 No.
2. 250 mm long flat latch. 1 No.
3. 100 mm butt or 150 mm hinges or suitable parliamentary hinges. 3 Pairs.
4. 100 mm long tower bolts. 2 Nos.
5. 100 mm long handles 150 mm long. 2 Nos.
6. Door catchers 2 Nos.

For bath & door 16 mm dia 250 mm long aldrop and one handle on both sides shall be provided.

3. **Windows**

1. 75 mm long butt hinges or parliamentary hinges 2 to 3 pair as per size.
2. 100 mm tower bolts 4 Nos.
3. 100 mm handles. 2 Nos.
4. 150 mm hook eye or stopper of approved quality. 2 Nos.

4. **Ventilator.**

1. 75 mm butt hinges. 1 Pair
2. 100 mm tower bolts. 1 Nos.
3. 150 mm long hook eye. 2 Nos.

5. **Cup Board**

1. 75 mm long butt hinges 2 Pairs.
2. 100 mm handles 2 Nos.
3. 100 mm tower bolt. 2 Nos.
4. Pivot. 2 Nos.
5. Ball catcher. 1 No.

The Nos. of fixtures shown above is for general arrangement but in case some change is felt necessary on site it shall be made by Executive Engineer on site and shall be binding to the contractor.

**Glazing :**

For all glazing of doors, windows, ventilators and cup Boards all glasses shall be of best quality free from bubbles, smoke wanes, air hole, specks and other defect. Sheet glass, ground for clear as approved and instructed shall be of 3 mm thickness. The glasses shall be fixed with wire nails and putty of best quality or wooden bead of required size to flush with style or sash bar etc. The putty and the wooden battens should be finished with 3 coats of oil paints matching with other paint of doors, windows and ventilators. At the time of handing over the glazing work shall be intact. Any damage shall have to be replaced by the contractor without any extra cost.

**Erection :**

All doors, windows, ventilators, cupboards shall be erected in line, level and in one plane to the elevation shown in the drawing or directed by Engineer in charge at site.

**Painting :**

All doors, windows, ventilators, cup board shall be given 3 coats of approved quality, brand and shade of oil paint. Each coat of paint shall be allowed to dry thoroughly before next coat is applied. The work shall not show any brush marks, ridges or drops of paint and no puddles in the corner of panels or molding etc., shall be left.

**Measurement :**
For payment purpose of doors, windows, ventilators and cup board, measurement will be paid outside to outside of the frame in square meter basis.

**D. GRILL/FABRICATION/RAILING**

**General**

All workmanship and finish shall be of first class quality, in all respects and shall confirm to the best accepted standards of practice. Finish surface should not have any defect. The greatest accuracy shall be observed to see that all parts properly fit with each other on erection.

Before cutting & fabrication work is taken up, it is necessary, to see that if any twisting, bending etc. is there, the same is removed and made straight or in plane. The process to be adopted shall be such that original material is not injured.

Members shall be fabricated on site or in workshop, as approved, by Engineer in charge. Allowance for camber shall be made in case of truss etc. similarly in tension member and compression members. IS standards shall be followed. Based on design and/or detailed drawings, cutting schedule with no, of members shall be prepared and got approved from competent authority. Shearing machine or gas cutting may be adopted as approved.

All holes to be drilled shall be marked on members and drilled after proper checking. If necessary, a template shall be made for this. All holes shall be perpendicular to the face of the member and 1/6” larger than the nominal size of rivet or bolt. All holes shall be so drilled and reamed that more than 85% of continuous holes in any group in same plane shall not show any offset greater than 1/32” between adjacent thickness of metal. Burns, resulting from reaming or drilling, shall be removed with a tool making 1/16” bored.

All welding shall be done with electric arc method. Welding electrodes shall be heavily coated type designed for all position. The size, type and manufacturer of electrodes shall be subject to approval of Engineer. Electrodes and welding work shall be as per I. S. standards. All the cutting and needed surface shall be properly grinded with electric grinder. Fabricated members shall be joined either by welding or by rivets or nut & bolt arrangement as specified or shown on drawing or instructed. One assembled shall be got approved for alignment, riveting, welding etc. For bolted joints necessary washers shall be provided as shown in the drawing or as instructed on site.

Fabricated structure shall be given one shop coat of red oxide. Erection of the structure shall be done by approved method. Care shall be taken during erection so that no accident occurs. All the workers shall be provided with safety belts, helmets etc, during working.

Care shall be taken to see that no damage is done to the members during transportation of fabricated/assembled structure. Contractor shall provide necessary derricks, gantry, scaffolding and staging, inflammable etc. for erection work, No. gas cutting shall be allowed for the widening of holes when it is not matching. It shall be drilled.

After erection of structure one more coat of red oxide and 2 coats of approved oil painting should be provided to the structure. Paint to be applied shall be got approved for brand, quality, tint etc.

If desired test shall have to be carried out for welded joints. IS 816 shall be followed for general construction in mild steel. Bolts shall be confirm to IS 1363 & IS 1364. Electrodes shall confirm to IS 814.
(E5) GENERAL TECHNICAL SPECIFICATIONS FOR BUILDING WORKS:

GENERAL:
1. In the specifications " as directed "/"approved" shall be taken to mean " as directed "/"approved by the Engineer-in-Charge.
2. Wherever a reference to any Indian Standard appears in the specifications, it shall be taken to mean as a reference to the latest edition of the same in force on the date of agreement.
3. In " Mode of Measurement" in the specifications wherever a dispute arises in the absence of specific mention of a particular point of aspect, the provisions on these particular points, or aspects in the relevant Indian Standards shall be referred to.
4. All measurements and computations, unless otherwise specified, shall be carried out nearest to the following limits:
   (i) Length, width and depth ( height) 0.01 meter
   (ii) Areas 0.01 Sq.Mt.
   (iii) Cubic Contents 0.01 Cu.Mt.
   In recording dimensions of work, the sequence of length, width and height ( depth ) or thickness shall be followed.
5. "The distance which constitutes lead shall be determined along the shortest practical route and note necessarily the route actually taken. The decision of the Engineer-in-charge in this regard shall be taken as final.
6. Where no lead is specific, it shall mean " all leads ".
7. Lift shall be measured from plinth level.
8. Up to " floor two level" means actual height of floor ( Maxi. 4 .M ) up to 3 Mt. above plinth level.
9. Definite particulars covered in the items of work, though not mentioned or elucidated in it specifications shall be deemed to be included therein.
10. Reference to specifications of materials as made in the detailed specification of the items of works is in the form of a designation containing the number of the specification of the material and prefix "M" e.g. 'M-5'.
11. Approval to the samples of various materials given by the Engineer-in-charge shall not absolve the contractor from the responsibility of replacing defective material brought on site or materials used in the work found defective at a later date. The contractor shall have no claim to any payment or compensation whatsoever on account of any such materials being rejected by the Engineer-in-charge.
12. The contract rate of the item of work shall be for the work completed in all aspects.
13. No collection of materials shall be made before it is got approved from the Engineer-in-charge.
14. Collection of approved materials shall be done at site of work in a systematic manner. Materials shall be stored in such a manner as to prevent damage, deterioration or intrusion of foreign matter and to ensure the preservation of their quality and fitness for the work.
15. Materials, if and when rejected by the Engineer-in-charge, shall be immediately removed from the site of work.
16. No materials shall be stored prior to, during and after execution of a structure in such a way as to cause or lead to damage or overloading of the various components of the structure.
17. All works shall be carried-out in a workmanlike manner as per the best techniques for the particular item.
18. All tools, templates, machinery and equipment for correct execution of the work as well as for checking lines, levels, alignment of the works during execution shall kept in sufficient numbers and in good working condition on the site of the work.
19. The mode, procedure and manner of execution shall be such that it does not cause damage or over-loading of the various components of the structure during execution or after completion of the structure.
20. Special modes of construction not adopted in general Engineering practice if proposed to be adopted by the Contractor, shall be considered only if the contractor provides satisfactory evidence that such special mode of construction is safe, sound and helps in speedy construction and completion of work to the required strength and quality. Acceptance of the same by the Engineer-in-Charge shall not, however absolve the contractor of the responsibility of any adverse effects and consequences of adopting the same in the course of execution of completion of the work. 21. All installations pertaining to water supply and fixtures there of as well as drainage lines and sanitary fittings shall be deemed to be completed only after giving satisfactory tests by the contractor 22. The contractor shall be responsible for observing the rules and regulations imposed under the "Minor Minerals Act", and such other laws and rules prescribed by Government form to time. 23. All necessary safety measures and precautions (including those laid down in the various relevant Indian Standards ) shall be taken to ensure to ensure the safety of men materials and machinery on the works as also of the work itself.  

24. The testing charges of all materials shall be borne by the Contractor 25. Approval to any of the executed items for the work does not in any relieve the contractor of his responsibility for the correctness, soundness and strength of the structure as per the drawings and specifications

(E6) SPECIFICATIONS OF MATERIALS:

M-1. 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 bad 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 handling of water shall be clean. Water shall conform to the standard specified in I.S.456-1978.

1.2 If required by the Engineer-in-Charge it shall be tested by comparison with distilled water. Comparison 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 per cent in strength, of mortar prepared with water sample when compared with the results 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 . It shall be free of elements which significantly affect the hydration reaction or otherwise interfere with the hardening of mortar or concrete during curing or those which produce objectionable stains or other unsightly deposits on concrete or mortar surfaces

1.4 Hard and bitter water shall not be used for curing.

1.5 Potable water will generally found suitable for curing mortar or concrete.

M-2 Lime
2.1 Lime shall be hydraulic lime as per I.S. 712-1973 Necessary tests shall be carried out as per IS .6932 ( Parts I to X) 1973

2.2 The following field tests for Times are to be carried out:
(1) A very rough idea can be formed about the type of lime by its visual examination i.e. fat lime bears pure white colour, lime in form of porous lumps of dirty white colour indicates quick lime, and solid lumps are the unburnt limestone.

(2) Acid tests for determining the carbonate content in lime Excessive amount of impurities and rough determination of class of lime.

2.3 Storage shall comply with I.S. 712-1973. The slaked lime, if stored, shall be kept in a weatherproof and damp-proof shed with impervious floor and sides to protect it against rain, moisture, weather and extraneous materials mixing with it: All lime that has been damaged in any way shall be rejected and all rejected materials shall be removed from site of work.
2.4 Field testing shall be done according to I.S. 1624-1974 to show the acceptability of materials.

**M-3 Cement**
3.1 Cement shall be ordinary Portland slag cement as per I.S.269-1976 or Portland slag cement as per I.S. 455-1976

**M-4 White Cement**
4.1 The white cement shall conform to I.S 8042-E-1978.

**M-5 Coloured Cement**
5.1 Coloured cement shall be with white of grey Portland cement as specified in the item of the work.
5.2 The pigments used for coloured cement shall be of approved quality and shall not exceed 10% of cement used in the mix. The mixture of pigment and cement shall be properly ground to have a uniform colour and shade. The pigments shall have such properties as to provide for durability under exposure to sunlight and weather.
5.3 The pigment shall have the property such that it is neither affected by the cement nor detrimental to it.

**M-6 Sand**
6.1 Sand shall be natural sand, clean, well graded, hard strong, durable and gritty particles free from injurious amounts of dust, clay kankar nodules, soft or flaky particles shale, alkali salts organic matter, loam, mica or other deleterious substances and shall be got approved from the Engineer-in-Charge. The sand shall not contain more than 8 percent of silt as determined by field test. If necessary the sand shall be washed to make it clean.
6.2 Coarse Sand: The fineness modulus of coarse sand shall not be less than 2.5 and shall not exceed 3.0. The sieve analysis of coarse shall be as under:

<table>
<thead>
<tr>
<th>I.S Designation</th>
<th>Sieve Passing sieve</th>
<th>Percentage by weight Designation</th>
<th>I.S. Sieve percentage weight passing sieve</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.75mm</td>
<td>100</td>
<td>600 Micron</td>
<td>30-100</td>
</tr>
<tr>
<td>2.36mm</td>
<td>90 to 100</td>
<td>300 Micron</td>
<td>5-70</td>
</tr>
<tr>
<td>1.18mm</td>
<td>70-100</td>
<td>150 Micron</td>
<td>0-50</td>
</tr>
</tbody>
</table>

6.3. Fine Sand:
The fineness modulus shall not exceed 1.0. The sieve analysis of fine sand shall be as under:

<table>
<thead>
<tr>
<th>I.S Designation</th>
<th>Sieve Passing sieve</th>
<th>Percentage by weight Designation</th>
<th>I.S. Sieve percentage by weight passing sieve</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.75mm</td>
<td>100</td>
<td>600 Micron</td>
<td>40-85</td>
</tr>
<tr>
<td>2.36mm</td>
<td>100</td>
<td>300 Micron</td>
<td>5-50</td>
</tr>
<tr>
<td>1.18mm</td>
<td>75-100</td>
<td>150 Micron</td>
<td>0-10</td>
</tr>
</tbody>
</table>
M-7 Stone Dust
7.1. This shall be obtained from crushing hard black trap or equivalent. It shall not contain more than 8% of silt as determined by field test with measuring cylinder. The method of determining silt contents by fields test is given as under
7.2. A sample of stone dust to be tested shall be placed without drying in 200 mm. measuring cylinder. The quantity of the sample shall be such that it fills the cylinder up to 100mm. Mark. The clean water shall be added up to 150 mm. mark. The mixture shall be stirred vigorously and the content allowed to settle for 3 hours.
7.3. The height of silt visible as settled layer above the stone dust shall be expressed as percentage of the height of the stone dust below. The stone dust containing more than 8% silt shall be washed so as to bring the content within the allowable limit. The fineness nodules of stone dust shall not be less than 1,80.

M-8. Stone Grit
8.1. Grit shall consist of crushed or broken stone and be hard, strong, dense, durable, clean of proper gradation and free from skin or coating likely to prevent proper adhesion of mortar. Grit shall generally be cubical in shape and as far as possible flakey elongated pieces shall be avoided. It shall generally comply with the provisions of I.S. 383-1970. Unless special stone of particular quarries is mentioned grit shall be obtained from the best black trap or equivalent hard stone as approved by the Engineer-in-Charge. The grit shall have no deleterious with cement.
8.2. The grit shall conform to the following gradation as per sieve analysis:

<table>
<thead>
<tr>
<th>I.S Designation</th>
<th>Sieve Passing sieve</th>
<th>Percentage by weight Designation</th>
<th>I.S. Sieve percentage by weight passing sieve</th>
</tr>
</thead>
<tbody>
<tr>
<td>1250mm</td>
<td>100 %</td>
<td>4.75mm</td>
<td>0-20 %</td>
</tr>
<tr>
<td>10.00mm</td>
<td>85-100 %</td>
<td>2.36mm</td>
<td>0-25%</td>
</tr>
</tbody>
</table>

8.3. The crushing strength of grit will be such as to allow the concrete in which it used to build-up the specified strength of concrete
8.4. The necessary tests for grit shall be carried out as per the requirements of I.S.2386- (parts-I of VIII) 1963, as per instructions of the Engineer-in-Charge. The necessity of test will be decided by the Engineer-in-Charge.

M-10. Lime Mortar
10.1. Lime : Lime shall conform to specification M-2 Water : Water shall conform to specification M-1 Sand: Sand shall conform to specification M-6
10.2. Proportion of Mix :
10.2.1. mortar shall consist of such proportions of slaked lime and sand as may be specified in item. The slaked lime and sand shall be measured by volume.
10.3 Preparation of mortar :
10.3.1. Lime mortar shall be prepared by wet process as per I.S.1625-1971. Power driven mill shall e used for preparation of lime mortar. The slaked lime shall be placed in the mill in an even layer and ground for 180 revolutions with a sufficient water. Water shall be added as required during grinding (care being taken not to add more water) that will bring the mixed material to a consistency of stiff paste. Thoroughly wetted sand shall then be added evenly and the mixture ground for another 180 revolutions.
10.4. Storage :
10.4.1. Mortar shall always be kept damp, protected from sun and rain till used up, covering it by tarpaulin or open sheds.
10.5 Use :
10.5.1. All mortar shall be used as soon as possible after grinding. It should be used on the day on which it prepared, But in no case mortar made earlier than 36 hours shall be permitted for use.

**M-11 Cement Mortar**
11.1 Water shall conform to specification M-1 Cement : Cement shall conform to specifications M-3 Sand : Sand shall conform to M-6

**11.2 Proportion of Mix**
11.2.1. Cement and sand shall be mixed to specified proportion, sand being measured by measuring boxes, the proportion of cement will be by volume on the basis of 50 Kg/Bag of cement being equal to 0.0342 Cu.m. The mortar may be hand mixed of machine mixed as directed.

**11.3 Proportion of Mortar :**
11.3.1. In hand mixed mortar, cement and sand in the specified proportions shall be thoroughly mixed dry on a clean impervious platform by turning over at least 3 times or more till a homogeneous mixture of uniform colour is obtained. Mixing platform shall be so arranged, that no deleterious extraneous material shall get mixed with mortar or mortar shall flow out. While mixing, the water shall be gradually added and thoroughly mixed to from a stiff plastic mass of uniform colour so that each particle of sand shall be completely covered with a film of wet cement. The water cement ratio shall be adopted as directed.

The mortar so prepared shall be used within 30 minutes of adding water. Only such quantity of mortar shall be prepared as can be used within 30 minutes.

**M-12 Stone Coarse Aggregate For Nominal Mix Concrete**
12.1 Coarse aggregate shall be of machine crushed stone of black trap or equivalent and be hard, strong, dense, durable, clean and free from skin and coating likely to prevent proper adhesion of mortar.

12.2 The aggregate shall generally be cubical in shape. Unless special stones of particular quarries are mentioned aggregates shall be machine crushed from the best black trap or equivalent hard stone as approved. Aggregate shall Have no deleterious reaction with cement. The size of the coarse aggregate for plain cement and ordinary reinforced cement concrete shall generally be as per the table given below. However, in case of reinforced cement concrete the maximum limit may be restricted to 6 mm less than the minimum lateral clear distance between bars or 6 mm. less than the cover whichever is smaller.

**TABLE**

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<tr>
<th>IS. Sieve</th>
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<td>Sized aggregates of Nominal size 40mm 20mm 16mm</td>
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<tr>
<td>16mm</td>
<td>85-100</td>
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**Note**: This percentage may be varied some what by the Engineer-in-Charge when considered necessary for obtaining better density and strength of concrete.

12.3. The grading test shall be taken in the beginning and at the change of source of materials. The necessary tests, indicated in IS. 383-1970 and 456-1978 shall have to be carried out to ensure the acceptability. The aggregates shall be stored separately and handled in such a manner as to prevent the mixing of different aggregates. If the aggregates are covered with dust, they shall be washed with water to make them clean.

**M-13 Black Trap or Equivalent Hard Stone Coarse**
13.1. Aggregate For Design Mix Concrete Coarse aggregate shall be of machine crushed stone of black trap or equivalent hard stone and be hard, strong, dense, durable, clean and free from skin and coating likely to prevent proper adhesion of mortar, 13.2. The aggregates shall generally be cubical in shape. Unless special stones of particular quarries are mentioned, aggregates shall be machine crushed from the best, black trap or equivalent hard stones as approved, Aggregate shall have no deleterious with cement.

13.3. The necessary tests indicated in IS. 383-1970 and IS.456-1978 shall have to be carried out to ensure the acceptability of the material. If aggregate is covered with dust it shall be washed with water to make it clean.

M-15 Brick
15.1 The brick shall be machine moulded and made from suitable fly ash, cement, lime, gypsum, etc. They shall be free from cracks and nodules of free lime. They shall have smooth rectangular faces with sharp corners and shall be of uniform colour. The bricks shall be moulded with the frog of 100mm x 40 mm and 10mm to 20mm deep on one of its flat sides. The bricks shall not break when thrown on the ground from a height of 600mm.
15.2 The size of the modular bricks shall be 190 x 90 x 90 mm.
15.3 The size of the conventional bricks shall be 225 x 110 x 75mm.
15.4. Only bricks of one standard size shall be used on one work. The following tolerance shall be permitted in the conventional size adopted in a particular work. Length +3.0mm, Width + 1.50mm, Height +1.50mm.
15.5 The crushing strength of the brick shall not be less than 35.0 Kg / Sq cm. The average water absorption shall not be less than 20 per cent by weight. Necessary test for crushing strength and water absorption shall be carried out as per IS 3495 : (Part I to Part IV) 1976.

M-16 Stone
16.1 The stone shall be of the specified variety such as Granite/Trap Stone/-Quartzite Or any other type of good hard stones. The stones shall be only from the approved quarry and shall be hard sound, durable and free from defects like cavities, cracks, sand holes, flaws injurious veins, patches of loose or soft materials etc., and weathered portions and other structural defects or imperfections tending to affect their soundness and strength. The stone with round surface shall not be used. The percentage of water absorption shall not be more than 5% of day weight. When tested in accordance with I.S. 1124-1974. The minimum crushing strength of stone shall be 200 Kg/Sq. Cm. unless otherwise, specified 16.2 The samples of the stone to be used shall be got approved before the work is started. 16.3 The Khanki facing stone shall be dressed by chisel as specified in the item for khanki facing in required shape and size. The face of the stone shall be so dressed that the bushing on the exposed face shall not project by more than 40 mm. from the general wall surface and on face to be plastered it shall not project by more than 19 mm. nor shall it have depressions more than 10 mm. from the average wall surface.

M-17 Laterite Stone
17.1 Laterite stone shall be obtained from the approved quarry. It shall be compacted in texture, sound, durable and free from soft patch. It shall have minimum crushing strength of 100Kg/Sq.Cm.in its-dry condition. It shall not absorb water more than 20% of its own weight, when immersed for 24 hours in water. After quarrying, the stone shall be allowed to weather for some time before using in work.
17.2 The stone shall be dressed into regular rectangular blocks so that all faces are free from waviness and unevenness, and the edges true and square.
17.3 Those types of stone in which white clay occurs should not be used. Special corner stones shall be provided where so directed.

M-21. Mild Steel Binding Wire
21.1. The mild steel wire shall be of 1.63 mm. or 1.22 mm. ( 16 to 18 gauge ) diameter and shall conform to I.S. 280-1972.
21.2. The use of black wire will be permitted for binding reinforcement bars. It shall be free from rust, oil paint, grease, loose mill scale or any other undesirable coating which may prevent adhesion of cement mortar.

M-22. Structural Steel
22.1. All structural Steel shall conform to I.S. 226-1985. The steel shall be free from the defects mentioned in I.S. 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. River bars shall conform to I.S. 1148-1973. When the steel is supplied by the Contractor test certificate of the manufacturers shall be obtained according to I.S. 226-1975 and other relevant Indian Standards.

M-26 Shuttering
26.1: The shuttering shall be either of wooden planking of 30 mm. minimum thickness with or without steel lining or of steel plates stiffened by steel angles. The shuttering shall be supported on battens and beams and props of vertical ballies properly cross braced together so as to make the centering rigid. In places of bulli props, brick pillar of adequate section built in mud mortar may be used.
26.2. The form work shall be sufficiently strong and shall have camber, so that it assumes correct shape after deposition of the concrete and shall be able to resist forces caused by vibration of live load of men working over it and other incidental loads associated with it. The shuttering shall have smooth and even surface and its joints shall permit leakage of cement grout.
26.3. If at any stage of work during or after placing concrete in the structure, the form work sags or bulges out beyond the required shape of the structure, the concrete shall be removed and work redone with fresh concrete and adequately rigid form work. The complete formwork shall be got inspected by and got approved from the Engineer-in-Charge, before the reinforcement bars are placed in position
26.4. The props shall consist to bullies having 100 mm. minimum diameter measured at mid length and 80mm. at thin end shall be placed as per design requirement. These shall rest squarely on wooden sole plates 40 mm. thick and minimum bearing area of 0-10 sq m. laid on sufficiently hard base.
26.5. Double wedges shall further be provided between the sole plate and the wooden props so as to facilitate tightening and easing of shuttering without jerking the concrete.
26.6. The timber used in shuttering shall not be so dry as to absorb water from concrete and swell or bulge nor so green or wet as to shrink after erection. The timber shall be properly sawn and planed on the sides and the surface coming in contact with concrete, Wooden form work with metal sheet lining or steel plates stiffened by steel angles shall be permitted,
26.7. As far as practicable, clamps shall be used to hold the forms together and use of nails and spikes avoided.
26.8. The surface of timber shuttering that would come in contact with concrete shall be well wetted and coated with soap solution before the concreting is done. Alternatively coat of raw linseed oil or oil of approved manufacture may be applied in place of soap solution. Incase of steel reinforcement either soap solution or raw linseed oil shall be applied after thoroughly cleaning the surface. Under no circumstances black or burnt oil shall be permitted.
26.9. The shuttering for beams and slabs shall have camber of 4 mm. per metre
26.10. (1in250)or as directed by the Engineer-in-Charge so as to offset the subsequent deflection. For cantilevers, the camber at free end shall be 1/50 of the projected length or as directed by the Engineer-in-Charge.

M-29 Teak wood
29.1 The teak wood shall be of good quality as required for the item to be executed. When the kind of wood is not specifically mentioned, good Indian teak wood as approved shall be used.
29.2 Teak wood shall generally be free from large, loose dead or cluster knots, flaws shakes, warps, twists, bends or any other defects, it shall generally be uniform in
substance and of straight fibres as far as possible. It shall be free from rot decay, harmful fungi and other defects of harmful nature which will affect the strength, durability or its usefulness for the purpose for which it is required. The colour shall be uniform as far as possible. Any effort like painting using any adhesive materials made to hide the defects shall render the pieces liable to rejection by the Engineer-in-Charge.

29.3 All scantlings, planks etc., shall be sawn in straight lines and planes in the direction of grains and of uniform thickness.

29.4 The tolerances in the dimensions shall be allowed at the rate of 1.5 mm. per face to be planed.

29.5. First class teak wood

29.5.1. First class teak wood shall have no individual hard and sound knots, more than 6 sq. cm. in size and the aggregate area of such knots shall not be more than 1% of area of piece. The timber shall be closed grained.

29.6. Second Class Teak Wood:

29.6.1. No individual hard and sound knots shall be more than 15 sq. cms. in size and aggregates area of such knots shall be not exceed 2% of the area of piece.

M-31. Aluminum doors, windows ventilators

31.1. Aluminum alloy used in the manufacture of extruded window sections shall conform to I.S. designation HEA-WP of I.S. 733-1975 and also to I.S. Designation WVG-WP of I.S. 1285-1975. The section shall be as specified in the drawing and design. The fabrication shall be done as directed.

31.2. The hinges shall be cast or extruded aluminum hinges of same type as in window but of larger size. The hinges shall normally be of 50 mm. projecting type. Non-projecting type of hinges may also be used if directed. The handles of door shall be of specified design. A suitable lock for the door operable either from outside or inside shall be provided. In double shutter door, the first closing shutter shall have concealed aluminum alloy bolt at top and bottom.

M-32. Rolling Shutters

32.1. The rolling shutters shall conform to I.S.6248-1979. Rolling shutters shall be supplied of specified type with accessories. The size of the rolling shutters shall be specified in the drawings. The shutters shall be specified in the drawings. The shutters shall be constructed with interlocking lath sections formed from cold rolled steel strips not less than 0.9 mm. thick and 80 mm. wide for shutters up to 3.5 m. width not less than 1.25 mm. thick and 80 mm. wide for shutters 3.5 m. in width and above, unless otherwise specified.

32.2. Guide channels shall be of mild steel deep channel section and of rolled pressed or built-up (fabricated ) joint less construction. The thickness of sheet used shall not be less than 3.15 mm.

32.3. Hood covers shall be made of M.S. Sheets not less than 0.90 mm. thick. For shutters having width 3.5 Meter and above, the thickness of M.S. sheet for the hood cover shall be not less than 1.25 mm.

32.4. The spring shall be of best quality and shall be manufactured from tested high tensile spring steel wire or strip of adequate strength to balance the shutters in all position.

The spring pipe shaft etc. shall be supported on strong M.S. or malleable C.I. brackets. The brackets shall be fixed on or under the lintel as specified with rawl plugs and screws bolts etc.

32.5. The rolling shutters shall be of self rolling up to 8 Sq. m. clear area without ball bearing and up to 12 Sq.m. clear area with ball bearing. If the rolling shutters are of larger, then gear operated type shutters shall be used.

32.6. The locking arrangement shall be provided at the bottom of shutter at both ends. The shutters shall be opened from outside.

32.7. The Shutters shall be completed with door suspension shafts, locking arrangements, pulling hooks, handles and other accessories.

M-33. Collapsible Steel Gate
33.1. The collapsible steel gate shall be in one or two leaves and size as per approved
drawings or as specified. The gate shall be fabricated from best quality mild steel
channels, flats, etc. Either steel pulleys or ball bearings shall be provided in every
double channel. Unless otherwise specified the particulars of collapsible gate shall be as
under:
(a) Pickets: These shall be of 20mm MS channels of heavy sections unless otherwise
shown on drawings. The distance centre to centre of pickets shall be 12 cms. with an
opening of 10 cms.
(b) Pivot MS flats shall be 20 mm x 6 mm.
(c) Top and bottom guides shall be from tee or flat iron of approved size.
(d) The fittings like stoppers, fixing hold fasts, locking cleats, brass handles and cast iron
rollers shall be of approved design and size.

M-37. Plywood
37.1. The plywood for general purpose shall conform I.S.303-17-1975
Plywood is made by cementing together than boards or sheets of wood into panels.
There are always an odd number of layers, 3,5,7,9, ply etc. The plies are placed so that
grain of each layer is at right angles to the grain in the adjacent layer.
37.2. The chief advantages of plywood over a single board of the same thickness is the
more uniform strength of the plywood, along the length and width of the plywood and
greater resistance to cracking and splitting with change in moisture content.
37.3. Usually synthetic resins are used of gluing, phenol resins are usually cured in a hot
press which compresses and simultaneously heats the plies between hot plates which
maintainatemperatureof90degree C to 140 degree C and a pressure of 11 to 14 Kg/Sq.
Cm. on the wood. The time of heating may be. anything from 2 to 60 minutes depending
upon thickness.
37.4. When water glue are used the wood absorbs so much water that the finished
plywood must be dried carefully. When synthetic resins are used as adhesive the
finished plywood must be exposed to an atmosphere of controlled humidity until the
proper amount of moisture has been absorbed.
37.5. According to I.S: 303-1975 the plywood for general purpose shall be of the grades
namely BWR, WWR and CWR, depending upon the adhesives used for bonding the
veneers, and it will be further classified into six types namely AA, AB, AC, BB, BC and
CC based on the quality of the two faces each face being of three kinds namely A, Band
C After pressing, the finished plywood should be reconditioned to a moisture content not
less than 8 percent and not more than 16 percent. Thickness of plywood Boards:

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M-38. Glass
38.1. All glass shall be of the best quality, free from specks, bubbles, smokes veins, air
holes, blisters, and other defects. The kind of glass to be used shall be as mentioned in
the item or specification or in the special provision or as shown in detailed drawings.
Thickness of glass panes shall be uniform. The specifications for different kinds of glass
shall be as under.
38.2. Sheet Glass
38.2.1. In absence of any specified thickness or weight in the item or detailed
specifications of the item of work, sheet glass shall be weighing 7.5 Kg/Sq. m. for panes
up to 600 mm. x 600 mm.
38.2.2. For panes larger than 600 mm. x 600 mm. and up to 800 mm. x 800 mm. the
glass weighing not less than 8.75 Kg/Sq. m. shall be used For bigger panes up to 900
mm. x 900 mm. glass weighing not less than 8.75 Kg/Sq. m. shall be used. For bigger panes up to 900 mm. x 900 mm. glass weighing not less than 11.25 Kg/Sq. m. shall be used.

38.2.3. Sheet glass shall be patent flattened glass of best quality and for glazing and framing purposes shall conform to I.S. : 1761-1960. Sheet glass of the specified colours shall be used, if so shown, on detailed drawings or so specified. For important buildings and for panes with any dimension over 900 mm. plate glass of specified thickness shall be used.

38.3. Plate Glass :
38.4. 38.3.1. When plate glass is specified it shall be "polished patent plate glass" of best quality. It shall have both the surface ground, flat and parallel and polished to obtain clear undisturbed vision and reflection. The plate glass shall be of the thickness mentioned in the item or as shown in the detailed drawing or as specified. In absence of any specified thickness, the thickness of plate glass to be supplied shall be 6 mm. and a tolerance of 0.20 mm. shall be admissible.

38.4. Obscured Glass :
38.4.1. This type of glass transmits light so that vision is partially or almost completely obscured. Glass shall be plain rolled, figured, ribbed or frosted glass as may be specified as required. The thickness and type of glass shall be as per details on drawings or as specified or as directed.

38.5. Wired Glass :
38.5.1. Glass shall be with wire netting embedded in a sheet of plate glass. Electrically welded 13 mm. Georgian square mesh shall be used. Thickness of glass shall not be less than 6 mm. Wired glass shall be of type and thickness as specified.

M-40. Particle board
40.1. The particle boards used for face panels shall of best quality free from any defects. The particle boards shall be made with phenol formaldehyde adhesive. The particle boards shall conform I.S.3087-1965. "Specification for wood particle board for general purpose". The size and the thickness shall be as indicated.

(1) M-43. Fixtures and fastenings
43.1. General :
43.1.1. The fixtures and fastenings, that is butt hinges, tee and strap hinges, sliding door bolts, tower bolts, door latch, bath-room latch, handles, door stoppers, casement window fasteners, casement stays, and ventilators catch shelf be made of the metal as specified in the item or its specification.
43.1.2. They shall be of iron, brass, aluminum chromium plated iron, chromium plated brass, copper oxidized iron, copper oxidized brass or anodized aluminum as specified.
43.1.3. The fixtures shall be heavy medium or light type. The fixtures and fastenings shall be smooth finished and shall be such as will ensure ease of operations.
43.1.4. The samples of fixtures and fastenings shall be got approved as regards, quality and shape before providing them in position
43.1.5. Brass and anodized aluminum fixtures and fastenings shall be bright finished.
43.2. Holdfasts :
43.2.1. Holdfasts shall be made from mild steel flat 30 cm. length and one of the holdfasts shall be bent at right angle and two nos. of 6 mm. diameter holes, salt be made in it for fixing it to the frame with screws. At the other end, the holdfast shall be forked and bent at right angles in opposite directions.
43.3. Butt hinges :
43.3.1. Railway standard heavy type butt hinges shall be used when so specified.
43.3.2. Tee and strap hinges shall be manufactured from M.S. Sheet
43.4. Siding door bolts ( Aldrops ) :
43.4.1. The aldrops as specified in the item shall be used and shall be got approved.
43.5. Tower bolts ( Barrel Type ) :
43.5.1. Tower bolts as specified in the item shall be used and shall be got approved.
43.6. Door Latch :
43.6.1. The size of door latch shall be taken as the length of latch.

43.7. Bathroom Latch :
43.7.1. Bathroom latch shall be similar to tower bolt.

43.8. Handle:
The size of the handles shall be determined by the inside grip length of the handles. Handles shall have a base plate of length 50 mm. more than the size of the handle.

43.9. Door Catch :
43.9.1. Door stoppers shall be either floor door stopper type or door catch type. Floor stopper shall be of overall size as specified and shall have a rubber cushion.

43.10. Door Stoppers :
43.10.1. Door catch shall be fixed at a height of about 900 mm. from the floor level such that one part of the catch is fitted on the inside of the shutter and the other part is fixed in the wall with necessary wooden plug arrangements for appropriate fixity. The catch shall be fixed 20 mm. inside the face of the door for easy operation of catch.

43.11. Wooden Door Stop with hinges :
43.11.1. Wooden door stop of size 100 mm. x 60 mm. x 40 mm. shall be fixed on the door frame with a hinges of 75 mm. size and at a height of 900 mm. from the floor level. The wooden door stop shall be provided with 3 coats of approved oil paint.

43.12. Casement Window Fastener :
43.12.1. Casement window fastener for single leaf window shutter shall be left or right handed as directed.

43.13. Casement stays (Straight Fed Stay):
43.13.1. The stays shall be made from a channel section having three holes at appropriate position so that the window can be opened either fully or partially as directed. Size of the stay shall be 250 mm. to 300 mm. as directed.

43.14. Ventilator Catch :
43.14.1. The pattern and shape of the catch shall be as approved.

43.15. Pivot:
43.15.1. The base and socket plate shall be made from minimum 3 mm. thick plate, and projected pivot shall not be less than 12 mm., diameter and 12 mm. length and shall be firmly riveted to the base plate in case of iron pivot and in single piece plate in the case of brass pivot.

M-44. Paints :
44.1. (A) Oil paints:
44.1.1. Oil paints shall be of the specified colour and as approved. The ready mixed paints shall only be used. However, if ready mixed paint of specified shade or tint is not available white ready mixed paint with approved strainer will be allowed. In such a case, the contractor shall ensure that the shade of the paint so allowed shall be uniform.

44.1.2. All the paints shall meet with the following general requirements
(i) Paint shall not show excessive setting in a freshly opened full can and shall easily be dispersed with a paddle to a smooth homogeneous state. The paint shall show no curdling, livering, caking or colour separation and shall be free from lumps and skins.
(ii) The paint as received shall brush easily, possess good levelling properties and show no running or sagging tendencies.
(iii) The paint shall not skin within 48 hours in a three quarters filled closed container.
(iv) The paint shall dry to a smooth uniform finish free from roughness, grit unevenness and other imperfections.

44.1.3. Ready mixed paint shall be used exactly as received from the manufacturers and generally according to their instructions and without any admixtures whatsoever.

44.2. (B) Enamel paints:
44.2.1. The enamel paint shall satisfy in general requirements in specification of oil paints, Enamel paint shall conform to I.S.2933-1975

M-46. Marble chips for marble mosaic terrazzo
46.1. The marble chips shall be of approved quality and shades. It shall be hard, sound, dense and homogeneous in texture with crystalline and coarse grains. It shall be uniform in colour and free from stains, cracks, decay and weathering.

46.2. The size of various colours of marble chips ranging from the smallest up to 20 mm shall be used where the thickness of top wearing layer is 6 mm. size. The marble chips of approved quality and colours only as per grading as decided by the Engineer-in-charge shall be used for marble mosaic tiles or works.

46.3. The marble chips shall be machine crushed. They shall be free from foreign matter, dust etc. except as above, the chips shall conform to I.S.2114-1962.

M-47. Flooring Tiles.

47.1. (A) Plain Cement tiles;

47.1.1. The plain cement tiles shall be of general purpose type. These are the tiles in the manufacture of which no pigments are used. Cement used in the manufacture of tiles shall be as per Indian Standards.

47.1.2. The tiles shall be manufactured from a mixture of cement and natural aggregates by pressure process. During manufacture the tiles shall be subjected to pressure of not less than 140 Kg/Sq.Cm. The proportion of cement to aggregate in the backing of the tiles shall be not less than 1:3 by weight. The wearing face, through the tiles are of plain cement, shall be provided with stone chips of 1 to 2 mm size. The proportions of cement to aggregate in the wearing layer of the tiles shall be three parts of cement to one part chips by weight. The minimum thickness of wearing layer shall be 3 mm. The colour and texture of wearing layer shall be uniform throughout its face and thickness. On removal from mould, the tiles shall be kept in moist condition continuously at least for seven days and subsequently, if necessary, for such long period as would ensure their conformity to requirements of I.S. 1237-1980 regarding strength resistance to wear and water absorption.

47.1.3. The wearing face of the tiles shall be plane, free from projections, depressions and cracks and shall be reasonably parallel to the back face of the tile. All angles shall be right angle and all edges shall be sharp and true.

47.1.4. The size of tiles generally be square shape 24.85 cm x 24.85 cm. or 25 cm x 25 cm. The thickness of tiles shall be 20 mm.

47.1.5. Tolerance of length and breadth shall be plus of minus one millimeter. Tolerance on thickness shall be plus 5 mm.

47.1.6. The tiles shall satisfy the tests as regards transverse strength; resistance to wear and water absorption as per I.S. 1237-1980.

47.2.(B) Plain Coloured Tiles:

47.2.1. The tiles shall have the same specification as for plain cement tiles as per (A) above except that they shall have a plain wearing surface wherein pigments are used. They shall conform to I.S.1237-1980.

47.2.2. The pigments used for colouring cement shall not exceed 10 percent by weight of cement used in the mix. The pigments, synthetic or otherwise, used for colouring tiles shall have permanent colour and shall not contain materials detrimental to concrete.

47.2.3. The colour of the tiles shall be specified in the item or as directed.

47.3. (C) Marble mosaic tiles:

47.3.1. These tiles have same specification as per plain cement tiles except the requirements as stated below:

47.3.2. The marble mosaic tiles shall conform to I.S. 1237-1980. The wearing face of the tiles shall be mechanically ground and filled. The wearing face of tiles shall be free from projections, depressions, and cracks and shall be reasonably parallel to the back face of the tiles. All angles shall be right angles and all edges shall be sharp and true.

47.3.3. Chips used in the tiles be from smallest unto 20 mm size. The minimum thickness of wearing layer of tiles shall be 6 mm. For pattern of chips to be used on the wearing face, a few samples with or without their full size photographs as directed shall be approved by the Engineer-in-Charge, for approval.
47.3.4. Any particular samples if found suitable shall be approved by the Engineer - in - Charge, or he may ask for a few more samples to be presented. The sample shall have to be Made by the contractor till a suitable sample is finally approved for use in the work. The Contractor shall ensure that the tiles supplied for the work shall be in conformity with the approved sample only, in terms of its dimensions, thickness of backing layer and wearing surface, materials, ingredients, colour, shade, chips, distribution etc. required.

47.3.5. The tiles shall be prepared from cement conforming to Indian Standards or Coloured Portland cement generally depending upon the colour of tiles to be used or as directed.

47.4. (D) Chequered Tiles:

47.4.1. Chequered tiles shall be plain cement tiles or marble mosaic tiles. The former shall have the same specification as per (A) above and the latter as per marble mosaic tiles as per (C) except as mentioned below.

47.4.2. The tiles shall be of nominal size of 250 mm. x 250 mm. or as specified. The centre to centre distance of chequer shall not be less than 25 mm. and not more than 50 mm. The overall thickness of the tile shall be 22 mm.

47.4.3. The grooves in the chequers shall be uniform and straight. The depth of the grooves shall not be less than 3 mm. The chequered tiles shall be plain coloured or mosaic as specified. The thickness of the upper layer measured from the top of the chequers shall not be less than 6 mm. The tiles shall be given the first grinding with machine before delivery to site.

47.4.4. Tiles shall conform or relevant I.S. 1237-1980.

47.5. (E) Chequered Tiles For Stair Cases:

47.5.1. The requirements of these tiles shall be the same as chequered tiles as per (D) above except in following respects:
(1) The length of a tile including note shall be 300 mm.
(2) The minimum thickness shall be 28 mm.
(3) The nosing shall have also the same wearing layer as at the top.
(4) The nosing edge shall be rounded.
(5) The front portion of the tile for a minimum length of 75 mm. from and including the nosing shall have grooves running parallel to nosing and at centers not exceeding 25 mm. Beyond that the tiles shall have normal chequer pattern.

M-49. Polished Kotah Stones

49.1. Polished Kotah stone shall have the same specification as per rough Kotah stone except as mentioned below:

49.2. The stones shall have machine polished surface. When brought on site, the stones shall be single polished or double polished depending upon its use. The stones for paving shall generally be single polished. The stones to be used for dado, skirting, sink, veneering, sills, steps, etc. where machine polishing after the stones are fixed in situ is not possible shall be double polished.

M-55. White glazed tiles

55.1. The tiles shall be of best quality as approved by the Engineer-in-Charge. They shall be flat and true to shape. They shall be free from cracks, crazing sports, chipped edges and corners. The glazing shall be of uniform shade.

55.2. The tiles shall be nominal size of 150 mm. x 150 mm. unless otherwise specified. The maximum variation the stated sizes, other than the thickness of tile shall be plus or minus 1.5 mm. The thickness of tile shall be 6 mm. Except as above the tiles shall conform to I.S. 1977-1970.

M-56. Galvanized iron pipes and fittings

56.1. Galvanized iron pipes shall be of the medium type and or required diameter and shall comply with I.S.1239-1979. The specified diameter of the pipes shall refer to the inside diameter of the bore. Clamps, screw and all galvanized iron fittings shall be of the standard ‘R’ or equivalent make.

M-57. Bib cock and stop cock
57.1 A bib cock is a draw off tap with a horizontal inlet and free outlet. A stop cock is a valve with a suitable means of connection for insertion in a pipe line for controlling or stopping the flow.

57.2. They shall be of screw down type and or brass chromium plated and of diameter as specified in the description of the item. They shall conform to I.S. 781-1977 and they shall be of best Indian make. They shall be polished bright.

57.3. The minimum finished weight of bib cock and stop cock shall be as given below:

<table>
<thead>
<tr>
<th>Diameter</th>
<th>Bib cock</th>
<th>Stop cock</th>
<th>Diameter</th>
<th>Bib cock</th>
<th>Stop cock</th>
</tr>
</thead>
<tbody>
<tr>
<td>8mm</td>
<td>0.25kg</td>
<td>0.25 kg</td>
<td>15mm</td>
<td>0.40kg</td>
<td>0.40 kg</td>
</tr>
<tr>
<td>10mm</td>
<td>0.30 kg</td>
<td>0.35 kg</td>
<td>20mm</td>
<td>0.75kg</td>
<td>0.75 kg</td>
</tr>
</tbody>
</table>

**M-58. Gun metal wheel valve**

58.1. The gun metal wheel valve shall be of approved quality. These shall be of gun metal fitted with wheel and shall be of gate valve opening full way and of the size as specified. These shall conform to I.S.778-1971.

**M-59. White glazed porcelain wash basin**

59.1. Wash basin shall be of white porcelain first quality best Indian make and it shall conform to I.S.2556.(Part-IV ) -1972 and I.S.771-1979. The size of the wash basin shall be as specified in the item. Wash basin shall be of one piece construction with continued over flow arrangements. All internal angles shall be designed so as to facilitate cleaning. Wash basin shall have single tap hole or two holes as specified. Each basin shall have a circular waste hole which is either rebated or beveled internally with 65mm. diameter at top and 10 mm. depth to suit the waste fitting. The necessary stud slot to receive the bracket on the underside of the basin shall be provided Basin shall have an internal soap holder recess which shall fully drain into the bowl.-

59.2. White glazed pedestal of inequality and color as that to the basin shall be provided where specified in the item. It shall be completely recessed at the back for reception of supply and wash pipe. It shall be capable of supporting the basin rigidly and adequately and shall be so designed as to make the height from the floor to top of the rim of basin 750 mm. to 800 mm. as directed.

**M-60. European type water closet / with low level flushing.**

60.1 The European type water closet shall be white / coloured glazed porcelain first quality and shall be of wash down type conforming to IS 2556 – 1973 and IS 771 – 1979. Each pan shall have integral flushing. It shall also have an inlet at black an or front for connecting flush pipes as directed, The inside of the bottom or the pan shall have sufficient slope from the front towards the outlet and surface shall be uniform and smooth. Pan shall be provided with 100 mm. diameter 'P' or 's' trap with approximately 50 mm. Water seal and 50 mm. diameter vent horn.

**M-61. Orissa type water closet**

61.1 The specification of Orissa type white / coloured glazed water closet of first quality shall conform to IS 256 (Part III) 1981 and relevant specification of Indian type water closet except that pan will be with the integral squatting pan of size 580 mm x 440 mm with raised footrest.

**M-62. Indian type water closet**

62.1. The Indian type white glazed water closet of first quality shall be of size as specified in the item and conforming to I.S. : 771-1979 and I.S. :2556- (Part -II) 1981. Each pan shall have integral flushing. It shall also have an inlet at black an or front for connecting flush pipes as directed, The inside of the bottom or the pan shall have sufficient slope from the front towards the outlet and surface shall be uniform and smooth. Pan shall be provided with 100 mm. diameter 'P' or 's' trap with approximately 50 mm. Water seal and 50 mm. diameter vent horn.

**M-62. A. Foot Rests**

62.A. 1. A pair of whit glazed earthen ware rectangular foot to minimum size 250 mm. x 130 mm. x 20 mm. shall be provided with the water closet.
M-64. Glazed earthen-ware Lipped type flat back urinal/corner type urinal
64.1. The lipped type urinal shall be flat back or corner type as specified in the item and shall conform to I.S.771-1979. It shall be of best Indian make and, size as specified and approved by the Engineer-in-Charge. The flat back of corner type urinal must be of 1st quality free from any defects, cracks etc.

67.1. Half turn flush cock (Heavy weight) shall be of gun metal chromium plated of diameter as specified in the description of the item. The flush cock shall conform to relevant Indian Standard.

M-68. Cast iron pipes and fittings.
68.1. All soil, water, vent and anti-siphonage pipes and fitting shall conform to I.S.1729-1964. The pipes shall have spigot and socket ends with head on spigot end. The pipes and fitting shall be true to shape, smooth, cylindrical, their inner and outer surfaces being as nearly as practicable concentric. They shall be sound and nicely cast and shall be free from cracks, laps, pinholes or the imperfection and shall be neatly dressed and carefully fettled.
68.2. The end of pipes and fittings shall be reasonable square to their axis.
68.3. The sand of cast iron pipes shall be of the diameter as specified in the description and shall be in lengths of 1.5 M., 1.8 M. including socket ends of the pipe unless shorter lengths are either specified or required at junctions etc. The pipes and fittings shall be supplied without ears unless specified or directed otherwise.

68.4. Tolerances:
68.4.1. The Standard weights and thickness of pipes shall be as shown in the following table. A tolerance up to minus 10 per cent may however be allowed against these standard weights.

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Nominal dia. of bore</th>
<th>Thickness</th>
<th>Overall 1.5 m. long</th>
<th>Weight of pipe 1.8 m. long excluding ears 2.m. long</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>75mm</td>
<td>5mm</td>
<td>12.38kg</td>
<td>16.52kg</td>
</tr>
<tr>
<td>2</td>
<td>100mm</td>
<td>5mm</td>
<td>18.14kg</td>
<td>21.67kg</td>
</tr>
</tbody>
</table>

68.4.2. A tolerance up to minus 15 percent in thickness and 20 mm. length will be allowed. For fittings tolerance in lengths shall be plus 25 mm. and minus 10 mm.
68.4.3. The thickness of fittings and their socket and spigot dimensions shall conform to the thickness and dimensions specified for the corresponding sizes of straight pipes. The tolerance in weights and thickness shall be the same as for straight pipes.

M-69. Nahni Trap
69.1. Nahni trap shall be of cast iron and shall be sound and free from porosity or other defects which affect serviceability. The thickness of the base metal shall not be less than 6.5mm. The surfaces shall be smooth and free from craze, chips and other flaws or any other kind of defects which affect serviceability. The size of Nahni trap shall be specified and shall be of self cleaning design.
69.2. The Nahni trap shall be of quality approved by the Engineer-in-Charge and shall generally conform to the relevant Indian Standards.
69.3. The Nahni trap provide shall be with deep seal, minimum 50 mm. except at places where trap with deep seal cannot be accommodated. The cover shall be cast iron perforated cover shall be provided on the trap of appropriate size.

M-70. Gully Trap
70.1. Gully trap shall conform to I.S.651-1980. If shall be sound, free from defects such as fire cracks or hair. cracks. The glaze of the traps shall be free from crazing. They shall give a sharp clear note when struck with light hammer. There shall be no broken blisters.
70.2. The size of the gully trap shall be as specified in the item.
70.3. Each gully trap shall have one C.I. grating of square size corresponding to the dimensions, of inlet of gully trap. It will also have a water tight C.I. cover with frame inside dimensions 300mm.x300mm. the cover with frame inside dimensions 300 mm. x 300 mm. the cover and weighing not less than 4.53 Kg. and the frame not less than 2.72 Kg. The grating cover and frame shall be of sound and good casting and shall have truly square machined seating faces.

M 71. Glazed Stone Ware pipe And Fittings

71.1. The pipes and fittings shall be of best quality as approved by the Engineer – in - Charge.  The pipe shall be of best quality manufactured from stone-ware of fire clay, salt glazed thoroughly burnt through the whole thickness, of a close even texture, free from air blows, fire blisters, cracks and other imperfections, which affect the serviceability. The inner and outer surfaces shall be smooth and perfectly glazed. The pipe shall be capable to withstand pressures or 1.5 M. lead without showing sign of leakage. The thickness of the wall shall not be less than 1/12th of the internal dia. The depth of socket shall not be less than 38 mm. The socket shall be sufficiently large to allow a joint of 6 mm. around the pipe.
The pipes shall generally conform to relevant I.S.651-1980.

M-78 Barbed Wire

78.1: The barbed wire shall be of galvanized steel and it shall generally conform to I.S.278-1978. The barbed wire shall be of type-l whose nominal diameter for line wire shall be 2.5 mm. and point wire 2.24 mm. The nominal distance between two barbs shall be 75 mm. unless otherwise specified in the item. The barbed wire shall be formed by twisting together two line wires. One containing the barbs. The size of the line and point wires and barb spacing shall be as specified above. The permissible deviation from the nominal diameter of the line wire and point wire shall not exceed + 0.08 mm.

78.2. The barbs shall carry four points and shall be formed by twisting two point wires, each two turns, lightly round one line wire, making altogether four complete turns. The barbs shall have a length of not less than 13 mm. and not more than 18 mm. The point shall be sharp and cut at an angle not greater than 35 degree of the axis of the wire forming the barbs.

78.3. The line and point wires shall be circular in section, free from scale and other defects and shall be uniformly galvanized. The line wire shall be in continuous length and shall not contain any welds other than those in the rod before it is drawn. The distance between two successive splices shall not be less than 15 metres.

78.4. The lengths per 100 Kg. of barbed wire I.S. type I shall be as under: Nominal 1000 metre Minimum 934 Metre Maximum 1066 Metre
(E7) : DETAIL SPECIFICATION FOR WORK ITEMS:

Excavation for foundation in trenches in ordinary, dense, hard soil, sand, clay, soft murrum up to 1.50 Mt. depth including strutting, shoring wherever necessary and throwing away the extra stuff within the lead of 50 Mt. radius and its dressing etc. complete as directed by E. I. C.

1.0. General
1.1. Any soil which generally require close application of picks or jumpers or scarifiers to loosen it, stiff clay, gravel and stone, etc. or organic soil, gravel silt, sand, turf, loam, clay, peat, etc. fall under this category.

2.0. Clearing the site
2.1. The site on which the structure is to be built shall be cleared, and all obstructions, loose stone, materials, and rubbish of all kinds, bush wood and trees shall be removal as directed. The materials so obtained shall be property of the Government and shall be conveyed and stacked as directed within 50 m. lead. The roots of the trees coming in the sides shall be cut and coated with a hot asphalt.
2.2. The rate of side clearance is deemed to be included in the rate of earth work for which no extra will be paid.

3.0. Setting out
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.

4.0. Excavation
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 leveled both longitudinally and transversal as directed by removing and watering as required. No earth filling will be allowed for bring 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 1.5 m depth shall be measured under this item.

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 leveling 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 measurements & payment
6.1. The measurement of excavation in trenches for foundation shall be made according to the sections of trenches shown on the drawing or as per sections given by the Engineer-in-Charge. No payment shall be made for surplus excavation made in excess of above requirements or due to stopping and sloping back as found necessary on account of conditions of soil and requirements of safety.
6.2. The rate shall be for a unit of one cubic meter.

Excavation for foundation in trenches in ordinary, dense, hard soil, sand, clay, soft murrum up to 1.50 Mt. to 3.0 Mt. depth including strutting, shoring wherever necessary and throwing away the extra stuff with in the lead of 50 Mt. radius and its dressing etc. complete as directed by E. I. C.
1.0  Workmanship
1.1  The relevant specification of item no. 1 shall be followed except that the excavation work shall be carried out with 1.5Mt to 3.0Mt lift in ordinary soil, sand, clay, soft murrum.

2.0.  Mode of measurements & payment
2.1  The relevant specification of item no. 1 shall be followed.
2.2  The excavation work from 1.5Mt to 3.0Mt shall be measured under this item.
2.3.  The rate shall be for a unit of one cubic meter.

Excavation for foundation in trenches in ordinary, dense, hard soil, sand, clay, soft murrum up to 3.00 Mt. to 5.0 mt. depth including strutting, shoring wherever necessary and throwing away the extra stuff with in the lead of 50 Mt. radius and its dressing etc. complete as directed by E. I. C.

1.0  Workmanship
1.1  The relevant specification of item no. 1 shall be followed except that the excavation work shall be carried out with 3.0Mt to 5.0Mt lift in ordinary soil, sand, clay, soft murrum.

2.0.  Mode of measurements & payment
2.1  The relevant specification of item no. 1 shall be followed.
2.2  The excavation work from 3.0Mt to 5.0Mt shall be measured under this item.
2.3.  The rate shall be for a unit of one cubic meter.

Filling available excavated earth (Excluding rock) in trenches, plinth sides of foundation etc. in layers not exceeding 20 CM in depth, consolidating each deposited layers by ramming and watering.

1.0  Workmanship
1.1  The earth to be used for filling shall be free from salts, organic or other foreign matter. All clots of earth shall be broken.
1.2  As soon as the work in foundation has been completed and measured the site of foundation shall cleared of all debris, brick bats, mortar dropping etc., and filled with earth in layers not exceeding 20 cms. Each layer shall 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 butt ends of crow bars, where rammer cannot be used.
1.3  The plinth shall be similarly filled with earth in layers not exceeding 20 cms. 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 of 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 in the plinth.

2.0  Mode of Measurements & Payment
2.1  The payment shall be made for filling the plinth and trenches. No deduction shall be made for shrinkage and voids, if consolidated as instructed above.
2.2  The rate shall be for a unit of one cubic meter.

Filling in foundation and plinth with murrum or selected soil in layers of 20 CM thickness including watering, ramming and consolidation etc. complete (Yellow earth should be brought by contractor from out side) Note: 25 % of the successive bill amount shall be retained till lapse of one full scale monsoon and rectifications of subsistence if any to the design ground level)
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 materials and natural mixture of clay of calcareous origin. The size of murrum shall not be more than 20mm.

2.0 Workmanship
The relevant specifications of item No. 4 shall be followed except that murrum or selected soil shall be filled in foundation and plinth in 20 cms. Layers including consolidating, ramming, watering, dressing, etc. complete.

3.0. Mode of Measurements & Payment
3.1. The relevant specifications of item No. 4 shall be followed.
3.2. The rate includes cost of collecting, carting murrum/or selected earth of approved quality with all lead and labour required for filling the same in trenches and plinth under floors.
3.3. The rate shall be for a unit of one cubic meter.

Filling in plinth with sand under floors including watering, ramming consolidating and dressing etc. complete.

1.0. Materials
1.1. Sand shall conform to M6.

2.0 Workmanship
The relevant specifications of item No. 4 shall be followed except that sand shall be filled in under floors, including watering, ramming, consolidating and dressing etc. complete.

3.0. Mode of Measurements & Payment
3.1. The relevant specifications of item No. 4 shall be followed.
3.2. The rate includes cost of collecting, carting sand with all lead and labour for filling the same in plinth under floors.
3.3. The rate shall be for a unit of one cubic meter.

Providing and applying anti termite treatment, as per IS 6313 (part II & Part III 2001) for building works in pre construction & Post construction stages, using chemicals conforming to relevant IS in water emulsion and effective when applied uniformly over the area to treated. The chemical to be used is chloro-pyriphos 20 % EC or its equivalent. The treatment is to be carried out as per the procedure mentioned below and treated plinth surface area is to be taken for measurement.

a) For pre-construction treatment: For plinth filling and periphery holes inside plinth to be drilled and 300mm centre to centre each having depth 1.5 mtr and for inside plinth the holes are to be treated with diluted chemical solution 1.5 ltr. Per hole in the ratio of 1:20 per periphery, i.e. outside plinth the ditch is to be treated with diluted solution 2.25 ltr. per Rmt. in the ratio 1:20. The entire surface area is to be treated with diluted solution of dose 2.25 ltr. per smt over and above as a plinth surface treatment.

Specification for the item shall be as per item description and relevant IS code.

“**For Anti-termite Treatment:**
The contractor shall submit performance guarantee of the anti-termite treatment item at the rate of 20% of cost of item of work order in the form of FDR of Schedule Bank/Nationalised Bank in favour of GETCO (A/c Agency) for a period of 5 years from actual date of completion of work on non-judicial stamp paper of appropriate value in approved format of GETCO. In the event of unsatisfactory performance of anti-termite treatment work, the agency shall carry out necessary remedial/rectification works that may be necessary in the opinion of GETCO at no
extra cost, failing which FDR shall be encashed by GETCO. The FDR shall be released only after satisfactory completion of performance period of 5 years.”

Measurement will be paid in square meter basis.

Brick work using common fly ash / concrete blocks building bricks having crushing strength not less than 35 kg. / sq. cm. in foundation and plinth in cement mortar 1:6 (1 -Cement : 6 - Fine sand)

1.0. Materials

2.0 Workmanship
2.1. Proportion : The proportion of the cement mortar shall be 1:6 (1 Cement : 6 fine sand) by volume.
2.2. Wetting of bricks : The bricks required for masonry shall be thoroughly wetted with clean water for about two hours before use or as directed. The cessation of bubbles, when the bricks are wetted with water is an indication of thorough wetting of bricks.
2.3.1 Laying : Bricks shall be laid in English bond unless directed otherwise. Half or cut bricks shall not be used except when necessary to complete to bond, closers in such case shall be cut to the required size and used near the ends of walls.
2.3.2 A layer of mortar shall be spread on full width for suitable length of the lower course. Each brick shall first be properly bedded and set home by gently tapping with the handle of trowel or wooden mallet. Its side face shall be flushed with mortar before the next brick is laid and pressed against it. On completion of course, the vertical joint shall be fully filled from the top with mortar.
2.3.3 The wall shall be taken up truly in plumb. All courses shall be laid truly horizontal and all vertical joints shall be truly vertical. Vertical joints in alternate course shall generally be directly one over the other. The thickness of the brick course shall be kept uniform.
2.3.4 The bricks shall be laid with frog upwards. A set of tools comprising of wooden straight edges, mason’s spirit level, square half meter rub, and pins, string and plumb shall be kept on the site of the work for frequent checking during the progress of work.
2.3.5 Both the faces of the walls of thickness greater than 23 cms. shall be kept in proper place. All the connected brickwork shall be kept not more than one meter over the rest of the work. Where this is not possible the work shall be raked back according to bond (and not left toothed) at an angle not steeper than 45 degrees.
2.3.6 All fixtures, pipes, outlets of water, holdfasts of doors and windows, etc. which are required to be built in wall shall be embedded in the cement mortar.

2.4 Joints
2.4.1 Bricks shall be so laid that all joints are quite flush with mortar. Thickness of the joint shall not exceed 12mm. The face joints shall be raked out as directed by raking tool daily during the progress of work, when the mortar is still green so as to provide key for plaster or pointing to be done.
2.4.2 The face of the brick shall be cleaned the very day on which the brick work is laid and all mortar dropping removed.

2.5 Curing
2.5.1 Green work shall be protected from the rain suitable. Masonry work shall be kept moist on all the faces for a period of seven days. The top of the masonry work shall be kept well wetted at the close of the day.

2.6 Preparation of the foundation bed
2.6.1 If the foundation is to be laid directly on the excavated bed, the bed shall be leveled, cleaned of all the loose materials, cleaned and wetted before starting masonry.
If masonry is to be laid on concrete footing, the top of the concrete shall be cleaned and moistened. The contractor shall obtain the engineer’s approval for the foundation bed, before foundation masonry is started. When pucca flooring is to be provided flush with the top to plinth, the inside plinth offset shall be kept lower than the outside plinth top by the thickness of the flooring.

3.0 Mode of measurement
3.1 The measurements of this item shall be taken for the brick masonry fully completed in foundation up to plinth. The limiting dimensions not exceeding those shown on the plans or as directed shall be final. Battered, tapered and curved portion shall be measured net.
3.2 No deduction shall be made from the quantity of brick work, nor any extra payment made for embedding in masonry or making holes in respect of following items.
   (1) End of joints, beams, posts, girders, rafters, purlins, trusses, corbel, steps, etc. where cross section area does not exceed 500 sq cm.
   (2) Opening not exceeding 1000 sq cm.
   (3) Wall plates and bed plates, bearing of slabs, and the like whose thickness does not exceed 10 cm and the bearing does not extended to the full thickness of the wall.
   (4) Drainage holes and recesses for cement concrete blocks to embed hold fasts for doors, windows, etc.
   (5) Iron fixtures, pipes up to 300mm dia, hold fasts and doors and windows built into masonry and pipes, etc. for concealed wiring.
   (6) Forming chases of section not exceeding 350 sq. cm. in masonry.
3.3 Apertures for fire places shall not be deducted nor shall extra labour required to make splaying of jambs, throttling and making arches over the apertures be paid for separately.
3.4 The rate shall be for a unit of one cubic meter.

Brick work using common fly ash building bricks having crushing strength not less 35 kg. / sq. cm. for super structure above plinth level up to floor two level (i.e. 4.0 m above plinth level and parapet above the same) in cement mortar 1:6 (1 - Cement : 6 - Fine sand)

The specification of item no. 8 shall be applicable to this item but for brick masonry for super structure above plinth level up to floor two level i.e. 4.0m above plinth level and parapet above the same.

The rate shall for a unit of one cubic metre.

Half brick masonry in fly ash / concrete blocks 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 6 mm mild steel round bars after every three courses embedded in cement mortar above plinth level up to floor two level.

1.0 Materials

2.0 Workmanship
2.1 Relevant specification of bricks, wetting and laying of bricks, joints, curing, scaffolding etc. shall conform to Item no. except the following:
2.2 Cement mortar used in masonry work shall be in proportion of one part of cement and three parts of sand by volume and shall conform to M-11, and this work is for half brick thickness for partition walls.
2.3 The hoop iron i.e. two nos. of 6mm dia MS round bars shall be provided at every third course. The ends of reinforcement shall be full embedded in main walls on both sides as directed. Reinforcement shall be placed on top of the bottom-most course. Laps shall be of 15 cms. of mild steel bars of hoop iron.
2.4 The joints in the course where reinforcement is placed shall admit of mortar cover to the reinforcement.

3.0 Mode of measurements and payment
3.1 The rate shall be for half brick masonry work including providing specified reinforcement, the limiting dimension not exceeding those in plan or as directed. The length shall be measured nearest to one cm.
3.2 Any work done extra over specified dimensions shall be ignored.
3.3 The rate shall be for a unit of one sq. meter.

Providing & laying M-15 grade of concrete with minimum cement content 240 kg/M³ and keeping maximum free water cement ratio as 0.60, for plain structure foundation using 12 mm to 20 mm size black trap machine crushed metal including necessary centering for all sides as required, mixing the concrete in mixer machine, ramming with vibrator, including keeping pockets for foundation bolts & finishing the exposed honey combed surface if any, curing, etc., complete as per drawing & specification, and as directed by E. I. C. (Finishing by Plaster & Reinforcement if any will be paid separately)

M-15 grade of concrete using machine cut black trap of size 12 to 20mm shall be laid using minimum cement content of 240 Kg / Cmt. and free water cement ratio of 0.60. Sample of ingredients to be used shall be got approved.
The general specification of concrete shall be applicable for this item. Rate quoted shall be of all materials, labour, tools, tackles, shuttering, scaffolding, curing, etc. as per item. Concreting work, involved in this item, is for the foundation work for various equipments and machinery.
Payment shall be made on actual cu. M. of concrete work done as per detailed drawing furnished by department.
The pockets to be grouted shall be properly cleaned. Dust and other foreign materials shall be removed. If required, it shall be cleaned by Air blower. If surface is not rough, roughening shall be done, if necessary and instructed by Engineer – in – Charge for bonding purpose. Existing surface shall be applied with thick paste of cement mortar. No separate payment will be admissible for this.
Payment shall be made for actual quantity of concrete work done for grouting.

Providing & Laying controlled cement concrete M-200 curing complete excluding the cost of form work and reinforcement for reinforced concrete work in
a) Foundation, footings, Bases of columns etc. and Mass concrete,
b) Slabs, Landings, shelves, Balconies, Lintels, Beams, Girders and cantilever up to floor two level,
c) Columns pillars posts and struts up to floor two level.

1.0 Materials
Grit shall conform to M-8. Graded stone aggregate 20mm nominal size shall conform to M-12.

2.0 General
2.1 The concrete mix shall be designed by 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 grade of M-200 with prefix controlled added to it. The
letter ‘M’ refers to mix and numbers specify 28 days works cube compressive strength of 150mm cubes of the mix expressed in Kg/ Cm$^2$

2.2 The proportion of cement, sand and coarse aggregates shall be determined by weight. The weigh batching 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:

<table>
<thead>
<tr>
<th>Grade of concrete</th>
<th>Compressive strength of 15 cms. cubes in Kg / Cm$^2$ at 28 days, conducted in accordance with IS 516 – 1959. Preliminary test (min)</th>
<th>Work test (min)</th>
</tr>
</thead>
<tbody>
<tr>
<td>M-150</td>
<td>200</td>
<td>150</td>
</tr>
<tr>
<td>M-200</td>
<td>260</td>
<td>200</td>
</tr>
<tr>
<td>M-250</td>
<td>320</td>
<td>250</td>
</tr>
<tr>
<td>M-300</td>
<td>380</td>
<td>300</td>
</tr>
<tr>
<td>M-350</td>
<td>440</td>
<td>350</td>
</tr>
<tr>
<td>M-400</td>
<td>500</td>
<td>400</td>
</tr>
</tbody>
</table>

In all cases, the 28 days compressive strength specified in above table 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 all purposes as concrete belonging to the lower of the two grades between which its strength lies.

2.3 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 admixture.

3.0 Workmanship

3.1 The proportions for ingredients chosen shall be such that concrete has adequate workability for conditions prevailing on the work in question and can be properly compacted with means available except where it can be shown to the satisfaction of the Engineer – in – Charge, that the supply of properly graded aggregate of uniform quality can be maintained till the completion of work. Grading of aggregate shall be controlled by obtaining the coarse aggregates, in different sizes and being in them in the right proportions as required. Aggregate of different sizes shall be stocked in separate stock piles. The required quantity of material shall be stock 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 the 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 weighed separately to check the net weight. Where the cement is weighed from bulk stocks at site and not by bags, it shall be weighed separately from the aggregates. Water shall either be measured by volume in calibrated tanks or weighed. All measuring equipments 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 determination of moisture content in the aggregates, IS 2389 (Part III) shall be referred to. Suitable adjustments shall also be made in the weights of coarse aggregates due to variation in the moisture content. Minimum quantity of cement to be used in concrete shall not be less than 320 Kg / Cmt.
3.4 Mixing
3.4.1 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 half a 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 two minutes after all ingredients have been put into the mixer.
3.4.2 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.

3.5 Consistency
3.5.1 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 IS 1199 – 1959. The slump of 10 mm to 25 mm shall be adopted when vibrators are used and 80 mm when vibrators are not used.

3.6 Inspection
3.6.1 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. 3.6.2 Centering 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 ensuring proper cover, mortar blocks of suitable size shall be cast and tied to the reinforcement. Timber, kapachi or metal pieces shall not be used for this purpose.

3.7 Transporting and laying
3.7.1 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, snow or ice immediately before placing of concrete. No concrete shall be placed in any part of the structure until the approval of Engineer – in – Charge has been obtained.
3.7.2 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.
3.7.3 Unless otherwise agreed to by the Engineer – in – Charge, concrete shall not be dropped into place from a height exceeding 2 metres. When trucking or chutes are 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 13mm thick layer of mortar composed of cement and sand in same ratio as in the concrete mix itself. This 13 mm
layer of mortar shall be freshly mixed and placed immediately before placing of new concrete. When 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 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.

3.7.4 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 can not 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 ever surface. Compaction shall be completed before the initial setting starts i.e. within 30 minutes of addition of water 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.

3.8 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. Masonary 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.

3.9 Sampling and testing of concrete

3.9.1 Samples from fresh concrete shall be taken as per IS 1199 – 1959 and cubes shall be made, cured and tested at 7 days or 28 days as per requirements in accordance with IS 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:

<table>
<thead>
<tr>
<th>Quantity of concrete in the work</th>
<th>No. of samples</th>
<th>Quantity of concrete in the work</th>
<th>No. of samples</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 – 5 Cmt.</td>
<td>1</td>
<td>31 - 50 Cmt.</td>
<td>4</td>
</tr>
<tr>
<td>6 – 15 Cmt.</td>
<td>2</td>
<td>51 and above</td>
<td>4 + one additional for each additional 50 m. or part thereof.</td>
</tr>
<tr>
<td>16 – 30 Cmt.</td>
<td>3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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 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.

3.9.2 The average strength of the group of cubes cast for each day shall not be less than the specified cube strength of 150 Kg / Cm² 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, does 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.

4.0 Stripping

4.0.1 The Engineer – in – Charge shall be informed in advance by the contractor of his intention to 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 of 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 for respective item of form work.

4.0.2 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. Centering shall be gradually and uniformly lowered in such a manner as to permit the concrete to take stress 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 form work, 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.

4.0.3 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 line caused by form joint, 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 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 filling 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 and extent or character as to effect 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 effected.

4.1 Mode of measurement and payment

4.1.1 Controlled concrete RCC form work as specified shall be measured under this item. The rate excluded the cost of form work.

4.1.2 The consolidated cubical contents of concrete work as specified in item shall be measured. The concrete laid in excess of sections shown on drawings or as directed shall not be measured. No deduction shall be made for –

(a) Ends of dis-similar materials such as joists, 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.

4.1.3 The rate includes cost of all materials, labour, tools, and plant required for mixing, placing in position, vibrating and compacting, finishing as directed, curing and all other incidental expenses for producing concrete of specified strength.

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

Providing and laying Thermo Mechanically Treated (TMT bars) steel reinforcement conforming to grade Fe 415 IS : 1786 for RCC work including cutting, bending, hooking and binding the reinforcement with approved quality of binging wire etc., completed as per design
All reinforcement TMT bar specified in item shall confirm to relevant IS standard 1786 for thermo mechanical Tested bars. Wherever tested brands to be used, certificate for the same from manufacture shall be submitted. If it is instructed by Executive Engineer, contractor shall have to arrange for testing of bars at the laboratory or institution, suggested by GETCO at his cost.

If the bars are to be supplied by GETCO at specified rate, in schedule “A” the same shall be collected and carted to the site of use.

Bars shall be bent as per bar bending schedule supplied with drawing. If bar bending schedule is not supplied contractor shall prepare it and get it approved at the site before cutting for fabrication. Bars shall be clean, free from rust, dust, mud etc. If coils are there, they shall be first straightened. Bars shall be cut according to the cutting length specified/approved by department. Bars shall be bent gradually. Bars having crack or spits shall be rejected. Bars shall be bent cold, unless otherwise specified in case of higher diameter bars. If bar is bend wrongly, it should be straightened and recent such that it do not injure the materials.

Laps and splices shall be got approved. They shall be staggered and shall be at location shown/approved. Lapping shall be avoided when full length bars are available. All laps, hooks, bends etc. shall be provided as per IS standards. Reinforcement bars shall be place in position as per drawing or details given. It shall be tied with annealed black wire/G.I. wire of 18 gauge. Blocks, spacers, chairs etc., shall be provided as per IS. 2502 at places instructed.

Bars shall be provided with clear cover as shown in drawing or as instructed on site. Cover shall be provided with cement mortar cover block prepared of specified thickness with binding wire embedded to fix cover in position and tie with the reinforcement so that it may not get disturbed. Minimum clear cover shall be less than 13 mm or diameter of bars for slabs. For beam and columns depending on size it shall be 20mm to 25mm. Cover shall be provided depending on structure, weather condition, location of structure etc., as per ISI.

After the reinforcement is tied and checked by contractor himself it shall be got checked by GETCO’s authorized representative and okayed for pouring of concrete. Quantity of reinforcement bars in M.T. embedded in concrete shall be paid. Weight shall be computed on cutting length approved or given multiplied by standard weight of particular diameter of bars as per IS standards. Work shall to be carried out at all levels. “Rate quoted shall inclusive of wastages, cost of binding wire etc., No separate payment will be made for binding wire. However laps, dowels etc., shall be paid as per drawing or as approved in site.

For the purpose of payment, the bar shall be measured correct up to 100 mm length and weight payable worked out at the rate specified below:

<table>
<thead>
<tr>
<th>Diameter (mm)</th>
<th>Weight (Kg) per Rmt.</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>0.22</td>
</tr>
<tr>
<td>8</td>
<td>0.39</td>
</tr>
<tr>
<td>10</td>
<td>0.62</td>
</tr>
<tr>
<td>12</td>
<td>0.89</td>
</tr>
<tr>
<td>14</td>
<td>1.21</td>
</tr>
<tr>
<td>16</td>
<td>1.58</td>
</tr>
<tr>
<td>18</td>
<td>3.00</td>
</tr>
<tr>
<td>20</td>
<td>2.47</td>
</tr>
<tr>
<td>22</td>
<td>2.98</td>
</tr>
<tr>
<td>25</td>
<td>3.85</td>
</tr>
<tr>
<td>28</td>
<td>4.83</td>
</tr>
<tr>
<td>32</td>
<td>6.31</td>
</tr>
<tr>
<td>36</td>
<td>7.99</td>
</tr>
<tr>
<td>40</td>
<td>9.86</td>
</tr>
</tbody>
</table>

Providing 15 mm. thick cement plaster in single coat in C. M. (1:3) on fair side brick / concrete wall for interior plastering of floor two level including finishing the surfaces with smooth cement finishing, necessary drip moulding, scaffolding, curing with three coats of the white wash or colour wash as directed by E. I. C.
1.0 Materials
1.1 Water M-1. The cement mortar of proportion 1:3 shall conform to M-13.

2.0 Workmanship
2.1 Scaffolding: Wooden ballies, 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 roughened by wire brushing if it is not hard and by racking if it is hard. In case of concrete surface, if a chemical retardant has been applied to the hard and by racking if it is hard. In case of concrete surface, if a chemical retardant 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 retardant is left on the surface. Trimming of projections on brick / concrete surface 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 plastering operation shall be started from top floor and carried downwards. For internal plaster, the plastering operations may be started wherever the building frame and cladding work are ready and the temporary supporting ceiling resting on the wall of the floor have been removed. Ceiling plaster shall be completed before starting plaster to walls.

2.3 Applications of plaster:
2.3.1 The plaster about 15 x 15 cms. shall be first applied horizontally and vertically at not more than 2 metre 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 movement at a time. Finally, the surface shall be finished off true with a trowel or wooden float according as a smooth or a sandy granular texture is required. Excessive trowelling or overworking the float according as a smooth or a sandy granular texture is required. Excessive trowelling or overworking the float shall be avoided. All corners, arises, angles and junctions 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 the size required.
2.3.2 Cement plaster shall be used within half an hour after addition of water. Any 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 15cms to any corners or arises. Horizontal joints in plaster work 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. Moistenung 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 matting or gunny bags on the outside of the plaster and keeping them wet.
3.0 Mode of measurement & 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 meters unless, otherwise specified. Length, breadth or height shall be measured correct to a centimeter.
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 10mm 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. Flowing soffits shall be measured separately.
3.7 For jambs, soffits, sills, etc. for openings not exceeding 0.5 Sq. Mt. each in area for ends of joists, beams, posts, girders, 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 manner:
   (a) No deduction 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, sills etc. of these opening 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 reveals, jambs, soffits, sills etc. of these openings.
      (i) When both 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 with of reveals on both faces of all equal, deductions of 50 % of area of opening on each face shall be made from area of plaster and / or pointing as the case may be.
3.8 For opening having door frames equal to 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 opening but jambs, soffits & sills shall be measured.
3.10 The rate shall be for unit of one sq.mtr.

Providing 20 mm thick smooth cement plaster finished in two coats, first base coat of 12 mm thick in C. M. (1:3) and second coat of 8 mm thick in C. M. (1:2) including providing drip moulding, making grooves in plaster, curing, scaffolding etc., completed as directed by E. I. C.

1.0 Materials
1.1 Water shall conform to M-1. Cement mortar shall conform to M-11.

2.0 Workmanship
2.1 The work shall be carried out in the coats. The backing coat (base coat) shall be 12 mm. thick in C.M.
2.1.3 The relevant specifications of item No. 14 shall be followed except that the thickness of back coat shall be 12 mm. average. Before the first coat hardens its surface shall be beaten up by edges of wooden tappers and close dents shall be made on the surface. The subsequent coat shall be applied after this coat has been allowed to set for 3 to 5 days, depending upon the weather conditions. The surface shall not be allowed to dry during this period.
2.2. The second coat shall be completed to 8 mm. thickness in C.M. 1:1 as described above, including raising sand facing by bushing. The sample of sand face shall be got approved before the work is started. The whole work shall be carried out uniformly as per sample approved.

2.3. Curing:
The curing shall be started overnight after finishing of plaster. The plaster shall be kept wet for a period of 7 days. During this period, it shall be protected from all damages.

3.0. Mode of measurement & payment
3.1. The relevant specifications of item No. 17.58 shall be followed except that the sand face plaster on outside up to 10 m. above ground level shall be measured under this item.
3.2. The rate shall be for a unit of One sq. metre.

Providing 20 mm thick SAND FACED CEMENT PLASTER on wall up to height 10 mtrs. above ground level finished in two coats, 1st base coat of 12 mm thick in C. M. (1:3) and 2nd coat of 8 mm. thick in C. M. (1:1) including making grooves in plaster curing, scaffolding etc., complete as directed by E. I. C. with three coats of water proofing cement paint on wall surface, including watering as directed by E. I. C.

1.0. Materials

2.0. Workmanship
2.1. The work shall be carried out in the coats. The backing coat (base coat) shall be 12 mm. thick in C.M. 1:3. The relevant specifications of item No. 14 shall be followed except that the thickness of back coat shall be 12 mm. average. Before the first coat hardens its surface shall be beaten up by edges of wooden tappers and close dents shall be made on the surface. The subsequent coat shall be applied after this coat has been allowed to set for 3 to 5 days, depending upon the weather conditions. The surface shall not be allowed to dry during this period.
2.2. The second coat shall be completed to 8 mm. thickness in C.M. 1:1 as described above, including raising sand facing by bushing. The sample of sand face shall be got approved before the work is started. The whole work shall be carried out uniformly as per sample approved.
2.3. Curing:
The curing shall be started overnight after finishing of plaster. The plaster shall be kept wet for a period of 7 days. During this period, it shall be protected from all damages.

3.0. Mode of measurement & payment
3.1. The relevant specifications of item No. 17.58 shall be followed except that the sand face plaster on outside up to 10 m. above ground level shall be measured under this item.
3.2. The rate shall be for a unit of One sq. metre.

Providing 100 mm quarter round water proofing cement vatah in C. M. (1:1) at junction of walls & slab in parapets, weather sheds, cantilevers including finishing the top with smooth cement finishing using water proofing compound, curing scaffolding etc., complete as directed by E. I. C.

1.0. Materials

2.0. Workmanship
2.1. The work of cement vata of 10 cms. x 10 cms. size shall be earned out at junctions of parapets and terraces as directed. The vata shall be finished in quarter round shape. The work shall be earned out in the best workman like manner. The inner portion of rain
water pipe shall be rounded off properly during constructing the vata. The work shall be cured for 7 days.

3.0. Mode of measurements and payment
3.1. The work shall be measured for finished item in running metre.
3.2. The rate shall be for a One running metre.

Providing & applying 3 coats of oil bound distemper and with one coat of primer of approved shade & make including scaffolding touching with putty, smoothening the surfaces etc., completed as directed by E. I. C.

1.0. Materials
1.1. Oil bound washable distemper and primer shall be of approved brand and manufacture. The distemper shall be of required colour and shade and the same shall conform to I.S. : 428- 1969.

2.0. Workmanship
2.1. Scaffolding
Where scaffolding is required, it shall be erected in such a way that as far as possible no part of scaffolding shall rest against the surface to be distempered. A properly secured and well tied suspended platform (Joola) may be used for distempering. Where ladders are used, pieces of old gunny bags” shall be tied at top and bottom to prevent scratches to the walls and floors. For distempering to ceiling, proper stage scaffolding shall be erected where necessary.

2.2. Preparation of surface :
2.2.1. The undecorated surface to be distempered shall be thoroughly brushed from dust, dirt, grease, mortar dropping and other foreign matter and sand papered smooth. New plaster surface shall be allowed to dry for at least 2 months before applications of distemper.
2.2.2. All unnecessary nails shall be removed. Pitting in plaster shall be made good with plaster again with a fine grade sand paper and made smooth. A coat of distemper shall be applied over the patches. The surface shall be allowed to dry thoroughly before the regular coat of distemper is allowed. The surface affected by moulds, moss, fungi, algae lichens, efflorescence etc. shall be treated in accordance with I.S; 2395 (Part01) 1966. Before applying distempering, any unevenness shall be made good by applying putty made of plaster of pairs mixed with water on entire surface including filling up the undulation and then sand papering the same after it is dry.

2.3. Priming coat :
2.3.1. A priming coat of distemper primer of approved manufacture and shade shall be applied over the papered surface in case of new work on undecorated surface. If the distemper priming is done after the wall completely, the distemper primer shall be applied.
2.3.2. Application of primer shall be done as under : The primer shall be applied with a brush on the clean dry and smooth surface. Horizontal strokes shall be given first and vertical strokes shall be applied immediately afterwards. This entire operation will constitute on coat. The surface shall be finished as uniformly as possible leaving no brush marks. It shall be allowed to dry for at least 48 hours before oil bound distemper or paint is applied.
2.3.3. Oil bound distemper is not recommended to be applied within six months of the completion of wall plaster.

2.4. Preparation of oil bound distemper :
2.4.1. The distemper shall be diluted with water or any other prescribed thinner in a manner recommended by the manufacturer only. Sufficient quantity of distemper required for a days work shall be prepared.

2.5. Application of Distemper coat :
2.5.1. For undecorated surfaces, after the primer coat is dried for at least 48 hours, the surface shall be lightly sand papered to make it smooth for receiving the distemper, taking care not to rub but priming coat. All loose particles shall be dusted of after
rubbing. Minimum tow coats of distemper shall be applied with brushes in horizontal strokes followed immediately by vertical strokes which together shall constitute one coat. The subsequent coats shall be applied after a time interval of at least 24 hours between consecutive coats to permit proper drying of the proceeding coat. The finished surface shall be even and inform without patches, brush marks, distemper drops etc.

2.5.2. Sufficient quantity of distemper shall be mixed to finish one room at a time. The application of a coat in each room shall be finished in one operation and no work shall be striated in any room which cannot be completed on the same day.

2.5.3. 15 cm. double bristled distemper brush shall be used. After day's work brushes shall be thoroughly washed in hot water with soap solution and hung down to dry. Old brushes which are dirty and caked with distemper shall not be used on the work.

2.6. Protective measurements: The surfaces of doors, windows, floors, articles of furniture etc. and such other parts of the buildings as are not to be distempered shall be protected from being splashed upon. Such surface's shall be cleaned of distemper splashes if any.

3.0. Mode of measurements and payment
3.1. Priming coat of distemper primer, scraping of surface spoiled by trunk soots, removal of oil and grease spots, treatment for infraction of effloresces., mould, moss, fungi, algae and lichen and patch repairs to plaster shall be included in this item for which nothing extra shall be paid.

3.2. All the work shall be measured net in the decimal system as in place subject to the following limits unless otherwise stated hereinafter:
(a) Dimensions shall be measured to the nearest 0.01 m.
(b) Area in individual items shall be worked out to the nearest 0.01 sq. m. All work shall be made for ends of joints, beams, posts etc., and openings, not exceeding 0.5 sq.m.t. each and no addition shall be made for reveals, jambs, soffits, sills etc. of these openings not for finish around ends of joints, beams, posts etc.

3.3. Deductions of opening exceeding 0.5 sq.m. but not exceeding 3 sq. m. each shall be made as follows and net addition shall be made for reveals, jambs, soffits etc. of these openings
(a) When both the faces of wall are provided, with same finish, deductions shall be made for one face only.
(b) When each face of wall is provided with different finish, deduction shall be made for that side of frame for doors, windows etc. on which width of reveals is less than that of the other side but no deduction shall be made on the other side. Where the width of reveals on the both the faces of wall are equal, deduction of 50% of area of opening on each face shall be made from area of finish.
(c) When only one face of wall is treated and the other face is not treated, full deductions shall be made if the width of the reveal on treated side is less than that on untreated side but if the width of the reveal is equal or more than that on untreated side neither deductions nor additions to be made for reveals, jambs, soffits, sills etc.

3.4. In case of opening of area exceeding 3 sq. m. each deduction shall be made for openings but jambs, sills and soffits shall be measured.

3.5. No deductions shall be made for attachments such as casings, conduits, pipes, electric wiring and the like.

3.6. Item includes removing nails, making good holes, patches with materials similar in composition of distemper.

3.7. The rate includes cost of all materials, labours, scaffolding, protective measures etc. involved in all the operations described above. This shall also include conveyance, delivery, handing, unloading, storing work etc. The rate shall be for a unit of one sq. metre.

Providing & applying 3 coats of ACID / ALKALI resisting paint of approved shade & make to wall, ceiling including filling putty smoothing the surfaces scaffolding etc., complete as directed by E. I. C.
Acid/Alkali resisting painting of approved brand and tint be got approved before, collecting. Surface shall be cleaned as described in item of distempering. One coat of primer shall be applied to the surface, after same is made even with putty application. Primer shall be of same manufacture and suitable for Acid. Alkali resisting paint. Acid & Alkali resisting paint shall be applied in 2 to 3 coats as per item, with either brush or with spray painting. Uniform painting on surface shall be done & got approved. manufacturers instructions regarding use of paint be followed.

Providing & applying 2 coats of APEX or its equivalent ACRYLIC EXTERIOR paint on exiting plastered surface or approved makes & shade including finishing & thinning as per manufacturer’s instruction. A gap of 6 hrs. should be given between 2 subsequent coats. The work should be carried out strictly as per manufacturer's specifications and requirement etc., complete as directed by E. I. C.

Specification of item no. 7 shall be followed for preparing of surface to receive the painting work. Surface shall be applied with smoothing coat of paint, putty, before application of paint. Surface of shall be applied first coat of APOCOLITE APEX or its equiv. ACRYLIC EXTERIOR paint after putty has dried and surface is smoothes by applying fine sand paper. Second coat of paint shall be after first coat had dried. Surface shall be rolled with 3 layer to get uniformity. Sample of painting work shall be first prepared and got approved before taking further work. Manufacturers instructions shall be followed while applying the paint.

Providing & fixing steel rolling shutter 18 Gauge of approved make & made 30 mm wide M. S. Laths interlock together through their entire length and jointed together at the end by end locks mounted on specially designed pipe shaft with bracket plates guide channel and arrangement for inside and outside locking with push pull operation complete including the cost of hood cover and spring etc., complete with both sides one coat of red oxide and three coats of oil cover painting of approved colour & tint with drum & cover in perfect working condition etc., complete as directed. (THE MEASUREMENT SHALL BE PAID FOR WALL OPENING PLUS DRUM ONLY)

Rolling shutter shall be of interlocking scroll rolled from 18 gauge, steel metal. The scrolls are to be held in place by markable iron locks, which are riveted to alternate latches, wind lock on slots shall be included. The bottom bar shall be of two angles back to back. Steel guide shall be of angle-framed, screwed to the metal frame at opening. The hood shall of 18 gauge-selected steel suitably reinforced to prevent sag. The guaranteed deflection of shaft and hood shall be stated in the tender. This shall be set on inside of wall; above high point of opening, as shown on drawing. Rolling shutter shall be manually operated and for big shutter, if chain pulley arrangement of electrically operated is specified; the same shall be designed and installed by contractor. The rolling shutter shall be applied one coat of red oxide as shop coat and 2 coats of aluminum paint after erection. Contractor shall give satisfactory operation of shutter trial and has to maintain the shutter during guarantee period.

Pull & push operations shall be constructed with curve slab from steel metal of 18 gauge with dimension 65mm between centers inter lock and bridge depth of 16mm. These curve slab shall slide into one another, fitted with alternatively inter lock. They shall coil at the head of the opening with the weight of shutter at all positions, tempered steel. Shutter when coiled up, shall be housed in a box of 18 gauge steel metal. They shall be opened from outside and locking arrangement shall be provided at the bottom of the shutter on both ends.
The rate quoted shall be inclusive of complete supply of shutter with hood, drives etc., scaffolding, fixing in position, painting, labour, tools, equipments, pull & push arrangements.
Measurement shall be taken for clear area plus drum area provided on top and paid as per unit rate quoted for item.

Providing and fixing aluminium anodised sliding windows having standard section using extruded section fabricated by standard. Manufacturers with 15/20 Microns silver colour anodising as per drawing windows shall be of 4 mm thick. Triveni 'HB4' plain glass glazing rubber gasket and necessary hardware, handles cum locking arrangement etc. complete unit shall be fabricated from aluminum section conforming to HE9WP designated to IS - 1285 / 1980 for its chemical and mechanical properties. Anodised shall be conforming to IS - 1868 / 1968. All joints shall be mechanically joint having secured with specially design M. S. Zink plated heat arrangement. The frame section shall be 61.85 mm. X 31.75 mm. weighing 0.695 Kg per mtr. Minimum of section no 8687 Jindal Aluminium Ltd. make or its equivalent and section for shutter shall be of 50 mm X 20 mm size weighing 0.571 Kg per mtr. minimum of section no. 8305 of Jindal Aluminium Ltd. make or its equivalent. No welding process shall be allowed in the unit.

The aluminum section to be utilized shall confirm to IS 1285/1980 and IS 1869/1968 for the material grade and anodizing respectively. The frame section shall be 61.85mm x31.75mm weighing 0.695kg per mtr. Minimum of section no 8687 Jindal Aluminum Ltd make or its equivalent and section for shutter shall be of 50 mm x 20 mm size weighing 0.571kg per Mtr. minimum of section No 8305 of Jindal aluminium Ltd make or its equivalent. Necessary additional / special sections shall be used to facilitate locking arrangement, handle stay if necessary. As directed by EIC. Payment shall be made on Smt. Basis. No additional payment shall be made for fixture or addition /special section.

ITEM : -- DO --- as above, but for ventilator.

The material grade and anodizing shall confirm to IS mentioned in Item No 57. The frame section size shall be 50mm x 25mm and the section shall be 1.5 mm. The ventilation shall be adjustable louvered type with glass fins of 125mm size. The description of item 57 is confirming this item in terms of material only.

Supply & Fixing to doors & windows, ventilator, cup-boards following fixtures & fastenings of approved quality with wooden or metal screws, nuts & bolts as directed or as per the drawing & specifications etc., complete as directed by E. I. C.

Supplying & fixing to doors, windows, ventilators, cupboards fixtures & fastenings of approved quality with wooden or metal screws, nuts & bolts as directed or as per drawings.
Oxidized iron
Sample of oxidized iron fixtures proposed to the used shall be got approved and approved sample shall be displayed on Board, of work site for comparison. Aldrop shall be with plate handle covering the rod and riveted. All fixtures shall confirm to relevant IS Standards.
All G. I., Iron, C. P. brass, C. P. & aluminum fixtures shall be got approved and approved sample kept on site. Only approved brand and quality fixtures shall be used in the work.
Ten-takora khataka lock with latch of approved quality & make shall be provided & fixed.
All the fixtures & fastenings are to be fixed with required size & no. of nuts & bolts, screws etc. All Aldrop shall be with nuts & bolts arrangements for fixing.
Rate quote for fixtures and fastenings are inclusive of supplying & fixing with nuts, bolts etc., screws of approved quality, make, brand and size.

Providing & fixing M. S. Grill of approved quality & design weighing 25 to 30 KG / SMt. as per drawing & as directed with necessary grill door (IF REQUIRED) including welding or bolted fixtures and fastening, M. S. Flat hold fasts, 300 mm. long 16 mm. dia. Aldrop & 300 mm. long tower bolt necessary handles etc., with 3 coats of oil painting of approved shade & tint with one coat of red oxide primer including grouted hold fast in C. C. (1:2:4) etc., complete as directed by E. I. C.

General specification of fabrication shall be applicable. Grill shall be prepared of approved design supplied by Board. Fabricated grill shall be in one plane, line & level with all members. If any members, is found destroyed, it shall have to be changed. All fixtures & fastenings shall be bolted unless otherwise instructed welded. Tower bolt, aldrop etc shall be of approved quality. Bolts, nuts shall be “GKW” brand or its equivalent confirming to I.S. standard. All structure shall be given one coat of red oxide primer and 3 coats of oil painting. Holdfast shall be grouted in c. c. 1:2:4.

Rate quoted shall be inclusive of erection at site. Actual weight arrived at with standard sectional wt. of members, shall be paid. No. payment shall be made for weight due to welding.

Providing fabricating & erecting in position M. S. Angle, channels girders etc., for purlins rafters, columns etc., including welding the section as per instruction & drawing making holes & 3 coats of oil painting of approved shade & make etc. complete. (ALL MATERIALS SHALL BE BROUGHT BY THE CONTRACTOR)

General specification of fabrication shall be applicable. Cutting schedule of the various members shall be prepared as per drawing and got approved.
The rate quoted shall be for supplying steel, confirming I. S. Standards, fabricating and painting the structure.
Payment will be made by computing the weight of various structural section on the basis of standard weight as per I. S. and weight of bolts and nuts if provided. No Payment shall be considered for the weight due to riveting or welding.

Providing & laying 40 mm. thick I. P. S. Flooring in C. C. (1:2:4) including finishing the floor with smooth cement slurry, marking diagonal lines, curing etc., complete as directed by E. I. C.

1.0 Materials
Cement concrete 1:2:4 proportion measured by volume shall conform to relevant specification or ordinary grade 1:2:4 concrete.

2.0 Workmanship
2.1 The cement concrete flooring of 40 mm thick (average) is to be laid as per the site condition. The concrete shall be mixed in a mechanical mixer at the work. Hand mixed however, may be allowed for smaller quantities of the work and in case of failure of machines or as permitted by the Engineer – in – Charge. 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 cases 10 % more cement than otherwise required shall have to be used without any extra cost. The mechanical mixing shall be done for period of ½ to 2 minutes. The quantity of the water shall be just sufficient to produce a dense concrete of required workability. The flooring of specified
thickness shall be laid in accordance with the approved pattern or as directed. Finishing operation shall start shortly after the cessation of beating and shall be spread over a period of one to six hours depending upon the temperature and atmospheric condition. The surface shall be left for some time till moisture disappears from it. Fresh quantity of cement shall be mixed with water to form a thick slurry to spread over the surface while the concrete is still green. Use of dry cement or cement and sand mixture sprinkled on this surface to stiffen the concrete or absorb excessive moisture shall not be permitted. The cement slurry shall then be properly pressed twice by means of iron floats, once when the slurry is applied and the second time when cement starts setting and finished smooth. The surface shall be marked with string or BRC fabric jail to make the surface non-slippery as and when directed. The junction of the floors with wall plaster, dado or skirting shall be rounded off where so required up to 25 mm radius. Flooring in lavatories and bathrooms shall be laid after fixing of water closet and squatting pans and floor traps which shall be plugged while laying the floors and opened after the floors are completed. Any damage done water supply or sanitary fittings during the execution of the work shall be made good.

2.2 After the final set, the concrete shall be kept continuously wet, if required by ponding for a period of not less than 7 days from the date of placement.

2.3 The form work shall be provided, if necessary as directed by the Engineer – in – Charge. Concreting shall be done as per alternate bay method with necessary centering either by mastic or cement mortars as directed.

3.0 Mode of measurement and payment
3.1 The rate shall include the cost of all materials and labour involved in all the operations described above. No deduction shall be made or extra paid for any opening up to 0.1 Sq. Mt. In area in the floor, nothing extra shall be paid for laying the floor at different level in the same room or the courtyard.

3.2 The rate shall be for unit of one square metre.

Providing & laying 25 mm. thick POLISHED KOTAHE STONE HAND DRESSED on all sides of approved quality of 600 mm X 450 mm size in floor & dado in (1:1.5) lime mortar bedding & setting the stone in cement slurry filling the joints with cement, curing, machine polishing etc., complete as directed. (CONCRETE BEDDING SHALL BE PAID SEPERATELY). This item includes providing and fixing of marble patti of 600 X 25 X 25 mm thick size between the joints of the Kotah Stone flooring in line and level as per the instruction of the EIC.

1.0. Materials

2.0. Workmanship
2.1. Each slab shall be cut to the required size and shape and fine chisel dressed at all the edges. The sides trust dressed shall have a full contract if a straight edge is laid along. The sides shall be table rubbed with coarse sand before paving. All angles and edges of the slabs shall be true square and free from chippings and giving a plane surface. The thickness shall be 25 mm. (Average) as specified in the item but not less than 20 mm. at any place of the slab.

2.2. Bedding for the Kota stone slabs shall be of cement mortar 1:6 (1 cement : 6 coarse sand) or M. 1:1.5. of average thickness 20 mm. given in the description of the item. Sub grade shall be cleaned, wetted and mopped. Mortar of the specified mix and thickness shall then be spread on an area sufficient to receive one kota stone slab. The slab shall be washed clean before laying. It shall be laid on top, pressed, tapped gently to bring it in level with the other slabs. If shall then be lifted and laid aside. Top surface of the mortar shall then be corrected by adding fresh mortar at hollows or depressions. The mortar shall then be allowed to harden bit. Over this surface, cement slurry of honey-like consistency shall be applied. The slab shall then be gently placed in position and tapped
with wooden mallet till it is properly padded in level with and close to the adjoining slab. The joint shall be as fine as possible. The slabs fixed in the floor adjoining, the walls shall enter not less than 10 mm. under the plaster, skirting or dado. The junction between the wall and door shall be finished neatly. The finished surface shall be true to levels and slopes as directed.

2.3 The floor shall be kept wet for a minimum period of 7 days so that bedding and joints set properly.

2.4 Polishing shall be normally commenced after 14 days of laying the stone slab. First polishing shall be done with carborundum stones of 120 grade grit fitted in the heavy machine and then second polishing shall be done with carborundum stone of 220 to 350 grade grit fitted in heavy machine. Water shall be properly used during polishing. The stone shall then be washed clean with water. When directed by the Engineer-in-charge, wax polish of approved quality shall be applied on the surface with the help of soft cloth over a clean and dry surface. Then the polishing machine fitted with bobs shall be run over it.

2.5. The holes required for Nahni traps, pipes and any other fittings shall be made without any extra cost.

3.0. Mode of Measurement & payment

3.1. The rate shall include the cost of all materials and labour involved in all the operations described above. The kota stone flooring shall be measured in square metres correct to two places decimal, length and breadth shall be measured correct to a centimeter and between the finished face of skirting dado or wall plaster and no deduction shall be made nor extra paid for any opening in floor of areas up to 0.1 sq. mt.

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

ITEM : --- DO --- as above item No. but for 1600 mm X 350 mm wide for steps, riser, dado, pillar laid on 10 mm thick C. M. (1:3) etc., complete etc., complete.

1.0. Materials


2.0. Workmanship

2.1. The relevant specification of item no. 28 shall be followed except that the Kotah stone shall be fixed for riser of steps, dado or skirting in cement mortar 1:3 and shall be done manually instead of machine polishing.

3.0. Mode of Measurement & payment

3.1. The riser of steps, skirting or dado shall be measured in sq. meter. Length shall be measured along the finished faces of the riser, skirting or dado. Height shall be measured from finished level of treads or floor to top. Lining of the pillars shall be measured under this item.

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

Providing & fixing white / coloured glazed tiles of Spartek / Kajaria / Nittco / JOHNSON or its equivalent make in flooring, skirting & dado including fixing the same in cement mortar bedding (1:2) & 12 mm. thick back coating of cement plaster in C. M. (1:3) for base, filling the joints with white / colour cement neatly.

1.0. Materials


2.0. Workmanship

2.1. Preparation of Surface:

In case of brick masonry wall, the joints shall be raked out to a depth of least 15 mm. while the masonry is being laid. In case of concrete wall the surface shall be chiselled
and roughed with wire brushes. The surface shall be cleaned and wetted thoroughly before commencing the laying work.

2.2. Laying:

2.2.1. The wall surface shall be covered with 10 mm. thick plaster of cement mortar 1:3 mix and allowed to harden. The plaster shall be roughened with wire brushes both way. The back of tiles shall be floated with grey cement slurry set and edges with white cement slurry in bedding mortar. The tiles shall be gently tapped in position on after the other keeping the joints as thin as possible. Top of skirting or dado shall be truly horizontal and the joints vertical or as per required pattern.

2.2.2. Risers of steps, skirting and dado shall rest on top of treads or flooring. Where full size tiles can not be fixed, They shall be cut to the required size and the edges be smoothened.

2.2.3. The joints shall be cleaned and flush pointed with white cement. The surface shall be kept wet for seven days. After curing the surface shall be washed clean.

3.0. Mode of measurements and payment

3.1. The rate shall include the cost of all materials and labour required for various operations described above. Risers of steps, skirting and dado shall be measured in square metres. Length and height shall be measured along the finished face of the skirting or dado including curves, where special such as covers, internal and external angles, etc., used. The length and height shall be measured correct to the centimeter except in case of risers and skirting where height shall be measured correct to 3 mm. The rate shall be for a unit of one sq. metre.

Providing, supplying, fabricating & erecting chain link fencing panel of size 2400 X 2000 mm. made from 75 X 75 mm & 10 Gauge G. I. Chain links & 50 X 50 X 6 mm. angle including fixing the chain link in angle frame by means of 40 X 3 mm. M. S. Flat welded to angle frame drilling to holes in angle frame & flat with hot deep galvanizing as per IS-2633 / 72 and 209 of 1966 or latest amendment including making necessary arrangement of gate 0.75 X 2.0 in it with locking arrangement and fixing the same with angle post in line level & plumb by means of 10 mm. dia. bolts frame & flat & nuts, etc., complete as per drawing & as directed by E. I. C. (ALL THESE MATERIALS LIKE M. S. FLAT, CHAINLINK FENCING, M. S. ANGLES, BOLTS, NUTS, WILL HAVE TO BE SUPPLIED BY THE CONTRACTOR)

Necessary M.S. Angle M.S. Flat, chain link jali, bolts, nuts and washers shall be procured by contractor. Fabrication work shall be carried out as per general specifications of fabrication work. Chain link fencing panels shall be prepared as described in the item. All corners shall be at right angle and fame in one plane. One frame shall be prepared & got approved. Chain link shall be got approved before collecting. It shall be properly galvanized.

Frame work shall be hot dip galvanized as per IS 2633 /72 and 209 of 1966 or latest amendment and as directed. Fabrication work shall be as per drawing and as directed on site.

Payment shall be made on number of panels prepared and erection of the same as above and rate shall be inclusive of all labour, materials tools, plant, painting etc., required fabricated and painted panels for erection. Surplus panel if any is to be credited to store or stack at place shown, shall be done without any extra cost.

Providing, supplying, fabricating & fixing 50 X 50 X 6 mm. M. S. Angle for vertical support 2.75 Mt. long including providing & 50 X 6 mm. M. S. Flat / Pieces, 150 mm. long welded at top & bottom of support with 18 mm. dia. slotted holes in flats, as directed by E. I. C. with hot dip galvanizing as per IS-2633 / 72 and 209 of 1966 or latest amendment & grouting the same in pillar in line & level etc., complete. (THE ITEM RATE INCLUDES COST OF SUPPLY OF MATERIALS, FABRICATION & ERECTION AT SITE).
M.S. Angle 50 x 50 6mm shall be fabricated as per detailed drawing supplied and as described in the item. General specification of fabrication shall be followed. Necessary holes for providing barbed wire on top shall be provided. Angle shall be fabricated as per drawing. Angle shall be erected in line & level at the center to center distance given on the drawing or as directed at site. Angle shall be welded with holdfasts, anchor at bottom to have fixing with concrete work done at base. MS flats / pieces 150mm long shall be welded at top & bottom on two sides as shown in the drawing with 18mm dia slotted holes to receive the bolts required for fixing chain link fencing panel.

Frame work shall be hot dip galvanized as per IS 2633 /72 and 209 of 1966 or latest amendment and as directed. Fabrication work shall be as per drawing and as directed on site.

Rate quoted shall be for supply and fabrication of M.S. Angle 50 x 50 x6mm with M.S. flat 5- x6mm necessary bolts, nuts, washers, cutting bending, welding, erection in line & level & plum, got dip galvanizing, etc. complete. Payment shall be made on number basis.

Providing water proofing treatment in Terrace of different levels preparing roof surface for laying brick bat on cement mortar (1:4) with special water proofing compound in necessary gradient for easy flow of rain water, brick bat coba is finally covered by join less cement plaster in cement mortar (1:3) added with special water proofing compound and top smooth finished with trowel with false chequered making of 3000 mm size. The treatment is carried along the vertical surface of the parapet and other joining wall up to height of about 300 mm in a shape of quarter round vatah. The average thickness of the water proofing treatment is about 140 mm. Minimum thickness at rain water outlet points being 75 mm including curing etc. complete as per specification and instruction including water proofing test for minimum 3 days etc., complete as directed by E. I. C. Contractor should give guarantee for water proofing for 5 years. All the material including cement should be brought by the contractor at his own cost.

The work is carried out using brick bats of assorted sizes with cement mortar 1:4 ratio and special water proofing compound. The work is to be carried out as per good practice and as per item description. The complete drawing of terrace area specified ridges, valleys, gradient and its exact location shall be prepared in advance. The same shall has to be got approved by EIC. The work is to be carried out so as to facilitate complete draining of rain water. Necessary basins shall be constructed at the mouth of spout or rain water pipes.

The contractor shall have to give the pond test by filling 8” depth of water on the treated surface by blocking the spout for 7 days.

“For Water Proofing Treatment:-

The contractor shall submit performance guarantee of the waterproofing item at the rate of 20% of cost of item of work order in the form of FDR of Schedule Bank / Nationalised Bank in favour of GETCO (A/c Agency) for a period of 5 years from actual date of completion of work on non-judicial stamp paper of appropriate value in approved format of GETCO. In the event of unsatisfactory performance of waterproofing work, the agency shall carry out necessary remedial/rectification works that may be necessary in the opinion of GETCO at no extra cost, failing which FDR shall be encashed by GETCO. The FDR shall be released only after satisfactory completion of performance period of 5 years.”

Providing & Laying approved best quality of MEDIUM GRADE Asian / Surya / Swastik / Ambica make G. I. Water pipe including necessary excavation up to 750
mm. depth refilling trenches under ground or on walls inside grooves made in the masonry or concrete including with all necessary fittings like Elbow, Tee, Union, Nipple, Plug etc., giving water tight test etc., complete.

a) 15 mm dia pipe weighing 1.21 Kg / Rmt.
b) 25 mm dia pipe weighing 2.42 Kg / Rmt.

General specifications of water supply piping shall be followed. Rate shall be quoted for the diameter specified with all specials required for completing pipe work as per drawing or as directed.

1.0. Materials
1.1. Galvanized mild steel tubes of specified dia nominal bore shall conform to I.S. 1239-1968.
1.2. The galvanized fittings, clamps, etc. required for specified dia. bore pipes shall be of best quality and make as approved by the Engineer-in-charge.

2.0. Workmanship
2.1. Cutting, Laying & Jointing
2.1.1. When the tubes are to be cut or re-threaded, the ends shall be carefully filed out so that no obstruction to bore is offered. The ends of the tubes shall then be threaded conforming to the requirements of I.S. 554-1955 with pipe dies and taps carefully in such a manner as will not result in slackness of joints when the two pieces are screwed together.
2.1.2. The taps and dies shall be used only for straightening screw threads which have becoming bent or damaged and shall not be used for turning of the threads so as to make them slack as the latter procedure may not result in the water tight joint. The screw threads for tube and fitting shall be protected from edge until they are fitted.
2.1.3. In jointing the tubes, the inside of the socket and the screwed end of the tubes shall be oiled and smeared with white or red lead and wrapping around with a few turns of fine spun yarn round the screwed end of the tube. The end shall then be tightly screwed in the socket, tees, etc. with a pipe wrench. Care shall be taken that all times free from dust, and dirt during fixing. Burr from the joints shall be removed after screwing. After laying the open ends of the pipes shall be temperately plugged to prevent access of water, soil, or any other foreign matter.
2.1.4. Any threads exposed after jointing shall be painted or in the case of underground piping thickly coated with, approved anti-corrosive paint to prevent corrosion.
2.1.5. When the tubes are required to buried in the ground the specification of item no. 1 shall be applicable. All the buried pipes shall be applied three coats of anti – corrosive paint. When the paint has completely dried, the pipes shall be additionally protected by enclosing them in PVC jacket.

2.2. Fixing of tube fittings to wall ceiling & floors.
2.2.1. In case of fixing of tubes and fittings to, the walls or ceilings, these shall run on the surface of the wall, or ceiling (not in chase) unless otherwise specified. The fixing shall be done by means of standard pattern, holder clamps keeping the pipes about 15 mm. clear of the wall. When it is found necessary to pattern, holder clamps keeping the pipes about 15 mm. clear of the wall. When it is found necessary to conceal the pipes and when specified so, chasing may be adopted or pipe fixed inducts or recesses etc. provided that there is sufficient space to work on the pipe with usual tools. The pipe shall not ordinarily be buried in walls or solid floors, where unavoidable, pipe may be buried for short distances provided that adequate protection is given against damage and where so required joints are not buried. Where required M.S. tube sleeve shall be fixed at a place a pipe is passed through a wall or floor for expansion and contraction and other movements. In case the pipe is embedded in walls or floors, it should be painted with anti-corrosive bitumastic paint of approved quality. The pipe should not come in contact with lime mortar or lime concrete as the pipe is affected by lime. Under the floors, the pipe shall be laid in layer of sand filling.
2.2.2. All pipes and fittings shall be fixed truly vertical and horizontal unless unavoidable. The pipes shall be fixed to walls with standard pattern clamps of required size and shape, one end of which shall be properly plugged or cemented into walls with cement mortar-1:3 (1 cement : 3 coarse sand) and the other tightened round the pipes to hold it securely. These clamps shall be spaced at regular intervals in straight lengths at 2 M C/C interval in horizontal run and 2.5 m. interval in vertical run. For pipe of 15 mm. dia. up to 25 mm. dia the holes in the walls and floors shall be made by drilling with chisel or jumper and not by dismantling the brick work or concrete. However for bigger diameter pipes the holes shall be carefully made cement : 3 coarse sand) and properly finished to match the adjacent surface.

2.3. Testing of joints:
2.3.1. After laying and jointing, the pipes and fittings shall be inspected under working conditions of pressure and flow. Any joints found leaking shall be redone, and all leaking pipes removed and replaced without extra cost.
2.3.2. The pipes and fittings after they are laid shall be tested to hydraulic pressure of 6 Kg/sq. cm. The pipe shall be slowly and carefully charged with water allowing all air to escape and avoiding all shock and water hammer. The draw off takes and stop cock shall then be closed and specified hydraulic pressure shall be applied gradually. The pressure gauge must be accurate. The pipes and fittings shall be tested in sections as the work laying proceeds, keeping the joints exposed for inspection during the testing.

3.0. Mode of measurements and payment
3.1. The description of each item shall, unless otherwise stated, be held to include where necessary, conveyance, and delivery, handling, unloading, storing, fabrication, hoisting, all labour for finishing to required shape and size, setting, fitting in position straight, cutting and waste, return of packing etc.
3.2. The length shall be measured on running metre basis of finished work. The length shall be. taken along the centre line of the pipe and fittings. The pipes fixed to wall, ceiling, floors etc. shall be measured and paid under this item.
3.3. All the work shall be measured in decimal system as fixed in its place, subject to tolerance given below unless otherwise stated.
(i) Dimension shall be measured to the nearest 0.01 metre. (ii) Area shall be worked out to the nearest 0.01 sq. metre.
3.4. All measurements of cutting shall unless otherwise stated by held to include the consequent waste.
3.5. In case of fitting of unequal bore, the targets bore shall be measured for the test.
3.6. Testing of pipe lines, fittings, and joints include for providing all plant appliances necessary for obtaining access to the work to be tested an carrying out the tests.
3.7. The rate includes galvanized steel tubing with screwed socket joints, together with all fittings (such as bends, sockets springs, elbows, test, crosses, short pieces, clamps and plugs unions etc.) and fixing complete with clamping wall hooks, wooden plug etc. and also cutting, screwing and waste and for making forged (or hand made) bends on piping as required. Connector shall be inserted, where required or directed. The rate also includes cutting through walls, floors etc. and their making good and painting exposed threads with anti-corrosive paint as above, excavation wherever required, PVC jacket for protection of buried pipes and testing. Where tubes are to be fixed to wall, ceiling and flooring, the rate shall not include painting of pipes, providing sleeves and sand filling under floor for which separate payment shall be made. The rate shall be for a unit of one running metre.

Providing & Fixing approved best quality I. S. S. approved full way G.M. Wheel valve.
a) 15 mm. dia. Valve
b) 25 mm. dia. Valve
c) 40 mm. dia. Valve
1.0. Materials: The gun metal check or not return full way wheel valve or specified dial, shall conform to I.S.: 778-1964. The non-return valve shall be of tested quality.

2.0. Workmanship
2.1. The gun metal check or non return valve shall be fully cleared of all foreign matter before fixing. The fixing of shall be done by means of bolts nuts and 3 mm. rubber insertions with flags of spigot and socketed tail pieces, drilled to the same specifications as in case of socket and spigot flanges in case of flanged pipes. The joining shall be done leak proof.

3.0. Mode of measurements and payment
3.1. The rate includes all labours, materials, tools and plant etc. required for satisfactory completion of this item.
3.2. The rate shall be for a unit of One number.

Providing & Fixing 25 mm. dia. half turn brass C. P. Flush cock with one union of approved quality prince or its equivalent I. S. I. approved quality including fixing the same in pipe line as directed by E. I. C.

1.0. Materials: Chromium plated brass half turn flush cock shall conform to M-67.

2.0. Workmanship
The hall turn flush cock of specified diameter shall be fixed as directed. The flush cock shall be fixed in G.I. pipe line With necessary fittings. The joints shall be made leak proof by using spun yarn and white zinc. The fixing work shall be carried out as per relevant specifications of item No. 35.

3.0. Mode of measurements and payment
3.1. The rate includes cost of all materials and labour required for satisfactory completion of this item including fittings.
3.2. The rate shall be for a unit of One number.

Providing & Fixing 15 mm. dia. brass C. P. Screw down bib cock of approved quality having 250 to 300 grams weight etc., complete as directed by E. I. C.

1.0. Materials:
15 mm. dia. brass screw down with bright polished finished shall conform to I.S, 781-1977. The bib cock shall be best Indian make and quality.

2.0. Workmanship
2.1. The screw down bib cock 15 mm. as specified above shall be fixed as directed. The threaded portion shall be smeared with white or red lead and around with a few turns of fine spun yarn round the screwed end of the pipe. The bib cock shall be then screwed and fixed to water tight position.

3.0. Mode of measurements and payment
3.1. The rate includes cost of all labour, materials, tools and plant etc. required for satisfactory completion of this item.
3.2. The rate shall be for a unit of One Number.

Providing & Fixing readymade 1000 LITRE capacity P. V. C. water tight storage tank made from linear low density polyethylene & low density polyethylene LDPE product confirming to I. S. : 10146 - 1982 with cover including providing & fixing one 20 mm. dia. float valve ball-cock, one 20 mm. dia. G. I. Waste pipe with plug one 25 mm. dia. G. I. Over flow pipe of length up to 0.30 mt. including making all connection for inlet / outlet supply with necessary fittings for outlet / inlet etc., complete as directed by E. I. C.

P.V.C. Polythene readymade water tank (equivalent to Sintex make ‘Sintex’ brand and not the ‘Reno” brand) internally white coated shall be approved make and as per I.S. 10146. Quality of tank proposed to be provided shall be got approved Technical literature
of tank shall be submitted for approval. Tank of capacity specified shall be installed at places shown with 20mm dia float valve with polythene ball and brass handle and fixing arrangements, 20mm dia G.I. “C” class waste pipe with G.I. plug, 25mm G.I. “C” class overflow pipe with all necessary fittings of heavy type for inlet/outlet connection. Tank shall be installed on terrace or other places shown. Rate shall be inclusive of providing tank at place of use, installing at terrace or place shown with all fittings specified above, and giving test with filling of water. Payment shall be made for tank provided and installed of capacity specified in the tender, with all necessary fitting specified above. On number basis.

Providing and fixing FINOLEX brand or equivalent rigid P. V. C. Pipe for rain water (4.0 Kgf/cm2) including necessary fittings like bend shoe, cowl etc., & fixing the pipes to the wall in plumb by means of G.I. Clamps of 18 gauge sheet with 1 meter distance and joining pipe with approved solution etc., complete as directed by E. I. C.

a) 110 mm. dia. O. D., P. V. C. Pipe

1.1 The pipe material and specials like bend shoe cowl coupler etc shall confirm to grade and quality specified in relevant IS code. The spout pipe shall be fixed at level, suitable to drain complete rainwater. The vertical pipes shall be truly in plumb, shall be fixed to walls by means of G.I. clamps of approved quality with G.I. studs, saddles etc. complete leak proof test shall be given before payment is realized.

1.2 P. V. C. pipes shall be fixed on wall with wooden plugs and suitable clamps.

1.3 The pipes and sockets shall be accurately cut. The ends of the pipes and fittings should be absolutely free from dirt and dust. The outside surface of the pipes and the inside of the fittings shall then be roughened with emery paper, and then solvent cement joint. Since solvent cement is aggressive to P.V.C., care must be taken to avoid applying excessive cement to the inside of pipe sockets as any surplus cement cannot be wiped off after jointing. Empty solvent cement tins, brushes, rags, or paper impregnated with cement should not be buried in the trenches. They should be gathered, not left scattered about, as they can prove to be a hazard to animals, which may chew them.

1.4 If manufacturer recommends its own methods of jointing, the same shall be adopted after necessary approval from the Engineer - in – Charge.

1.5 Payment shall be given in running length of the pipe irrespective of specials used.

Providing & fixing (HEAVY DUTY) C. I. Soil pipe for drainage line including necessary fittings like bend, tee, Y bend, plug bend etc., fixed with wall by means of clamps and nails filling the joints with cement as directed by E. I. C.

a) 75 mm. dia. pipe
b) 100 mm. dia. pipe

1.0. Materials :

1.1 The specified dia C.I. spigot and socket soil or waste pipe shall conform to M-68.

2.0. Workmanship

2.1 The fixing of C.I. spigot and socket soil waste and ventilating pipe shall be carried out as per relevant specifications of item 35 except the C.I. spigot and socket shall be fixed. The joints shall be fixed with cement mortar 1:2 (1 cement : 2 sand) and spun yarn. The pipes without ears shall be fixed to wall with M. S. clamps. The pipes with ears shall be secured with 40mm before steel or iron barrel distance pieces or bobils and stout galvanized iron nails 10 cms. long driven into hard wood plugs fixed in walls. Access doors to fittings shall be provided with 3mm rubber insertion packing and secured without screws to make air and water tight.

2.2 All soil pipes shall be carried up above the roof and shall have a wire balloon guard or a cowl.
2.3 The ventilating pipe or shaft shall be carried out to a height of at least one metre above the outer covering of the roof of the building or in the case of windows in a gable wall or a dormer windows, it shall be carried up to the ridge of the roof or at least two metres above the top of the windows. In case of flat roof to which access for use is provided, it shall be carried out up to a height of at least one metre above the parapet or two metres measured vertically from the top of any windows or opening which may exist up to a horizontal distance of five metres from the vent pipe into such building and in no case shall be carried out to a height less than three metres.

2.4 Where ventilating pipe are carried in pipe shafts, the shafts shall be of a minimum size of one metre. If the shafts are also used to give light and air to rooms, the ventilating pipes must be carried out to a horizontal distance at roof level not less than five metres from the site of shaft.

2.5 The sand cast iron pipes above the parapet shall be fixed with M.S. clamps and stays. The clamps shall be made from 1.5 mm thick M. S. flat or 3 mm width band to the required shape and size to fit tightly on the sockets when tightened with screw bolts. It shall be formed of two semi-circular pieces with flanged ends on both sides, with holes to fit in the screw bolts and nut 40mm dia M. S. bars. One end of the stay shall be bent from a hook to be fixed with clamps by means of bolts and the other end shall be bent for embedding in wall in cement concrete block of size 200mm x 100 mm x 100 mm in 1:2:4 mix. The concrete shall be finished to match the surrounding surfaces.

2.6 The connection between the main pipe and branch pipes shall be made by using branches and bends with access doors for cleaning.

2.7 The waste from lavatories, kitchens, basins, sinks, baths, and other floor traps shall be separately connected to respective stacks of upper floors. The waste stack of lavatories shall be connected directly to manhole while waste stack of other shall be separately discharged over gulley trap.

3.0 Mode of measurements and payment

3.1 The length of pipe shall be measured included all fittings along its length in running metres correct to a centimeter. No allowance shall be made for the portion of pipe length entered in the sockets of the adjacent pipe or fittings.

3.2 The rate includes all labour, and materials, tools and plant etc. required for satisfactory completion of this item.

3.3. The rate shall be for a unit of one running metre.

Providing & fixing S. W. G. Pipe for sanitary connection (SEWER DRAIN PIPE) with necessary slope including excavation refilling the trenches, providing 150 mm thick B. B. C. C. (1:4:8) below joints filling the joints with C. M. (1:1) curing etc., complete as directed by E. I. C.

100 mm. dia. Pipe

1.0 Materials
(1) Water shall conform to M-1, (2) Cement mortar of proportion 1:1 shall conform to M-11, (3) 100mm dia glazed stone ware pipe shall conform to M-71.

2.0 Workmanship
2.1 The trenches for stone ware pipe drains shall be carried out as per relevant specifications item no. 1 & 35 except that the work is for stone ware pipes of 100 mm dia.

2.2 Laying
2.2.1 The pipes shall be laid accurately and perfectly true to line, levels and gradients. Great care shall be taken to prevent sand etc. from entering the pipes. The pipes between two man holes shall be laid truly in a straight line without vertical or horizontal undulation. All junctions and changes in direction and diameter shall be made inside manholes by means of curved tapered channels formed in cement concrete finished smooth and benched on both sides. The body of the pipe shall rest for its entire length,
on an even level bed grips being made or left on the bed to receive the sockets of the pipes.

2.3 Jointing

2.3.1 Tarred gaskin or yarn soaked in neat cement slurry first be placed around the spigot of each pipe and the spigot shall then be placed well in home into the socket of the pipe previously laid. The pipe shall then be adjusted and fixed in the correct position and gaskin caulked home so as to fill not more that 1/4th of the total depth or (13mm in depth) of the socket.

2.3.2 The remainder of the socket shall be filled with the stiff mixture of cement mortar in proportion of one part of cement and one part of sharp sand. When the socket is filled, a fillet, shall be formed round the joints trowel, forming an angle of 45° with the barrel of the pipe.

2.3.3 The mortar shall be mixed as necessary for immediate use.

2.3.4 After the joint is made, any extraneous materials shall be removed from the inside of the joints with a suitable scraper of ‘badger’. The newly made joint shall be protected, until set, from the sun, dry winds, rain or frost, sacking or other suitable materials which shall be used for the purpose.

2.3.5 The mortar shall be cured for 10 days.

2.3.6 CC (1:4:8) 150mm thick shall be provided below joints so as joints are not affected due to any settlement. Specification of item no. 93 shall be applicable to this item.

2.4 Testing of joints

2.4.1 The pipes shall be tested as directed.

2.4.2 If any leakage is visible, the defective part of the work shall be made good at no extra cost.

2.4.3 A slight amount of sweating which is uniform may be overlooked, but excessive sweating from a particular pipe or joints shall be watched for and taken as indicating a defect to be made good.

3.0 Mode of measurements & payment:

3.1 Pounding or bottoming of the trenches bed to fit the lower part of the pipe and ‘Grips’ left to take socket, collars etc. are included in the rate of laying of the pipes.

3.2 The measurements shall be net without any allowance for cutting and waste. The length of bends, junctions and other connections shall be included in the total length of the drain pipes. Noting extra shall be paid for the same. The rate includes necessary excavation, refilling the trenches, etc. complete.

Providing & laying 300 mm dia. (NP - 2) ’A’ Class R. C. C. hume pipe including necessary excavation, refilling the trenches, laying 150 mm. thick B. B. C. C. (1:4:8) below joints up to half the height of joints making water tight joints in C. M. (1:1) curing etc., complete as directed by E. I. C.

1.0 Materials

The reinforced concrete light duty non-pressure pipes of specified diameter shall conform to IS 458 – 1971.

2.0 Workmanship

2.1 The relevant specification of item no. 41 shall be followed for work of trenches except that the excavation in trenches shall be for reinforced concrete pipes of specified diameter.

2.2 Laying

2.2.1 The pipes shall be lowered into the trenches carefully. Mechanical appliances may be used. Where necessary pipe shall be laid in straight lines or with easy curves and true to line and gradient as specified and true to line and gradient as specified. The laying of pipe shall proceed upgrade of a slope. In the with loose collars, the collars shall be slipped on before the next pipe is laid.
2.2.2 In case where the foundation conditions are unusual such as proximity of trees or holes, under existing or proposed around in 150mm thick cement concrete 1:5:10 (1 cement : 5 fine sand : 10 graded stone aggregate 40mm nominal size) or compacted sand or gravel.

2.2.3 In case where the natural foundation is inadequate the pipe shall be laid either in concrete cradle, supported on proper foundation or on any other suitably designed structure. If concrete bedding is used, the depth of concrete below bottom of the pipe shall be at least ¼ th of the internal diameter of the pipe subject to a minimum of 100mm and maximum 300mm. The concrete shall be extended up to the sides of the pipe at least a distance of ¼ th of the outside diameter for pipes 300mm and over in diameter.

2.2.4 The pipes shall be laid in the concrete bedding before the concrete has set. Pipes laid in trenches in earth shall be bedded evenly and firmly and as up to the haunches of the pipe as to safely transmit the load expected from the back fill through the pipe to the bed. This shall be done either by excavating the bottom of the trenches to fit the curve of the pipe or by compacting the earth under round curve of the pipe to form an even bed. Necessary provision shall be made for joints wherever required.

2.3 Jointing

2.3.1 The joints shall be done by slipping the collar over and clear of the end of the pipe. The recess of the end of the pipe shall be filled with jute threading dipped in hot bitumen. The new pipe shall then be brought forward until the bitumen ring in recess of first pipe is set into the recess of the second pipe. This process shall be repeated for two or three pipe which shall then be jacked up to as to thoroughly compress the bitumen. The quantity of jute and bitumen shall be just enough to fill the recess when pressed hard by jacking, care being taken that no offset of the jute braiding shall be visible either outside or inside of pipe. The collar shall then be set up over the joints covering equally both the pipe and leaving an even caulking space all round. Cement and sand mortar 1:1 shall then be well punched or pressed home with a caulking tool within this caulking space. Care shall be taken that the underside of the joints is properly filled with mortar.

2.4 Curing

2.4.1 Every joint shall be kept wet for about 10 days for maturing, the section of the pipe line and joint shall be covered immediately to protect from weather effects. Minimum bore of 100mm is considered adequate.

2.4.2 The joints shall be left exposed for observation.

2.5 Testing of joints

2.5.1 The testing of joints shall be done as per relevant specification of item no. 44 except that the testing of reinforced concrete pipes shall be done.

3.0 Mode of measurements & payment:

3.1 The relevant specifications of item no. 44 shall be followed except that the rate includes for laying (to level or slope in trenches etc. measured separately) making the joints as indicated and testing to stand the water test.

3.2 The measurement shall be net without any allowance for cutting and waste. The length of bends, junctions, and other connections being numbered afterwards and paid for extra over pipes.

3.3 CC (1:4:8) 150mm thick provided below the joints is also included in the rate of laying of the pipes.

3.4 Nothing extra shall be paid separately from the use of mechanical appliances, where necessary, as described above.

3.5 The rate shall be for a unit of one running metre.

Providing & fixing C. I. Nahani trap of approved size & make with additional aluminium perforated Jali Cover & C. I. Pipe outside the wall with plug, bend, etc., complete as directed by E. I. C. 75 mm. dia.
C.I. nahni trap of specified diameter shall be fixed at locations shown. Nahni trap shall be with arm, length as per thickness of wall so as to have joint outside wall and any leakage may not harm the wall. Nahni trap shall be fixed in concrete. Aluminum perforated jali of approved make and shape shall be provided on the nahni trap. Necessary C.I. pipe of the diameter of main line shall be connected from nahni trap to Gully Trap/main line outside the wall necessary plug bend etc. as required. Payment shall be made per number of nahni trap fixed with necessary jali, plug bend, pipe pieces etc. complete.

Providing & Fixing 150 X 100 mm. stone ware gully trap with 300 X 300 mm. B. B. Masonry in C. M. (1:6) clear chamber including B. B. C. C. (1:4:8) 150 mm. thick bed concrete, plastering the chamber with 300 X 300 mm. C. I. Cover with frame curing etc., complete as directed by E. I. C.

Stoneware gully trap 150 x 100mm shall be as per I.S. specifications and free from crack, other defects and shall be uniformly glazed. Trap shall rest on B.B.C.C. (1:4:8) 150mm thick. Brick masonry chamber of 225 x 150mm clear size and of required height shall be built in c.m. (1:6). Height of chamber shall be constructed on site as per site conditions. Masonry wall shall be carried out on base concrete of B.B.C.C. (1:4:8). Direction of trap opening shall be as per line layout on site for drainage work. Gully trap shall be provided with C.I. Cover of 225 x 150mm with frame on top of camber. Inner side of chamber of 200mm below final ground level of other area shall be plastered 12mm thick in c.m. (1:3) C.I. cover shall be given three coats of black anticorrosive paint as per item No. 17 of Section F. Payment shall be made on number basis for all described above.

Providing 300 X 300 mm. B. B. Masonry in C. M. (1:6) clear chamber including B. B. C. C. (1:4:8) 150 mm. thick bed concrete, plastering the chamber with 300 X 300 mm. C. I. Cover with frame curing etc., complete as directed by E. I. C.

B.B. masonry inspection chamber (manhole) of specified size, item shall be constructed at location shown with base concrete of (1:4:8) B.B.C.C. 150mm thick, 225mm thick. Brick masonry wall in c.m. (1:6) shall be constructed of width as per drawing or as per details furnished on site. Plastering inside including bottom and outside 300mm below final ground level shall be provided in c.m. (1:3) 12mm thick. Curing the cement work, fixing light type C.I. manhole cover with frame as per size of the chamber including necessary excavation, backfilling, disposed off surplus earth etc., complete, necessary chamber shall be provided with slope in bottom C.I. cover shall be given 3 coats of anticorrosive paint.

Specification of earth work and backfilling of section B, specification of brick masonry of section C, specification of concrete of section D, and plastering section E shall be followed. Payment shall be made on number of chamber constructed of the size specified in the tender with all operations as per item.

Providing B. B. Masonry inspection chamber (MANHOLE) of 610 X 455 mm. Clear size including light type C. I. Cover having total weight including frame not to be less than 38 Kgs. (Weight of Cover 23 Kgs & Weight of frame 15 Kgs.) with frame, 100 mm. thick R. C. C. top slab in C. C. (1:2:4) with necessary excavation bottom concreting of B. B. C. C. (1:5:10) 150 mm. thick / 225 mm. thick B. B. Masonry in C. M. (1:6) 12 mm thick cement plaster in C. M. (1:3) inside & to all exposed faces up to 300 mm. below ground level, curing etc., including disposal off surplus excavated earth up to radius of 300 mt. including 3 coats of white or colour wash to all exposed finished surface etc. complete as directed by E. I. C. (B. B. MASONRY UPTO 900 mm. DEPTH)
B.B. masonry inspection chamber (manhole) of specified size, item shall be constructed at location shown with base concrete of (1:4:8) B.B.C.C. 150mm thick, 225mm thick. Brick masonry wall in c.m. (1:6) shall be constructed of width as per drawing or as per details furnished on site. Plastering inside including bottom and outside 300mm below final ground level shall be provided in c.m. (1:3) 12mm thick. Curing the cement work, fixing light type C.I. manhole cover with frame as per size of the chamber including necessary excavation, backfilling, disposed off surplus earth etc., complete, necessary chamber shall be provided with slope in bottom C.I. cover shall be given 3 coats of anticorrosive paint.

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

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

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

Specification of earth work and backfilling of section B, specification of brick masonry of section C, specification of concrete of section D, and plastering section E shall be followed.

Payment shall be made on number of chamber constructed of the size specified in the tender with all operations as per item.

Providing B. B. Masonry inspection chamber (MANHOLE) of 500 X 700 mm. Clear size including light type C. I. Cover having total weight including frame not to be less than 38 Kgs. (Weight of Cover 23 Kgs & Weight of frame 15 Kgs.) with frame, 100 mm. thick R. C. C. top slab in C. C. (1:2:4) with necessary excavation bottom concreting of B. B. C. C. (1:5:10) 150 mm. thick / 225 mm. thick B. B. Masonry in C. M. (1:6) 12 mm thick cement plaster in C. M. (1:3) inside & to all exposed faces up to 300 mm. below ground level, curing etc., including disposal off surplus excavated earth up to radius of 300 mt. including 3 coats of white or colour wash to all exposed finished surface etc. complete as directed by E. I. C. (B. B. MASONRY UPTO 900 mm. DEPTH)

The relevant specification of item no. 50 shall be followed except that instead of 610 X 455 clear size of chamber 500 x 700 mm clear size chamber shall be constructed and paid for.

Providing & fixing best INDIAN make white or coloured porcelain rectangular wash hand basin size 500 X 400 mm. with C. I. M. S. Brackets fixed in wall including approved quality of 1 No. of brass C. P. Pillar cock (PRINCE TYPE) or its equivalent 15 mm. dia. Bottle trap, one brass C. P. 15 mm. dia. Stop cock, with P. V. C. pipe connection for stop cock to pillar cock 25 mm. dia. G. I. Waste pipe up to 1.0 M. length etc., complete as directed by E. I. C.
1.0. Materials

1.1. The white glazed earthenware wash basin shall be 550 mm. x 400 mm. of 1st quality and make as approved by the Engineer-in-charge. The wash basin shall conform to M-59.

2.0. Workmanship

2.1. The washbasin shall be fixed on the wall as and where directed. The wash basin shall be supported on a pair of M.S. or C.I. brackets fixed in C.M. 1:3 (1 cement : 3 sand). The bracket shall conform to I.S. : 775-1962. The wall plaster on the rear shall be cut to rest the top edge of the washbasin. After fixing the basin, plaster shall be made good and surface finished to match the existing one.

2.2. The brackets shall be painted white with ready-mixed paint.

2.3. The C.I. brass trap and union shall be connected to 32 mm. dia. waste pipe which shall be suitably bent towards the wall and which shall discharge into an open drain leading to a gully trap or direct in to gully-trap on the ground floor and shall be connected to a waste pipe through a floor trap on the upper floors. C.P. brass trap and union may not be provided where the surface drain or a floor trap is placed directly under the basin and the waste is discharged in to vertically.

2.4. The height of the front edge to the wash basin from the floor level shall be 80 cms.

2.5. The necessary inlet, outlet connections and fittings such as pillar cocks (Prince type), CP brass waste trap, waste pipe, stop cock, chain with rubber plug etc. shall be fixed.

3.0. Mode of measurements & payment

3.1. The rate includes cost of all labour, materials, tools and plant etc. required for satisfactory completion of this item as specified in workmanship. The rate shall be for a unit of One number.

Providing & Fixing 500 mm X 700 mm size light type C. I. Manhole covers with water tight C. I. frame & fixing the same in concrete etc., complete as directed by E. I. C.

Materials

C.I. Manhole cover of 500 x 700 mm size shall be of best quality. The weight of C.I. cover and frame shall into be less than 35 Kg. The C.I. manhole cover shall be of light duty and conform relevant i.S.

2.0. Workmanship

2.1. The C.I. Manhole cover shall be fixed as per relevant specifications of item No. 50 except that the C.I. cover shall be fixed ad and where directed.

3.0. Mode of measurements and payment

3.1. The rate includes cost of all labour and materials required for satisfactory completion of this item.

3.2. The rate shall be for a unit of One number.

Providing & Fixing WHITE / COLOURED ORISSA PAN W. C. SEAT of ROLEX / CLASSIC / JOHNSON MAKE and of approved quality of 580 mm. size including trap, necessary C. I. Piping with plug bends up to soil chamber for G. F. & up to the out side wall for floors including porcelain foot rests etc., in complete working condition & as directed by E. I. C.

Orissa Pan type WC. if specified size shall be of first quality and of approved make according to I.S. Specifications. It shall be fixed in B.B.C.C 1:5:10 shall be provided in 115mm portion with required slope towards WC. pan. Top surface shall be finished as per specified in item of I.P.S glazed or ordinary tiles, which shall be as pet item. W.C. shall be provided, with pipe from flush cock to pan, for flushing arrangement, trap with WC. pan and 100mm C.I. pipe for trap to chamber with plug bend. For W.C. on floors,
pipe with plug bend shall be provided up to main soil pipe line in wall.. All joints shall be in CM. 1:1 and leak proof test be given.
Rate quoted shall be for providing & fixing WC. pan with all other accessories specified and whole thing shall be paid per No. of WC pan provided and fixed.

Providing & Fixing white or coloured porcelain lip shaped wall type URINAL PAN of 550 X 300 mm. of approved quality & make including waste coupling bends & necessary outlet of 25 mm. dia. G. I. Pipe connections including providing brass stop cock, PVC connection etc., completed as directed by E. I. C.

1.0 Materials
The white earthenware flat pack or corner type urinal of size 550 x 300mm shall conform to M-64

2.0 Workmanship
2.1 The urinals shall be fixed in position by using wooden plugs and screws and shall be at a height of 65 cms. from the floor level to the top of the lip or urinal unless otherwise directed. The wooden plugs shall be 50 mm x 50 mm at base tapering to 38mm x 38 mm at top and 50mm in length shall be fixed in wall in cement mortar 1:3 (1 cement : 3 coarse sand). The urinal shall be connected to 32 mm dia galvanized mild steel waste pipe which shall discharge in the channel or floor trap. The connection between the urinal and flush or waste pipe shall between made by means of putty or white lead mixed with chopped hemp.
2.2 The urinal shall be provided with waste coupling bends, necessary outlet of 25mm dia GI pipe connection, brass stop cock, PVC connection pipe from stop cock to urinal inlet provided at the top.

3.0 Mode of measurement and payment.
3.1 The rate includes cost of all labours, materials, tools and plants, etc. required for satisfactory completion of this item.
3.2 The rate shall be for a unit of one number.

Providing Fixing 25 mm. thick POLISHED KOTAH STONE wall partitions 600 mm. wide & required height & all sides polished, machine cut & of approved quality including fixing the same in wall in line & level etc, complete as directed by E. I. C.

25mm thick polished kotah stone partition shall be provided for urinals. The quality of kotah stone shall be got approved. The stone shall be machine polished to all side. The outer edges of the stone shall be machine cut, rounded and polished properly. The size of the kotah stone shall be of 600mm wide and height according to the site condition. A groove shall be cut in wall for fixing of the stone. Stone shall be fixed with the wall in line, level and plumb as directed in the groove white c.m. 1:1 and finished smoothly with existing finishing.
Payment shall be made on square meters basis.

Providing & Fixing 75 mm. dia. C. I. cowl ventilator of LIGHT Type for water tanks etc., complete.

The material shall be got approved in advance prior to supplying the same on the site. The relevant specification of item no. 43 shall be applicable to this item except that CI cowl ventilator of 75mm dia with socket and spigot ends and light type shall be provided and paid for.

Drilling of bore well of 400 mm. dia. by machine in all kinds of soil, sand, clay, murrum, soft rock and hard murrum, etc., complete, truly vertical with all equipments and labours etc., complete as directed by E. I. C.
a) For 00.00 to 30.00 Mt. Depth
b) For 31.00 to 60.00 Mt. Depth
c) For 61.00 Mt. onwards

Bore well 400mm ∅ shall be drilled with drilling machine at the place shown, Necessary arrangement for required water for drilling, preparing water tank etc. may be made by contractor. The drilling shall be carried out to the depth decided on site as per availability of the water bearing strata. Necessary cutting edge and column length of the drilling shall be arranged by the contractor. Drilling shall be carried out truly vertical. Bentonite powder slurry circulation shall be arranged as required. Samples of various strata shall be collected, showing the depth of the strata. A chart of the various strata with depth shall be prepared and submitted for record. They shall be kept on site in a wooden box indication the strata with depth so the information is easily available for inspection.

Rate shall be quoted for various depth given in the item per running meter basis.

Providing and installing vertically 150mm dia ‘C’ class M S ERW casing pipe in the bore as per specifications including supplying graded gravel of suitable size & packing the same surrounding the pipe from the bottom including sealing the bottom of the pipe & welding at joints & top clamping etc. complete as directed by the Engineer – in – Charge.

“C” class ERW casing pipe conforming to IS specifications shall be provided and installed in the well as directed. Pipe shall be painted with 3 coats of anticorrosive paint from outside. Pipe shall be lowered slowly so that drilled well is not damaged or collapsed on some portion. Pipe shall be joined with couplings and couplings tack welded on both ends as directed or welded fully with specified thickness of welding as approved. Pipe shall be sealed at bottom by full welding of plate of 12mm thickness and applied with 3 coats of anti-corrosive paint. Necessary arrangement for lowering pipe shall be made by the contractor. After the pipe line is lowered completely and cleaned at top and covered at top, annular space all-round pipe shall be filled with pea size gravel uniformly all-round. Gravel collected shall be screened and all dust small and big size and gravel and other foreign materials shall be removed.

Rate shall be quoted for the diameter of pipe specified with all the operations and materials required with plant, machinery, tools and tackles, etc. for completing the item. Payment shall be made on pipe lowered as above with filling of gravel all-round on Rmt basis.

Labour charges for making slotted holes in pipe supplied under item no. 55 i.e. MS ERW casing pipe as directed by the Engineer – in – Charge for making strainer pipe.

Slotted holes of approved / required size shall be made in the pipes supplied under item no. 5 shall be made for the water bearing strata as approved by the Engineer – in – Charge.

Payment shall be made on Rmt. basis for the length of pipe through which required holes are made with all operations, plant, machinery, tools and tackles etc. for completing the item.

Providing & Laying 112 mm. thick brick on edge paving (SOLING) including leveling the ground & laying the bricks with required grade & camber etc., complete with two vertical bricks as kerbing on each side of the road filling the joints with yellow earth & spreading sand at the rate 0.15 M3/10 M2 including 3 coats colour wash to vertical kerbing bricks etc., complete as directed.
The bricks of approved quality shall be used. Bricks shall be laid on sub grade checked and approved for alignment level, camber and consolidation where area is infilling; Brick on edge i.e. 110mm thick shall be laid in haring bond, bond unless otherwise instructed. The sides of the road shall be provided with two vertical bricks to each side for curbing. Curbing shall be in line, level and grade as instructed and shall be laid close to the road edge. Excavation required for curbing shall not be paid separately; only good quality of full brick shall be used in curbing. No bricks or brickbats shall be allowed in the paving work, unless the same is required at the ends. Brick shall be laid closed so that no voids or space is left out between two bricks. All joints shall be filled with yellow earth by spreading, brooming and watering. Surplus earth shall be removed from the surface. Finally clean river sand usable in plasterwork shall be spread uniformly, at the rate of 0.15 cmt/10 smt of road surface.

Payment shall be made on actual square meter of work carried out including side curbing, earth filling and sand spreading. Rate quoted shall be inclusive of all materials, tools, tackles required for complete excavation of item.

**Supplying & Stacking 40 to 60 mm. size hard stone road metal including transportation filling the box etc., complete**

1. The field of machine cut metal shall be of approved quarry as shown on the quarry chart as well as approved by the Executive Engineer prior to collection.
2. The machine cut metal shall be hard, tough, sound, durable, black trap field metal of close texture, free from decay and weathering. Each piece of the stone shall be angular and roughly cubical in shape and round elongated or flaky material shall be rejected. No round or oblong pebbles or angular chips larger or smaller than specified size shall be allowed.
3. All unsound, weathered or disintegrated stone obtained from the upper surface layer of the quarry or other layer of boulders shall be rejected. The physical requirement for standard size metal shall conform to the test results indicated in para 3 of item 4.
4. Machine cut metal shall be as nearly uniform in size as possible and shall conform to following minimum requirements of passing through the rings:
   - 63 mm 100
   - 50 mm 95-100
   - 40 mm 35-70
   - 20mm 0-10
5. Wherever and doubt exists as to whether the above requirements are satisfied in whole or part, the collection of machine cut metal shall be got screened by the contractor if so ordered by the Executive Engineer and for which no extra payments shall be claimed by the contractor.
6. Any collection which does not fully satisfy the above requirements is liable to be rejected altogether.
7. Stacking shall be done by filling in the standard steel pharas of 2.00 x 1.50 x 0.50 metre and 25% deduction of voids shall be made from the gross measurements.
8. Regular stacks shall be done by the contractors on a fairly level ground. All the stacks shall be marked by white wash immediate on being measured and recorded by the Engineer-in-charge. The rate includes blasting the rock, it any, breaking the metal, stacking, measuring in pharas etc. complete.

**Supplying & Stacking murrum of approved quality including transportation filling the box etc., complete E. I. C.**

Murrum of approved quality preferably Red shall supply. Sample of the murrum shall be got approved. It shall be free from dust, vegetation, foreign materials and powdery
substance etc. The murrum shall be stacked at the places shown, in regular boxes approved by the Engineer-in-charge.
The measurements shall be paid on Cubic Meter basis on the box measurement, deducting 25% for voids. The contractors shall make arrangements for marking of the stacks measured for separating the same.

**Supply & Stacking black trap stone machine crushed grit / stone dust including royalty, all Government taxes transportation, filling boxes etc., complete as directed by E. I. C.**

1.0 The field of machine cut grit shall be of approved quarry as shown on the quarry chart as well as approved by the Executive Engineer prior to collection.
11. The machine cut grit shall be hard, tough, sound, durable, black trap field metal of close texture, free from decay and weathering. Each piece of the stone shall be angular and roughly cubical in shape and round elongated or flaky material shall be rejected. No round or oblong pebbles or angular chips larger or smaller than specified size shall be allowed.
12. All unsound, weathered or disintegrated stone obtained from the upper surface layer of the quarry or other layer of boulders shall be rejected. The physical requirement for standard size metal shall conform to the test results indicated in para 3 of item 4.
13. Machine cut grit shall be as nearly uniform in size as possible and shall conform to following minimum requirements of passing through the rings : 5. Wherever and doubt exists as to whether the above requirements are satisfied in whole or part, the collection of M.C metal shall be got screened by the contractor if so ordered by the Executive Engineer and for which no extra payments shall be claimed by the contractor.
12. Any collection which does not fully satisfy the above requirements is liable to be rejected altogether.
13. Stacking shall be done by filling in the standard steel pharas of 2.00 x 1.50 x 0.50 metre and no deduction of voids shall be made from the gross measurements.
14. Regular stacks shall be done by the contractors on a fairly level ground. All the stacks shall be marked by white wash immediate on being measured and recorded by the Engineer in-charge. The rate includes blasting the rock, it any, breaking the metal, stacking, measuring in pharas etc. complete.

**Labour charges for spreading metal in 75 mm. thick layer for soling with required grade & camber & filling the voids with small size of chips and earth & watering consolidating by 8 to 10 tonnes power roller etc., complete as directed by E. I. C.**

1. Metal shall not be spread without permission of the Engineer-in-charge. Metal should be spread under careful supervision by trained coolies. Contractor shall see that uniform spreading as per collection of metal is done. The contractor shall spread the metal fully from the stacks without keeping any balance unless directed by the Engineer-in-charge to keep some stack in balance for making good unevenness or depressions during rolling works. To ensure that the material is spread to the required thickness, the road surface shall be marked out in to length over which the contents of heaps are to be spread. The bounds of earth or murrum (one on either side) shall be laid with a distance between them equal to the width of road to be metalled and shall be enough to prevent the loose metal from spreading during consolidation as well as to retain water used for consolidation. Payment for bunds will be made in the respective item.
2. The metal (including old metal) shall be screened and rubbish, dust, grass shall be removed and spread evenly on the prepared surface in grade and camber by using camber board etc. so as to ensure that the surface is true to camber and grade. At least two camber by using camber boards shall be in use at site. The surface shall be checked at every 50 ft. by means of template while the correctness of the camber in between shall be tested by string and corrected as required. Between the straight lengths and the
curves in camber of road to super elevation shall be made very gradually as may be directed by the Engineer-in-charge.

3. The spreading of metal shall proceed only 20 mt.(max.) advance of the rolling operations. The collection and spreading of the metal shall not be carried out in one and the same kilometer.

4. At the time of rolling by 8 to 10 tonne roller all surface irregularities, hollows, depressions, humps etc. shall be straight. The spreading of metal in required layer shall be done by the contractor.

The rate for this item shall be paid on cmt. basis and includes all the above operations with all lead and lift and consolidation by 8 to 10 tonne power rollers up to the satisfaction of Engineer - in - Charge.

**Labour charges for spreading murrum or yellow soil filling voids of metalling including watering consolidating by 8 to 10 tonnes power roller etc., complete as directed by E. I. C.**

Murrum of yellow earth shall be spread uniformly on the surface as instructed. Murrum shall be collected from the stacks shown by department. Earth shall be excavated and taken from the places shown. After uniform spreading, dry rolling with 8 to 10 tone roller shall be carried out. After rolling, surface shall be broomed and voids shall be filled up. After dry rolling is complete, the surface shall be watered and rolled again. All the voids shall be filled up again, watered and re - rolled. Rolling shall be carried out such that the layer already spread and rolled earlier shall not get disturbed. If required additional quantity of murrum/earth shall be spread at the places shown to get uniform surface. The operation of rolling, watering and re-rolling shall have to be continued, till uniform surface with required grade and camber is obtained.

Rate quoted shall be for all labour, tools, tackles and machinery. Payment shall be made for actual square meter of area provided with spreading of murrum/earth as above.

**As above but grit / stone dust**

Specification for item no. 67 shall also be applicable to this item except that instead of spreading murrum / yellow earth grit / stone shall be provided and paid for.

**Providing & Laying 600 mm dia. NP - 3 class R. C. C. Hume Pipe of approved size with collars for road crossing including excavation up to 900 mm. depth & refilling the trenches, joining, the pipes with C. M. (1:1) & filling 150 mm. thick concrete (1:4:8) below joints, curing etc., completed as directed by E. I. C.**

NP3 class R.C.C. Hume pipe of required diameter shall be of approved make. Contractor shall produce necessary test certificate. Pipes shall confirm to the IS. Pipes shall be laid to required depth and to the slope as instructed on site. Marking or invert levels on both sides shall be erected and pipe laid accordingly in line and level, Joint of the pipes shall be filled with c.m. 1:1 with necessary hemp rope. Joint shall be packed properly with semi-wet mortar with pressing. Outer surface shall be chamfered and finished neatly. C. C. 1:4:8 shall be provided with crushed stone chips of 12mm and down graded. Curing arrangement shall be made for the cement mortar joint and concrete for keeping continuous wet for period of minimum 12 days.

The relevant specification of item no. 45 shall also be followed for workmanship and mode of measurement.

Rate quoted shall be inclusive of all materials like pipe, collars, cement, coarse and fine aggregate hump ropes, labour, excavation, back filling etc. complete and disposing extra earth as directed.

Payment shall be made on running meters of pipe laid.
ITEM : --- DO --- but 300 mm. dia Pipe

The relevant specification of item no. 45 shall also be followed for workmanship and mode of measurement. Specification for item no. 69 shall be applicable to this item also but instead of 600mm dia pipe 300mm dia shall be provided and fixed and paid for.

Providing plantations to development of plants / trees / flowers, ornamental plants and gardens shrubs small trees of plants of selected and approved name, quality, size and growth in good condition. The work including the cost of plants, materials, digging pits in the soil of size 0.60 X 0.60 X 0.60 mtr, soil for planting trees mixing of manure & refilling the pit with good earth, watering as and when required. Providing pesticides / fertilizers with twelve months of maintenance, replacement and replacing of dead plants during maintenance, cleaning, removing, labourers tools and tackles, transportation, loading and unloading etc., complete as directed by E. I. C.

The work shall be carried out as per description of the item. The work includes all materials like plants, soil, manure, pesticides, fertilizers, labour, and maintaining the plants for twelve months.

The plant selection its location and duration shall be got approved in advance.

The payment shall be made per no. of plant provided and maintained.

Providing & Fixing 20 mm. dia. M. S. bar steps 150 mm. wide & 300 mm. long clear including grouting in wall, 3 coats of oil painting etc., complete as directed by E. I. C.

Concrete

20 mm dia MS bars steps are to be bent as per size specified in item with extra anchor length of 225 mm, with suitable hooks for proper grip in the wall. Grooves shall be cut in masonry at required distance as directed in the wall. The bar steps shall be properly grouted in wall in line & level with C. C. (1:2:4) and finishing smooth the same. Steel bar steps shall be given one coat of red oxide and 2 coats of approved brand, quality, tint enameled paint.

Payment shall be made on number bases for all above, including materials etc. complete.

Providing & Fixing 450 X 600 X 6 mm. thick size approved best quality of looking glass mirror with plastic moulded frame with shelf etc., complete as directed by E. I. C.

1.0. Materials
1.1. The 600 mm. x 450 mm. size mirror shall be of superior glass with edge rounded offer beveled as specified. It shall be free from flaws specks, or bubbles and its thickness shall not be less than 6 mm. The glass for the mirror shall be uniformly silver plated at the back and shall be free from silvering defects. Silvering shall have a protective uniform covering of red lead paint. The 6 mm, thick plywood shall conform to M-37. The 6 mm. thick A.C. sheets shall conform to M-24.

2.0. Workmanship
2.1. The mirror of 600 mm. x 450 mm. size mounted on A.G. Sheet or plywood 6 mm. thick with C.P. brass clips shall be fixed as directed, by fixing wooden plugs in wall and C.P. brass screws and washers. The work shall be carried out in best workman like manner.

3.0. Mode of measurements & payment
3.1. The rate includes cost of all labour and materials, tools and plant etc. required for satisfactory completion of this item. The rate shall be for a unit of One number.
ITEM NO. 69: Providing & Fixing a set of 6 Nos. of stainless steel coat racks of approved quality fixed on 20 mm. thick teak wood batten including 3 coats of oil painting etc., complete as directed by E. I. C.

Teakwood batten of 600mm x 100mm x 20mm thick shall be provided as per general specification of woodwork. The wooden batten shall be fixed at the place shown at the height instructed at site with the wall. 6Nos. of aluminum anodized coat racks of approved quality, shall be fixed on the batten at 150mm c/c 3 coats of oil paint shall be applied to wood work of approved quality make, tint shall be applied as per specification no. 16 of Schedule F.

Providing & Fixing 16 mm. dia. M. S. fan hooks embedded in slab or beam during casting as per instruction including 3 coats of oil painting etc., complete as directed by E. I. C.

16mm Dia M.S. bar fan hooks shall be provided in slab, beam, during casting as per instruction of Engineer-in-charge. The hook shall be kept vertical and binded with the slab, or beam bars as the case may be. The hooks shall be applied 3 coats of oil paint of approved color make in tint as per specification no. 17 of section F. If instructed by the Engineer - in - Charge to proved fan hook with smaller dia of bar, necessary reduction in the rate shall be made applicable by the Engineer - in – Charge. Payment shall be made per number basis.

Providing & Fixing 300 X 300 mm. size marble year plate with black border all-round & letters including fixing the same in cement mortar etc., complete as directed by E. I. C.

The marble plate should be 25mm thick and 300 x 300mm size of approved white marble, free from cracks and other defects and machine polished. The size of letters for number and the year shall be provided as directed by Engineer-in-charge and engraved and finished black with border all round. Necessary groove shall be provided in wall at the place shown by Engineer-in-charge. The plate shall be fixed in line level and plumb with c.m. 1:2 and all the edges shall be well finished as directed. Payment shall be made per number basis for all above operations.

Providing & Fixing 600 mm. long & 20 mm. dia. aluminium anodised towel rod with brackets etc., complete as directed by E. I. C.

1.0, Materials
1.1. The 20mm dia aluminum anodized towel rod shall be 600 x 20 mm. of best quality as approved by the Engineer-in-charge. The brackets shall be of anodized aluminum of best quality.

2.0. Workmanship
2.1. The brackets of the towel rail shall be fixed by means of CP, brass screws to wooden firmly embedded in the wall with C.M. 1:3 (1 cement: 3 coarse sand). The towel rail shall be fixed as and where directed.

3.0. Mode of measurements and payment
3.1. The rate includes cost of all labour and materials, tools and plant etc. required for satisfactory completion of this item.
3.2. The rate shall be for a unit of One number.

Painting the letters with best enamel oil paint in 200 to 250 mm. size etc., complete as directed by E. I. C. (Paint should be brought by the contractor.)
Letters shall be painted with best synthetic enamel paint of approved quality make and tint. Generally the letters shall be appointed with black letters with yellow background and black border of 12mm size or as per instruction of Engineer-in-charge and as specified in item. The letters shall be painted at the place shown by Engineer-in-charge. General specification of painting is applicable. The rate shall be for a unit of one number.

Providing & Fixing SIGN BOARD having size 2000 X 1000 mm. for SUB-STATION made from 16 gauge M. S. Sheet having frame work of 35 X 35 X 3 mm. M. S. angle all-round & 4 vertical intermediate angle supports at equal distance welded to sheet with 3 Nos. of 50 X 50 X 6 mm. M. S. angle posts 3.0 M. long with arrangement of bolting, 3 coats of oil painting etc., complete as directed by E. I. C.

General specification of fabrication shall be applied. The signboard shall be prepared from 16 gauge M.S. Sheet of specified size with angle frame of 35 x 35 x 3 mm size with 2 vertical angle supports to be welded at intermediate portion with the frame, as instructed. The signboard shall be fixed with 50 x 50 x 6mm M.S. angle supports by bolts and nuts. The angle supports shall be erected in line level and plumb as directed including necessary excavation. c.c. (1:3:6), grouting, curing etc. complete as per instruction of Engineer-in-charge. All steel work shall be given one coat of anticorrosive paint 2 coats of approved enamel oil paint. The signboard is painted with letters with border as per instruction of Engineer-in-charge with approved synthetic enamel paint. Rates shall be inclusive of all above materials, operation, tools, tackles etc. complete. The rate shall be for a unit of one number.

Providing COOKING PLATFORM 3000 X 675 mm. size with approved quality of stainless steel sink of size 450 mm. dia. & 4 Nos. of partition walls (middle) with cement plaster in C. M. (1:3) to all exposed faces, 75 mm. thick R. C. C. Slab in C. C. (1:2:4) at top with necessary reinforcement making holes in slab for gas connection, including kotah stone flooring with side Patti of required size & thickness, with polishing etc., complete & fixing teak wood cupboard of frame size 75 X 50 mm with shutter for opening of size 1.20 X 0.60 Mtrs. made from 19 mm. thick Nova Pan / ECO Board exterior laminated with all round teak batten Patti including two coats of oil paints & one coat of primer including PVC waste pipe, Nahni trap, bib cock, etc., complete as per drawing & instruction of E. I. C.

R.C.C. cooking platform of 3000 x 675mm size shall be constructed at the place shown as per drawing and instruction of engineer-in-charge. The relevant specification of B.B. masonry cement, concrete, reinforcement, cement plastering etc. shall be applicable as per items of the respective sections. B.B. masonry of 225/115mm thick in c.m. (1:6) shall be constructed on bed concrete of floor up to the required height as per drawing or as directed. The top R.C.C. slab 75mm thick, with sink, shall be cast in c.c. 1:2:4 with necessary shuttering and reinforcement, keeping holes for gas connections and waste coupling. Masonry and R.C.C. work shall be extra plastered 40 x 12mm thick all round. Arrangement for keeping pot shall be made on the top as per drawing or as directed. One brass waste coupling of 30mm size shall be provided and fixed in the sink with necessary P.V.C. waste pipe up to nahani trap. All masonry, R.C.C. plastering work shall be cured from minimum 10 days. Payment shall be made per number which covers all above as specified with all materials, labour, tools, tackles, shuttering, curing etc. complete.

Providing of template & foundation bolt in line and level before concreting of foundation and making arrangement for fixing template in such a way as it remains in position during concreting etc., complete as directed by E. I. C.
The templates and foundation bolts shall be line and level before concreting. Payment shall be made on number basis.

Supply, erecting and Commissioning 2 H. P. self priming Mono Block pump set of ISI make as per the instruction of Engineer-in-charge, with 2.0" suction and 1.5" delivery including casting cement concrete foundation for pump, with required length of G. I. pipe for suction with all necessary fittings like elbow, union, tees, bends, set of flange one brass float valve etc., complete as directed including supplying and fixing the starter of ISI make with ICTP switch & allied wiring of copper cable & board, testing etc., complete as directed by E. I. C.

Single phase 2 HP self priming mono-block pump having ISI mark with 2" suction and 1.5" as described in the item description, approved by Engineer – in – Charge shall be supplied and installed. Required panel BOARD, with all accessories, described in item description shall be installed, with steel framework and fixed as per instruction of Engineer – in – Charge with CC (1:2:4). Foundation of pump and motor shall be cast in CC (1:2:4), with necessary shuttering, reinforcement, supplying and fixing of foundation bolts, curing and finishing smooth of concrete work etc. complete. 18 gauge GI sheet cover with 25mm x 25mm x 5 mm angle frame shall be prepared as per approved design with hinges, locking arrangement etc. complete with 3 coats of oil painting as directed. All electrical installation will be carried out by licensed electrical supervisor only. Necessary test report shall be submitted for electrical installation. Pump with motor shall be handed over in complete working condition with trial run as decided by the Engineer – in – Charge. Guarantee for pump and motor from manufacturer shall be submitted for minimum one year. Rate quoted shall be for supplying, installing with all labour, materials, tools, tackles etc. and giving test to required delivery head as directed by Engineer-in-charge with manufacturers guarantee for satisfactory performance of pump and motor for minimum period of one year.

Payment will be made on number basis for all described in item and specifications.

Providing and fixing 24 gauge chicken mesh jali in plaster concrete and masonry joint work including required nails, tools tackles & approved quality of jali as directed by E. I. C.

The material to be used shall have to be got approved before start of work. Payment shall be made on actual square meter basis.

Supplying and spraying "Round up" (Glyphosphate 41 % SL) or equivalent weedicide for weed control in proportion of 250 ml. Weedicide in 15 litre of clean fresh water in two spray as per the manufacturer's specification and as directed by EIC.

The Contractor has to carry out the work as per manufacturer’s specification for the duration specified by the manufacturer of the product. Result shall be guaranteed for the duration specified and shall be backed by bank guarantee for the amount of 5 % of the operated item.

Providing and fixing of acrylic sign board of Acrylic sheet, computerised vinyl diagram in GI box with tube light fitting size 1800 mm X 1200 mm for various 66 KV S/S.

The matter in the board size of lettering and colors shall be got approved in advance.
Labour charges for leveling the transformer rail etc., complete as directed by E. I. C.

The work shall be carried out in line and level as directed EIC. The level of both the rail shall be uniform.
The pockets to be grouted shall be properly cleaned. Dust and other foreign materials shall be removed from the pockets. If required, Air blower shall be used for cleaning the pocket. If surface is not rough, roughening shall be done, if necessary and instructed by Engineer – in – Charge for bonding purpose. Payment shall made for the pair of rails made available for grouting and will include all labours, tools, tackles, etc. complete.

Providing & Fixing 25 mm. dia. PVC, conduit pipe for electric wiring as directed by the EIC.

25mm dia OD PVC pipe of the ISI quality and approved brand specified by the Engineer – in – Charge shall be fixed in the RCC column as per the instruction. Care shall be taken to plug all the ends by cloth so as to prevent entry of concrete or any other foreign material which may block the pipe for future insertion of cables. The pipe shall be so laid and fixed that while casting / constructing gate pillars, it remains in truly vertical position in centre of column.
The payment shall be made on running meter basis for the length of pipe fixed in the column and shall include all materials, specials such as bend, tee, etc, labour, tools, tackles, etc. complete.

Providing & Laying C. C. M. 7.5 for foundation & plinth with gravel or picked up metal or hand broken stone of size 40 mm. to 60 mm. as coarse aggregates including mixing in mixture machine only, watering, ramming, consolidating etc., complete as directed by EIC.

1.0. Materials

2.0 Workmanship
2.1 The proportion of the concrete mix shall 1:4:8 (one cement : four coarse sand : 8 hand broken stone aggregate 40 mm to 60mm nominal size) by volume. Concrete work shall have surface or as specified in the item.
2.2 The designation ordinary M-7.5, specified as per IS corresponding approximately 1:4:8 nominal mix of ordinary concrete by volume respectively.
2.3 The ingredients required for ordinary concrete containing one bag of cement of 50 Kg by weight (0.0342 Cu. M.) for different proportions of mix shall be as under :
2.4 The quantity of water in a mix shall be just so adjusted to overcome the difficulties of placement and compaction.
2.5 Workability of the concrete shall be controlled by maintaining 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 the coarse aggregate shall be as large as possible within the limits specified.
2.7 Proportioning : Proportioning shall be done by volume, except cement which shall be measured in terms of bags of 50 Kg weight. The volume of one such bag being taken as 0.0342 Cu. meter. 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 allowance for bulkage shall be made.
2.8 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 water tight 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 and 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 percent above the specified.

3.0 Mode of measurements and payment

3.1 The concrete work shall be measured in length, breadth and depth as specified on the drawing limiting dimensions to those specified on drawing or as directed.

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

Providing form work of ordinary timber planking so as to give 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

1.0 Materials

1.1 The shuttering to be provided shall be of ordinary timber planks 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.

2.0 Workmanship

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

2.2 Cleaning and Treatment of forms

2.2.1 All rubbish, particularly chippings, shaving and saw dust shall be removed from the interior of the form before the concrete is placed and the form work in contact with concrete shall be cleaned and thoroughly wetted or treated. The surface shall be then coated with soap solution applied before concreting is done. Soap solution for the purpose shall be prepared by dissolving yellow soap in water to get consistency of paint. Alternatively a coat of raw linseed oil or form oil of approved manufacture may be applied in case steel shuttering is used. Soap solution or 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 reinforcement bars.

2.3 Stripping time

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

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

2.5.1 The centering to be provided shall be got approved. It shall between 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 of centering and form work is satisfactory during concreting. Erection should also be 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 centering shall be provided on firm foundation or base of sufficient strength to carry the loads without any settlement.

2.5.3 The centering 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 centering. If there is a failure of form work or centering, contractor shall be responsible for the damages to the work, injury to life and damage to property.

2.6 Scaffolding

2.6.1 All scaffolding, hoisting arrangement and ladders, etc. required for the facilitating of concreting 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 withstand 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 solely responsible for the safety of the scaffolding, hoisting arrangement, ladders, work and workman etc.

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

2.6.3 The rate is applicable to all conditions of working and any height. 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, strutting, propping, bolting, nailing, wedging, easing, striking and removal.

(b) Filleting to form stop chamfered edges or splayed external angles not exceeding 20mm 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-use

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

3.0 Mode of measurements and payment

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

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

3.3 The rate is for the completed item.

3.4 The rate shall be for a unit of one square metre.
Providing fitting & fixing fully glazed/ partly glazed double leaf anodized aluminum entrance door using extruded section fabricated by standard manufactures with framing 10.15cm x 4.45cm rectangular section & door shutter made from 10.15 cm x 4.45cm aluminum bottom section top & vertical section 6.35x3.80cm size using 5.5mm thick "Triveni" or HB4 plain glass with glazing deep rubber gasket with locking arrangement(Godrej type) with all fixtures & fastenings of anodized section with aluminum bedding floor spring mounted door closer with all labours & materials etc. Complete as per drawing and as directed by E.I.C.

The aluminium section to be utilized shall confirm to IS 1285/1980 and IS 1869/1968 for the material grade and anodizing respectively. The frame section shall be 61.85mm x 31.75mm weighing 0.695kg per mtr. Minimum of section no 8687 Jindal Aluminium Ltd make or its equivalent and section for shutter shall be of 50 mm x 20 mm size weighing 0.571kg per Mtr. minimum of section No 8305 of Jindal aluminium Ltd make or its equivalent.

Necessary additional / special sections shall be used to facilitate locking arrangement, handle stay if necessary. As directed by EIC.

Payment shall be made on Smt. Basis. No additional payment shall be made for fixture or addition /special section.

Providing & Fixing MS grill for exhaust fan of approved quality and design and drawing including welding or bolting fixtures and fastening MS hold fast with three coats of oil painting of approved shade and make with one coat of red - oxide primer including grouting the hold fasts in C C (1:2:4) / fixing in wall with required size of nails including tools, tackles and materials and all labours including making holes for fan etc., complete.

Specification shall be as per item description.

Payment shall be made on the basis of number of grills for exhaust fan fixed and shall include all materials, labour, tools, tackles, etc. complete.

Providing & Fixing Garware film of approved quality and make etc. complete.

Before starting the work, Garware film sample shall be got approved from the Engineer -in – Charge. Work shall be executed as per manufacturer’s specification and instructions.

Payment shall be made on the basis of Sq. meter of film applied on the glass panel of windows / doors. The payment includes all materials, labour, tools, plants, wastage, if any etc. complete.

Providing & Fixing M. S. Cover for cable trench in control room made from 14 Gauge M. S. Sheet having M. S. Angle frame all-round of 40 X 40 X 5 mm. size and cover shutter frame of angle 30 X 30 X 5 mm. size & 2 supports at middle including oil painting of 3 coats of approved shade & make. Providing 2 handles of 6 mm. dia. M. S. bar as per instruction etc., complete as directed by E. I. C.

General specification of fabrication shall be applicable. The covers shall be fabricated as per detailed drawing given as instructed on site. Item provides for supplying, fabrication, painting and fixing M.S. Covers at site, with 2 handles of 6mm dia bars shall be provided with holes in the cover, with necessary flat welded at the bottom of the handle so that the handle do not project outside when the covers are placed on the cable trench. Measurements shall be paid on the square meter of the covers provided.
Providing 2500 mm. internal diameter and 3.0 mt. deep soak pit including excavation in all types of soil and soft / hard rock and B. B. C. C. (1:4:8) bedding 300 mm. thick below masonry and 450 mm. thick B. B. masonry in C. M. (1:6) up to 2000 mm height, 350 mm. thick for further 2000 mm and 230 mm thick for remaining height honey combed plastering in CM 1:3 inside up to full height and 100 mm thick R. C. C. slab with 600 X 600 mm. C. I. Heavy duty cover with frame, with necessary reinforcement as per design and C. I. Vent pipe 1800 mm. long with B. B. Masonry pillar 350 X 350 X 450 plastered all around filling 40 to 50 mm size brick bats up to 1.5 tm. depth, including 16 mm dia M. S. U Steps refilling and as directed and including disposal of the surplus excavated earth up to the lead of 500 tm. radius including 3 coats of white or colour wash to all exposed finished surface etc., complete as directed by E. I. C.

Soak pit of given dimension shall be constructed at place shown. The specification of excavation, brick masonry, concrete, plaster etc. shall be as provided in respective section. Brick wall on B.B.C.C. 1:4:8 shall be constructed as described in item in C.M. (1:6). R.C.C. slab to be provided at top, shall be in c.c. 1:2:4 with necessary shuttering and reinforcement. 600 x 600mm heavy duty C.I. cover with frame as per I.S. standard shall be provided in top slab. Honeycombed brick masonry shall be provided for the depth as shown in drawing or as directed. 12mm thick outside plastering in c.m. 1:3 shall be provided for 1:5 tm. depth of masonry from top. The pit shall be filled with brickbats of 40mm to 50mm size up to 1.5 meter depth. Brickbats shall be of size specified and free from dust, small pieces and other foreign materials. If desired by Engineer-in-charge the same shall be screened and other foreign materials. If desired by Engineer-in-charge the same shall be screened and provided. 16mm dia M.S.U. shape steps shall be provided @ 200mm c/c as directed. Plastered surface and top shall be given 3 coats of whitewash, 75mm dia C.I. vent pipe of 1800 mm length shall be provided with brick masonry plastered pillar and C.I. cowl ventilator shall be provided at the top of vent pipe with joint filled in c.m. 1:1. Payment shall be made per number, which covers all above as specified with all materials, labour, tools, tackles scaffolding, curing etc. complete.

Providing and fixing Acrylic name plates of required size including painting letters as directed and fixing as directed by engineer in charges.

Before starting the work, acrylic sheet sample as well as type of letter style and size of letter shall be got approved from the Engineer - in – Charge. Work shall be executed as per Engineer - in – Charge’s instructions.

Payment shall be made on the basis of one number. The payment includes all materials, labour, tools, plants, wastage, if any etc. complete.

Labour charges for beveling the Kotah stone as directed.

The item shall be executed on the exposed edges of Kotah stone fixed on sills, steps and wherever directed by the Engineer - in – Charge. The Kotah stones shall be beveled in half round shape with smooth finishing.

The payment shall be made on the basis of running metre of edges beveled and shall include all tools, tackles and plant, labour, etc. complete.

Providing & laying CC (1:3:6) or M 10 for structural foundations and for erection of M. S. angle posts using 20 to 25 mm. size black trap machine crushed metal including shuttering for all side up to any height and mixing in mixer machine, ramming with mechanical vibrator & including grouting of foundation bolts simultaneously with the help of templates (setting of template of foundation bolts and finishing by plaster will be paid separately)
M-10 grade of concrete using machine cut black trap of size 12 to 20mm shall be laid using minimum cement content of 221 Kg / Cmt. and free water cement ratio of 0.60. Sample of ingredients to be used shall be got approved.
The general specification of concrete shall be applicable for this item. Rate quoted shall be of all materials, labour, tools, tackles, shuttering, scaffolding, curing, etc. as per item. Concreting work, involved in this item, is for the foundation work for various equipments and machinery.
Payment shall be made on actual cu. M. of concrete work done as per detailed drawing furnished by department. The pockets to be grouted shall be properly cleaned. Dust and other foreign materials shall be removed. If required, it shall be cleaned by Air blower. If surface is not rough, roughening shall be done, if necessary and instructed by Engineer – in – Charge for bonding purpose. Existing surface shall be applied with thick paste of cement mortar. No separate payment will be admissible for this.
Payment shall be made for actual quantity of concrete work done for grouting.

Providing and Laying controlled cement concrete M-150 and curing complete excluding the cost of form work and reinforcement for reinforced concrete work in
(a) Foundation, footings, Bases of columns etc. and Mass concrete.
(b) Slabs, Landings, shelves, Balconies, Lintels, Beams, Girders and cantilever up to floor two level.
(c) Columns, pillars, posts and struts up to floor two level

1.1. The relevant specifications of item No. 12 shall be followed except that the work shall be carried out for M-150 reinforced concrete work. In addition, the following stipulations shall be followed for :
(a) The bars shall be kept in position by the following methods :
(i) In case of beam and slab construction, sufficient number of precast cover blocks in cement mortar 1:2 (1 cement : 2 coarse sand) about 4 cms. x 4 cms. section and of thickness equal to the specified cover shall be placed between the bars and shuttering as to secure and maintain the requisite cover of concrete over the reinforcement. In case of cantilevered or doubly reinforce beams or slabs, the main reinforcing bars shall be held in position by introducing chain spacers or supports bars at. 1.0 to 1.2 metre centres. (ii) In case of columns and walls, the vertical bars shall be kept in position be means of timber templates with slots accurately cut in them, the templates shall be removed after concreting has been done below it. The bars may be also be suitably tied by means of annealed steel wires to the shuttering to maintain their position during concreting.
1.2. All bars projecting form pillars, columns, beams, slabs etc, to which other bars and concrete are to be attached or bounded to later on, shall be protected with a coat of thin neat cement grout, if the bars are not likely to be incorporated with succeeding mass of concrete within the following 10 days. This coat of thin neat cement shall be removed before concreting.

2.0. Mode of Measurement & Payment
2.1. The relevant specifications of item No. 12 shall be followed.
2.2. The volume occupied by reinforcement shall not be deducted from R.C.C. work.
2.3. The rate shall be for a unit of one cubic metre.

Providing & fixing sliding gate of 40 mm. dia. mild steel pipe 'B' Class all round and 20 mm. dia. mild steel pipe at 200 mm C/C and 12 mm. mild steel square bars at 200 mm. c/c alternatively i.e. One square bar between two pipe vertically welded to 40 mm dia. pipe frame as per drawing and design with necessary brackets, holdfasts, locking arrangement on top & aldrop on both sides including base rail for sliding the gate having ball bearing rollers & guide track of 50 X 6 mm. M. S. Flat with holdfast, fabrication of side supports including fixing the letters
"GETCO" on front side etc. complete with three (3) coats of approved Oil Painting & one cost of red oxide primer as directed (The cost does not include the cost of reinforcement, column supports, joists, concrete masonry work)

Sliding gate with 40 mm dia M.S. Pipe frame shall be prepared as per detailed drawing. General specifications for fabrication shall be applicable. Holes shall be drilled in 40mm dia m.s. pipe in top and bottom members at 200mm c/c for 20mm dia pipe. Pipe shall be inserted at least 20mm inside and then welded to frame. Similarly 12mm M.S. Square bars shall be provided alternatively at 20mm c/c necessary brackets. hold fast, aldrop, locking arrangement shall be provided as per detailed drawing and as per item description. GETCO letters shall be of 250mm sizes and shall be fixed on gate as shown or as directed. Gate shall be erected in plumb, line and level with bottom rail and guide and rollers with bearing.

Gate shall be given one coat of red oxide and 3 coats of approved quality, brand and tint oil paint or 3 coats of aluminum paint as directed. Trial for smooth operation shall be given and defect observed during guarantee period of 12 months will have to be attended with replacing of parts etc. without any extra cost.

Payment shall be made on square meter basis. Area of gate provided & fixed shall be measured and paid, based on unit rate quoted.

Providing & Fixing hinged type 40 mm. dia. M. S. pipe "B" class all around & 20 mm. dia. M. S. Pipe gate as per drawing & design with necessary brackets, hold fasts welded to vertical girders, ball bearing wheels for sliding the gates with 50 x 6 mm. M. S. Flat, guide rail fixed in concrete with 3 coats of oil painting of approved shade & make, with one coat of red oxide primer etc., complete as directed by E. I. C. (COST DOES NOT INCLUDE THE COST OF COLUMNS, STEEL / JOISTS, CONCRETEM, MASONRY ETC.)

The specification of item No. 104 shall be applicable. The gate shall be hinged and provided with sliding arrangement with ball bearing wheels, 50 x 6mm guide holdfasts for fixing in concrete for guide as well as gate. Aldrop shall be provided on both side with locking arrangement at top. General specification of fabrication shall be applicable. After gate is completely fabricated and okayed. One coat of red oxide shall be given and after erection in position and testing, 3 coats of oil painting of approved quality, brand and tint shall be applied or 3 coats of aluminum paint shall be applied according to instruction at site. All fabrication, welding etc. shall be in best workmanship like manner. For frame of 40mm dia pipe elbow shall be provided at corners. For smooth bending shall be have to be adopted by approved method. Any damage, deshaping etc. during fabrication, bending or welding shall make member for rejection. Where bending is approved smooth and uniform bending shall be for all corners.

Payment shall be made for actual square meter area of gate provided as per drawing or per details furnished on site.

Providing & applying two coats of snowcem or equivalent cement paint including cleaning the surfaces, watering etc. complete as directed by EIC

Water proof cement paint Snowcem or equivalent quality shall be of approved brand and manufacture and shall be applied on surface as per manufacturer’s specifications. Prior to applying the paint the surface shall be cleaned, brushed and all loose adherences, mortar dropping, grease, etc. shall be removed. Surface shall be wetted with water before application of paint. Paint shall be mixed with water in such quantity that can be utilized within an hour. The paint shall be mixed with water in such proportion and by such method as recommended by the manufacturer. During application of the mix to the surface, it shall be stirred well. It shall be applied such that direct heat of sun is avoided during application. Next coat is applied after previous coat
has set for 24 hours. Next coat shall be applied without wetting of surface, 2 coats of paint shall be applied as specified in the item to get uniform shade. Painted surface shall be cured for 7 days by sprinkling water and keeping it wet. Rate quoted shall be including of cleaning of surface before application of paint, cleaning area after application including stain removal, scaffolding, curing, etc. complete.

Providing & laying 75 mm thick built up spray grout base course double layer using tack coat at the rate of 5 kg of asphalt of required grade per 10 sq. mt. for first layer and 15 kg. of asphalt of required grade per 10 sq. mt. For grouting for second layer as per requirement and spreading grit at the surface using 0.13 cmt. of key aggregates of size 40 to 50 mm. (black trap metal) per 10 sq. mt. Area over existing surface including rolling & consolidating with 8 to 10 tonnes power roller for each layer etc., complete as per specification and as directed by EIC.

The surface shall be cleaned with wire brush and coir brush to remove the dust and foreign materials. 75 mm thick built up spray grout base course shall be provided in single layer as directed by Engineer-in-charge.
Asphalt of 60/70 or 80/100 grade satisfying the requirement of I.S. 702 and grade as decided by Engineer-in-charge should be used. The binder shall be heated to optimum temperature in boiler. Aggregate of size 40 mm to 50 mm (black trap metal) of approved quality shall be used.
Payment shall be made on Sq. Mt. basis.

Supplying and pouring of 'Pidiproof' of PIDILITE brand or equivalent as waterproofing admixtures as per manufacturer's specifications in cement concrete during casting of concrete as directed by the Engineer - in - Charge.

Pidiproof waterproofing admixture manufactured by M/S Pidilite shall be mixed with concrete mix before laying the same in manner and 200ml per one cement bag or as recommended by the manufacturer. This admixture shall be used during concreting of slabs and all other water retaining structures.

Providing and fixing broken glass pieces on top of compound wall coping. This item should be executed immediately after the casting of coping.

Broken glass pieces obtained from soda bottles shall be fixed during concreting of the top coping of compound wall in close proximity of each other at about 20 to 25 mm c/c and shall project from the top of coping by about 25 to 40 mm and shall be embedded in the concrete to a depth of 25mm and as per instruction of Engineer - in – Charge.

The payment for this item in running metre and shall include providing of glass and labour charges irrespective of the thickness of coping.

Conducting and carrying out verticality test as per ISS (The contractor shall have to submit the certificate of verticality test from reputed firms who are carrying out such tests.) If the verticality test is not satisfactory or not conforming to IS specifications the amount maximum upto 20 % of contract i.e. total value of work done will be recovered from contractor's bill.

Verticality test as per IS standard shall be carried out as instructed in the item with all necessary arrangement and materials. The results observed shall be noted for various depths and submitted with certificate as desired in the item. The test shall be carried out in the presence of Engineer – in – Charge or his authorized agent.
Rate shall be quoted for lump sum for the job.
Developing and cleaning and giving yield test for bore well, by required size of compressor and pump running for 12 hours with necessary pipes, lowering and removing the pipes in well etc., with all equipments etc. complete.

Bore well drilled shall be first developed by suitable compressor for 12 hours and observation of water coming out, shall be made for, sand particles in water shall be noted. Arrangement of “V” notch weir shall be made for measuring the water flow for yield with marking on the same. A chart showing the discharge with various depth of flow from V notch shall be submitted.

After compressor test is over, pump for running test yield test shall be arranged for 12 hours pumping for desired yield and the flow shall be measured with V notch weir. Results observed may be submitted. Draw down level for water in each case be noted and submitted and time taken for equipment shall be also noted and submitted. All observation shall be made and noted in presence of representation from GETCO. Due to pumping any difference in gravel packing level shall be observed, and qty, required to bring to top shall be also noted & informed & filled up.

Rate quoted shall be lump sump for above tests with all necessary equipments, tools, tackles, machineries etc. complete required for the job.

Providing water logging test with electro logging equipment and arranging for water potability test including defining the water availability test, chemical and bacteriological analysis of water sample as per parameters for drinking water sample from PH engineering lab or any Government body, etc. complete as directed.

Water logging test, with electro logging equipment, may be carried out in presence of authorized agent of Engineer-in-charge. Potability of water shall be got tested in Government, public health laboratory or other recognized laboratory approved by Engineer-in-charge. Results obtained shall be submitted. Total availability of water from bore and maximum discharge available, type of pump with it’s capacity recommended shall be also obtained from authorized agency experienced in the work of from recognized institute as approved by Engineer-in-charge. Details of all test carried out with their observations and inference shall be informed.

Payment shall be made after completion of entire job on the basis of each job work completed.

Providing and fixing top cap for 200mm ø pipe, clamps and socket and other accessories required for completing for completing the job.

The cap for 200mm ø socket shall be provided on the well drilled so that pipe do not get chocked with foreign materials and no one can play mischief. One clamp for supporting the pipe line lowered in the well shall be provided at floor level/ground level so that pipe may not run down in the well due to any accident, Socket shall be provided on the top of pipe. All the work shall be carried out as directed by Engineer-in-charge.

Rate quoted shall be lump sump for all above providing and fixing including welding, fabrication etc., necessary.

Supplying and Lowering the Kalama or KSB Kalama/ Jyoti / Kirloskar / Amrut make submersible pump of 4 HP X 12 stage in bore well etc., completed as directed including ISI approved MEI type oil immersed auto transformer starter commissioning and testing to required delivery head. (ALL OTHER ACCESSORIES WILL BE PAID SEPERATELY.)

4.0 H.P. 12 stage submersible pump with motor of I.S.I. mark and approved make shall be supplied and installed as directed. Rate quoted shall be for supplying, installing with
all labour, materials, tools, tackles etc. and giving test to required delivery head as directed by Engineer-in-charge with manufacturers guarantee for satisfactory performance of pump and motor for minimum period of one year.

**Extra for one H.P. additional capacity mortar.**
Rate shall be quoted for additional one H.P. capacity of the motor specified in the above noted item.

**Extra for one stage additional capacity for pump.**
Rate shall be quoted for additional one stage of the pump specified in the above noted item no. 101.

**Providing & Fixing panel BOARD of metal box with a main fuse connection, Ampere meter, Voltmeter 30 Amp, 3 phase switch single phase preventor cum water level guard and male and female type socket 3 phase indicator lamps and toggle switch etc., including all wiring / earthing complete as directed by E.I.C.**

A panel BOARD of T.W. 20mm thick shall be of the specified dimension required for the all the assessorial described in the item. All the accessories shall be as per I.S. specifications and shall be of approved make. All the accessories shall be as per I.S. specification and shall be of approved make. All accessories shall be connected with copper wire/cable suitable for 30 Amp. load, connected with indicator lamps etc., as directed by Engineer-in-charge.
Payment shall be for BOARD with all accessories, wiring, etc., on lump sump basis.

**Providing and joining 4mm flat copper sufficient for 7.5 H.P. pump set etc. complete as directed.**

4mm flat copper cable suitable for 20 H.P. pump shall confirm to I. S. specification and to approved make. Cable shall be jointed or fixed by licensed electrical supervisor only with necessary precaution and materials required for connection and joining.
Payment shall be made in running meter of the cable supplied and fixed.

**Providing & fixing and lowering Ashirvad make 50mm dia uPVC column pipe (standard pipe) with coupling and wire lock, O ring, rubber gasket, APPL marked bottom and top adaptor and pump guard with flange set as per requirement and specification, closing, clamping, etc. with required bend, plug etc. complete as directed by E.I.C.  The pump shall be additionally supported by 2 nos. of 4mm dia GI HT wires along the entire length of column pipes and shall be taken out of the borewell and fixed with casing pipe etc. complete as directed by the Engineer – in Charge.**

uPVC  Ashirvad make 50mm internal dia square threaded column pipe with coupling and wire lock, O ring, rubber gasket, APPL marked bottom and top adaptor and pump guard with flange set shall be provided and installed in the well as directed. Pipe shall be lowered slowly so that drilled well is not damaged or collapsed on some portion. Pipes shall be joined by screwing male and female end as per manufacturer’s instruction and specifications and couplers shall be locked with special wire lock system to ensure that during installation and removal of the pumps the coupler does not come out resulting in column slippage. Necessary arrangement for lowering pipe shall be made by the contractor. After the pipe line is lowered completely and cleaned it shall be covered at top.
The pump fixed at the bottom of the pipe shall be supported additionally on 2 nos. of 4mm dia GI HT wires passed along the entire length of the column pipes and taken out of the casing pipe and fixed with casing pipe top so that pump is restricted from falling inside the drilled borewell.

Rate shall be quoted for the diameter of pipe specified with all the operations and materials required with plant, machinery, tools and tackles etc., for completing the item. Payment shall be made on pipe lowered as above on Rmt basis.

**Box cutting the road surface to proper slope and camber for making the base of road work including removing the excavated stuff and depositing on the road side slope as directed up to 50 mtr lead.**

Cutting shall be done in proper grade and camber as per measurements given. Care must be taken that the tall slopes are evenly and truly dressed. Cutting shall be done to the exact depth required and shall be as per formation level in proper grade and the camber. If extra depth of cutting is done due to negligence of the contractor the same shall be refilled with approved quality of materials duly consolidated to the satisfaction of the Engineer – in – Charge (without any extra cost). Box cutting for soling and metalling in required width and the depth shall be done.

The stuff received from the cutting shall be utilized for filling cuts and correcting side slopes of band with all lead and lift as directed. Useful stuff shall be carefully stacked separately as directed.

The measurement shall be taken as per cross sectional measurement of the cutting based on length, breadth, depth measured with tape at every 25 metres interval.

The payment shall be made on Cmt. basis.

**Providing & laying cement sealing work for the drilled bore-well hole to stop entry of upward salty water including clay packing as required in proper manner or suggested by geologist to required depth at site as directed by Engineer-in-charge etc. completed.**

Specification for the item shall be as per item description. Payment will be done on the basis of job work after completion of entire job.

**Providing cement pointing in C.M.(1:1) including racking out of joints, scaffolding, curing finishing etc., completed as directed by E.I.C.**

Before pointing work is taken up joints, if not racked shall be racked out for proper bondage. Surface shall be wetted with water and joints cleaned. Sand and cement are mixed in equal proportion. The mortar shall be pressed in the joints just sufficient to cover up the joint only. Horizontal and vertical impression shall be made with nail or M.S. flat piece. The impression shall be 6mm wide and 6mm deep freely horizontal and vertical. Pointed surface shall be kept wet for minimum 10 days. Sample of pointing to be got approved from Engineer in charge before starting work.

Rate quoted shall be inclusive of scaffolding and working at all levels. Payment shall be made for actual sq. metres of area provided with pointing.

**Uncoursed rubble masonry with hard stone of approved quality in foundation and plinth in cement mortar 1:6(1 cement : 6 course sand ) including levelling up etc complete**
1.0 Materials:
The cement mortar shall conform to M-11. Stones shall conform to M-16.

2.0 Workmanship:

2.1 Dressing of stones:
Stones used for uncoursed rubble masonry work shall be hammer dressed on the sides, and beds in such a way as to close up with the adjacent stone in the masonry work as strongly as possible. The face stone shall be dressed in such a manner as to give a specified pattern such as blygonal tucking etc. The face of the stones shall be so dressed that bushing on the exposed face shall not project by more than 40mm from the general wall surface and on the face to be plastered. It shall not project by more than 19mm nor shall have depressions more than 10mm from the average wall surface.

2.2 Laying:
All the stone shall sufficiently wetted before laying to prevent absorption from mortar. The wall shall be built true to plumb (or true to required batter when so specified). All connected walls in a structure shall normally be raised up uniformly and regularly. However, if for any specific reason, one part of masonry is required to be left behind, the wall shall be racked back at an angle not steeper than 45°. Vertical toothed joints in masonry shall not be allowed. The work shall be carried out regularly and masonry of any day will not be raised by more than 1 metre in height.

2.3 The stone shall be laid in an uncoursed fashion or random facing etc. However the masonry is required to be brought to level at various stages viz. plinth level, window sill level, roof level and any other level specifically shown in the drawings. This may be done by first adjusting the laying of stones to one level and then providing leveling course of cement concrete 1:6:12 (1 cement : 6 sand : 12 graded stone aggregate 20mm nominal size) or as otherwise specified.

2.4 Proper bonding shall be achieved by closely filling in adjacent stones as well as by using bond stones or through stones as described herein below. Face stone shall extend back sufficiently and bond well with the masonry. The stone shall be carefully set so as to break joints and avoid formation of vertical joints. The depth of stone from face of the wall inwards shall not be less than width or breadth at the face. The hearing or interior filling of the wall shall consist of rubble stones which may be of any shape. Neither the face stone nor the hearing stone shall be so small to pass through circular ring of 150mm internal diameter in any direction nor shall any of them shall have minimum thickness 100mm.

2.5 All stone shall be carefully laid, hammered down by a wooden mallet into position and solidly embedded in mortar, chips and spawls of stone may be used wherever necessary to avoid thick mortar beds or joints at the same time ensuring that no hollow space is left anywhere in the masonry. The chips shall not be more than 20% of volume of masonry. The hearing shall be laid nearly level with face stones except that at about one metre intervals vertical bond stone or plums projecting about 150 to 200 mm shall be firmly embedded to form vertical bonding in masonry.

2.6 Bond Stones:
Bond stones or through stones running right across the thickness of wall shall be provided in walls upto 600mm thick. In thicker walls two stones overlapping each other by at least 150mm shall be provided across the thickness of the wall to form bond stones. There shall be atleast one bond stone for every 0.5 sq. m. of wall surface. The bond stone shall be marked by a distinguishing letter during construction for subsequent verification and shall be laid staggered in subsequent layers.

2.7 Quoins:
The quoins or corners stone shall be selected stone nearly dressed with hammer and/or chisel to form the required corner angle and laid header and stretcher alternatively. The bed and top surface of quoins shall be chiseled dressed to give horizontal joints. The quoins shall have a uniform chisel draft of at least 25mm width at four edges of each
exposed face, all the edges of the same face being in one plane. No quoins stone shall be smaller than 0.025 cum. in volume.

2.8 Jamb stones:
The jamb stone shall be made with stone specified for quoins, except that the stone provided on the jambs shall have their length equal to thickness of wall upto 600mm and a line of headers shall be provided for walls thicker than 600mm as specified for bone.

2.9 Joints:
All the joints shall be completely filled with mortar and their width shall not exceed 25mm. When plastering or pointing is not required to be done, the joints shall be struck flush and finished simultaneously while laying the stone. Otherwise the joints shall be racked to a minimum depth of 20mm by a racking tools during progress of laying while mortar is still green.

2.10 Scaffolding:
Single or double scaffolding shall be used. The scaffolding shall be strong and sound. The holes left in masonry for supporting scaffolding shall be filled and made good before plastering.

2.11 Curing:
Green work shall be protected from rains by suitably covering the same. Masonry shall be kept constantly moist on all the faces for a period of at least 7 days. The top of masonry shall be flooded at the close of the day.

3.0 Mode of measurement and payment:
3.1 All work shall be measured on the basis of finished dimensions and measured net except where otherwise specified. Only specified dimensions shall be allowed. Anything extra shall be ignored. The masonry work in foundation and plinth shall be measured under this item. No deduction shall be made nor extra payment made for the following:
(a) Ends of joints, beams, posts, girders, rafters, purlins, trusses, corbels, etc. each upto 500 sq. cm. In section.
(b) Opening each upto 0.1 sq. cm.
(c) Wall plates and bed plates bearings of chhaja and like upto 10 cm. Depth (bearing of floor and roof slabs shall be deducted from masonry).
(d) Drain holes and recesses for cement concrete blocks to embed hold fasts for doors, windows, etc.
(e) Building in the masonry iron fixtures, pipes upto 300mm dia hold fasts of doors and windows.
(f) Forming chases in masonry upto section of 350 sq. cm.
3.2 The rate shall be for a unit of one cubic metre.

Providing and fixing 30mm thick factory made PVC rigid foam paneled door shutters manufactured by Rajshri or its equivalent made from MS tube of 19 gauge thickness, size 19 x 19mm for styles and 15 x 15mm for top and bottom rails, covered with heat moulded PVC “C” channel of 6mm thick sheet and 30 x 50mm wide to form styles and 5mm thick and 75mm wide PVC sheets for top rail, lock rail and bottom rail on either side and 5mm thick, 20mm wide cross PVC sheet as gap insert for top rail and bottom rail, paneling of 5mm thick PVC sheet fitted in MS frame welded/sealed to the styles and rails with 5 x 30mm PVC sheet beading on either side and joined together with solvent cement adhesive etc. complete as per manufacturer’s specification and direction of EIC fixed to frames with 4 nos. of powder coated butt hinges. (For W.C. and bathroom shutters)

Specification shall be as per item description.

Payment shall be given on the basis of sq. m. and shall be measured out to out of the door shutter and shall not include wastage, if any and will be inclusive of tools, tackles, labour, transportation, etc. required to complete the item.
Providing and fixing factory made PVC door frame manufactured by M/s. Rajshri or its equivalent of size 50 x 47 mm with a wall thickness of 5mm made out of extruded 5mm rigid PVC foam sheet mitred at corners and joined with 2 nos. of 150mm long brackets of 15 x 15 mm MS square tube, the vertical door profiles to be reinforced with 19x19mm MS square tube of 19 gauge, EPDM rubber gasket weather seal to be provided throughout the frame. the door frame to be fixed to the wall using MS screws of 65/100mm size complete as per manufacturer’s specifications etc. complete as directed.

Specification shall be as per item description.

Payment shall be made on the basis of running metre of the frame fixed and shall not include wastage, if any and will be inclusive of tools, tackles, labour, transportation, etc. required to complete the item.

Providing B.B. Masonry chamber for earthing pit of approved size and drawing including 40 mm thick. PSC cover with 25mm dia. hole in centre for watering, necessary excavation bottom concreting of 150mm thick BBCC (1:4:8) below RCC 1:2:4 lintel beam only, with 2 Nos. of lintel beam of size 1.52 x 0.23 x 0.15 and 2 Nos. of lintel beam of size 1.06 x 0.23 x 0.15 out to out with 5 Nos. of 8 mm dia. bars & 6mm dia., 11 Nos. rings, and 4 Nos. of 8mm dia. bars & 6mm 5 Nos. rings respectively, 225mm thick B.B. masonry in CM (1:6), 12mm thick. Cement plaster in CM (1:3) inside as per requirement (without bottom) and to all exposed faces upto 300mm below, including disposal of excavated earth within or outside s/s premises for any lead including making groove at top of masonry wall for fixing 40mm thick PSC cover flush to top of man hole, 3 coats of white or colour wash to all exposed finished surface & green colour oil paint to PSC cover etc. complete as directed by E.I.C.

A 600 x 600 clear size with BB masonry upto 1000mm depth.

B.B. masonry inspection chamber (manhole) of specified size, item shall be constructed at location shown with base concrete of (1:4:8) B.B.C.C. 150mm thick, 225mm thick. Brick masonry wall in c.m. (1:6) shall be constructed of width as per drawing or as per details furnished on site. Plastering inside including bottom and outside 300mm below final ground level shall be provided in c.m. (1:3) 12mm thick. Curing the cement work, fixing P. S. C. manhole cover as per size of the chamber including necessary excavation, backfilling, disposed off surplus earth etc., complete, necessary chamber shall be provided with slope in bottom P. S. C. cover shall be painted with 3 coats of green colour oil paint of approved make.

Specification of earth work and backfilling of section B, specification of brick masonry of section C, specification of concrete of section D, and plastering section E shall be followed.

Payment shall be made on number of chamber constructed of the size specified in the tender with all operations as per item.

Providing and fixing galvanized chain link jali 2” 10 x 10 gauge inserting 2 nos. of 4mm dia GI HT wire at top and bottom along the length in alternate links and fixing the same with angle supports using GI wires of appropriate
size or GI 'U' pin approved by EIC including transportation, cutting, wastage. Joints shall be aligned at angle supports only.

Galvanized chain link jali having 2" (50mm) 10x10 gauge wire and 2 metre height shall be used for execution of this item. The chain link jali shall be fixed with angle supports using 4mm dia GI HT wire at top and bottom passed through alternate links. To give sufficient fixity with angle supports extra GI wire shall be wound through links and along the supports or GI 'U" pins shall be used to fix the jali with angle supports as directed by the engineer – in – Charge.

Joints shall be aligned at the supports and an overlap of minimum 300 mm shall be given where jali ends.

Payment shall be made on the basis of running metre.

Supplying & Stacking rubble stone of approved quality for road soling of about 200 to 250 mm. size including transportation, stacking rubble close in rectangular stack etc., complete as directed by E.I.C. (FOR VOIDS 25% WILL BE DEDUCTED.)

Rubble of approved quality and size specified shall be supplied. Rubble shall conform to material specification M-16. Only rubble of required size shall be supplied and no undersize rubble shall be accepted. Rubble shall be stacked at the place shown in regular stacks of the size approved by the engineer – in – Charge.

Payment shall be made on stack measurement basis on cubic metre. 25 % of the quantity arrived at shall be deducted for voids.

Labour charges for laying rubble in 225 mm. thick layer for soling with required grade & camber & filling the voids with small size of chips and earth & watering consolidating by 8 to 10 tonnes power roller etc., complete as directed by E.I.C.

The rubble collected and stacked on site shall be used for soling work. Soling shall be done in such a manner that the required thickness of 225mm is obtained after the rolling. The rubble shall be provided close so as to leave minimum voids. All the voids shall be filled with small size chips of the same quality of rubble, when soling and filling is completed it shall be got checked and finally the yellow earth shall be spread over it. The surface shall be rolled dry with 8 to 10 tonnes roller and the voids shall be filled up by brooming. The surface shall be watered and rolled again and broomed so that all the voids are filled up. Due care shall be taken to see that the required grade and camber are maintained. The rolling shall be done as instructed by the Engineer-in-charge so that no undulation or wavy surface is obtained. The rolling operation shall be repeated for required final surface is obtained as desired.

The rate quoted shall be for all labour, tools, tackles, machineries etc. The measurements shall be paid on actual Sq. Meter of the work carried out.

Boring holes in ordinary soil, sand, clay soft murrum, hard murrum and soft rock (for cast in situ piles) under ream piles of 350 MM diameter up to 4.0 M depth from GL with two bulbs in each pile as per dimension and position,
as per drawing including using the Bentonite as per requirement during drilling including all tools and tackles, labours and drilling equipment, manually or mechanically etc. complete as directed include disposing the stuff to a lead of 500 Mtr. radius as directed by E.I.C. (The concreting & reinforcement will be paid separately in respective items).

1.0 Workmanship :
1.1 The ground shall be roughly leveled and after marking the position of piles, the holes shall be bored with aspiral angle to the 4.0m depth and specified diameter using boring guide.
1.2 The bore holes shall be truly vertical and uniform bore throughout of specified diameter. After boring to the required depth, the bore shall be cleared off the loose soil and disposal of surplus excavated stuff as directed up to a lead of 500 metres.
1.3 The bore shall be enlarged at two places at the specified depth by an under reamer 2 to 2 ½ times the diameter of the bore to make a bulb as directed. It shall be ensured that the bore for the pile shall be enlarged to the correct diameter.

2.0 Mode of measurement and payments :
2.1 The rate of boring holes shall include :
(a) Roughly leveling the ground in positions where piles are to be provided.
(b) Marking the position of piles by pegs and boring guide and also for shifting of boring guide.
(c) Making of two nos. of bulbs.
(c) Bailing out water, if any met with during boring.
(d) Disposal of surplus excavated soil within a lead of 50m and
(e) All tools, plants, equipments and labour, materials like Bentonite, etc. required for satisfactory completion of work.
2.2 The rate shall be for a unit of one running metre.

Providing & Fixing special G.I. 'R' brand or I.S.I. approved quality fittings including cutting the pipe, threading, making water tight joints etc., complete as directed by E.I.C. 50mm dia bend

All the fittings shall be heavy type 'R' brand or as per ISI standard for drinking water supply line. Fittings shall be fixed to the line with threading of pipe etc. and joint shall be made water tight as described in general specifications.

Payment shall be made for number supplied and fixed in line as per drawing or as instructed.

Disposing off the excavated stuff of the items of excavation for lead of 400 to 500 metres. For any lead less than the above, rate shall be reduced as per R&B SOR 2005 - 06 for Vadodara District.

Unsuitable materials obtained from clearing site and excavation shall be disposed off within the lead specified and as directed beyond the building area using necessary tools, tackles, equipments etc.

Payment shall be made on the cu. Metre basis for the material disposed off for specified lead. If required contractor may be asked to dispose off the stuff at a lesser lead for which rate will be reduced as per R&B SOR year 2005-06 for Vadodara district. The rate is inclusive of all labour, tools, tackles, equipments, etc.

Drilling of bore of 300mm & 400 mm diameter as per approved design in all type of strata approximately upto 10-12metre depth (from excavated GL) for bore of RCC cast-in-situ type bored piles including procurement and using bentonite and/or other equivalent compound as required. (no extra payment shall be made for empty bore i.e. from bed level to platform) with all plants and equipments.
1.0 Workmanship:

1.1 The ground shall be roughly leveled and after marking the position of piles, the holes shall be bored with aspiral angle to the 4.0m depth and specified diameter using boring guide.

1.2 The bore holes shall be truly vertical and uniform bore throughout of specified diameter. After boring to the required depth, the bore shall be cleared off the loose soil and disposal of surplus excavated stuff as directed up to a lead of 500 metres.

1.3 The bore shall be enlarged at two places at the specified depth by an under reamer 2 to 2½ times the diameter of the bore to make a bulb as directed. It shall be ensured that the bore for the pile shall be enlarged to the correct diameter.

2.0 Mode of measurement and payments:

2.1 The rate of boring holes shall include:
(a) Roughly leveling the ground in positions where piles are to be provided.
(b) Marking the position of piles by pegs and boring guide and also for shifting of boring guide.
(c) Making of two nos. of bulbs.
(d) Bailing out water, if any met with during boring.
(e) Disposal of surplus excavated soil within a lead of 50m and
(f) All tools, plants, equipments and labour, materials like Bentonite, etc. required for satisfactory completion of work.
SECTION :E
APPENDICES
## APPENDICES

### APPENDIX –I

### TENDERER’S EXPERIENCE

A List of Similar jobs executed by the Contractor &Name with address of a Person whom reference can be made, by the Corporation, if required necessary.

[Tenderers shall submit the information in the Format detailed here under]

<table>
<thead>
<tr>
<th>Sr. No</th>
<th>Description of Work</th>
<th>Value of Work Executed Rs.</th>
<th>Construction Period as per Contract</th>
<th>Actual Construction Period for the Completion of the work</th>
<th>Date Of Completion</th>
<th>Client</th>
<th>Persons to whom Reference may be made</th>
<th>Principal Features</th>
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</tr>
</tbody>
</table>

Contractor’s Representative legible signature: ____________________________

Name of the person: _______________________________________

Seal of the company: _______________________________________

Date & place:
## APPENDIX – II

**WORKS TENDERED / IN HAND**

Details of other Works, tendered for & in hand, as on the date of the Submission of this tender [Tenderers shall submit the information in the Format detailed here under]

<table>
<thead>
<tr>
<th>Sr. No</th>
<th>Name of work with location and address</th>
<th>Work in hand</th>
<th>Work Tender for</th>
<th>Remark</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Tender Cost</td>
<td>Cost of Remaining work</td>
<td>Anticipated Date of Completion</td>
<td>Estimated Cost</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

Contractor’s Representative legible signature: ______________________
Name of the person: __________________________________________
Seal of the company Date & place: ________________________________
GETCO
APPENDIX-III
TENDERER’S DETAILS OF PERSONNEL
The List of Technical Personnel intended to be placed at the Work by the Contractor. [Tenderers shall submit in the Format detailed here under]

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Description &amp; Details of position</th>
<th>Name</th>
<th>Qualification</th>
<th>Professional Experience &amp; details of works carried out</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

Contractor’s Representative legible signature: ______________________
Name of the person: __________________________________________
Seal of the company: __________________________________________
Date & place: ________________________________________________
TENDERER'S DETAILS OF MACHINERY
The List of Technical Personnel intended to be placed at the Work by the Contractor.
[Tenderer shall submit in the Format detailed here under.

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Description &amp; Details machinery</th>
<th>Capacity</th>
<th>Numbers</th>
<th>Make</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a)</td>
<td></td>
<td>(b)</td>
<td>(c)</td>
<td>(d)</td>
<td>(e)</td>
</tr>
</tbody>
</table>

Contractor's Representative legible signature: ________________________________
Name of the person: _______________________________________________________

Seal of the company

Date & place: ____________________________________________________________

Gujarat Energy Transmission Corporation Ltd.
**APPENDIX-V**

**PERFORMA, SHOWING THE DETAILS OF SITE VISIT DONE BY AGENCY BEFORE QUOTING THE TENDER.**

[Tenderers shall submit in the Format detailed here under]

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Name of firm</th>
<th>Name of Authorized representative of firm who has visited the site.</th>
<th>Qualification</th>
<th>Designation / post holding in company.</th>
<th>Remarks.</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a)</td>
<td>(b)</td>
<td>(c)</td>
<td>(d)</td>
<td>(e)</td>
<td>(f)</td>
</tr>
</tbody>
</table>

**Contractor’s Representative legible signature:** ____________________________

Name of the person: ______________________________________________________

Seal of the company

Date & place: ____________________________________________________________