



Gujarat Energy Transmission Corporation Ltd.

Regd. & Corporate office: Race course, Vadodara.

Circle Office, Visnagar Road, Mehsana – 384 001

Corporate Identity No: U40100GJ1999SGC036018

Fax No: (02762) 223054 Email : setrmehsana.getco@gebmail.com

E-TENDER FOR THE WORK OF

ARC for the work of SBC, Plate load and CBR test work for new proposed 66KV/EHV substations & R & M under Mehsana TR Circle.

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E - TENDER NOTICE

SE (TR) invites “On line Tenders” (e-tendering) for the **“ARC for the work of SBC, Plate load and CBR test work for new proposed 66KV/EHV substations & R & M 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. Bidders should fulfill the all the qualification criteria. Otherwise their bids will not be considered & price bid will not be opened. All the bidders should have valid e-tender vender registration.

Tender Papers & Specifications may be downloaded from Web site as <https://getco.nprocure.com> (For view, download and on-line submission) and GUVNL / GETCO web sites www.gseb.com & www.getco.gujarat.com (For view & download only).

All tender documents are to be upload (Notarized / self-attested copies of original – as specified in tender document) including scanned copy of duly attested Tender fee receipt, EMD receipt, Integrity Pact, attested tender documents with technical specification & other mentioned documents in qualification requirement through online only (mandatory) on (n) procure portal.

“NO PHYSICAL DOCUMENTS TO BE SUBMITTED BY BIDDER

1	Tender Notice No.:	MTC/CIVIL/092026/N-84
2	Name of work	ARC for the work of SBC, Plate load and CBR test work for new proposed 66KV/EHV substations & R & M under Mehsana TR Circle.
3	Tender Fee (non-refundable)	₹ 900 + ₹ 162 GST (@18 %) = ₹ 1062.00
4	Estimated cost Excluding GST	₹ 1997060.32
5	Earnest Money Deposit (EMD) amount	₹ 19971.00
6	Time Limit	24(Twety Four) Calendar Months
7	Required Class of Contractor	Approved vendor in GETCO certificate of NABL.
8	On line (E-tendering) tender/ offer submission last date up to 16.00 hours only (This is mandatory)	15-10-2026
9	Date of opening of Preliminary & Technical stage (on-line Opening) 16.10	15-10-2026
10	Tentative Date of on – line opening of Price bid, (if possible),	Shall be intimated separately

IMPORTANT:

- All the online Annexures and price bid, other tender documents (refer Table-A) must be submitted/attached through online form only.**
- Bidder has to upload scanned copies of original (Notarized / self-attested copies of original – as specified in tender document) documents with bid and **no physical documents to be submitted by bidder.****
- 2 Quality Assurance**

3. All such documents should be strictly submitted through online uploading. Otherwise the offer will not be considered and no any further communication in the matter will be entertained on or before due date of submission. **However, of anywhere in tender documents submission of other than this document or physical submission mentioned to be overlooked.**

4. Regarding Payment of Tender Fees: -

All the Bidders will be required to pay Tender Fees plus applicable GST as mentioned in the Tender document either in Cash (up to Rs. 10,000/- only) at the office address or by RTGS/ NEFT/online.

5. Regarding Payment of EMD:-

If the EMD amount is more than Rs.3 Lakhs, it should be paid either by RTGS/ NEFT/Online or Demand Draft or Banker's Cheque or Pay Order or Bank Guarantee. Otherwise it should be paid either in Cash (up to Rs. 10,000/- only) at the office address or by RTGS/ NEFT/online.

6. For payment through RTGS/NEFT/Online bidder has to mail following details:

Detail for RTGS/NEFT Payment:

Sr.	Particulars	Requisite Details
1	Name of Bank	Bank of Baroda
2	Name of Branch	Mehsana Main
3	Branch Code	MEHSAN
4	MICR Code	384012001
5	IFSC Code	BARB0MEHSAN (5 th Digit- Zero)
6	Name of Account	Gujarat Energy Transmission Corporation Limited
7	Account No.	01520200030093

In case of payment through RTGS/NEFT, Bidder has to provide following details on the same date of payment so that receipt can be generated. bidder has to below mail addresses with following details:

Sr.	Required Details
1	Name & Address of the bidder
2	Bidder GST No
3	Tender No with due date
4	Mode of Transfer
5	Ref. ID with Bank Details
6	Paid Amount
7	Payment against (Tender Fee / EMD)

Mail to:aotr.mehsana@gebmail.com
cashiermhs.getco@gebmail.com
setrmehsana.getco@gebmail.com

Bidder has to provide all above details on the same date of payment so that receipt can be generated.

7. In case short submission of documents with bid and / or clarification if any required from the bidder, the required details / documents may be asked from bidder in physical form.
8. It shall be sole responsibility of the bidder that the uploaded scanned documents (in PDF form) remain legible and should not be password protected.
9. All the relevant scanned documents as per requirement of the tender are to be upload through online only on n procure portal Including Tender fee, EMD and Integrity Pact, otherwise the offer will not be considered and no any further communication in the matter will be entertained.
10. Tender will be evaluated on basis of Data / Details / Documents submitted by online form only.
11. It is mandatory for all the bidders to upload their tender documents by on line only (E-tendering) in scheduled time. **No documents shall be considered physically which are mentioned for**

on-line submission only.

- 12.** The bidders are required to fill up all the online annexure / forms (word file attached) and shall be uploaded invariably. This is intended for transparency and speedy evaluation of the bids. Instead of simply confirming / attached in bid / refer physical offer, the Bidder shall fill in the particulars against appropriate place in respect of each line appearing in each online annexure. Wherever required, bidder shall invariably have to upload supporting authentic documents in the online bid. (In the absence of required details in the online annexure, the purchaser has every right to evaluate the bids accordingly and bidder cannot raise any objection against any point during evaluation.)
- 13.** Bidders are requested to remain in touch with the web-site for any amendment / corrigendum or extension of due date etc
- 14.** The Earnest Money Deposit and tender fee will be accepted through online payment mode NEFT/RTGS only and Tender Fee payment through NEFT/RTGS with different purchaser or agency shall not be accepted. Tender without EMD and tender fee shall be rejected. Two separate transaction for Tender fee and EMD should be submitted.
- 15.** 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.

Any technical questions, information and clarifications that may be required pertaining to this enquiry should be referred to: **The Superintending Engineer (TR), Gujarat Energy Transmission Corporation Limited, Transmission Circle Office, Mehsana - 384001**

GETCO reserves the right to reject any OR all tenders without assigning any reasons thereof.

**Yours faithfully,
Superintending Engineer (TR)
Mehsana**

To view the PDF file please use "Acrobat Reader" software which can be downloaded from "Adobe" website.

GUJARAT ENERGY TRANSMISSION CORPORATION LIMITED

MEHSANA

Date:

INTEGRITY PACT

OUR ENEAVOUR

To create environment where Business Confidence is built through Best Business Practices and is fostered in an atmosphere of trust and respect between providers of goods and services and their users for the ultimate benefit of society the nation.

GETCO COMMITMENT

- To maintain the highest ethical standards in business and professional.
- Ensure maximum transparency to the Satisfaction of stakeholders.
- To ensure to fulfill the terms of agreement / contract and to consider objectively the viewpoint of parties.
- To ensure regular and timely release of payment on due dates for work done.
- To ensure that no improper demand is made by employees or by anyone on our behalf.
- To give maximum possible assistance to all the vendors / supplier / Service provider and other to enable them to complete the contract in time.
- To provide all information to suppliers / contractors relating to contract / job which facilitate him to complete the contract / job successfully in time.
- To ensure minimum hurdles to vendors / suppliers / contractors in complete of agreement / contract / work order.

PARTY'S COMMITMENT

- Not to bring pressure / recommendations outside GETCO to influence its decision.
- Not to use intimidation, threat, inducement or Pressure of any kind on GETCO or any of its employees under any circumstances.
- To be prompt and reasonable in fulfilling the contract, agreement, legal obligations.
- To provide goods and / or services timely as per agreed quality and specifications at minimum cost of GETCO.
- To abide by the general discipline to be maintained in out dealings.
- To be true and honest in furnishing information including payment to agents / sub-agent.
- Not to divulge any information, business details available during the course of business relationship to others without the written consent of GETCO.
- Not to enter into carter / syndicate / understanding whether formal / non-formal so as to influence the price.

Seal & Signature
(GETCO Authorized Signatory)

Name:
Designation:

Seal & Signature
(Party's Authorized Person)

PART.II

Technical Specification & Commercial Conditions

SECTION – A INSTRUCTIONS TO THE BIDDERS

(A) INSTRUCTIONS TO THE BIDDERS

(A1) SCOPE OF WORK :

- (1) The site of proposed work is situated at **various ss under Mehsana Transmission Circle and nearby circle jurisdiction in case of emergency ”**. The works shall be carried out as per tender's 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, vegetation, 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 in to contract. All cost and liabilities arising out of the site visit shall be at bidder account.

(A2) Earnest money Deposit:

- i.) Bidders are requested to pay an earnest money deposit (1 % of estimated cost) either by **Online-payment (NEFT/RTGS) only** for the amount as specified in the tender notice. Payment of EMD in any other form shall not be accepted.
- ii.) The EMD shall be paid submitted / attached along with uploading of Technical bid only. In no case it shall be submitted with sealed cover or in other form like DD, Cheque, etc.
- iii.) Tenders not accompanied by EMD shall be rejected.
- iv.) If during the tender validity period, i.e. **180 days**, the tenderer withdraws their tender, the EMD shall be forfeited and the tenderer may be disqualified from tendering for further works of GETCO.
- v.) 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 in to 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.

(A) Guarantees issued by the following Banks will be accepted as SD on permanent basis.

1. All Nationalized Banks.

(B) Guarantees issued by following Banks will be accepted as SD for the period up to March, 2024 Or the issuance of new Government Resolution on the same subject whichever is earlier. The validity cut – off date in GR is with respect to date of issue of Bank Guarantee is irrespective of date of termination of Bank Guarantee.

No.	Bank Name	No.	Bank Name
1	A U Small Finance Bank	19	Nutan Nagrik Sahakari Bank Limited
2	Ahmedabad Mercantile Co. Operative Bank Limited	20	Rajkot Nagrik Sahkari Bank Limited
3	Axis Bank	21	SVC Co-Operative Bank LTD
4	City Union Bank	22	Saraswat Co-operative Bank Ltd
5	DBS Bank India Limited	23	Saurashtra Gramin Bank
6	DCB Bank	24	Tamilnadu Mercantile Bank
7	Equitas Small Finance Bank	25	The Gujarat State Co-operative Bank
8	Federal bank	26	The Mehsana Urban Co-operative Bank Limited
9	HDFC Bank	27	The Surat District Co-operative Bank
10	ICICI Bank	28	The Surat Peoples Co-operative Bank
11	IndusInd Bank	29	Utkarsh Small Finance Bank
12	Kalupur Commercial Co-operative Bank Limited	30	HSBC Bank
13	Kotak Mahindra Bank	31	Karnataka Bank
14	Bandhan Bank	32	Karur Vysya Bank
15	CSB Bank	33	South Indian Bank
16	IDBI Bank	34	IDFC First Bank
17	Jana Small Finance Bank	35	The Cosmo Co-op Bank Ltd
18	Baroda Gujarat Gramin Bank		

(A3) COMPLETION PERIOD:

“The time limit for the completion of the above work will be 24 (Twenty Four) calendar months from the commencement of the work, which will be reckoned as separate commencement order given by Concerned.”

- One month additional will be considered for the rainy season if the scheduled execution period falls within the period from 1st July to 31st October. In case the duration of execution is not exactly falls for a period of 1st July to 31st October, the proportionate days shall be given based on the duration falls between period 1st July to 31st October. e.g.
 - if entire duration falls between 1st July to 31st October, 30 days allowable towards rainy days.
 - If the execution period falls short by four months, then the proportionate days shall be calculated based on following formula:
 Delay allowable on account of rainy period = $30 \times N / 120$
 Where N=Number of days falling between period 1st July and 31st October.
 Note: While applying this formula no extension of time limit shall be permitted on account of delay due to rain.
- 15 days additional will be considered where hard rock strata are available.

- Delay due to power supply will be considered in TLE only if the agency applies for power supply to DISCOM within 5 days from the date of issue of LOI. It is necessary for the bidders to apply within first 5 days from the date of LOI for temporary power connection considering 5 days required by Distribution company to provide the power connection as per their SOP, making thereby availability of power supply on 10th day of LOI.

Any delay in making the application for temporary power connection beyond initial 5 days shall be on account of bidder.

(A3) SECURITY DEPOSIT:

As per prevailing rules of the Corporation, 5% of the contract value shall be paid as 'Security Deposit'. As per Government of Gujarat vide circular No. JNV.10212/520A dtd. 26.06.2012 & GERC audit report, contractor has to pay 100% SD upon placement of LOI within 10 days. Therefore, successful bidder shall have to enter contract agreements along with 100% of S.D. shall be paid at C. O. Mehsana within 10 days from receipt of letter of intent either

- a) In form of DD in favor of "Gujarat Energy Transmission Corporation Ltd." of any Nationalized Bank payable at Local Branch Mehsana
OR
- b) In form of Bank Guarantee of any Nationalized Bank as per the approved format (attached) of the Corporation valid for minimum period of time limit plus guarantee period of one year.

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.

(A4) 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 online only.
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 thereof. 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 **Superintending Engineer (TR), Gujarat Energy Transmission Corporation, Circle Office, Mehsana-384001.**
6. **Proof of payments of taxes 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: Goods and Service Tax (GST)

The F.O.R. Destination prices are excluding GST and Cess as applicable which will be paid extra on a given taxable goods and/or services within the original contractual delivery period. The amount and% of GST and Cess as applicable should clearly be indicated separately. (GST/Cess means all applicable Tax/Cess under GST Laws. GST Laws means IGST Act, GST

(Compensation to the State for Loss of Revenue) Act, CGST Act, UTGST Act and SGST Act, 2017 and all related ancillary legislations).

Bidder shall have to submit a C.A Certificate & duly authorized Signatory of successful bidder, certifying that you have not claimed Refund of any applicable GST and Cess, charged to COMPANY or shall not claim any such Refund, on a future date, from the concerned Authorities and if, any Refund, in respect of such GST and Cess, is claimed by you, it will be immediately passed on to the COMPANY, without COMPANY making any specific Claim, for the same, either from the Department or from you.

The offers having price INCLUSIVE OF GST and Cess is likely to be rejected if the rate of GST and Cess is not mentioned clearly unless the bidder has opted for Composition Scheme under GST Act, which should be clearly indicated in the price bid. COMPANY may at its discretion consider such offer with presumption of highest applicable rate of VAT/GST/Cess prevailing when the price quoted is inclusive of GST and Cess.

If the Supplier/Contractor has opted for the Composition scheme of GST, the same must be clearly specified with valid Declaration & Certificate from Department. In the event of withdrawal/cessation of the Supplier from Composition scheme during the tenure of the contract, the rate mentioned in the price bid shall be final and any additional GST will have to be borne by the tenderer. In no case additional amount towards tax or otherwise will be paid / reimbursed to supplier/contractor. Further Statutory Variation clause will not be applicable in case of Supplier / Contractor has opted for Composition Scheme under GST. Supplier/Contractor should charge GST in Invoice at the rate as agreed to / mentioned in acceptance of tender only and any deviation in the same shall not be accepted. Further, any additional liability of GST (later on due to wrong mentioning of GST rate, mis-interpretation of HSN/SAC Code, etc.) over and above as charged in the invoice shall be borne by the Supplier/Contractor. However, any refund received by the supplier / contractor on account of GST charged from the company; such refund shall have to be passed on to the company, along with interest if any. Such refund along with interest needs to be passed on suo-moto by the supplier / contractor.

Further, the Company has a right to recover the amount of GST along with penal interest at the rate of 15% per annum if GST charged is not paid / short paid to the government or fail to upload the details or uploads inaccurate particulars on GSTIN portal by the Supplier / Contractor within the stipulated time limit.

In case, Govt. revises the rate of GST rate / Code during the tenure of the contract, the provision of GUVNL's statutory variation clause shall apply.

6A-2: STATUTORY VARIATION:

Any statutory increase or decrease in taxes and duties including GST and cess as applicable or in the event of introduction of New tax/cess or cessation of existing tax/cess subsequent to suppliers offer if it takes place within the original contractual completion date will be to company's account subject to the claim being supported by documentary evidence. However, if any decrease takes place after the contractual delivery date the advantage will have to be passed to the company.

6A-3: DEDUCTION OF TDS UNDER GST:

"As per provisions of GST Act, TDS under GST @ 2% (1% CGST & 1% SGST or 2% IGST as applicable) or at the applicable rate from time to time, will be deducted from the bill of suppliers/contractors at the time of credit or payment. TDS Certificates in the prescribed format will be issued as per the prescribed rules under GST."

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 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.

6C: INPUT TAX CREDIT BENEFIT:

In the event of any statutory increase in the rate of Input Tax Credit and / or due to inclusion of any other additional item of their inputs / input services under the ambit of the Input Tax Credit provisions under the GST Act, subsequent to the date of submission of the offer, the same should be passed on to COMPANY and you should inform such changes to COMPANY from time to time.

6D: PENALTY FOR DELAY:

Penalty for delay, the contractor shall pay compensation, an amount equal to half percent per one week for the contract amount of work. 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. Penalty will be levied as per tender condition plus applicable taxes (if any) will be imposed.

6E INCOME TAX:

Income tax at source at the prevailing rate will be deducted from bills in accordance with the provision of income tax laws and to that effect a certificate will be issued to the contractor.

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 equipment, 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 **Superintending Engineer (TR)**, Gujarat Energy Transmission Circle, Circle Office, Mehsana or their 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 their 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 **Superintending Engineer (TR)**, Gujarat Energy Transmission Corporation, Circle Office, Mehsana. 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 their 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 their 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 entertaining 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 an agreement that bidder shall have no cause of action or claim against the GETCO for rejection of their bid. The owner shall always be at liberty to reject or accept split any bid or bids at their 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. **By successful submission of bid shall be considered as fully acceptance of all conditions & specifications mentioned in this tender booklet to bidder.**
30. **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.
31. 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.
32. 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.
33. These rules and directions shall form part of the contract.
34. **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.
35. **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.
36. The contractor has to make their own arrangement of water for construction activity at their own cost. The contractor shall be allowed to draw water from bore well / open well by making their 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.

- 37. Tenders / bids received after scheduled time period:** 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 they wish to submit.
- 38.** 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.
- 39.** 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.
- 40.** 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.

41. ACCEPTANCE OR REJECTION OF BID

- a) The GETCO 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 thereof. Tenders departing from the stipulated technical specifications, commercial conditions or the method of bidding in a radical manner are liable to be rejected.
 - b) The bid is liable for rejection prima facie, if it is
 - c) Without payment of EMD / Tender Fee or Payment of EMD / Tender fee in any form other than online payment (NEFT/RTGS Only)
 - d) Not in prescribed form.
 - e) Not bearing signature of the bidder & seal of the company on all the documents accompanying the tender.
 - f) Not confirming to specifications or conditional tender.
 - g) Received after expiry of the due date & time.
 - h) Received by telex or telegram or fax.
 - i) Submitted by bidders who are listed under declaration of ineligibility for corrupt or fraudulent practices issued by GETCO, Govt. of Gujarat or its Public Sector under taking.
- Tender not fulfilling all the above conditions and those specified in the documents attached or incomplete in any respect are liable to rejection.

SECTION- B

Qualification Requirement

Qualification Requirement

1. **Registration:**

Bidder quoting for the bid shall have approved vendor in GETCO

Bidder quoting for the bid shall have certificate of NABL.

2. **Experience:** Bidder should have experience of similar work 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 Photocopy 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. The solvency should be in the name of “To Whomsoever it may concern” or “**GUJARAT ENERGY TRANSMISSION CORPORATION LIMITED (GETCO)**”.

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 along with Income Tax return photocopies.

6. **Nature of Firm :** Attested copy of **Partnership Deed with recent Form-G obtained from Registrar of firms for the current year, Power of Attorney**, if any, for signing the bid documents in case of partnership firm & **self-affidavit for proprietorship firm**. In case the Form-G is not available for current year Affidavit cum Undertaking of the firm declaring no change in Form-G is to be submitted. **However, this affidavit cum undertaking should be executed only by partnership firm.** The party shall be liable to give fresh affidavit cum undertaking, after completion of its one year. All such documents shall have to be **NOTARISED**.

7. **Goods & Service Tax (GST) Registration:** The Bidder shall be registered under the GST Act and a certified copy of such registration under the GST act indicating the GSTIN shall have to be submitted along with the bid by the bidder.

8. **I.T. PAN CARD:** The bidder should submit the attested photocopy of PAN Card of their fir & Income Tax Return & Balance sheet for last three years.

Note: All the required documents submitted / uploaded must be Self-attested by bidder.

Signature of Contractor

Superintending Engineer (TR)
GETCO,CO, Mehsana

CHECK LIST OF DOCUMENTS SUBMISSION

TABLE-A		
upload on-line only (pdf file)		
No.	Particulars	Check Mark
1	Scan of Tender Fee Amount / Online payment receipt	
2	Scan of EMD Amount / Online payment receipt	
3	Registration document as Approved Contractor in Appropriate Class	
4	Work completion certificate in Form No.3A (Experience Certificate as main contractor) only as Per Qualification Requirement	
5	Bank Solvency Certificate	
6	Provident Fund Code Number Documents	
7	GST Registration Number Documents	
8	Income Tax Return, Profit Loss Accounts and Balance sheet of Last Three Financial Years	
9	Nature of Firm:	
	Partnership deed/Latest Form-G/ POA/Authorized Signatory Certificate for Partnership	
	Self-Affidavit/POA/Authorized Signatory Certificate for Proprietorship	
10	PAN Number Document	
11	Filling Annexure / Appendices 1 to 8 on Pg. 121-130	
12	Scan of Self-attested copy of Tender document including technical specification i.e. signed on each pages (preferably digitally signed)	

For Partnership firm only

AFFIDAVIT CUM UNDERTAKING (On Rs.300/- stamp paper duly notarized)

We, Shri _____ (names of all partners and POA holder) of M/s.
_____ (name of partnership firm) having registered place of business at
_____ do hereby solemnly state and affirm on Oath as under:

1. That Form G up to last entry dated _____ has been submitted to GETCO by us.
2. That since this Form G is not of current year, it is affirmed that whatever entries specified by Registrar of Firms in this submitted Form G is true and correct and that, there is no any modification or change in any of the partners or other details. It is further affirmed that we are liable & bound to disclose to GETCO immediately, if there is any change and/or modification in partnership of this firm.
3. That if GETCO finds any undisclosed modification/amendment in partners or other details at any time, then they shall be entitled to take any legal action against us / partnership firm. GETCO shall be empowered to stop-deal and /or black-list our firm for any contract, at such instances.
4. That whatever stated in aforesaid paras and contents therein are true and correct and shall be binding on all the partners of this partnership firm, which includes their heirs, representative, assigness, executors etc.

Hence solemnly affirmed on this _____ day of _____ months of 20_____ at
_____.

DEPONANTS
(name & sign of all
partners / or POA Holders)

Dated:

Place:

For Proprietorship firm only

Self Affidavit for proprietorship firm (On Rs.300/- stamp paper duly notarized)

I the undersigned _____ hereby solemnly declare on oath that I am the sole proprietor of the firm _____. The proprietorship concern is solely owned, managed and controlled by me. The signature appearing in the contract agreement is signed by me and is true. I hereby state that whatever is stated herein above is true and correct to the best of my knowledge and belief.

Hence solemnly affirmed on this _____ day of _____ of 202

Deponent

Place:

Date :

SECTION – C
GENERAL CONDITIONS OF CONTRACT

(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 their 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 Superintending Engineer" and "CE " means "Superintending 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 Superintending Engineer to supervise the works or part of the works.
- (h) "Approved" and "Directed" means the approval or direction of the Superintending 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.
- (l) GST/Cess means all applicable Tax/Cess under GST Laws. GST Laws means IGST Act, GST(Compensation to the State for Loss of Revenue) Act, CGST Act, UTGST Act and SGST Act, 2017 and all related ancillary legislations.
- (m) Owner shall means the Gujarat Energy Transmission Corporation Ltd, Or any of its group companies I,e GUVNL, GSECL, MGVCL, DGVCL, PGVCL, UGVCL and Shaal include its legal representative ,successors and assigns.

2. Security Deposit

The contractor shall, within 10 days of the issue of Letter of Intent, pay 5 % as Security Deposit along with Contract agreements; 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. 1,00,000/- .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 DD or in the form of BG 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 BG shall be cashed by GETCO. The BG 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 DD or in the form of BG 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 BG shall be encashed by GETCO. The BG 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 on the 10th day of issuance of LOI OR separate commencement order given by Concern. The work shall throughout the stipulated period of contract proceeds with due diligence (time being deemed to be essence of contract) and for delay, the contractor shall pay compensation @ 0.5% per week or part thereof on delayed portion subject to maximum 10% of the Total contract value of the civil works (End cost with GST & applicable tax (if any). For calculating the delayed portion, date of work completion mentioned in work completion certificate shall be considered.

In event of failure of the contractor to pay the amount of penalty as demanded, the Owner shall be entitled to deduct the amount of penalty for delay from the amounts payable under any other contract with the GUVNL and its subsidiary companies i.e. GETCO, GUVNL, GSECL,

MGVCL, DGVCL, PGVCL, UGVCL. It is permissible for the owner to adjust the amount of Penalty of delay against any bank Guarantee furnished by the contractor under

this contract or any other contract with GUVNL and/or its subsidiary companies.

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 their 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 their 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 their 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.

If the Contractor shall neglect to execute the works with due diligence and expedition or shall refuse or neglect to comply with any reasonable order given to him, in writing by the Engineer in connection with the works or shall contravene the provisions of the Contract, the Owner may give notice in writing to the Contractor to make good the failure, neglect or contravention complained of. Should the Contractor fail to comply with the notice within thirty (30) days from the date of serving the notice, then and in such case the Owner shall be at liberty to employ other workmen and forthwith to execute such part of the works as the Contractor may have neglected to do or if the Owner shall think fit, without prejudice to any other right he may have under the Contract to take the work wholly or in part out of the Contractor's hands and re-contract with any other person or persons to complete the works or any part thereof and in that event the Owner shall have free use of all Contractor's equipment that may have been at the time on the Site in connection with the works without being responsible to the Contractor for fair wear and tear thereof and to the exclusion of any right of the Contractor over the same, and **If the sum that the Contractor is entitled to be paid plus the costs incurred by the Owner in completing the works, exceeds the Contract Price or the entire works if entire works have been completed or the price for part of the works if part of the works have been completed. the Contractor shall be liable for such excess.**

If such excess is greater than the sums due to the Contractor, the Contractor shall pay the balance to the Owner and if such excess is less than the sums due to the Contractor, Owner shall pay the balance to the Contractor. For facilitating such payment. Owner shall encase the Bank Guarantees of Contractor available with Owner/s and retain such other payments due to the Contractor under the Contract in question or any other Contract that the Owner/s may have with the Contractor. Such payment of excess amount shall be independent of the liquidated damages for delay which the Contractor shall have to pay if the completion of works is delayed.

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 be 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.

10-A PAYMENT TERMS UNDER MSME ACT:

Bidders have to update their MSME detail on GETCO's website by following link <https://getco.co.in/msme/> (and intimate to concern bill submitting office with copy to this office).

(2) The payment will be made within 45 days from the ***date of acceptance or the "date of deemed acceptance of goods or services i.e. After submission of all required documents as per at Terms & time to time circular issued by GETCO's corporate Office as well as statutory requirement to process the Bill.

Date of acceptance means-

- (a) The day of actual delivery of goods or the rendering of services: or
- (b) Where any objection is made in writing by the buyer regarding acceptance of goods or services. the day on which such objection is removed by the supplier.

*** "Date of deemed acceptance" Means, where no objection is made in writing by the buyer regarding acceptance of goods or services within fifteen days to the delivery of the goods or the rendering of services, the day of the actual delivery of goods or the rendering or services.

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 thereto. 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.

14. Alteration in Specifications and Designs not to invalidate Contracts.

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 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 Alteration 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 the 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 by Corporation in the supply of materials entered in Schedule-A where such delay is caused by: Difficulties relating to supply of railway wagons

I. Force Majeure

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 intension 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.

24. Rescission of Contract and Forfeiture of Deposit.

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 if 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 AN 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 REFERRED TO THE "GUJARAT PUBLIC WORKS CONTRACTS DISPUTES ARBITRATION TRIBUNAL" AS PER THE PROVISIONS OF THE GUJARAT PUBLIC WORKS CONTRACTS DISPUTES ARBITRATION TRIBUNAL ACT, 1992.

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% plus GST as applicable . 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 from the contractor at the market rate or stock issue rate whichever be higher at the time of materials account plus 15% plus GST as applicable.

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.

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 throughout the working hours.

Labour Laws :-

- a) Persons below the age of 18 years shall not be employed for the work.
 - b) Female worker shall be employed according to latest labour laws
 - 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.
 - vii. Provision of compensation in the case of accidental injury.
 - 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 its 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 in 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 direct RTGS to contractor's bank account. 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:

Superintending Engineer (TR)
GETCO, CO Mehsana.

GENERAL CONDITIONS OF CONTRACT

1.0 Contractor 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 indemnify 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 indemnify 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 indemnify 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 works & 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 its 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 otherwise 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. Any levy of GST on such compensation payable to GETCO shall be on contractor's account.

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 whichever 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) Penalty, if Leviable,

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.

(f) GST as applicable on recoveries due from the contractor enlisted as above.

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 notwithstanding 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 conform 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.

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 or 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.

37. RIGHTS OF THE OWNER

Whenever any claim or claims for payment of a sum of money arises out of or under the contract against the contractor, the Owner shall be entitled to withhold and also have lien to retain such sum or sums in whole or in part from the security, if any, deposited by the contractor and for the purpose aforesaid, the Owner shall be entitled to encash and withhold

the amount of Performance Bank Guarantee or other security, if any, furnished as the case may be. The Owner shall also have a lien over the same pending finalization or adjudication of any such claim. In the event of the security is insufficient to cover the claimed amount or amounts, the Owner shall be entitled to withhold and have lien to retain to the extent of the such claimed amount or amounts referred to above, from any sum or sums found payable or which at any time-thereafter may become payable to the Contractor under the same contract or any other contract with the Owner or GUVNL or its subsidiary companies pending finalization or adjudication of any such claim.

Lien in respect of Claims in other Contracts:

a) Any sum of money due and payable, to the Contractor (including the security deposit) under the contract may be withheld or retained by way of lien by the Owner against any of its claim in respect of payment of a sum of money arising out of or under any other contract made by the contractor with the owner or GUVNL or any of its subsidiary companies.

b) It is agreed that the sum of money so withheld or retained under this clause by the Owner will be kept withheld or retained as such by the owner till its claim arising out of the same contract or any other contract is either mutually settled or determined by the arbitrator or competent court, as the case may be, and the Contractor shall have no claim for interest or damages whatsoever on this account or on any other ground in respect of any sum of money withheld or retained under this clause and as may be duly notified to the contractor."

38. Relationship with employee:-

Every bidder, at the time of submission of bid. Give a declaration as under

"If any bidder company/firm, the interest (i.e. Shareholding in Company and share in partnership firm) of any employee of the tendering company or his/her relative as defined in Section 2(77) of the Company's act 2013 is 10% or more, the tendering Company will not deal with such Company/Firm at all.

Tendered therefore, must specifically disclose this fact in his technical bid. Non-disclosure of such facts would immediately disqualify the tenderer for further dealing with the tendering company.

39. Conflict of Interest among Bidders/ Agents

A bidder shall not have conflict of interest with other bidders for particular quoted item. Such conflict of interest can lead to anti-competitive practices to the detriment of Procuring Entity's interests. The bidder found to have a conflict of interest shall be disqualified. A bidder may be considered to have a conflict of interest with one or more parties in this bidding process for particular quoted item, if:

- a) they have proprietor/ partner(s)/ Director(s) in common; or
- b) they receive or have received any direct or indirect subsidy/ financial stake from any of them; or
- c) they have the same legal representative/ agent for purposes of this bid; or
- d) they have relationship with each other, directly or through common third parties, that puts them in a position to have access to information about or influence on the bid of another bidder; or

- e) bidder participates in more than one bid in this bidding process. Participation by a bidder in more than one Bid will result in the disqualification of all bids in which the parties are involved. However, this does not limit the inclusion of the components/ sub-assembly/ assemblies from one bidding manufacturer in more than one bid.
- f) in cases of agents quoting in offshore procurements, on behalf of their principal manufacturers, one agent cannot represent two manufacturers or quote on their behalf in a particular tender enquiry. One manufacturer can also authorise only one agent/ dealer. There can be only one bid from the following:
 1. The principal manufacturer directly or through one Indian agent on his behalf; and
 2. Indian/ foreign agent on behalf of only one principal.
- g) a Bidder or any of its affiliates participated as a consultant in the preparation of the design or technical specifications of the contract that is the subject of the Bid;
- h) in case of a holding company having more than one independently manufacturing units, or more than one unit having common business ownership/ management, only one unit should quote. Similar restrictions would apply to closely related sister companies. Bidders must proactively declare such sister/ common business/ management units in same/ similar line of business.
- i) Bidder shall not act in contravention/ violation to the provisions of competition act, as amended from time to time.

Every bidder should, at the time of submission of bid, give a declaration, that bidder shall not have conflict of interest with other bidders, as above.

40. Use of Call before you dig(CBUD) App

All the excavators/excavating agencies engaged by "GETCO(Gujarat Energy Transmission Corporation Limited) must self-register " Call Before you Dig (CBUD) app as excavator

All digging agencies/Contractors must be mandated to do any type of digging/excavation only after prior intimation through CBUD Mobile app.

**SECTION –D
TECHNICAL SPECIFICATIONS:**

GUJARAT ENERGY TRANSMISSION CORPORATION LTD

STANDARD FIELD QUALITY PLAN (REVISED-R1)

FOR CIVIL WORKS OF GETCO PROJECTS

Sr. No.	Component/Operation & Description of Test	Sampling Plan With Basis	Ref. Document for Acceptance	Testing Agency	Specific Guideline	Approving Authority
1	MATERIAL					
A	CEMENT (FROM APPROVED LIST ONLY)					
(i) (ii) (iii)	Fineness Compressive Strength Initial & final setting time	As per mix Design requirement	IS: 456,IS: 269 IS: 8112,IS: 12269 IS: 1489	Govt. Approved Lab	The tests for cement Coarse aggregates & Fine aggregate shall be conducted during Mix design for Concrete. Mix design shall be subject to approval by GETCO	B-3
B	COARSE AGGREGATES (FOR CONCRETE)					
(I) (ii) (iii) (iv) (v) (vi) (vii) (viii) (ix)	Determination of Particle size (Sieve Analysis) Flakiness Index Crushing Value Specific Gravity Bulk Density Absorption Value Moisture Content Soundness of Aggregate Presence of deleterious materials.	As per mix Design requirement	IS: 383,IS: 2386 IS: 456	Govt. Approved Lab	In case of change of source of coarse& Fine aggregates, mix Design should be revised.	B-3
C	COARSE AGGREGATES (FOR ROAD AND YARD)					
(i) (ii) (iii) (iv) (v) (vi) (vii)	Particle Size Distribution Elongation Index Flakiness Index Deleterious Material Specific Gravity Water Absorption Impact Value	As per relevant IS	IS ; 2386, IS : 383	Govt. Approved Lab	To be approved by GETCO	B-3

(viii)	Los Angeles Abrasion Value					
(ix)	Aggregate Crushing Value					
(x)	10% Fines value					
(xi)	Soundness					
(xii)	Alkali Aggregate Reactivity					
(xiii)	Petrography					
D	FINE AGGREGATE					
(i)	Gradation /Determination of Particle size	As per mix Design requirement	IS: 383,IS: 2386,IS: 456	Govt. Approved Lab	In case of change of source of coarse& Fine aggregates, mix Design should be revised.	B-3
(ii)	Specific Gravity and density.					
(iii)	Moisture content					
(iv)	Absorption Value					
(v)	Bulking					
(vi)	Silt Content Test					
(vii)	Presence of deleterious materials					
E	BURNT CLAY BRICKS					
(i)	Dimensional tolerance	As per relevant IS	GETCO Specs. IS: 3495) (Part I to Iv)	Govt. Approved Lab	To be approved by GETCO	B-3
(ii)	Compressive Strength					
(iii)	Water Absorption					
(iv)	Efflorescence					
F	FLY ASH LIME BRICKS					
(i)	Dimension	As per relevant IS	GETCO Specs. IS: 3495 and IS : 12894	Govt. Approved Lab	To be approved by GETCO	B-3
(ii)	Water absorption					
(iii)	Drying Shrinkage					
(iv)	Compressive Strength					
(v)	Efflorescence					
G	SOLID CC BLOCKS					
(i)	Dimension	As per relevant IS	GETCO Specs. IS: 2185 Part 1	Govt. Approved Lab	To be approved by GETCO	B-3
(ii)	Block Density					
(iii)	Compressive strength					
	Water absorption					

(iv)	Dry Shrinkage					
(v)						
H	BELLA STONE					
(i)	Water absorption	As per relevant IS	GETCO Specs. IS: 2386 Part 3	Govt. Approved Lab	To be approved by GETCO	B-3
(ii)	Compressive Strength					
I	PRECAST CC PAVER BLOCKS					
(i)	Shape and Dimension	As per relevant IS	GETCO Specs. IS: 15658	Govt. Approved Lab	To be approved by GETCO	B-3
(ii)	Compressive Strength					
(iii)	Flexural Strength					
(iv)	Abrasion Resistance					
(v)	Split Tensile Strength					
(vi)	Water absorption					
J	SOIL TO BE USED FOR BACK FILLING					
(i)	Grain Size Analysis	As per relevant IS	IS :2720	Govt. Approved Lab	To be approved by GETCO	B-3
(ii)	Atterberg's limit					
(iii)	Classification of Soil					
(iv)	Free Swell Index					
(v)	Swelling Pressure					
(vi)	Proctor Test					
(vii)	SO ₃ (Sulphate) Content					
K	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	Contractor / GETCO	Each source to be Approved by GETCO	C
(II)	Chemical and physical properties of water for checking its suitability for construction proposes.	One sample per Source	IS: 456,IS: 3025 and GETCO Specification	Govt. Approved Lab		

L	REINFORCEMENT STEEL(FROM APPROVED LIST ONLY)					
(i)	Identification & size	Random	IS: 432,IS: 1139, IS: 1786 &GETCO Specification	Contractor should produce manufacturer's test Certificate. i.e. from approved Manufacturer. Govt. Approved Lab	Approved by GETCO.	B-3
(ii)	Chemical Analysis Test	One sample per Heat				
(iii)	Tensile Test					
(iv)	Yield stress\proof stress	One sample per Each size				
(v)	Percentage Elongation Bend/Re-bend Test	One sample per Each size				
(vi)	Reverse Bend Test for HYSDWire	One sample per Each size				
M	STRUCTURAL STEEL					
(i)	Chemical Composition	One sample per Heat	IS :2062, IS :228, IS : 1608, IS : 1599, IS : 1757, IS : 10842	Govt. Approved Lab	Approved by GETCO.	B-3
(ii)	Tensile Strength	One sample per Each size				
(iii)	Yield Strength	One sample per Each size				
(iv)	Percentage Elongation	One sample per Each size				
(v)	Bend Test	One sample per Each size				
(vi)	Impact Test	One sample per Each size				
(vii)	Y Groove Crackability Test	One sample per Each size				
(viii)	Dimensions	Random				
N	FOUNDATION BOLTS					
(i)	Identification & size	Random	IS : 209, IS : 2016, IS : 2062, IS : 2633, IS :12427,& GETCO Specification	Govt. Approved Lab	Approved by GETCO.	B-1
(ii)	Chemical Analysis Test	One sample per Each				
(iii)	Tensile Test	One sample per Each				
(iv)	Yield stress/Proof Stress	One sample per Each				
(v)	Percentage Elongation	One sample per Each				
(vi)	Bend / Rebend	One sample per Each				
(vii)	Weight/Thickness/Uniformity of Galvanizing	One sample per Each				
O	PVC WATER STOPS					
(i)	Tensile strength	One sample per Each	IS : 15058, IS :8543 (Part4 / Sec 1), IS : 13360 (Part 5 / Sec 1), IS ; 9766	Contractor should Produce manufacturer's test Certificate.	Approved by GETCO.	B-3
(ii)	Elongation	One sample per Each				
(iii)	Hardness	One sample per Each				

(iv)	Water absorption, percentage by mass	One sample per Each	& GETCO Specification	i.e from approved Manufacturer.		
(v)	Cold bend temperature at which sample does not crack	One sample per Each				
(vi)	Accelerated extraction test: (a) Tensile strength (b) Elongation	One sample per Each				
(vii)	Stability in effect of alkalis test : (a) weight increase at 7 days, % by mass (b) weight decrease by mass at 7 days, % by mass (c) Change in hardness at 7 days (d) Weight increase at 28 days (e) Weight decrease at 28 days (f) Dimension change	One sample per Each				
P	Bought out item (shown as annexure – II) Check the bought out items are as per Technical specification / IS codes before use. Approval of all bought out items.	Check all the items	GETCO Specification	Joint inspection By GETCO. And Contractor	Approval by GETCO.	A
2	WORKS					
	GANTRY/EQUIPMENT FOUNDATION/CABLE TRENCH					
A	BEFORE EXCAVATION					
(i)	Checking of pegs location as	100% on each Location	IS: 4091, IS: 3764 & GETCO approved Drawing/ specification	Contractor	Approved by GETCO.	C
(ii)	Per line and alignment Checking of pit making as per Drawing & RL	100% on each Location				
B	EXCAVATION					
(i)	Dimensional conformity	Each location	IS: 4091, IS: 3764 & GETCO approved Drawing/ Specification.	Contractor	Approval by GETCO.	B-3
(ii)	Verticality/slopes & Square ness of each pit	Each location		Contractor	(1) Foundations will not be placed on filled up soil	
(iii)	Verification of classification of foundation wherever applicable.	Each location		Joint inspection By GETCO.	(2) Minimum depth Of foundation will	

				And Contractor	be 750 mm in Virgin soil.	
C	ANTITERMITE TREATMENT					
(i)	Check for material to be used	100%	IS : 6313 & GETCO Specification	Joint inspection By GETCO. And Contractor	Approval by GETCO.	B-3
(ii)	Check for proportion	Random				
(iii)	Depth and c/c distance of holes	Random				
(iv)	Check for pouring of required quantity of liquid in holes	Random				
D	P.C.C. PADDING	For all locations	IS:456,GETCO Approved foundation Drawing & specification	Joint inspection By GETCO. And Contractor	Approval by GETCO.	C
E	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
F	PLACEMENT OF REINFORCEMENT STEEL.					
(i)	Check the steel bars for rust, cracks, surface flaws, laminate etc. (Visual check)	100%	IS: 456,GETCO Specification/ approved drawings.	Joint inspection By GETCO. And Contractor	Approved by GETCO.	B-3
(ii)	Check as per the bar bending Schedule before placement of Concrete. Check cutting tolerance for bars as per check List/drawings.					
(iii)	Check whether all bent bars and lap lengths are					

	as per approved bar bending schedule.					
(iv)	Check whether all joints & crossing of bars are tied properly with right gauge & annealed wire as per specification.					
(v)	Check for proper cover distance spacing of bars, spacers, & chairs after the reinforcement cage has been put inside the formwork.					
(vi)	Check whether lapping of bars are tied properly with right gauge and annealed wire as per specification.					
G	PILE FOUNDATION (Additional Tests)					
(i)	Check of centre line of pile group	Each pile group	IS:2911 & GETCO Approved pile Foundation Drawings/ Specification. GETCO Approved pile foundation Drawings/specification	Joint inspection by GETCO and Contractor	Checklist to be prepared And signed jointly	B-3
(ii)	Check pile location	Each pile				
(iii)	Temporary casing tube & permanent line also check Thickness of liner material (if applicable)	Each pile				
(iv)	Bentonite slurry (if applicable)	Each pile				
(v)	Pile depth, level, size and alignment	Each pile				
(vi)	Chipping of pile head	Each pile				
(vii)	Pile load testing	As per GETCO GBOQ/Specification IS: 2911				
(viii)	Anchor bolts if applicable					
(ix)	Level, centre to centre distance of bolts.	100% on each Location				
(x)	Visual check for galvanizing	100% on each Location				
H	SETTING OF TEMPLATE					
(i)	Identification	Each foundation	GETCO Approved specifications	Joint inspection by GETCO and Contractor	Approval by GETCO	C
(ii)	Check for orientation of template to match with drawing	Each foundation				
(iii)	Check for line and level of template	Each foundation				

(iv)	Check for center line of foundation and template	Each foundation				
(v)	Check for diagonal dimensions	Each foundation				
(vi)	Check for diameter and distance of holes	Each foundation				
I	PLACEMENT OF FOUNDATION BOLTS					
(i)	Identification (Diameter and length)	Each foundation	GETCO Approved specifications	Joint inspection by GETCO and Contractor	Approval by GETCO	C
(ii)	Check the foundation bolts for rust, cracks, surface flaws, laminate etc. (Visual check)	Each foundation				
(iii)	Check for height of bolts above concrete level as per drawing	Each foundation				
(iv)	Check for bolt to bolt distance as per drawing	Each foundation				
(v)	Check for verticality of bolts	Each foundation				
(vi)	Check for Fixity of bolts	Each foundation				
J	PLACEMENT OF WATER STOP					
(i)	Check the water stops for blisters, pinholes, cracks, and embedded foreign matters (Visual Check)	Random	GETCO Approved specifications	Joint inspection by GETCO and Contractor	Approval by GETCO	B-3
(ii)	Check for width and thickness	Random				
(iii)	Line and level	100%				
(iv)	Fixity during concreting	100%				
K	CONCRETING					
a	APPROVAL OF MIX DESIGN.	For each grade of Concrete.	IS: 456 & GETCO Approved specifications	Contractor	Approval by GETCO	B-3
b	Batching, mixing & placing of concrete and compacting	Random	IS: 456 & GETCO Approved drawings And specifications	Contractor	Approval by GETCO	B-3
	Placing concrete, and compacting	Random				
c	CONCRETE TESTING					
	Slump test	Random	IS:456,IS:516,IS: 1199 And GETCO Specifications	Contractor	Results to be recorded and signed Jointly	B-3
		Random				

	Check for quantities for cement, fine aggregate, coarse aggregate and water while batching					
d	CONCRETE CUBE TESTING					
	Compressive Strength	Sample (Consisting of minimum 6 cubes-3 cubes for 7days and 3 cubes for 28 days test) 1-5 Cmt : 1 6-15 Cmt : 2 16-30 Cmt : 3 31-50 Cmt : 4 Above 50 Cmt : 4+1 additional for each additional 50 Cmt	Is:1199,IS:456, IS:516	Govt. Approved lab	To be witnessed for important structure (slab)& Approved by GETCO	B-3
L	BACKFILLING					
	Check for thickness of Layer & watering Visual check for correction/ramming Compaction test (Percentage ofMax dry density)	100%	GETCO Specifications.	Govt. Approved lab	To be witnessed & Approved by GETCO	C
M	BRICK-WORK					
	Mortar mix/proportion	Random	IS:2250, GETCO Specification	Joint inspection by GETCO and Contractor	Approval by GETCO	C
	Plumb & Alignment	Random				
	Joints	Random				
N	PLASTERING					
	Plastering thickness and evenness	Random	GETCO Specification	Joint inspection by GETCO and Contractor	Approved by GETCO	C
	Mortar mix proportion	Random	GETCO Specification			
O	FLOORING					
(i)	Thickness of flooring material (Kotah stone/Vitrified tiles/glazed tiles)	Random	GETCO Specification	Joint inspection by GETCO and Contractor	Approved by GETCO	B-3
(ii)	Mortar mix proportion	Random				
(iii)	Line and level	100%				
(iv)	Joints	100%				
P	WATERPROOFING					
(i)	Check for material to be used	100%	GETCO Specification,.	Joint inspection By GETCO. And Contractor	Approval by GETCO	B-3
(ii)	Cleaning of terrace	100%				
(iii)	Proportion of mortar	Random				
(iv)	Level	100%				

(v)	Joints	100%				
(vi)	Pond Test	100%				
Q	CURING FOR CONCRETE, MASONRY, PLASTERING ETC.	100% on all locations	IS 5613 & GETCO Specification,.	Contractor.	Approval by GETCO	C
R	ALLUMINIUM DOORS/WINDOWS					
(i)	Check for size of different members	Random	IS : 733, IS: 1285, IS : 1868, & GETCO Specification	Joint inspection By GETCO. and Contractor and test report from Manufacturer	Approval by GETCO	B-2
(ii)	Check for weight of different members	Random				
(iii)	Check for anodizing	Random				
(iv)	Check for joints of various members	Random				
(v)	Check for thickness of glass	Random				
(vi)	Fixing (line, level, plumb)	100%				
(vii)	Gap between frame and wall	100%				
S	FALSE CEILING					
(i)	Type of false ceiling	Random	GETCO Specification	Joint inspection By GETCO. And Contractor	Approval by GETCO	B-2
(ii)	Thickness of false ceiling panel	Random				
(iii)	Check for size and weight of different members of false ceiling skeleton	Random				
(iv)	Fixing with wall	Random				
(v)	Line and level	Random				
(vi)	Check for hangers	Random				
(vii)	Cutouts for lighting fixtures	Random				
T	GI PIPE FOR WATER SUPPLY					
(i)	Check for weight as per diameter of pipe	Random	IS : 1239 & GETCO Specification	Joint inspection By GETCO. And Contractor	Approval by GETCO	B-3
(ii)	Depth of excavation for pipe line	Random				
(iii)	Laying of pipe line as per layout given	Random				
(iv)	Fixing of pipe with clamps on walls	100%				
(v)	Watertight ness of joints	100%				

U	SITE SURFACING					
(i)	Check for layers of 200mm	100%	GETCO Specification	Contractor and Govt. approved Laboratory	Approval by GETCO	B-3
(ii)	Check for watering	100%				
(iii)	Check for rolling	100%				
(iv)	Check for density (% Compaction)	100%				
V	ROAD WORK					
(i)	Visual check for material	One sample	IS383 & 2386	Contractor	Approval by GETCO	B-3
(ii)	Stacking of material	100%	GETCO Specs.			
(iii)	Preparing the land for road	Random	GETCO Specification			
(iv)	Spreading of metal in required thickness	Random				
(v)	Camber	Random				
(vi)	Rolling	Random				
(vii)	Watering	Random				
W	YARD QUARRY DUST/METAL SPREADING					
(i)	Visual check of material	One sample	IS383 & 2386	Contractor	Approval by GETCO	B-3
(ii)	Stacking of material	100%	GETCO Specs.			
(iii)	Preparing the land upto required level	Random				
(iv)	Spreading of material of required thickness	Random				
(v)	Compaction	Random				
X	FALSE FLOORING					
(i)	Type of false flooring	Random	GETCO Specification	Joint inspection By GETCO. And Contractor	Approval by GETCO	B-2
(ii)	Thickness of false flooring panel	Random				
(iii)	Check for size and weight of different members of false flooring skeleton	Random				
(iv)	Fixing with floor	Random				
(v)	Line and level	Random				
(vi)	Check for studs	Random				
(vii)	Cutouts for panel to be supported on MS channel	Random				
Y	PERIPHERAL/ROAD SIDE DRAIN					

(i)	Alignment as per lay out	100% on each Location	As per approved drawings	contractor	Approval by GETCO	C
(ii)	Invert level as per outlet points	100% on each Location	As per approved drawings	contractor	Approval by GETCO	C
(iii)	Concrete and masonry as per FQP		As per approved drawings	contractor	Approval by GETCO	C

: 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 i.e. SAIL, TISCO, IISCO or Rashtriya Ispat Nigam or the rerollers approved by main producers.

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 sulphate 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 plan

Category	type of Check	100%Checking/ witnessing by	counter check/ surveillance check by	Accepting Authority, if Test results Are within Permissible Limit	Deviation Dispositioning Authority
A	Critical	EE (civil) of circle with Contractor's Engineer	SE(TR) Plus EE(C)	SE(TR) Plus EE(C)	CE, Corporate Office
B-1	Major	D E (Quality Deptt)	E E (Quality Deptt)	EE (Quality Deptt)	CE (Quality Deptt)

B-2	Major	EE (civil) of circle with Contractor's Engineer	SE (Civil)	SE (Civil) plus EE (C)	CE, Corporate Office
B-3	Major	DE(C)	EE(C)	EE(C)	SE(TR) Plus EE(C)
C	Minor	JE(C)	DE(C)	DE(C)	EE(C) Plus DE(C)

ANNEXURE-II

BOUGHT OUT ITEMS

Check the following bought out items for their specifications / IS codes before use

1. Cement.
2. Murrum or yellow earth for filling in yard or plinth.
3. Bricks/Block.
4. Reinforcement.
5. Structural steel.
6. Foundation bolts.
7. Fine aggregate.
8. Coarse aggregate for all type of concrete, WBM road and metal spreading in

yard.

9. PVC water pipe line with fixtures.
10. PVC drainage pipe line with fixture.
11. PVC rain water pipe with fixture.

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12. PVC casing pipe for bore well.
13. 4 mm thick flat copper cable for submersible pump
14. Teak wood for frame and shutter.
15. Aluminium door, window and ventilator.
16. FRP door.
17. Steel cup board shutter.
18. False ceiling material.
19. Glazed tiles.
20. Kotah stone and marble strips.
21. Vitrified tiles.
22. Granite or Marbo granite tiles.
23. Metallic hardener topping.
24. Paver concrete block.
25. Prestressed concrete cover for cable trench.
26. Oil bound distemper.
27. Acid/Alkali resistant paint.
28. Apex or equivalent exterior paint.
29. Epoxy paint for flooring in GIS room.
30. Rolling shutter.
31. Chain link fencing panel and angle.
32. Wash basin.
33. Orissa pan/European pan.
34. Glass mirror.
35. Marble year plate.
36. Towel rod for bath room.
37. Sliding gate.
38. RCC Hume pipe.(pressure/Non pressure).
39. Submersible pump for bore well.
40. Substation Sign boards.
41. Acrylic name plates.
42. MS cover for cable trench in control room/GIS room.
43. Ear thing strips.
44. Grout materials for foundation/flooring.

(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 re 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, over writing 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. **Contractor has to bring the Cement, Reinforcement steel, Structural steel from approved brand list published on GETCO'S Website.**

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/ M-30 is 300 Kgs/320-Kgs/370Kgs/396Kgs 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.

Sr. No.	Item Description	Unit	Cement to be consumed in Bags
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1. Masonry Works

B.B. Masonry in C.M. 1:6.	1 CMT	1.4
U.C.R. Masonry in C.M. 1:6	1 CMT	1.7
U.C.R. with pointing in C.M. 1: 2	1 CMT	2.0
115 mm thick B. B. Partition in C.M. 1:4	1 SMT	0.2

–do- but with both sides plaster in

C.M. 1:3;12 mm thick.	1 SMT	0.46
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2. Cement Concrete works without finishing	1 SMT	0.46
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C.C. 1:1 ½ : 3	1 CMT	8.12
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C. C. 1 : 2 : 4	1 CMT	6.27
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C.C. 1 : 3 : 6	1 CMT	4.42
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C.C. 1 : 4 : 8	1 CMT	3.00
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C.C. 1 : 5 : 10	1 CMT	2.47
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3. Flooring

25 mm thick I.P.S. in C.C. 1:2:4	1SMT	025
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–do- 40 mm thick	1SMT	0.35
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–do- 50 mm thick	1 SMT	0.45
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–do- 75 mm thick	1SMT	0.60
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–do- 100 mm thick	1SMT	0.75
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Cement for fixing marble Mosaic Tiles	1SMT	0.13
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–do- White glazed tiles with 12 mm thick	1SMT	0.25
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coating cement plaster for leveling.

Terrazzo floor finishing 20 mm thick with	1SMT	0.25
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mm thick back coating cement plaster.

Kotah stone flooring	1SMT	0.20
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4. Bedding Below Flooring

110 mm thick C. C. 1 : 4 : 8	1 SMT	0.35
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– do – C. C. 1 : 5 : 10	1SMT	0.28
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5. Plastering & Pointing

12 mm thick C.P. in C.M. 1 : 3	1SMT	0.13
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20 mm thick C.P. in C.M. 1:3	1SMT	0.19
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20 mm thick sand faced in two layers.	1SMT	0.20
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Cement Pointing 1 : 1	1SMT	0.07
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6. Ground Sink 750 x 750 mm with dwarf wall	1NO	0.75
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115 mm thick 40 mm IPS with 110mm. thick

1: 5: 10 bedding,		
7. RCC water tank 1000 liter. (1.2x1.2x0.9M with free Corporation)	1NO	0.75
– do – size (2x2x0.9 M with free Corporation) (3000 Liters)	1NO	13.0
8. Kitchen Platform with 75 mm thick slab with 2 partitions with 12 mm smooth plaster.		
Size 2000 x 675 mm	1NO	1.50
Size 3000 x 675 mm	1NO	2.50
9. 75 mm quarter round vata in C.M. 1:2.	100RMT	4.0
100 mm – do –	100RMT	5.0
150 mm – do –	100RMT	7.0
10. Fixing W.C. Pan	1 No.	0.50
11. Gully trap with chamber or 300x300mm. Nahni trap	1NO	0.75
	1NO	0.05
12 50mm thick RCC shelf in C.C. 1:1 ½ : 3	1 SMT	0.60
13 - do - precast cover 300 mm, wide 50 mm thick with smooth finishing on all sides.	1SMT	0.60
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.		
Size 900 x 450 mm	1NO	2.5
Size 600 x 450 mm	1NO	2.0
Size 600 x 600 mm	1NO	2.25
Size 900 x 900 mm	1NO	3.70
Size 450 x 450 mm	1NO	1.25
Size 300 x 300 mm with 110 mm partition wall.	1NO	0.75
15 RCC hume pipe with filling joints in C.M. 1:1 and bed concrete 1:4:8 below joints 150 mm. thick		
750 mm Dia	1RMT	0.45
650 mm Dia	1RMT	0.35
450 mm Dia	1RMT	0.24
300 mm Dia	1RMT	0.16
225 mm Dia	1RMT	0.12
150 mm Dia	1RMT	0.08
16. Porcelain Pipes (S.W.G. Pipes)		
100 mm Dia	1RMT	0.06
150 mm Dia.	1RMT	0.08
17 150 mm Dia half round gutter in C.C. 1:3:6	1 RMT	0.15
18 2500 mm Dia x 300 mm deep of hollow masonry in C.M. 1:6 with C.C. 1:4:8 bedding & RCC slab cover, for soak pit.	1NO	21.00

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 material 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 change 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 from 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 of 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 than 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 then 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, chhajjas 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 or 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 form 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 charge 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 pipe 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 Balsar 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, undervise 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 mm 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 butt 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 or 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 from time to time.

23. All necessary safety measures and precautions (including those laid down in the various relevant Indian Standards) shall be taken 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, change 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-19.78.,

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 :

I.S Designation	Sieve Passing sieve	Percentage by weight Designation	I.S. Sieve percentage weight passing sieve
4.75mm	100	600 Micron	30-100
2.36mm	90 to 100	300 Micron	5-70
1.18mm	70-100	150 Micron	0-50

6.3. Fine Sand :

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

I.S Designation	Sieve Passing sieve	Percentage by weight Designation	I.S. Sieve percentage by weight passing sieve
4.75mm	100	600 Micron	40-85

2.36mm	100	300 Micron	5-50
1.18mm	75-100	150 Micron	0-10

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 whit 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 :

I.S Designation	Sieve Passing sieve	Percentage by weight Designation	I.S. Sieve percentage by weight passing sieve
1250mm	100 %	4.75mm	0-20 %
10.00mm	85-100 %	2.36mm	0-25%

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. motor 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 or 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 form 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

IS. Sieve	Percentage passing for single			IS. Sieve	Percentage passing for single		
Designation	Sized aggregates of Nominal size			Designation	Sized aggregates of Nominal size		
	40mm	20mm	16mm		40mm	20mm	16mm
80mm	-			12.5mm	0.5		0.20
63mm	100			10 mm	0.5		0.5
40mm	85-100	100		4.75mm			
20mm	0.2	85-100	100	2.35 mm			
16mm		85-100					

Note : This percentage may be varied somewhat 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 dry 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 plywood sheet. The shuttering shall be supported on battens and beams and tubular steel supports properly cross braced together so as to make the centering rigid.

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 tubular steel support shall be placed as per design requirement. These shall rest squarely on steel sole plates 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. In case of steel shuttering 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. (1 in 250) 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 aggregate area of such knots shall 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. This 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) Pivoted 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 Superintending 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 maintain a temperature of 90 degree 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, B and 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 :

TABLE

Board	Thickness	Board	Thickness	Board	Thickness	Board	Thickness
3 ply	3mm	5 ply	5mm	7 ply	9mm	9 ply	16mm
	4mm		6mm		13mm		19mm
	5mm		7mm		16mm	11 Ply	19mm
	6mm		8mm	9 ply	13mm		25mm

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 fluted, 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 be of best quality free from any defects. The particleboards 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 ensue 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, shall 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 re 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 140Kg/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 parts

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 x24.85 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 or minus one millimeter.

Tolerance on thickness shall be plus 5 m.m.

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 nosing 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 spots, 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 of 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 of 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 :

Diameter	Bib cock	Stop cock	Diameter	Bib cock	Stop cock
8mm	0.25kg	0.25 kg	15mm	0.40kg	0.40 kg
10mm	0.30 kg	0.35 kg	20mm	0.75kg	0.75 kg

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.

60.2 'S' trap shall be provided as required with water seal not less than 50mm. The solid plastic seat and cover shall be of the best Indian make conforming to IS 2548 – 1980. They shall be made of moulded synthetic materials which shall be tough and hard with high resistance to solvents and shall be free from blisters and other surface defects and shall have chromium plated brass hinges and rubber buffer of suitable size.

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 back and or front for connecting flush pipes as directed, The inside of the bottom of 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 white 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.

M-67. Flush cock.

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.

Sr. No.	Nominal dia. of bore	Thickness	Overall 1,5 m. long	Weight of pipe 1.8 m. long	excluding ears 2.m. long
1	75mm	5mm	12.38kg	16.52kg	18.37kg
2	100mm	5mm	18.14kg	21.67 kg	24.15kg

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. It 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-I 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 any lead and outside of Substation premises 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 kind, 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 up to any. 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 transferal as directed by removing and watering as required. No earth filling will be allowed for brining 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 all lead and 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 within any lead and outside of

Substation premises and its dressing etc. 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 within any lead and outside of Substation premises and its dressing etc. 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 be 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 DD or in the form of BG 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 BG shall be encashed by GETCO. The BG 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 35 kg. / sq. cm. in foundation and plinth in cement mortar 1:6 (1 -Cement : 6 - Fine sand)

1.0. Materials

Water shall conform to M-1. Cement shall conform to M-3. Sand shall conform to M-6. Cement mortar shall conform to M-11. Brick shall conform to M-15.

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

Water shall conform to M-1. Cement shall conform to M-3. Sand shall conform to M-6. Cement mortar shall conform to M-11. Brick shall conform to M-15. M.S. reinforcement shall conform to M-18.

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 300 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 300 Kg / Cmt. and free water cement ratio of 0.55. 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

Water shall conform to M-1. Cement shall conform to M-3. Sand shall conform to M-6. 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/ Cm²

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 :

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

In all cases, the 28 days compressive strength specified in above 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 access to different parts, suitable mobile platforms shall be provided so that steel reinforcement in position is not disturbed. For ensuring proper cover, mortar blocks of suitable size 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 even 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. Masonry work over foundation concrete may be started after 48 hours of its laying but curing of concrete shall be continued for a minimum period of 14 days.

3.9 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:

Quantity of concrete in the work	No. of samples	Quantity of concrete in the work	No. of samples
1 – 5 Cmt.	1	31 - 50 Cmt.	4
6 – 15 Cmt.	2	51 and above	4 + one additional for each additional 50 m. or part thereof.
16 – 30 Cmt.	3		

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 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 section shown on drawings or as directed shall not be measured. No deduction shall be made for –

(a) Ends of dissimilar 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 415/500D IS : 1786 for RCC work including cutting, bending, hooking and binding the reinforcement with approved quality of binding wire etc., completed as per design

All reinforcement TMT bar specified in item shall conform 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 bent wrongly, it should be straightened and re-bent such that it does 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 placed 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 be carried out at all levels. "Rate quoted shall be 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 :

1	6 mm x 0.22 Kg / Rmt.	8	20mm x 2.47 Kg / Rmt.
2	8 mm x 0.39 Kg / Rmt.	9	22mm x 2.98 Kg / Rmt.
3	10 mm x 0.62 Kg / Rmt.	10	25mm x 3.85 Kg / Rmt.
4	12 mm x 0.89 Kg / Rmt.	11	28mm x 4.83 Kg / Rmt.
5	14mm x 1.21 Kg / Rmt.	12	32mm x 6.31 Kg / Rmt.
6	16 mm x 1.58 Kg / Rmt.	13	36mm x 7.99 Kg / Rmt.
7	18 mm x 3.00 Kg / Rmt.	14	40mm x 9.86 Kg / Rmt.

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. Moistening shall commence as soon as plaster is hardened

sufficiently. Soaking of walls shall be avoided and only as much water as can be readily absorbed shall be used, excessive evaporation on the sunny or windward side of building in hot air or dry weather shall be prevented by hanging 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 metres 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 width 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.

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

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. 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 vata 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

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

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 paris 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 off after rubbing. Minimum two 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 uniform 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 started 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 surfaces 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 infestation 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.mt. 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 existing 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 fabricating & erecting in position GI Angle, channels girders etc., for purlins rafters, columns etc., including welding the section as per instruction & drawing making holes 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 erecting.

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

Water shall conform to M-1. Cement shall conform to M-3. Sand shall conform to M-6. Stone aggregate 20mm nominal size shall conform to M-12.

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, 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 & GI 50 X 50 X 6 mm. angle including fixing the chain link in angle frame by means of 40 X 3 mm. GI 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 GI FLAT, CHAINLINK FENCING, GI ANGLES, BOLTS, NUTS, WILL HAVE TO BE SUPPLIED BY THE CONTRACTOR)

Necessary GI Angle GI 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 frame 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 etc., required fabricated. 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. GI Angle for vertical support 2.75 Mt. long including providing & 50 X 6 mm. GI 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).

GI 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 GI Angle 50 x 50 x6mm with GI flat 5-x6mm necessary bolts, nuts, washers, cutting bending, welding, erection in line & level & plumb, got dip galvanizing, etc. complete. Payment shall be made on number basis.

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 $\frac{1}{4}$ 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 $\frac{1}{4}$ 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 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.

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 20% 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, if any, breaking the metal, stacking, measuring in pharas etc. complete.

Supplying & Stacking 25 to 40 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 pharms of 2.00 x 1.50 x 0.50 metre and 15% 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, if any, breaking the metal, stacking, measuring in phases etc. complete.

STONE SPREADING AND ANTI-WEED TREATMENT

The layout of the area, where anti-weed treatment and stone spreading is to be done, shall be developed by the Contractor during detailed engineering and the same shall be submitted to the employer for approval. The Contractor shall arrange all labour, equipment and materials required for complete performance of the work in accordance with the drawings, specification and direction of the Employer.

Stone spreading over cement concrete layer shall be done in the areas of the switchyard under scope of work.

The material required for site surfacing/stone filling shall be free from all types of organic materials and shall be of standard quality, and as approved by the Employer.

The material to be used for stone filling/site surfacing shall be stone aggregate of 40mm nominal size (ungraded single size) conforming to Table 2 of IS:383 – 1970. Hardness, flakiness shall be as required for wearing courses are given below:

- i) Sieve Analysis limits (Gradation) (IS: 383 – Table – 2)

Sieve Size	% passing by weight
63mm	100
40mm	85–100
20mm	0–20
10mm	0–5

- ii) Hardness: Abrasion value (IS:2386 Part–IV) – not more than 40% Impact value (IS: 2386 Part–IV) – not more than 30%.
- iii) Flakiness Index: As per IS: 2386 Part – I maximum value is 25%.
- iv) Frequency of test shall be conducted for sieve analysis, Hardness & Flakiness index as per latest FQP Plan.

After all the structures/equipments are erected, antiweed treatment shall be applied in the switchyard where ever cement concrete is to be done and the area shall be thoroughly de-weeded including removal of roots. The recommendation of local agriculture or horticulture department may be sought where ever feasible while choosing the type of chemical to be used.

The antiweed chemical shall be procured from reputed manufacturers. The doses and application of chemical shall be strictly done as per manufacturer's recommendation. Nevertheless, the effectiveness of the chemical shall be demonstrated by the Contractor in a test area of 10MX10M (appx) and shall be sprinkled with water at least once in the afternoon every day after forty-eight hours of application of chemical. The treated area shall be monitored over a period of two to three weeks for any growth of weeds by the Engineer – in- charge. The final approval shall be given by Engineer – in –charge based on the results.

Engineer-in-charge shall decide final formation level so as to ensure that the site appears uniform devoid of undulations. The final formation level shall however be very close to the formation level indicated in the approved drawing.

After antiweed treatment is complete, the surface of the switchyard area shall be maintained, rolled/compacted to the lines and grades as decided by Engineer-in-charge. The sub grade shall be consolidated by using half ton roller/surface vibrator with suitable water sprinkling arrangement to form a smooth and compact surface. The roller shall run over the sub grade till the soil is evenly and densely consolidated and behaves as an elastic mass.

In areas that are considered by the Engineer-in-Charge to be too congested with foundations and structures for proper rolling of the site surfacing material by normal rolling equipments, the material shall be compacted by hand rammer, if necessary. Due care shall be exercised so as not to damage any foundation structures or equipment during rolling / compaction.

The sub grade shall be in moist condition at the time the cement concrete is placed. If necessary, it should be saturated with water for not less than 6 hours but not exceeding 20 hours before placing of cement concrete. If it becomes dry prior to the actual placing of cement concrete, it shall be sprinkled with water and it shall be ensured that no pools of water or soft patches are formed on the surface.

Over the prepared sub grade, 75mm thick base layer of cement concrete in 1:5:10 (1 cement: 5 fine aggregate: 10 graded stone aggregate 40mm nominal size) shall be provided in the area excluding roads, drains, cable trenches as per detailed engineering drawing. For easy drainage of water, the slope of 1:1000 is to be provided from the ridge to the nearest drain.

The ridge shall be suitably located at the centre of the area between the nearest drains. The above slope shall be provided at the top of base layer of cement concrete in 1:5:10. A final layer of 100mm thickness of stone aggregate of 40mm nominal size shall be spread uniformly over cement concrete layer after curing is 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. 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 immediately on being measured and recorded by the Engineer in- charge. The rate includes blasting the rock, if any, breaking the metal, stacking, measuring in pharas etc. complete.

Labour charges for spreading metal in 100 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 roiling 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 of above item 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 of above item shall be applicable to this item also but instead of 600mm dia pipe 300mm dia shall be provided and fixed and paid for.

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.

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

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

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 bulking 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 ply sheathing and tubular steel support so as to give fair 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 plywood make and shall conform to IS4990:2011.

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
	(ii) Spanning over 6 m	21 days

2.4 Procedure when removing the form work

2.4.1 All form work shall be removed without such shock or vibrations as would damage the reinforced concrete surface. Before the 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 be strong enough 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 over laps 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 & 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 by 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 from 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 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.

Galvenized chain link jali having 2" (50mm) 10x 10 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.

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

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 2015-16 for concern 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 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.

Carrying out boring through 100 mm or over dia auger in all type of soil up to 10-meter depth or



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No: CE(Proj)/CIRCULAR/SBC/3370

Date: 21.07.2026

CIRCULAR

To,

The Executive Engineer (Civil)

GETCO, Circle Office,

Amreli / Anjar / Gondal / Jamnagar / Junagadh / Surendranagar /

Bharuch / Navsari / Jambuva / Himmatnagar / Mehsana / Nadiad / Palanpur

Subject: Guidelines for Conducting Geotechnical Investigation (S.B.C.) and Submission of Soil Investigation Reports for Substation and Transmission Line Projects.

Soil investigation is a critical component in the planning and execution of substations and transmission line projects, as it enables assessment of subsurface conditions, determination of soil characteristics, evaluation of Safe Bearing Capacity (SBC), and recommendation of suitable foundation systems. A comprehensive and technically sound geotechnical investigation report is essential for ensuring safe, reliable, and economical design and construction of civil assets.

In order to standardize the quality and contents of Geotechnical Investigation Reports, the following guidelines are hereby issued for strict compliance by all field offices.

These guidelines shall be applicable to:

- ☐ All new substation projects.
- ☐ Renovation and Modernization (R&M) works involving foundation design.
- ☐ Transmission line locations requiring geotechnical investigation.

1. Minimum Requirements of Soil Investigation Reports

Field offices shall ensure that the appointed geotechnical investigation agency includes, at a minimum, the following information in the final report:

a) Borehole Investigation

- ☐ Boreholes shall be planned on an 80 m × 80 m grid pattern covering the entire substation area.
- ☐ However, Minimum borehole requirements shall be as follows:

Description	Minimum Boreholes
33kV & 66 kV New Substation	02 Nos.
132kV & 220kV Substation	6 Nos. for AIS & 4 Nos. for GIS
400kV & 765kV Substation	10 Nos. for AIS & 8 Nos. for GIS

For Transmission line and R&M work same shall be as follows:

For Transmission Tower	1 No. per tower location.
For R&M & new Admin Office Building	02 Nos.

The minimum borehole depths shall be:

- ☐ 66 kV Substations: 10 m

- ☐ EHV Substations: 20 m
- ☐ 66 kV Line Locations: 15 m
- ☐ EHV Line Locations: 30 m
- ☐ River Crossing Locations: 30 m

Additional boreholes and additional depth shall be carried out wherever site conditions warrant. The report shall also include but not limited to following:

- ☐ Borehole coordinates in Degree-Minute-Second format along with KMZ files (for line)
- ☐ Date of execution of each borehole.
- ☐ Ground Water Table observations.
- ☐ Standard Penetration Test (SPT) details.
- ☐ Disturbed and undisturbed soil sampling records.
- ☐ Frequency of SPT and UDS as prescribed.
- ☐ Laboratory testing details for all collected samples.
- ☐ California Bearing Ratio (CBR) test results for EHV substations.
- ☐ Photographic documentation of borehole execution shall be mandatory for all locations with date and time.

b) Laboratory Investigations

The report shall contain results of all relevant laboratory tests including:

Physical Properties

- ☐ Specific Gravity
- ☐ Bulk and Dry Density
- ☐ Natural Moisture Content
- ☐ Atterberg Limits
- ☐ Grain Size Analysis
- ☐ Void Ratio

Strength Properties

- ☐ Shear Strength Parameters ($C-\phi$)
- ☐ Unconfined Compressive Strength
- ☐ Consolidation Characteristics
- ☐ Coefficient of Friction

Chemical Properties

- ☐ pH Value
- ☐ Chloride Content
- ☐ Sulphate Content
- ☐ Organic Matter Content
- ☐ Salinity Levels

All tests shall be conducted as per the latest relevant IS Codes and SP-36 guidelines.

c) Safe Bearing Capacity Analysis

The report shall include SBC calculations based on:

- ☐ General Shear Failure.
- ☐ Local Shear Failure.
- ☐ Intermediate Shear Failure, wherever applicable.
- ☐ Settlement criteria for 25 mm and 40 mm settlements.

SBC calculations shall consider groundwater table at surface level wherever the groundwater table is encountered at a higher level (approximately within 10 meters below the ground surface).

Minimum factors of safety shall be:

- ☐ Compression: 2.5
- ☐ Uplift: 3.0

The summary shall be furnished in the format prescribed under Annexure-A.

d) Foundation Recommendations

The Geotechnical Engineer shall provide recommendations regarding:

- ☐ Feasibility of shallow foundations.
- ☐ Requirement of deep foundations.
 - ☐ Pile capacities (Vertical, Uplift and Lateral).
 - ☐ Recommended pile diameter and depth.
 - ☐ End bearing and skin friction values.
 - ☐ Depth of fixity and scour depth.
 - ☐ Type of piles proposed.
- ☐ Pile capacities shall mandatorily be furnished in the formats prescribed under Table-1, Table-2 and Table-3.
- ☐ Where liquefaction is identified, separate pile capacities shall be provided for liquefied and non-liquefied conditions.

2. Liquefaction and Soil Improvement

The report shall include:

- ☐ Liquefaction susceptibility assessment.
- ☐ Identification of vulnerable strata.
- ☐ Recommended mitigation measures.
- ☐ Soil stabilization measures, wherever required.

3. Geotechnical Recommendations

The report shall clearly indicate:

- ☐ Recommended foundation type.
- ☐ Allowable bearing capacity.
- ☐ Settlement estimates.
- ☐ Soil improvement requirements.
- ☐ Construction precautions.
- ☐ Risk factors and mitigation measures.
- ☐ Suitability of excavated earth for reuse as backfill.
- ☐ Geological formation and historical observations.
- ☐ Anticipated construction challenges and proposed solutions.

4. Supporting Documents

The following shall form part of the report:

- ☐ Borehole logs with date and time stamped photographs.
- ☐ Soil profiles and cross-sections.
- ☐ Laboratory and field test reports with photographs.
- ☐ Plate Load Test results.
- ☐ Site layout showing exploration locations with coordinates.

5. Trial Pits

Minimum trial pit requirements shall be:

Type of Substation	Minimum Trial Pits
66 kV	02 Nos.
EHV	05 Nos.

Trial pits shall generally be 2 m × 2 m in plan and extend up to a depth of 3 m or as directed by the Engineer-in-Charge.

6. Plate Load Tests

For GIS substations, Plate Load Tests shall be conducted as under:

- ☐ 66 kV GIS Substations: One test at the Control Room Building location.
- ☐ EHV GIS Substations: One test each at the Control Room Building, Reactor Foundation, Transformer Foundation, Store Building and Quarter Building locations.

7. Responsibility of Field Offices

Field Offices shall ensure that:

- ☐ The above requirements are incorporated in the scope of work and technical specifications of soil investigation tenders.
- ☐ Reports submitted by agencies are thoroughly verified and validated before forwarding for approval.
- ☐ Incomplete reports shall not be accepted.

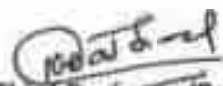
These guidelines prescribe the minimum requirements for Geotechnical Investigation Reports. Agencies may furnish any additional information considered necessary for safe and economical foundation design.

To uniform the tender items and its specifications, a sample Schedule-B and items, Technical specifications are also enclosed to be incorporated in future works/ tenders for soil investigation. This Schedule-B is sample; field office may have allowed to add any other items required for the work as per general practice.

This Circular shall come into force with immediate effect and shall be followed for all ongoing and future works where geotechnical investigations are undertaken.

Enclosures:

1. Frequency of Collecting UDS & Performing SPT (Limited upto Overburden)
2. Annexure-A – Summary of Allowable Bearing Pressure.
3. Table-1 – Bored Cast-in-Situ Pile Capacity.
4. Table-2 – Under-reamed Pile Capacity (Single Bulb).
5. Table-3 – Under-reamed Pile Capacity (Double Bulb).
6. Sample Schedule-B
7. Technical specification for Geotechnical Investigation


Chief Engineer (Projects)
Corporate office, Vadodara

CFWCs to:

ACE (Zone), GETCO, Zonal Office, Bharuch / Mehsana / Rajkot

Copy to:

SE, GETCO, Circle Office, Amreli / Anjar / Gondal / Jamnagar / Junagadh / Surendranagar / Bharuch / Navsari / Jambuva / Himmatnagar / Mehsana / Nadiad / Palanpur

1. Frequency of Collecting UDS & Performing SPT (Limited up to Overburden)

2-2

Depth Below EGL	1.00	2.00	3.00	4.00	5.00	6.00	Every meter up to depth of Termination of Bore Hole
BH-1	UDS-a	SPT	UDS-b	SPT	UDS-b	SPT	
BH-2	SPT	UDS-b	SPT	UDS-b	SPT	UDS-a	
BH-3	UDS-a	SPT	UDS-b	SPT	UDS-b	SPT	
BH-4	SPT	UDS-b	SPT	UDS-b	SPT	UDS-a	
So on as per GETCO Requirement							

Lab test requirement for Overburden/Soil Strata:

Sample	Lab test to be Conducted
SPT	SA: %Gravel, % Coarse Sand, % Medium Sand, % Fine sand and % (Silt + clay) Liquid Limit, Plastic Limit, Field water content
UDS-a	Field Bulk unit weight, Field water content SA: %Gravel, % Coarse Sand, % Medium Sand, % Fine sand and % (Silt + clay) Liquid Limit, Plastic Limit, Shear Parameter: C & Phi
UDS-b	Field Bulk unit weight, Field water content SA & Hydrometer: %Gravel, % Coarse Sand, % Medium Sand, % Fine sand and % (Silt + clay) Liquid Limit, Plastic Limit, shrinkage limit, Shear Parameter: C & Phi Consolidation test: Cc, Pc, Cr, Cv, Mv (Range 2 to 4 & 4 to 8 Kg/cm ²) Unconfined Com Strength (UCS) in CL, ML, CI, MT, CH, MH Soil type

ANNEXURE –A

SUMMARY OF ALLOWABLE BEARING PRESSURE BASED ON SHEAR AND SETTELEMENT CRITERION.

Depth of foundation	Length of foundation	Width of foundation	Safe bearing capacities calculated based on shear criteria			Safe bearing pressure calculated based on settlement criteria		Allowable bearing pressure	Allowable bearing pressure	Recommended Net safe bearing capacity
			General Shear	Local Shear	Intermediate Shear	For 25mm settlement	For 40mm settlement	For 25mm settlement	For 40mm settlement	
Met	Met	Met	T/Sq.MT			T/Sq.MT	T/Sq.MT	T/Sq.MT	T/Sq.MT	T/Sq.MT
0.5	1.3	1.3								
0.5	1.5	1.5								
0.5	1.7	1.7								
0.5	2.0	2.0								
1.0	1.3	1.3								
1.0	1.5	1.5								
1.0	1.7	1.7								
1.0	2.0	2.0								
1.5	1.3	1.3								
1.5	1.5	1.5								
1.5	1.7	1.7								
1.5	2.0	2.0								
2.0	1.5	1.5								
2.0	1.8	1.8								
2.0	2.0	2.0								
2.0	2.5	2.5								
2.5	1.5	1.5								
2.5	1.7	1.7								
2.5	2.0	2.0								
2.5	2.5	2.5								
3.0	3.0	3.0								
3.0	3.0	4.5								
3.0	5.0	5.0								
3.0	7.5	7.5								
3.0	8.0	8.0								

3.5	5.0	7.0								
3.5	7.5	7.5								
3.5	8.0	8.0								
3.5	9.0	9.0								
3.5	10.0	10.0								
SIZE OF FOUNDATION REQUIRED BY DESIGNER AS PER SITE REQUIREMENT										

Table -1-For Bored cast in situ pile.

Type of pile	BH. No.	Diameter	Pile Cut-off level	Effective pile length below E.G.L	Length of Pile from E.G.L	Pile capacity,(T)			Depth of fixity(Fixed & Free)
		Meter	Meter	Meter	Meter	Vertical	Uplift	Lateral (Fixed & Free)	
Bored cast in situ pile	1 to 2/6/10	0.30			Starting from 1.0 mtr, i.e 1.0mt,				
		0.40							
		0.45							
		0.50			2.0mt, 3.0mt,upto borehole depth(At every meter).				
		0.60							
		0.75							

Table -2-For Under reamed pile (with single bulb)

Type of pile	BH. No.	Diameter	Pile Cut-off level	Effective pile length below E.G.L	Length of Pile from E.G.L	Pile capacity,(T)			Depth of fixity(Fixed & Free)
		Meter	Meter	Meter	Meter	Vertical	Uplift	Lateral (Fixed & Free)	
Under reamed pile (with single bulb)	1 to 2/6/10	0.30			Starting from 1.0 mtr, i.e 1.0mt, 2.0mt, 3.0mt,upto borehole depth(At every meter)..				
		0.40							
		0.45							
		0.50							
		0.60							
		0.75							

Table -3- For Under reamed pile (with double bulb)

Type of pile	BH. No.	Diameter	Pile Cut-off level	Effective pile length below E.G.L	Length of Pile from E.G.L	Pile capacity,(T)			Depth of fixity(Fixed & Free)
		Meter	Meter	Meter	Meter	Vertical	Uplift	Lateral (Fixed & Free)	
Under reamed pile (with double bulb)	1 to 2/6/10	0.30			Starting from 1.0 mtr, i.e 1.0mt, 2.0mt, 3.0mt,upto borehole depth(At every meter)..				
		0.40							
		0.45							
		0.50							
		0.60							
		0.75							

SAMPLE SCHEDULE- B

GUJARAT ENERGY TRANSMISSION CORPORATION LTD					
AM CIRCLE					
Schedule-B					
Sub: Bi-annual Rate Contract to carry-out Sub soil Investigation work for Various Sub-Station under Transmission Circle jurisdiction (Dist. _____)					
SN	Description	Qty.	Rate	Unit	Amount
1	Geotechnical Investigation in Soil. Carrying out geotechnical investigation by drilling 150 mm diameter boreholes in all types of overburden and soil strata excluding hard rock, including setting up and shifting of equipment, collection of disturbed and undisturbed samples, Standard Penetration Tests, groundwater observations, preservation and transportation of samples, all field investigations, laboratory testing, chemical analysis of soil and groundwater samples, engineering analyses, determination of allowable bearing pressure, settlement analysis, pile capacity calculations, liquefaction assessment wherever applicable, preparation and submission of detailed Geotechnical Investigation Report, recommendations for foundations and construction measures, geo-tagged photography and videography, furnishing coordinates of bore locations and submission of hard and soft copies of reports, complete in accordance with the Technical Specifications, relevant Indian Standards and as directed by the Engineer-in-Charge.				
a	Geotechnical investigation in soil up to 10 m depth.			Rmt	0.00
b	Extra over geotechnical investigation in soil beyond 10 m and up to 20 m depth.			Rmt	0.00
c	Extra over geotechnical investigation in soil beyond 20 m and up to 30 m depth.			Rmt	0.00
d	Extra over geotechnical investigation in soil beyond 30 m depth.			Rmt	0.00
2	Geotechnical Investigation in Hard Rock. Carrying out geotechnical investigation in hard rock by rotary diamond core drilling from the top of hard rock strata up to termination/refusal depth, including setting up and shifting of equipment, core drilling, core recovery, core logging, determination of Rock Quality Designation (RQD), collection and preservation of representative rock core samples, groundwater observations, all field investigations, laboratory testing, rock mass characterization, engineering analyses, determination of foundation parameters, pile capacity calculations wherever applicable, preparation and submission of detailed Geotechnical Investigation Report, recommendations for foundations and rock treatment measures, geo-tagged photography and videography, furnishing coordinates of bore locations and submission of hard copies and soft copies of reports, complete in			Rmt	0.00

	accordance with the Technical Specifications, relevant Indian Standards and as directed by the Engineer-In-Charge.				
3	Trial Pit Excavation of trial pit of size 2.0 m × 2.0 m and depth up to 3.0 m or as directed by the Engineer-In-Charge, in all types of overburden and soil strata excluding rock, including collection of representative samples, recording of subsurface strata and groundwater observations, photography, backfilling and restoration of the area to original condition and incorporation of the observations in the Geotechnical Investigation Report, complete in accordance with the Technical Specifications, relevant Indian Standards and as directed by the Engineer-In-Charge.			Each	
4	Plate Load Test Conducting Plate Load Test at the specified location and depth, including excavation, preparation of test pit, loading arrangement, observations, interpretation of results and incorporation of the findings in the Geotechnical Investigation Report, complete in accordance with the Technical Specifications, relevant Indian Standards and as directed by the Engineer-In-Charge.			Each	
5	California Bearing Ratio (CBR) Test Conducting California Bearing Ratio (CBR) test on representative soil samples, including sample preparation, laboratory testing, interpretation of results and incorporation of the findings in the Geotechnical Investigation Report, complete in accordance with the Technical Specifications, relevant Indian Standards and as directed by the Engineer-In-Charge.			Each	
				Total:	
General Note:					
1	The quoted rates shall be deemed to include all labour, materials, consumables, equipment, tools and tackles, transportation, loading, unloading, setting up and shifting of machinery, water, electricity, sampling, preservation and transportation of samples, laboratory testing, chemical analysis, engineering analyses, preparation and submission of reports, photography, videography and all incidental works required for satisfactory completion of geotechnical investigations in accordance with the Technical Specifications and relevant Indian Standards.				
2	In case of discrepancy between the Schedule of Quantities and the Technical Specification, the provisions of the Technical Specification shall prevail.				
3	All investigations, testing, analyses and reporting shall be carried out in accordance with the Technical Specifications, relevant Indian Standards and as directed by the Engineer-In-Charge.				
4	Measurement for boreholes in soil, soft rock and hard rock shall be made separately on actual running meter basis for the respective strata encountered and verified by the Engineer-In-Charge.				
5	Measurement for hard rock shall be made from the level at which hard rock strata is encountered up to the termination/refusal depth recorded in the bore log and accepted by the Engineer-In-Charge.				

6	Payment for extra depth beyond the specified depth, wherever provided in the Schedule of Quantities, shall be made only on actual quantities executed and certified by the Engineer-In-Charge.
7	The classification of strata as soil, soft rock and hard rock shall be based on the bore logs and geological conditions encountered during drilling as per required test and the decision of the Engineer-In-Charge in this regard shall be final and binding.
8	The rates quoted shall include collection, preservation and transportation of disturbed and undisturbed samples, groundwater samples and representative rock core samples, wherever applicable.
9	The rates quoted shall include submission of detailed Geotechnical Investigation Reports along with hard copies and soft copies, duly incorporating field observations, laboratory test results, engineering analyses and recommendations.
10	Geo-tagged photographs and videography of investigation activities shall be submitted along with the Geotechnical Investigation Report as specified in the Technical Specifications.
11	Borehole coordinates and other relevant site details shall be furnished in the Geotechnical Investigation Report. KMZ files shall also be submitted wherever required for transmission line investigations.
12	Backfilling and restoration of boreholes and trial pits after completion of investigations shall be deemed to be included in the quoted rates.
13	No extra payment shall be made for casing, bentonite, drilling mud, chiselling, flushing, dewatering, water loss, caving of boreholes, repeated Standard Penetration Tests, obstruction due to boulders or any other incidental difficulties encountered during execution of the work.
14	The quantities shown in the Schedule of Quantities are tentative and may vary depending upon site conditions and requirements. Payment shall be made on actual quantities executed and accepted by the Engineer-In-Charge.
15	Any additional investigations considered necessary during the course of work for proper interpretation of subsurface conditions shall be carried out as directed by the Engineer-In-Charge and paid under the relevant items of the Schedule of Quantities.
16	The decision of the Engineer-In-Charge regarding the classification of strata, acceptance of test results and measurements shall be final and binding on the contractor.



GUJARAT ENERGY TRANSMISSION
CORPORATION LTD.

SARADAR PATEL VIDYUT BHAVAN,
RACE COURSE, BARODA – 390 007.

GETCO/C/TS – GEOTECH/R1, JULY 2026

TECHNICAL SPECIFICATIONS
FOR
GEOTECHNICAL INVESTIGATION

GEOTECHNICAL INVESTIGATION.

1. GENERAL REQUIREMENTS

The Bidder shall have its own fully equipped laboratory with adequate facilities, equipment's and qualified person to carry out all required testing (in accordance with the relevant standard & project requirement) associated with the geo technical investigation works.

This specification covers the technical requirements for carrying out detailed geotechnical investigations and submission of a comprehensive Geotechnical Investigation Report for the proposed substation.

The purpose of the investigation is to establish the subsurface conditions and to determine the relevant engineering properties of soil and rock necessary for the safe, reliable, and economical design of foundations and other civil works. The investigation shall provide adequate and accurate geotechnical parameters, including soil stratification, groundwater conditions, bearing capacity, settlement characteristics, and other design parameters required for foundation engineering.

The findings and recommendations of the Geotechnical Investigation Report shall form the basis for the design of all structures and facilities within the substation premises, including but not limited to:

- ❑ Control Room-cum-Administrative Building and associated buildings;
- ❑ Residential quarters and colony infrastructure, wherever applicable;
- ❑ Transformer foundations;
- ❑ GIS building foundations;
- ❑ Gantry and switchyard structure foundations;
- ❑ Foundations for electrical equipment including circuit breakers, current transformers, capacitor voltage transformers, lightning arresters, wave traps, cable sealing ends and other equipment;
- ❑ Foundations for vibratory equipment;
- ❑ Cable trenches, oil sumps and underground utilities;
- ❑ Peripheral drains, roadside drains and retaining structures;
- ❑ Internal roads and pavements;
- ❑ Boundary walls, fire walls and security structures; and
- ❑ Any other civil, structural, architectural, or infrastructure works associated with the substation.

The above list is indicative and not exhaustive, and the Geotechnical Investigation Report shall provide recommendations for all permanent structures and facilities forming part of the scope of the project.

2. SCOPE OF INVESTIGATION

The scope of work shall comprise the complete geotechnical investigation for the proposed substation site, including mobilization of all necessary equipment, drilling rigs, testing apparatus, engineering and technical personnel, skilled and unskilled manpower, and all associated resources required for the successful execution of the investigation.

The investigation shall include field exploration, laboratory testing, engineering analysis, interpretation of subsurface conditions, and preparation of a comprehensive Geotechnical Investigation Report. The report shall provide detailed recommendations for the design of foundations for various substation structures, including assessment of allowable bearing capacity, foundation depths, settlement characteristics, and other geotechnical parameters relevant to structural design.

The scope shall cover evaluation of different foundation sizes and loading conditions at varying founding strata for all proposed substation facilities and associated structures. All investigations, testing procedures, analyses, and reporting shall be carried out in accordance with the latest editions and amendments of applicable Indian Standards (IS Codes) and other relevant statutory requirements.

The investigation agency shall familiarize itself with the layout, type, loading requirements, and functional characteristics of the proposed substation structures through consultation with GETCO prior to commencement of the work.

The detailed scope of investigation shall include, but not be limited to, the following:

- ❑ Drilling of boreholes to the specified depths and collection of disturbed and undisturbed soil samples.
- ❑ Conducting Standard Penetration Tests (SPT) at specified intervals and strata changes.
- ❑ Excavation of trial pits wherever required.
- ❑ Plate Load Tests (PLT) at designated locations and depths.
- ❑ Collection and chemical analysis of groundwater and soil samples to assess corrosivity and suitability for foundation construction.
- ❑ Recording of groundwater table and subsurface stratification details.
- ❑ Backfilling and proper restoration of boreholes and trial pits upon completion of field investigations.
- ❑ Performance of all necessary laboratory tests on soil, rock, and water samples in accordance with relevant IS standards.
- ❑ Analysis and interpretation of field and laboratory test results.
- ❑ Evaluation of geotechnical design parameters including bearing capacity, settlement characteristics, modulus values, soil classification, and foundation recommendations.

- ❑ Preparation and submission of detailed geotechnical reports containing factual data, test results, bore logs, subsurface profiles, engineering analyses, conclusions, and recommendations for the safe and economical design of foundations for all substation structures.

The Geotechnical Investigation Report shall clearly specify the recommended foundation system, allowable bearing pressure, founding level, expected settlements, construction considerations, and any special measures required for the proposed substation development.

The locations of all boreholes, trial pits, and Plate Load Tests (PLTs) shall be finalized and approved by GETCO prior to commencement of the field investigations. The investigation agency shall accurately capture the geographical coordinates (Latitude and Longitude) of each borehole, trial pit, and test location using suitable GPS equipment or equivalent surveying instruments. The recorded coordinates shall be jointly verified and documented with the concerned GETCO field representative, and the same shall form part of the Geotechnical Investigation Report and associated field records.

3. APPLICABLE CODES AND STANDARDS

All field investigations, laboratory testing, analysis, interpretation of results, reporting, and recommendations shall conform to the latest editions, revisions, amendments, and supplements of the applicable Indian Standards (IS), Codes of Practice, and other relevant statutory regulations in force at the time of execution of the work.

The geotechnical investigation agency shall ensure that all procedures, methodologies, workmanship, equipment, sampling techniques, testing practices, and reporting formats comply with the requirements of the relevant standards issued by the Bureau of Indian Standards (BIS). Where a particular aspect of the work is not covered by the Indian Standards, internationally accepted engineering practices and standards may be adopted with the prior approval of GETCO.

The following standards are indicative and not exhaustive. The investigation agency shall comply with all other relevant standards applicable to the scope of work, whether specifically listed herein or not.

IS Code	Description
IS 1498	Classification and Identification of Soils for General Engineering Purposes
IS 1888	Method of Load Test on Soils

IS 1892	Code of Practice for Subsurface Investigation for Foundations
IS 2131	Method for Standard Penetration Test (SPT) for Soils
IS 2132	Code of Practice for Thin-Walled Tube Sampling of Soils
IS 2720 (All Parts)	Methods of Test for Soils
IS 2809	Glossary of Terms and Symbols Relating to Soil Engineering
IS 2810	Glossary of Terms and Symbols Relating to Soil Dynamics
IS 4078	Indexing and Storage of Drill Cores
IS 4464	Presentation of Drilling Information and Core Description in Foundation Investigation
IS 4968 (All Parts)	Method for Subsurface Sounding for Soils
IS 5249	Method of Test for Determination of In-situ Dynamic Properties of Soils
IS 5529	Code of Practice for In-situ Permeability Tests
IS 9214	Method for Determination of Modulus of Subgrade Reaction (k-Value) of Soils in the Field
IS 10060	Code of Practice for Subsurface Investigation for Power House Sites

In addition to the above, all applicable standards related to borehole drilling, soil and rock sampling, groundwater investigation, chemical analysis of soil and water, plate load testing, geotechnical laboratory testing, and foundation engineering shall be followed wherever relevant.

In the event of any discrepancy or conflict between the requirements of this specification and the provisions of the referenced codes and standards, the requirements of this specification shall prevail. However, where the code requirements are more stringent than those specified herein, the more stringent requirements shall be adopted unless otherwise approved by GETCO.

4. FIELD INVESTIGATION. - SOIL

4.1. BOREHOLE

4.1.1. General

Boreholes shall be drilled at locations approved by GETCO to establish the subsurface profile, determine the engineering characteristics of soil and rock, and obtain

representative disturbed and undisturbed samples for laboratory testing and foundation design.

Boreholes of 150 mm diameter shall be drilled in accordance with IS 1892 and other applicable Indian Standards. The minimum depth of exploration shall generally be 10 m below existing ground level or up to refusal, whichever occurs earlier. Refusal shall be deemed to have occurred when a Standard Penetration Test (SPT) value of 100 blows for 300 mm penetration is recorded.

4.1.2. Number of Boreholes.

Generally, the minimum number of boreholes shall be as follows:

- ▣ For R&M & new Admin Office Building: 2 Nos.
- ▣ For Transmission Tower: 1 No. per tower location.
- ▣ 33 kV & 66 kV Substation: 2 Nos.
- ▣ 132kV & 220kV Substation: 6 Nos. for AIS & 4 Nos. for GIS.
- ▣ 400kV & 765kV Substation: 10 Nos. for AIS & 8 Nos. for GIS.

However, the number and depth of boreholes may be increased or reduced, subject to approval of GETCO, considering the plot area, importance of structures, local geological conditions, variation in subsurface strata, and findings obtained during the course of investigation, so as to establish a representative subsurface profile and obtain adequate geotechnical parameters for design.

4.1.3. Depth of Exploration

The investigation agency shall plan and execute the exploration programme considering the nature of the proposed structures, local geology, past experience in the area, and subsurface conditions encountered during drilling. The depth of exploration may be modified during the investigation, with the approval of GETCO, to ensure that sufficient information is obtained for safe and economical foundation design.

Where low bearing capacity strata, highly compressible soils, expansive soils, loose saturated deposits, liquefiable strata, or other adverse subsurface conditions are encountered, the depth of exploration shall be extended as necessary to establish the characteristics of the underlying competent strata and to evaluate the suitability of shallow or deep foundations.

Where deeper compressible strata are encountered or where the primary investigation indicates that pile foundations may be required, the boreholes shall generally be extended up to 20 m below ground level or up to refusal, whichever occurs earlier.

In areas comprising loose saturated sandy strata, reclaimed land, coastal deposits, alluvial formations, or sites identified as potentially susceptible to liquefaction based on geological conditions, seismic considerations, or preliminary investigations, the depth of exploration shall generally be extended up to 30 m below ground level or

deeper, if required, based on engineering judgment and approval of GETCO, to adequately assess liquefaction susceptibility and establish the engineering properties of the underlying strata.

The final depth of exploration shall be governed by the subsurface conditions encountered, geological setting, proposed foundation system, and foundation design requirements, and may be further increased wherever considered necessary by GETCO.

4.1.4. Rock Exploration

Where refusal is encountered during boring, the borehole shall be advanced by chiselling or other suitable means to confirm the presence of rock. Upon confirmation of rock strata, rotary core drilling shall be carried out and representative rock cores shall be collected. Coring shall continue for a minimum depth of 3 m into sound rock or until a core recovery of not less than 95% is achieved, whichever requirement governs.

4.1.5. Drilling Methodology

Boreholes may be advanced by auger boring, shell and auger boring, rotary drilling, or any other suitable method appropriate to the prevailing ground conditions and in accordance with the relevant Indian Standards.

Suitable casing shall be provided wherever necessary to prevent collapse of the borehole and to minimize disturbance to the surrounding soil. Wash boring shall not be adopted.

4.1.6. Backfilling and Restoration

Upon completion of drilling, testing, and sampling, all boreholes shall be properly backfilled and the site restored to its original condition or as directed by GETCO.

4.2. BOREHOLE LOGGING AND REPORTING

Detailed borehole logs shall be prepared immediately upon completion of drilling and submitted to the Engineer-in-Charge. The logs shall include soil and rock descriptions, sampling details, SPT results, groundwater observations, core recovery, RQD values, and any other relevant field observations.

All field records, borehole logs, test data, and observations shall be jointly verified at site by the GETCO representative and shall form part of the final Geotechnical Investigation Report.

In addition to the above requirements, the investigation agency shall comply with the latest editions, revisions, and amendments of all relevant BIS Codes of Practice applicable to geotechnical investigations.

4.3. STANDARD PENETRATION TESTS AND SAMPLING

Standard Penetration Tests (SPT) shall be conducted in accordance with IS 2131 to determine the subsurface stratification and engineering properties of soil. The tests shall be carried out at intervals of approximately 1.5 m, at every change of strata, at depths where undisturbed samples cannot be obtained, and at such other depths as directed by GETCO.

The starting depth of SPT shall be staggered in alternate boreholes to obtain a better representation of the subsurface profile. The tests shall commence from 0.5 m below ground level and continue up to the termination depth of the borehole.

Disturbed samples recovered from the split spoon sampler shall be collected, visually classified, properly labelled, preserved, and transported to the laboratory for identification and testing.

The SPT value (N-value) shall be reported in accordance with IS 2131. Refusal shall be deemed to have occurred when 100 blows are required for 300 mm penetration, and the corresponding penetration and blow count shall be recorded.

4.4. GROUND WATER

4.4.1. Observations

The groundwater table, if encountered, shall be measured and recorded in each borehole in accordance with IS 6935 and other relevant Indian Standards. Groundwater observations shall be made after stabilization of the water level and the measured depth below ground level shall be reported.

Where the investigations are carried out during non-monsoon periods, the highest seasonal groundwater level shall also be assessed from reliable local sources and included in the Geotechnical Investigation Report.

The investigation agency shall record groundwater conditions and their likely effect on foundation construction, dewatering requirements, and long-term performance of structures.

4.4.2. Sub-soil Water Sampling

Representative groundwater samples shall be collected from boreholes immediately upon first encounter of groundwater and prior to the addition of water, drilling mud, or other contaminants. Where groundwater has been affected by drilling operations or surface runoff, the borehole shall be dewatered and allowed to stabilize before collecting the sample.

Samples shall be collected, preserved, labelled, and transported in clean airtight containers in accordance with relevant IS Codes. Sufficient quantity of water samples shall be obtained for chemical analysis.

The chemical analysis shall include, but not be limited to, determination of pH, chlorides, sulphates, carbonates, bicarbonates, nitrates, organic matter, suspended solids, and other constituents likely to affect the durability of concrete, steel, and foundation performance.

Where required by the applicable test methods, suitable preservatives may be added to the samples in accordance with relevant IS Codes.

4.5. SAMPLING

4.5.1. General

Representative disturbed and undisturbed soil samples shall be collected from boreholes and trial pits to establish the soil profile and to determine the physical, engineering, and chemical properties of the soil. Sampling procedures and equipment shall conform to the requirements of IS 1892, IS 2132 and other relevant Indian Standards.

All samples shall be visually classified in accordance with IS 1498 and shall be properly identified with borehole or trial pit number, sample number, depth of collection, and date of sampling. Undisturbed samples shall be suitably sealed, preserved, packed, and transported to the laboratory to prevent loss of moisture and disturbance.

Where an undisturbed sample cannot be obtained at the specified depth, the borehole shall be advanced and a Standard Penetration Test (SPT) shall be conducted. The reasons for non-recovery of undisturbed samples shall be recorded in the bore logs.

4.5.2. Disturbed Samples

Disturbed samples shall be collected at regular intervals and at every change of strata for field identification and laboratory testing. Bulk samples, wherever required, shall also be collected for evaluating the suitability of soil for use as fill material.

4.5.3. Undisturbed Samples

Undisturbed samples shall be collected at intervals of approximately 3 m and at every significant change of strata, or as directed by GETCO. The starting depth of undisturbed sampling shall be staggered in alternate boreholes to obtain a representative assessment of the subsurface profile.

Undisturbed samples shall preferably be obtained using thin-walled tube samplers. Where conventional sampling is not feasible, suitable sampling techniques, including

piston samplers or compressed air samplers, may be adopted in accordance with the relevant Indian Standards.

In soils where undisturbed sampling is impracticable, or where the SPT value exceeds 50, Standard Penetration Tests may be substituted for undisturbed sampling with the approval of GETCO.

4.6. TRIAL PITS

Trial pits shall be excavated at locations approved by GETCO to facilitate visual examination of soil strata, collection of representative samples, and conduct of in-situ tests. Unless otherwise specified, the trial pits shall be approximately 2 m × 2 m in plan and shall extend up to a depth of 3 m below ground level or as directed by GETCO.

The minimum number of trial pits shall be:

- EHV Substation: 5 Nos.
- 66 kV Substation: 2 Nos.

Adequate safety measures, including shoring, dewatering, barricading, and other protective arrangements, shall be provided wherever necessary in accordance with IS 4453. Precautions shall be taken to prevent collapse of pit walls and ingress of surface water.

Visual examination of the exposed strata shall be carried out and recorded, including soil type, colour, consistency, thickness of strata, groundwater conditions, and other relevant observations.

Undisturbed soil samples shall be collected at approximately 1 m intervals and at the termination depth of the pit. Where undisturbed sampling is not feasible, suitable in-situ tests, including field density tests, shall be carried out in accordance with relevant Indian Standards.

Upon completion of sampling and testing, the trial pits shall be properly backfilled using excavated material and restored to original condition as directed by GETCO.

4.7. PLATE LOAD TESTS (PLT)

Plate Load Tests (PLT) shall be conducted in accordance with IS 1888 to determine the allowable bearing capacity, load-settlement characteristics, and modulus of subgrade reaction of the soil. Determination of the modulus of subgrade reaction (K-value) shall conform to IS 9214.

The number, location, and depth of Plate Load Tests shall be finalized by GETCO based on the proposed foundation locations and subsurface conditions. Unless otherwise

specified, tests shall generally be conducted at the proposed foundation level below finished ground level. Typical test locations may include:

- GIS Building location (765/400/220/66 kV, as applicable)
- Control Room-cum-Administrative Building location
- Transformer foundation location (500 MVA/160 MVA, as applicable)
- Store Building location
- Security Cabin location
- Colony area

The size of the test pit shall not be less than five times the test plate dimension. Excavation, visual examination, groundwater observations, and sampling shall be carried out in the same manner as specified for trial pits. Representative undisturbed soil samples shall be collected from suitable depths for laboratory testing.

Unless otherwise approved by GETCO, the reaction method of loading shall be adopted. The test equipment, loading procedure, observations, interpretation of results, and reporting shall conform to the requirements of IS 1888 and IS 9214.

Loading shall be continued until the specified settlement or failure criteria prescribed in the relevant standards are reached. Upon completion of testing, the pits shall be properly backfilled and restored to their original condition using excavated material or as directed by GETCO.

In case of gravelly, bouldery, or rocky strata, the testing methodology and interpretation of results shall conform to the relevant applicable Indian Standards and accepted engineering practice.

4.8. FIELD CALIFORNIA BEARING RATIO (CBR) TEST

Field California Bearing Ratio (CBR) tests shall be conducted, wherever required, for the design of roads and pavements. The location and depth of testing shall be as specified in the drawings or as directed by GETCO. The equipment, test procedure, observations, and reporting of results shall conform to IS 2720 (Part 31) and other relevant Indian Standards.

4.9. ADDITIONAL INVESTIGATIONS

The scope and quantities specified herein represent the minimum requirements for geotechnical investigation. Depending upon the site conditions encountered during execution, GETCO may direct additional boreholes, trial pits, field tests, laboratory tests, or increased depths of exploration. Such supplementary investigations shall be carried out in accordance with the relevant Indian Standards and accepted engineering practices. The decision of GETCO in this regard shall be final and binding on the Investigation Agency.

5. FIELD INVESTIGATION – ROCK

5.1. GENERAL

Field investigation in rock shall be carried out wherever rock strata are encountered or anticipated, with the objective of establishing the depth, nature, extent, and engineering characteristics of the rock mass for the design and construction of foundations and other civil structures. The investigation shall include rock core drilling, collection of representative rock samples, determination of core recovery and Rock Quality Designation (RQD), groundwater observations, field tests, laboratory testing, and preparation of detailed bore logs and reports.

All investigations shall be carried out in accordance with the applicable Indian Standards, including their latest revisions and amendments, and in accordance with accepted engineering practices.

5.2. ROCK CORE DRILLING

Where rock strata are encountered or anticipated, rock exploration shall be carried out by rotary diamond core drilling in accordance with IS 6926 and other relevant Indian Standards. The drilling shall be continued to establish the depth, nature, and engineering characteristics of the rock mass.

Rock coring shall generally be carried out using double tube core barrels of BX or NX size or equivalent, so as to obtain maximum core recovery and representative samples. The depth of rock drilling shall normally extend to a minimum of 3 m into sound rock or until a minimum core recovery of 95% is achieved, whichever criterion governs the termination of drilling. The depth of drilling may be increased, if required, based on subsurface conditions or as directed by GETCO.

During drilling operations, the investigation agency shall record the depth of rock encountered, groundwater conditions, rate of core recovery, and any significant variations in lithology, weathering, fractures, cavities, seams, or other geological features. Any appreciable loss of drilling fluid or other unusual observations encountered during drilling shall also be recorded.

All recovered cores shall be carefully preserved, properly labelled, and stored in sequential order in core boxes for detailed examination, logging, photography, and laboratory testing.

The drilling equipment, core barrels, drilling procedures, and methods of preservation and handling of rock cores shall conform to the requirements of relevant Indian Standards and accepted engineering practices.

5.3. ROCK CORE LOGGING AND CORE RECOVERY

All recovered rock cores shall be systematically examined and logged immediately after drilling in accordance with IS 4464 and other relevant Indian Standards. Borehole logs shall include details of rock type, colour, texture, degree of weathering, jointing, fractures, cavities, seams, and other significant geological features encountered during drilling.

Core recovery shall be determined for each core run and expressed as a percentage of the drilled length. The investigation agency shall also determine and record the Rock Quality Designation (RQD) and other relevant rock mass characteristics for each borehole. Wherever required, Rock Mass Rating (RMR) or other suitable rock mass classification systems may be adopted.

The location and depth of core losses, fractured zones, weak seams, and any unusual geological conditions shall be clearly identified and recorded. Representative photographs of rock cores shall be taken and included in the Geotechnical Investigation Report.

All bore logs and core records shall be jointly verified at site by the GETCO representative and shall form part of the final Geotechnical Investigation Report.

5.4. ROCK SAMPLING

Representative rock core samples obtained during drilling shall be preserved, labelled, and stored systematically in suitable core boxes in the sequence of recovery for identification, logging, photography, and laboratory testing.

The rock cores shall be examined to determine lithology, degree of weathering, discontinuities, fractures, and other relevant geological features. Particular attention shall be paid to zones of weak, fractured, weathered, or sheared rock, and such features shall be clearly identified and recorded in the bore logs.

Representative samples from each significant rock stratum encountered shall be selected for laboratory testing. Where required, additional samples shall be collected from weak seams, fractured zones, or other critical locations to establish the engineering properties of the rock mass.

All samples shall be properly protected during handling, transportation, and storage to prevent damage and deterioration. The methods of sampling, preservation, and handling shall conform to the requirements of relevant Indian Standards and accepted engineering practices.

5.5. GROUNDWATER OBSERVATIONS

Groundwater conditions encountered during rock drilling shall be carefully observed and recorded. The depth of groundwater table, seepage conditions, water-bearing

fractures, cavities, zones of water loss, and any other hydrogeological features encountered during drilling shall be noted and incorporated in the bore logs.

Any significant loss of drilling fluid, artesian conditions, or inflow of groundwater indicating the presence of joints, fissures, solution channels, or permeable strata shall be recorded. Where required, representative groundwater samples shall be collected and analysed in accordance with the provisions specified under Clause 4.4.

The observations shall form part of the Geotechnical Investigation Report and shall be considered while recommending foundation type, dewatering requirements, and other construction measures.

5.6. FIELD TESTS AND MEASUREMENTS

Where considered necessary based on subsurface conditions or as directed by GETCO, suitable in-situ tests shall be carried out to evaluate the engineering properties of the rock mass and to establish parameters required for foundation design.

Such investigations may include permeability tests, plate load tests on rock, pressure meter tests, seismic refraction surveys, geophysical investigations, or any other specialized tests considered necessary for assessing the strength, deformability, and hydraulic characteristics of the rock mass.

The selection of test locations, test procedures, interpretation of results, and reporting shall conform to the relevant Indian Standards and accepted engineering practices. The results of such tests shall form part of the Geotechnical Investigation Report and shall be considered while recommending the type and design parameters of foundations.

5.7. BOREHOLE LOGGING AND REPORTING

Detailed borehole logs and rock core records shall be prepared immediately upon completion of drilling in accordance with IS 4464 and other relevant Indian Standards. The records shall include, but not be limited to, depth of boreholes, lithological description, degree of weathering, jointing, fractures, cavities, groundwater conditions, core recovery, Rock Quality Designation (RQD), and other significant geological features encountered during drilling.

Representative photographs of the rock cores shall be taken and included in the Geotechnical Investigation Report. Results of field and laboratory tests, wherever carried out, shall also be incorporated in the report.

All bore logs, core records, test data, and field observations shall be jointly verified at site by the GETCO representative and shall form part of the final Geotechnical Investigation Report.

In addition to the above requirements, the investigation agency shall comply with the latest editions, revisions, and amendments of all applicable BIS Codes and accepted engineering practices relating to rock investigations.

5.8. ADDITIONAL INVESTIGATIONS

The scope and quantities specified herein represent the minimum requirements for rock investigations. Depending upon the geological conditions encountered during execution, GETCO may direct additional boreholes, increased depths of exploration, supplementary field tests, laboratory tests, geophysical investigations, or any other specialized studies considered necessary for establishing the engineering characteristics of the rock mass.

Such supplementary investigations shall be carried out in accordance with the relevant Indian Standards and accepted engineering practices. The decision of GETCO regarding the extent and nature of additional investigations shall be final and binding on the Investigation Agency.

6. LABORATORY TESTING

Laboratory testing shall be carried out progressively during the field investigation programme to facilitate interpretation of subsurface conditions and optimization of subsequent exploration activities. The extent and frequency of testing shall be sufficient to establish the engineering characteristics of the subsurface strata and to develop reliable design parameters for foundations and other civil structures.

All laboratory tests shall be performed by qualified technical personnel in accordance with the latest editions and amendments of the applicable Indian Standards.

The laboratory testing programme shall include, but not be limited to, the following:

6.1. SOIL TESTS

- ❑ Visual and engineering classification of soils.
- ❑ Natural moisture content.
- ❑ Bulk density and dry density.
- ❑ Specific gravity.
- ❑ Grain size distribution.
- ❑ Atterberg limits (Liquid Limit, Plastic Limit and Plasticity Index).
- ❑ Shrinkage Limit.
- ❑ Free Swell Index.
- ❑ Swell Pressure.
- ❑ California Bearing Ratio (CBR), wherever applicable.
- ❑ Relative density of cohesion less soils, wherever required.
- ❑ Permeability tests, wherever required.

- ▣ Shear strength tests.
 - ▣ Consolidation tests and compressibility characteristics.
 - ▣ Triaxial compression tests (UU, CU or CD), as applicable.
- Any other tests required for evaluating settlement, strength and deformation characteristics of soil.

6.2. CHEMICAL TESTS

Chemical analysis of representative soil and groundwater samples shall be carried out to determine:

- ▣ pH value.
- ▣ Chlorides.
- ▣ Sulphates.
- ▣ Carbonates and bicarbonates.
- ▣ Nitrates.
- ▣ Organic matter and organic content.
- ▣ Dissolved salts and suspended solids.

Any other deleterious constituents likely to affect concrete, steel, or long-term foundation performance.

6.3. ROCK TESTS (Where Applicable)

Representative rock samples shall be tested, wherever rock strata are encountered, for determination of:

- ▣ Rock Quality Designation (RQD).
- ▣ Rock Mass Rating (RMR).
- ▣ Unconfined Compressive Strength (UCS/UCC).
- ▣ Point Load Index.
- ▣ Specific Gravity.
- ▣ Water Absorption.
- ▣ Porosity, wherever required.
- ▣ Slake Durability Index, wherever required.

Any other tests necessary for characterization of rock mass and foundation design.

The type, number, and frequency of laboratory tests may be modified or supplemented based on subsurface conditions encountered during investigation and as directed by GETCO.

7. TEST RESULTS AND REPORTING

The Investigation Agency shall submit detailed Geotechnical Investigation Reports in duplicate, duly signed by the authorized representative of the Investigation Agency and

jointly verified by the GETCO site representative. The report shall present the results of field and laboratory investigations, interpretation of subsurface conditions, engineering analyses, and recommendations for foundation design.

The report shall include, but not be limited to, the following:

7.1. GENERAL INFORMATION

- ▣ Site description and geological setting.
- ▣ Scope and details of the investigation programme.
- ▣ Dates of field and laboratory investigations.
- ▣ Applicable codes and standards.

7.2. LAYOUT AND EXPLORATION DETAILS

- ▣ Layout plan showing the locations of boreholes, trial pits, plate load tests, electrical resistivity tests, and other investigations with Latitude and Longitude coordinates.
- ▣ Depth and identification details of each borehole and trial pit.

7.3. BOREHOLE LOGS AND SUBSURFACE PROFILES

- ▣ Detailed borehole logs and trial pit records.
- ▣ Soil and rock stratification profiles.
- ▣ Groundwater observations and seasonal groundwater levels.
- ▣ Rock core logs, core recovery, RQD values, and other geological observations.

7.4. FIELD AND LABORATORY TEST RESULTS

- ▣ Results of all field investigations and in-situ tests.
- ▣ Results of laboratory tests on soil, rock, and groundwater samples.
- ▣ Test data presented both stratum-wise and in consolidated tabular form.
- ▣ Relevant charts, graphs, photographs, and soil and rock profiles.
- ▣ Core photographs and rock core logs.

7.5. ENGINEERING ANALYSES

- ▣ Determination of engineering properties and design parameters.
- ▣ Bearing capacity calculations as per attached 'ANNEXURE-A'.
- ▣ Settlement analysis.
- ▣ Pile capacity calculations, wherever applicable as per attached 'ANNEXURE-B'.
- ▣ Evaluation of liquefaction susceptibility, wherever required.
- ▣ Interpretation of field and laboratory test results.

Sample tabular formats for allowable bearing capacity and pile capacity may be furnished as Annexures for guidance. Additional tables, charts, and calculation sheets necessary for interpretation of results shall also be included.

7.6. SUPPORTING DOCUMENTS

The report shall include all relevant field records, bore logs, laboratory test certificates, calculations, charts, diagrams, photographs, and other supporting documents necessary for proper interpretation of the investigation results.

All test results and records shall bear the signatures of the Investigation Agency and the GETCO site representative and shall form part of the final Geotechnical Investigation Report.

8. RECOMMENDATIONS

The Geotechnical Investigation Report shall provide clear, project-specific recommendations for the design and construction of all proposed structures. The recommendations shall be supported by field observations, laboratory test results, engineering analyses, and accepted geotechnical practices.

The recommendations shall include, but not be limited to, the following:

8.1. Site Assessment

- ❑ Geological and geotechnical characteristics of the site.
- ❑ Groundwater conditions and seasonal fluctuations.
- ❑ Historical information and experience from nearby structures, where available.
- ❑ Identification of any problematic strata or adverse geological features.

8.2. Foundation Recommendations

Recommendations regarding the type of foundation, founding depth, and design parameters for all proposed structures, including but not limited to:

- ❑ GIS Building.
- ❑ Control Room-cum-Administrative Building.
- ❑ Transformer Foundations.
- ❑ Switchyard structures and equipment foundations.
- ❑ Store Buildings and Security Cabins.
- ❑ Boundary walls and retaining structures.
- ❑ Oil sump, fire wall, DG foundation, pipe supports.
- ❑ Roads, drains, cable trenches, street light foundations, plinth protection, paver blocks, and other ancillary structures.

Where pile foundations are recommended, the report shall include:

- ❑ Type of pile.
- ❑ Diameter and length.
- ❑ Safe load capacity and pile group efficiency as per Annexure-B.
- ❑ Liner requirements, depth of fixity, and scour considerations.
- ❑ Comparison of alternative pile systems, wherever applicable.

8.3. Bearing Capacity and Settlement

- ▣ Allowable bearing pressures at various depths and foundation sizes as per Annexure-A, supported by calculations.
- ▣ Net Safe Bearing Capacity based on a minimum factor of safety of 2.5.
- ▣ Estimated total and differential settlements and permissible settlement limits.
- ▣ Coefficient of subgrade reaction (K-value).
- ▣ Earth pressure coefficients for retaining and underground structures.

8.4. Soil Behaviour and Ground Improvement

- ▣ Swelling and shrinkage characteristics of soil.
- ▣ Liquefaction susceptibility assessment in accordance with the latest provisions of IS 1893 and other relevant standards.
- ▣ Recommendations for ground improvement and soil stabilization measures, wherever required.
- ▣ Recommendations for treatment or replacement of expansive soils, if encountered.

8.5. Construction Considerations

- ▣ Anticipated difficulties during excavation and foundation construction.
- ▣ Stability of excavations and recommended side slopes.
- ▣ Dewatering requirements and groundwater control measures.
- ▣ Temporary works and other precautions necessary during construction.

8.6. Durability Considerations

Based on the chemical characteristics of soil and groundwater, recommendations shall be provided regarding:

- ▣ Grade of concrete.
- ▣ Type of cement.
- ▣ Protective coatings and corrosion protection measures.
- ▣ Sulphate resistant measures, wherever required.
- ▣ Any special requirements necessary to ensure durability of concrete and steel.

8.7. Rock Foundation Recommendations

Where foundations are to be placed on rock strata, the report shall include recommendations regarding:

- ▣ Founding criteria and design parameters of the rock mass.
- ▣ Rock Quality Designation (RQD) and Rock Mass Rating (RMR), where applicable.
- ▣ Rock anchoring, rock bolting, and grouting requirements.
- ▣ Grouting material and anchorage details, wherever applicable.
- ▣ Measures for treatment of weak, fractured, or weathered rock zones.

8.8. Additional Investigations

Recommendations regarding any supplementary investigations considered necessary for final foundation design or for resolving uncertainties encountered during the course of investigation.

8.9. Seismic Considerations

Recommendations shall be provided regarding the seismic suitability of the founding strata in accordance with the latest provisions of IS 1893 and other applicable standards. Special measures, if any, required for mitigation of liquefaction, differential settlement, or instability under seismic loading shall be clearly indicated.

Annexure-B

SUMMARY OF PILE CAPACITY

Type of pile	Dia. Of pile	Pile Cut-off level	Length of Pile from EGL	Pile capacity, (T)			Depth of fixity (Fixed & Free)	B
				Vertical	Uplift	Lateral (Fixed & Free)		
	Meter		Meter	T	T	T	Meter	
Bored cast in situ pile/ Under reamed pile (with single bulb or Two bulb)/precast pile/Driven (Displacement pile) pile/Cast in place pile	0.40		3.0					
			4.0					
			5.0					
			6.0					
			up to the termination depth of the borehole					
	0.45		3.0					
			4.0					
			5.0					
			6.0					
			Similarly, every 1.0-meter interval up to the termination depth of the borehole					
	0.50		3.0					
			4.0					
			5.0					
			6.0					
			Similarly, every 1.0-meter interval up to the termination depth of the borehole					
	0.60		3.0					
			4.0					
			5.0					
			6.0					
			Similarly, every 1.0-meter interval up to the termination depth of the borehole					
	0.75		3.0					
			4.0					
			5.0					
			6.0					
			Similarly, every 1.0-meter interval up to the termination depth of the borehole					
	0.90		3.0					
			4.0					
			5.0					
			6.0					
			Similarly, every 1.0-meter interval up to the termination depth of the borehole					
FOR DIAMETER AND DEPTH OF PILE OTHER THAN SPECIFIED ABOVE SHALL BE ALSO PROVIDED AS REQUIRED BY DESIGNER & AS PER SITE REQUIREMENTS.								

ANNEXURE-A**SUMMARY OF ALLOWABLE BEARING PRESSURE BASED ON SHEAR AND SETTLEMENT CRITERION.**

Depth of fdn.	Length of fdn.	Width of fdn.	Safe bearing capacities calculated based on shear criteria (Clearly Specify General Shear/ Local shear/ Intermediate shear)	Safe bearing pressure calculated based on settlement criteria		Allowable bearing pressure	Allowable bearing pressure
				For 25mm settlement	For 40mm settlement	For 25mm settlement	For 40mm settlement
Meter	Meter	Meter	T/Sq.MT	T/Sq.MT	T/Sq.MT	T/Sq.MT	T/Sq.MT
0.5	1.3	1.3					
0.5	1.5	1.5					
0.5	1.7	1.7					
0.5	2.0	2.0					
1.0	1.3	1.3					
1.0	1.5	1.5					
1.0	1.7	1.7					
1.0	2.0	2.0					
1.5	1.3	1.3					
1.5	1.5	1.5					
1.5	1.7	1.7					
1.5	2.0	2.0					
2.0	1.5	1.5					
2.0	1.8	1.8					
2.0	2.0	2.0					
2.0	2.5	2.5					
2.5	1.5	1.5					
2.5	1.7	1.7					
2.5	2.0	2.0					
2.5	2.5	2.5					
3.0	3.0	3.0					
3.0	3.0	4.5					
3.0	5.0	5.0					
3.0	7.5	7.5					
3.0	8.0	8.0					
3.5	5.0	7.0					
3.5	7.5	7.5					
3.5	8.0	8.0					
3.5	9.0	9.0					
3.5	10.0	10.0					
SIZE OF FOUNDATION REQUIRED BY DESIGNER AS PER SITE REQUIREMENT.							

(On the letter pad of the company)

Date:

Declaration Of Relationship with employee

To
Superintending Engineer
Gujarat Energy Transmission Corporation Limited,
Circle office, Visnagar road ,Mehsana

Ref: Tender Notice No.....

With refrence to above your tender Notice No.....
For the work of.....

We do not have any type of relationship with any current employees of GETCO.

Yours Faithfully,

SAFETY CUM INDEMNITY BOND

(On Non-judicial Stamp paper of value not less than Rs. 300.00)

KNOW ALL MEN BY THESE PRESENTS that we, _____ By this SAFETY CUM INDEMNITY BOND Executed on this _____ Day of _____ 2023. I/We Having Registered Office Mehsana (herein after called "THE CONTRACTOR" which expression shall mean and includes my /our heirs, executors, administrators and legal representatives, successors and permitted assigns) do hereby binds myself/ourselves and also our company/firms after having the power to bind by this promise and undertaking in favor of the Gujarat Energy Transmission Corporation Limited (GETCO), Vadodara a State Transmission Utility under The Electricity Act, 2003 having its registered office at Sardar Patel Vidyut Bhavan, Race course, Vadodara. (hereinafter called as GETCO, which expression shall mean and include its legal representative, administrators assigns) has agreed under the terms and conditions of the contract no. _____ Dated _____ made between GETCO and _____ for the contract of the _____ value of Rs. _____ interalia on Production of Safety cum Indemnity Bond.

We do hereby undertake and agree to Indemnify and keep Indemnified GETCO from time to time to the extent of Rs. _____ Rupees _____ only against any losses or damages, costs, charges and expenses caused to or suffered by reason of the CONTRACTOR while Project, R&M, O&M work including work carried out by outsourcing agency, failing to take proper care or not complying the guidelines given hereunder as per Annexure-A and instructions which may be given from time to time during the continuance of the contract and we further undertake to unconditionally pay the amount claimed by the GETCO on demand and without demur to the extent aforesaid.

Whereas the CONTRACTOR has/have been awarded to execute the job/works under order no. _____, dated _____ for _____ issued by the GETCO after having observing necessary formalities, the details of which is described in the order no. _____ dated _____ and whereas the said job/works will be /likely to be done in places covered under Employees' State Insurance Act, 1948 (ESI) and /or the Workmen Compensation Act, 1923 and /or other laws relating to the Labour Management and Welfare Act. (Respective Amendments)

And whereas according to the condition of the Contract the CONTRACTOR is under obligation to execute this Safety cum Indemnity Bond before the commencement of actual execution of work

Now the indenture witnesses that I/We the CONTRACTOR do hereby undertake to follow the guidelines as per Annexure-A prepared by the GETCO.

Further we the CONTRACTOR agree that the GETCO shall be sole judge of and as to whether there has been any breach of the guidelines as per Annexure-A of this bond and as to the extent of the loss, damages, costs, charges and expenses caused to or suffered by the GETCO.

We the CONTRACTOR further agree that our liability under this bond shall not be discharged because of the change in the constitution of the GETCO or for the extension of the time limit or for any other reason.

We the CONTRACTOR further agrees to the given terms and conditions:

- a. That the CONTRACTOR undertakes /undertake to indemnify and keep harmless the GETCO from all claims, actions, proceedings and risk, damage danger to any person whether belonging or not belonging to the. CONTRACTOR.
- b. That the CONTRACTOR shall keep harmless the GETCO from all claims, compensation, damages any

proceedings in respect of any of its employee / workmen under the Workmen Compensation Act or any other laws for the time being in force.

- c. That, if during the course of execution of work as stated in the contract order mentioned hereinabove issued by the OBLIGEE, it is found that the CONTRACTOR has not complied with guidelines as per Annexure-A or terms and conditions / formalities within the meaning of Employees' State Insurance Act, 1948 (ESI) or Workmen Compensation Act 1923 or any other laws relating to the Labour Welfare for the time being in force, and also has not observed the safety norms in accordance with the law prevailing at the place of work/job to the satisfaction of the GETCO, the GETCO shall have the right to stop the execution of work/job and the period of such stoppage shall not be taken into account for the calculation of the total period of completion of work for which the CONTRACTOR is responsible to complete the work/job and it will be deemed that discontinuance was due to default of the CONTRACTOR .
- d. That, if any time, due to exigency, GETCO as the Principle Employer, becomes liable to pay any such compensation mentioned hereinabove, whether on failure of the CONTRACTOR or for any other reason, the GETCO shall have the right to recover the said amount from any amount receivable by GETCO or any bank guarantee deposited or anything payable whether in connection with this contract or other contract by the CONTRACTOR to the OBLIGEE.
- e. That the CONTRACTOR is/are aware and accept that for the persistent or repeated violation of any guidelines as per Annexure-A and terms and conditions mentioned in this Safety cum Indemnity Bond, GETCO shall have right to terminate the contract of work issued to the CONTRACTOR .
- f. In case if any safety related fatal Electrical / Mechanical accident occurred to any employee of agency or outsider due to negligence or non-compliance of GETCO safety norms then in addition to the compensation and liability as per statutory requirement, contractor / agency is hereby agreed to pay the penalty amount as given below:
- a. case if any safety related fatal Electrical / Mechanical accident occurred to any employee of agency or outsider due to negligence or non-compliance of GETCO safety norms then in addition to the compensation and liability as per statutory requirement, contractor / agency is hereby agreed to pay the penalty amount as given below:

Sr.No	Amount of Contract in Rs.	Penalty amount
1	Up to 1Lac	Rs.5000/- plus GST as applicable
2	Above 1Lac to 10Lacs	Rs.40000/- plus GST as applicable
3	10 to 100 Lacs	Rs.100,000/- plus GST as applicable
4	>100Lacs	1.0% of contract value plus GST as applicable

- b. I/We the CONTRACTOR hereby confirm that in case of any dispute/difference for settlement of claims under this Safety Cum Indemnity bond the courts in Gujarat State wherever job/work is performed or as per GETCO norms shall have the jurisdiction to decide the rights & liabilities of the parties while adjudicating the matter of claims under this Safety Cum Indemnity Bond.
- c. This Safety cum Indemnity Bond shall continue and hold good until it is released by the GETCO in Writing on the CONTRACTOR's application after the Contractor has discharged all his obligations under the order mentioned hereinabove and submitted a "NO DEMAND CERTIFICATE" from the GETCO under the said order. The Safety cum Indemnity Bond shall be valid for a CONTRACT PERIOD and renewable thereof (Claim Period).
- d. This Safety cum Indemnity Bond and the guidelines as per Annexure-A herein contained are in addition to And not by way of limitation or substitution for any other guarantee, indemnities Hereto before given to the GETCO by the CONTRACTOR and this indemnity does not Revoke or limit such indemnities or guarantees. IN WITNESS WHEREOF the Parties hereto have executed this indenture the day the year First hereinabove written.

(Signature with seal of The CONTRACTOR)

In the presence of:

1.

2.

CONTRACT AGREEMENT

(Non Judicial Stamp Paper of Rs. 300/-)

This Agreement is made at BARODA the _____ day of _____ in the Christian Year Two thousand fourteen between M/s. _____ (address of office) _____ (hereinafter referred to as "THE CONTRACTOR" which expression shall unless excluded by or repugnant to the contract include its successors or permitted assigns) of the ONE PART and the Gujarat Energy Transmission Corporation Ltd, having their Head office at Vidyut Bhavan, Race Course, Baroda 390 007 (hereinafter called "The GETCO" which expression shall unless excluded by or repugnant to the context include its successors or assigns) of the other part.

WHEREAS the aforesaid GETCO has accepted the tender of the aforesaid contractors for

_____ as per GETCO's Order No. _____ hereinafter called "the works" and more particularly described and enumerated or referred to in the specification, terms and conditions prescribed in the order letter, covering letter and other letters and schedule of price which for the purpose of identification have been signed by Shri _____ on behalf of the contractors and by _____ on behalf of the GETCO, a list whereof is made out in the Schedule hereunder written and all of which said documents are deemed to form part of this contract and included in the expression "The works" wherever herein used, upon the terms and subject to the conditions hereinafter mentioned.

AND WHEREAS THE GETCO has accepted the tender of contractors for the construction of the said works for the sum of Rs. _____ Rupees (_____) upon the terms and subject to the conditions herein mentioned.

NOW THIS AGREEMENT WITNESSESS AND IT IS HEREBY AGREED AND DECLARED THAT.

1. The contractors shall do and perform all works and things in this contract mentioned and described or which are implied therein or there from respectively or are reasonably necessary for the completion of the works as mentioned and at the times, in the manner and subject to the terms and conditions and stipulations contained in this contract, and in consideration of the due provision, executions, supply and completion of the works agreed to by the contractor as aforesaid the Board doth hereby covenant with the contractor to pay all the sums of moneys as and when they become due and payable to the contractors under the provisions of the contract. Such payment to be made at such times and in such manner as is provided by the contract.
2. The conditions and covenants stipulated here-in-before in this contract are subject to and without prejudice to the rights of the Board to enforce penalty for delays and / or any other

rights whatsoever including the right to reject and cancel on default or breach by the contractor of the conditions and the covenants as stipulated in the general conditions, specifications, forms or tender schedule etc. attached with GETCO's Order No. _____.

The contract value, extent of supply & erection works, delivery dates, specifications and other relevant matters may be altered by mutual agreement and if so altered shall not be deemed or construed to mean or apply to affect or alter other terms and conditions of the contract and the general conditions and the contract so altered or revised shall be and shall always be deemed to have been subject to and without prejudice to said stipulation.

SCHEDULE

List of documents forming part of the contract:

1. GETCO's Tender Specification No. _____ and contractor's offer opened on dated ____/____/2022
2. GETCO order No. _____ Dtd. ____ / ____ / 2023
3. Contractor's acceptance of order vide letter no. _____.
4. Contractor's Partnership Deed Dtd. _____.
5. Contractor's Power of Attorney / Board Resolution authorizing person to sign on behalf of Firm.

In witness whereof the parties here to have set their hands and seals this day and month, year first above written.

- 1) Signed, sealed and delivered by
(Signature with name, Designation and official seal)

For and behalf of M/s. _____

(Signature)

Address: _____

In the presence of (Full Name, Address and Signatures)

i) _____

(Signature)

ii) _____

(Signature)

- 2) Signed, sealed and delivered by

(Signature with name, Designation and official seal)

For and on behalf of Gujarat Energy Transmission Corporation Ltd., Mehsana.

In the presence of name, Full address and Signature:

(1) _____

(2) _____

SECTION :E APPENDICES

ANNEXURE-A

OUR ENDEVOUR - Safety a habit

To create environment where Business Confidence is built through Best Business Practices and is fostered in an atmosphere of trust and respect between providers of goods and services and their users for the ultimate benefit of society & the nation, safety guidelines are agreed upon by the agency as under.

Safety is our prime concern and zero accident is our goal. In order to prevent the accident, while execution of works in indoor and outdoor systems of GETCO, the following guideline and preventive measures are identified.

<u>Indoor safety precaution</u>	<u>Outdoor safety precaution</u>
The method of work required T&P and manpower should be discussed between GETCO supervisor, contractor's supervisor and gang leaders.	The method of work required T&P and manpower should be discussed between GETCO supervisor, contractor's supervisor and gang leaders.
Prior to execution of work a joint survey must be conducted by GETCO supervisor and contractor's supervisor for risk assessment. - Clearly identify the work location, to distinguish between the equipment that is dead and other equipment / part that may be live. - Disconnect equipment from supply. - Protect against other live parts. - Take special precautions when close to bare conductors / Bus bar.	Prior to execution of work a joint survey must be conducted by GETCO supervisor, contractor's supervisor and DISCOM line man in order to identify the following : a. HT/LT line or tap line crossing under each span of line of the work. b. Isolation point of each line crossing. c. Each line crossing & isolation point under each span must be discussed and noted in maintenance register with sketch.
Following safety guidelines are mandatory for all contractors operating in GETCO premises for Electrical, non-electrical & civil works. - The contractors must provide advance planning of work to concerned in-charge of substation in writing. - Before starting any work whether switch yard, "permit to allow to work" must be taken from control room in-charge. - Utilising Electrical / non-electrical equipments, safety rules must be implemented. - If the work is to be carried out on Sunday or public holiday, the necessary permission must be taken in advance, requesting in writing. - Unwanted person including children of labours will not be allowed at working site/ in the switchyard and in the prohibited area. - Any electrical work or electrical connections to equipment for any other work must be carried out by certified	Contractor's supervisor and GETCO Supervisor must ensure all isolations physically with adequate earthing technically prior to give clearance to gang leader for taking up job. While execution of stringing work, the identified line crossing must be isolated / de-energized and written clearance should be obtained from concerned DISCOM supervisor. The isolation of Tap line must be physically seen and verified by Contractor and GETCO supervisor. At D.O. fuse junction contractors person should be posted to ensure that no person restore D.O. supply while work is under execution Contractor's supervisor must ensure that concern officer take LCP for EHV line and power line crossing.

electrician/wiremen with adequate size of wire through MCB as per I.E. Rule, - Live penal area / bus bar must be isolated and sealed / bifurcated with red colour tape for visible warning. - Display Board must hang on LCP panel. - Transformer must be switched off whenever and wherever contractor and line workers are not satisfied with isolation, earthing or any equipment performance of GETCO, it will be pointed out and work shall begin only after resolution. Contractor shall not take up job in absence of GETCO authorized person. All wire temporary connection & material whenever erection activity has any connection and disconnection work of bus bar, string bus.	
All workers / labour of contractor & supervisors must use personal protective equipment (PPE) during the work like gloves, safety belt, Safety shoes, Helmet, earthing rods, etc. duly approved by GETCO.	All workers / labour of contractor & supervisors must use personal protective equipment (PPE) during the work like gloves, safety belt, Safety shoes, Helmet, earthing rods, Live line detector etc. duly approved by GETCO.
The local earthing must be done at the place of work before execution of any work.	The local earthing must be done at the place of work before execution of any work.
11 kV breaker in panel must be switched off and racked out only after ensuring no voltage in breaker and without door opening.	Circuit breaker opening is not an isolation and isolator on either side must be opened. No work during rains and cloudy weather condition.
	Transmission line activities. 1) Used of Voltage detector to ensure outage. 2) Earthing at three point, local, left & right side of bus bar / string bus. 3) Match line colour code with colour of wrist band.
	Local earthing of electrical equipments like filter M/c, welding machine, testing kits etc. is must. Crane shall only be used for material handling and erection. Working platform shall only be used for work in switchyard.

BG Draft for Civil Department

NON JUDICIAL STAMP PAPER OF RS. 300/- (Stamp Paper Validity Six Months):

To,
The Superintending Engineer(TR)
Gujarat-Energy. Transmission Corporation Ltd
Transmission Circle Office,
Mehsana
383001

BG. No.
Issue Date
Expiry Date
Amount

BANK GUARANTEE FOR SECURITY DEPOSIT

In consideration of the M/s _____ Address at [Insert name of the Supplier / Contractor / Agency, Address] who have entered into a contract for the supply/works specified below:

L.O.I. No. _____ dated- _____ with Gujarat. Energy Transmission Corporation Limited (herein after referred to as GETCO), We [Insert name and address of the bank issuing the guarantee and address of the Registered office] (hereinafter referred to as "Guarantor Bank) hereby agrees unequivocally, irrevocably and unconditionally to pay to the GETCO at Mehsana forthwith on demand in writing from the GETCO or any Officer authorized by it in this behalf, any amount up to and not exceeding Rupees only [Insert the amount of the bank guarantee].

This Bank Guarantee shall be valid and binding on the Guarantor Bank up to _____ (Date of Expiry of BG) with a right to seek encashment for a period up to 15 days from the said Date and shall in no event be terminable by notice or any change in the constitution of the Bank or the term of the Agreement or by any other reasons whatsoever and our liability hereunder shall not be impaired or discharged by any extension of time or variations or alternations made, given, or agreed with or without our Knowledge or consent, by or between parties to the respective agreement.

Our liability under this Guarantee is restricted to Rupees _____. Our Guarantee shall remain in force until [Insert Date of Expiry of BG]. The GETCO shall be entitled to invoke this Guarantee any time up to thirty (15) days of the last date of the validity of this Guarantee i.e. _____ [Date of Expiry of BG + 15 days] by issuance of a written demand to invoke this guarantee.

The BANK GUARANTEE can also be presented at the (obtain detail postal address of Mehsana local branch) of the (issuing Bank of BG) for its invocation

The Guarantor Bank hereby expressly agrees that it shall not require any proof in addition to the written demand from the GETCO, in any format, raised at the above mentioned address, in order to make the said payment to the GETCO at Mehsana.

The Guarantor Bank shall make payment hereunder on first demand without demur and without raising any restriction or conditions and notwithstanding any objection by, _____ [Insert name of Contractor/Supplier/Agency] and/or any other person.

The Guarantor Bank shall not require the GETCO to justify the invocation of this BANK GUARANTEE, nor shall the Guarantor Bank have any recourse against the GETCO in respect of any payment made hereunder.

This BANK-GUARANTEE shall be a primary obligation of the Guarantor Bank and accordingly the GETCO shall not be obliged before enforcing this BANK GUARANTEE to take any action in any court or arbitral proceedings against the _____ (Name of party) to make any claim against or any demand on the _____ (Name of party) or to give any notice to the M/s (Name of party) or to enforce any security held by GETCO or to exercise, levy or enforce any distress, diligence or other process against _____ (Name of party)

This BANK GUARANTEE shall be interpreted in accordance with the laws of India and the courts at Mehsana shall have exclusive jurisdiction.

The Guarantor Bank represents that this BANK GUARANTEE has been established in such form and with such content that it is fully enforceable in accordance with its terms as against the Guarantor Bank in the manner provided herein.

This BANK GUARANTEE shall not be affected in any manner by reason of merger, amalgamation, restructuring, liquidation, winding up, dissolution or any other change in the constitution of the Guarantor Bank.

Any demand made by GETCO on the Guarantor Bank Mehsana shall be conclusive and binding not withstanding any difference between GETCO and _____ [Name of Supplier/Contractor/Agency] or any dispute pending before any Court, Tribunal, Arbitrator or any other Authority.

Notwithstanding anything contained hereinabove, our liability under this Guarantee is restricted to Rs. _____ (Rupees _____ only) and it shall remain in force until [Insert date of validity of BG], with an additional claim period of thirty (30) days of the last date of the validity of this Guarantee i.e. _____ [Date of Expiry of BG + 30 days]. We are liable to pay the guaranteed amount or any part thereof under this Bank Guarantee only if the GETCO serves upon us a written claim or demand.

In witness whereof the Bank, through its authorized officer, has set its hand and stamp on this..... day of at

Witness:

1.....

Name and Address

2.....

Name and Address

Signature(s) of

Constituted Attorney with POA No. and
round seal of Bank

OR

Signature of Two Bank officials with their
sign, sign code nos. & round seal of Bank

(E) APPENDICES

Gujarat Energy Transmission Corporation Ltd.

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]

Sr. No	Description of Work	Value Of Work Executed Rs.	Construction Period as per Contract	Actual Construction Period for the Completion of the work	Date Of Completion	Client	Persons to whom Reference may be made	Principal Features
1	2	3	4	5	6	7	8	9

Contractor's Representative legible signature: _____

Name of the person: _____

Seal of the company

Date & place:

Gujarat Energy Transmission Corporation Ltd.

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]

Sr. No	Name of work with location and address	Work in hand			Work Tender for			Remark s
		Tender Cost	Cost of Remaining work	Anticipated Date of Completion	Estimated Cost	Date when decis ion Is Expe cted	Stipulated Date or period Of Completi on	
1	2	3	4	5	6	7	8	9

Contractor's Representative legible signature: _____

Name of the person: _____

Seal of the company Date & place: _____

Gujarat Energy Transmission Corporation Ltd.

**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]

Sr. No.	Description &Details of position	Name	Qualification	Professional Experience & details of works carried out	Remarks
1	2	3	4	5	6

Contractor's Representative legible signature: _____

Name of the person: _____

Seal of the company

Date & place: _____

Gujarat Energy Transmission Corporation Ltd.

APPENDIX-IV

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.

Sr. No.	Description & Details machinery	Capacity	Numbers	Make	Remarks
(a)	(b)	(c)	(d)	(e)	(f)

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]

Sr. No.	Name of firm	Name of Authorized representative of firm who has visited the site.	Qualification	Designation / post holding in company.	Remarks.
(a)	(b)	(c)	(d)	(e)	(f)

Contractor's Representative legible signature: _____

Name of the person: _____

Seal of the company

Date & place: _____

Gujarat Energy Transmission Corporation Ltd.

**APPENDIX – VI
Qualification Requirement.**

Contractor must fill up below details & should place at the top of the Technical Bid.

Sr No:	List of Documents	
1	Registration	Class – with valid up to
2	P.F. No.	GJ/
3	Partnership deed/Proprietor (Notarized copy)	
4	Power of Attorney (Notarized copy)	
5	Bl. Sheet / P&L A/C, Statement of last three years.	
6	Latest Solvency certificate.	Rs. Lacs issued by Bank, branch dtd.
7	GST Registration No.	
8	PAN NO	
9	Experience certificate – form 3A of last 5 years (minimum value of similar work done should be equal to or more than 50% of estimated cost	

Signature of Tenderer

Date :

Place

Company's Round Seal

Gujarat Energy Transmission Corporation Ltd.

APPENDIX – VII Qualification Requirement.

1.	PRICES: [FIRM ONLY] (Please Specify YES / NO.)	
2.	PENALTY TERMS AGREED (Please Specify YES / NO.)	
3.	SECURITY TERMS AGREED: (Please Specify YES / NO.)	
4.	TERMS AGREED: (Please Specify YES / NO.)	
5.	VALIDITY Of the offer for 180 DAYS From the date of opening of the Technical Bid: AGREED: (Please Specify YES / NO.)	
6.	PAYMENT TERMS AGREED: (Please Specify YES / NO.)	
7.	MOBILE NOS., TELEPHONE NOS. & FAX NO:	
8.	Authorized person of the firm :	
9.	Name of the proprietor, partners, directors [as the case may be], along with address, telephone, fax no. etc.	

Contractor must fill up above details

Signature of Tenderer

Date :

Place

Company's Round Seal

Placing Vendors/Contractors for Purchase/Works in a Stop deal/Banned for business dealing / blacklisting:

- 1.1. Stop deal / banned for business dealing / blacklist means debarment of parties from participating in the tendering process.
 - 1.1.1. Firm will mean Bidder / Licensor / Tendered / Consultant / Vendor / Contractor.
 - 1.1.2. Reasons for Putting a Firm on Stop deal / banned for business dealing / Blacklisting is to protect the GUVNL and its subsidiary Companies from dealing with an undesirable firm.
- 1.2. The list of indicative reasons for placing the firm in a Stop deal / banned for business dealing / Blacklist are as under.
 - A Firm will be placed in a Stop deal / banned for business dealing / blacklist, if the Firm-
 - 1.2.1. Has submitted fake, false or forged documents / certificates,
 - 1.2.2. Has revised / withdrawn price bid after opening of Techno – commercial bid, until and unless it is sought for,
 - 1.2.3. Has tampered with the stipulated tendering procedure.
 - 1.2.3. Has refused to accept letter of Acceptance / purchase Order / Work Order after the same is issued by the Company within the validity period and as per agreed terms and conditions,
 - 1.2.5. Has committed breach of contract or has failed to perform a contract or has abandoned the contract,
 - 1.2.6. Has failed to provide suitable expertise for the work as per per-scheduled Program.
 - 1.2.7. Has failed to submit all the necessary tests reports / documents within time schedule / as per company's time limit, as mentioned in the LOI, if the letter of Acceptance (LOA) is placed subject to submission of type reports / documents to the firm.
 - 1.2.8. Has indulged in construction and erection of defective works.
 - 1.2.9. Has supplied inferior quality / defective materials and refused to replace with stipulated time frame, as specified by the company,
 - 1.2.10. Has substituted materials in lieu of materials supplied by the company or has not returned or has short returned or has unauthorisely disposed of materials / documents / drawings / tools or plants or equipment supplied by the Company,
 - 1.2.11. Has involved in malpractices such as bribery, corruption, fraud, canvassing and pilferage,
 - 1.2.12. Has unauthorisely obtained official company information or copies of documents, in relation the tender / Contract.
 - 1.2.13. Has failed to follow the stipulated mode of communication, if specified by the tendering authority / purchaser.
 - 1.2.14. Has parted with, leaked or provided confidential / proprietary information of the Company given to the firm only for its use (in discharge of its obligation against an order) to any third party without prior consent of the Company,
 - 1.2.15. Any other ground for which in opinion of the company makes it undesirable to deal with the Firm
 - 1.2.16. In case the State Government directs the Company to place a firm in stop dealing / banned for business dealing / banned for business dealing / blacklisting.
- 1.3. Every bidder should at the time of submission of bid, give a declaration that bidder and / or proprietor / partner / Director of the firm has not been placed on stop dealing / banned for business dealing / blacklisting by GUVNL and It's any subsidiary Companies as per **ANNEXURE-VIII (as per attached format)**.

(On the letter head of the firm/company)
ANNEXURE-VIII

**(UNDERTAKING IN REGARD TO STOP DEAL / BANNED FOR BUSINESS DEALING/
BLACK LIST THEREOF)**

Sub: Undertaking in regard to Stop Deal/ Banned for Business dealing/ Black List thereof

Ref: Tender Notice No

All bidders will have to furnish the following undertaking dully filled in, signed and stamped for each quoted item of the tender along with the Technical Bid.

I/We _____
authorized _____ signatory _____ of _____ M/S
_____ here by certify that M/S
_____ and their
proprietor / any partner / any directors of the firm are not stop deal and / or banned for business
dealing and / or black listed by GUVNL and / or their any subsidiary company viz. GSECL /
GETCO / DGVCL / MGVL / UGVCL / PGVL.

Seal of the Firm

Signature of the Tenderer

SCHEDULE-B

NAME OF WORK :-ARC for the work of SBC,Plate load and CBR test work for new proposed 66KV/EHV substations & R & M under Mehsana TR Circle.

No	Description	Qty	Rate	Unit	Amount
1	Geotechnical Investigation in Soil. Carrying out geotechnical investigation by drilling 150 mm diameter boreholes in all types of overburden and soil strata excluding hard rock, including setting up and shifting of equipment, collection of disturbed and undisturbed samples, Standard Penetration Tests, groundwater observations, preservation and transportation of samples, all field investigations, laboratory testing, chemical analysis of soil and groundwater samples, engineering analyses, determination of allowable bearing pressure, settlement analysis, pile capacity calculations, liquefaction assessment wherever applicable, preparation and submission of detailed Geotechnical Investigation Report, recommendations for foundations and construction measures, geo-tagged photography and videography, furnishing coordinates of bore locations and submission of hard and soft copies of reports, complete in accordance with the Technical Specifications, relevant Indian Standards and as directed by the Engineer-in Charge.- Geotechnical investigation in soil up to 10 m depth.	520.00	1575.00	RMT	819000.00
2	Do as Above-Extra over geotechnical investigation in soil beyond 10 m and up to 20 m depth.	320.00	1465.00	RMT	468800.00
3	Do as Above- Extra over geotechnical investigation in soil beyond 20 m and up to 30 m depth.	200.00	1318.00	RMT	263600.00
4	Do as Above- Extra over geotechnical investigation in soil beyond 30 m depth.	50.00	1055.00	RMT	52750.00
5	Carry out Trial pit size 1.5mtr X 1.5mtr X 3.0Mtr or up to Hard Rock Whatever is less With all Tools, Tackles, Labours, etc including backfilling excavated stuff after inspection of GETCO authority as directed by EIC.	4.00	1724.00	No	6896.00
6	Plate Load Test. Conducting Plate Load Test at the specified location and depth, including excavation, preparation of test pit, loading arrangement, observations, interpretation of results and incorporation of the findings in the Geotechnical Investigation Report, complete in accordance with the Technical Specifications, relevant Indian Standards and as directed by the Engineer-in-Charge.	3.00	25171.00	No	75513.00

7	California Bearing Ratio (CBR) Test. Conducting California Bearing Ratio (CBR) test on representative soil samples, including sample preparation, laboratory testing, interpretation of results and incorporation of the findings in the Geotechnical Investigation Report, complete in accordance with the Technical Specifications, relevant Indian Standards and as directed by the Engineer-in Charge.	3.00	1955.00	No	5865.00
		Total Rs.			1692424.00
		Add 18 % GST			304636.32
		Total Cost Rs.			1997060.32

NOTES:

1. GST & Welfare cess as per rules will be applied & same shall be reimbursed on production of proof of such payments made by the contractor to the appropriate department.
2. Proof of payment of taxes 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

**SUPERINTENDING ENGINEER
GETCO, CO, MEHSANA**

PRICE BID

I/We have read and clearly understood the terms, conditions, Schedule 'B' and Technical specifications put by GETCO on WEB site.

I/We hereby accept all the conditions and specifications of this tender document, and accordingly, I/We am/are willing to carry out the work at _____% (in words _____percentage) above/below the estimated cost. Accordingly the total amount of my/our tender works out to Rs. _____ (Rupees _____)

SIGNATURE OF CONTRACTOR.

(With rubber stamp/seal of the company)

