

MILITARY ENGINEER SERVICES GE TENGA

E - TENDER

NAME OF WORK : REPAIR/ REPLACEMENT OF INTERNAL WIRING, FITTING, GEYSER, VENTILATING SYSTEM, SUB MAIN WIRING LED FITTING I/C SOLAR HOT WATER HEATING PHASE II MD ACCN (CHINDIT TOP, TENGA LEDGE, GOC CAMP AREA) OF AGE E/M UNDER GE TENGA.

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Encls: (Drawing - Nil Sheets)

Total pages -

Signature of Contractor

AGE (Contracts)
for Accepting Officer

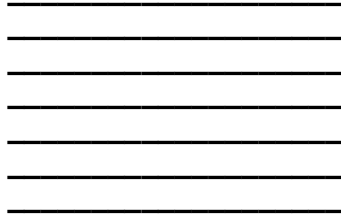
Dated : 2026

Tele: 03782-273304

REGISTERED POST/ACK. DUEGarrison Engineer Tenga
Military Engineer Services
PIN – 900 694
C/O 99 APO

8206/ /E8

2026



E-TENDER

NAME OF WORK: REPAIR/ REPLACEMENT OF INTERNAL WIRING, FITTING, GEYSER, VENTILATING SYSTEM, SUB MAIN WIRING LED FITTING I/C SOLAR HOT WATER HEATING PHASE II MD ACCN (CHINDIT TOP, TENGA LEDGE, GOC CAMP AREA) OF AGE E/M UNDER GE TENGA.

Dear Sir, (s)

1. Tender documents along with BOQ in respect of above work are uploaded on the website www.defproc.gov.in. The tender is on single stage two cover e-tendering system. The contents of Cover-I & Cover-II are specified in NOTICE OF TENDER.

2. The last date of receipt of **online application (Cover-1)** along with scanned copies of documents mentioned in Notice Inviting Tender shall be as per the critical dates given in tender documents. DD towards cost of tender should reach the office of Garrison Engineer Tenga **within 5 days from date of bid submission end date** failing which their price bid (Cover-2) shall not be opened. However, in case of applications/ bids from enlisted contractors of MES, where scanned copies of requisite DD/Bankers Cheque towards cost of tender has been uploaded but physical copies are not received within **05 days after scheduled bid submission end date (excluding closing date)**, their price bids will be opened **but** non-submission of physical copies of cost of tender shall be considered as willful negligence of the bidder with ulterior motives and such bidder shall be banned from bidding for a period of six months commencing from the date of opening of finance bid (cover-2).

3. The complete priced tender (BOQ) shall be uploaded by tenderers on the MES portal www.defproc.gov.in on or before the due date of price bid (Cover-2) as given in critical dates of tender documents. The bid of successful bidder will be opened on date and time as given in critical dates in the office of Garrison Engineer Tenga in the presence of such tenderers who have uploaded their priced tender and who wish to be present.

4. Information/ documents (forming part of the contract) mentioned herein below are not enclosed with the tender documents. These are available for perusal in the office of Garrison Engineer Tenga:-

- (a) IAFW-2249 (1989 Print) including errata/ amendments thereto and Schedule of Minimum Fair Wages.
- (b) SSR- Part-I (2009) and SSR-Part-II (2020) Print including amendments/errata thereto.

5. Whether documents mentioned in Para 4 above are actually seen or not, if you submit a valid tender, you are deemed to have taken into account the contents thereof.

6. **Conditional tender is not acceptable to the Government.**

- (a) The tenderer is not permitted to make any condition or alteration or insertion in the tender documents other than the amendments issued by the Department. The applicability of amendment issued by the Department remains hold good irrespective of the amendment carried out by the tenderer in their offer.
- (b) Any condition/ stipulation/ insertion etc without showing it in the tenderer's tender forwarding letter will not be accounted during scrutiny and the effect shall be ceased in case the tender is accepted.
- (c) You are requested to ensure that all errata/ amendments/ issued prior to the due date are accounted in your offer.
7. Instructions for filling and submission of tenders are also enclosed herewith for strict compliance. This letter and the instructions shall form part of the contract and shall be uploaded duly signed along with the tender documents.
8. No tender/bid will be received in physical form and any tender/bid received in such manner will be treated as non confide tender/bid.
9. You may forward your points on tender document and/or depute your technical representative for discussion on tender/drawings and to clarify doubts, if any, on or before bid submission start date, you are requested not to write piece meal points and forward your points duly consolidated before due date viz bid submission start date.
10. Unenlisted contractors are required to submit the scanned copies (in pdf file) of documents required as per eligibility criteria mentioned in instructions for filling the tender document and Appendix 'A' to NIT along with EARNEST MONEY DEPOSIT (EMD) and tender fee on e-procurement portal and submit the physical documents in the office of Garrison Engineer Tengga within time limit specified in NIT. Inadequacy/deficiency of documents shall make the bid liable for rejection resulting in disqualification for opening of finance bid.
11. Contractor having not executed standing security bond and standing security deposit in any MES formation shall upload scanned copy of EARNEST MONEY DEPOSIT (EMD) mentioned in Notice of Tender and shall ensure receipt of hard copy of EMD in the office of tender issuing authority before date & time fixed for this purpose. In case of failure to abide by any of these two requirements, the finance bid will not be opened.
12. Enlisted contractor of MES shall submit the scanned copies (pdf file) of enlistment letter, tender fee and such other documents as mentioned in Appx 'A' to NIT on e-procurement portal and submit physical documents in the office of Garrison Engineer Tengga before date & time fixed for this purpose.
13. The contractor must ensure that the tender/bid on the proper form is uploaded in time as the Accepting Officer will take no cognizance of any quotations/offer received in any other electronic or physical form like email/fax/by hand/through post tenderer/bidder even if they are received in time.
14. In view of delays due to system failure or other communication related failures, it is suggested that the tender/bid be uploaded if necessary, sufficiently in advance of the last due date and time fixed.
15. **ANY TENDERER, WHICH PROPOSES ALTERATIONS TO ANY OF THE CONDITION, SPECIFICATIONS LAID DOWN IN THE TENDER DOCUMENTS OR ANY NEW CONDITION, WHATSOEVER, IS LIABLE TO BE REJECTED.**

Encls: (As above)

Yours Faithfully,

Signature of the Contractor
Dated: _____

AGE (Contracts)
for Accepting Officer

INSTRUCTIONS ON FILLING AND SUBMISSION OF TENDER**1. EARNEST MONEY DEPOSIT (EMD)**

Contractor(s) who are not enlisted with MES/who are enlisted but have not executed the standing security Bond shall submit Earnest Money Deposit as detailed in Notice of Tender in one of the following forms, alongwith their tender/bid :-

- (a) Deposit at Call Receipt from a Scheduled Bank in favour of GE Tenga.
- (b) Receipted Treasury Challan, the amount being credited to the Revenue Deposit of GE Tenga.

It is advisable that earnest Money is deposited in the form of deposit call receipt from an approved Schedule Bank for easy refund. In case the tenderer / bidder wants to lodge 'EARNEST MONEY DEPOSIT' in any other form allowed by MES, a confirmation about its acceptability will be obtained from the Accepting Officer well in advance of the bid submission end date and time. Earnest Money Deposit shall be submitted in the name of GE Tenga.

NOTES:- Earnest Money Deposit (EMD) in the form of cheque/Bank Guarantee etc will not be accepted. NON-SUBMISSION OF EARNEST MONEY DEPOSIT (EMD) (scanned copy alongwith Technical Bid & physical copy before the date & time fixed for opening of BOQ) WILL RENDER THE BID DISQUALIFIED FOR OPENING OF COVER II (FINANCE BID).

2. **SECURITY DEPOSIT**- Refer Amendment Nos. 41 and 47 to IAFW-2249 (General Conditions of Contracts).

3. **CONTRACTORS ENLISTED WITH ADG (NEI)/CHIEF ENGINEER EASTERN COMMAND AND WHO HAVE EXECUTED STANDING SECURITY BOND AND DEPOSITED STANDING SECURITY BOND AND DEPOSITED STANDING SECURITY BUT OF LOWER CLASS**

Refer Amendment No. 41 and 47 to IAFW-2249 (General Conditions of Contracts).

4. **CONTRACTORS ENLISTED IN OTHER MES FORMATIONS (OUT SIDE OF CWE TENGA AREA FOR 'E' CLASS & ADG(NEI) GUWAHATI OR CE EASTERN COMMAND AREA FOR 'D' TO 'S' CLASS CONTRACTOR)**

Refer Condition 19 of General Conditions of Contracts, IAFW-2249.

5. GENERAL INSTRUCTION FOR COMPLIANCE

5.1 The bids received only in the electronic form will be considered. All bids shall be submitted on www.defproc.gov.inportal. Documents should be scanned and forwarded in 'pdf' form and 'xls' form as indicated.

5.2 Bid shall be uploaded on www.defproc.gov.inportal on or before the bid closing date mentioned in the tender. No tender/bid in any other electronic or physical form like email / fax /by hand /through post will be considered.

5.3 Bids should be DIGITALLY signed using valid DSC. All pages of tender documents, corrections/alteration shall be signed/initialled by the lowest bidder after acceptance.

5.4 Drawings, if issued in physical form, must be returned duly initialled by the tenderer/bidder in separate envelope indicating his name and address.

5.5 The tender shall be signed, dated and witnessed at all places provided for in the documents after acceptance. All corrections shall be initialled. The Contractor shall initial every page of tender and shall sign all drawings forming part of the tender. Any tender /bid, which proposes alterations to any of conditions whatsoever, is liable to be rejected.

5.6 In the technical bid, a scanned copy of Power of Attorney in favour of the person uploading the bid using his/her DSC shall be uploaded. In case the Digital Signatory himself is the sole proprietor, an affidavit on stamp paper of appropriate value to this effect stating that he has authority to bind the firm in all matters pertaining to contract including

the Arbitration Clause, shall be attached in 'pdf' form. In case of partnership concern or limited company, Digital Signatory of the bid/tender shall ensure that he is competent to bind the Contractor (through partnership deed, general power of attorney or Memorandum and Articles of Association of the Company) in all the matters pertaining to the contracts with Union of India including arbitration clause. A scanned copy of the documents confirming of such authority shall be attached with the tender/bid in 'pdf' form, if not submitted earlier. The person uploading the bid on behalf of another partner(s) or on behalf of a firm or company using his DSC shall upload with the tender/bid a scanned copy (in 'pdf' form) of Power of Attorney duly executed in his favour by such other or all of the partner(s) or in accordance with constitution of the company in case of company, stating that he has authority to bind such other person of the firm or the Company, as the case may be, in all matters pertaining to the contract including the Arbitration Clause.

5.7 Even in case of Firms or Companies which have already given Power of Attorney to an individual authorizing him to sign tender in pursuance of which bids are being uploading by such person as a routine, fresh Power of Attorney duly executed in his favour stating specifically that the said person has authority to bind such partners of the firm, or the company as the case may be, including the condition relating to Arbitration Clause, should be uploaded in 'pdf' form with the tender/bid; unless such authority has already been given to him by the Firm or the Company. It shall be ensured that power of attorney shall be executed in accordance with the constitution of the company as laid down in its Memorandum & Article of Association.

5.8 Hard copies of all above documents should be sent by the contractor to the Tender issuing authority well in advance to be received before the date & time fixed for the same.

5.9 Bid (Cover 1 & 2) shall be uploaded online well in time.

5.10 The contractor shall employ Indian Nationals after verifying their antecedents and loyalty. Attention is also drawn to special 3 referred hereinafter and also Conditions 24 & 25 of IAFW 2249 (General conditions of contract).

5.11 Tenderers/bidders who uploaded their priced tenders/bids and are desirous of being present at the time of opening of the tenders/bids, may do so at the appointed time.

5.12 The tenderer/bidder shall quote his rate on the BOQ file only. No alteration to the format will be accepted, else the bid will be disqualified and summarily rejected.

5.13 In case the tenderer/bidder has to revise/modify the rates quoted in the BOQ (excel sheet) he can do so only in the BOQ, through eprocuremes.gov.in site only before the bid closing time and date.

6. PERFORMANCE SECURITY

6.1 Within 28 days of receipt of the letter of Acceptance, the successful contractor shall deliver to the Accepting Officer a Performance Security in any of the forms given below **for an amount equal to 5% (five percentage) of the contract sum:-**

- (a) A Bank Guarantee in the prescribed form.
- (b) **Government Securities** - FDR or any other Government Instruments.

6.2 If the performance security is provided by the successful Contractor in the form of a Bank Guarantee, it shall be issued by Nationalized/Scheduled Indian Bank but its confirmation shall be done **only from the Head Office of the Bank.**

6.3 Failure of the successful contractor to comply with the requirements of sub-clause 6.1 shall constitute sufficient grounds for cancellation of the award of work and forfeiture of the Earnest Money. **In case of MES enlisted contractor,** amount equal to the Earnest Money stipulated in the Notice Inviting Tender, shall be notified to the tenderer for depositing the amount through MRO. **Issue of tender to such tenderers shall remain suspended** till the aforesaid amount equal to the Earnest Money is deposited in Government Treasury.

7. All compensation or other sums of money payable by the contractor to the Government under the terms of this contract or under any other contract with Government may be deducted from, or paid by the sale of a sufficient part of

the Performance Security or from the interest arising there from or from any sums which may be due or become due to the contractor by the Government on any account whatsoever and in the event of his Performance Security being reduced by reason of any such deduction, or sale as aforesaid, the contractor shall within ten days thereafter make good in cash or securities, endorsed as aforesaid, any sum or sums which may have been deducted from or realized by the sale of his Performance Security or any part thereof. **Government shall not be responsible for any loss of securities or any depreciation in the value of securities while in their charge nor for loss of interest thereon.**

8. In the event of contract being cancelled under Conditions 52, 53 & 54 of General Conditions of Contract, IAFW-2249, the Performance Security shall be forfeited in full and shall be credited into Consolidated Fund of India.

9. **BANK GUARANTEE BOND (BGB) AGAINST PERFORMANCE SECURITY**

9.1 Condition 19.1 of IAFW-2249 and Condition 14A.1 of IAFW-1815-Z provides for submission of Performance Security by the successful contractor in the form of Bank Guarantee Bonds or Govt. Securities, FDR or any other form of deposit.

9.2 The Performance Security shall be in favour of Accepting Officer and shall be in any one of the forms mentioned above. Work Order No. 1 shall be placed only after submission of **Performance Security of adequate value by the contractor**. In case a fixed deposit receipt of any Bank is furnished by the contractor to the Government **as part of the Performance Guarantee** and the Bank is unable to make payment against the said fixed deposit receipt, the loss caused thereby shall fall on the contractor and the contractor shall forthwith on demand furnish additional security to the Government to make good the deficit.

9.3 If the Performance Security is provided by the successful contractor in the form of a Bank Guarantee, it shall be **issued by Nationalized/ Scheduled Indian Bank** but its confirmation shall be **done only from the Head office of the Bank**.

9.4 Form for Bank Guarantee Bond against Performance Security Deposit shall be same as Appendix 2.1 of MES Manual on Contracts 2020 with "security deposit" in Para 1 line 4 replaced by "Performance Security Deposit".

9.5 The **period of validity of the Bank Guarantee Bond (BGB)** against **Performance Security** shall be initially valid upto the stipulated date of expiry of Defects Liability Period **plus minimum 60 days beyond that**. In case final bill is not paid during this period, the contractor shall **get the validity of Performance Guarantee** extended to cover such enlarged time required for payment of final bill.

9.6 The original Bank Guarantee Bond against **Performance Security** along with necessary certified copies shall be sent to the PCDA/CDA by the Accepting Officer for verification and then returning the original to the Accepting Officer and the certified true copies to the CDA Guwahati & AO GE Tenga. The **original Bank Guarantee Bond (BGB) shall be kept in the custody of the Accepting Officer**.

9.7 The **Accepting Officer** shall evolve a procedure to ensure that timely action is initiated to have the validity date of the Bond extended by the Contractor, or to have it encashed before the same expires. For this purpose a suitable register shall be maintained by the Accepting Officer. The register shall also be maintained by the Contract Section with details of Performance Securities and dates of validity of these instruments and the **same shall be an auditable document**. Performance Security shall be in possession of the official who is head of the Contract Section of the Office of concerned Accepting Officer.

9.8 In case at a later stage, on account of delay in completion of work or due to any other reason, it is considered that the validity date stipulated in the Bank Guarantee against Performance Security should be extended, then the contractor shall be directed by the Accepting Officer of the contract to have the validity extended before the date of validity expires. If the contractor fails to do so, the Bank Guarantee shall be encashed before expiry. The encashment notice shall be similar to the format given in Appendix 18.5 of MES Manual on contract - 2020 with "in lieu Retention Money" in Para 1, line 2 replaced by "against Performance Security". Accepting Officer shall ensure to **issue notice to the concerned contractor** to get the validity of Performance Security instrument extended suitably **two months before**

the expiry of the validity. In case **extension is not received four weeks before the expiry of validity of financial instrument**, necessary **encashment notice** shall be **served by Accepting Officer**.

9.9 In case the BGB is not encashed by the concerned Bank, the matter shall be referred to the Central Office of RBI in Delhi and Mumbai at the following address or any latest address which can be found from internet:-

(A)	(B)
Jt Chief Officer Deptt of Banking and Operations Reserve Bank of India Parliament Street, New Delhi-110011	Reserve Bank of India Central Office Department of Banking Operations & Development Centre-1 World Trade Centre Cuffe Parade, Colaba Mumbai-400005

9.10 **Bank Guarantee Bond (BGB)** in lieu of Performance Security is due for discharge on expiry of Defects Liability period **provided always** that the contractor has been paid the final bill and contractor has rendered the No Demand Certificate (IAFW-451). **Immediately** after expiry of defects liability period, this office shall check and ascertain the position of final bill.

In case final bill has been paid, **contractor shall be asked** to submit the No Demand Certificate (IAFW-451), if not already submitted by him. After submission of No Demand Certificate (IAFW-451), this office will intimate this fact within a week who shall release the **Bond duly discharged** to the Contractor. Accepting Officers will ensure that no delay occurs in releasing the Bank Guarantee Bond.

In case final bill has not been paid, the status thereof shall be ascertained by Accepting Officer and efforts will be made to get it cleared within one month of expiry of Defects Liability period. After clearance and payment of final bill contractor shall be asked to submit the No Demand Certificate (IAFW-451), if not already submitted by him. After submission of No Demand Certificate (IAFW-451) and on receipt of the same, Accepting Officer shall release the **Bond duly discharged** to the contractor without any delay.

If any recovery is outstanding against the contractor, release of Bank Guarantee will be subject to compliance of the procedure for effecting recovery/ withholding the due amount as stipulated in Condition 67 of IAFW-2249 as amended of GCC (IAFW-2249) or Condition 34 (as amended) of GCC (IAFW-1815Z), as applicable.

10. REVOCATION/REVISION OF OFFER UPWARD/ OFFERING VOLUNTARY REDUCTION, AFTER OPENING OF FINANCIAL BIDS BY LOWEST BIDDER

In the event of lowest tenderer/bidder revoke his offer or revise his rates upward/ offering voluntary reduction, after closing of bid submission date & time, his offer will be treated as revoked and the Earnest Money deposited by him shall be forfeited. In case of MES enlisted Contractors, the amount equal to the Earnest Money stipulated in the Notice of tender, shall be notified to the tenderer/bidder for depositing the amount through MRO. Bids of such Contractors/bidders shall not be opened till the aforesaid amount equal to the earnest money is deposited by him in Govt Treasury. In addition, bids of such tenderer/bidder and his related firm shall not be opened in second call or subsequent calls. Reduction offered by the tender/bidder on the freak high rates referred for review shall not be treated as voluntary reduction.

11. C P M (CRITICAL PATH METHOD) CHART

11.1 The project planning for work covered in the scope of tender is based on CPM.

11.2 The tenderer/bidder is expected to be fully conversant with the CPM technique and employ technical staff who can use the technique in sufficient details. Sufficient books and other literature on the subject are widely available in the market which the tenderer/bidder may make use of.

11.3 The tenderer's/bidder's attention is drawn to special condition of the tender regarding preparation of the detailed network analysis and time schedule for the work and his liability for employing sufficient resources to adhere to this schedule. Any inability on the part of the tenderer/bidder in using the technique will be taken as his technical inefficiency and will affect his class of enlistment and future prospect/invitation to tenders for future works.

12. AMENDMENT TO TENDER DOCUMENTS

12.1 Department may issue amendments/ errata in form of **CORRIGENDUM** to tender/ revised BOQ to the tender documents. The tenderer/ bidder is requested to read the tender documents in conjunction with all the errata/ amendments/corrigendum, if any, issued by the department.

12.2 In case the BOQ is **revised by the department** and the bidder has failed to quote in revised BOQ (i.e. he/she has quoted in previous BOQ), such bid shall be treated as willful negligence by the bidder and his quotation shall be considered **non-bonafide**. In such cases the lowest tender shall be **determined** by the lowest amount amongst the valid/ bonafide bids only.

13. Tenderer is deemed to be in possession of copy of MES schedule of Rates (Part I & II) including errata and amendments there to and an updated TD booklet mentioned in list of drawings. In case the same is required by tenderer it can be obtained from this HQ on any working day with due cost as admissible.

14. These instructions shall form part of the contract documents.

Signature of Contractor
Date : _____

AGE (Contracts)
For Accepting Officer

NOTICE INVITING TENDER (NIT)

1. A tender is invited for the work as mentioned in appendix 'A' to this NOTICE INVITING TENDER (NIT)
2. The work is estimated to cost indicated in aforesaid appendix 'A'. This estimate, however, is not a guarantee and is merely given as a rough guide and if the work cost more or less, a tender/bidder will have no claim on that account. The tender shall be based on as mentioned in aforesaid appendix 'A'.
3. The work is to be completed within the period as indicated in aforesaid Appendix 'A' in accordance with the phasing, if any, indicated in the tender from the date of handing over site, which will be on or about two weeks after the date of acceptance of tender.
4. Normally contractors whose names are on the MES approved list for the area in which the work lies and within whose financial limit/class/category the estimated amount would fall, may tender/bid but in case of term contracts, contractors of categories SS to E may tender/bid. Contractors whose names are on the MES approved list of any MES formation and who have deposited standing security and have executed standing security bond may also tender/bid without depositing Earnest money along with the tender/bid. Not more than one tender/bid shall be submitted/uploaded by one contractor or one firm of contractors. Under no circumstances will a father and his son (s) or other close relations who have business dealing with one another be allowed to tender/bid for the same contract as separate competitors. A breach of this condition will render bids of both the parties liable for rejection.
5. The office of the **Garrison Engineer Tenga** will be the Accepting Officer here-in-after referred to as such for purpose of the contract.
6. The Technical Bid and Financial Bid (Cover-1 and Cover 2) shall be uploaded by the tenderer/ bidder on or before the date & time as fixed under **critical dates**. A scanned copy of DD with enlistment details/ documents etc shall be uploaded as packet 1/cover-1 ('T' bid) of the tenderer/ bidder on e-tendering portal. DD is refundable in case T bid (Cover-1) is not accepted resulting in non-opening of 'Q' bid (Cover- 2). The applicant contractor shall bear the cost of bank charges for procuring and encashing the DD and shall not have any claim from Government whatsoever on this account.
 - 6.1 Tender form and conditions of contract and other necessary documents shall be available on www.defproc.gov.in/www.eprocure.gov.in site for download and shall form part of contract agreement in case the tender/bid is accepted.
 - 6.2 In case of contractor who has not executed the Standing Security Bond, the cover-I shall be accompanied with by Earnest Money of amount as mentioned in appendix 'A' in the form of deposit at call receipt in favor of concerned CCE/CE/GE/ GE(I)/AGE(I) (see appendix 'A') by a scheduled Bank or in receipted treasury Challan the amount being credited to the revenue deposit of the concerned CCE/CE/GE/GE(I) AGE(I) (see Appendix 'A').
 - 6.3 A Contractor who is not enlisted for the area in which the work lies but whose name is in the MES approved list of any MES formation and who has deposited standing security and executed standing security Bond may bid without depositing earnest money along with the tender.
 - 6.4 -----BLANK-----
 - 6.5 The Accepting Officer will return the Earnest Money wherever applicable to all unsuccessful tenderers/bidders by endorsing an authority on the deposit-at-call receipt for its refund, on production by the tenderer, bidder a certificate of the Accepting Officer that a bonafide tender/bid was received and all documents were returned.
 - 6.6 The Accepting Officer will either return the Earnest Money to the successful tenderers/ bidders by endorsing an authority on the deposit-at-call Receipt for its refund on receipt of an appropriate amount of Performance Security Depositas per provisions made through Amendment No. 47 to IAFW-2249 General Conditions of Contracts.

6.7 Copies of the drawings and other document pertaining to the work signed for the purpose of identification by the Accepting Officer or his accredited representative, sample of materials and stores to be supplied by the contractor will also be available for inspection by the tenderer/bidder at the office of Accepting Officer during working hours.

7. The tenderers/bidders are advised to visit the site of work by making prior appointment with GE & AGE/Sub-Divn concern who is also the executing agency of the work (see appendix 'A') the tenderers/bidders are deemed to have full knowledge of all relevant documents, samples, site etc., whether they have inspected them or not .

8. Any tender/bid which proposes any alteration to any of the conditions laid down or which proposes any other condition or prescription whatsoever, is liable to be rejected.

9. The uploading of bid implies that bidder has read this notice and the Conditions of Contract and has made himself aware of the scope and specification of work to be done and of the conditions and rates at which stores, tools and plants etc. will be issued to him and local conditions and other factors having bearing on the execution of the work.

10. Tenderers/bidder must be in possession of a copy of the MES standard schedule of Rates (see appendix 'A') including amendments and errata thereto.

11. Invitation for e- tender does not constitute any guarantee for validation of 'T' bid and subsequent opening of finance bid of any applicant/bidder, even of enlisted contractors of appropriate class, merely by virtue of enclosing DD. Accepting Officer reserves the right to reject the 'T' bid and not open finance bid of any applicant/ bidder. 'T' bid validation shall be decided by the Accepting Officer based on, inter alia, capability of the firm as per criteria given in appx 'A' to this NIT. The applicant contractor/bidder will be informed regarding non-validation of his 'T' bid assigning reasons thereof through the defproc/ eprocuremes website. The applicant contractor / bidder if he so desires may appeal to the Next Higher Engineer Authority (NHEA) viz **HQ Commander Works Engineer Tenga - 790116, AP** on mail id tenga3-mes@gov.in with copy to the Accepting Officer on email before the scheduled date of opening of Finance Bid. The decision of the next higher engineer authority (NHEA) shall be final and binding. The contractor/bidder shall not be entitled for any compensation whatsoever for rejection of his bid.

12. The Accepting Officer reserves the right to accept a tender submitted by a public undertaking, giving a price preference over other Tender(s)/bids which may be lower, as are admissible under the Government Policy. No claim for compensation or otherwise shall be admissible from such tenderer/bidder whose tender/bid is rejected on account of said policy.

13. Accepting Officer does not bind himself to accept the lowest or any tender/bid or to give any reason for not doing so.

14. Court of the place from where tender has been issued shall alone have Jurisdiction to decide any dispute out of or in respect of this tender. After acceptance of the tender, Condition 72 jurisdiction of court IAFW-2249 shall be applicable.

15. Goods and Service Tax (GST) on works contract is applicable to this contract. The unit rate quoted by the tenderer against various items of work given in BOQ/Sch 'A' are deemed to be inclusive of GST on works contracts as applicable.

16. This **Notice Inviting Tender (NIT)** including appendix 'A' shall form part of the contract.

Signature of contractor

Date : _____

AGE (Contract)
For Accepting Officer

APPENDIX 'A' TO NOTICE INVITING E-TENDER

1.	Name of Work	:	<u>REPAIR/ REPLACEMENT OF INTERNAL WIRING, FITTING, GEYSER, VENTILATING SYSTEM, SUB MAIN WIRING LED FITTING I/C SOLAR HOT WATER HEATING PHASE II MD ACCN (CHINDIT TOP, TENGA LEDGE, GOC CAMP AREA) OF AGE E/M UNDER GE TENGA.</u>															
2.	Estimated Cost of Work	:	Rs 40.00 Lakhs (As per Market)															
3.	Period of completion	:	270 days															
4.	Cost of tender documents	:	Rs. 500/- in the form of DD/ Banker cheque from any scheduled bank in favour of GE Tenga and payable at Tenga Valley.(Note: In case of retendering, the contractor who had quoted in the previous call is not required to submit the cost of tender)															
5.	Website/ portal address	:	www.defproc.gov.in															
6.	Type of Contract	:	The tender shall be based on IAFW 1779A and GCC (IAFW- 2249). with schedule 'A' (list of works to be priced by Contractor.															
7.	<u>Timeline details:</u> (a) Bid submission start date (b) Bid submission end date (c) Date of bid opening	:	Refer critical date on the website.															
8.	<u>Eligibility Criteria</u> (a) For MES enlisted contractor	:	Contractor shall be enlisted with MES in Class 'D' and above and category 'b(i)' subject to satisfactory remarks wrt performance in respect of work in hand as reflected in Work Load Return (WLR) or any other report circulated by competent engineer authority.															
	(b) For contractor not enlisted with MES	:	<p>(i) Contractor not enlisted with MES should meet the enlistment criteria of 'D' class & 'b(i)' category contractor with regard to satisfactorily completion of requisite value works with Central/ State Government/ Central/ State PSUs/ AWHO/ AFNHB/ CGEWHO/ DGMAP annual turnover, bank solvency, working capital and other requirements given in Para 1.4 & 1.5 of Section 1 of MES Manual of Contracts 2020 as available in all MES formations as well as MES website (www.mes.gov.in)</p> <p>(ii) Not carrying adverse remarks in Work Load Report (WLR) or any other similar report circulated by any competent authority, if already working in MES.</p> <p>(iii) Not suspended/ debarred/ blacklisted (either permanently or temporarily) from participating in any bid or for business dealings by any Central/ State Government Department or any Central/ State Government PSU or any Autonomous Body under Central/ State Government or any Local Body as on the bid submission end date.</p> <p>(iv) Details of works completed and under progress in MES be submitted in the following format:-</p> <table border="1" data-bbox="659 1728 1471 1831"> <thead> <tr> <th>Srl No.</th> <th>CA No & Name of Work</th> <th>Value of CA</th> <th>Date of Commencement</th> <th>Date of Completion</th> <th>Extended Date of Completion</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table> <p>(v) Un-enlisted Contractor who have secured two works in MES should get themselves registered in the appropriate designated Class with any Registering authority, else the firm will not be eligible for participation in the tender unless until the firm is enlisted with the MES.</p>				Srl No.	CA No & Name of Work	Value of CA	Date of Commencement	Date of Completion	Extended Date of Completion						
Srl No.	CA No & Name of Work	Value of CA	Date of Commencement	Date of Completion	Extended Date of Completion													

9.	Tender issuing and Accepting Officer	:	Name: Mohan Singh Yadav Address: GE Tenga, PIN-900694, Care of 99 APO E-mail : getenga4-mes@gov.in
10.	Executing agency	:	Garrison Engineer Tenga
11.	Earnest Money	:	Rs 80,000/- in favour of GE Tenga in the form of deposit at Call receipt. FDR not acceptable.

NOTES:-

1. In case after opening of Cover 1, the number of MES enlisted contractors of eligible class as well as eligible un-enlisted contractors, if any, fulfilling the other eligibility criteria given in NIT is less than 7 (Seven), application in respect of MES contractors of one class or two classes (in case of remote and difficult areas to be decided as per list circulated by CE command/ADG) below the eligible class also be considered subject to fulfillment of other eligibility criteria given in the NIT. Therefore MES contractor's one class below (two classes below in case of remote and difficult areas) may also bid for this tender. Such contractors (contractors of one/two classes below the eligible class) shall **not be considered** in case their present residual work in hand is more than **Five Times** their present tendering limit. However in case such contractors fulfill the criteria of upgradation to the stipulated eligible class based on past experience of completed works (individual work experience and/or average annual turnover, as applicable) and financial soundness (solvency/financial soundness and working capital), the ceiling of present residual work will not apply and they will be considered for issue of tender. Such bidders shall upload in their Cover-I bid details related to residual work in hand like details of works in hand showing names of work, names of Accepting Officers, Contract amounts, dates of commencement and completion (stipulated) and progress as on bid submission date. Such contractors, if claim to fulfill the criteria of upgradation shall also upload the requisite information/documents in support of upgradation. These details shall be verified by the Tender Issuing Authority from concerned formations in case bids of such contractors are considered for evaluation.

2. In case after opening of Cover-1, the number of MES enlisted contractors of eligible class as well as un-enlisted contractors, if any, fulfilling the other eligibility criteria given in NIT are 7 (seven) or more applications of only those one class below the eligible class bidders shall be considered, who have previously completed similar works satisfactorily and are meeting the criteria of up-gradation in respect of past experience of completed works (individual work experience and/or average annual turnover as applicable) and financial soundness (solvency/financial soundness and working capital) as per details in Manual of Contracts. Therefore, such contractors shall upload the requisite information/documents in the Cover-1.

3. Unenlisted contractor shall be considered provided he meets the criteria. Foreign firms shall not be eligible for this tender. However, Indian firms having Foreign national/Indian nationals staying abroad/ Indian national having taken foreign citizenship as director (s) shall be considered subject to security clearance from the concerned authorities.

4. Contractors enlisted with MES will upload the following documents in Cover-1 for checking eligibility:-

- (a) Application for tender on Firm's letterhead.
- (b) Enlistment letter issued by the Registering Authority duly renewed for the cycle period in vogue.
- (c) Scanned copy of DD/Bankers cheque towards cost of tender and EMD instrument in case SSD bond is not signed at the time of registration.
- (d) Any other document required as described in this Appendix.

5. Contractors not enlisted with MES will required to upload following documents in Cover-1 for checking eligibility:-

- (a) Application for tender on Firm's letterhead.
- (b) Scanned copy of DD/Bankers cheque toward cost of tender and Earnest Money Deposit (EMD) instrument.
- (c) Copy of Police verification report/Police Clearance Certificate/Character certificate from the Police Authority of the area where the registered office of the firm is located/notarized copy of valid passport of Proprietor/each Partner/each Director.

- (d) All documents required for enlistment in MES for the class mentioned in Para 8(b) above as per Para 1.5 of Section 1 of MES Manual on Contracts 2020.
- (e) Details of works being executed in MES, if any.
- (f) Any other documents required as described in this Appendix.

6. Tenders not accompanied by scanned copies of requisite DD/Bankers Cheque towards cost of tender and earnest money (as applicable) in Cover-1 shall not be considered for validation of 'T' bid and their Financial Bids will not be opened.

7. Contractors should ensure that their original physical DDs and Earnest Money Deposit (EMD) instruments (as applicable) reach the office of Accepting Officer within 05 (five) days of bid submission end date, failing which following action shall be taken :-

(a) In case of tenders from the enlisted contractor of MES, where scanned copies of requisite DD/ Bankers cheque towards cost of tender have been uploaded in Cover-1 but physical copies are not received within the stipulated period, their financial bids (Cover-2) will be opened. However, non-submission of physical copies of cost of tender shall be considered as wilful negligence of the tenderer with ulterior motives and such tenderer shall be banned from bidding for a period of six months commencing from the date of opening of Financial Bids (Cover-2).

(b) In case of tenders from un-enlisted contractor, where scanned copies of requisite DD/ Bankers cheque towards cost of tender have been uploaded in Cover-1 but physical copies are not received within the stipulated period, their financial bids (Cover-2) will not be opened, name of such contractors alongwith complete address shall be circulated for not opening of their bids for a period of six months commencing from the date of opening of Financial bids (Cover-2).

(c) In case of tenders from enlisted and un-enlisted contractors, where scanned copies of instruments for Earnest Money Deposit (as applicable) have been uploaded in Cover-1 but the same are not received in physical form within stipulated period, such tenders shall not qualify for opening of financial bid (Cover-2).

8. Contractor will not be allowed to execute the work by subletting or through power of attorney to a third party/ another firm on his behalf. However, a contractor can execute the work through power of attorney to sons/ daughters/ spouse of Proprietor/ Partner/ Director and firm's own employees, director, project manager **provided they are not having a separate enlisted firm in MES in their name as Proprietor/ Partner/ Director.**

9. After opening of Cover-1 and during its technical evaluation, in case any deficiency is noticed in the documents required to be uploaded by the tenderer as per NIT, a communication in the form of e-mail/ SMS/ Speed Post etc shall be sent to the contractor to rectify the deficiency within a period of seven days from date of communication failing which their financial bid (Cover-2) shall not be opened and contractor shall not have any claim on the same.

10. Invitation for e- tender does not constitute any guarantee for validation of 'T' bid and subsequent opening of finance bid of any applicant/bidder, even of enlisted contractors of appropriate class, merely by virtue of enclosing DD. Accepting Officer reserves the right to reject the 'T' bid and not open finance bid of any applicant/ bidder. 'T' bid validation shall be decided by the Accepting Officer based on, inter alia, capability of the firm as per criteria given in appx 'A' to this NIT. The applicant contractor/bidder will be informed regarding non-validation of his 'T' bid assigning reasons thereof through the defproc/ eprocuremes website. The applicant contractor / bidder if he so desires may appeal to the Next Higher Engineer Authority (NHEA) viz **HQ Commander Works Engineer Tenga - 790116, AP** on mail id tenga3-mes@gov.in with copy to the Accepting Officer on email before the scheduled date of opening of Finance Bid. The decision of the next higher engineer authority (NHEA) shall be final and binding. The contractor/bidder shall not be entitled for any compensation whatsoever for rejection of his bid.

11. In case of un-enlisted contractor is already executing works in MES, he shall not be considered eligible for the subject tender if the total value of such works is more than twice the tendering limit of the MES class of contractor for which it is eligible. For this purpose, details of the works being executed by such a contractor shall be uploaded in the Cover-1 of the bid and shall be checked/ verified by the Accepting Officer.

12. In case the BOQ is revised through the corrigendum and the bidder has failed to quote on revised BOQ (i.e., he has quoted on pre-revised BOQ) such bid shall be treated as wilful negligence by the bidder and his quotation shall be considered non-bonafied. In such cases the lowest tender shall be determined from amongst the valid/ bonafied bids only. Accepting Officer may decide whether to re-tender or consider the lowest bonafide tender for acceptance.

13. Revoking the offer or revising the rates upward or offering voluntary reduction by the lowest tenderer after opening of Cover-2 shall be considered as a wilful default. For this default a penalty of an amount equal to Earnest Money shall be levied. In case of any un-enlisted tenderer. Earnest Money deposited by him shall be forfeited. In case of MES enlisted tenderer having deposited the Standing Security Bond, an amount equal to the earnest money stipulated in the NIT shall be notified to the tenderer for depositing through MRO and consideration of such tenderer in tender evaluation for future works shall remain suspended till the aforementioned amount is deposited in the Government Treasury. No other disciplinary/ administrative action shall be taken against such tenderers. In such a situation, the next lowest offer shall not be considered for acceptance. Instead, retendering shall be resorted to in a transparent and fair manner and the defaulting tenderer and his related firm if any shall not be eligible for this tender in second call or subsequent calls.

13A. Irrespective of whatever is mentioned in condition 19.3 of IAFW 2249 with regard to suspension of tenders on account of non-submission of Performance Security, issue of tenders to such tenderers shall remain suspended for a period of six months from the date of cancellation of contract under condition 19.3 of IAFW 2249 in case of unenlisted Contractors. In case of MES enlisted contractor, issue of tenders shall remain suspended till deposit of EMD or six months from date of cancellation whichever is later.

14. Tender to related firms shall not be issued simultaneously. Firms shall be termed as related if proprietor/one or more Partners/ Directors are common. Decision of Accepting Officer on issue/ deny the tender to any one of the related firms shall be final and binding.

15. **All Contractors/bidders to please note that the successful bidder whose bid is finally accepted has to submit Performance Security as per Condition 19 of General Conditions of Contracts, IAFW-2249.**

File No 8206/ /E8 dt 2026

AGE (Contracts)
For Accepting Officer

Garrison Engineer Tenga
Military Engineer Services
PIN: 900 694
C/O 99 APO

IN LIEU OF IAFW-1779A (REVISED 1955)ITEM RATE TENDER AND CONTRACT TO BE USED IN CONJUNCTION
WITH GENERAL CONDITIONS OF CONTRACTS IAFW-2249 (1989 PRINT)E-TENDERMILITARY ENGINEER SERVICESREGISTERED POST/ACK. DUE

Garrison Engineer Tenga
 Military Engineer Services
 PIN – 900 694
 C/O 99 APO

8206/ /E8

2026

E-TENDER

NAME OF WORK: REPAIR/ REPLACEMENT OF INTERNAL WIRING, FITTING, GEYSER, VENTILATING SYSTEM,
 SUB MAIN WIRING LED FITTING I/C SOLAR HOT WATER HEATING PHASE II MD ACCN (CHINDIT TOP, TENGA
 LEDGE, GOC CAMP AREA) OF AGE E/M UNDER GE TENGA.

1. Shri/ M/S _____ of _____ is/ are hereby authorised to e-tender for the above mentioned work.
2. The complete tender (BOQ) is to be uploaded on the MES portal of **www.defproc.gov.in** The bid of successful bidder will be opened in office of Garrison Engineer Tenga, Tenga valley in the presence of such tenderer/s who have uploaded their priced tender and who wish to be present.
3. All correspondence must be returned to this office whether or not the tender has been online submitted.
4. All correspondence concerning to this tender shall be addressed as indicated on the top of this letter quoting the reference as given.

THE PRESIDENT OF INDIA DOES NOT BIND HIMSELF TO ACCEPT THE LOWEST OR ANY TENDER

Signature of Officer Issuing tender:
 Appointment : AGE (Contracts)
 Dated : 2026

(_____))
 Signature of contractor

SCHEDULE 'A'NAME OF WORK: REPAIR/ REPLACEMENT OF INTERNAL WIRING, FITTING, GEYSER, VENTILATING SYSTEM, SUB MAIN WIRING LED FITTING I/C SOLAR HOT WATER HEATING PHASE II MD ACCN (CHINDIT TOP, TENGA LEDGE, GOC CAMP AREA) OF AGE E/M UNDER GE TENGA.

1. **SCOPE OF WORK:-** This contract comprises of works as listed in BOQ and as specified Particular Specifications.
2. Description of items given in BOQ (in excel) is in brief. These are deemed to be amplified and read in conjunction with special conditions, particular specifications, specifications for materials and workmanship and conditions in relevant trade sections of the MES Standard Schedule of Rates (Part-I) 2009 for specifications & (Part II) 2020 for rates, preamble, special condition and contract drawings if any including notes thereon.
3. The quantities shown in Schedule (BOQ sheet) are approximate and inserted as a guide only. They do not constitute any guarantee of the ultimate quantities which will be ordered on the contractor. They shall not however be varied beyond the limits laid down in condition-7 of IAFW-2249, General Conditions of Contracts.
4. Site for all works shall be handed over simultaneously and date of commencement for entire work under this contract shall start concurrently. In case it is not possible to make the entire site available on the award of work, the Contractor will have to re-arrange his working program accordingly. No claim what-so-ever, for not giving the entire site on award of work and for giving the site(s) gradually, will be tenable.
5. The bidder shall enter the unit rate in BOQ on website www.defproc.gov.in. The unit rates shall be entered by the bidder in **figure only**.
- 6.1 The unit rates quoted by the contractor shall be deemed to include for material and labour or supplying and fixing/laying complete all as directed/specified, unless described otherwise in BOQ.
- 6.2 The unit rate quoted by the tenderer will be deemed to include for transportation of contractors tools, plant and equipment required for execution at sites of work as detailed in Schedule 'A'/BOQ, removing the same from site of work after completion and leaving the site clear to the entire satisfaction of Engineer-in-Charge.
- 6.3 The rates quoted by the Contractor shall include for **all taxes, GST and duties act required to be paid by him to concerned authorities** as per the rules and laws in force. No additional payment on these accounts shall be made under this Contract by the MES/ department.
7. Unit rate quoted by the tenderer against each item shall be deemed to include for all incidental and additional materials and labour/supply and fixing unless otherwise specifically provided for, obviously required for completion of the particular items of work in workman like manner described in MES Schedule 2009 Part-I (Specifications) and 2020 Part-II (Rates) ,and preamble to analogous items in the said schedule whether such additional items are included in the description of BOQ or not but are essential for executing the work in a workman like manner and sound Engineering practice. In case of any dispute whether any extra item/items constitute "Minor accessories/part"are part of contract or not, the decision of Accepting Officer shall be final conclusive and binding.
8. Measurements of work done shall be recorded as per the items and units as mentioned in Schedule 'A'/BOQ and this mode of measurement shall take precedence over the method/mode of measurement as shown in the MES Standard Schedule of Rates (Part-I) 2009 for specifications & (Part-II) 2020 for rates, if any variance noticed at later stage.
9. **Actual work done at site shall be measured and recoded/ uploaded in e-MB duly accepted by all concerned.**
10. Contract Sum" will be treated after deduction of "Schedule of Credit" amount if any "Schedule of Credit" are involved in the subject work.

SCHEDULE 'A' NOTES (CONTD...)

11. **DISMANTLED MATERIALS**The contractor is advised to visit the site to assess the quality of materials as indicated in "Schedule of credit" with approximate quantities which shall be contractor's property. The materials obtained from demolition/dismantling shall be removed from site of work after obtaining written approval from the Engineer-in-Charge and recovery shall be made from contractor's dues (RAR/Final bill as the case may be) as and when the work of demolition/ dismantling proceeds. No claim whatsoever on this account shall be admissible. Old dismantled/ demolished materials **other than** "Sch of credit", either to be returned to MES stores yard or to be thrown at site in low level areas as directed by Engineer-in-Charge. Amount **at the double of market rate** shall be effected/ recovered from the final bill, if old dismantled/ demolished materials (other than "Schedule of Credit") shall not be returned/ deposited by the contractor.

12. **ENFORCEMENT OF RIGHTS CONFERRED TO LABOUR UNDER VARIOUS ACTS & LAWS**Statutory provisions of Rights to labour under various Acts & Laws shall be strictly adhered to & these aspects shall be taken under consideration while quoting the rates by bidders. Accordingly, Contractor's quoted rates shall be deemed to include following factors:-

(a) **Contract Labour (Regulation & Abolition) Act 1970.**

(b) MES Model Rules for protection of health and sanitary arrangements for workers employed by the contractor have been specified in Annexure 'C' to IAFW-2249. As per condition 26 and 58 of IAFW-2249, the contractor during the progress of the work should comply with all the rules and provisions contained in the various Acts, Labour laws and MES Model Rules and should also arrange for safety provisions as per MES Safety Code specified in Annexure 'B' to IAFW-2249.

(c) **Minimum Wages Act 1948 and Fair Wages**

The contractor shall pay not less than the 'fair wage' as defined below or the minimum wage fixed under the Minimum Wages Act, whichever is higher to labourers engaged by him on the Work (Condition 58 of IAFW-2249 (General Condition of Contracts) refers). ***The contractor shall not pay wages lower than minimum wages for labour as fixed by the Government of India/ State Government/ Union Territory, whichever is higher.*** The contractor shall, notwithstanding the provisions of any contract to the contrary, has to pay 'fair wage' or minimum wage fixed under the Minimum Wages Act, whichever is higher to labourers indirectly engaged on the work, including any labour engaged by his sub-contractors in connection with the said work, as if the labourers had been directly employed by him. **'Fair Wage'** means wage whether for time or piece-work notified at the time of inviting tenders for the Work and where such wages have not been so notified the wages prescribed by the Chief Engineer for the stations at which the Work is done.

(d) **The Employees Provident Funds & Miscellaneous Provisions (EPF & Assam) Act,** The Contractor shall have the registration with EPFO and ESIC. The EPF and ESI contribution on the part of employer in respect of this contract shall be paid by the contractor. Accordingly, Contractor's quoted rates shall be deemed to include all these factors.

(e) **The Building and Other Construction Workers Welfare Cess Act 1996**

The cess as per 'The Building and Other Construction Workers Welfare Cess Act 1996' shall be deducted, as notified by respective State Government, from payments to contractors.

(f) **Payment of Wages Act, 1936**

(i) The amendment to Payment of Wages Act, 1936 Act, issued in the Gazette Notification dated 15 Feb 17 states "All wages shall be paid in current coin or currency notes or by cheque or **by crediting the wages in the bank account of the employee.**" Crediting of wages directly in bank account of the employee may **preferably be adopted** over other modes of payment of wages. This provision would make it easy to verify and ensure that minimum/ due wages are paid to the employees and their social security rights are protected, leaving little room for complaints/ litigations at a later date.

SCHEDULE 'A' NOTES (CONTD...)

- (ii) **Mode of Payment.** The payments will be made into **AADHAAR linked bank account** of the employees by the contractor. Where the employee insists on being paid in coins or currency notes or by cheque, the same will not be denied. An undertaking may be obtained from such employees. However, efforts shall be made to educate the employees on benefits of bank/ digital payments and pursue with the individual(s) to shift towards banking system/ digital modes.

13. **PERIOD OF COMPLETION**The entire work under this contract described in Schedule 'A' shall be completed within **270 days**including **Holidays** from the date of handing over site as shown in work order No. 01

14. **DEFECT LIABILITY PERIOD OF THE WORK (Refer Condition 46 of IAFW-2249)**:- The date of completion for the purpose of issue of completion certificate by GE under condition 49 of IAFW-2249 (General Conditions of contracts) shall be the date of taking over of works, in all respect, after obtaining satisfactory test results for items of works as applicable and as specified under respective items of Schedule 'A'. The defects liability period referred to in condition 46 of IAFW-2249 shall commence from the certified date of completion of the work as per completion certificate issued by GE.

As per latest amendments to General Conditions of Contract IAFW-2249 the defect liability period has been specified as:-

- a) **12 (Twelve months) calendar months after the works have been handed over to Government (hereinafter referred to as "defect liability period")**

15. Unit rates quoted by the tenderer shall deem to include the cost towards all types of tests as applicable in terms of provisions contained in this contract.

16. In any case repeated items in Sch 'A', lowest rate quoted shall be considered for payment purpose.

17. Wherever in Sch 'A/ anywhere else in tender document, it is mentioned "or equivalent" in the makes; the equivalent makes shall only be provide only in case the makes mentioned does not manufacture the respective item.

18. The rates quoted by the Contractor shall be include for incorporation of materials as per make mentioned in BOQ, if makes is not available in BOQ then as per list of product (**GROUP OF PRODUCTS BASED ON MAKES /BRAND, materials of Group-I shall be incorporated in the work in case provided group wise in CA.** If make of product/ materials in BOQ as well as in **Group-I** is not available then **Group-II/Group-III** shall be used only after getting the written approval of Accepting Officer.

19. Irrespective whatever written elsewhere in the tender documents the fine aggregate, coarse aggregate shall be procured from only the legal sources.

Signature of Contractor

Dated: 2026

AGE (Contracts)
for Accepting Officer

SCHEDULE OF CREDIT**NOTES:-**

1. The contractor shall take proper precaution for demolition /dismantling work. If any damage caused due to dismantling/demolition to the existing structure, the contractor shall make good the same at this own cost without any extra cost to the Govt.
2. All dismantling / taking down materials (except those included in Sch of Credit and those re-used in the work) shall be returned to MES store without any extra cost to the Government. However useless materials as per the opinion of Engineer-in-charge shall be removed outside MD land or thrown away at low laying area as directed by Engineer-in-Charge without any extra cost to the Government.
3. The rates inserted by the department under column 5 are the minimum recovery rate which shall be final and binding. However the contractor may offer higher rates under Col-7. The rates whichever is higher between Col-5 and Col-7 will be considered at the time of Acceptance.
4. Unless specifically mentioned in Sch 'A', the Contractor shall not be permitted to incorporate the demolished materials in the work under any circumstances.
5. The contractor shall be allowed to take away the demolished materials only after deduction of credit amount from the Contractors payment due with prior permission of Engineer-in-Charge.
6. The quantities mentioned under Col-4 are for rough guidance only. However the quantities mentioned under this column will be measured as per actual quantity obtained from demolition/dismantling against respective items of Sch 'A'. No claim whatsoever due to any variation in quantities shall be entertained.

Srl No	Brief description of item	Unit	Qty	Unit Rate		AMOUNT		Remarks
				RS	P	RS	P	
1	2	3	4	5		6		7
01	Old Unsv Point Wiring any type and size	Per Point	920.00	50.00		46000.00		
02	Old unsv switch/socket/ceilling rose/lamp holder/call bell/ bell push any size	Each	1930.00	5.00		9650.00		
03	Old unsv fittings any type	Each	2099.00	30.00		62970.00		
04	Old unsv UG XLPE Cable any type and size	RM	300.00	20.00		6000.00		
05	Old unsv sub main wire/service cable any type and size	RM	500.00	20.00		10000.00		
06	Old unsv DBs any type and size	Each	10.00	50.00		500.00		
07	Old unsv MCB any capacity	Each	75.00	5.00		375.00		
08	Old unsv MCCB any capacity	Each	19.00	25.00		475.00		
09	Old unsv electronic meters any type	Each	6.00	50.00		300.00		
10	Old unsv inner body/outer body any size	Each Job	30.00	60.00		1800.00		
11	Old unsv heating coil/Thermostat/NRV/Connection pipe any cap	Each	90.00	10.00		900.00		
12	Copper scrap	Kg	1.00	350.00		350.00		
13	Old Unsv fan blade/ball bearing any type	Each	60.00	10.00		600.00		
14	Old unsv exhaust fan motor any cap	Each	30.00	50.00		1500.00		
15	Old unsv earthing any type	Each	2.00	150.00		300.00		
				Total in Rs.		141720.00		

GENERAL SUMMARY

- | | | | |
|----|--|---|------------------------|
| 1. | Total amount of Sch 'A' worked out by contractor | : | Rs. _____ |
| 2. | Sch of Credit | : | Rs. 1,41,720.00 |
| 3. | Less Reduction offered by Contractor | : | Rs. 0.00 |

TOTAL CONTRACT SUM = Rs. _____

Rupees in words (Rupees _____ Only)

SCHEDULE 'B'

(LIST OF MATERIALS TO BE ISSUED TO CONTRACTORS)

(See Condition 10 of IAFW-2249)

Sl No	Particulars	Rate at which stores etc will be issued to the contractor		Place of issue (by name)	Remarks
		Unit	Rate Rs.		
1	2	3	4	5	6

----- NIL -----

Signature of Contractor

AGE (Contracts)
for Accepting Officer

Dated : 2026

SCHEDULE 'C'

(LIST OF TOLLS AND PLANTS (OTHER THAN TRANSPORT) WHICH WILL BE HIRED TO THE CONTRACTOR (REFER CONDITION 15, 34 AND 36 OF IAFW – 2249))

Sl No	QTY	Particulars	Details of MES crew supplied	Hire charges per unit per working days Rs.	Standing by charges per unit per day Rs.	Place of issue (by name)	Remarks
1	2	3	4	5	6	7	8

----- NIL -----

Signature of Contractor

AGE (Contracts)
for Accepting Officer

Dated : 2026

SCHEDULE 'D'TRANSPORT TO BE HIRED TO THE CONTRACTOR
(SEE CONDITION 16 AND 35 OF IAFW – 2249)

Sl No	QTY	Particulars	Rate per unit per working days Rs.	Place of issue (by name)	Remarks
1	2	3	5	6	7

----- NIL -----

Signature of Contractor

AGE (Contracts)
for Accepting Officer

Dated : 2026

TENDER

To

THE PRESIDENT OF INDIA

Having examined and perused the following documents:-

1. Particulars specifications signed by AGE (Contracts).
2. Drawings details in the list of drawings.
3. Schedule 'A', 'B', 'C' and 'D' attached hereto.
4. MES Standard Schedule of Rates-2009 Part I (Specifications) amendment 1 to 3 and MES Standard Schedule of Rates- 2020 Part II (Rates) with amendment No 1 to 122 (hereinafter and in IAFW-2249 referred to as the MES Schedule).
5. General conditions of contracts, IAFW – 2249 (1989 Print) together with errata 1 to 20 amendments 1 to 49 and Schedule of Minimum Wages
6. WATER. Refer Conditions 31 of IAFW – 2249, General Conditions of contracts. Water will be supplied by MES and shall be paid for @ Rs.3.75 for every Rs.1000.00 value of work carried out by the contractor where the water supplied is unmeasured.
7. Should this tender be accepted, I/We agree.

** (a) that the sum of Rs. _____ Rs. _____
_____) forwarded as Earnest money shall either be retained as part of Security Deposit/ be refunded by the Government on received of the appropriate amount of security deposit, all as per Condition 22 of IAFW – 2249.

(b) To execute all the work referred to in the said documents upon the terms and condition contained or referred to therein as detailed in item rate/General Summary and to carry out such deviations as may be ordered vide condition 7 of IAFW-2249 upto a maximum of 10 % (Ten Percent) and further agreed to refer to all disputes, as required by condition 70 of IAFW – 2249 to the sole arbitrator a serving Officer heaving degree in Engineering or equivalent or having passed final/ direct final examination of sub-division – II of Institution of surveyors of India) recognized by the Govt. of India to be appointed by the **CHIEF ENGINEER, EASTERN COMMAND, KOLKATA** or in his absence the Officer Officiating as **CHIEF ENGINEER** if specifically delegated in writing by **CHIEF ENGINEER, EASTERN COMMAND, KOLKATA** whose decision shall be final, conclusive and binding.

** To be deleted where Not applicable.

TENDER (CONTD.)

In lieu of IAFW-1779-A (Revised 1955) contd.

Signature _____ Name _____ (IN BLOCK CAPITALS) In the capacity of ____ duly authorized

to sign the tender for and on behalf of M/S _____ (BLOCK LETTERS)

Witness _____

Date _____

Address _____

Postal address _____

Telegraphic address:

Telephone No _____

ACCEPTANCE

---Nil--- alteration (s) have been made in these documents and as evidence that these alteration(s) were made before the execution of the Contract Agreement these have been initialed by the contractor and **ZAKIR HUSSIN, AE (QS&C), AGE(Contracts)**, GE Tenga, PIN 900694, C/O 99 APO.

The said officer(s) is/are hereby authorised to sign and initial on my behalf the documents forming part of this contract.

The above tender was accepted by me on behalf of the President of India for the item rates contained in the Sch 'A' for

Rs. _____ on the ____ day of ____ 2026.

Signature dated this ____ day of ____ 2026.

(FOR AND ON BEHALF OF THE PRESIDENT OF INDIA)
Garrison Engineer Tenga
C/O 99 APO
(ACCEPTING OFFICER)

GENERAL CONDITIONS OF CONTRACTS (IAFW 2249 (1989 PRINT))
ITEM RATE CONTRACTS - IAFW 1779-A (REVISED 1955)

A copy of the GENERAL CONDITIONS OF CONTRACTS - IAFW 2249 (1989 Print) with errata 1 to 20 and amendment No. 1 to 49 has been supplied to me/us*, has been perused by me/us* and is in my/our* possession. I/We* have read and understood the provisions contained in the aforesaid GENERAL CONDITIONS OF CONTRACTS before submission of this tender and I/We* shall abide by the terms and conditions thereof, as modified if any, elsewhere in these tender documents.

It is hereby further agreed and declared by me/us, that the GENERAL CONDITIONS OF CONTRACTS, IAFW-2249 (1989 Print) including condition 70 thereof pertaining to settlement of disputes by arbitration, containing 33 pages and errata 1 to 20 and amendment Nos. 1 to 49 form part of these tender documents.

NOTE:- In case of difference in interpretation due to wordings of English and Hindi versions of the General Conditions of Contracts (IAFW-2249) (1989 Print), the English version will prevail.

*Delete whichever is not applicable.

Signature of Contractor

Dated: 2026

AGE (Contracts)
for Accepting Officer

SCHEDULE OF MINIMUM WAGES

1. It is hereby agreed that the “**Schedule of Minimum Wages**” as published by Govt. of India/State Govt./Govt. local authorities which is higher and which specified minimum rates of wages for various categories of workman as applicable on the last due date of receipt of this tender shall form part of these tender document.
2. The minimum rates of wages shall consist of all inclusive rates and include also the wages for weekly day of rest.
3. My/our signature here under amount to my/our having signed the aforesaid documents forming part of this tender.

Signature of Contractor

Dated : 2026

AGE (Contracts)
for Accepting Officer

SPECIAL CONDITION AND REQUIREMENTS**1. GENERAL**

1.1 The following Special Conditions shall be read in conjunction with the General Conditions of Contracts, IAFW-2249 and IAFW-2159 (Revised-1947) including errata/amendments thereto. Any provision in these special conditions if at variance with that of the aforesaid documents shall take precedence there over. The term General specifications used in any of the documents forming part of the contract refer to the specification contained in the MES Schedule.

2. SPECIFICATIONS

2.1 General specifications mentioned anywhere in the contract including those in General Conditions of Contracts, viz IAFW-2249, shall mean the specifications given in the MES Standard Schedule of Rates 2009 (Part-I). Particular specifications given here-in-after are in brief and only to particularise/amend and emphasise the specification given in the MES standard Schedule of Rates. Specifications, General Rules. Preambles and special conditions contained in MES standard Schedule of Rates Part-II (rates) shall, unless specifically described otherwise, be applicable to this contract.

2.2 Any work shown on drawings(s) but not described in particular specifications shall, unless specifically described to be excluded from the contract, be deemed to be included in the item rate quoted by contractor for Schedule 'A'. In case of doubt with regard to the manner of detail for executing the work, the decision of the Accepting Officer shall be final, conclusive and binding. This shall not be applicable to the items of work pertaining to services for which separate parts of Schedule 'A' setting out the requirements have been given. Should there be item(s) or parts as shown on drawings but not included in the relevant sections of Schedule 'A' these shall, unless otherwise described or stated in the contract, constitute an additional work.

2.3 All headings and marginal notes to these special conditions or to any other documents of this contract are solely for the purpose of giving a concise indication and not a summary of the contents thereof, and they shall never be deemed to supersede the contents of the clauses.

2.4 The tenderer is advised to point out in writing discrepancy(s), if any, of the tender documents, at least 10 days before the due date of receipt back of tender. In case discrepancy(s) in contract documents is/are noticed by the Contractor during execution of the works, it shall be brought out to the notice of the Accepting Officer of contract and others concerned in writing before commencement of the particular work where discrepancy (s) is/are noticed failing which the contractor shall forfeit his right to claim on account of such discrepancy (s)

2.5 Also where there are obvious mistakes in any of the contract provisions, the Accepting Officer shall be sole deciding authority with regard to the intention of the contract documents and his decision in this respect shall be final, binding and conclusive.

2.6 Where the drawings show finishes to wooden members, such finishes shall be applied to wooden members as well as wood based members. However, surfaces covered with laminates shall not be given any finish such as painting, polishing etc.

2.7 Where reinforcement details/thickness of RCC members such as slab, beams, lintels etc are not shown on the drawings, the same shall be supplied by the GE on the basis of provisions in IS-456-2000 and the same shall be provided and incorporated in the works by the contractor and no extra payment will be admissible on this account.

2.8 Where ever nomenclatures of structural slabs (e.g S-1, S-2 etc) is given in the RCC Plans, the details of reinforcement for such slabs shall be as given for slabs of the same nomenclature elsewhere, if not given in the same drawing.

2.9 Dwarf wall in situations like verandah, passage etc even if not shown on drawings, shall be deemed to be included in the scope and shall be provided at no extra cost to the department.

SPECIAL CONDITION AND REQUIREMENTS CONTD...**3. CONDITIONS OF CONTRACTS AND EXECUTION OF WORKS**

3.1 The various sections /Sub-divisions of the tender documents shall be deemed to be supplementary/complementary to Each other. or earlier on determination of the contract. The contractor shall also along with the final

4. INSPECTION OF SITE BY THE TENDERER

4.1 The tenderer is advised to contact the Garrison Engineer for the purpose of inspection of site (s) and relevant documents other than those sent herewith, who will give reasonable facilities for the purpose. The tenderer shall also make themselves familiar with the working conditions, accessibility of site (s), availability of materials and other cogent conditions which may effect the entire completion of work under this contract.

4.2 Refer Condition 4 of IAFW-2249. The tenderer shall be deemed to have satisfied himself before submitting his tender as to the nature of the ground and sub-soil (so far as it is practicable), the climatic conditions, the form and nature of the site, nature of work and the manner of access to the site and the accommodation he may require. In general, the tenderer shall be deemed to have himself obtained all necessary information's on inspection of site, as to risks, contingencies and other circumstances which may influence or effect his tender. No extra payment consequent on any mistake or misunderstanding or otherwise on this account shall be allowed.

4.3 The tenderer shall be deemed to have inspected the site (s) and made themselves familiar with the working conditions, whether they have actually inspected the site (s) or not.

5. AVAILABILITY OF LAND FOR STORAGE OF MATERIALS (ACCOMMODATION FOR LABOUR ETC)

5.1 Delete the following in para 1 of Condition 24 of IAFW-2249, General Conditions of Contracts: "In the event of the areas of land.....allotted to him" and the following shall be read in conjunction with condition 24 of IAFW-2249. "The contractor shall be permitted to store his materials including erecting temporary sheds there for temporary workshops and the like at the area of land marked for this purpose, on the site plan/shown by the GE free of rent, if it is on Class A-I land. For other types of land he shall be charged license fee of Rs. 1/- per year or part of year for each and every separate area of land allotted to him". No land shall be allotted to the contractor for construction of huts for accommodation of labour.

6. CONDITION OF WORKING

6.1 The work lies in **UNRESTRICTED AREA**. However, the contractor, his agents, servants, workmen and vehicles may pass through specified points/route, pass through unit lines and may be asked to disclose their identity and bonafides by the authority controlling the area as per their rules and regulations. Engineer-in-Charge shall at his discretion have the right to issue passes, control their admission to the site of work or any part thereof after through verification of antecedent by contractor. The contractor shall, on demand by the Engineer-in-Charge, submit a list of personnel etc., concerned and any other information called for by the Engineer-in-charge and shall satisfy the Engineer-in-charge as to the bonafides of such people. Passes shall be returned at any time on demand by The Engineer-in-charge and in any case on completion of work.

6.2 The contractor and his work people shall observe all the rules promulgated from time to time by authority controlling the area in which the work is to be carried out e.g. prohibition of smoking, etc. Any person found violating the security rules laid down by the authority shall be immediately expelled from the area without assigning any reasons, whatsoever, and the contractor shall have no claim on this account. Nothing shall be admissible for any man hours lost on this account.

7. FIRE PRECAUTIONS

7.1 The contractor, his agent, representatives, workmen etc shall strictly observe the orders pertaining to fire precautions prevailing within the restricted area/place of execution of work.

SPECIAL CONDITION AND REQUIREMENTS CONTD...

7.2 Motor transport vehicles if any allowed by authorities to the restricted area/place of execution of work must be fitted with serviceable fire extinguishers and flash eliminators. The contractor shall be responsible to abide by security rules promulgated by the authority.

7.3 Any kind of smoking and carrying lighting/match box or any fire instruments within the restricted area/place of execution of work is strictly prohibited.

8. SECURITY OF CLASSIFIED DOCUMENTS

8.1 Contractor's special attention is drawn to condition 2-A & 3 of General conditions of contracts (IAFW-2249). The contractor shall not communicate any classified information regarding the works either to Sub-contractors or others without prior approval of the Engineer-in-Charge. The contractor shall also not make copies of the design/drawings and other documents furnished to him in respect of the work and he shall return all documents on completion of the work or earlier on termination of contract. The contractor shall alongwith final bill attach a receipt from the Engineer-in-Charge in respect of his having returned the classified documents as per condition 3 of General conditions of Contracts (IAFW-2249).

9. OFFICIAL SECRET ACT

9.1 The contractor shall be bound by the India Official Secret Act, 1923, particularly Section 5 thereof, all as per condition 2A of IAFW-2249.

10. EMPLOYMENT OF PERSONNEL

10.1 Contractor shall employ only Indian Nationals as his representatives, servants and workmen after verifying their antecedents and loyalty. He shall ensure that no person of doubtful antecedents and nationality is, in any way, associated with the work. If for the reasons of technical collaboration or other considerations the employment of foreign national (s) is unavoidable, the contractor shall furnish full particulars to this effect to the Accepting Officer at the time of submission of the tender. As a proof that the contractor has employed only India Nationals, he shall render a certificate to GE within one month from the date of acceptance of tender to this effect. In case the GE desires, contractor will have the police verification done of personnel employed by him. All expenses in connection with verification antecedents by Police Authority/Security Agency shall be borne by the contractor.

10.2 The GE shall have full power, and without giving any reason to order the contractor immediately to cease to employ in connection with this contract, any agent, servant or employee whose continued employment is, in his opinion, undesirable. The contractor shall not be allowed any compensation on this account.

10.3 The contractor's attention is also drawn to condition 25 of IAFW-2249 in this connection.

11. DAMAGE TO EXISTING STRUCTURES

11.1 Any damage to the existing structures, any existing road, cables, communication lines, etc., during the execution of work shall be made good by the contractor at his own expense. Rectification, replacement, making good and touching up etc shall be carried out to conform to the materials and workmanship originally provided and to the satisfaction of the Engineer-in-Charge. In case of any dispute on this account, the decision of the GE shall be final, conclusive and binding.

12. QUARRIES AND ROYALTIES

12.1 Quarries are not available on land which is in the charge of MES authorities. Condition 14 of IAFW-2249 shall be treated as not applicable contractor to pay all royalties as per Govt order and nothing extra will be paid on this account.

13. APPROACHES

SPECIAL CONDITION AND REQUIREMENTS CONTD...

13.1 The contractor shall make arrangements for and provide at his own cost all temporary approaches, if required to the site (s), after obtaining approval in writing of the GE to the layout of such approaches.

14. LOCATION OF BUILDINGS AND WORKS

14.1 There may be some changes in location/siting of building shown in site (layout) plan (s) to suit local conditions and/or departmental requirements. The contractor shall have no claim what-so-ever consequent to such change in the location/siting of works.

15. ACTION WHERE NO SPECIFICATIONS EXIST

15.1 In case of any class of work for which there are no specifications in the tender documents including SSR, such work shall be carried out in accordance with Indian Standard Specifications and where Indian Standard Specifications do not cover the same, the work shall be carried out as per standard engineering practice subject to the approval of the GE.

15.2 No claim what-so-ever will be tenable for any misunderstanding or for not having ascertained requisite information/knowledge to muster the resources required in satisfactory completion of the entire work to requirements as per contract agreement.

16. METHOD OF MEASUREMENTS

16.1 Measurement of all measurable work executed under this contract shall be taken in accordance with the rules of measurements as laid down in SSR Part –I, 2009 & SSR Part-II, pertaining to various items of work as applicable, unless otherwise indicated in the respective sections\ parts of Schedule 'A'. In case the method of measurements for a particular item of work is not given in SSR, a reference will be made to the relevant provisions contained in the latest edition of IS-1200.

17. COORDINATION WITH OTHER AGENCIES

17.1 The contractor shall permit free access and afford normal facilities and usual convenience to other agencies or departmental workmen to carryout connected works or services under separate arrangements. The contractor will not be allowed any extra payment on this contract.

18. SECURITY AGAINST LOSS OR DAMAGE

18.1 CONTRACTOR'S PLANTS/EQUIPMENTS AT SITE:- The contractor shall furnish to the Engineer-in-charge every morning a distribution return of his plants/equipments on the site of the work, stating the following particulars :-

- (i) Particulars of plants/equipments, its make, manufacture No., Model No., if any, Registration No., if any, capacity, year of manufacture and year of purchase etc.
- (ii) Total No (Quantity) on site of work.
- (iii) Location and indication of No.(quantity) at Each location of the site of work.
- (iv) Purchase value on the date of purchase. For the purpose of this condition, plant/equipment shall include vehicles i.e. trucks and lorries but neither the workmen's tools nor any manually operated tools/equipment. The Engineer-in-charge shall record the particulars supplied by the contractor in the works diary and send monthly return to the GE for record in his office.

18.2 LOSS ON ACCOUNT OF ENEMY ACTION :- If as a result of enemy action the contractor suffers any loss or damage, the Govt, shall reimburse to the contractor such loss or damage to the extent and in the manner provided here-in-after :-

- (i) The loss suffered by him on account of any damage or destruction of his plants/equipment (as defined in special condition (a) above), materials or any part or parts thereof the amount of loss assessed by the Accepting Officer of the contract on this account shall be final, conclusive and binding.

SPECIAL CONDITION AND REQUIREMENTS CONTD...

(ii) The compensation paid by him under any law for the time being in force, to any workmen employed by him for any injury caused to workman or workman's legal successor for loss of the workman's life.

(iii) Payment of compensation for loss or damage to any work or part of work carried out. The amount of compensation shall be determined in accordance with condition 48 of General conditions of Contracts (IAFW-2249).

(iv) No reimbursement shall be made nor shall any compensation be payable under the above provision unless the contractor had taken Air Defence precautions ordered by the GE/or concerned, or in the absence of such order, reasonable precautions taken by the contractor. No reimbursement shall be made nor shall any compensation be payable for any plants/equipment or materials not lying at site of work at the time of enemy action.

19. WATER

19.1 Refer Condition 31 of General Conditions of Contracts (IAFW-2249).

19.2 Refer Condition 31 of IAFW-2249, if contractor desires to buy water from Government, water will be supplied by the department at point(s) as indicated in the site plan. The water supply shall be unmetered and the contractor shall pay for water used in works and by his workmen at the rate of Rs.3.75 for every Rs.1000.00 value of work carried out by the contractor where the water supplied is unmetered. The supply of water may however not be continuous the contractor shall be deemed to have ascertained the hours availability of water before submitting his tender. MES do not guarantee the output of water supply, and nor compensation whatsoever shall be allowed for intermittent supply or break down in the system or if supply is not sufficient. The contractor shall make his own arrangements to store and supplement the water supply at his own cost.

19.3 The contractor if he so desires, will be allowed to augment the department's water supply by boring wells at his own cost at site(s) approved by the GE. On completion of the work, the contractor shall remove pipe etc installed and make good the site as directed by Engineer-in-Charge without any extra cost to Government. No rebate shall be given for augmentation of water by the contractor and charges for water shall be recovered at the rate mentioned above. The contractor shall, however, ensure that water drawn from such sources is clean and free from all impurities and is suitable for mixing concrete, mortar, washing aggregate and curing of concrete as specified in IS-456

20. ELECTRICITY

20.1 In case the contractor desires to buy electricity from the MES, he shall be charged for electric energy consumed at the following rates :-**At Rs. 8.58 per KWH for Power & Light.**

20.2 Electric supply required for the work shall be made available by the MES at the point (s) marked on the layout plan. The main switches and energy meter to register the electric energy supplied shall be provided and installed by the MES. The contractor shall provide all necessary cable, fittings etc from the main switches in order to ensure a proper and suitable supply of electricity for the execution of work. The contractor shall also provide necessary earthing keeping in view the safety requirements. The MES does not guarantee for the continuity of supply and no compensation whatsoever shall be allowed for supply becoming intermittent or for breakdown in the system. The actual position of supply point (s) for electric energy will be ascertained by the contractor from the GE before submitting his tender. Irrespective of whether he actually inspects or not, he shall be deemed to have inspected and seen the supply point (s) in consultation with GE before submitting his tender. No claim, what so ever, shall be entertained on this account.

21. Blank**22. SAMPLES OF MATERIALS/ARTICLES :-**

22.1 Materials/Articles provided by the contractor for in-incorporation in the works shall unless otherwise specified in the particular specifications, comply with the requirements of the relevant Indian Standards (IS) of the year of Publication/edition specified in the MES Schedule Part-I and shall have IS certification marking, in particular, the following items as applicable :-

SPECIAL CONDITION AND REQUIREMENTS CONTD...

(i)	All items for which payment is claimed in RAR as " Material lying at site"
(ii)	Cement
(iii)	Steel
(iv)	Point wiring, Sub main wiring
(v)	Earthing
(vi)	GI pipe
(vii)	Sheet metal enclosures
(viii)	MCB, MCCB, DB
(ix)	Geysers and Geysers' spares
(x)	Exhaust fan spares
(xi)	NRV
(xii)	XLPE cable
(xiii)	Energy meter
(xiv)	Wires & cables.
(xv)	Switches / sockets / boards
(xvi)	All electrical HT / LT cables
(xvii)	All types of light fittings.
(xviii)	Any other material as decided by GE

22.2 Blank

22.3 The tenderers are advised to inspect sample of the materials which are displayed in the office of the Garrison Engineer before submitting his tender. The tenderers shall be deemed to have inspected the samples and satisfied himself as to the nature and quality of materials, he is required to incorporate in the work, irrespective of whether he has actually inspected or not. The materials to be incorporated in the work by the contractor shall conform to or shall be superior in quality to the sample displayed and shall comply with the specifications given here-in-after. The materials to be provided by the contractor shall conform to or be superior to the sample.

22.4 The selection and use of sources for materials shall be subject to the compliance of these specifications read in conjunction with the MES Schedule and relevant India Standard Specifications.

22.5 Refer condition 10 of IAFW-2249 and Clause No 1.6 & 1.7 of MES Standard Schedule of Rates Part-I (Specifications).

22.6 The contractor shall not procure materials unless the samples are first approved by the Garrison Engineer.

22.7 The materials other than materials of local origins shall comply with the requirement of the latest IS.

22.8 The cost of testing of material shall be borne by the contractor, while quoting their rates for each item of Schedule 'A' this aspect shall be kept in mind and nothing extra shall be admissible on this account.

23. **PROPRIETARY MATERIALS/ARTICLES-**

23.1 The proprietary articles such as Anti-termite Chemical, bitumen, fibre base felt, water proofing compound, paint, etc. when brought to site shall be inspected and approved by the GE.

23.2 The quantity of proprietary articles brought to site shall be recorded in measurement book (IAFW-2261) and signed by the contractor and the Engineer-in-Charge as a check to ensure that the required quantity has been brought to site for incorporation in the works.

23.3 The proprietary materials shall be stored as directed. Those already recorded in the Measurement book shall be marked suitably for identification.

SPECIAL CONDITION AND REQUIREMENTS CONTD...

23.4 The contractor, shall on demand, produce to the GE, Original receipt vouchers/invoices in respect of the supplies, to ensure that the contractor has actually brought the articles of required quality and quantity from the authorised agent/manufacturer/supplier and also to find out the rates thereof.

23.5 The chemical required for anti-termite treatment shall be purchased from manufacturers/authorised dealers only and contractor shall produce the cash voucher etc. to prove the genuineness of the same. GE will also ensure that proper quality/quantity of chemicals are brought and incorporated in the works.

23.6 The condition 64 of the General Condition of Contracts shall be deemed to be modified to the extent mentioned here-in-after. Add the following in continuation of para 8 "Provided further the contractor may be paid advance on account to the full value of the under mentioned materials only, brought on the site, on his furnishing Guarantee Bond(s) from a Scheduled Bank for the amount of retention money which should otherwise be recoverable from him under contract :-

(i)	All items for which payment is claimed in RAR as "Material lying at site"
(ii)	Cement
(iii)	Steel
(iv)	Point wiring, Sub main wiring
(v)	Earthing
(vi)	GI pipe
(vii)	Sheet metal enclosures
(viii)	MCB, MCCB, DB
(ix)	Geyser and Geyser's spares
(x)	Exhaust fan spares
(xi)	NRV
(xii)	XLPE cable
(xiii)	Energy meter
(xiv)	Wires & cables.
(xv)	Switches / sockets / boards
(xvi)	All electrical HT / LT cables
(xvii)	All types of light fittings.
(xviii)	Any other material as decided by GE

The Vouchers/invoices will clearly indicate the contract number and the IS No. specific alternative to which the material conforms in case of various alternatives given in IS.

23.7 The Bank Guarantee Bonds shall be executed for a period of 24 months and on a form as directed by the Accepting Officer. The contractor shall further arrange to extend the period of Guarantee Bond if and when necessary, as directed by the Accepting Officer or shall furnish fresh guarantee bond(s) of similar value in lieu. It shall be noted that advance on account to the full value of materials brought on the site is permissible only in respect of fittings and fixture and other manufactured items which do not lose their identity materials.

24. RECORD OF CONSUMPTION OF CEMENT

24.1 The contractor shall maintain a pucca bound register with serially numbered pages with all pages initialled by Engineer-in-Charge against numbering showing quantities of cement records and used in the work daily and balance at the end of each day. The form of record shall be as approved by Engineer-in-Charge. The register shall be signed daily by the representative of MES and the contractor in token of verification of its correctness and shall be checked by Engineer-in-Charge, at least once a week and on the days cement is issued to the contractor.

24.2 The register shall be kept at site safe custody of the contractor representative during the progress of the work and shall on demand, be produced for verification to the inspecting officers.

24.3 On completion of the work the contractor shall deposit the cement register with the Engineer-in-Charge for record.

SPECIAL CONDITION AND REQUIREMENTS CONTD...**25. RECORD OF MATERIALS**

25.1 The quantity of materials such as cement, steel, paints, water proofing compound, chemicals for Anti-termite treatment and the like, as directed by the Engineer-in-Charge (the quantity of which cannot be checked after incorporation in the works), shall be recorded in measurement books and signed by the contractor and the Engineer-in-Charge as a check to ensure that the required quantity has been brought to site for incorporation in the work.

25.2 Materials brought to site shall be stored as directed by the Engineer-in-Charge and those already recorded in Measurement Book shall be suitably marked for identification.

25.3 Contractor shall produce vouchers/invoices from the manufacturers and/or their authorized agents for the full quantity of the following materials as a pre-requisite before submitting claims for payment for advances on account-of the work done and/or materials collected in accordance with Condition 64 of General Conditions of Contracts IAFW-2249 .

(i)	All items for which payment is claimed in RAR as " Material lying at site"
(ii)	Cement
(iii)	Steel
(iv)	Point wiring, Sub main wiring
(v)	Earthing
(vi)	GI pipe
(vii)	Sheet metal enclosures
(viii)	MCB, MCCB, DB
(ix)	Geyser and Geyser's spares
(x)	Exhaust fan spares
(xi)	NRV
(xii)	XLPE cable
(xiii)	Energy meter
(xiv)	Wires & cables.
(xv)	Switches / sockets / boards
(xvi)	All electrical HT / LT cables
(xvii)	All types of light fittings.
(xviii)	Any other material as decided by GE

25.4 The contractor shall ensure that the materials are brought to site, in original sealed containers/packing, bearing manufacturer's marking except in the case of the requirement of materials(s) being less than smallest packing.

25.5 The vouchers/invoices will clearly indicate the contract number and the IS No., specific alternative to which the material conforms in case of various alternative in IS.

26. WATCH/LIGHTING

26.1 The contractor shall at his own cost take all possible precautions to ensure safety of life and property by providing necessary fencing, barrier, light, watchman etc. during the progress of work and as directed by Engineer-in-charge.

27. MAKING GOOD

27.1 The contractor shall leave or form holes in concrete (Plain or RCC), Brick work, stone masonry and in any other situation as required for the work or as directed by the Engineer-in-charge and make good all the holes in the same mortar and mix as specified for that portion of work.

SPECIAL CONDITION AND REQUIREMENTS CONTD...**28 CLEANING DOWN**

28.1 Refer condition 49 of IAFW-2249. The contractor shall clean all floors, remove cement, lime or paint drops, clean joinery, glass panes etc, touch up all painter's work and carry out all other necessary items of work in connection there with and leave the whole premises clean and tidy to the entire satisfaction of Engineer-in-charge before handing over the items/works. No extra payment shall be admissible to the contractor for this operation.

29. ADJUSTMENT OF TAXES/LEVIES

29.1 Tendered rates are inclusive of all taxes and levies payable under the respective statutes and nothing extra will be paid on this account.

30. CONSTRUCTION LABOUR WELFARE CESS/TAX

30.1 Consequent upon promulgation of ordinance by the President of India, the Contractor is liable to pay element for construction Labour Welfare Cess/Tax. The rates quoted by the contractor shall be deemed to be inclusive of this CESS/TAX at the rate prevailing on last due date for receipt of tenders.

31. WORK ON HOLIDAY

31.1 The contractor shall not carryout any work on gazetted holidays, weekly holidays and other non-working days except when he is specially authorised in writing to do so by the GE. The GE may at his sole discretion declare any day as holiday or non-working day without assigning any reason for such declaration.

32. QUALIFIED TRADESMEN

32.1 In compliance with the condition 26 of IAFW-2249 (General Conditions of Contracts), the contractor shall employ skilled/semi skilled tradesmen who are qualified and possessing certificate in particular trade from Industrial Training Institute (ITI)/National Institute of Construction Management and Research (NICMAR)/Similar reputed and recognised institutes by State/Central Government, to execute the works of their respective trade. The number of such qualified tradesmen shall not be less than 25% of total skilled/semi skilled tradesmen required in Each trade. The contractor shall submit the list of such tradesmen alongwith requisite certificates to Garrison Engineer for verification and approval. Notwithstanding the approval of such tradesmen by GE, if the tradesmen are found to have inadequate skill to execute the work of their trades, leading to unsatisfactory workmanship, the contractor shall remove such tradesmen within a week after written notice to this effect by the GE and shall engage other qualified tradesmen after prior approval of GE. GE's decision whether a particular tradesmen possesses requisite qualification, skill and expertise commensurate with nature of work, shall be final and binding. No compensation whatsoever on this account shall be admissible.

33. PRICING OF DEVIATIONS

33.1 The principle enumerated in condition 62 of IAFW-2249 shall apply to various sections of Schedule 'A' of this contract.

34. MINIMUM WAGES PAYABLE

34.1 Refer condition 58 of IAFW-2249. Govt of India, Min of labour (Deptt of labour and Employment) vide notification dated 28 Jan 2002 have fixed minimum rates of wages as upto dated from time to time for various categories of employees under the Minimum Wages Act, 1948. The contractor shall not pay wages lower than minimum wages including allowances as fixed under said notification as updated till the date of receipt of tender. Where in any area the minimum rates of wages are also fixed by state Government for employees in employment in the construction/maintenance of buildings/roads/ runways, the labour wages as fixed vide above said updated Notification of Ministry of Labour or respective state Government whichever is higher in respect of these areas shall be deemed

SPECIAL CONDITION AND REQUIREMENTS CONTD...

minimum rates of wages payable under this contract and the contractor shall not pay lower than this minimum rates of wages.

34.2 Contractor's attention is also drawn, amongst other things to the 'explanations' to the schedule of minimum wages referred to above.

34.3 The fair wages referred to in condition 58 of IAFW-2249 will be deemed to be the same as the minimum wages, referred to above as upto dated from time to time.

34.4 The contractor shall have no claim whatsoever, if on account of local factor and/or regulations, he is required to pay the wages in excess of minimum wages as described above during the execution of work.

34.5 Schedule of min wages has not been enclosed alongwith tender documents. However, contractor shall be deemed to have verified the minimum wages payable as on the last due date of receipt of tender.

35. SITE CLEARANCE

35.1 Irrespective of what is mentioned in special conditions or anywhere in this contract, penal recovery rates for non-clearance of site after completion of works, to the entire satisfaction of the Engineer-in-charge's, will be as under :-

- | | | | |
|------|-------------------------|---|----------------------------|
| (i) | Non clearance of Debris | : | Rs 100.00 Per cum per week |
| (ii) | Non repairing of road | : | Rs50.00 Per RM per week |
- (Cut for laying water supply or electric line)

36. TESTING OF MATERIALS

36.1 The cost of testing of materials as listed in Appendix 'A' except material issued under Schedule 'B' shall be borne by the contractor.

36.2 Rates given under Col 7 of Appendix 'A' shall be for per lot of samples.

36.3 A level tests for works costing 100 Lakhs : The contractor may set up site laboratory at his option for works costing 100 lakhs and above. The other stipulations will be same as specified in proceeding para. However, in case the contractor has not set up the site laboratory and tests are carried out in zonal or any other laboratory approved/set up by GE, a the recovery shall be made at rates given in Appendix 'A' for tests carried out in zonal lab or otherwise as per actual rates in case the tests are carried out in other labs. Testing charges will be deducted from the RARs irrespective of the test result for such tests.

36.4 B&C level tests: For tests of 'B' and 'C' level as indicated in Appendix 'A' charges for the same shall be borne by the contractor at the rates indicated in Appendix 'A', only if the test results disclose that materials are not conformity with provisions of the contract. However, if the tests results disclose that materials are in-conformity with the provisions of the contract, no recovery shall be effected from the contractor.

36.5 The recoveries on account of testing charges wherever applicable shall be effected from the running account payments due to the contractor payable after completion of the respective test or whenever the test is due whichever is earlier.

37 FEES CHARGEBALE BY POLICE AUTHORITIES FOR VERIFICATION OF ANTECEDENTS

37.1 Verification of antecedents of Proprietor/Partners/Directors of the firm in connection with issue of tender and of Enlistment shall be Govt. responsibility and accordingly payment to police authorities towards verification of antecedents shall be borne by Govt.

SPECIAL CONDITION AND REQUIREMENTS CONTD...

37.2 Verification of antecedents of Contractor's representatives/labour deployed at site in connection with execution of work under the contract, as per security requirement of User Unit/Installation shall be the responsibility of the contractor and all expenses in connection with verification of antecedents by Police Authority/Security Agency shall be borne by the contractor.

38. VALIDITY OF TENDER

38.1 The tender shall remain open for acceptance for a period of **60 (Sixty days)** from bid submission end date as mentioned in web site. For the purpose of calculating this period, the day on which the tenders are due to be submitted shall be excluded.

39.& 40. Blank**41. SITE FOR EXECUTION WORK**

41.1 Site for execution of work shall be available as soon as the work is commenced on the date as mentioned in the Work Order No 1. However, in case due to unavoidable circumstances it is not possible to make the entire sites available on the date of the commencement, the contractor shall have to arrange his programme accordingly. No claim whatsoever for not getting the entire site on the date of commencement of work & for giving the site gradually shall be tenable.

42. RECOVERY CHARGES FOR TESTING OF MATERIALS

42.1 Where testing of contractor's materials is carried out in zonal/National test house/SEMT wing/Engineering college by the department, the contractor shall be liable to pay the testing charges as stated in Appendix 'A' to particular specifications and shall be recovered from the contractor's running payment/final bill as the case may be.

43. SAFETY PRECAUTION

43.1 The contractor shall take every/precaution to control traffic on road keeping danger boards, necessary lighting arrangements, fencing and watchman to avoid any damage. In case due to excavation or others the road is to be blocked the contractor shall, without any extra cost to the Govt. provide separate bypass so that normal traffic is not disturb.

43.2 Any damages to the existing road/building etc, shall be made good by the contractor with the same specifications as per existing work, without any extra cost to the Govt. In the event of contractor not fully complying with the above provisions to the satisfaction of the GE, the GE may provide the same for which the expenses incurred shall be recovered from the contractor.

44. REIMBURSEMENT/REFUND ON VARIATION IN PRICES

44.1 Ref condition of 63 of IAFW-2249

45. RETENTION MONEY/COMPENSATION FOR DELAY

45.1 Refer condition 64 of IAFW-2249 (Advances on account) and Condition 50 of IAFW-2249(Compensation for Delay).

45.2 For the purpose of calculating retention money and liquidated damages under condition 64 of IAFW-2249 and compensation for delay in completion of work under condition 50 of IAFW-2249, the value of contract as revised by above mentioned price variation under modified condition 63 of IAFW -2249 shall be taken into account.

46. OFFICIAL SECRET ACT

SPECIAL CONDITION AND REQUIREMENTS CONTD...

46.1 Refer Condition 24 of General Condition of Contract IAFW-2249. The contractors attention is invited to Indian Official Secret Act 1923 (xxx of 1923) particularly Sec 5 thereof. The contractors shall be bound by the provision of this Act.

47. DAMAGE TO EXISTING STRUCTURE/BUILDING

47.1 Any damage caused to the existing structure during the execution of work shall be made good by the contractor at his own cost and the site of work left clean and tidy on completion. Rectifications/making good etc. shall conform to the standard of materials originally used in the work and finished work shall match with existing work in all respects to the entire satisfaction of the GE. In case of any dispute on this account the matter shall be referred to the CE whose decision in writing shall be final, conclusive and binding.

48. ROCK MET IN EXCAVATIONS

48.1 If during excavation, rock is met with GE shall be informed of this in writing by the contractor. The nature/type of rock met with shall be decided by the GE, whose decision is final and binding. If the nature of rock met with is 'Hard Rock' the same shall be priced and paid as excavation in hard rock at the rates as applicable to this contract. Hard rock obtained from excavation shall be properly stacked, measured and recorded in measurement book and will be the property of the Contractor. Credit at the rate of Rs 500.00 per cubic metre of hard rock obtained shall be recovered from the contractor. The measurement shall be signed by Engineer-in-charge and contractor. Hard rock obtained thus can be reused in the execution under this contract subject to fulfillment of requisite specification specified here-in-after and after written approval of Garrison Engineer.

49. FEMALE LABOUR

49.1 If the contractor desires to employ female labour on works to be carried out inside the area of a Factory, Depot, Park etc and a female searcher is not borne on the authorised strength of the Factory, Depot, Park etc, at the time of submission of the tender, he shall be deemed to have allowed in his tender for pay and allowances etc. for a Female Searcher (Class (IV) servant/GP 'D' servant)calculated for the period, female labour is employed by him inside that area. If more than one contractor has/have to employ female searcher in addition to the authorised strength of the Factory, depot, park etc the salary and allowances paid to additional female searcher(s) shall be distributed on an equitable basis between the contractors employing female labour taking into consideration the value and period of completion of their contracts. The GE's decision in regard to the amount recoverable on this account from any contractor shall be final and binding.

50. RE-IMBURSEMENT/REFUND ON VARIATION IN "TAXES DIRECTLY RELATED TO CONTRACT VALUE

(a) The rates quoted by the contractor shall be deemed to be inclusive of all taxes/cessesviz GST, Central & State Govt GST on works contracts, duties, Royalties, Octroi& other levies payable under the respective statutes. No other levies, and/or imposition/abolition of any new/existing taxes/cesses, duties, Royalties, Octroi& other levies shall be made except as provided in para (b) here-in-below.

(b) (i) The taxes/cesses which are levied by Govt at certain percentages rates of contract sum/Amount shall be termed as "taxes directly related to contract value" such as GST, Central & State Govt GST on works contracts, Labour welfare cess/tax and like as applicable but excluding Income Tax. The tendered rates shall be deemed to be inclusive of all "taxes directly related to contract value" with existing percentage rates as prevailing on last due date for receipt of tenders. Any increase in percentage rates of "taxes directly related to contract value" with reference to prevailing rates on last due date for receipt of tenders shall be reimbursed to the contractor and any decrease in percentage rate of "taxes directly related to contract value" with reference to prevailing rates on last due date for receipt of tenders shall be refunded by the contractor to the Govt/deducted by Govt from any payment due to the contractor. Similarly imposition of any new "taxes directly related to contract value" after the last due date for receipt of tenders shall be reimbursed to the contractor and abolition of any "taxes directly related to contract value" prevailing on last due date for receipt of tenders shall be refunded by the contractor to the Govt/deducted by the Govt from the payments due to the contractor.

SPECIAL CONDITION AND REQUIREMENTS CONTD...

(ii) The contractor shall, within a reasonable time of his becoming aware of variation in percentage rates and/or imposition of any further “taxes directly related to contract values”, give written notice thereof to the GE stating that the same is given pursuant to this Special Condition, together with all information relating thereto which he may be in a position to supply. The contractor shall submit the other documentary proof/information as the GE may require.

(iii) The contractor shall, for the purpose of this condition keep such books of account and other documents as are necessary and shall allow inspection of the same by a duly authorised representative of Govt, and shall further, at the request of the GE furnish, verified in such a manner as the GE may require, any documents so kept and such other information as the GE may require.

(iv) Reimbursement for increase in percentage rates/imposition of “taxes directly related to contract value” shall be made only if the contractor necessarily & properly pay additional “taxes directly related to contract value” to the Govt, without getting the same adjusted against any other tax liability or without getting the same refunded from the concerned Govt Authority and submits documentary proof for the same as the GE may require

51. DEFECT LIABILITY PERIOD:

51.1 In this connection please refer condition 46 of IAFW-2249 (General Conditions of Contracts).

52 Blank

53. PAYMENT OF WAGES TO WORKMEN :-

53.1 Tenderer shall submit proof of payment of wages to Labours engaged by him as per Govt policy issued time to time to GE as and when asked by GE. No payments to contractors/ firms will be made unless proof of payment of wages to the workmen is submitted by the contractors/ firms. In case payments are made in current coin or currency notes, certificate will be submitted by the contractors/ firms along with undertaking by the concerned workmen asking for payment other than by cheque or by crediting in the bank account of the employee/workman.

54. EPF

54.1 Tenderer shall have Provident Fund Code Number and that he shall ensure compliance of the EPF & MP Act 1952 and also by the sub-contractor, if any engaged by him in this work. The contractor shall provide copy of EPF registration to GE as and when demanded.

55. HANDING OVER OF SITE

55.1 Site for execution of work will be available as soon as the work is awarded. In case it is not possible to make the entire site available on the award of work, the contractor will have to arrange his working programme accordingly. No claim whatsoever, for not giving entire site on award of work and forgiving site gradually, will be tenable.

Signature of Contractor

Dated: 2025

AGE (Contracts)
for Accepting Officer

PARTICULAR SPECIFICATION**1. GENERAL REQUIREMENT**

- 1.1 These particular specifications shall be read in conjunction with MES Schedule 2009 (Part I) and 2020 (Part II).
- 1.2 General specifications referred to mentioned in IAFW-2249 (1989 print) and other tender documents mean specifications including other provisions & preambles given in MES Schedule 2009 (Part I) and 2004 (Part-II) including amendments and errata as mentioned here-in-before.
- 1.3 Reference to some paragraphs of MES Schedule has been made in these particulars specifications but other paragraphs and provisions as applicable are also be followed e.g. reference to paras pertaining to general workmanship for brick work, block walling, joinery, iron and steel work, etc, have not been made but provisions therein as required for work are applicable.
- 1.4 Where specifications for any item of work are not given in MES Schedule or in these particular specifications, specification given in relevant Indian Standard specification or code of practice shall be followed.
- 1.5 Where specifications/provisions given in these particular specifications are at variance with the provisions/specifications given in MES Schedule, Specifications provisions given in these particular specifications shall be followed.

1.6 SCOPE OF WORK

- 1.6.1 This contract includes for the full, final and entire completion of works described in schedule 'A' and specified in these particular specifications and/or shown in drawings forming part of this tender.

1.7. MATERIALS.

- 1.7.1 All material to be supplied by the contractor for incorporation in the work shall conform to relevant specification. Any material needed for incorporation in the work, if not contained in any where in the contract documents, the specification of such materials proposed to be incorporated in the work shall be got approved in writing from GE before their incorporation in work by the contractor without any price adjustment.
- 1.7.2 As far as practicable all manufactured materials/articles other than those manufactured in contractor's workshop at site shall bear IS certification marks. In case any article not bearing IS certification marks but conforming to a relevant IS sample of the same shall be got approved in writing from Garrison Engineer before its incorporation in work. The contractor shall submit sufficient evidence to the GE to show that the articles conform to the relevant specifications and no price adjustment shall be made on the account.
- 1.7.3 Manufactured materials/articles shall be brought at site in original sealed containers, packing-bearing manufacturers marking unless the quantity required is in fraction of smallest packing. Letters conveying approval of samples/materials by Garrison Engineer shall interalia mentions the sources of supply, name of manufacturer, trade name/brand (if applicable) and reference to Clause of tender documents containing specification of particular material.

1.8 PRODUCTION OF PURCHASE VOUCHERS FOR MATERIALS PROCURED

The contractor shall produce purchase vouchers from the manufacturer and/or their authorised agents for the full quantity **following materials as applicable** as a prerequisite before submitting claim in RAR as material lying at site for payment of advances on account materials collected in accordance with condition 64 of General Conditions of Contracts, IAFW-2249: -

- (a) Materials, which loose identity after incorporation such as water proofing compound, paint, chemicals for anti-termite treatment etc.
- (b) MS/ CI/ GI/ DI pipes, fittings and pre-moulded bituminous boards, etc.
- (c) Pipes and fittings.

PARTICULAR SPECIFICATION CONTD....

- (d) Steel windows and ventilators.
- (e) Factory made door shutters, particle boards, plywood etc.
- (f) Major E/M items such as DG Set, Transformer, VCB/OCB, LT/HT cable, Panel Board, ACSR Conductor, Poles etc
- (g) Electrical & water supply fittings/fixtures where name of manufacturers / brands are specified or approved.
- (h) Bitumen & Road marking Paint
- (j) Cement.
- (k) All steel sections (including reinforcement).
- (l) Epoxy compound for water proofing treatment.
- (m) Polymeric water proofing membrane.
- (n) Sealing compound
- (o) Pre moulded bituminous filler etc

1.9 When the cost of each category of materials for entire contract is less than Rs 2500/- productions of bills may not be insisted upon, if the GE is otherwise satisfied with the quality and quantity of materials.

2. EXCAVATION AND EARTH WORK.**2.1 PREPARATORY WORK:**

2.1.1. Before setting out the layout of building and commencing the construction, contractor shall carry out the preparatory work such as removal of grass, bushes, vegetation etc and trimming/surface dressing of the area as per Clause 3.6, 3.8 and 3.10 of MES Schedule Part-I to the entire satisfaction of Engineer-in-Charge. The 'area' referred to implies the entire building plot extending upto three metres all around from the outer edge of plinth protection of the building. The cost of such work as may be necessary shall be deemed to be included in the contractor's quoted lump sum.

Note : In case buildings to be constructed under this contract are located on the area of site clearance, above condition number 2.1 shall not be applicable.

2.2 EXCAVATION

2.2.1 Soft/loose soil, hard/dense soil and mud shall be classified as any type of soils.

2.2.2 Unit rates for building in Schedule 'A' Part-I shall include for excavation and earth work in any type of soil as aforesaid.

2.2.3 However, in the event of deviation involving excavation and earth work, the rate shall be the average of loose/soft soil and hard/dense soil.

2.2.4 The measurement of excavation shall be as explained in MES Schedule (Part-II) with the exception that separate quantities of soft/loose soil, hard/dense soil and mud shall not be worked out but these materials shall be grouped together as any type of soil as aforesaid.

2.2.5 Boulders and stones obtained from excavation shall be sorted out and neatly stacked at site by the contractor as directed by the Engineer-in-Charge, without any extra cost to the Govt. The aforesaid boulders and stones in stacks shall be issued to the Contractor under Schedule 'B'. These boulders may be used in the work in soling/WBM/Hard Core/hand packing in retaining wall/Filling in wire crates etc, after breaking them into specified size as approved by GE. Balance boulders/stones, if required will be arranged by the Contractor and nothing extra shall be payable on this account. In case the quantity of Stone /boulders stones is more than what can be incorporated in the work, the balance quantity issued under Sch 'B' shall be the property of contractor.

2.2.6 If rock (soft/hard/disintegrated) is met at site, contractor shall immediately notify the fact to the GE in writing, who will after the verification, regularise the change through a proper deviation order.

PARTICULAR SPECIFICATION CONTD....**2.3. FILLING IN TRENCHES/UNDER FLOORS AND REMOVAL**

- 2.3.1 The approved earth obtained from excavation in foundations shall be used for filling in trenches, under floors and any other situation as specified after removing big stones, grass roots and vegetable moulds, or other organic matter. Earth mixed with small stones/pebbles (if approved by GE) is permitted for use in filling under floors and foundations. The filling around pipes, after the pipes are laid and tested shall however be with earth-free from pebbles/stones. Any additional earth required for the purpose of filling shall be arranged by the contractor at no extra cost to the department from outside of defence land.
- 2.3.2 Filling under floors/sides of trenches shall be in layers not exceeding 250mm thick, and Each layer shall be watered and well rammed.
- 2.3.3 Surplus spoil (obtained in Schedule 'A' Part-1) shall be removed and spread at places as directed by the Engineer-in-Charge, to a distance exceeding 100 metres, but not exceeding 200 metres, and leveled as directed by Engineer-in-Charge.

2.4. TRENCHES FOR FOUNDATIONS AND PIPES

- 2.4.1 The excavation shall be restricted to dimensions shown on the drawings. Excavation made, if any, in excess of required depth/width shall be made good by the contractor with cement concrete PCC M-10(Nominal mix) without extra cost to the Govt.
- 2.4.2 The bed of the trenches, if in soft or made up earth, shall be watered and well rammed and any depressions thus formed shall be filled with approved earth as required to the level and slope as directed by Engineer-in-Charge.

2.5 DRESSING AROUND BUILDINGS

- 2.5.1 After construction and before handing over any building, the area around, as defined in Clause 2.1 here-in-before shall be dressed without extra cost to the Govt. Spoil obtained from surface dressing shall be removed to a distance exceeding 50 metres and not exceeding 100 metres, spread and leveled as directed by Engineer-in-Charge.

2.6 FOUNDATION AND PLINTH

- 2.6.1 Any change in foundation/plinth necessitated due to undulating ground, which may have to be carried out as per the decision of the GE, shall be adjusted through a proper deviation order.
- 2.6.2 For the purpose of reckoning the depth of the foundation, the average level of the ground after surface dressing shall be considered except at the places where cutting is involved.

2.7 "BLANK"

2.8 HARD CORE

- 2.8.1 Hard core shall be of hard broken stone or boulders broken to gauge not exceeding 63mm. The material of hard core shall be well graded for providing dense and compact sub grade. Hard core shall be deposited, spread and leveled in layers not exceeding 15cm thick and watered and well rammed to a true surface and compacted with sufficient fine material. The thickness of hard core specified or indicated in the drawing, is the thickness after consolidation. Where thickness has not been mentioned it shall be 150mm consolidated.

2. CONCRETE WORK

PARTICULAR SPECIFICATION CONTD....**3.1 CEMENT:**

3.1.1 Cement will be procured by the contractor at his own arrangements. The cost of cement, its transportation, storage, testing charges, its accounting and preservation etc till consumed in work shall be borne by the contractor.

3.2 TYPE OF CEMENT

3.2.1 Type of cement to be used in this contract shall be ordinary portland cement, grade 43, conforming to IS-8112-1989 in all situation. However, the contractor may also use Portland Pozzolana cement conforming to IS-1489-1991 at his discretion without any price adjustment except in overhead tanks, sumps, water retaining structure and the like wherein only OPC shall be used.

3.3 PROCUREMENT.

3.3.1 Cement supplied by the contractor shall be procured from main producers of cement

3.3.2 The following are the approved main cement manufacturers company of OPC and PPC.

Sr No	Company Name	Address	Approved grade of cement
1.	M/s Cement Manufacturing Company Ltd	MayurGraden, 2nd Floor, opp- Rajuv , Bhawan, GS Road, Guwhati-781005 , Ph- 0361-2462215/216/513 , Fax: 0361-2462217 , Email: cmclghy@cml.co.in	OPC-43, 53 Grade & PPC
2.	Ultra Tech Cement	'B' Wing . 2n Floor, Mahakali Caves Road, Andheri (East), Mumbai- 400093	OPC-43 Grade, PSC & PPC
3.	OCL India Ltd	Rajgangpur, Dist- Sundargarh, Orissa, Pin- 770017, Ph- 0361-2668504 , Fax-2662131	OPC-43 Grade & PPC
4.	Dalmia Cement (Bharat) Ltd	Dalmiapuram, Disttiruchirappalli, Tamil Nadu – 621651	OPC-43 Grade & PPC
5.	M/sChettinad Cement Corporation Ltd	4 Floor, Rani Seethai Hall Building, 603, Anna Salai Hall, Chennai-600006, Tel No. 044-42951800, Fax No. 044-28291558, EMail: - info@chettinadcement.com Website- www.chettinadcement.com	OPC-43 Grade, PSC & PPC
6.	M/S Heidelberg Cement India Ltd	9th Floor, Infinity Tower "C", DLF Cyber City, Gurgaon, Haryana -122002, Ph- 0124- 4503700, Fax- 0124-4147698	PPC
7.	M/S My Home Industries I Ltd	9 Floor, Block-3, My Home Hub, I Madhapur, Hyderabad- 500081, Ph- 040-66929696, Fax- 040-66929797198	OPC-43 Grade & PPC
8.	M/S Parasakti Cements Ltd	REGD OFFICE:-123/3 RT, Plot # 8-3-214/21 , Srinivasa Nagar Colony(West), Tel- 040-44119100 /200, Fax- 040-23747562	OPC-43 Grade & PPC
9.	M/S Zuari Cement Ltd	No. 6, MC Nichols Road, Chetpet Chennai - 600031, Ph. 044-28363958, 28365047	OPC-43 Grade & PPC
10.	M/S Toshati Cements Pvt Ltd	123/13RT, 2nd Floor Sanjeeva Reddy Nagar, Hyderabad -500038, Ph 040-2300675 CORPORATE OFFICE 9-14-13, C.B.M Compound, Near Mehar Apartments, Visakhapatnam-530003	OPC-43 Grade, PSC & PPC
11.	MIS Saifco Cement Pyt	Opposite Post Office, Batwara, Srinagar - 190004 (J&K), Ph 0194-2466061	OPC-43 Grade

PARTICULAR SPECIFICATION CONTD....

Sr No	Company Name	Address	Approved grade of cement
12.	MIS Prism Cement Ltd Prism	3/113, VivekKhand, Gornto Nagar, Lucknow -226010, Ph. 0522- 2396847, 2397589	OPC-43 Grade & PPC
13.	MIS Shree Guru Kripa cement (Pvt) Ltd	4/4 Trikuta Nagar Jammu, Phone No 0191-2472043	OPC-43 Grade & PPC
14.	M/S Barak Valley Cements Ltd	Debendra Nagar, BadarpurGhat, Distt :- Karimganj Assam -788803, Ph. 03845-269258	OPC-43 Grade
15.	M/s Dhruv Industrial Company Ltd.	49/27 Sinha Market General Ganj, Kanpur-208001	OPC-43 Grade
16.	Madras Cement	Auras Corporate Centre, 98-A, Dr., RadhakrishnanSalai, Mylapore, Chennai -600004, Ph-044 28478666	OPC-43 Grade & PPC
17.	SaurashtraCemen-t	Gala No A-1, Ground Floor. Udhog, Sadan No 3 MIDC, Central Road, Andheri (East), Mumbai- 400093	OPC-43 Grade & PPC
18.	Lafarge Cement	Crescenzo, 1004, 8-wing , 10 Floor, C-38/39, G Block, BandraKurla, complex, Bandra (East). Mumbai-400051	OPC-43 Grade & PPC
19.	The Associated Cement Companies Ltd	414-421 , Splendor Forum (4th Floor} , 3, District Centre, Jasola, New Delhi – 110044, Ph-011 46583600	OPC-43 Grade & PPC
20.	Grasim Industries Ltd	Birlagram. Nagda, Madhya, Pradesh, Pin- 456331 Phone- 07366-246760/246766	OPC-43 Grade & PPC
21.	The India Cement	Building, 827, . Anna Salai, Chennai- 600002	OPC-43 Grade & PPC
22.	The India Cement	Dhun Building, 827, Anna Salai, Chennai-600002	OPC-43 Grade & PPC
23.	Andhra Cement Ltd	Durga Cement Works, Durgapuram, Dechepalli Guntur, Andhra Pradesh, Pin-522414 , Ph-0863 257429	OPC-43 Grade & PPC
24.	Century Cements	Industry House, 159 Church gate Reclamation, Mumbai -400020 , Ph-22-22025936	OPC-43 Grade & PPC
25.	Binan Cement Ltd	Mercantile. Chambers. 12, J.N Heredia Marg, Ballard Estate, Mumbai -400001 Ph-022- 22690506/10	OPC-43 Grade & PPC
26.	Mangalam Cement Ltd	PO Adityanagar, Morak, DistKota, Rajasthan- 326520 Ph-9351468076	OPC-43 Grade & PPC
27.	Birla C orporation Ltd	Birla Building (3rd &4th Floor) ·9/1 , R.N Mukherjee Road, Kolkata -700001, Ph-033-30573700	OPC-43 Grade & PPC
28.	Orient Cement	5-9-22/57/0, 2nd and 3rd Floor, GP Birla Centre, Adarsh Nagar, Hyderabad-500063, Pin-044 23688600	OPC-43 Grade & PPC
29.	Shree Cement	Bangur Nagar, Beawar, Dist:-Ajmer, Rajasthan- 305901 Ph -01462 228101-06	OPC-43 Grade & PPC
30.	J K Cement		OPC-43 Grade & PPC
31.	J K Lakshmi Cement Ltd	Jaykaypuram, Dist-Sirohi, Rajastt)aQ .. Ph- 02971 244409/10	OPC-43 Grade & PPC
32.	JaypeeRewa Cement		OPC-43 Grade & PPC
33.	Ambuja Cement Ltd	Kodinar, PO-Ambujanagar, Taluka-Kodinar, DistJulyagadh, Gujarat-362715, Ph-02795 237000	OPC-43 Grade & PPC

PARTICULAR SPECIFICATION CONTD....

Sr No	Company Name	Address	Approved grade of cement
34.	M/s Calcom Cement India Ltd (NE region only)	Silpukhuri South Bank, Guwahati, Assam, Pin-781003 Ph-0361-2668504, Fax-2692131, Website : www.calcom.co.in	OPC-43 Grade & PPC
35.	M/S Meghalaya Cements Ltd	Lohia House, M. G Road Factory Bazar, Guwahati-781001. Tel 0361 -260367/671	OPC-43 Grade
36.	M/S Narayan Kar & Associates Pvt Ltd	BodhJulygnagarInd, Growth Centre , P.O Khayerpur-799008 West Tripura, Ph. 0381-2514927/4786	OPC-43 Grade & PPC
37.	Star Cement Manghalaya	Lumshnong, PO-Khaliehriat, Dist-Jantia Hills, Meghalaya, Ph-03655 278215/16/18	OPC-43 Grade & PPC

3.3.4 While using PPC, the following requirements shall be met with:-

- a) PPC shall meet the strength criteria of 43 grade OPC as laid down in IS 8112 - 1989.
- b) The minimum period before striking formwork given in Clause 11.3.1 of IS-456 shall be suitably modified at site by the GE. The contractor shall not claim any extra cost on this account.
- c) Mixing of OPC and PPC shall not be allowed in a work.
- d) While procuring PPC, the following requirements are to be ensured and certificate to that effect from the manufacturer shall be submitted by the contractor for Each batch:-
 - (i) The quality of fly ash used is strictly as per IS-1489 (Part-I)-1991.
 - (ii) The fly ash is inter ground with clinker and not mixed with clinker.
 - (iii) The dry fly ash is transported in closed containers and stored in silos. Only pneumatic pumping has been used.
 - (iv) The fly ash has been received from thermal power plants using high temperature combustion above 1000 Degree Centigrade.
 - (v) The fly ash content in PPC is less than 25% to achieve desired consistency.

3.3.5 Cement brought by the contractor at site(s) of work shall be in jute/polythene/paper bags containing 50Kg cement in Each bag originally sealed by manufacturer. Before allowing any on account payment for materials at site, test check shall be carried out to ascertain average weight of cement per bag.

3.3.6 Contractor shall produce purchase vouchers, test certificates and other valid documentary proof to the entire satisfaction of the GE for entire quantity of Each consignment to prove that cement has been purchased from the main producers as in para 3.2.2.1 above. The contractor shall also submit particulars of the manufacturer of cement for every lot for verification by the site staff and GE.

3.4 TESTING OF CEMENT

3.4.1 The contractor shall submit the manufacturer's test certificate in original along with the test sheets giving the result of Each physical test as applicable and the chemical composition of the cement or authenticated copy thereof, in accordance with BIS provisions duly signed by the manufacturer or his authorised representative with Each consignment. The Engineer-in-Charge shall record these particulars in the Cement Acceptance Register (Format given in Appx 'B' attached herewith).

3.4.2 Cement brought to site of work shall remain the property of Govt. Contractor shall in no case, remove any bag of cement unless permitted in writing by the GE. In addition to manufacturer's test certificate, the GE shall also take random samples of cement drawn from various lots of Each consignment as specified in IS Codes and get them tested from any one of the Govt. approved laboratories at his discretion or from SEMT CME, Regional

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Research Laboratory or Zonal Laboratory, all as per IS-3535(Method of Sampling Hydraulic Cement), IS-4031 (Method of Physical Test of Hydraulic Cement)1985 and IS-4032 (Method of Chemical Analysis of Hydraulic Cement). Irrespective of results, cost of materials for such samples, cost of requisite handling & conveyance etc shall be borne by the contractor. Cement from Each consignment shall be allowed to be incorporated in the work only after the GE is satisfied with the quality of cement brought by contractor.

- 3.4.3 It shall be ensured that tested and untested cement is segregated and stored separately with distinct identification. Cement of different brands shall be stacked separately by the contractor. The stacking of cement shall not be more than 10 bags high.
- 3.4.4 Cost of testing undertaken as per provision in Clause 4.3.1 of SSR Part-I shall also be borne by the contractor.
- 3.4.5 If the test results on samples of a particular consignment are not within acceptable limits, the matter shall be referred to the Accepting Officer, whose decision regarding acceptability of such cement with price adjustment or removal from the site shall be final and binding. Cement so rejected or any bag of cement in godown showing indication of any setting shall be segregated and removed by contractor from the site within a week's time, with due permission of the GE for their removal.

3.5 STORAGE/CONSUMPTION OF CEMENT

- 3.5.1 Cement in bags shall be stored in proper leak proof/damp proof storage godown, over at least a 20cm high platform, away from walls in such manner as to prevent deterioration due to moisture or intrusion of foreign matter, all as specified in Clause 4.3.1 of SSR Part-I.
- 3.5.2 For the purpose of keeping a record of cement procured and consumed in works, the contractor shall maintain a properly bound register in the form approved by the Engineer-in-Charge showing all procurements, quantity used in the work and balance in hand, at the end of Each day and such other information as may be required to control the consumption of cement. Pages of the register shall be numbered and initialed by Engineer-in-Charge. This register shall be signed daily by the contractor or his representative as token of correctness of the entries made. In token to check, it shall be signed by MES representative also as follows :-
- a) Daily by JE(Civil) in-charge of works.
 - b) Twice in a week by the Engineer-in-Charge.
- 3.5.3 The said register shall remain at site of work, in the safe custody of the contractor and on demand same shall be produced for verification of Inspecting Officer. On completion of the work, the register shall be returned to MES. The cement godown shall be provided with two locks on Each door. The key of one lock on Each door shall remain with the Engineer-in-Charge or his authorised representative and that of the other lock with the contractor's authorised agent at site of work so that cement is removed from the godown according to daily requirements and with the knowledge of both the parties.
- 3.5.4 Foregoing provisions shall not, however absolve the contractor of his responsibility of incorporating required quantity of cement in various items of works as per contract provisions.
- 3.5.5 Cement shall be used in order of which it is received. It shall be ensured that only one type/make of cement is used in any structural member.
- 3.5.6 Cement shall not be more than 02 months old and shall be consumed within next 02 months of its packing.

3.6 DOCUMENTATION

- 3.6.1 The contractor shall submit original purchase vouchers from the main producer for the total quantity of cement supplied under Each consignment to be incorporated in the work. All consignment received at the work site shall be inspected by the GE along with the relevant documents before acceptance. The original vouchers and the test certificates shall be defaced by the Engineer-in-Charge and kept on record in the office of the GE duly authenticated and with cross reference to the control number recorded in the Cement Acceptance Register. The cement Acceptance Register will be signed by the JE(Civil), Engineer-in-Charge, GE and the contractor. The

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Accepting Officer may order a Board of Officers for random check of cement and verification of connected documents. The entire quantity of cement shall be suitably recorded in the Measurement Book also for record purposes before incorporation in the work, as "Not to be abstracted" indicating the voucher number with dates, quantity, date of manufacture/expiry date etc. It shall form the basis to allow advance on account through RARs.

3.7 SCHEDULE OF SUPPLY

3.7.1 The Contractor shall ensure that procurement action is taken immediately after acceptance of the contract so as to adhere to schedule of activities as per CPM Net Work.

3.7.2 The periodicity of striking the form work and curing for works with ordinary Portland cement shall be as stipulated in Clause 11.3 and 13.5 of IS 456 of 2000 and the same shall be suitably modified by the GE when PPC is used. No claim, whatsoever on his account shall be admissible.

3.8 AGGREGATES

3.8.1 Aggregates for concrete work shall conform to specifications all as specified in Clauses 4.4.1 to 4.4.7 of MES Schedule Part-1.

3.9 FINE AGGREGATE (SAND)

3.9.1 Grading for fine aggregate shall be within the limits of grading zone I to III as given in Clause 4.4.7.2 of MES Schedule Part-I. Crushed stone sand of grading I to IV may be used for concrete and masonry work only.

3.10 COARSE AGGREGATE

3.10.1 Unless specified otherwise in these particular specifications coarse aggregate for all concrete work in all situations shall be graded crushed stone aggregate of approved quality. The contractor may however use graded stone aggregate/all in aggregate graded of approved quality in lean concrete under foundation and sub base of floor (in all parts of Sch 'A') without any price adjustment. However, two types of aggregate shall not be mixed.

3.11 GRADING OF COARSE AGGREGATE

3.11.1 Graded aggregate of nominal sizes given hereunder, shall be used, unless specified otherwise in the specifications here-in-after:-

a) REINFORCED CEMENT CONCRETE :

- | | | |
|---|---|--------|
| (i) For elements of depth/thickness more than and including 100mm | : | 20mm |
| (ii) For elements of depth/thickness less than 100mm | : | 12.5mm |

NOTE: However, in no case the nominal size of aggregate shall be greater than one fourth the minimum thickness of the member and further it should conform to the requirement given in Clause 5.3 of IS 456-2000.

b) PLAIN CEMENT CONCRETE:

- | | | |
|-------------------------------|---|--------|
| i) Under 30mm thickness | : | 12.5mm |
| ii) 30 to 80mm thickness | : | 20mm |
| iii) Exceeding 80mm thickness | : | 40mm |

3.12 WATER

3.12.1 Water shall conform to the requirements stipulated in Clause 5.4 of IS 456-2000.

3.13 ADMIXTURE

3.13.1 Admixture, if used shall conform to the requirements stipulated in Clause 5.5 of IS 456-2000.

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3.14 MIX OF CONCRETE FOR WORKS (COVERED UNDER SCHEDULE 'A' PART-1)

3.15 **MIX OF CONCRETE:** Unless otherwise specified either in drawings or in the specifications elsewhere), mix of cement concrete in various situations. shall be as under:-

(a) Lean concrete in foundation for brick wall, dwarf wall, steps, : PCC of grade M-7.5 (Nominal Mix)
lean concrete under plinth beams and below RCC Col footings

(b) PCC in plinth protection, PCC cills, Coping and PCC block for : PCC of grade M-10 (Nominal Mix)
holder bats, back of pressed steel door frames and plugging for scaffolding holes.

(c) All RCC work of building work : Grade M-25 (Design mix) as per IS-456 of 2000.

(d) Overhead reservoir : As per drawing

(e) PCC in bed plate, benching, padding to staging for PVC : Grade M-15 (Nominal Mix)
storage tank and per-cast articles which are not specified here-in-after

3.16 **SPECIFICATION FOR DESIGN MIX CONCRETE**

This shall be done as per clause No 4.11.2.1 on page 60 and 61 of MES SSR Part-I. Volumetric mixing of concrete will not be permitted. Weigh batching along with system of measured water either through calibrated pump or calibrated tank is to be adopted strictly for all design mix concrete work.

3.17 **BATCHING**

Irrespective of what is specified in MES SSR and else wherein these tender documents, weigh batching & mixing shall be governed by following specifications:

- a. The weigh batcher shall be Automatic/Semi-automatic type.
- b. Weigh Batchers shall comply to IS latest IS 4925:2004.
- c. Capacity of weigh batcher shall be more than 8 cum/ hr.
- d. Weigh batcher shall be computerized and shall have automated water control system
- e. Weigh batcher shall have printing arrangements for batching report.
- f. Weigh batching along with system of measured water either through calibrated pump or calibrated tank is to be adopted strictly for all design mix concrete work.

The contractor shall be instructed to furnish the details of manufacturer of batching plant along with model number to the GE. The GE shall first approve those details before use of that plant.

3.18 **MIX PROPORTION AND STRENGTH**

(i)	Strength to be achieved	As per IS-456-2000
(ii)	Type of cement	As per clause 4.1 here-in-before
(iii)	Target mean strength of cement concrete	To be taken as per mix designed as per IS-10262 clause 2.2
(iv)	Aggregate/cement ratio by weight	As per mix design based on IS 10262 and IS-456-2000
(v)	Workability	As per clause 7.1 of IS-456-2000 slump shall be 25 mm to 75 mm compacting factor 0.85 to 0.92
(vi)	Max free water cement ratio	As per mix design based on IS-10262 and IS-456-2000
(vii)	Degree of quality control	Good (Refer Appx 'A' of IS-10262)
(viii)	Durability	Exposure - Moderate
(ix)	Minimum cement content	As per IS-456:2000 Table-5
(x)	Type of aggregate	Crushed stone aggregate
(xi)	Max nominal size of aggregate	20mm or as specified

PARTICULAR SPECIFICATION CONTD....**NOTE:-**

- (i) In case there is any variation of cement content between design mix approved and minimum cement indicated here-in-before, there shall be no price adjustment for the same and contractor shall have no claim what so ever for using more quantity of cement
- (ii) If cement contents as per actual mix design are worked out lower than minimum cement content indicated here-in-before, the contractor shall have to provide minimum cement content indicated here-in-before and nothing extra shall be payable on this account.
- (iii) Lump sum amount quoted by the contractor shall deemed to be include the cost for quantity of cement as per design mix and nothing extra on this account shall be admissible
- (iv) No element of wastage of cement shall be allowed while working out the cement consumption details for design mix concrete work.
- (v) Mix design shall be prepared based on SP-23, handbook on concrete mixes and IS-10262. Recommendations guide lines for concrete mix design.
- (vi) Design mix with suitable admixture / plasticizer for workability of concrete shall be done separately while using pump able concrete.

3.19. Blank**3.20 ACCEPTANCE CRITERIA**

- (a) The contractor shall be deemed to comply with the strength requirement as per clause 16 of IS-456.
- (b) Whenever there is any change in the type of grading of material, the mix should be rechecked and modified suitably to the desired compressive strength.
- (c) Standard deviation to be rechecked after collecting the result of actual concrete work (compressive strength actually achieved at site) to review for Design mix.

3.20.1 Testing of cubes shall be carried out at the site laboratory as per Annexure 'I'

3.21 TRANSPORTATION

3.21.1 Refer para 4.11.9 of MES Schedule Part-I.

3.22 PLACING & CURING OF CONCRETE

3.22.1 Placing & curing of concrete shall be as specified in SSR Part-I and as per IS.

3.23 MIXING AND COMPACTION OF PLAIN CEMENT CONCRETE

- (i) All plain cement concrete shall be mixed in approved mechanical mixer. The mixer must also have a water container with a water meter for adding measured quantity of water in each batch. Mixing of concrete shall be as per clause 4.11.5 of MES SSR Part-I.
- (ii) All RCC work shall be consolidated with approved mechanical vibrators except where not practicable in the opinion of the Engineer-in-Charge. RCC in slabs shall be compacted with plate/surface type vibrator and in beams/columns with needle/pin vibrator.

3.24 CAST IN SITU/PRECAST ARTICLES

- (a) PCC chills, RCC shelves may be cast in situ or pre-cast at the discretion of the contractor. In the event of deviation with regard to these items, pricing shall be done at appropriate rate in SSR for cast-in-situ articles. Top of such pre-cast articles shall be distinctly marked.
- (b) Unless otherwise specified all pre-cast concrete articles shall be set and jointed in cement mortar (1:4).

PARTICULAR SPECIFICATION CONTD....

- 3.24.1 **PRE - CAST RCC JALLIES:** It shall be provided wherever indicated and as shown on drawings. Pre- cast RCC jallies shall be set in cement mortar 1:3. Thickness of jallies shall be as indicated on the drawing(s). Where thickness is not indicated, it shall be 50mm thick.
- 3.25 **THROATING/WEATHERING:** Throating to projections of RCC/PCC beyond external faces of the walls where shown on TD drawings and where RCC chajja are not provided with downward facia, shall be formed in the concrete while casting, by planting fillets/square bar of 16mm diameter in the form work and finished smooth. Roof projection of top slab where not shown on the drawings, roof projection minimum 600mm wide to be provided beyond external faces of the wall along with facia.
- 3.26 **RCC CHAJJA:** RCC chajja shall be provided as per details shown on TD drawings.
- 3.26.1 The top surface of chajjas shall be finished with 10mm thick cement plaster in cement mortar (1:3) with mixture of approved water proofing compound as per manufacturer's instructions while the concrete is green viz before the final setting time. 75mm PCC M-15 (Nominal mix) using 12.5mm graded stone aggregate shall be provided at the Julyction of wall and chajjas before external plastering,10mm wide 5mm deep vertical groove shall be provided between RCC and brick wall. Chajjas shall be casted monolithic along with the casting of lintel band.
- 3.27 **LINTEL/BAND:** Lintels over openings shall be provided as per details given in TD drawings.
- 3.28 **CONCRETE FILLING:** Where the required height of wall openings, is not obtained with adequate size of bricks, the same shall be obtained by providing PCC of grade M-10 (Nominal Mix).
- 3.29 **BEARING OF RCC STRUCTURAL MEMBERS:** All RCC beams/rafters resting on Brick wall shall be provided with PCC bed blocks cast in PCC of grade M-15 (Nominal mix) . Bed blocks shall be twice the width of beams in length covering the entire thickness of wall and of depth 150mm, unless otherwise shown on drawings. The bearing of lintels shall comprise of full PCC block with vertical joints in brick work staggered. No treatment shall be provided under bearing of RCC bands.
- 3.30 **PLINTH PROTECTION:** Plinth protection shall be in PCC M-10 (Nominal mix) using 20 mm graded stone aggregate 75 mm thick over 100 mm thick hard core of broken brick aggregate of gauge not exceeding 63 mm over 30 cm compacted earth filling in layers over rammed earth along with PCC saucer drain 30cm wide on all sides of buildings. The width of plinth protection (including drain) shall be 900mm from external face of wall. Top of plinth protection concrete shall be finished fair without using extra cement. Construction joints shall be provided at 3 meter intervals and at corners with 50 mm deep and 10 mm wide joints as specified in clause 13.32.3 of MES Schedule Part I. The joints shall be filled with epoxy sealant.

4. FORMWORK

- 4.1 Refer Clause No. 7.15 on pages 142 of MES Schedule Part-I. Form work shall be of steel/plywood. Formwork shall be for fair finish as specified in clause 7.15.2(b) on page 142 of SSR Part-I. No camber in form work as mentioned in Para 7.15 of MES Schedule Part-I shall be provided.
- 4.2 Design of formwork shall be got approved by the Engineer-in-Charge before commencement of work and recorded in works passing register.
- 4.3. The vertical props shall consist of steel sections only. The props consisting of ballies/bamboos or brick pillars as mentioned in clause 7.15.4 of MES schedule part-I shall not be used. The steel props shall rest firmly on steel plates/wooden planks. The bricks shall not be used below vertical props to adjust/make up length of props.
- 4.4 In case the height of centering exceeds 3.5 Meters, the props shall be provided in multistage. All the props shall be firmly braced in both directions horizontally.

PARTICULAR SPECIFICATION CONTD....**4.5 CENTERING/STAGING**

- 4.5.1 Staging should be as designed with required extension pieces as approved by EIC to ensure proper slopes, as per design for slabs/beams etc and as per levels as shown in drawings . All the staging shall be either of tubular steel structure with adequate bracings as approved or made of built up structural sections from structural steel sections.
- 4.5.2 In case of structures with two or more floors, the weight of concrete, centering and shuttering of any upper floor being cast shall be suitably supported on one floor below the top most floor already cast.
- 4.5.3 Form work and concreting of upper floor shall not be done until concrete of lower floor has set at least for 14 days.
- 4.5.4 The bidder shall be responsible for the failure of formwork due to lack of its structural stability and strength. Nothing can be admitted in this regard. The bidder is also requested to take prior approval regarding its stability and strength before commencing any further work from GE. Irrespective of above, in case the formwork fails, contractor should make the formwork correct without any extra price adjustment.

4.6 SHUTTERING

- 4.6.1 Shuttering used for concreting should be sufficiently stiffened. The shuttering should also be properly repaired before use and properly cleaned to avoid stains, honey combing, seepage of slurry through joints etc.

4.7 GENERAL REQUIREMENT

- 4.7.1 The formwork shall be rigid and so constructed as to retain the shape and dimensions of the member being cast. It shall have sufficient strength and rigidity to withstand the load of concrete, vibrations, movement of men, materials and plants and any other incidental loads without excessive deflection beyond permissible limits. Before concreting is started, the props and wedges shall be thoroughly checked to see that these are intact, and are not loose. While concreting is in progress, a constant watch shall be kept on the props and immediate remedial measures taken as soon as any of these gets loosened. Care shall be taken that props and wedges do not get loose for the minimum period specified for the removal of formwork.
- 4.8 In case of multi-storeyed structures, the weight of concrete and formwork of any upper floor shall be suitably supported on at least two floors below the same.
- 4.9 In case the height of centering exceeds 3.50 metres, the props may be provided in multi-stages. All the props shall be firmly braced in both directions horizontally.
- 4.10 All bolts and nuts shall be countersunk and well ground to provide a smooth plain surface on metal forms.
- 4.11 Where concrete is required to have a rounded edge, beveled edge or moulded edge, provision shall be made in the form itself. Opening for fan clamps and other fitting connected with services shall be provided in the shuttering as directed by the EIC.

4.12 SURFACE TREATMENT TO SHUTTERING

Forms shall be thoroughly cleaned of all dust, dirt, wood shavings and other matter by washing with water. The surface shall then be coated with soap solution before concreting is done. Soap solution shall be prepared by dissolving yellow soap in water to get consistency of paint. Alternatively a coat of raw linseed oil/refined pale paraffin mineral oil of approved manufacturer may be applied. Care shall be taken that the coating does not get on construction joint surface and reinforcement bars. It shall also not cause softening or permanent staining of concrete surface nor shall impede the wetting of surfaces to be water-cured. Special care shall be taken in case of small grooves. The form strips shall be oiled coated thoroughly so as to prevent swelling of the forms and consequent damages to the concrete on removal of forms.

PARTICULAR SPECIFICATION CONTD....**4.13 ERECTION OR ASSEMBLY OF FORMS**

Formwork shall be erected true to line, vertical or battered to proper slope as required and free from twist. It shall be so assembled as to facilitate easing and removal of the various parts in proper sequence without jarring the concrete. For columns etc., where concreting is done in stages one side of the formwork shall be made in suitable parts and shall be capable of being fixed securely and quickly in position. The complete formwork for its stability and its positions shall be inspected and approved by the EIC before placing reinforcement and laying concrete. The formwork shall conform to the shapes, lines and dimensions as shown on the drawings or as indicated, within the tolerance given under clause no 7.15.8 of SSR Part-I.

4.14 STRIKING/REMOVAL OF FORMS

Forms shall be removed gently. They shall be eased carefully in order to prevent the load being suddenly transferred to concrete. The minimum period that shall elapse after the concrete has been laid and before form work is eased and removed is given in section-4: Concrete, for ordinary Portland cement and should be in accordance with provisions of latest IS 456.

Notes:-

- a. For other types of cement, the stripping time recommended for ordinary Portland cement may be suitably modified. If Portland pozzolana or low heat cement has been used for concrete, the stripping period will be increased suitably as indicated or directed by EIC.
- b. The number of props left under, their sizes and disposition shall be such as to be able to safely carry the full dead load of the slabs, beams or arch as the case may be, together with any live load likely to occur during curing or further construction.
- c. For rapid hardening cement periods will be suitably decreased as indicated or directed by EIC. However for vertical side of slabs, beams and columns forms should be retained for at least 24 hrs.
- d. In case of cantilever slabs and beams, the centering shall remain till structures for counter acting or bearing down have been erected and have attained sufficient strength.
- e. Proper precautions should be taken to allow for the decrease in the rate of hardening that occurs with all types of cement in cold weather and accordingly stripping time shall be increased.
- f. Work damaged through or careless removal of forms shall be reconstructed.

4.15 REUSE

Before reuse, the forms shall be thoroughly scraped, cleaned and joints gone over and repaired where necessary. Inside surface shall be retreated to prevent adhesion of concrete.

4.16 INSPECTION OF FORM WORK

The completed form work shall be inspected and approved by the EIC before the reinforcement bars are placed in position. Proper form work should be adopted for concreting so as to avoid honey combing, blow holes, grout loss, stains or discolouration of any defects of concrete etc. Proper and accurate alignment and profile of finished concrete surface shall be ensured by proper designing and erection of form work which will be approved by EIC. Shuttering surface before concreting should be free from any defect/ deposited and fully cleaned so as to give perfectly straight smooth concrete surface. Shuttering surface should be therefore checked for any damage to its surface and excessive roughness before use.

5. EXPOSED SURFACE OF CONCRETE

5.1.1 Exposed soffits of RCC floors/RCC slabs, soffits and sides of slab/beam, parapet and staircase, soffits and sides of shelves, RCC fascia, RCC parapet, chajja and cantilevers etc. which are not continuous with adjoining plastered surface will be finished with a thin layer of 5 mm thick plaster in cement mortar (1:3) and finished fair and even without using extra cement after removal of form work.

5.1.2 Exposed surface of columns, beams, lintels, bands and similar items which are continuous with plastered surfaces of walls shall be plastered in the manner as that for adjoining walls plastering.

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- 5.1.3 Exposed surface of columns, beams, lintels, bands and similar items which are not covered under clause 6.1.1 & 5.1.2 above shall be finished with a thin layer of 5 mm thick plaster in cement mortar (1:3) and finished fair and even without using extra cement after removal of form work.
- 5.1.4 Exposed surface of concrete shall be roughened with wire brushes and hacked cut closely for making key for plaster before the application as described above.
- 5.1.5 If thickness of plaster in cement mortar (1:3) as specified above is required to be increased in excess of 5 mm to achieve fair and even surfaces, it shall be provided by the contractor without any extra cost to Government and the same shall be deemed to have been included in the lump sum amount quoted by the contractor.

5.2 CONCRETE UNDER SPECIAL CONDITION

- 5.2.1 During hot or cold weather concreting should be done as per the procedure set out in IS-7861.

6 & 7 BLANK-**8. MASONRY WORK****8.1 MATERIALS****8.1.1 AAC BLOCK MASONRY WORK**

- 8.1.2 Masonry work in building above DPC level shall be with eco friendly autoclaved aerated concrete (AAC) block. Autoclaved Aerated Concrete (AAC) block is made with fine aggregates, cement and an expansion agent that causes the fresh mixture to rise like bread dough. Cured blocks of autoclaved aerated concrete shall be jointed with thin cement mortar (1:4). AAC block shall conform to IS : 2185 Part-III.

- 8.1.3 Particulars of AAC block is as under:-

Size	= 600 mm x 200 mm x 100-300 mm or as specified in schedule.
Compression Strength	= 3-4.5 N/mm ² (IS 2185 Part-3)
Normal Dry Density	= 550-650 Kg/m ³
Sound Reduction Index (Db)	= 45 for 200 mm thick wall
Fire Resistance	= 2 to 6 Hrs (Depending on thickness).

8.2 BRICK MASONRY WORK

- 8.2.1 Masonry Work in building below DPC level shall be with Fly Ash Bricks.
- 8.2.2 **FLY ASH BRICKS**: Fly ash bricks shall be cement bonded and shall have smooth rectangular spaces with sharp and square corners. The bricks shall be free from any honeycombing and other defects. Bricks shall be machine moulded and shall be made from the mixture of suitable good quality of fly ash, sand and cement and other required materials as per the latest relevant IS code (IS 12894:2002). The shape and size of bricks are as per latest IS code (IS 12894:2002). The size of bricks is 240mm x 110mm x 70 mm or as specified in schedule.

NOTE FOR BRICK WORKS: -

Wherever 250mm/125 mm thick brick wall is mentioned in tender documents or shown on drawing except for Soak Well, the same shall be amended to read as One brick thick / Half brick thick wall.

The bricks are being tested for following physical characteristics:

- (a) Compressive strength (minimum crushing strength 75 Kg/CmSq): Tested as per IS 3495 (Part-I). The wet compressive strength of any individual brick shall not fall below the minimum average wet compressive strength specified for the corresponding class of bricks by more than 20 percent.

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(b) Drying Shrinkage: The average drying shrinkage of the bricks when tested by the method described in IS 4139, being the average of three units, shall not exceed 0.15 percent.

(c) Efflorescence Test (efflorescence shall be "Moderate"): The bricks when tested in accordance with the procedure laid down in IS 3495 (Part-3), shall have the rating of efflorescence not more than "moderate" up to class 12.5 and „slight" for higher classes.

(d) Water Absorption (water absorption shall be within 13-15% by weight): The bricks, when tested in accordance with the procedure laid down in IS3495 (Part-2), after immersion in cold water for 24 hr shall have average water absorption not more than 20 percent by mass up to class 12.5 and 15 percent by mass for higher classes.

Few names of manufacturer of fly ash bricks locally available are as under:-

- | | |
|---|--|
| <p>(i) Koshi Brick Industries Pvt Ltd,
Factory: Jotia Kali Radarbadi,
Phoolbari,
Siliguri.
Office: Metro Plaza, 3rd Floor, SF
Road,
Siliguri.
Mob.9434047576</p> | <p>(ii) VashnodeviBuildcon Private Limited,
Factory: FakirchandJotePhansideva,
PO-Buraganj. Dist-Darjeeling (WB).
Office: Ganeshhayan Building Room,
No.8, Ground floor, Sevoke Road,
Siliguri-734001.
Phone:0353-2521609.</p> |
| <p>(ii) Shankar Oil & Saw Mills
Factory : Station Road
PO : Naxalbari
Distt : Darjeeling
West Bengal</p> | <p>(iv) ICL Concrete Industries
Mousa – GouriaJote
PO – Nemai
PS – Matigata
Dist – Darjeeling
Mob 9434052184</p> |
| <p>(iii) Vinayak Fly Ash Bricks (VFB)
PO – Sakoajhora
Telepara
Dist – Jalpaiguri</p> | <p>(vi) RadheConcreto (SRC)
NH – 31, Opp SN & Co.
PO – Ethelbari
Dist – Jalpaiguri</p> |
| <p>(iv) Sree Bricks
PO Sakoajhora
Dist – Jalpaiguri (WB)</p> | |

8.2.3 **CLAY BRICKS:** Bricks shall be kiln burnt 250mm X 125mm X 75mm. Nominal size, locally available best quality with minimum crushing strength 75 Kg/Sq cm. The dimensions of bricks shall not vary more than +/- 8% of the dimensions given above of nominal size. Bricks shall be kiln burnt locally available, best quality conforming to the samples kept in GE's office and Clause 5.6 of MES SSR Part -I. Unless otherwise specified in schedule 'A'/Notes on drawings, bricks shall have average compressive strength of 75 Kg/Sqcm and conforming to IS-1077. The physical properties of the bricks shall be as per clause 5.6.1 to 5.6.8 of MES Schedule Part-I. Centre line dimensions shall invariably be maintained. In all other respect, brick shall conform to requirements of sub class 'B'.

8.2.4 Fly Ash/ Clay brick shall got tested by the department in Site laboratory or in Command / Zonal laboratory and the contractor shall bear the cost of testing at the rates as per Appendix 'D'. In all other respect, brick shall conform to requirements of sub class 'B'. Brick shall be got tested by the contractor in site laboratory if established by the Department or in the Zonal laboratory and the recovery as specified in Annexure 'I' shall be effected from the contractor. If facility for these tests is not there in the site lab established by the Deptt or Zonal lab, the tests shall be carried out in Command Test Lab

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- 8.2.5 **Contractor may use Clay bricks in case of non-availability of fly ash bricks in sufficient quantity as certified by the GE without any price adjustment.** However for pricing of deviation, the average rate of clay brick and fly ash brick work given in SSR Part-I-2010 shall be applicable subject to adjustment by DO percentage.
- 8.2.6 Clay brick work and fly ash brick work should not be mixed together in any particular building i.e. only one type of brick work either Clay or Fly ash brick work should be used for particular entire building.
- 8.2.7 **Cement:** Refer Clause 4.1 hereinbefore.
- 8.2.8 **Sand:** Sand for mortar shall be as specified in Clause 5.4 of MES Schedule Part-I.
- 8.3 **Brick Work:**
- 8.3.1 Bricks shall be kiln burnt 250mm X 125mm X 75mm. Nominal size, locally available best quality with minimum crushing strength 75 Kg/Sq cm. The dimensions of bricks shall not vary more than + or – 8% of the dimensions given above of nominal size. Centre line dimensions shall invariably be maintained. In all other respect, brick shall conform to requirements of sub class 'B'. Brick shall be got tested by the contractor in site laboratory if established by the Department or in the Zonal laboratory and the recovery as specified in Annexure 'I' shall be effected from the contractor. If facility for these tests is not there in the site lab established by the Deptt or Zonal lab, the tests shall be carried out in Command Test Lab. The cost of materials and transportation charges shall be borne by the contractor without any extra claim for testing at Command Test Lab. Lintel/Tie beams/Roof Beams shall not be cast directly over brick work. The last course of the wall shall be built after the form work underneath the slabs or beams is removed.
- 8.3.2 The contractor shall produce brick etc, as require for such testing and carry the bricks to the place of testing as directed by the Engineer-in-Charge without extra cost to the Govt. Brick walls 750mm, 625mm, 500mm, 375mm, 250mm and 125mm thick shall mean 3 bricks, 2½ bricks, 2 bricks and 1½ bricks , 1 bricks and half brick thick wall respectively and vice-versa. Sub class 'B' bricks or brick works with sub class 'B' bricks mentioned in items of various parts of Schedule 'A' and in MES Schedule shall be deemed to be same as first class brick or brick work with first class bricks as specified above. In case of deviation, irrespective of size/type of bricks used brick work shall be priced at appropriate rate for sub class 'B' bricks(old size) as given in the MES Schedule, irrespective of the fact that locally available best quality bricks have been used.
- 8.3.3 Half brick thick wall of height more than 90cm shall be reinforced with two Nos 8 mm dia MS TMT bar horizontally at every fourth course starting from floor level. The first layer of reinforcement shall be started with 2nd course of brick work above floor level.
- 8.3.4 At the Jultyction of RCC wall/column and brick walll, 40 mm x 3 mm FI wall ties shall be provided at every fourth course of brick work starting from the floor level as shown on TD Drg.
- 8.3.5 In the event of deviations, brick work as specified above, shall be priced at the applicable rates in MES Schedule (Part-II) for M & L sub class 'B' bricks (old size), subject to contractor's percentage, as applicable.
- 8.3.6 Provision contained in clause 5.23.1 of SSR Part –I shall not be applicable.
- 8.3.7 (a) Mix of mortar for brick work shall be in cement sand mortar (1 : 6).
(b) Brick work less than one brick thick wall shall be in cement sand mortar (1 :4) .
- 8.4.1 Width of concrete lintels, beams, cills, and the like coming in conJultyction with brick walls/pillars shall be kept to the actual width of brick work of that place unless otherwise have been specifically shown, in which case, the width as shown on structural drawings shall be maintained.

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- 8.4.2 Centre line dimensions of rooms, verandahs, etc shown in drawing shall be maintained. Internal and overall dimensions, if at variance from whatever shown in drawings, shall be deemed to have been amended accordingly. The dimensions for various height shall be maintained as shown on the drawings.
- 8.4.3 Mortar bed joints shall be such that four courses of brick work and three joints taken consecutively shall measure 3cm to 4cm in addition to the combined height of bricks themselves. The provision regarding above, made in Para 3.26 of MES Schedule shall be deemed to be modified accordingly and no price adjustment shall be done on this account.
- 8.5 **Window Cill:** It shall be 18 to 20 mm thick Granite Stone finished on top internally and externally sloping with 150 mm bearing on both sides over 40 mm thick PCC (1:2:4) type B0 shall be provided in window cill. Outside projection shall be 25 mm.

9 to 11 BLANK-**12. STEEL AND IRON WORK**

- 12.1 The entire steel required for incorporation in the work shall be arranged by the contractor and shall comply with the requirement of following specifications:-
- (a) **REINFORCEMENT STEEL:** High strength deformed steel bars produced by Thermo Mechanical Treatment process (TMT) steel bars of Grade Fe 500 (D) meeting all other requirements of IS-1786-2008. The procurement shall be done as per procedure given below.
- (b) **STRUCTURAL STEEL:** Standard quality: Fe-410-S Conforming to IS- 2062, Structural Steel Tube shall be YST-310 grade.
- (c) **HOLD FASTS,GRILLS ETC & OTHER THAN STRUCTURAL:** Fe-310-0 conforming to IS – 1977.
- (d) **GALVANISED SHEETS PLAIN OR CORRUGATED:** Conforming to IS -227.
- (e) **FABRIC REINFORCEMENT FOR CONCRETE:** Conforming to IS- 1566 . Wire fabric for General use, window Grills, etc shall be conforming to IS-4948 and all as per MES Sch Part I clause 10.33

- 12.2 **PROCUREMENT:** TMT Reinforcement steel shall be procured from the following manufacturers:

Ser No.	Firm Name & Address	Type of Steel
1	Rashtriyaspat Nigam Ltd. (RINL) Brand "RINL" Visakhapatnam Steel Plant, Visakhapatnam-530031, India Tel : (91891)518226, 518376, Fax : (91891) 518316 Email: cmdvsp@itpvis.ap.nic.in	All
2	Tata Iron & Steel company (TISCO, or Tata Steel) Brand : "TATA" Bombay House, 2,4 HomiModi Street, Mumbai-400001, India Tel : (9122) 2049131, Fax : (9122) 2049522, 287,840 Email : corpcomm@isr.tatasteel.com (Br office for North: Jeevan Tara Building , Patel Chowk New Delhi	All
3	Steel Authority of India Ltd. Brand : "SAIL" Central Marketing Organization, Northern Region, 17 th Floor, scope Minar, Laxmi Nagar Distt Centre, Delhi-110092	All
4	M/S Jai Balaji Industries Ltd .Brand : "JAI BALAJI" 5 Bentek Street, Kolkata-700001, Delhi Office : 510, Block-b Navraung House, 21 Kasturba Gandhi Marg, Nerw Delhi-110001 Ph-011-43620219, 43620220, Mob : 783827772/99589367103	TMT bars of Grade Fe 500 & Fe 500D

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	E-mail-info@jjabalajigroup.com	
5	M/S Shyam Steel Industries Ltd. Brand "SHYAM TMT" Shyam Towers EN-32, Sector-V, Salt Lake, Kolkata-700091 Tel : 033-40074007, Fax-033-40074010, E-mail-marketing@shyamsteel.com	TMT bars of Grade Fe 500 & Fe 500D CRS
6	M/S Steel Exchange India Ltd. Brand : "SIMHADRI TMT" My home Laxminivas, Apartments, Ameerpet,Hyderabad-500016, A.P., Tel : 040-23403725, Fax : 040-23413267, E-mail-info@seil.co.in	TMT bars of Gde Fe 500 & Fe 500D HSCRM
7	M/S Jindal Steels and Power Ltd. Brand : "JINDAL" OP Jindal Road, Hissar, Haryana Pin-125005 Tel : +91 1662 222471-84, Fax : +91 1662 220476	TMT bars of Gde Fe 500, Fe 500D, Fe 550 & Fe 550D and CRS with sizes (8-40mm)
8	M/S SRMB Srijan Ltd. Brand : "SRMB" Srmb House, ;7, khetra das lane, Kolkata-700012 Tel : 033-66006600, Fax : 033-2211 0483	TMT bars of Gde Fe 500, Fe 500 D, Fe 550 & Fe 550 D (8m to 32mm)
9	M/S Concast Steel & Power Ltd, Kolkata. Brand : "CONCAST MAXX" 21, HemantBasuSarani Suit Nos-511 & 512, 5th Floor, Kolkata-700001 Phone : 91-33-2213 0481-87, Email-info@concastgroup.com	TMT bars of Grade Fe 500 & 500D (8mm to 32mm)
10	M/S ShriBajrang Power &Ispat Ltd, Brand : "GOEL TMT" Raipur, Chhatisgarh, Vill : Borjhara, Urla Industrial Area, Raipur-493221, Chhatisgarh, Tele : 0771 4288019/29/39	TMT bars of Grade Fe 500 & Fe 500D (8mm to 36mm)
11	M/S JSW Steel Ltd, Karnataka, Jindal Mansion, 5A Dr G Deshmukh Marg Mumbai-400026 Tel : 022-2351-3000 & 022-235206400 Brand : "NEOSTEEL"	TMT Bars of Grade Fe 500, 500D CRS (8mm to 40mm)
12	M/s. ShyamMetalics& Energy Ltd. , Viswakarma, 1st Floor, 86 C, Topsia Road, Kolkata-700046 Tel : 33-2285-2212 Email www.shyamgroup.com , Brand : "SEL"	TMT Bars of Gde Fe 500 , Fe 500D (size 8-32mm)
13	M/s. Kamachi Sponge & Power Corporation Ltd. ABC Trade Centre, 3rd Floor (Inside Devi Theatre Complex) Old No. 50, New No. 39, Anna Salai, Chennai-600002, India : Tel 044-42961100 : Fax 044-42961122 Email sales@kamachitmt.com Brand : "KAMACHI"	TMT Bars of Gde Fe 500, Fe 500D, Fe550, Fe 550D HCRM (size 8-40mm)
14	M/s Adhunik Industries Ltd Brand "ADHUNIK Fe 500 SD" "Lansdowne Towers' 2/1A, Sarat Bose Road 6th Floor, Kolkata-700020 Tel- 033-30517100 Fax- +91-33-2289 0285 Website- www.adhunikindustries.com	TMT bars of Grade Fe 5000 with sizes 8mm to 32 mm dia
15	M/S Gallant Metal Ltd, Brand: "GALANTT TMX", Ward 10BC, Plot No. 123, Ground Floor, GanddhiDham Kutch, Gujarat-370201, Tel: 91-2836-228164,Fax: 91-2836-235787, Email: gml@gallant.com , Webite: www.gallant.com	TMT Bars of Grade Fe 500, Fe500D, CRS (8mm to 32mm)
16	M/S RashmiMetaliks Ltd., Brand: "RASHMI TMT", Premlata Building, 39, Shakespeare Sarani, 6th floor, Kolkata-700017, Tel: 033-2894255/56, Fax: 033-22894254, Email : domesticdip@rashmigroup.com , Website: www.rashmigroup.com	TMT Bars of Gde Fe 500 size (8-32mm), Fe 500D, Fe 550D (size 8-25mm)
17	M/S Real Ispat& power Ltd, Brand: "GK TMT", Vrindavan, Near IDBI Bank Civil Lines, Raipur-492001, C.G., Tel: 91-771-4224000, Fax: 91-771-4224010, E-mail: real@realispat.com , Website: www.realispat.com	TMT Bars of Gde Fe 500, Fe 500D (size 8-36mm)
18	M/s Super Smelters Ltd, Kolkata, Brand: "SUPER SHAKTI", Premlata Building, 39, Shakespeare Sarani, 3rd floor, Kolkata-700017, Tel/Fax: 91-33-2289-2734/36, Email: info@supershakti.in , Website: www.supershakti.in	TMT Bars of Gde Fe 500, Fe 500D, Fe 550 (size 8-32mm)

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19	M/s Electrotherm (India) Ltd, Brand: "ET TMT", Survey No. 72, Palodia, Via-Thaltej, Ahmedabad Gujarat-382115, Tel: 91-2717-660649/660550, Fax: 91-2717-234866, Website: www.electrotherm.com	TMT Bars of Gde Fe 500, Fe 500D & CRS (size 8-32mm)
20	M/s ShyamSel and Power Ltd. Brand: "SEL" SS Chambers, 5 C.R, Avenue, Kolkata-700 072 Tel- +9133 4011 1000 Fax- +9133-40111031 Website- www.shyamgroup.com	TMT Bars of Gde Fe 500D (Size 8-32mm)
21	M/s SPS Steels Rolling Mills Ltd. Brand "ELEGANT TMT " Diamond Prestige", 41 A, A.J.O Bose Road, 8th Floor, Room No 801, Kolkata- 700017 Mob-9831055568/8910797649 Telefax :033-66255252 Email:Info@spsgroup.co.in	TMT Bars of Gde Fe 500, Fe 550 & Fe 500D
22	M/s Shree Nakoda (spat Ltd. Brand "NAKODA TMT" Near Railway Crossing Mowa, P.O Shankar Nagar Raipur-492007 (C.G) Tele-91- 771-2282130 Mob No - 78989741 Website- www.nakodagroup.com	TMT Bars of Gde Fe 500, Fe 500D (Size 8mm-32mm)

12.2.1 Reinforcement steel for water retaining structure shall be as per table below:-

SAIL	: HCR Rebar
TISCO	: TISCON CRS
RINL	: High Strength Corrosion Resistant Rebar (HSCRM)

12.2A It shall be noted that contractor can also procure steel from the manufacturer who is approved by HQ E-in-C's Branch till end date of submission of bid for above work irrespective of the fact that name of manufacturer is not listed above. In such case it is the responsibility of the contractor to produce copy of approval letter by HQ E-in-C's branch and other documents, if any, to GE for verification and further action. Similarly, if any manufacturer from the above list is disapproved by the HQ E-in-C's Branch till end date of submission of bid, steel shall not be procured from such manufacturer.

12.2.2 **STRUCTURAL STEEL**: Structural steel sections of all sizes shall be procured directly from main producers SAIL/TISCO (Tata Steel)/RINL/JINDAL only. In case the desired section of Structural Steel is not rolled/manufactured by main producers as aforesaid, the shall be procured from any other reputed producer as approved by the Accepting Officer.

Ser No.	Firm Name & Address	Type of Steel
1	Rashtriyaspat Nigam Ltd. (RINL) Brand "RINL" Visakhapatnam Steel Plant, Visakhapatnam-530031, India Tel : (91891)518226, 518376, Fax : (91891) 518316 Email: cmdvsp@itpvis.ap.nic.in	Structural Steel (angle, Beam, Colum, Channel, plate)
2	Tata Iron & Steel company (TISCO, or Tata Steel) Brand : "TATA" Bombay House, 2,4 HomiModi Street, Mumbai-400001, India Tel : (9122) 2049131, Fax : (9122) 2049522, 287,840 Email : corpcomm@isr.tatasteel.com (Br office for North: Jeevan Tara Building , Patel Chowk New Delhi)	-do-
3	Steel Authority of India Ltd. Brand : "SAIL" Central Marketing Organisation, Northern Region, 17 th Floor, scope Minar, Laxmi Nagar Distt Centre, Delhi-110092	-do-
4	M/S Jindal Steels and Power Ltd. Brand : "JINDAL" OP Jindal Road, Hissar, Haryana Pin-125005 Tel : +91 1662 222471-84, Fax : +91 1662 220476	-do-

12.2.3 **FABRIC REINFORCEMENT OF CONCRETE** : These shall be Procured directly from main producers. Testing provisions are given here in after in these particular specifications.

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- 12.3 Contractor shall have to check from GE as to whether the proposed secondary producer is approved by the Deptt or not. No claim whatsoever shall be entertained in case proposed secondary producer is rejected due to non-approval of Deptt.
- 12.4 Structural steel and Fabric reinforcement for concrete may be procured from authorized dealers of main producers in case total requirement of structural steel / Fabric reinforcement for concrete is less than 05 Tonnes.
- 12.5 Steel sections for railings, gates, fencing. Guard bars, grills, steel chowkhats, hold fasts etc. which do not constitute structural members, may be procured from main producers / secondary producers / BIS marked manufacturers or their authorized dealers at the option of contractor without any price adjustment. Testing of these articles is optional at the discretion of GE.
- 12.6 The contractor may procure TMT steel from the authorized conversion agents of main producers provided that the main producers have given such direction in a specific sale / purchase order and they are producing TMT steel using Thermax/ Tempcore / EVCON Turbo Technology. In such case the purchase Voucher or cash memo shall be from main producers.
- 12.7 All finished steel shall be well and clearly rolled to the dimensions, sections and weight specified. The finished material shall reasonably free from cracks, surface flaws, laminations rough, jagged and imperfect edges and other harmful defects and shall be finished in a workmanlike manner.
- 12.8 Tolerance in size and weight of reinforcement bars shall be as specified in clause 10.17.14 and clause 10.17.5 of MES Sch. (Part I).

12.9 TESTING OF STEEL:-

- 12.9.1 The contractor shall submit the manufacturer's test certificate in original along with test sheet giving the results of each chemical test as applicable and the chemical composition of steel or authenticated copy thereof, duly signed by the manufacturer with each consignment. The Engineer-in-Charge shall record these details in Steel Supply & Acceptance Register, as given at Appendix "F" after due verification and send a certified true copy of test sheet to GE for record. The CWE/GE shall also organize independent testing of random samples of steel drawn from various lots from National Test House, SEMT Wing CME, Regional Research Labs, Govt. approved Labs, Zonal Labs etc. as per recommended minimum frequency shown in Table below. Samples from each lot should be tested for quality and elongation. The elongation shall not be less than 16% (as per IS 1786-2008).

Srl No.	NOMINAL SIZE OF STEEL FOR CONCRETE REINFORCEMENT	QUANTITY
1.	Bars of size less than 10mm	1 sample (3 specimens) for each test for every 25 tonne of steel or part thereof.
2.	Bars size 10mm to 16mm	1 sample (3 specimen) for each test for every 35 tonne of steel or part thereof
3.	Bars size over 16mm	1 sample (3 specimen) for each test for every 45 tonne of steel or part thereof
	STRUCTURAL STEEL	
4.	Tensile Test	1 Test for every 25 tonne of steel or part thereof
5.	Bend Test	1 Test for every 10 tonne of steel or part thereof

- 12.9.2 Independent testing of reinforcement steel and structural steel by GE is mandatory and testing charge shall be borne by the contractor.
- 12.9.3 In all case, the contractor at his own cost shall provide all facilities required for testing and cost of material consumed in tests and transportation charge shall be borne by contractor.

PARTICULAR SPECIFICATION CONTD....**12.10 DOCUMENTATION:-**

12.10.1 The contractor shall produce original purchase vouchers from the manufacturer for the total quantity of steel supplied under each consignment to be incorporated in the work. The GE along with relevant documents before acceptance shall inspect all the consignments received at the work site. The original purchase vouchers and test certificates shall be defaced by Engineer-in- Charge and kept on record in the office of the GE duly authenticated and with cross reference to the control number recorded in the steel acceptance register.

12.10.2 The Steel Supply & Acceptance register shall be signed by JE, Engineer-in-Charge, GE and contractor. The entire quantity of steel be suitably recorded in the measurement book not to be abstracted before incorporation in the work and shall be signed by Engineer-in-charge and contractor.

12.12 **STEEL IN COILS ETC:** Any bar of any dia for reinforcement may be procured in round bundles or coils and the cost of straightening the same shall be borne by the contractor. When bars are procured in bundles, the length of each bundle shall be worked out on the basis of unit weight predetermined by the GE by getting suitable length (not less than 3 m) out of each consignment received, getting it straightened, length measured and weighed in presence of contractors accredited representative. The said length and the weight shall be recorded from which unit weight (weight per unit length) shall be calculated. The length of bars worked out on the basis of unit weight determined as above shall form the basis for the purpose of calculating quantity of steel used/to be used in work and making payment of materials lying at site. However if the unit weight works out more than the unit weight given in SSR, then unit weight given in SSR shall be followed for computing weight of steel for the purpose of making payment of steel lying at site.

12.13 **STORAGE:** Steel of different sizes shall be stacked separately. For each classification of steel, separate areas shall be earmarked. Steel shall be marked with distinct painting marks for easy identification. All steel shall be so stored that it is always at least 15cm above the GL Steel shall be stored in a manner so as to prevent distortion and corrosion. Any section that has deteriorated and corroded or if considered defective by Engineer-in-Charge shall not be used in the work and shall be removed by the contractor without any extra cost. It will be the responsibility of the contractor to make sure that all possible arrangements are made for the safe custody of the steel. In case of any loss of steel only contractor will be responsible and the loss will/shall be made good without any delay or claim what so ever.

12.14 **SCHEDULING AND SUPPLY:** Schedule of supply of steel shall be finalized by contractor with GE and shall be incorporated in CPM chart so that supply of steel is monitored in a way to avoid any delay in completion of the work. The complete requirement of steel of various sizes will be worked out before making any RAR payment and procurement of steel by the contractor will be completed sufficiently in advance of the date of completion, No extension of time will be considered for non-availability of any section of steel.

12.15 Assembly of reinforcement shall be as per clause 12 of IS 456.

12.16 **NOMINAL COVER TO REINFORCEMENT:** Nominal cover shall be as under:-

Exposure	Nominal cover Not less than **		Slab	Wall	Beams	Columns
Mild	20mm		20mm	20mm	20mm	40mm *
Moderate	30mm		30mm	30mm	30mm	40mm *

* In case of columns of minimum dimension of 200mm or under, whose reinforcing bars do not exceed 12mm, a nominal cover may be of 25mm.

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** For further details refer clause 26.4 of IS 456 of 2000.

- 12.17 **WELDING**: Welding where directed shall be gas or arc electric welding which shall be at the contractor's option and as per IS: 816 and IS: 1323 as applicable.
- 12.18 Tee or Angle Iron Door, Window and Ventilators Frames Tee or Angle Iron Door, Window and Ventilators Frames shall be all as specified in clause 10.28 of SSR Part I 2009.
- 12.19 Pressed Steel Frames for Wooden Doors/Window Shutters Pressed Steel Frames for Wooden Doors/Window Shutters shall be all as specified in clause 10.27 of SSR Part I 2009 and IS-4351-2003. Frames shall be either painted with two coats of ready mixed paint or power coated conforming to IS 13871 as indicated and frames shall be fitted with PCC 1:3:6.
- 12.20 Barbed Wire Barbed Wire shall be all as specified in clause 10.32 of SSR Part I 2009 and shall conform to IS 278-2001.

13. PLUMBING WORK

- 13.01 Plumbing work shall be carried out as specified in Clause 18.13 to 18.23, 18.40 and 18.62 to 18.67 of MES Schedule part-I.

13.02 SOIL/WASTE/VENT PIPES/FITTINGS/ACCESSORIES

Soil waste and vent pipes (except of 50mm bore) shall be of cast iron (Spun pipe) conforming to IS-3989:1984 with or without ears and with spigot and socket ends. 50mm bore CI pipe shall be sand cast conforming to IS-1729:1979 with or without ears and with spigot and socket ends. All the pipes and fittings shall bear ISI certification mark.

13.03 JOINTING

- 13.3.1 CI pipes and fittings laid under floor/hidden portion shall be jointed with run lead joints as specified in Clause 18.40 and 18.67 of MES Schedule part-1 and all other joints shall be in cement mortar as specified in MES Schedule Part- 1.

13.04 FIXING OF PIPES TO WALLS

- 13.4.1 CI pipes and fittings shall be fixed to wall with mild steel clamps as specified in Clause 18.67 to 18.67.6 of MES Sch Part-I.

13.05 NAHANI/FLOOR TRAPS

- 13.5.1 Nahani/floor traps shall be provided in situations as shown on drawings. These shall conform to IS-1729. Floor traps shall be provided with CI grating.

NOTES : Where Nahani/floor traps of 22.5cm depth can not be accommodated in sunken floor, a 300mm x 300mm portion of the RCC slab shall be sunk to the extent it accommodates the Nahani trap without any additional cost.

13.06 SHORTER LENGTH

- 13.6.1 Except for WC connections, the contractor may use pipe pieces without sockets in shorter lengths (less than one pipe length), where approved by the GE and connect these to pipe fittings with double sockets/collars including additional joints as specified above without extra cost to the Government.

PARTICULAR SPECIFICATION CONTD....**13.07 GULLY TRAPS**

- 13.7.1 Gully traps shall be salt glazed stone ware complying with the requirements of IS-651. These shall be set in PCC M-10 (Nominal mix) block measuring 450 x 450mm and 100mm thick. Jointing to drain pipe shall be done in cement mortar (1:1).
- 13.7.2 Cast iron perforated grating shall be 150mmx150mm bituminous coated and fixed as directed by Engineer-in-Charge. PCC M-10 (Nominal Mix) in kerb and RCC cover slab reinforced with XPM weight not less than 4Kg/Sqm and shall be provided all as directed by Engineer-in-Charge.

13.08 TRENCHES FOR PIPE LINES

- 13.8.1 Excavation for trenches shall be done as per the width given in Clause 3.2.3 of MES Schedule Part-II and as specified hereinbefore and depth as required at site. The trenches shall be back filled after testing of pipes with excavated earth in layers not exceeding 250mm and surplus spoil disposed off to a distance not exceeding 50 metres.

13.09 TESTING

- 13.9.1 All soil, waste and vent pipes shall be tested as specified in Clause 18.79.1 to 18.79.5 of MES Schedule part-1.

14. INTERNAL WATER SUPPLY**14.01 WATER TUBING, BIBTAPS, STOP VALVES AND SHOWER ROSE**

- 14.1.1 Mild steel galvanized tubes (pipes) and fittings shall be ISI Marked & all as specified in Clause 18.4 of MES Schedule part-I, bib taps and stop valves shall be all as specified in Clause 18.14 and 18.15 of MES Schedule part-1. Shower rose shall be of approved make as per sample kept in GE's office.

14.02 LAYING AND FIXING PIPES

- 14.2.1 The pipes for supply of water to all fittings inside the buildings/toilets shall be run on the walls except otherwise as specified in these tender documents or shown on drawings, connected to various fittings and shall be brought in the room at point/position approved by the Engineer-in-Charge at site.
- 14.2.2 Where pipes are laid underground, the trenches shall be excavated as directed by the Engineer-in-charge. The pipes running along face of the walls/concealed in walls shall be clamped in the walls as specified in SSR. Where pipe is passing through a wall, a mild steel tube sleeve shall be fixed all as specified in Clause 18.51.1 of SSR part-1.

14.03 PVC PIPE CONNECTION

- 14.03.1 Readymade PVC connection pipes of standard make shall be 450mm long suitable for 15mm bore GI pipe complete with brass chromium plated coupling nuts and rubber washer. The weight of brass coupling nuts shall not be less than 40 grams. The weight of PVC pipe 450mm long shall not be less than 40 grams.

14.04 WORKMANSHIP

- 14.4.1 Laying of GI pipes (internal works) shall be in accordance with Clause 18.51 of MES Schedule part-1.
- 14.4.2 The contractor shall use proper bends, elbows, unions etc at turning corner. Bending of pipes shall not be allowed in any case.
- 14.4.3 Pipe shall not run diagonally.

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- 14.4.4 Contractor shall provide screwed plugs to all open ends of pipes on completion of days work.
- 14.05 **TESTING** : Testing of pipes shall be carried out all as per Clause 18.50.4 of MES Schedule Part-1.
- 14.06 **RECORD DRAWINGS** : Three copies of line plan of complete work indicating the line of pipes, position of fittings etc. shall be submitted by the contractor to the Engineer-in-Charge on completion of work.

15. EXTERNAL WATER SUPPLY**15.01 GENERAL**

- 15.1.1 Materials, workmanship and testing required to be incorporated in these works shall be as given under specification and workmanship in the trade section of MES Standard Schedule Part-I duly modified by these particular specifications and notes on the drawings.
- 15.1.2 Layout of water supply pipelines including fittings and locations of valves, valve chambers as shown on drawing are tentative. The exact layout/alignment of water supply pipe lines including their fittings and location of valves, valve chambers shall be as directed and approved by the Engineer-in-Charge in writing before the contractor takes the work in hand and nothing extra shall be paid due to any change in layout/location.
- 15.1.3 On completion of entire work, the contractor shall submit layout plans drawn to a suitable scale on tracing cloth, showing actual routes/alignment of various pipelines, indicating the size of pipes and distance of pipelines from the main buildings and roads to the Engineer-in-Charge. All sizes and dimensions shall be shown in the above plans in metric units (i.e. in CGS system) only. All work shall be carried out by plumber/fitters/skilled labours. Nothing extra shall be paid due to above for preparation of final layout plan etc.
- 15.1.4. Before commencement of excavation, the contractor shall mark the proposed pipe route on ground along with the alignment as directed by the Engineer-in-Charge. Exact position of valve chamber, pipe supports etc. which are to be considered on Each route shall similarly be marked thereon.

15.02 SCOPE OF WORK

- 15.2.1 The work consists of work described in Sch 'A'. All references to Clauses in succeeding paragraphs pertaining to MES Sch Part-1.

15.03 MATERIALS**15.3.1 MILD STEEL GALVANISED TUBES (PIPES) AND FITTINGS**

- 15.3.2 These shall conform to the Clause 18.4.1 to 18.4.5 and shall bear ISI certification mark.

15.3.3 RUBBER GASKET FOR JOINTING

- 15.3.3.1 It shall be as specified in Clause 18.11 of MES Schedule part-1.

15.3.4 SLUICE VALVE

- 15.3.3.1 It shall be of cast iron class PN-1 with flanged ends. It shall bear IS certification mark and shall comply with the requirements of IS-14846 of 2000. Sluice valve shall be long body type non rising type loaded with tin bronze sheet and stainless steel stem.

15.3.4 MASONRY VALVE PITS

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15.3.4.1 Masonry valve pits shall be of size as given in relevant item of schedule 'A' and drawings. Pit shall be underground with foundation in PCC M-10(Nominal mix) brick work in CM (1:6), internally finished with 15mm thick cement plaster in CM (1:6) and externally flush pointed in same mortar as work proceeds. Flooring shall be 40mm thick PCC M-15(Nominal mix) laid over 75mm thick hardcore. Cover shall be 3.15mm thick MS sheet fixed with nuts/bolts having proper locking arrangements and shall be provided with two coats of synthetic enamel paint over a coat of primer. Excavation and earth work shall be in any type of soil, returning filling in and disposal of surplus spoil to a distance not exc. 50 metres.

15.3.5 Cast iron pipes and fittings shall be of class as per description of relevant item of Sch 'A' and shall conform to relevant IS.

15.04 WORKMANSHIP

15.4.1 The work shall be carried out in compliance with the requirement specified in Clause 18.41 to 18.48 of MES Schedule part-1 applicable to handling/laying of cast iron pipe.

15.4.2 Laying and jointing of GI pipe shall be in accordance with Clause 18.50 of MES Schedule part-1 laying and jointing of CI pipe shall be all as per Clause 18.48 of MES Schedule part-1 and as per description of Sch 'A'.

15.4.3 BACK FILLINGS OF TRENCHES

15.4.3.1 It shall be all as specified in Clause 18.56 of MES Sch Part-1.

15.4.4 FIXING OF SLUICE VALVE/REFLUX VALVE/AIR RELEASE VALVE

15.4.4.1 It shall be in accordance with Clause 18.57 of MES Sch Part-1.

15.4.5 MAKING CONNECTION OF GI/CI DISTRIBUTION WITH GI/CI MAIN

15.4.5.1 It shall be as per Clause 18.59 of MES Schedule part-1.

15.4.6 CUTTING OF GI PIPE LINE, FIXING METER AND STOP VALVE

15.4.6.1 It shall be as specified in Clause 18.63 to 18.63.2 of MES schedule part-1.

15.4.7 TESTING OF PIPE LINE

15.4.7.1 Testing of pipe line shall be carried out as specified in Clause 18.49.7 and 18.54 of MES Schedule part-1.

16 GI PIPES AND FITTINGS

16.01 GI pipes and fittings shall be laid in trenches, fixed to walls/floor/ceiling/poles and jointed all as specified in Clause 18.50 and 18.50.3 and 18.51.1 to 18.51.5 of MES Schedule Part-I.

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23. INTERNAL ELECTRIFICATION**23.1 STANDARD OF QUALITY & WORKSMANSHIP**

23.1.1 KNOWLEDGE OF WORK:- The tenderers shall be deemed to have thorough working knowledge of the exact requirement of the job. In case of any doubt clarification may be sought from GE/Engineer-in-Charge before tender is submitted. Tenderers are advised to visit the site and get themselves conversant with site conditions.

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No claim what so ever shall be entertained/accepted in case the tenderer is coming up with an excuse of having incomplete knowledge of work involved.

23.1.2 **WORK IN ACCORDANCE WITH SPECIFICATION** :-Work under this contract shall be carried out as per brief description given in Schedule 'A'/BOQ and Particular Specifications. Work shall also be in conformity with IE Rules, relevant IS specification and MES Schedule which are forming part of the contract. The entire work shall be carried out properly with due care and under the supervision of competent technical personnel.

23.3 GENERAL

23.3.1 Refer Clause No. 19.2 of MES Schedule Part-I and requirements of Clause No. shall be strictly followed.

23.3.2 Supply and Installation of Electrical Equipments and Accessories shall strictly comply with the provisions contained in the Latest Edition of India Standard Code of Practice and/or IS Specification as applicable, Works except where such Regulations and Rules are modified by these Particular Specifications.

23.3.3 All Electrical Work shall be carried out in conformity with the requirements of the Indian Electricity Act 1910, Indian Electricity Rules 1956 framed there under, Indian Standard Codes of Practice, Fire Insurance Act as applicable and also the relevant Regulations for Electric Supply and Installations of all Electrical Equipments, Fittings and Accessories as amended from time-to-time.

23.3.4 The supply and installation of all Electrical Equipments and Accessories shall strictly comply with the provisions contained in the latest edition of Indian Standard code of Practice IS Specification as applicable to above mentioned work except where such regulations and rules are modified by these specifications.

23.4 QUALIFIED ELECTRICAL SUPERVISORS/ENGINEERS :-

Refer Condition 25 of General Conditions of Contracts, IAFW-2249. All Electrical Works shall be carried out by properly Skilled and Licensed Electricians under the supervision of qualified Electrical Supervisors/ Engineers. The Contractor shall on demand shall produce such evidence of qualifications of his Workmen/ Supervisors/Engineers, either at the commencement of Work or at any time thereafter/ during currency of the Contract. The entire Work shall be High Class with the best Workmanship and to the entire satisfaction of Engineer-in-Charge/ GE.

23.5 WIRING:-

23.5.1 All work of electrification shall be executed by fully qualified licensed electricians as per the latest Engg practice and latest IS code/IE Rules. Certificates of qualification shall be produced on demand by EIC.

23.5.2 The position of electrical fittings and fixtures shall be as directed by EIC at the time of execution.

23.5.3 Looping-in-system of wiring shall invariably be used through out the installation.

23.5.4. PRECAUTIONS :-

23.5.4.1 All safety precautions shall be taken by the contractor to prevent danger to persons.

23.5.4.2 The contractor/his workmen shall not start work in the electric line or on electric equipment unless he obtains proper shut down and unless he/they are reasonably satisfied that there is no danger to the life of workmen.

23.5.4.3 The contractor shall be responsible for providing all necessary safety equipment to his workmen to avoid accidents. In case of accidents the department will not be held responsible.

23.5.5 TOOLS, LADDERS, SAFETY EQUIPMENTS ETC. :

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23.5.5.1 All tools, ladders, safety equipment's etc required to execute the work shall be arranged by the contractor and no extra payment shall be admissible to him for the same.

23.5.6 MATERIALS AND WORKMANSHIP

23.5.6.1 All electric works shall be carried out in conformity with the requirement of the Indian Electricity Act 1910 and Indian Electricity Rules 1950 framed there under also the relevant regulations of electric supply authorities concerned as amended from time to time.

23.5.6.2 Unless otherwise exempted under the rules of the Indian Electricity Rules all electrical works shall be carried out under the supervision of person having a certificate of competency issued by the recognized authority. The workman shall also held certificate of competency.

23.5.6.3 Good workmanship is an essential requirement for compliance with their specifications. The work shall be executed in such manner as directed by the EIC.

23.5.7 TYPE OF WIRING :

23.5.7.1 The type of wiring shall be given in relevant section of schedule 'A' and particular specification and as directed by EIC. Point wiring for light/ power/ fan/ bell or buzzer etc including all works comprising of :-

- (a) Supply and fixing/drawing of cable for carrying out wiring.
- (b) Supplying and fixing of suitable size sunk pressed steel terminal box covered with white PVC laminated sheet to accommodate requisite switches, sockets, fan regulators or switch socket combination.

23.5.7.2 NON METALLIC (PVC) CONDUIT AND CONDUIT ACCESSORIES:-

23.5.7.2.1 Refer clause 19.29 of MES Schedule Part-I, 2009. Conduit and conduit accessories shall conform to relevant IS i.e., IS-9537 (Part-III) 1983 and IS-3419-1976. Conduit shall be non-metallic PVC conduit and shall show no appreciable un-evenness. Interior and ends of conduit and conduit accessories shall be free from bushes, ducts fins and the like which may cause damage to the cables. Each length of PVC conduit shall be marked with the following :-

- (a) Manufacturer's name or trade mark.
- (b) Country of manufacture.
- (c) Nominal size of the conduit.

23.5.7.2.2 Each length of conduit shall also be marked with the ISI certificate mark.

23.5.7.2.3 PVC flexible conduit of size as directed by the Engineer-in-charge shall be provided as required without any extra cost.

23.5.7.2.4 CONDUIT ACCESSORIES

23.5.7.2.4.1 The conduit fittings shall be made of non metallic PVC and shall be fabricated or cast to shape. They shall be so designed and constructed that they match with the corresponding conduit sizes without any adjustment and ensure reliable mechanical protection to the cable. The inside edges, through which the cables are intended to pass, shall be smoothly routed in order to prevent abrasion of cables. Entries for conduits shall be formed so as to prevent the conduit being screwed or pushed right through to the interior of the fittings. Inspection fittings shall be so constructed that the screws fixing the cover do not deform the conduits or damage the insulation of the cable enclosed. The screwed couplers shall be screwed inside throughout their entire length.

23.5.7.2.4.2 The axis of any elbow shall be a quadrant of a circle plus a straight portion at each end. Normal bend shall be large sweep being giving a diversion of 90 degree in the turn of the conduit half normal bends shall be similar to normal bends both as regards of curvature and length of straight portions at the ends but shall

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give a diversion in the run of the conduit of 45 degree small circular boxes shall be provided with lugs of thickness not less than 2.8 mm for fixing the covers. Large circular boxes shall have lugs of thickness not less than 4mm for fixing the cover fittings shall be adequately protected against rust and corrosion both outside and inside with medium protective coating.

23.5.7.2.4.3 Fitting shall comply with the dimensions given in appropriate tables of IS-2667-1976 subject to a tolerance of + 5 percent.

23.5.7.2.4.4 Each fittings shall be marked clearly and with the following information :-

- (a) Name or trade mark of manufacturers.
- (b) Country of manufacture.

23.5.7.2.4.5 The fittings may also be marked with the ISI certification mark.

23.5.7.2.4.6 Conduit pipes shall be fixed by heavy gauge saddles, secured to suitable wood plugs or other plug with screws in an approved manner at an interval of not more than one metre, but on either side of couplers at bends or similar fittings, saddles shall be fixed at a distance of 30 cm from the center of such fittings. All necessary bends in the system, including diversion shall be done by bending pipes or by inserting suitable solid or inspection by normal bends, elbows or similar fittings, or fixing inspection boxes whichever is more suitable. Conduits fittings shall be avoided as per as possible on conduit system exposed to weather, where necessary solid type fittings shall be used. All the screws shall be cadmium coated.

23.5.7.2.4.7 The conduit of each circuit or section shall be completed before conductors are drawn in the entire system of conduit after erection shall be tested for mechanical and electrical continuity through out and permanently connected to earth wire by means of suitable earthing clamp efficiently fastened to conduit pipe in a workman like manner for a perfect continuity. Gas or water pipes shall not be used as earth medium.

23.5.7.2.4.8 Inspection type conduit fittings such as inspection boxes, drawn boxes, bends, elbows and tees shall be so installed that they can remain accessible for such purposes as to withdrawal of existing cables or the installing of additional cables.

23.5.7.2.4.9 Separate conduit shall be used for normal light, fan, exhaust fan.

23.5.7.2.4.10 In case of concealed wiring, conduits shall be laid before casting in the slab so as to conceal the entire run of conduits and ceiling outlet boxes. Vertical drops shall be buried in columns or walls.

23.5.7.2.5 All wiring from FFL upto a height of 100 cm shall be drawn through non-metallic (PVC) conduit, concealed in walls. Contractors rates for the respective item of point wiring shall included for this provision.

23.5.7.2.6 All the fan boxes shall be covered with 3 mm thick hylem sheet and contractors rate for the point wiring for fan shall include this provision.

23.5.7.2.7 LAYING OF CONDUITS

23.5.7.2.7.1 Conduits shall be laid either recessed in walls and ceilings or on surface on walls and ceilings or partly recessed partly on surface, as required.

23.5.7.2.7.2 Same rate shall apply for recessed and surface conduiting in this contract.

23.5.7.2.7.3 Stranded copper conductor insulated wire of size as per schedule of quantities shall be provided in entire conducting for loop earthing.

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23.5.7.2.7.4 GI wire of suitable size to serve as a fish wire shall be left in all conduit runs to facilitate drawing of wires after completion of conducting.

23.5.7.3 PVC CASING - CAPPING WIRING:-

23.5.7.3.1 PVC Casing – Capping wiring shall be all as described in Schedule- 'A' .

23.5.7.3.2 PVC Casing -Capping and their fittings/accessories shall be as per relevant IS .

23.5.7.3.3 The point wiring cable shall be enclosed and secured within the PVC Casing- Capping and fitting / accessories .

23.5.7.3.4 PVC Casing – Capping and fittings / accessories shall be fixed to the surface of wall/ceiling by means of PVC sleeves /dash fasteners with cadmium plated steel screws at distance required for proper holding, all as directed by GE However in long runs this distance shall not exceed 75cms.

23.5.7.3.5 Their shall be no gap between two lengths of casing and capping or between casing -capping and PVC fittings / accessories

23.5.7.4 DISTRIBUTION BOARD:-

23.5.7.4.1 (a) Distribution board shall be as described in Schedule 'A' and shall be made of 1.6mm thick steel sheet properly pretreated conforming to IS: 13032 and stove enameled powder painted. Bus bar shall be of copper and shall be fixed all as directed by EIC.

(b) Suitable earth terminal shall be provided in the distributionboard for bonding to each.

(c) Distribution board shall be any one of the make as described in Sch 'A' and should bear ISI marking .

23.6 MCB AND DISTRIBUTION BOARD

23.6.1 Extra length of cable shall be kept inside the distribution board for connection with MCB. All cable terminals with MCB shall be provided with suitable crimping lugs. All MCB and their distribution board shall comply with IS 8828-1978 and shall have minimum rupturing capacity as 10.0 kA.

23.8 SWITCHES / SWITCH SOCKET:-

23.8.1 Switches / Switches socket shall be as described in Sch 'A' and current carrying parts shall be make of brass, copper phosphor bronze, aluminum alloy or any other suitable materials, springs shall be of corrosion resistant metal. Attachment fitting screw and other noncurrent carrying parts shall be of mild steel aluminum alloy or insulation materials. All socket shall bear ISI marking. These shall be any one of the make as described in Sch'A' .

23.9. SUB MAIN WIRING :

23.9.1 Wiring shall be carried out as specified in the Sch 'A' item and as per Para 19.102 of SSR (Pt-I). Cable shall be ISI marked SSR Part-I, 2009.

24. EARTH CONTINUITY :-

24.1 Earth continuity conductor shall be as mentioned in Schedule 'A' and all specified in clause 19.142 and 19.143 of MES SSR Part-I,2009 and as directed by EIC.

25. TESTING :

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25.1 After completion of work necessary tests as specified in clause 19.2.5 under Section 19 of MES SSR Part-I, 2009 testing of all internal electrical installations shall be carried out by the contractor in accordance with clause No 19.146.1 to 19.146.3 of MES SSR Part –I, 2009 and as per IE rules shall be carried out by the contractor in presence of EIC. Test results shall be kept in record duly authenticated by the EIC if satisfactory result is obtained.

25.2 RECORD DRAWING

25.2.1 Record drawings for the complete work of wiring on tracing cloth with two prints as directed by the Engineer-in-Charge shall be submitted by the contractor at his own expense.

25.3. ROUTINE AND COMPLETION TESTS**25.3.1 Installation Completion Tests:**

25.3.1.1 At the completion of the work, the entire installation shall be subject to the following tests:

- (a) Wiring continuity test
- (b) Insulation resistance test
- (c) Earth continuity test
- (d) Earth resistivity test

25.3.1.2 Besides the above, any other test specified by the local authority shall also be carried out. All tested and calibrated instruments for testing, labour, materials and incidentals necessary to conduct the above tests shall be provided by the contractor at his own cost.

25.3.2 Wiring Continuity Test:

25.3.2.1 All wiring systems shall be tested for continuity of circuits short circuits and earthing after wiring is completed and before installation is energized.

25.3.3 Insulation Resistance Test

25.3.3.1 The insulation resistance shall be measured between earth and the whole system conductors, or any section thereof with all fuses in place and all switches closed and except in concentric wiring all lamps in position of both poles of the installation otherwise electrically connected together, a direct current pressure of not less than twice the working pressure provided that it does not exceed 1100 volts for medium voltage circuits. Where the supply is derived from AC three phase systems, the neutral pole of which is connected to earth, either direct or through added resistance, pressure shall be deemed to be that which is maintained between the phase conductor and the neutral. The insulation resistances lower than one mega ohm. The insulation resistance shall also be measured between all conductors connected to one phase conductor of the supply and shall be carried out after removing all metallic connections between the two poles of the installation and in those circumstances the insulation shall not be less than that specified above. The insulation resistance between the frame work of housing of power appliances and all live parts of each appliance shall not be less than that specified in the relevant standard specification or where there is no such specification, shall not be less than half a mega ohm or when PVC insulated cables are used for wiring 12.5 mega ohms divided by the number of outlets. Where a whole installation is being tested a lower value than that given by the above formula subject to a minimum of 1 Mega ohms is acceptable.

25.3.4 Testing of Earth Continuity Path

25.3.4.1 The earth continuity conductor including metal conduits and metallic envelopes of cable in all cases shall be tested for electric continuity and the electrical resistance of the same along with the earthing lead but excluding any added resistance of earth leakage circuit breaker measured from the connection with the

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earth electrode to any point in the earth continuity conductor in the completed installation shall not exceed one ohm.

25.3.5 Testing of Polarity of Non-Linked Single Pole Switches

25.3.5.1 In a two wire installation a test shall be made to verify that all non-linked single pole switches have been connected to the same conductor throughout, and such conductor shall be labeled or marked for connection to an outer or phase conductor or to the non-earthed conductor of the supply. In the three of four wire installation, a test shall be made to verify that every non-linked single pole switch is fitted to one of the outer or phase conductor of the supply. The entire electrical installation shall be subject to the final acceptance by GE.

25.3.6 Earth Resistivity Test

25.3.6.1 Earth resistivity test shall be carried out in accordance with IS Code of Practice for earthing IS 3043.

25.3.7 Performance

25.3.7.1 Should the above tests not comply with the limits and requirements as above the contractor shall rectify the faults until the required results are obtained. The contractor shall be responsible for providing the necessary instruments and subsidiary earths for carrying out the tests. The above tests are to be carried out by the contractor without any extra charge.

25.3.8 Tests and Test Reports

25.3.8.1 The contractor shall furnish test reports and preliminary drawings for the equipment to the GE for approval before commencing supply of the equipment. The contractor should intimate with the tender the equipment intended to be supplied with its technical particulars. Any test certificates etc. required by the local Inspectors or any other Authorities would be supplied by the Contractor without any extra charge.

26. EARTHING

26.1 Earthing shall be carried out by Earth Electrodes as shown in Electrical Plate No. 3 of MES Schedule Part-I and as specified in IS-3043 including upto date amendments thereto. The Earth Electrodes shall be placed all as specified and as directed by Engineer-in-Charge and 2.0 Metre away from the Main Structure. The surplus soil obtained from the excavation shall be removed to distance not exc. 50 Metre. The Concrete for Chamber shall be PCC 1:3:6 (using 20 mm graded stone aggregate) and exposed surfaces need to be finished fair. Funnel shall be prepared out 3.15mm thick PGI Sheet by welding and shall be leak proof. It shall be provided with wire gauge with 1.18mm average width of aperture and 0.45mm average dia of wire soldered to Funnel Cover. Dust shall be used for Medium Grade 20mm with 12mmdia holes drilled staggered @ 300mm C/C through out Pipe. The bottom of Pipe shall be layed at an angle of 45°. Earthing shall be interconnected with strip as per directed by the Engineer-in-Charge.

26.2 The following Tests shall be carried out to the entire satisfaction of the Engineer-in-Charge :-

- (a) Earth Resistance Test : Resistance of each Earthing shall be measured individually and shall not exceed 0.5 Ohm in ordinary soil and 3 Ohm in Rocky situation.
- (b) In case the Resistance is more than as specified, the Contractor shall increase the depth of the Bore hole, quantity of Charcoal, Salt and length of Electrodes to bring the Resistance of Earth to the Value specified above, without any Extra Cost to the Government.

27. GUARANTEE/ PRODUCTION OF TEST CERTIFICATE

27.1 After completion of work the contractor shall guarantee that materials and workmanship of the equipment, power system and connected items offered and installed by him are new and best quality in every respect

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and he will make good the defects, damages which are not attributed to normal wear and tear or misuse for which decision of the GE is final and binding. Contractor shall be responsible for repairing and or replacing at his cost any parts which are rendered defective and unserviceable during the defect liability period.

27.2 Manufacturer's test certificate in respect of HT/LT cables and other equipment as directed by GE are to be submitted to the Engineer-in-Charge by the contractor before any payment from Department.

28. **SAFTY PRECAUTION:-** The contractor shall take precautions during execution of work i.e. "MES SAFETY CODE" as laid down in IAFW-2249 annexure 'B' para 1 to 15 of serial page No. 30 and 31.

29. **DEMOLITION/DISMANTLING/MAKING GOOD**

29.1 Refer paras of section 21 of MES Schedule Part-I. All demolished/taking down materials (except those were re-used and not accounted in Schedule of Credit) shall be returned to MES store without any extra cost to the Government.

29.2 Please note that if any existing surface is damaged during taking down/execution of work that surface shall be made good as per existing one without any extra cost to the Govt. The rate for making good is deemed to be inclusive in the quoted rates of Schedule 'A'/BOQ.

30. **PROTECTION DURING EXECUTION**

30.1. During execution of work adequate preparation and care shall be given so that the existing structures and other allied items are not damaged. If anything happens in this regards, the same has to be made good by the contractor at his own expense.

31. **REMOVAL/SITE CLEARANCE:** Old demolished materials considered under Schedule of credit shall be the property of the contractor and will be removed by the contractor from the site. Debris and other materials if any shall be disposed off and sites to be cleared to the entire satisfaction of the GE.

32. **EXTERNAL ELECTRIFICATION**

32.1 **SCOPE OF WORK**

32.1.1 The extent of work is as per items given in schedule 'A'. All references to Clause in the succeeding paragraphs pertain to MES Schedulepart-1.

32.2 **GENERAL REQUIREMENT**

32.2.1 Materials, execution, testing and record of installation shall conform to relevant IS certifications and as given in Clause 19.2.1 to 19.2.6 of MES Schedule part-1 and as also in accordance with Indian Electricity Rules1956.

32.2.2 The location and distribution of various items in the drawing is tentative. The GE as per the site requirements can make alternations and there shall be no price adjustment on this account.

32.2.3 On completion of entire work, the contractor shall submit in triplicate to the Engineer-in-Charge layout plan showing actual position of poles, routes, cable run, and all other information's and details as directed by the GE that will be necessary for record of maintenance and operation.

32.3 **SAMPLE AND MATERIALS**

32.3.1 All materials, fittings and appliances etc. to be incorporated in this work shall be of highest standard and unless otherwise specified here in after shall strictly comply with the relevant IS

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specifications. The contract or will supply the samples of the following items /materials to GE for approval.

- 32.3.1.1 All types of insulators
- 32.3.1.2 All types of underground cables
- 32.3.1.3 Danger Notice Boards
- 32.3.1.4 Stay assembly and stay wire and anti-climbing device.
- 32.3.1.5 All type of conductors
- 32.3.1.6 Earthling plates/electrodes
- 32.3.1.7 MCCB
- 32.3.1.8 HT/LT in sulators
- 32..3.1.9 MCB &ELCB or RCBO
- 32..3.1.10 Distribution boards
- 32..3.1.11 Cable Route Indicator In addition to the above, other material as mentioned below, required to be incorporated in the work ,shall be invariably got approved in writing from GE:
- 32..3.1.12 Pre-stressed concrete poles/steel poles.
- 32..3.1.13 Setoff lightning Arrestor HT/LT.
- 32..3.1.14 LT Panel Board.
- 32..3.1.15 Voltmeter and Ammeter
- 32..3.1.16 Transformer copper coil
- 32..3.1.17 Transformer Oil
- 32..3.1.18 Any other item as directed by GE.
- 32.3.2 The material and the equipment to be supplied and installed under this contract shall be of indigenous make. In case tenderer offers any imported materials, he may do so out of his existing stock. No foreign exchange will be given by the department to the tenderer for importing any equipment for this job.
- 32.3.3 Steel in corporate in work need to be of test equality and the contractor shall procure all steel required to be incorporated in the work from market.
- 32.3.4 The contractor after obtaining written approval of samples from the GE shall purchase material and equipment from the approved firms or through their authorized agents only all as specified in these tender documents and as directed the GE.As a proof that a particular materials have been purchased from the firm/their authorized agents, the contractor shall produce such evidence to the satisfaction of GE when asked for With regard to quality the materials shall be brought to the site with maker's original packing with seal intact.
- 32.3.5 All electric works shall be carried out inconformity with the requirements of the Indian Electricity Act 1910

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and Indian Electricity Rules 1956 framed there under and fire insurance actas applicable and elsewhere relevant regulations of electric supply authorities concerned as amended from time to time.

32.3.6 Unless otherwise exempted under the rules of the Indian Electricity Rules, all electrical works shall be carried out under the supervision of person holding a certificate of competency issued by the recognized authority. The workman shall also hold certificate of competency.

32.3.7 Good workmanship is an essential requirement for compliance with their specifications. The work shall be executed in the manners directed by the Engineer-in-Charge.

32.4 MAKING GOOD :The contractor is deemed to have included in his lump sum cost of cutting holes/making chases when required through roads/bricks or concrete work for taking in cables, conduits and conductors etc and making good the same to match with the existing work.

33. EQUIPMENT AND MATERIALS

33.1 **STANDARD OF QUALITY AND WORKMANSHIP** :-All equipments and materials to be incorporated in the work shall be one of the following makes as approved by the Garrison Engineer in writing and shall strictly comply with latest appropriate, Indian standard specifications or where IS specifications not available, those shall comply with the latest BS specifications.

33.2 Materials and equipment's for which make have not been specified shall be of standard makes and shall strictly comply with current appropriate IS specifications or where IS specifications has not been issued, they shall comply with the latest BS specifications.

33.3 The supply and installation of all electrical equipment's and accessories shall strictly comply with the provisions contained in the at estedition of India Standard code of Practice IS specification as applicable to above mentioned work except where such regulations and rules are modified by these specifications.

33.4. (See condition 25 of General conditions of contracts IAFW-2249).All electrical works shall be carried out by properly skilled and licensed electricians under the supervision of qualified electrical supervisors/Engineers. The contractor shall on demand by the Engineer-in-Charge .produce such evidence of qualification of his workmen/Supervisors/Engineers, either at the commencement of work or at any time there in after during the currency of the contract. The entire work shall be of high class with the best workmanship and to the entire satisfaction of the Engineer-in-Charge.

34. LAYOUT OF EQUIPMENT

34.1 Layout of various equipments, cables, control box, LT Panel Board etc, shall be as directed by the Engineer-in-charge to suit the site requirements.

35. STEEL TUBULAR POLES.

35.1 Steel tubular poles shall be comply with the requirements of IS 2713 Part I to III (Specification for steel tubular pole for overhead power lines) and shall be described in Schedule 'A'.The contractor shall produce copy of the manufacture's test certificate to this effect that the poles comply with the requirement to IS-2713 Part I to III if called upon by the Engr-in-charge.

35.2 Erection of pole shall be carried in accordance with IS-5613 (Part-I) in PCC foundation. The embedding of the pole shall be as specified here-in-after.

35.2.1 The pole shall be erected with due care, in such a manner that they are truly vertical position as directed by Engr-in-charge. These shall be erected exactly in a line except where line changes direction. Proper erection equipment such as derrick, cranes, shear ages etc shall be used by the contractor at the time of erection of pole, so that they are not improperly strained or damaged during operation and are finally

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stayed till the foundation has properly done and secured.

- 35.3 Refer para19.3 of MES Schedule Part-I (1991) including subpara as applicable.
- 35.4 The steel tubular poles shall be erected all as specified under par 19.50,19.51,19.51.1,19.51.2,19.52 of MES Schedule Part-I.
- 35.5 The poles shall be numbered as directed by the Engr-in –charge. With letters and figures of height 75mm at a height 2.60 meter from ground level. The cost for numbering is deemed to be included in the cost of Schedule 'A' item.
- 36 CROSS ARMS, CLAMP SET.**
- 36.1 Sizes of cross arms, bracings clamps etc shall be all as specified and directed by Engineer-in charge and as described in Schedule 'A'. Some of the cross arms may have to be made to required shape as directed by Engineer-in-charge. No extra payment shall be made on this account.
- 36.2 Steel section shall be cut to con form exact shape sand lengths as directed.
- 36.3 Shape and size of champs, bolts etc shall be all as directed. Normally clams shall be made out of flat iron and shall bees cured within the adequate size of bolts and nuts etc.
- 36.4 The rate quoted shall include for drilling, punching holes. Holes shall be punched clean and burns removed and edges fixed square and smooth.
- 36.5 Cross arms and clamps shall be painted with two coats of aluminum paint over a coat of red oxide primer.
- 36.6 The work of steel cross arms shall be carried out all as specified in para 19.9,19.53.3 including sub para of MES Schedule Part-I and the same shall be fixed in a approved manner as per direction of Engineer-in-charge.
- 37 ACSR CONDUCTOR.**
- 37.1 ACSR conductor shall comply with the requirement of IS-398.
- 37.2 All jointing in ACSR shall be twisted jointing. This joints consists of two oval shapes aluminum sleeves, angle enough to slip over dead ends of cables to be jointed. Pressure twisted type joints shall be made.
- 37.3 For connection of conductors dead end to the insulators on poles dead end pooling is to be done after taking the cable around the thimble by using a finished joint.
- 37.4 For laying conductor to insurancy aluminium binding wire of suitable size for different conductors as per manufactures instruction shall be provided.
- 37.5 For connection of service wire, jumper, main line conductor, MS clamps of approved quality are to be used.
- 38 INSULATOR, STAY WIRES,STAYA SSEMBLY.**
- 38.1 Refer para19.6,19.7 and19.8of MES Schedule Part-I
- 39 EXPULSION TYPE LIGHTNIN GARRESTERS**
- 39.1 All as specified under para19.13 and19.13.1of MES Schedule Part-I.
- 40 TRIPLE POLE AIR BREAK SWITCH**
- 40.1 Refer para19.69 of MES Schedule Part-I(2009)

PARTICULAR SPECIFICATION CONTD....**41 CURRENT TRANSFORMERS (CTs):**

41.1 Refer clause No19.99.13 of MES Schedule Part-I(2009).

42 CABLE TERMINATION & JOINT KITS :

42.1 Refer clause No19.22 of MES Schedule Part-I(2009).

43 PAINTING OF POLES, CROSSARMSETC. :

43.1 Refer clause No19.71of MES Schedule Part-I(2009).

44 CABLE WORK

44.1 Where the cables are to be laid in the trenches 80 mm thick cushion of clean dry sand shall be provided below the bottom of cable. The cable shall be covered by a further layer of clean dry sand above the cable, to the height as mentioned in MES Schedule. The cable cover/Bricks shall be laid dry and side by side to protect the cable from mechanical injury, the cables shall be looped at ends for furthers joints. The above additional length of cable as directed by Engineer-in-Charge shall also be measured and paid for under the respective item of cable in Schedule 'A'. Laying bricks at places where cables area shacked, shall be done as directed by the Engineer-in-Charge shall also be measured and paid for under the respective items of in Schedule 'A'. Cable gland shall be provided at cable termination in the DBS and feeder pillar-box, the cost of which is deemed to be included in the rate of cable.

44.2 All jointing materials such as tape, cables compound and cable boxes, etc. for straight joints shall be provided by contract or without extra cost to Government.

44.3 The cables being of short length for various connections, there shall be no straight through joints. The cable shall be terminated in switch fuse units through suitable pin type hugs.

44.4 The cost of cutting through roads drains path for laying cable under the road/drain/path and making good shall be deemed to be included in the unit rate quoted against GI pipes.

44.5 **Sand cushioning** – The sand shall be local sand as approved by Engineer-in-Charge. For laying of Cable in trenches, provision of cushioning shall be carried out all as a specified in clause 19.75 and19.77 of MES Schedule Part-I.

44.6 LAYING OF HT CABLES

- a) The HT XLPE insulated PVC sheathed underground cables shall be of 11000 volts(E), grade armored, heavy-duty underground cable, conforming to IS-7098 (Part-I&II).
- b) The cable should be laid at a depth of not less than 750mm plus radius of complete cable.
- c) HT Cable shall bear ISI certification mark.
- d) Both ends of pipe protecting the cable shall be sealed with wooden bush escutin to two halves of appropriate size.
- e) The cable shall be protected by means of 15cm of sand cushion on top and under the cable as described in SSR Part-I.
- f) Earthwork, sand cushioning & cable protection shall be measured and paid separately.

44.7 LAYING OF LT CABLES

- (i) The XLPE insulated PVC sheathed (HeavyDuty) underground cables shall be of 1100volts, grade armored, heavy-duty underground cable, conforming to IS-7098 (Part-I).
- (ii) The cable should be laid at a depth of notless than 450mm plus radius of complete cable.
- (iii) LT Cable shall bear ISI certification mark. Both ends of pipe protecting the cable shall be sealed with wooden bushes cut into two halves of appropriate size.
- (iv) The cable shall be protected by means of 15cm of sand cushion on top and under the cable as described in SSR Part-I.
- (v) Earthwork, sand cushioning & cable protection shall be measured and paid separately.

44.8 LT CABLES

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44.8.1 The PVC insulated PVC Sheathed cable shall comply with IS 7098 (Part-I) and as specified in Para 19.19 of MES Schedule Part-I. Laying of cables shall be carried out as specified in relevant para of MES Schedule para of MES Schedule Part-I.

44.9 TESTING OF CABLES

This shall be carried out all as specified in Para19.93 to 19.93.1 and 19.93.67 of MES Schedule Part-I.

44.10 TEST CERTIFICATE

44.10.1 The Contractor shall submit Manufacturers test certificate and literature for LT Cable.

44.11 CABLE JOINTING

44.11.1 Cable as far as possible shall be laid in complete lengths, uncut lengths from one termination to the other. Before start of cable laying, cable schedule shall be prepared and approved by EIC to minimize /avoid straight through required in the entire network shall be worked out and approved by the EIC. All cable jointing in terminal or through joint boxes shall be carried out by experienced/trained and qualified cable jointers.

44.11.2 Cable Jointing work shall be carried out only by a licensed/experienced cable jointer. Sufficient surplus cable approximate 3 meter shall be left on each end of the cable and on each side of underground joints at the time of original installation. A caution board indicating "CAUTION CABLE JOINTING WORK IN PROGRESS" shall be displayed to public and traffic where necessary.

44.11.3 CABLE TERMINATIONS AND STRAIGHT THROUGH JOINT KITS FOR 3 CORE HT XLPE CABLES

44.11.3.1 The cable termination kits and straight through joint kits shall be suitable for HT. XLPE cables shall be of Cold shrinkable or push type on with sound and proven technology. These terminations shall be environmental friendly and flame-retardant

44.11.3.2 Each kit shall contain all necessary components accessories, including cable glands where verrequired cable lugs (clamping type) jointing materials and consumables to make a complete termination in such a way that no live parts of the terminal and connecting lugs are exposed.

44.11.3.3 The basic raw material used in construction of Joints and termination shall be Electrical grade EPDM (Ethylene Propylene Diene Monomer Rubber component) with high dielectric strength. The termination shall control the voltage distribution of electrical field effectively and shall minimize the surface stress by uniformly redistributing the electrical field over the entire surface of the insulator. Insulators shall be made of silicon rubber with long service life.

44.11.3.4 The straight through joint kits shall be suitable for underground buried installation with uncontrolled back fill and chances of flooding by water and suitably designed to be protected against rodent and termite attack. Further the joint kit shall be in capsulated in cast resin compound to provide excellent mechanical & moisture protection in sub soil conditions. While making termination, earthing connection & outer protection arrangement shall also be sured.

44.11.3.5 The test certificates from the manufacturer for termination kits and straight through joints kits shall mention results of the following tests:-

44.11.3.5.1 AC Voltage with stand test (as per IEC-68)

44.11.3.5.2 Partialdis charge test

44.11.3.5.3 Impulse with stand test (as per IEC-68)

44.11.3.5.4 Load cycling test (as per VDE-2078)

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44.11.3.5.5 Thermal short circuit test.

44.11.3.5.6 DC Voltage with stand test.

44.11.3.5.7 Humidity test (as per IEC-166)

44.11.3.5.8 Dynamic shortcircuit test(as per VDE-2078)

44.11.3.5.9 Salt Fog(out door termination only) test.

44.11.3.5.10 Impact test (for joints only)

44.11.4 CABLE END TERMINATION AND STRAIGHT THROUGH JOINT FOR 1100V GRADE XLPE CABLES

Cable end termination Indoor/outdoor type and straight through joints for LT cables shall be based on cast resin system. The casting resin shall be polyurethane based having compatibility with the cable components. The termination kit shall be designed for easy installation and have crutch sealing arrangement for environmental protection on the core trifurcation. The joints shall be suitable to with stand mechanical impact, heat shock tests, load cycle test and water, penetration test (under pressure) with out damage to the outer sheath.

44.11.5 CABLE TERMINATIONS

All cables shall be terminated at the end in such a manner as to prevent ingress of moisture into cable. The type and method of termination of cable shall depend on the voltage of cable and type of termination whether indoor or outdoor. All types of cable and termination joints shall be indicated as prescribed by the cable manufacturers. However the following types of joints and termination systems are common and popular.

- (i) Tape system
- (ii) Heat shrinkable sleeve type
- (iii) Pushonorslipon type technique

44.12 CABLE ENDS

44.12.1 Refer Para 19.86.1 of MES Schedule Part-I (2009) .All PVC cables upto 1100 volts gde shall be terminated into the equipment by means of compression type cable glands having screwed nipple sand check nuts. The cable conductors shall be provided with crimped type solder less cable sockets or connectors to suit the termination arrangement of the equipment. The crimping shall be done by hand/hydraulically operated crimping tool after applying conducting jelly. The insulation of the cable shall be removed just immediately before the crimping is done.

45. SAND CUSHIONING

45.1 Sand : Sand shall be durable clean and free form adherent costing, organic matter and shall not considered and reliable amount of clay balls.

45.2 Sand cushioning shall be done to the full width of the trenches and shall be carried out all as specified in para 19.75 of MES Schedule part-I

46. CABLE PROTECTION:-

46.1 PRE-CAST CABLE PROTECTION

46.1.1 Refer Para 19.88 of MES Schedule Part-I (2009). Protection of Cables Where indicated, the final protection shall be provided by laying precast concrete cable covers of the type and size as indicated

46.2 BRICKSFORCABLEPROTECTION

46.2.1 Bricks shall be common burnt clay building bricks (old size bricks) of sub-class'B' locally available and best quality.

46.2.2 The un-reinforced pre cast cover and bricks are provided for protection of cable for covering the cables.

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The un-reinforced pre cast cover shall be laid flat (width of protection being equal to length of brick). After the layer of un-reinforced pre cast cover is laid the remaining trenches will be filled with excavated earth.

46.3 Cable path indicators shall be provided at distance of every 100 meters and at cable joints and turning of all cables except for street light cables and 2 core cables size and voltage written on it. The CI path indicator shall be fixed on MS angle iron. The cable path indicators shall be erected the time of refilling the trenches sand the cable path indicator shall be painted as under.-

46.3.1 For HT 11KV cables-"BROWN"

46.3.2 For LT cables -"BLUE"

47. EXPULSION FUSES

47.1 Shall comply with IS9385 (Part2)-1980, Specification for high voltage expulsion fuse sand similar fuses.

48. GI TUBING

48.1 GI tubing for cable protection shall to be light grade of make TATA/JINDAL/BANSAL/GST and all as per para18.4 of MES schedule part-I (2009).

49. WORK IN ACCORDANCE WITH SPECIFICATION

49.1 Work under this contract shall be carried out as per brief description given in Sch 'A', particular specifications. Work shall also be in conformity with IE rules, relevant IS specification and SSR which are forming part of the contract. The entire work shall be carried out properly with due care and under the supervision of competent technical personnel.

50. PAINTING TO STEEL AND IRON WORK

50.1 Refer Clause No.17.8 of MES Schedule Part-I.

50.2 Filler coat is not required to be applied. Where painting is indicated in Schedule of finishes, it shall be done in three coats viz primer, under coat and finishing coat. Primer for steel surfaces shall be red oxide zinc chromium and under coat and finishing coat shall be of synthetic enamel paint.

50.3 All exposed surfaces of iron and steel other than galvanized surfaces and reinforcement shall be painted with two coats of synthetic enamel paint over a coat of primer. Primer for steel work shall be red oxide zinc chrome primer. Steel brackets of cisterns/WHB shall be given two coats of aluminium paint over a coat of primer. However, steel members of roof, hidden by ceiling shall be painted with two coats of red oxide primer.

50.4 **PAINTING TO CONCRETE/PLASTERED SURFACES:-** Irrespective of what is shown on drawing, plastered/concrete surfaces of inside wardrobe, lofts, cupboard and open shelves shall be applied two coat so synthetic enamel paint over a coat of primer (white).

51. DRAWINGS

51.1 Schematic diagram of power wiring including cable sizes of LT Panel Board.

52. LT PANEL BOARD

52.1 CPRI Approved Factory Made LT Panel Board shall be fabricated with 2.00 mm CRCA sheet for indoor panel and 3.15 mm CRCA sheet for outdoor panel, built cubical, fully Compartmentalized type, dust and vermin proof, suitable for indoor installation, with bottom cable entry, structure treated under 8-Tank metal treatment process and duly powder coated, with electrolytic copper bus-bars supported on non-hygroscopic fibers, instrument wiring with suitable rating copper conductor and provided with GI Earthing strips, ventilating louvers, cable etc. comprising of components indicate tin Schedule-A.

53.2 Connection of control wiring of LT Panel Board shall be done with screw less connection strips and ferrules for identification of both ends.

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- 53.3 The Structural and connection Diagram shall be go tap proved by Engineer-in Charge & GE before Fabrication of panel.
- 53.4 The payment of LT Panel Board shall only be allowed after production of original purchase vouchers, test certificates by the contractor and result of testing carried out by the Department are found satisfactory after testing.
- 53.5 **BUSBAR:**
- 53.5.1 Bus Bar of rectangular cross section suitable for full rated current for phase bus bar, and half rated current for neutral bus bar and shall be extendable on either side. Bus Bar shall be made of high conductivity copper. The rating of bus bar shall be for a maximum total operating temperature of 110 deg.C, at an ambient of 40 deg.C.
- 53.5.2 The Bus bars shall be fully insulated with heat shrinkable PVC Sleeves.The sleeves shall be color coded for easy identification of individual phase and neutral.
- 53.6 Two nos. of GI earth studs of suitable size with double washers shall be provided on the body of power distribution panel. The terminal shall be permanently marked 'E'.
- 53.7 Danger notice plate of 1.6 mm thick mild steel sheet, vitreous enameled with letters, figures and conventional skull and bones in signal red color of size 20 cm x 15 cm shall be fixed on the front cover with four Nos of screws.
- 53.8 Testing of LT Panel Board. The following tests are to be carried out at the expense of the contractor and to the satisfaction of the Engineer-in-Charge. Over and above the factory test and test certificate furnished.
(i) Earth Test.
(ii) Insulation Test.
(iii) Commissioning Test as per IE Rules.
- 53. EARTHING**
- 53.1 Earthing shall be done in accordance with latest 13:3:42 code of practice for earthing and MES Schedule Part-I and IE rules. The contractor shall obtain approval of Engr-in-Charge before commencement of earthing work and it shall be executed in the presence of an authorized MES representative.
- 53.2 The earth electrode shall be located at least 2 m from the footing of the nearest foundation. Test links (test points) shall be provided in the earth circuit for carry in gout resistance measuring test.
- 54.3 In side and bottom of concrete pit shall be plastered 10mm thick in CM 1:4 and cover shall be with pre-cast RCC 1:2:4 type B1 reinforced with 8mm dia MS bar 15cm distance in both ways. Funnel shall be madewith20 gauge GI wire.
- 53.3 Charcoal, dust and salt filling shall be done in layers as shown in as shown in electrical plate No.3 of SSR, Part-I. Surplus soil shall be disposed off and site left clean on completion.
- 53.4 Testing shall be carried out off completion as per IE rule in the presence of Engr-in-Charge.
- 53.5 TESTING :-All electrical works shall be tested s specified in relevant Para's under section 10 or SSR Part-I,IE rule and as directed by Engineer-in-Charge Tools/apparatus etc requires for testing shall be supplied and standard by the contractor and the cost of testing shall be borne by the contractor.
- 54. LIGHTNING PROTECTION**
- 54.1 Arrangement for lightning protection shall be made on Locations as directed by Engineer-In-charge. The arrangement shall conform to IS-2309. On Ridge of Building aluminium Strip 25x3.150 mm shall be fixed

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with J Bolts on both side of Ridge as shown in Drawing. Both side, aluminium Strip shall be in contact with each other through Air Termination Point. If Extermination Point is separately fixed and not giving contact to both the aluminium strip in the case at every 10 Meter both the aluminium Strip shall be connected separately by a piece or same aluminium Strip so that Lightning have an easy and Shortest Passage to ground.

54.2 Air Termination Point shall be fixed as shown in Drawing. Aluminium Down Conductors shall be long CGI Sheet and on Wall fixed by means of Brass Saddles. Aluminum strip do conductor shall be terminated at Test Point. GI Strip coming from earth pit and from another te point shall meet Copper Down Conductor at Test Point. All Test Point shall be interconnect through Copper Strip as shown in Drawing.

54.3 All the Roof Conductor sand Down Conductors (i.e.aluminum Strip 25x.15mm) and Air Termination Copper Rod (12 mm dia& 300mm long) shall be mounted on suitable size of Porcelain Insulator. Due care be taken to ensure that any portion of the Lightning Protection Air Termination Rod and the Strip are not in contact with the Building. The cost of porcelain insulator is deemed to be included in the Quoted Rate/Amount of the concerned item.

55. DEMOLITION /DISMANTLING /TAKINGDOWN

55.1 Refer to relevant paras under section 21 of MES SSR 2009 Part-I (Specifications).

55.2 The contractor shall take proper precaution for demolition/dismantling work.If any damage caused due to dismantling/demolition to the existing structure, the contractor shall made good the same at his own cost without any extra cost to the Govt.

55.3 Unserviceable materials as per Credit Schedule obtained from demolition/dismantling shall be property of the contractor and shall credited as per schedule of credits. All demolished/dismantled materials shall be removed from the site of `the contractor as directed by the Engineer-in-Charge without any extra cost to the Govt. Demolished / Dismantled items not catered for in the Credit Schedule shall be the property of Govt and shall be handed over to Department store yard without any extra cost to the Govt.

56. TRANSLUCENT SHEETS ROOFING

Translucent sheet shall be of thickness as specified in BOQ/ Sch 'A'. Other specifications, laying and fixing of sheets and other workmanship shall be all as specified in clause 11.35 of MES Schedule Part-I (2009).

57. STEEL WATER TUBES AND FITTINGS.

58.1 Mild steel galvanized tubes (Pipes) and fittings shall comply with IS-1239 (Part-I and II). Refer clause 18.4 of MES Schedule Part-I for other specifications. These shall be laid in trenches/ under floors or fixed on wall/ ceiling and jointed all as specified in clause 18.50 and 18.51 of MES Schedule Part-I.

58.2 After pipes are laid and jointed in position but before they are buried in trenches or otherwise they shall be tested for the maximum permissible pressure specified hereinafter and defects noticed shall be made good immediately. It will be the responsibility of the contractor to arrange the testing apparatus without any extra cost.

58.3 After laying but before making joints, alignment and gradient of each section laid shall be got checked and approved (and such approval recorded) from the Engineer-in-Charge.

58.4 Angular adjustment to achieve change in direction or gradient may be done in joints upto maximum one degree per joint, and ten degrees between any two specials/ fittings. Larger angles shall be negotiated with GI bends for requisite degree.

58.5 Work shall be carried out as per Clause No 18.50.1 to 18.50.4 of SSR Part-I.

58.6 Plumbing work shall be carried out as specified in section 18.13 to 18.23 of MES Schedule Part-I (2009) and the Contractor shall employ licensed plumber.

PARTICULAR SPECIFICATION CONTD....**59. SANITARY FITTING AND PLUMBING WORK****59.1 GENERAL**

The work of supplying, fixing/ laying and jointing of water closets, wash hand basins, all pipes and fittings with accessories/ traps shall be carried out as specified in clause 18.32 of MES Schedule part I (2009).

59.2 Water closets, wash hand basins, etc, shall be vitreous china first/ standard quality white glazed and shall conform to relevant part of IS 2556 (Part-I)-1994 for Vitreous china sanitary appliances and shall be ISI mark or of superior quality and finish. Tolerance in the size of fittings as given in IS shall be permissible also refer relevant clause of Section 18 of MES Schedule Part-I(2009).

59.3 PVC WATER STORAGE TANKS

Materials & workmanship for PVC water storage tanks shall be as specified in clause 18.60 SSR Part-I (2009).

59.4 WHB

Vitreous china WHB works shall be carried out as specified in Para 18.32 & 18.89 MES Schedule part-I (2009).

59.5 WASH DOWN WC PEDESTAL PATTERN

Materials & workmanship for squatting pans shall be as specified in clause 18.32 & 18.87 SSR Part-I (2009).

59.6 SQUATTING PANS & OTHER SANITARY ITEMS

Materials & workmanship for squatting pans and other sanitary items shall be as specified in clause 18.32 & 18.86 to 18.90 of MES schedule Part-I (2009).

59.7 PVC LOW LEVEL FLUSHING CISTERN

Materials & workmanship for PVC low level flushing cistern shall be as specified in clause 18.34 & 18.99 SSR Part-I (2009).

59.8 SALT GLAZED STONEWARE PIPES, FITTINGS & GULLY TRAPS

Materials & workmanship for salt glazed stoneware pipes, fittings & gully traps shall be as specified in clauses 18.28 & 18.70 of SSR Part-I (2009).

59.9 CONCRETE BED AND HUNCHING OF PIPES

Concrete bed and hunching of pipes shall be as specified in clause 18.68 of SSR Part-I (2009).

59.10 BIB TAP/STOP VALVE/ PILLAR TAP/ANGLE COCK/BALL VALVE

It shall be as specified in clause no.18.14, 18.15, 18.16 and 18.19 of SSR Part-I (2009).

59.11 WATER PROOFING COMPOUND

WPC shall conform to IS-2645-1979 and shall be mixed in proportion as specified in Sch'A'/ BOQ or as per manufacturer instructions.

59.12 PVC (SWR) PIPES AND FITTINGS

Materials & workmanship for PVC (SWR) pipes and fittings shall be as specified in clause 18.67.7A of SSR Part-I (2009).

60 BARBED WIRE

Materials & workmanship for barbed wire shall be as specified in clause 10.32of SSR Part-I (2009).

61 CHAIN LINK FENCE

Materials & workmanship for chain link fence shall be as specified in clause 10.34 of SSR Part-I (2009).

62 PRECAST INTERLOCKING PAVER BLOCKS

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The work of precast Interlocking paver blocks shall be carried out as specified in clause 13.18 of MES schedule Part-I(2009).

63. **SAFTY PRECAUTION**:- The contractor shall take precautions during execution of work i.e. "MES SAFETY CODE" as laid down in IAFW-2249 annexure 'B' para 1 to 15 of serial page No. 30 and 31.
64. **PROTECTION DURING EXECUTION**:-During execution of work adequate preparation and care shall be given so that the existing structures and other allied items are not damaged. If anything happens in this regards, the same has to be made good by the contractor at his own expense.
65. **REMOVAL/SITE CLEARANCE**: Old demolished materials considered under Schedule of credit shall be the property of the contractor and will be removed by the contractor from the site. Debris and other materials if any shall be disposed off and sites to be cleared to the entire satisfaction of the GE.

**LIST OF PRODUCTS FOR WHICH SPECIFIC MAKES
ARE TO BE INCORPORATED IN WORKS**

GENERAL

Materials to be incorporated in the Work shall be any one of the following MAKE as approved by the GE in writing before incorporated in the Work. These shall strictly comply with latest appropriate Indian Standard Specification or where IS Specification is not available these shall comply with the latest BS Specification.

SI No	DESCRIPTION OF ITEMS	MAKE/BRAND
1 to 8	BLANK	
9	PAINT/DISTEMPER/POLISH/VARNISHES	
9(a)	Acrylic Washable Distemper / Oil bound Distemper (Interior)	Jadoo (Berger) /Nerolac /British Paint /Jotun India Pvt Ltd/Jenson and Nicholson /Shalimar Paint/Asian Paints
9(b)	Interior Acrylic / Plastic Emulsion Paint.	Silk(Berger)/DuluxVelvet touch(ICI) /Shalimar Paints Ltd (Superlac Stay Clean) /Asain Paint Ltd
9(c)	Synthetic Enamel Paint.	Shalimar Pants Ltd (Superlac) /Apolite(Asian) /Luxol(Berger)/Jenson & Nicholson Paints Ltd (Borolac)/Nerolac (impression)
9(d)	Cement Base Paint.	SnowcemPlus/Berger Paints/ Jenson & Nicholson /Asian paints(Gutucem)/ Jotun India PvtLtd./Crimocem Super Cement Paints
9(e)	Exterior Acrylic Emulsion Weather Coat Paint	Asian Paint Ltd (AppexUltima),/Shalimar Paints Ltd (Extra Maxium Ultra),/Berger Paints Ltd (Weather Coat),/Dulax (Weather Sheild Max),/Nerolac (Excel Total)/ Jotun India Pvt Ltd(Jotashield Water Xtreme)
9(f)	French Polish	Berger /J&N/Asian/Jotun India Pvt Ltd
9(g)	Thermo-plastic Road Marking Paint/Retro-Reflective Paint.	Asian Paint Ltd (Apcomark) /STP/Shalimar Paints Ltd/Berger Paints Ltd/Jenson & Nicholson Paints Ltd/Jotun India Pvt Ltd
9(h)	Water Based Road Marking Paint.	Jenson & Nicholson Paints Ltd /Berger Paints Ltd/ Asian Paint Ltd (Apcomark)/Shalimar Paints Ltd/Jotun India Pvt Ltd
9(j)	Acid Resistant Paint	Asian/ Berger/Jotun India Pvt Ltd
10 to 14	BLANK	
15	HDPE/LDPE WATER TANK	

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SI No	DESCRIPTION OF ITEMS	MAKE/BRAND
15(a)	HDPE/LDPE Water Tank	Sintex/ Polycon/Vectus/Astral/ Finolex
16	SEWAGEDISPOSAL	
16(a)	UPVC/PPR/HDPE Pipes for Sewerage	M/s Jain Irrigation/Kisan/Prince/Supreme/Oriplast /Finolex/KPT
16(b)	RCC Pipes(NP2/NP3)	Any ISI marked makes.
17	MISCELLANEOUSITEMS.	
17(a)	CI Centrifugally Cast (Spun) Pipes &Fittings	NecoCentri/ Jindal /Tata Metallic / Jai Balaji Industrie / Sri kalahasti Pipes Ltd
17(b)	PVC Soil/Waste/Rain Water (SWR) Pipes and Fittings.	Jain Irrigation/Kisan/Supreme/Prince
17 (c)	CPVC/UPVC Pipes and Fittings (Water &Sewerage)	Kisan /Supreme/Prince/Jain Irrigation/Oriplast /Finolex
17 (d)	HDPE Pipes and Fittings(Water)	Kisan/Jain Irrigation/Supreme/Prince/ Oriplast/ Ajay Flow
17 (e)	Brass Ball (Float) Valves.	Leader/Kirloskar/Zoloto
17 (f)	CI manhole Covers.	AIC/PIC/BIC
17 (g)	Construction chemicals like WPC, non metallichardner, epoxy and polymer based	Fosroc /Pidilite /Bauchemic India /Cico / Roff / Maruti Bitumen Pvt Ltd./STP
17 (h)	APP Modified waterproofing membranes	Sika India Pvt Ltd /Fosroc Chemicals / STP Ltd /IWL India Ltd/Tiki Tar Danosa (India) Pvt. Ltd/AR Industrie /Torchtar Membrane & Bitumen Pvt Ltd/ Bengal Bitumen /S N InfratechPvt Ltd
17 (j)	Joint sealing compound grade 'A'/'B'	STP /Chowksy Chemical /Tiki Tar Maruti Bitumen Pvt Ltd /SIKA
17 (k)	Polyurethane/Poly-sulphide sealant	Chowksay/ Fosroc / Rallithene/ Bostik/ Maruti Bitumen Pvt Ltd /STP/ SIKA
17 (l)	CGI & PGI Sheets	Tata/Jindal /Sail
17 (m)	AC Sheets	Charminar / Everest
17 (n)	Galvalume/ Zinalume(Pre-painted color coated) sheet for roof & wall	Tata blue scope/JSW steel / Dyna Roof/ Shalini Roofing Pvt. Ltd.
18	BITUMEN	IOC/ HPCL/ BPCL
19	DIFFERENT TYPE PIPES	
19(a)	GI PIPES	JINDAL/ TATA/ PRAKASH / BST/ KALINGA
19(b)	PP-R PIPES	SFMC/ SUPREME/ FINOLEX/ FUSION
19 (c)	PVC (SWR) Pipes	Supreme / Prince /KisanMouldings Limited / Vectus Industries Ltd.
19 (d)	PVC Pipes & fittings	KisanMouldings Limited/ Ori-plast/ Supreme / Prince/ Finolex.
19 (e)	UPVC/CPVC/RWP	Supreme/ Prince / Finolex/ Ori-plast.
19 (f)	CI pipes & Fittings	Electro steel/ Kesoram/Tisco/Lanco/Neco
19 (g)	DI Pipes and fittings	Jindal Saw ltd /Electro steel Castings Ltd Tata/Metaliks/ Lanco
19(a)	ERW MS Pipes	Surya Roshni ltd /Tata / Jindal Steel / Prakash
	E/M RELATED PRODUCTS	
20	LT WIRES AND CABLES	
20(a)	PVC insulated cable upto 1100 volts copper/ Aluminium conductor sheathed/unsheathed as per IS 694:1990	Anchor /Havells India Ltd /Finolex/KEI Industries Ltd / Polycab / RR Kabel Ltd / Richa cables Pvt Ltd.
20(b)	PVC XLPE insulated PVC sheathed heavy armoured/ un-armoured cables upto 1100	Anchor/Havells India Ltd / Finolex/ KEI Industries Ltd / Polycab

PARTICULAR SPECIFICATION CONTD....

SI No	DESCRIPTION OF ITEMS	MAKE/BRAND
	volts, Aluminium/Copper conductos, solid/stranded as per IS 1554 Pt1: 1998 & IS 7098 Pt1: 1998	
21	HT XLPE CABLES	
21(a)	HT XLPE Cables	Havells India Ltd / Finolex/ KEI Industries Ltd / Polycab
22	OTHER CAT OF CABLES/ABC CABLE	
22(a)	Other Cat of Cables/ABC Cable	Ravin Cables Ltd / Dynamic Cables Ltd. / KEI Industries Ltd
23	Other Category of Pipes	
23(a)	Composite Pipes/ASTM Plumbing Pipes /Submersible Pipes/Micro Irrigation Pipes Casing Pipes/ Underground Drainage Pipes Hot & Cold Water Distribution System	Kisan Mouldings Limited /Jain Irrigation Systems Ltd /Savoir-Faire Manufacturing Co Pvt Ltd / Vectus Industries Ltd.
24	PVC CONDUIT /STEEL CONDUIT	
24(a)	Conduit Steel ERW	Tata /Jindal / Kalinga/ BEC
24(b)	PVC Conduit	Presto-Plast/ Finolex/ Indo American Electrical / Kalinga / Gold Richa Cables Pvt Ltd
25	PVC casing caping	
25(a)	PVC casing caping	Presto Plast/ Finolex/ Kalinga/ Payal.
26	Light Fittings/Lamps	
26(a)	Flame Proof fittings/ Fans/ Exhaust Fan/ Switches/ Sockets	Bajaj /Crompton Greaves/ Sudhir/ M/s Shyam Switchgears Pvt. Ltd.
26(b)	LED Light fittings External/Internal	Anchor/Philips/ Wipro/ GE/ Crompton/ Havells/ Polycab
27(c)	High Mast Light	M/s Wipro/ Crompton Greaves /Bajaj / Philips
28	Switch Fuse/Changeover switch	
28(a)	Switch Fuse/Changeover switch	L&T/ Legrand/ ABB /Siemens/ GE/ Schneider / C & S Electric
28 (b)	MCB, RCCB, RCBO & DB	
28(c)	MCB, RCCB, RCBO & DB FOR MCBS, MCCB, Isolators	Anchor/Legrand /Havells /Siemens /ABB /L & T / Schneider/ GE / C & S Electric
28(d)	MCCB & Air CB	
28(e)	MCCB	Anchor/Schneider /GE / Legrand/L&T /Siemens /ABB / Indo Asian / Havells
28(f)	Air CB	Legrand / Siemens/ ABB/ L & T/ Schneider/ GE / Havells
29	Switches/Buzzer/Socket/Bell/Ceiling Rose/Regulator (Piano / Modular)	
29(a)	Switches/Buzzer/Socket/Bell/Ceiling Rose/Regulator (Piano Type)	Havells/ Anchor / Legrand/ Schneider /Hager / L & T /
29(b)	Switches/Sockets /Regulator (Modular type)	Havells (Crabtree)/Anchor (Woods) / Legrand / R RKable Ltd /M K Honey Well/ L & T / Schneider/ Hager
30	WATER HEATER / ENERGY SAVER / VARIOUS TYPE FAN	
30(a)	Water Heater (Geyser)	Anchor/Jaquar& Company Pvt Ltd/ Usha/ Ao-Smith/ V-Guard/ Havells/ Recold/ Crompton Greaves/ Bajaj

PARTICULAR SPECIFICATION CONTD....

SI No	DESCRIPTION OF ITEMS	MAKE/BRAND
30(b)	Exhaust/Ceiling Fans/Air Circulators/Wall Mounting	Crompton Greaves/ Havells/ Almonard/ Bajaj / Orient/ Usha/ CK Birla Group (Orient Electric)
30(c)	Solar Water Heater	Tata Power/ Supreme Solar
31	CAPACITOR BANK / APFC PANEL	
31(a)	Capacitor Bank/APFC Panel	Seimens/ABB / L& T / BCH / Schneider / C & S Electric
32	Thermoplastic Street Light Juyction Box/DB	
32(a)	Thermoplastic Street Light Juyction Box/DB	Hensel/ Sintex Industries Ltd / C & S Electric
33	Nature Switch/Street Light Timer	
33(a)	Nature Switch/Street Light Timer	Legrand / L&T / Crompton/ Schneider
34	LT Switch board panel (Indoor wall mounted Prewired)	
34(a)	LT Switch board panel (Indoor wall mounted Prewired)	Havells/Schnieder / L&T / ABB / Schneider / Neptune Systems Pvt Ltd./BCH Electric Ltd / C & S Electric
35	Lt Control Panel/Feeder Pillar Box	
35(a)	Lt Control Panel/Feeder Pillar Box	L&T/ Milestone/ Legrand/ Seimens/ C & S Electric Ltd/ Schneider/Shalabh (India) Ltd/M/s Power System & Controls
36	Steel Tubular Poles	
36(a)	Steel Tubular Poles	Jindal Steel /National Tubing Co /Bombay Tube & Store / Calcutta Poles & Tubes
37	Cable Joint LT & HT hot and cold Shrinkable	
37(a)	Cable Joint LT & HT hot and cold Shrinkable	M-Seal /Cab-Seal/Denson/Raychem/Birla-3M
38	Air Break Switches/HT Isolators/Gang Switches	
38(a)	Air Break Switches/HT Isolators/Gang Switches	Pactil /BHEL /Jaypuria Brothers
39	DSC/Pin type Porcelain Insulators	
39(a)	DSC/Pin type Porcelain Insulators	BHEL/Jaypuria Brothers/Pactil /Southern Insulators
40	DG SET	
40(a)	Diesel Generating Assembler	Kirloskar green /Jackson/Sudhir/ Greaves Cotton Mahindra
41	BATTERY & BATTERY CHARGER	
41(a)	Battery Maintenance Free	Exide/Amco/ Amaron
41(b)	Battery Chargers	Escorp /Su-Kam/ Microtech/ Exide
41(c)	UPS	APLAB/Luminous/SUKAM/TATA-LIEBERT
42(d)	Inverter	Live Line Electronics/ Microtech / Su-Kam
43	STABILIZER /INDICATOR LAMP / SELECTOR SWITCH	
43(c)	Indicator Lamp/Selector Switch	L&T / Siemens/ GE/ RR Micro / BCH /Schneider

PARTICULAR SPECIFICATION CONTD....

SI No	DESCRIPTION OF ITEMS	MAKE/BRAND
44	VARIOUS TYPE VALVES	
44(a)	Sluice / Reflux / Air release / Foot / Non return valve / Gate Valve / Butterfly valve	Kirloskar/ Leader/ Zoloto/ Audco (L & T) /Venus/Upadhyaya
44(b)	Balancing Valves	Leader/Audco/ Advance
44(c)	Gun Metal Valve (Full way, check & globe valve)	Kirloskar/ Leader/ Zoloto/ Audco (L & T) / Upadhyaya
45	VARIOUS TYPE PUMPS / MOTORS / COOLING TOWER	
45 (a)	Dol/Star-Delta Starter	Siemens/ L&T / ABB / Schneider / C & S Electric
45 (b)	Submersible Cable	Finolex/ RR Kabel/ Polycab
45 (c)	Centrifugal Pumps	Crompton Greaves/ Kirloskar /KSB
45 (d)	Submersible Pumps	Crompton Greaves /Calama/ KSB/ Kirloskar
45 (e)	Electric Motors	L & T/Siemens/ABB/Kirlosker/Crompton
45 (f)	Monoblock Pumps	Crompton Greaves /Kirloskar/KSB
45 (g)	Chiller Units/Compressors Scroll/Screw Type	Blue Star/Voltas/York/ Kirloskar/Carrier /Daikin/ Trane
45 (h)	Condenser & Chiller Pumps	Crompton Greaves/ Kirloskar/ ABB/ KSB
45 (j)	Cooling Towers	Paharpur / Mihir/ Delta
45 (k)	Cooling Coil/AHU	Blue Star/Voltas/Zeco/ Lloyd/ Carrier/ Accel
45 (l)	Filters	Blue Star /Airtech/Thermodyne
46	CHLORINATOR ITEMS	
46 (a)	Bleaching Dozer	Ion Exchange / RMC0 /Avon /Aqua Pura/Maic-India
46 (b)	Chloronome Plant/Chlorinator	Aqua/Pearl filters/Advance – 2000/ Jesco
46 (c)	PVC Over Head Tank (ISI Mark)	Sintex/ Polywell/ Polycon/ Vectus Industries Ltd
47	MISCELLEANIOUS ITEMS	
47 (a)	Strainer	Rapid Control/ Emberland/ Sant
47 (b)	Insulation Crosslink Polythene with Adhesive	Torcellen/ Paramount/ Thermoflex
47 (c)	Thermometers/Pressure Gauges	Hguru/Taylor / Fiebig
47 (d)	Thermostat, Humidistat	Honeywell/ Jhonson Control/ Danfoss/ Siemens
47 (e)	Actuators	Siemens/Rapid Control /Honeywell
47 (f)	Heaters	Daspass/ Recold/ Bajaj
47 (g)	Thermostatic Expansion Valve	Siemens/ Honeywell/ Danfoss
47 (h)	Split type AC/Package Type AC/Window type AC	O- General /Hitachi /Daikin /Carriers
47 (j)	Fire Pump& Panel	Crompton Greaves/Kirloskar / KSB
47 (k)	Sprinkler Head	Minimax/Tyco/Ceasefire/Safex
47 (l)	Pressure Switch	Siemens /Honeywell /Danfoss/Schneider /Rapid Control
47 (m)	High Mast Pole	Bajaj Electricals /CG Power & Industrial SolutionsLtd /Jindal Power.

Note:-

1. The makes have been given tradewise only for the purpose of easily locating the items and otherwise makes given are applicable to the entire contract.

PARTICULAR SPECIFICATION CONTD....

2. Wherever word “equivalent make” has been specified the option of equivalent make will only be considered after taking approval from Accepting Officer and only where products of brand/ manufacturer specified are not available in market.

SOURCES OF MATERIALS

SI No.	Name of Materials	Source of materials for works at station
1.	Bricks	Locally available best quality of fly ash bricks
2.	Coarse Sand	Locally available
3.	Fine Sand	Locally available
4.	Aggregates	Locally available

Note:

1. Makes specified in Sch 'A' with cat Part Nos. shall only be provided among the other makes are mentioned in Sch 'A'. If the items mentioned cat Part in Schedule 'A' is not available then the equivalent one shall be chosen based on documentary evidence from the other makes mentioned in Schedule 'A' against that item.
2. Makes specified in Particulars Specifications shall be provided only when no makes are specified in Sch 'A'.
3. Makes specified in this Appendix shall be provided only when no makes are mentioned in Sch 'A' and Particulars Specifications.
4. Contractor will supply the material only after obtaining the written approval from GE regarding use of specific make of items and will supply the material at appropriate time as and when required by the GE.
5. To ensure genuineness of material the contractor will order only on manufacture or authorized dealer and the Engineer-in-Charge will receive material after verifying the delivery challan of the supplier and after satisfying the genuineness of material.

6. **All other materials:-** Make and sample to be approved by GE

Signature of the Contractor

Dated:

AGE (Contracts)

For Accepting Officer