

MILITARY ENGINEER SERVICES GE TENGA

E - TENDER

NAME OF WORK: CERTAIN MISC B/R WORKS OF JOINARIES, PLUMBING TO MD & OTM ACCN PH-I (RUPA, GACHHAM, BIRPUR DP, BOMDILA) OF AGE B/R UNDER GE TENGA.C O N T E N T S

SL NO	DESCRIPTION	SERIAL PAGE NOS
1	2	3

1.	Content Page	01
2.	Tender forwarding letter including instruction for filling/ Guidance and submission of tender	02 to 08
3.	Notice of tender IAFW 2162 including Appendix 'A' to Notice inviting E-Tender and Term Contracts Works (IAFW 1779) including (revised 1955)	09 to 15
4.	Schedule " A " Notes	16 & 18
5.	BOQ	19 to 28
6.	Schedule of credit, Schedule 'B', 'C' & 'D', General Summery, Acceptance Page	29 to 33
7.	General Conditions of contracts IAFW-2249 (1989 Print) including Errata/amendment thereto.	34
8.	Schedule of minimum fair wages as per notifications of Govt. of India, Min of Labours	35
9.	Special conditions	36 to 40
10.	Particular specifications including Appendix	41 to 102
11.	Errata / amendment to tender documents if any	to
12.	Relevant correspondences	to
13.	Acceptance letter	to

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

8202/ /E8

Apr 2026

E-TENDER

NAME OF WORK: CERTAIN MISC B/R WORKS OF JOINARIES, PLUMBING TO MD & OTM ACCN PH-I (RUPA, GACHHAM, BIRPUR DP, BOMDILA) OF AGE B/R 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 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 Tenga 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 Tenga 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 from 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	:	CERTAIN MISC B/R WORKS OF JOINARIES, PLUMBING TO MD & OTM ACCN PH-I (RUPA, GACHHAM, BIRPUR DP, BOMDILA) OF AGE B/R UNDER GE TENGA.												
2.	Estimated Cost of Work	:	Rs 40.00 Lakhs (As per Market)												
3.	Period of completion	:	09 Months												
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 ' a(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 & 'a(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 1656 1471 1759"> <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 8202/ /E8 dt Apr 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-TENDER****MILITARY ENGINEER SERVICES****REGISTERED POST/ACK. DUE**

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

8202/ /E8

Apr 2026

E-TENDER**NAME OF WORK: CERTAIN MISC B/R WORKS OF JOINARIES, PLUMBING TO MD & OTM ACCN PH-I
(RUPA, GACHHAM, BIRPUR DP, BOMDILA) OF AGE B/R 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: CERTAIN MISC B/R WORKS OF JOINARIES, PLUMBING TO MD & OTM ACCN PH-I (RUPA, GACHHAM, BIRPUR DP, BOMDILA) OF AGE B/R 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.

- (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 **09 Months** 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) 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 RS P	Rem arks
1	2	3	4	5	6	7
1	Un serviceable plain or corrugated steel sheeting of any thickness as in roof coverings	Sqm	140.00	75.00	10500.0	
2	U/S iron scraps/ reinforcement	Kg	400.00	20.00	8000.00	
3	U/S 15mm bore steel water tubing	RM	200.00	15.00	3000.00	
4	U/S 20 mm bore steel water tubing	RM	175.00	20.00	3500.00	
5	U/S CI soil,waste,vent and rain water pipe of any size	RM	180.00	20.00	3600.00	
6	U/S chowkats or frames with shutters (without taking off shutters from the frames)incl iron mongeries exc 1.5 sqm but n. exc.4.0 sqm	Each	15.00	250.00	3750.00	
7	U/S chowkats or frames with shutters (without taking off shutters from the frames)incl iron mongeries n. exc.1.5sqm	Each	15.00	180.00	2700.00	
8	U/S galvanised mild steel wire cloth, 0.56 mm nominal dia of wire and average width of aperture 1.18 mm and fixed with tinned tacks or galvanised wire staples.	Sqm	100.00	25.00	2500.00	
9	Old U/S 10 ltrs capacity PVC valveless syphonic action type flushing cistern	Each	15.00	50.00	750.00	
10	Old U/S PVC connection 15mm dia 450mm long	Each	45.00	5.00	225.00	
11	Old U/S chromium plated shower rose 125 mm dia	Each	15.00	30.00	450.00	
12	Old U/S looking mirror 600 mm x 450 mm	Each	20.00	15.00	300.00	
13	Old U/S 15mm dia bib tap	Each	20.00	40.00	800.00	
14	Old U/S 15 mm dia stop valve	Each	20.00	40.00	800.00	
15	Old wall and ceiling boards.	Sqm	275.00	10.00	2750.00	
16	Old U/S 15 mm dia pillar tap	Each	15.00	40.00	600.00	
17	Old steel kitchen sink	Each	5.00	400.00	2000.00	
18	Old U/S water tank up to 500 ltr	Each	10.00	300.00	3000.00	
19	Old U/S water tank up to 1000 ltr	Each	5.00	600.00	3000.00	

20	Old U/S ball brass valve	Each	20.00	40.00	800.00	
21	Old U/S gate valve	Each	15.00	40.00	600.00	
22	Old U/S tubular towel rail	Each	15.00	20.00	300.00	
23	Old U/S CP mixture any type	Each	10.00	75.00	750.00	
24	Old U/S Soap dish	Each	10.00	20.00	200.00	
25	Old U/S Block masonry	cum	8.00	600.00	4800.00	
26	Old U/S tiles	Sqm	280.00	5.00	1400.00	
27	Old U/S stone slab, any thickness/ type	Sqm	5.00	25.00	125.00	
28	Old U/S curtain rod	RM	25.00	5.00	125.00	
29	Old U/S PVC scrap	Kg	2.00	20.00	40.00	
30	Old U/S WC seat cover	Each	5.00	10.00	50.00	
31	Old U/S Health faucet	Each	5.00	20.00	100.00	
32	Old U/S PP-R pipe any bore including fittings	RM	190.00	20.00	3800.00	
					Total in Rs.	65,315.00

GENERAL SUMMARY

1. Total amount of Sch 'A' worked out by contractor : Rs _____
2. Sch of Credit : Rs. **65,315.00**
3. Less Reduction offered by Contractor : Rs. _____

TOTAL CONTRACT SUM = Rs. _____

Rupees in words (Rupees _____ Only)

(Signature of contractor)
Dated:

AGE (Contracts)
For Accepting Officer

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 unmetered.
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 **Prop** 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. _____ (**Rupees** _____)

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 General Conditions of Contract IAFW-2249 (1989 Print) including amendments and Errata thereto and IAFW-2159 (Revised 1947/IAFW-1779 (Revised 1955) including all amendments and errata thereto. Any provision in these special conditions, if at variance the provision in the above mentioned documents shall take precedence there over.

2. **INSPECTIONS OF SITE** Refer Paras 11 & 19 of Notice of Tender (IAFW-2162 and 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 climate conditions, the form and nature of the site nature of work and the manner of access to the site, the accommodation he may require, in general he shall be deemed to have himself obtained all necessary information on inspection of site as to risk, contingencies and other circumstances which may influence or affect his tender. No extra payments consequent to any mistake and mis-understanding or otherwise on this account will be allowed.

3. AVAILABILITY OF LAND FOR STORAGE OF MATERIALS ACCOMMODATION FOR LABOUR ETC.

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 thereof, temporary workshops and the like at the area of land marked for the purposed, on the site plan/shown by the GE free of rent, if it is on Class A-1 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.

4. CONDITIONS OF WORKING

4.1 The work lies in UNRESTRICTED area. The contractor and his agents, employees and work people shall observe all the rules promulgated from time to time by the authority controlling the area in which the work is to be executed viz prohibition of smoking, lighting and fire precautions, search of workmen /agents and transport on entry and exit, keeping on specified routes, restricted hours of working etc.

4.2 Contractor shall not carry out any work on Gazetted holidays, weekly holidays and other non working days except when he is expressly authorised to do so by GE. The GE may at his sole discretion declare any day as holiday or non working day without assigning any reason for such declaration.

4.3 No payment shall be admissible for any man-hours lost on this account.

5. CONTRACTOR'S REPRESENTATIVES AND WORKMEN

5.1 Refer Condition 25 of IAFW-2249. The contractor shall employ only Indian Nationals as his representatives, servants and workmen and verify their antecedents and loyalty before employing them for the works. He shall ensure that no person of doubtful antecedents and nationality is, in any way, associated with works. If for reasons of technical collaboration, or other consideration, the employment of any foreign national is unavoidable, the contractor shall furnish full particulars to this effect to the Accepting Officer at the time of submission of his tender.

6. SECURITY OF CLASSIFIED DOCUMENTS

6.1 Contractor's special attention is drawn to Condition 2-A and 3 of IAFW-2249 (General Conditions of Contracts). The contractor shall not communicate any classified information regarding the work either to sub contractors or others without the 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 shall return all documents on completion of the works or earlier on determination of the contract. The contractor shall also along with the final bill attach a receipt of his having returned the classified documents as per Condition 3 of IAFW-2249 (General Conditions of Contracts).

SPECIAL CONDITION AND REQUIREMENTS CONTD....**7. MINIMUM WAGES PAYABLE**

7.1 Refer Condition 58 of IAFW-2249. 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.

7.2 The fair wage referred to in Condition 58 of IAFW-2249 will be deemed to be the same as the minimum wages payable as referred to above.

7.3 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.

8. CO-OPERATION WITH OTHER AGENCIES AT SITE OF WORK

8.1. The contractor shall permit free access and generally afford facilities and usual convenience to other agencies or departmental workmen to carry out work if any, under separate arrangements. The contractor shall not be allowed any extra payment on this account.

9. QUARRIES

9.1 Quarries are not available on land which is in the charge of the MES authorities. Condition 14 of IAFW- 2249 shall thus be treated as deleted.

10. WATER

10.1 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.

10.2 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.

11. **SUPPLY OF ELECTRICITY:-** Electric supply At **Rs 12.41 per unit** required for the work up to a maximum of of 3KVA only for three phase shall be made available by the MES at points shown on the site plan. Contractor shall provide all necessary step down transformer, poles, equipments cable, fittings etc from the tapping point in order ensure a proper and suitable supply of electricity for execution of work.

11.1 MES do not guarantee continuity of supply and no compensation, whatsoever, shall be allowed for supply becoming intermittent or for breakdown in the system.

11.2. Electric supply required for the work shall be made available from MES for the execution of works. All contractor's installation / work sites shall conform, to and be strictly in accordance with Indian Electricity Act and Rules, Moreover the layout of cables etc, as proposed by him shall be as per plan approved by the Engineer-in-Charge. Any risk either for materials or personnel will be the contractor's responsibility.

SPECIAL CONDITION AND REQUIREMENTS CONTD....**12. SAMPLES OF MATERIALS**

12.1 Refer Condition 10 of IAFW-2249.

12.2 The tenderer is advised to inspect samples of the materials, which are displayed in the office of the GE, before submitting his tender. The tenderer 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 them 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 specification given here-in-after.

12.3 The contractor shall not procure materials unless the samples are first got approved by the Garrison Engineer

12.4 The materials other than those as mentioned in Para 12.2 before to be provided by the contractor for incorporation in the work shall comply with the requirement of the Indian Standard Specifications of the year of publication as specified in MES Schedule Part-I. The contractor may however, at his own discretion provide and incorporate in the works such materials complying with the requirements of any corresponding subsequently amended or revised addition of Indian Standard without any price adjustment.

12.5 The following materials shall however have ISI certification marking :-

- (a) Aluminum fittings for joinery like tower bolts, handles etc.
- (b) Cement base paints.
- (c) Sanitary fittings.
- (d) Plywood, particle/block boards (both veneered or unveneered).
- (e) Chemicals for antitermite treatment for wood and soil treatment.
- (f) Electrical switches – Piano type.
- (g) PVC cables (marking on drums as well as on cable item).

13. RECORD OF MATERIALS

3.1 The quantity of materials such as 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.

13.2. 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.

13.3. The contractor shall, on demand, produce to the GE, and original receipted vouchers/invoices in respect of the supplies. Vouchers/invoices so produced and verified shall be stamped by Engineer-in-Charge indicating contract number. The contractor shall ensure that the materials are brought to site, in original sealed containers/packing, bearing manufacturers marking except in the case of the requirement of materials being less than smallest packing.

14. **ACCEPTABLE QUALITY OF WORK AND FINISHES.** The determine the acceptable standard of workmanship one quarter (to be decided by GE) shall be completed by the contractor well in advance as directed by GE under close supervision of the Engineer-in-Charge and shall be got approved from GE. The workmanship of various trades and finishes of this quarter shall serve as guiding sample for work in the remaining quarter/buildings.

15. REIMBURSEMENT/REFUND ON VARIATION IN "TAXES DIRECTLY RELATED TO CONTRACT VALUE"

15.1 The rates quoted by the contractor shall be deemed to be inclusive of **all taxes /cesses viz GST** duties, Royalties, Octroi & other levies payable under the respective Statutes. No reimbursement/refund for variation in rates of taxes, duties, Royalties, Octroi & other levies, and/or imposition/abolition of any **new/existing taxes/cesses**, duties, Royalties, Octroi & other levies shall be made except as provided in sub para 15.2 here-in-below.

SPECIAL CONDITION AND REQUIREMENTS CONTD....

15.2 **The taxes/cesses** which are levied by Govt. at certain percentage rates of Contract Sum/Amount shall be termed as “taxes directly related to Contract value” **such as GST, 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 rates 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 the Govt. from any payments due to the contractor. Similarly any imposition of new “taxes directly related to Contract Value” after the last due date of 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 shall be refunded by the contractor to the Govt. from the payments due to the contractor.

15.2.1 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 Value”, give written notice thereof to the Govt. stating that the same is given pursuant to this Special Condition, together with all information relating there to which he may be in position to supply. The contractors shall submit the other documentary proof information’s as the GE may require.

15.2.2 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 authorized representative of Govt. and shall further, at the request of the GE furnish, verified such a manner as the GE may require, any documents so kept and such other information as the GE may require.

15.2.3 Reimbursement for increase in percentage rates/imposition of “taxes directly related to Contract Value” shall be made only if the Contractor necessarily & properly pays 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.

16. VALIDITY OF TENDER

16.1 The tender shall remain open for acceptance for a period of 60 (Sixty) days from the due date of its submission.

17.B L A N K

18. RELEASE OF PERFORMANCE SECURITY DEPOSIT

18.1 Refer Condition 46 and 68 of IAFW-2249.

19. TAXES

19.1 The contractor’s quoted rates shall be deemed to be inclusive of all taxes/cesses viz GST, duties royalties, octroi and other levies payable under respective statutes as applicable on the date of receipt of tender. It may be noted that any tender imposing any condition in this regard or on any other account shall be treated as a conditional tender and the same shall be liable to be rejected.

20. RETENTION MONEY/COMPENSATION FOR DELAY

20.1 Refer Condition 64 of IAFW-2249 (Advance on account) and Condition 50 of IAFW-2249 (Compensation for Delay).

21. OFFICIAL SECRET ACT

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

SPECIAL CONDITION AND REQUIREMENTS CONTD....**22. DAMAGE TO EXISTING STRUCTURE/BUILDING**

22.1 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. Rectification/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 CWE whose decision in writing shall be final, conclusive and binding.

23. QUALIFIED TRADESMEN

23.1 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 recognized 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 tradesman 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.

24. PRICING OF DEVIATIONS-

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

Signature of Contractor

Dated: 2026

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 for 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 form 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.

PARTICULAR SPECIFICATION CONTD....

- 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.
- 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. PRECONSTRUCTION ANTITERMITE TREATMENT: "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.

PARTICULAR SPECIFICATION CONTD....**2. CONCRETE WORK****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 over head 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	Mayur Graden, 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.	MIs Chettinad 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

PARTICULAR SPECIFICATION CONTD....

Sr No	Company Name	Address	Approved grade of cement
11.	MIS Saifco Cement Pvt	Opposite Post Office, Batwara, Srinagar - 190004 (J&K), Ph 0194-2466061	OPC-43 Grade
12.	MIS Prism Cement Ltd Prism	3/113, Vivek Khand, 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, Badarpur Ghat, 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., Radhakrishnan Salai, Mylapore, Chennai -600004, Ph-044 28478666	OPC-43 Grade & PPC
17.	Saurashtra Cemen-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, Bandra Kurla, 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-22-22026936	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.	Jaypee Rewa Cement		OPC-43 Grade & PPC

PARTICULAR SPECIFICATION CONTD....

Sr No	Company Name	Address	Approved grade of cement
33.	Ambuja Cement Ltd	Kodinar, PO-Ambujanagar, Taluka-Kodinar, DistJunagadh, Gujarat-362715, Ph-02795 237000	OPC-43 Grade & PPC
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	Bodhjungnagar Ind, 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

PARTICULAR SPECIFICATION CONTD....

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 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

PARTICULAR SPECIFICATION CONTD....

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 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 |

PARTICULAR SPECIFICATION CONTD....**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.

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, lean concrete under plinth beams and below RCC Col footings : PCC of grade M-7.5 (Nominal Mix)

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

(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 storage tank and per-cast articles which are not specified here-in-after : Grade M-15 (Nominal Mix)

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 alongwith 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 Batcher 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

PARTICULAR SPECIFICATION CONTD....

(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

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. APPROVAL OF DESIGN MIX

(a) Soon after commencement of work, contractor shall arrange the design mix. Design mix concrete shall be got carried out from National Test House, SEMT, CME, Regional Research Laboratories, any Govt approved laboratories such as Govt Engineering College, Chief Engineer Siliguri zone laboratory. Cost of designing the mix shall be borne by the Contractor. Cost of designing the mix in Chief Engineer Siliguri zone laboratory shall be Rs 5000 per design mix and shall be recovered from RARs/final bill. The design mix shall be got approved from GE before implementation in the work. In case contractor fails to submit the samples of design mix soon after commencement of work, the delay shall solely be attributable to the contractor and no claim of whatsoever nature shall be admissible on this account.

(b) As soon as possible after receiving the design mix from the above agency same shall be verified at site by casting the final cubes.

(c) Frequency of sampling shall be as per clause 15 of IS-456. Each sample shall consist of three numbers of preliminary test cubes (except as stated in para (d) below) of size 15x15x15 cm, and shall be made as per clause 2.8, 2.9 and 2.10 of IS-516. The concrete cube shall be tested as per IS-516 at site laboratory. The cubes will be tested after 28 days from the date of casting.

(d) One sample for every design mix in the initial stage shall consist of seven numbers of preliminary test cubes of size 15x15x15 cm, and shall be made as per clause 2.8, 2.9 and 2.10 of IS-516. The concrete cube

PARTICULAR SPECIFICATION CONTD....

shall be tested as per IS-516 at site laboratory. Out of seven cubes, three will be tested after seven days (on 8th day) from the date of casting and three will be tested after 28 days from the date of casting & one No. cube shall be kept for record.

(e) The test after seven days (ie on 8th days) is intended only to give an early indication of the strength likely to be achieved. The strength thus achieved should be comparable with the above design mix report with specified design parameter. However, 28 days compressive strength shall alone be the criterion for acceptance and rejection of the concrete.

(f) GE can also carry out seven days strength test of more samples at his option. However, if the test report is found satisfactory, then the cost of testing including cost of cubes shall be borne by the Deptt. But if the result is found unsatisfactory, then the cost of cubes and cost of testing shall be borne by the contractor. The cost of conveyance of test cubes shall however be borne by the contractor in all cases.

(g) On the result of the above test, the mix actually to be used shall be agreed to and approved by the GE. The approval of the GE shall not relieve the contractor of his responsibility for obtaining the required minimum strength of quality concrete in the works.

(h) All testing charges including cost of cubes, conveyance, etc shall be born by the contractor except that the cost of optional seven days test be regularised as stipulated in para (f) here-in-before.

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 junction 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.

PARTICULAR SPECIFICATION CONTD....

- 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).

8.1.4 PRECAST CEMENT CONCRETE SOLID BLOCK MASONRY:

- 8.1.5 Precast cement concrete block masonry indicated in the drawings shall be built in PCC solid blocks.
- 8.1.6 The blocks will be machine moulded with mix prepared in a mechanical mixer and manufactured as per IS: 2185 (Part -I) 2005. The class grade and density shall be as under:-

Type of Block	Minimum average compressive strength at 28 days	Classification	Minimum Block Density
Solid Block	50 Kg/Cm ²	Grade 'C(5.0)'	1800 kg/m ³

- 8.1.7 The size of the concrete block solid shall be 400x200x200mm and 400x200x100 respectively. The size of block for 300mm thick wall shall be 400x300x200 mm. The physical requirements viz dimensions, density, compressive strength, water Absorption, Drying shrinkage and Moisture movement of the block shall conform to IS : 2185 (Part-I) 2005.

PARTICULAR SPECIFICATION CONTD....

- 8.1.8 The crushed stone aggregates of nominal size 12.5mm graded and conforming to the requirements of IS:383-1970 shall be used. The grading of the combined aggregate (ie fine and coarse) shall conform as near as possible to the requirements indicated in IS:383-1970. It is also recommended that the fineness modulus of the combined aggregate shall be between 3.6 and 4.0.
- 8.1.9 Sampling and Testing shall be as per IS: 2185 (Part –I) 2005. A sample of 20 block shall be taken from every consignment of 5000 blocks or part thereof of the same size and same batch of manufacture. All the 20 blocks shall be checked for dimensions and inspected for visual defects. The other tests shall be as under:-
- (a) Block density - 3 Blocks
 - (b) Compressive strength - 8 Blocks
 - (c) Water absorption - 3 Blocks
 - (d) Drying shrinkage and lateral to - 3 Blocks
Moisture movement
 - (e) Reserve for retest for drying shrinkage and - 3 Blocks
moisture movement if need arises.
- 8.1.10 The criteria for conformity of the lot shall be as specified in IS: 2185 (Part I) 2005. The cost of PCC blocks for testing and testing charges shall be borne by the contractor. The manufacturer of PCC blocks shall issue a certificate that these masonry units conform to the requirement of IS: 2185 Part I 2005. The blocks shall also bear the identification for the manufacturer and the grade of the unit supplied.
- 8.1.11 Unless specified otherwise precast cement concrete block masonry shall be built in CM 1:6 for 200mm thick and 300 mm thick wall and CM 1:4 for 100mm thick wall.
- 8.1.12 Precast PCC masonry wall of 100mm thick shall be constructed over PCC sub base in ground floor and from top of RCC slab in case of concealed beam/beam not shown on drawings. PCCblock masonry wall 100mm thick having height more than 1.5m shall be reinforced with two 8mm dia MS bars horizontally at every forth course starting from floor level and anchored in walls at junctions . The anchorage length shall be not less than 100mm.
- 8.1.13 The sources/manufacturers of PCC solid block shall be approved by GE. However, the same can be allowed to be manufactured at site confirming to the requirements all as specified.
- 8.1.14 Width of concrete lintels, beams, cills, columns and the like coming in conjunction with block masonry walls/pillars shall be kept to the actual width of masonry work of that place unless offsets have been specifically shown; in which case, the width as shown on drawings shall be maintained

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:

PARTICULAR SPECIFICATION CONTD....

- (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.
- (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) Vashnodevi Buildcon Private Limited,
Factory: Fakirchand Jote Phansideva,
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 – Gouria Jote
PO – Nemai
PS – Matigata
Dist – Darjeeling
Mob 9434052184</p> |
| <p>(iii) Vinayak Fly Ash Bricks (VFB)
PO – Sakoajhora
Telepara
Dist – Jalpaiguri</p> | <p>(vi) Radhe Concreto (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

PARTICULAR SPECIFICATION CONTD....

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

- 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 junction of RCC wall/column and brick wall, 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) .

PARTICULAR SPECIFICATION CONTD....

- 8.4.1 Width of concrete lintels, beams, cills, and the like coming in conjunction 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.
- 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 CRUMPLE JOINT

9.1 Crumple joint shall be provided in accordance with the following specifications :-

- (a) Aluminium sheet 0.63 mm thick shall be fixed to cover the gap.
- (b) Metal cradle wherever indicated shall be of PGI sheet 20 gauge thick and having zinc coating of 120 gms/sqm.
- (c) The filler board shall be PU foam type.
- (d) All other details shall be shown on drgs.

9.2 WATER PROOFING TREATMENT OVER CRUMPLE JOINT

Water proofing treatment over crumple joints shall be provided with polymeric bituminous membrane with tiling as specified here-in-under :-

- (i) The dried surface of slab laid in slope of 1:15 shall be painted with one coat of bituminous primer @ 0.40 litre/sqm conforming to IS:3384.
- (ii) A layer of APP based polymeric membrane 3 mm thick minimum weighing not less than 3.50 kg/sqm as approved by GE, reinforced with polyester non woven fabric (weighing not less than 150 gms/sqm) shall be provided. Application of polymeric membrane by torch application, side overlaps shall be minimum 75 mm and the end laps shall be minimum 100 mm and sealing all overlap & joints as per manufacturer's instructions. For parapets, membrane shall be taken to a height of min 60 cm and then inserted inside the parapet in a groove. The same shall be finished by a membrane flashing.

10. WOOD WORK AND JOINERY**10.1 Timber**

- 10.1.1 Timber for all joinery and wood work shall conform to specifications given in clause 7.3 of the MES Schedule and shall be within the permissible limits of defects defined in Clauses 7.4 and 7.5 of the MES Schedule Part-I .
- 10.1.2 Timber shall be well seasoned, weathered, air or kiln dried, at the discretion of the contractor but without any price adjustments. The moisture content of timber shall not exceed the limits laid down vide Clause 7.7 of the MES Schedule Part-I.

PARTICULAR SPECIFICATION CONTD....**10.2 PRESERVATION OF TIMBER**

10.2.1 Preservative/ antitermite treatment shall be carried out to all wood work and joinery fabricated by the contractor at site. Factory made Ply/Boards are also deemed to be provided with antitermite treatment.

10.2.2 Chemical used for antitermite treatment to wood work and joinery shall be COPPER NAPHTHANATE, ASCU or any other chemical specified in IS-401, applied in any one of the manners specified in ibid IS.

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10.3 Except where specifically indicated elsewhere in these particular specifications, the species of timber for joinery/furniture items fabricated at site and prefabricated wood products i.e. Plywood, particle/block/medium density fibre (MDF) board etc, shall be as specified here under :-

- (i) Fully panelled or partly panelled/ glazed/ wire gauged shutters : Factory made as per IS-1003 – 2nd Class HW (Hollock/ Bijsal/ Benteak).
- (ii) Frames of built-in cupboards/cabinets and furniture items if provided with timber shall be Second Class hard wood(Sal/ Hollock/ Kalasiris/ Chaplash).
- (iii) Panelled/ flush shutters of built-in cupboards/cabinet and furniture items as indicated on drawings and fabricated at site : Frame of second class hardwood and facing/inserts as indicated on drawings.
- (iv) Edging/ beading for particle/block/medium density fibre board exposed to view in shutters, shelves and tops of built-in furniture, cupboards and cabinets, handrail of stair : Teak/Shishu wood.
- (v) Gutties, plugs, cleats/stoppers, beading and fillets for shutters and frames : Second Class hardwood, (Sal/ Kalasiris/ Chaplash/ Hollock).
- (vi) All other woodwork and joinery not otherwise specified : Second Class hardwood,(Sal/ Kalasiris/ Chaplash/ Hollock).

10.4 PANELED DOOR SHUTTERS/WIRE GAUGE SHUTTERS

10.4.1 Door shutters shall be 35 mm thick factory made using 2nd class hardwood conforming to IS-1003 (Part-I). Styles and rails shall be kiln seasoned and chemically treated (under vacuum pressure). Panel inserts shall be 12mm thick plywood ventured finish BWR conforming to IS-3097 exterior grade (grade 1) solid core, general purpose commercial veneered on inside and decorative veneered on outside, the shade of veneering shall be approved by GE. The details and specifications unless otherwise specified of Panel Shutters and mosquito proof door shutters shall be as TD drawings Factory shall be approved/nominated from the any one of those in the list mentioned in Appendix 'B' to Particular Specifications here-in-after, which are located and active in the area as suggested by the contractor and approved by the GE. The door / window to be got approved from the GE duly factory visit prior to placing order for bulk delivery of all types of door / window for incorporation of work.

10.4.2 Panelled shutters & Wire gauge shutters shall be provided with beading around the panel insert on both sides of shutter. Size of beading irrespective what is shown in TD drawing, shall be 20mm in width and tapered thickness from 10mm to 5mm.

10.4.3 Frame (Door): Frame shall be made from pressed steel frame using CR steel of thickness 1.25 mm conforming to latest IS 513:2008. The size of frame will be as indicated in drawing. The Gap between frame and brickwork and the jamb will be filled with PCC (M-10 Nominal mix). Both will be done simultaneously.

10.4.4 All doors shall have Mortice Lock and Latch (vertical type and rebated type). The type of lock shall be provided with prior approval from GE.

10.5 FLUSH DOOR SHUTTERS

10.5.1 **FRAME (DOOR):** Frame shall be made from pressed steel frame using CR steel of thickness 1.25 mm conforming to latest IS 513:2008. The size of frame will be as indicated in drawing. The Gap between frame and brickwork and the jamb will be filled with PCC (M-10 Nominal mix). Both will be done simultaneously.

PARTICULAR SPECIFICATION CONTD....

- 10.5.2 **DOOR SHUTTER:** 35 mm thick flush door shutter (factory made best quality, ISI marked) shall be fixed with above door frame. The teak wood particle board (pre-laminated) core finished flush door with decorative veneered outside and commercial veneered inside, shall conform to IS 2202(Part 1):1999. The shade of veneering shall be approved by GE. The details and specifications unless otherwise specified of Flush door shutters shall be as TD drawing.
- 10.6 **WOOD BASED PRODUCTS:** Wherever shown on drawings or indicated elsewhere in the specifications for built- in furniture wood based products shall be as specified below :-
- 10.6.1.1 **UN-VENEERED PARTICLE BOARD:** Shall be flat pressed, three layered, medium density, phenol-formaldehyde synthetic resin bonded (BWR type adhesive) and stamped IS : 3087, specification for wood particle board (medium density) for general purposes.
- 10.6.1.2 **VENEERED PARTICLE BOARD:** It shall comply with the requirements of IS:3097, specifications for veneered particle boards. The board shall be exterior grade with solid core, general purpose type.
- 10.6.3 **PLY WOOD:** General purpose ply wood shall be BWR grade, type BB conforming to the requirements of IS : 303. PVC laminates 1mm thick, type-1 quality conforming to IS : 1328. Teak ply wood shall have teak veneer on one or both faces as indicated/ specified.
- 10.7 **DECORATIVE LAMINATES:** Decorative laminates where indicated on drawings shall be 1mm thick plastic laminated sheet type I as specified in Clause 12.7 of MES Schedule Part-I. The laminates shall be fixed to base with approved adhesive as per manufacturer's instructions.
- 10.8 **WORKMANSHIP**
- 10.8.1 Joinery shall be wrought all over, Timber surface exposed to view shall be wrought and for surface not exposed to view shall be clean sawn. The workmanship and fixing of joinery shall be as per Clauses 8.15 to 8.28 of MES Schedule Part -I.
- 10.8.2 The dimensions of the various components of joinery (other than block board shutters) shown on drawings, wherever at variance shall supersede the standard dimensions mentioned in the MES Schedule. However, for pricing deviation involving any joinery work the rates in MES Schedule for the corresponding joinery item shall be applicable without any price adjustment for variation in dimensions given in clause 8.25.5 of MES Schedule.
- 10.8.3 Unless otherwise specified, all work both carpenter's and joiner's shall hold full dimensions shown on drawings except that an allowance of 1.5mm shall be allowed for each wrought face. Wooden beads and fillets shall however, hold the full dimensions as shown on drawings. The contractor shall also maintain the overall sizes of the doors and windows etc as shown on drawings.
- 10.8.4 Timber up to 3M length shall be in one piece.
- 10.8.5 Plugging to walls, shall be done with wooden plugs as per clause 7.29 of MES Schedule Part-I and specified here-in-before.
- 10.9 **FRP DOORS & FRAMES FOR WC, BATH AND TOILETS:-**
- Doors and frame of WC, Bath and toilets shall be of fibre glass reinforced plastic (FRP) and as specified here under:-
- (a) FRP frames shall be of cross section 90mm x 45mm having single rebate of 32mm x 15mm to receive shutter of 30mm thickness. Door frame laminate shall be 2mm thick and shall be filled with suitable wooden block in all the three legs. MS stay shall be provided at the bottom to steady the frame.

PARTICULAR SPECIFICATION CONTD....

(b) The thickness of FRP shutters shall be 30mm & thickness of FRP sheet shall be 03mm Shutters shall be in depressed panel design and colour as approved by GE and shall be include extra reinforcement on edges. The core of shutter in styles and rails area shall be of polyurethane foam the panel area shall have ply-FRP sandwich construction having 4mm thick ply to have embedded wooden blocks for taking fixtures shutter shall have recesses to take hinge to fix with frame. The whole shutter shall have resistant to mild acid/alkali. Aluminium mongery to FRP shutter shall be fixed as per manufacturer's instructions. Any tenderer offering FRP shutter with more thickness of FRP will not be paid any thing extra cost to dept.

(b) FRP door shutter shall be of make as specified in Appx 'D'

(c) 03 Nos MS hold fasts/lugs on either side shall be fixed as per manufacturers instructions. Other joineries shall be provided as shown for relevant drawings for PVC doors.

11. BUILDER'S HARD WARE

11.1 **GENERAL** Items and quantities:-Hardware fittings shall be provided according to the scales indicated in the schedule of iron mongry on the relevant drgs and in conformity with any note that may be appearing on particular drawings.

11.1.2 In case the size of particular fitting is not given in the drawings, it shall be of size as decided by the GE.

11.1.3 All articles of builders hardware shall bear ISI marking. In case ISI marked articles are not manufactured, those shall conform to the relevant IS specifications given in the MES schedule for the relevant item.

11.1.4 Finish of articles shall be as specified in Clause 9.2.4 of the MES Schedule Part-I.

11.1.5 Screws used for fixing the articles of builders hardware shall be as specified in Clause 9.2.6 of the MES Schedule (Part-I).

11.1.6 **ITEM AND QUANTITIES:** All Builders hard ware shall be of as shown on drawing. In case of mongeries not shown on drawings same shall be considered as aluminium mongeries as specified.

11.1.7 **SIZES:** In case the size of particular fitting is not given in the drawing, it shall be of size as per common engineering practice as directed by the GE.

11.1.8 All articles of builder's hardware shall bear ISI marking. In case any item/fittings with ISI mark is not manufactured than it shall conform to the relevant IS specifications and the specifications given in the MES Schedule for the relevant item.

11.1.9 Screws used for fixing items of builders hardware shall be as specified in clause 9.2.6 of MES Schedule Part-I and shall match the material of respective builder hardware.

11.1.10 Articles of builders hardware, for built-in-furniture, where specified of aluminium, these shall be of anodised aluminium

11.2 ARTICLES**11.2.1 HINGES**

11.2.1.1 **BUTT HINGES:** Butt hinges shall be of stainless steel with 3 mm thick SS plate all as specified in clause 9.7.2 of MES Schedule Part I.

PARTICULAR SPECIFICATION CONTD....

- 11.2.2 **TOWER BOLTS:** Tower bolts shall be Aluminium anodised conforming to specifications given in MES Schedule. Diameter of bolt shall be 10mm (ISI Mark).
- 11.2.3 **SLIDING DOOR BOLTS:** Sliding bolts where shown on drgs, shall be of Aluminium anodised bolt not less than 16mm dia (ISI mark).
- 11.2.3.1 **HANDLE:** Handle shall be aluminium anodised with finger plate 1mm thick aluminium (ISI Marked) wherever shown on drgs.
- 11.2.3.2 **DOOR STOPPER:** Door Stopper shall be aluminium with rubber / PVC stopper.
- 11.2.4 **DOOR SPRINGS**
- 11.2.4.1 **DOOR SPRINGS RAT TAIL TYPE:** All wire gauzed shutters shall be provided with door springs Rat Tail Type made of mild steel all as specified in clause 9.7.8 of MES Schedule Part-I.
- 11.2.5 **PEGS:** Pegs where shown on drgs shall be of aluminium anodised cast integral with base plate. If the same is shown to be fixed on wall, the same shall be fixed on second class HW Base.
- 11.2.7 **TOWEL RAILS:** Towel rails shall be chromium plated 'D' shape with flanged ends for fixing. It shall be of minimum dia 19mm and 75cm long, in case length not mentioned in drawings
- 11.2.8 **WIRE CLOTH:** wire cloth to be used for wire gauzed shutter shall be of stainless mild steel wire cloth conforming to IS having "not less than 0.36 mm dia" of wire and 1.40 mm average width of aperture all as specified in SSR Part I
- 11.2.8.1 Wire cloth to be used for wire gauged shutters shall be galvanised mild steel with average width of aperture 1.18mm and nominal dia of wire 0.457mm all as specified in Clause 9.25 and 9.32 of MES Schedule Part-I.
- 11.2.8.2 Irrespective of what is shown on drgs, door handles, tower bolts and sliding door bolts shall be aluminium anodised duly ISI marked for all buildings covered under Sch 'A' Part-I
- 11.2.9 **CURTAIN RODS WITH BRACKETS(CR):** Curtain rod with brackets and end cap shall be provided to door and window and openings of rooms. The brackets shall be of decorative type. Curtain rods shall be of stainless steel of not less than 25 mm dia, and gauge not less than 0.8mm and shall be extended up to 150 mm on both side of opening.
- 11.2.10 **TIE HANGER:** Standard tie hanger 'D' shaped 300mm long of aluminium anodised tubular of dia 10mm shall be provided as directed by GE.
- 11.2.11 **HASP AND STAPLE:** Shall be aluminum alloy (anodised), safety pattern conforming to IS : 363-1976.
- 11.2.12 **FAN HOOKS:** Fan hooks shall be provided all as shown on TD drgs and as directed. The lump sum tendered by the contractor in BOQ shall be deemed to include for the cost of the same.1
- 11.3 **DRAPERY RODS**
- 11.3.1 Drapery rods shall be of 25mm dia plastic coated and shall be in one length per window/door and provided with one number Funnel and bracket on Each end. Rings shall be of appropriate size and shall be provided at 15cm C/C. Design & Colour shall be as approved by GE.

PARTICULAR SPECIFICATION CONTD....**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	Rashtriya Ispat 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 Homi Modi 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 E-mail-info@jiabalajigroup.com	TMT bars of Grade Fe 500 & Fe 500D
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	TMT bars of Gde Fe 500, Fe 500 D,

PARTICULAR SPECIFICATION CONTD....

	Tel : 033-66006600, Fax : 033-2211 0483	Fe 550 & Fe 550 D (8mm to 32mm)
9	M/S Concast Steel & Power Ltd, Kolkata. Brand : "CONCAST MAXX" 21, Hemant Basu Sarani 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 Shri Bajrang 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. Shyam Metalics & 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, Ganddhi Dham 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 Rashmi Metaliks 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)
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 Shyam Sel 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)

PARTICULAR SPECIFICATION CONTD....

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	Rashtriya Ispat 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 Homi Modi 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.

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.

PARTICULAR SPECIFICATION CONTD....

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.

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

PARTICULAR SPECIFICATION CONTD....

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.

** 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.

PARTICULAR SPECIFICATION CONTD....**14.21 STEEL WINDOWS/VENTILATORS**

- 12.21.1 Steel windows/ventilators shall be ISI Marked with IS-1038. Rolled steel sections used for fabrications shall confirm to IS-7452.
- 12.21.2 Steel windows/ventilators with only flash butt welding shall be incorporated in the work.
- 12.21.3 Both fixed and openable frames shall be constructed of sections mitred at corners. The Hinges shall be as per drawing for side hung shutters openable outside and friction type for openable inside. Size of projecting type hinges shall be 65mm to 75mm wide. The hinges pin shall be of electro galvanized steel of suitable thickness. Friction hinges shall be provided with stainless steel washers. The handle of minimum thickness 3mm and peg stays (minimum thickness 2mm) for side hung shutter shall be of mild steel copper oxidised or stove enamelled finish at the choice of contractor. Peg stays shall be 300mm long with steel peg and locking arrangement riveted or welded to the fixed frames. Machine screws as specified in IS –1038 shall only be used for fixing. Side hung shutters fitted with friction hinges shall not be provided with peg stays. Stay shall have three holes for keeping the shutters open in these different positions.
- 12.21.4 Fixing lugs to fixed frames shall be as per provision of IS-1038 except that the top lugs shall not be provided. The bedding of steel frames shall be done in cement mortar (1:4).
- 12.21.5 The sub dividing/sash bars of windows and vents shall be tenoned to frame and rivetted as specified in IS-1038.
- 12.21.6 All steel surfaces shall be thoroughly cleaned, free of rust, mill scales, dirt, oil etc. either by mechanical or chemical process and shall be treated with a coat of anticorrosive red oxide primer.
- 12.21.7 Centre hung windows shall be mounted on antifricition brass pivots.
- 12.21.8 Handle to fly proof window shall be pressed type.
- 12.21.9 Steel windows and ventilators shall be obtained from any of the firms mentioned as indicated in Appx-'B'

13. MILD STEEL GRILL/GUARD BARS

- (i) All steel windows and ventilators shall be provided with grills of 12 mm square mild steel bars welded to window frame. The pattern of guard bar/grills shall be as per TD drg No SZ/TD/219/99.
- (ii) Size of guard bars for Guard room, detention room and like shall be provided as per TD Drg.
- (iii) Size of guard grill for gun store, telecom store etc to be specified by user unit.

14. **ANODISED ALUMINIUM DOORS, WINDOWS, VENTILATORS, PARTITIONS, COMPOSITE:** All aluminium sections shall have powder coating with minimum thickness 50 micron if not mentioned in scope of work. Aluminium sections in various locations including sections to be used in false ceiling shall be extruded built up standard tubular and other sections of approved make conforming to IS: 733 and IS:1285, anodised dyed to required shade according to IS: 1868. (Minimum anodic coating of grade AC 15), fixed with rawl plugs and screws or with fixing clips, or with fixing clips, or with expansion hold fasteners including necessary filling up of gaps at junctions, at top, bottom and sides with required PVC / neoprene felt etc. Aluminium sections shall be smooth, rust free, straight, mitred and jointed mechanically wherever required including cleat angle, Aluminium snap beading for glazing/ panelling, C.P. brass / stainless steel screws, all complete as per the directions of Engineer-in-Charge. These shall be of procured from approved manufacturers as specified. Aluminium joinery shall be manufactured out of heavy extruded section.

- 14.1 All external window/ vents in md accn/ living accn shall be provided with double shutter i.e. glazed shutter + gauged shutter. The size of various components such as frame, styles and rails, beading and other

PARTICULAR SPECIFICATION CONTD....

- components, the thickness of aluminium sheet out of which these are fabricated shall be all as per details shown on schedule.
- 14.2 Any variation/deviation from the above shall be provided only after obtaining written approval from the Accepting Officer. However, the contractor shall note that the variation if found on plus side no extra payment will be admissible and if found on lower side the same will be adjusted through a minus deviation.
- 14.3 The aluminium fittings shall be fitted/fixd all as per manufacturer's instructions and as directed by Engineer-in-Charge.
- 14.4 The panels such as Glass panels/ Prelaminated particle board panel with decorative lamination on both sides etc, shall be all as described elsewhere in the specifications. The panels shall be fixed with standard aluminium beading self interlocking type with EDPM rubber gasket.
- 14.5 All screws shall be cadmium plated. EDPM rubber shall be provided for all glazing for giving cushion to glass. Everite/ Hardwyn make floor spring conforming to IS-6315 with set of special brass pivot with weighing capacity up to 130 Kg with stainless steel cover plate of ISI mark shall be provided to the door shutters.
- 14.6 **GRILLS FOR ALUMINIUM WINDOWS/VENTS:** Where shown on schedule aluminium windows/vents shall be provided with aluminium grills of the design as approved by GE. The aluminium grills shall be Polyester powder coating in any colour with minimum thickness 50 micron if not shown in schedule. The grills shall be fixed all as direction of engineer-in-charge.
- 14.7 **FROSTED GLASS IN DOORS / WINDOWS:** Thickness of glass pane shall be as shown on drawing. Frosted glass panes shall be fixed with frosted face on the inside. Glass panels shall be fixed by providing a thin layer of putty conforming to IS 419.
- 14.8 **GFRP/FRP DOOR** GFRP/FRP door specification shall be as per IS 14856-2000 and one door shall be tested at random from Govt. approved laboratory, cost of the same shall be borne by the contractor.
15. **COLLAPSIBLE GATE:** Collapsible gate shall be as specified in SSR part-I clause 10.24
16. **PRESSED STEEL FRAMES FOR DOORS**
- 16.1 Pressed steel frames shall be factory made fabricated from 1.25mm thick mild steel plain sheet and shall be provided all as per details shown on drawings and as specified in Clause 10.27 of MES Schedule. Pressed steel frames shall be filled with PCC of grade M-10 (Nominal mix) . Bedding of frames shall be done in cement mortar (1:3).
- 16.2 MS tie bar of 16mm dia round bars shall be provided at the bottom of frames by welding to the frame and tie bar shall be embedded and left in floor.
- 16.3 The frames shall conform to specification given in IS-4351 with regard to fittings, hinges and shock absorbers except that hinges shall be of mild steel. Cleat hinges may be welded on top of frames.
- 16.4 MS conduit 19mm dia of 16 gauge closed at one end and shall be welded to inner face of frame for receiving shoot of bolt. MS sockets for housing shoots of tower bolt shall also be provided as directed by Engineer in Charge.
- 16.5 Pressed steel door frames shall be supplied by manufacturers with a shop coat of zinc chrome primer.
- 17 **STRUCTURAL STEEL GATE/DOOR:** Structural steel gates/doors shall be made of MS Channel, Rolled steel beams, angle, flat and plates etc. riveted/welded joints, all as per drawing. Steel sheet covering to steel doors shall be with PGI/PBI sheet of thickness as shown on drawings. Where thickness is not indicated it shall be of 0.80mm thick.

PARTICULAR SPECIFICATION CONTD....

- 18 **STAIR CASE RAILING:** Railing consisting of flat iron and/or square bars duly welded shall be provided as per details shown on drawings. Mortice hole left in concrete for fixing balusters of the railing shall be grouted in cement mortar (1: 2) and finished to match the adjoining surface of concrete.
- 19 **STEEL ROLLING SHUTTER:** Steel rolling shutter shall be provided all as specified in clause No 10.23 of SSR Part-I for manual type. The rolling shutter shall be without ball bearing as specified including top cover, anchoring rod, haps and staple with safety lever locks mild steel with four levers. The thicknesses of laths shall be 1.25mm. The rolling shutter complete in all respect shall be fixed in position as shown on drgs. The rolling shutter shall be of standard make as approved by the GE”
- 20-22 **BLANK**
23. **ROOFING:**
- 23.1 **RCC ROOF SLAB:** RCC Roof slabs shall be cast/laid to slope and roof surfaces finished even and smooth without using extra cement.
- 23.2 After RCC slab is laid cured and fully set, ponding shall be done over RCC slab by filling water which shall be kept there for 48 hours and in case a slightest indication of seepage/leakage is noticed, the same shall be rectified by grouting and on plastering with cement mortar (1:3) after roughening the effected portion without any extra cost to the department. Water proofing treatment on roof slabs shall be carried out when there is no seepage/leakage observed.
- 23.3 RCC Roof shall be constructed monolithically with beam and column junction. RCC slab coming over brick work shall be laid over 20mm thick bearing plaster in cement mortar 1:3 over two layer of laminated water proof craft paper ,type-I conforming to IS – 1308, weight not less than 100 gram/Sqm(each layer).
- 23.4 A.RCC parapet shall be constructed monolithically with RCC slabs alongwith PCC coping/ benching of grade M-15 (Nominal mix) at junction of roof slabs and parapet wall for accessible roof”
- 23.5 RCC roof slab shall be prepared as described in paras 11.31.2 and 11.21 of MES Schedule before carrying out any treatment.
- 24 **SPOUT:** Spout shall be GI water tube of light grade of length and diameter as shown on drg. Where length and diameter of spout are not indicated it shall be taken at passing through the width of parapet or facia and projecting beyond 30cm from the outer face of wall of 50mm bore pipe irrespective of whatever shown on drawings.
- 25 **WATER PROOFING TREATMENT TO RCC ROOF:**
- 25.1 Water proofing treatment to the building shall be carried out as follows:-
- [A] **WATER PROOFING TREATMENT TO NON ACCESSIBLE RCC ROOF:** Water proofing treatment to the buildings with non accessible RCC roof shall be carried out as follows:-
- (a) Over the RCC roof slab, 15 mm thick plaster in CM (1:4) shall be provided mixed with water proofing compound, ISI marked as per manufacturer instructions. The plaster shall be provided when the concrete is green. The plaster surface shall be steel troweled to get a smooth surface
 - (b) After the plaster has dried up, the membrane treatment shall be applied as under:-
 - (i) The plastered surface shall be prepared by thoroughly wire brushing, washed, dried up and cleaned of all foreign matter and dust.

PARTICULAR SPECIFICATION CONTD....

(ii) On the prepared surface, one coat of approved bituminous primer @ 0.30 Ltr per Sqm shall be applied. The primer and the membrane to be used shall be of same manufacturer.

(iii) Over the primed surface, 3 mm thick APP modified polymeric membrane with non-woven polyester reinforcement shall be laid by torch application method. The make of APP membrane shall be as mentioned in the list of makes given here-in-after. Technical characteristics of the membrane shall be as under:-

CHARACTERISTIC	SPECIFICATIONS
(i) Thickness	Minimum 3mm
(ii) Weight	Minimum 3.50 Kg per Sqm of membrane
(iii) Softening point	Min 150° C.
(iv) Cold flexibility	(-)5° C
(v) Reinforcement	Non-woven polyester Mat Minimum 160 gm /m ² .
(vi) Tensile strength:-	
Lengthwise	> 650N / 5cm
Crosswise	> 450N / 5cm
(vii) Elongation :-	
Lengthwise	Min 40%
Crosswise	Min 35%
(viii) Heat Resistance	Does not Drip at 120°C
(ix) Tear Strength :-	
Lengthwise, N	> 300
Crosswise, N	> 250
(x) Water	
Absorption, %	<0.15

The side overlaps shall be minimum 75mm and the end laps shall be minimum 100 mm. All overlaps and joints shall be sealed as per manufacturer's instructions.

(iv) The finished surface shall be given aluminum paint @ 0.10Kg/M2 as per manufacturer's instructions.

(v) APP membrane shall be extended to downward facia for roof projection.

(c) For parapets/vertical surfaces of walls, the membrane shall be taken to a height of min 60 cm & then inserted inside the parapet in a groove. The same shall be finished by a membrane flashing.

(d) All angles and abutments should be sealed well with extra care to ensure full bondage.

(e) The entire work of APP membrane treatment to plastered RCC roof slabs shall be carried out by engaging **authorized applicator of the manufacturer**. For this purpose, contractor shall submit the details of authorized applicator alongwith supporting documents to GE well in time and the work shall be executed only after written approval by GE. However the main contractor shall give guarantee for efficiency of water proofing treatment for a period of ten years as specified here-in-before.

(f) Random samples of Polymeric Water Proofing membrane, as selected by GE, shall be got tested from National Test House/ Govt approved lab where such facilities exists before incorporation in the work. Cost of testing shall be borne by the contractor.

(g) In case the test results does not meet the specifications given above, the entire lot shall be rejected by the GE. In such a case, the contractor shall bring the fresh lot of desired quantity of APP modified Water Proofing Membrane and the same procedure of testing repeated till the time satisfactory test results are obtained. Nothing extra will be paid to contractor on this account.

[B] **WATER PROOFING TREATMENT TO ACCESSIBLE RCC ROOF/ TERRACE**

PARTICULAR SPECIFICATION CONTD....

- (a) Over the RCC roof slab, 10 mm thick plaster in CM (1:4) shall be provided mixed with water proofing compound, ISI marked as per manufacturer instructions. The plaster shall be provided when the concrete is green. The plaster surface shall be steel troweled to get a smooth surface.
- (b) After the plaster has dried up, the membrane treatment shall be applied as under :-
- (i) The plastered surface shall be prepared by thoroughly wire brushing, washed, dried up and cleaned of all foreign matter and dust.
 - (ii) On the prepared surface, one coat of approved bituminous primer @ 0.40 Ltr per Sqm shall be applied. The primer and the membrane to be used shall be of same manufacturer.
 - (iii) Over the primed surface 3 mm thick APP modified polymeric membrane with non-woven polyester reinforcement weighing not less than 3.50Kg/SM, shall be laid by torch application method. All other properties of APP modified polymeric membrane shall be all as specified in Para (A) (iii) here-in-before. The side overlaps shall be minimum 100 mm and the end laps shall be minimum 100 mm. All overlaps and joints shall be sealed as per manufacturer's instructions.
 - (iv) Provide 20-22mm thick the hydraulically pressed concrete tiles of size 250 X 250mm as per IS-1237 laid over 15mm thick bedding in cement mortar (1:4), joints grouted and flush pointed in cement mortar (1:3) mixed with 5% crude oil by weight of cement. The tiles shall be laid either through authorized applicator who has laid the APP membrane or by the contractor under the supervision of the authorized applicator of APP membrane.
- (c) For parapets/vertical surfaces of walls, the membrane shall be taken to a height of min 60 cm & then inserted inside the parapet in a groove. The same shall be finished by a membrane flashing.
- (d) All angles and abutments should be sealed well with extra care to ensure full bondage.
- (e) The entire work of APP membrane treatment to plastered RCC roof slabs shall be carried out by engaging **authorized applicator of the manufacturer**. For this purpose, contractor shall submit the details of authorized applicator alongwith supporting documents to GE well in time and the work shall be executed only after written approval by GE. However the main contractor shall give guarantee for efficiency of water proofing treatment for a period of ten years as specified here-in-before.
- (f) Random samples of Polymeric Water Proofing membrane, as selected by GE, shall be got tested from National Test House / Govt approved lab where such facilities exists before incorporation in the work. Cost of testing shall be borne by the contractor.
- (g) In case the test results does not meet the specifications given above, the entire lot shall be rejected by the GE. In such a case, the contractor shall bring the fresh lot of desired quantity of APP modified Water Proofing Membrane and the same procedure of testing repeated till the time satisfactory test results are obtained. Nothing extra will be paid to contractor on this account.

[C] ROOF TREATMENT OF GARAGES/COVERED GARAGES

Roof treatment shall be carried out while concrete is green, a layer of minimum 10mm thick CM (1:4) admixed with approved W.P.C and laid over to roof with proper slope all as directed.

26 WATER PROOFING TREATMENT TO SUNKEN FLOOR

26.1 Treatment to sunken floor shall be carried out as under :-

- (i) Cleaning top surface of floor slab and laying 50mm thick (average) PCC of grade M-10 (Nominal Mix), mixed with WPC as per manufacturer instruction laid in slope 1 : 20 towards spouts including coveting corners.

PARTICULAR SPECIFICATION CONTD....

- (ii) 15mm thick plastering in CM (1:4) on sides mixed with water proofing compound as per manufacturer instruction.
- (iii) Applying first layer of slurry at the rate of 0.488Kg/Sqm mixed with acrylic based polymer modified cementious compound at the rate of 0.253 Kg/sqm. This layer shall allowed to air cured for 4 hours.
- (iv) Applying second layer of slurry at the rate of 0.242Kg/Sqm mixed with acrylic based polymer modified cementious compound at the rate of 0.126 Kg/sqm. This layer shall allowed to air cured for 4 hours followed with water curing for 48 hours.
- (v) Applying a coat of industrial bitumen 85/25 penetration @ 1.50Kg/Sqm on plastered & concrete surfaces.
- (vi) Laying a layer of 200 micron polythene film.
- (vii) Two nos 25mm bore GI medium grade 450mm long spout shall be provided through external wall to drain out accumulated water. .
- (viii) Sunken floor shall be tested for water tightness by filling water for 72 hrs before and after treatment work is carried out and ensure that no leakage/seepage exists.
- (ix) Sunken portion shall be filled with lean cement concrete of grade M-7.5 using broken brick aggregates.

27 TESTING OF WATER PROOFING TREATMENT

- 27.1 After the water proofing treatment is completed, leak proof tests shall be done by ponding. For this purpose in roof, mud, mortar, fillet ponds shall be made longitudinally one meter apart over entire treated surface of roof to form pond of suitable size as directed by the Engineer-in-Charge. (These ponds shall be filled with potable water so that an average 50 mm(minimum 25mm and maximum 75mm) height of water is maintained during the test period.
- 27.2 Tests shall be carried out continuously for a period of 48 hours. Any seepage notified shall be rectified by the contractor and making good the defective portion to entire satisfaction of the GE, who will pass this stage.
- 27.3 All mud fillet bends shall be removed and surface made clear and tidy after completion of satisfactory testing.
- 27.4 Satisfactory completion of test shall not absolve the contractor from his responsibility of rectification of defects, which may arise during defect liability period.

27.5 GUARANTEE

- 27.5.1. **The defects liability period of water proofing treatment shall be 10 years and the contractor shall be responsible to keep the entire buildings free from leakage/seepage for a period of 10 years after the certified date of completion for the work by the GE. The contractor may obtain a similar guarantee from the specialist firm engaged by him for the purpose.**
- 27.5.2 **A sum equal to 2.5% of the quoted lump sum against buildings covered as per Schedule 'A' Part-I for which water proofing treatment has been specified, will be held back out of the contractor's bill as security deposit for the guarantee period of 10 years which shall be refunded to him after expiry of this period. Alternatively, the contractor may give a separate interest bearing security deposit or bank guarantee bond to GE valid for ten years for sum mentioned above.**

PARTICULAR SPECIFICATION CONTD....

- 27.5.3 Should the GE at any time during the construction or prior to the expiry of said Guarantee period of 10 years finds that there is seepage/leakage in the buildings wherein water proofing treatment has been given under the contract, the contractor shall on demand in writing from the GE specifying the bldgs complained of, notwithstanding that the same may have been inadvertently passed, certified and paid for, forthwith undertake to carry out such treatment which may be necessary to render the buildings free from leakage/seepage at his own expenses, till expiry of the Guarantee period of ten years.
- 27.5.4. In the event of contractor's failure to comply with GE's directions within the stipulated period, the work shall be carried out at the risk and cost of the contractor. The liability of the contractor under this condition shall not, however, extend beyond the period of the 10 years as elaborated in Para 8.5.1 hereinbefore unless the notice was served on the contractor previously to rectify such defects.
- 27.5.5. Security deposit/Bank guarantee shall be released to the contractor after the expiry of the period of ten years from the certified date of completion by the GE, provided always that the contractor shall first have been paid the final bill and have rendered a No Demand Certificate.

28 DAMP PROOF COURSE

- 28.1 DPC shall be provided where shown on drawing. Damp proof course shall consist of a layer of 40mm thick PCC M-20(Nominal mix) using 12.5mm stone aggregates with water proofing compound conforming to IS-2645 liquid grade as per manufacturer instructions. A layer of hot blown bitumen of grade 85/25 shall be applied @ 1.2 Kg/Sqm over DPC after 14 days of curing. DPC shall be provided on half brick walls also.
- 28.2 Integral liquid water proofing admixture shall be of Make as specified in Appendix 'F' and shall be conforming to IS-2645-1975, IS-9103-1999. It shall be mixed with cement mortar in the proportion and manner as given in manufacturer's instructions. Deviation, if any, shall be priced at the rate of 0.4% by weight of cement.
- 28.3 Damp proof course shall also be provided under door/openings below floor by giving vertical drop irrespective of what is shown on the drawings equal to the thickness of top layer of flooring. PCC/Terrazzo floor where provided shall be extended in door/openings.

29 LAYING AND BONDING

- 29.1 Bricks shall be laid and bonded, all as specified in Clauses 5.23 and 5.24 of MES Schedule Part-I as applicable to old size bricks (FPS conventional bricks).
- 29.2 Half brick walls upto 2100mm height shall rest directly on sub base of floor. Half brick walls above 2100mm height and dwarf walls shall be provided with foundations.

30 WOOD WORK AND JOINERY**30.1 TIMBER**

- 30.1.1 Timber for all joinery and wood work shall conform to specifications given in Clause 7.3 of the MES Schedule Part-1 and shall be within the permissible limits of defects in Clauses 7.4 and 7.5 of the MES Sch Part-1.
- 30.1.2 Timber shall be well seasoned whether air or kiln dried at the discretion of the contractor (except factory made door shutters which shall be kiln seasoned only) but without any price adjustments. The moisture contents of timber shall not exceed the limits laid down in Clause 7.7 of MES Schedule Part-1.

30.2 PRESERVATION OF TIMBER

- 30.2.1 Preserving antitermite treatment shall be carried out to all wood work and joinery fabricated by the contractor at site. Factory made wood based boards are not to be treated at site with any chemical.

PARTICULAR SPECIFICATION CONTD....

30.2.2 Chemical used for antitermite treatment to woodwork and joinery shall be copper naphthate or any other chemical specified in IS-401 applied in any one of the manners specified in the ibid IS.

30.3 SPECIES OF TIMBER

30.3.1 The species of timber and prefabricated wood products (ie plywood, wood particles board etc) shall be as specified below:-

- i) Panelled/glazed/wire gauzed shutter for doors (Styles, rails, glazing bars only, beading/ moulding fillets) - Factory made shutter using IInd class hard wood (Hollock Wood)
- ii) Any wood work not covered above and hereinbefore - First class soft wood (Deodar wood).

30.3.2 In the event of deviation the pricing shall be done at the rates given in SSR Part II.

30.3.3 Paneled shutters shall be provided with beading all-round the panel inserts on one side of door. The size of beading shall be 20mm in width and tapered thickness from 10mm to 5mm.

30.4 PARTICLE BOARD

30.4.1 Particle board shall be ISI marked exterior grade-1 (medium density). Particle board shall be flat pressed, BWP grade bonded with phenol formaldehyde synthetic resin adhesive conforming to IS-3087 (Type-I Part-I) all as specified in Para 12.13 of MES Schedule Part-I. Particle board shall be of uniform thickness and density throughout. Both the faces of particle board shall have sanded smooth finish. Where thickness of particle board has been shown as 20mm, it shall be read as 18/19mm.

30.5 PLYWOOD

30.5.1 Plywood where indicated shall be BWR grade bonded with phenol formaldehyde synthetic resin adhesive and marked with IS -303 for general purpose plywood and IS-1328 for decorative face plywood. Facing shall be of teak veneer or commercial veneer as shown on drawing/specified.

30.6 PRELAMINATED PARTICLE BOARD

30.6.1 The prelaminated particle board in all situations shall be three layered exterior grade ISI marked (IS :12823 Gde I) with prelamination of approved shade on one side and balancing white on other side, irrespective of what is shown on drawings.

30.7 WORKMANSHIP

30.7.1 Joinery shall be wrought all over. Timber exposed to view shall be wrought and timber not exposed to view shall be clean sawn. The workmanship and fixing of joinery shall be as per Clause 8.11 to 8.22 of MES Sch Part I.

30.7.2 The dimensions of the various components of joinery (other than block board shutters) shown on drawings, wherever at variance, shall supersede the standard dimensions mentioned in Clause 8.20 of the MES Schedule Part I. However, for pricing deviations involving any joinery work, the rates in MES Sch (Part-II) for the corresponding joinery items shall be applicable.

30.7.3 Unless otherwise specified, all work both carpenter's and joiner's shall hold full dimensions as shown on drgs except that an allowance of 1.00mm shall be allowed for Each wrought face. Wooden beads and fillets shall however, hold the full dimensions as shown on drgs. The contractor shall also maintain the overall sizes of the doors and windows etc. as shown on drgs.

PARTICULAR SPECIFICATION CONTD....

- 30.7.4 Timber members upto 3.00 metre in length shall be in one piece.
- 30.7.5 Plugging to walls shall be done with wooden plugs as per Clause 7.29 of the MES Schedule Part-I.

30.8 FACTORY MADE PANELLED/GAUGED/GLAZED SHUTTERS

- 30.8.1 All paneled/glazed/wire gauged shutters of doors shall be factory made, manufactured in accordance with IS-1003, made of well selected kiln seasoned, chemically pressure treated, 2nd class hardwood (as approved by GE). Styles, rails and glazing bars shall be as specified in Clause 6.3 (i) hereinbefore. Panel inserts shall be 12mm ply or thick particle board commercial on both faces, conforming to specifications mentioned in Clause 6.4 hereinbefore. Thickness of shutter shall be 35mm thick. Factory made shutters shall be procured from the manufacturers as listed in Appendix 'F' here-in-after.
- 30.8.2 A Tolerance of (plus/minus) 3mm on width and height only shall be allowed, provided the shutter snugly fits into the frame. The thickness of shutters given in drawing shall be the finished thickness and no tolerance on this shall be permissible.
- 30.8.3 The GE should visit the factory when a lot of factory made paneled shutters are ready for despatch to site. The GE should ascertain whether the testing facilities are available for seasoning, preservative treatment of timber and shutters are manufactured as per IS-1003 specifications.
- 30.8.4 Testing of shutters is mandatory from Govt approved lab as per IS-1003 Part-I before incorporation in the work. Shutters shall be allowed to be incorporated in the work only after the GE is satisfied with the quality of the shutters brought by the contractor. The cost of testing shall be borne by the contractor.

31. **Blank**
32. **FLOORING**

32.1 GENERAL

- 32.1.1 Ordinary Portland cement/Portland pozzolana cement for all flooring shall be used.
- 32.1.2 Provisions contained in Clauses 13.25, 13.27, 13.32 & 13.38 of MES Schedule (Part-I) are to be adopted for laying floors and pavements.
- 32.1.3 Floors shall be laid to levels or to falls as shown on drgs or as specified in Schedule 'A' and as directed by the Engineer-in-Charge.
- 32.1.4 Floor finish shall be extended over dwarf walls, doors and other openings.
- 32.1.5 Wherever cement concrete finish is shown on drawings for treads and landing, these shall be provided with cast-in-situ cement concrete topping 20mm thick in cement concrete M-20(Nominal mix). Risers in such cases shall be finished with 10mm thick cement plaster in Cement Mortar 1:4 finished even and smooth.
- 32.1.6 Marble aggregate (Chips) shall be of size 7mm to 10mm for terrazzo floors. The colour of marble chips shall be as shown on drawings or as approved by GE, when not indicated in drgs but in no case black marble aggregates (black chips) shall be used.
- 32.1.7 Surface of floors, skirting/dado/treads/landings when finished in terrazzo shall be grinded and wax polished as specified in Clause 13.38.6 to 13.38.8 of MES Schedule Part-I. The grinding by hand may be allowed in WC/Bath, if grinding by machine is not feasible in such situations. these situations are in addition to those as specified in Clause 13.38.6 of MES Schedule Part-I.

PARTICULAR SPECIFICATION CONTD....

32.1.8 The dividing line between the floors of different types wherever met between rooms, shall be determined on the basis of the finish visible when the doors are closed and the applicable finish shall accordingly be provided.

32.1.9 Floor finish over RCC slabs shall be as specified in Clause 13.32.5 of MES Schedule Part-I.

32.1.10 Sub base shall not be laid in panels.

32.1.11 MARBLE SLAB

Marble slab where shown on drawings or as specified in Schedule 'A' shall not be less than 18mm in thickness. The size of marble stone slab shall be as shown in drawing if the same is not mentioned in drawing it shall not be less than 90cm in length and 60cm in width. In situations where the minimum size does not adjust in that case the size of stone shall be as decided by GE. The marble slab shall be plain white makrana, machine cut and polished. Marble shall be hard, sound, dense and homogeneous in texture with crystalline and coarse grains all as specified in Clause 6.20.3, 6.20.4.2, 6.20.5 to 6.20.8 of SSR Part-1. Marble slab shall be bedded, jointed & pointed in neat cement slurry over 10mm thick screed layer of cement mortar 1:3.

32.1.12 CHEQUERED TILES

32.1.12.1 Chequered tiles (with grey cement) shall be 1st quality, (ISI marked) factory made of shape/pattern as decided by GE. The thickness of tiles shall be 300mm x 300mm x 25mm. Make: NTC/AI/NITCO/MODERN

32.2 TYPE AND COMPOSITION OF FLOORS

32.2.1 The flooring for all buildings shall be provided in situation as shown on drawings for Schedule of finishes and specified hereinafter.

32.2.2 PCC FLOORING

32.2.2.1 40mm thick PCC M-20(Nominal mix) type A1, finished fair using extra cement over 75mm thick PCC M-10 (Nominal mix) sub base over 75mm thick sand filling over rammed earth in ground floor. Top layer shall be laid in panels not exceeding 1.2 sqm panels using 4mm thick and 38mm wide glass dividing strips. In first floor 40mm thick PCC M-20 (Nominal mix) type A1 finished fair using extra cement and using glass dividing strips shall be provided after applying neat cement slurry @ 3Kg of cement per Sqm on RCC slab.

32.2.3 NON-SKID CERAMIC TILE FLOORING

32.2.3.1 Wherever shown on drawing/ Sch of finishes or as specified in Schedule 'A', Non skid ceramic tile flooring (size of Non skid tiles 400mm x 400mm x not less than 8 mm thick) shall be laid over 3mm thick (average thickness) of polymer adhesive as per IS:15477 (Ferrous Crete-Ferro 1111/ Fevimate XL of Pidilite/ Gold star of Bal endure) over 15mm thick screed in cement mortar 1:4, over 25mm thick PCC M-15 (Nominal mix) type B0 over 100mm thick PCC (1:5:10) type E2 over rammed earth for ground floor. In first floor, non skid tile flooring shall be laid over 3mm thick (average thickness) of polymer adhesive as per IS: 15477 (Ferrous Crete-Ferro 1111/ Fevimate XL of Pidilite/ Gold star of Bal endure) over 15mm thick screed in cement mortar 1:4, over 25mm thick PCC M-15 (Nominal mix) type B0 after applying neat cement slurry @ 3Kg of cement per Square meter over RCC slab. Tiles shall be fixed with adhesives as per manufacturer instructions. The tiles shall be pointed in white cement with pigment to match the colour of tiles.

32.2.4 KOTA STONE FLOORING

32.2.4.1 Wherever shown on drawing/ Sch of finishes or as specified in Schedule 'A' , Mirror Polished kota stone not less than 18mm thickness shall be laid on 20mm thick screed in Cement Mortar 1:4 over 30mm thick PCC M-15 (Nominal mix) over 100mm thick M-10 (Nominal mix) over 75mm thick sand filling over rammed earth in floors where indicated in sch of finishes. The size of kota stone shall not be less than 55cm in length and 55cm in

PARTICULAR SPECIFICATION CONTD....

width. The situation where the minimum size of kota stone does not adjust in that case size of kota stone will be decided by GE whose decision in this regard shall be final and binding. The type and laying of kota stone shall be as specified Clause No 13.47, 13.47.1 to 13.47.4 of SSR Part-I. In first floors Mirror Polished kota stone not less than 16mm thickness shall be laid on 20mm thick screed in Cement Mortar 1:4 after applying neat cement slurry i.e. 3 Kg per sqm of RCC slab.

Note : Where shown/mentioned in drawing/Schedule of finishes, 100mm wide white marble/granite strip (not less than 18mm thickness) shall be provided in border of Kota stone flooring as per pattern shown in drawing or as directed by Engineer-in-Charge.

32.2.5 CHEQUERED TILE FLOORING

32.2.5.1 Chequered tiles shall be of size 20cm x 20cm x 25mm factory made, laid on 10mm thick screed in cement mortar 1:3 over 30mm thick PCC M-15 (Nominal mix) over 75mm thick M-10 (Nominal mix) sub base over rammed earth in floors where indicated in Schedule of finishes.

32.2.6 STEPS**32.2.6.1 BRICK STEPS (PCC finish):**

Wherever PCC finish is shown on drawing/ Schedule of finishes, treads of steps shall be provided with Cast-in-situ cement concrete topping 20mm thick in PCC M-20 (Nominal mix) with chequered finish on top of treads. Risers of steps in such cases shall be finished with 10mm thick cement plaster in cement mortar (1:3) finished even and smooth without using extra cement. However the sides of the steps shall be finished with 5mm thick plaster in CM (1:3) finished even and smooth without using extra cement.

32.3 **TESTING OF TILES:** All tiles before incorporation in the work shall be tested in Command / Zonal Test Lab. However cost of materials and transportation charges to command/ Zonal Test Lab shall borne by the contractor without any extra claim. In case the required testing facility is not available in Command Lab/Zonal Lab, the same be done either at National Test House/Any Govt Engg College/ Any Govt Approved lab at the direction of the GE.

33. PLASTERING AND POINTING**33.1 GENERAL**

33.1.1 Plaster and skirting/dado shall be returned in jambs, soffits of lintels and windows etc.

33.1.2 Where plaster on concrete surface is shown to match the adjacent wall surface, the mix of plaster shall be same as for the wall surfaces.

33.1.3 All plastered surfaces shall be towelled to even and smooth surfaces without using extra cement.

33.1.4 All external finishes shall be carried out upto 15cm below ground level except where plinth protection etc is provided.

33.1.5 Thickness of cement plaster mentioned in Sch of finishes shall be finished thickness exclusive of dubbing. Dubbing may, however, be done in one operation with plaster.

33.1.6 All corners, angles, junctions shall be truly vertical or horizontal as the case may be and shall be carefully finished. Corners around joints openings and junction of walls shall be rounded to minimum radius of 5mm.

33.2. MATERIALS

33.2.1 CEMENT – As specified for concrete.

PARTICULAR SPECIFICATION CONTD....

33.2.2 SAND - It shall be as per Clause 14.5.2 of SSR Part-1.

33.3 GROOVES AT THE JUNCTION OF MASONRY AND RCC

33.3.1 Irrespective of what is specified and shown on drawing, 10mm wide and 5mm deep continuous groove shall be provided in plaster throughout, at the junction of brick wall and RCC works on the internal surfaces of buildings as per SP-25 of Bureau of Indian Standards and edges shall be properly made up.

33.3.2 No grooves shall be provided at the junction of brick wall and RCC work on the external surfaces of buildings. A strip of chicken wire mesh 15 cm wide having aperture approximately 12.5 mm in least dimension with a weight not less than 0.40 Kg per Sqm shall be fixed over the junction of RCC and brick work on the internal surfaces of buildings before plastering. The chicken wire mesh shall be fixed on the wall surface with the help of nails of suitable size. The chicken wire mesh shall be fixed in a manner that it covers 7.5cm of brick work and 7.5 cm of RCC work. However in case of lintel band, chicken wire mesh shall be fixed covering whole width of lintel band and projecting 7.5 cm Each on either side of brick work. After fixing of chicken wire mesh, 10mm thick plaster in CM (1:4), finished fair and even shall be applied as mentioned in Clause 11.4.2 here-in-after. However no such provision shall be required where columns,/ beams / slabs are projecting from external faces of wall.

33.4. CEMENT PLASTERING

33.4.1 Internal surfaces as indicated in Sch of finishes of buildings under Sch 'A' Part I, shall be plastered in cement mortar 1:6 over dubbing coat when required all as specified in Clause 14.17 of MES Schedule (Part -1). The thickness of internal plaster exclusive of dubbing shall be 10mm irrespective of whatsoever is shown on drgs. However, plaster on ceiling/soffit of slab shall be with cement and sand mortar (1:3), minimum 5mm thick finished even and smooth after removal of form work.

10.4.2. All external surfaces, except where otherwise indicated/specified, shall be plastered in cement mortar 1:4; 15mm thick in one coat mixed with water proofing admixture (conform to IS 2645-Specifications for integral cement water proofing admixture) as approved as per manufacturers instructions. For the purpose of the deviation the water proofing admixture shall be considered @ 0.4% by weight of cement.

33.5 Where pointing is indicated in drawing, it shall be keyed pointing in cement mortar 1:3 as per Clause 14.29 of MES SchPt-I.

33.7 SKIRTING/DADO:**33.7.1 CEMENT SKIRTING/DADO**

33.7.1.1 Where cement floor is indicated, cement skirting/dado shall be provided unless otherwise indicated or specified. Cement skirting/dado shall be provided in locations as indicated in the drgs. Skirting/dado shall be finished even and smooth with steel trowel using extra cement. Height of cement dado/skirting, where not shown on drawings, shall be 1.15 metre for dado and 10 cm for skirting. The thickness of skirting/ dado shall be 5mm in cement mortar 1:3 over plastered surfaces (10mm thick in cement mortar 1:6) as specified here-in-before.

33.7.2 GLAZED TILES DADO

33.7.2.1 Where glazed tiles dado is indicated in drawings/Schedule of finishes, the same shall be with Glazed tiles of size 300mmx200mm and not less than 5mm thick all as specified in Clause 13.14 of MES Schedule Part-I and shall be provided as specified in Clause 13.40 of MES schedule Part-I. Glazed tiles shall be laid over 10mm thick screed in cement mortar 1:3. The tiles shall be glossy and shade shall be as approved by GE. Make of tiles shall be as mentioned in Appendix 'F'.

PARTICULAR SPECIFICATION CONTD....**33.7.3 NON SKID CERAMIC TILES SKIRTING**

33.7.3.1 Where non skid ceramic tiles skirting is indicated in drawings/Schedule of finishes, the same shall be with Non skid ceramic tiles of shade, colour and texture as per flooring, shall be laid over 10mm thick screed in cement mortar (1:3), jointed & pointed in white cement with colour pigment (suitable to match with the colour of tiles). Irrespective of whatever is shown on drawings, the height of skirting shall be 100 mm.

34. STEEL SHEETING PLAIN OR CORRUGATED

34.1 Galvanized sheet sheets, plain or corrugated shall comply with the requirement of IS-277-2003, Specification for galvanized steel sheets plain or corrugated. Galvanized sheet shall be of grade of coating 275 with minimum zinc coating of 275 gms/Sqm.

34.2 Plain sheets shall be reasonably flat and free from twist, corrugated sheets shall be free from twist or buckle and shall have uniform corrugation, true in depth and pitch, and parallel to the side of sheets, the galvanized spots and other defects. Tolerance on weight of an individual sheet shall be $\pm 10\%$ and tolerance on bundle of sheet shall be $\pm 5\%$.

34.3 Galvanized sheet sheets, plain or corrugated shall comply with the requirement of IS-277-2003, Specification for galvanized steel sheets plain or corrugated. Galvanized sheet shall be of grade of coating 275 with minimum zinc coating of 275 gms/Sqm.

34.4 Plain sheets shall be reasonably flat and free from twist, corrugated sheets shall be free from twist or buckle and shall have uniform corrugation, true in depth and pitch, and parallel to the side of sheets, the galvanized spots and other defects. Tolerance on weight of an individual sheet shall be $\pm 10\%$ and tolerance on bundle of sheet shall be $\pm 5\%$.

34.5 Lap. The sheet shall be made with minimum end lap of 150 mm and side lap of two corrugations. The side and end lap may be increased to avoid cutting of sheets, if the Engineer-in-Charge agrees thereto but to no extra payment shall be made for the additional sheet so fixed.

34.6 Laying and fixing of sheets. The sheets shall be laid on the purlins to a true plane with lines of corrugation truly parallel or normal to the sides of the area to be covered.

34.7 Sheets shall be fixed to the purlins with galvanized or MS 'L' or 'J' hook bolts and nuts, 8 mm diameter with bitumen and GI limpet washers filled with white lead. The length of hook bolt shall be varied to suit the particular requirements. The bolt shall be sufficiently long so that after fixing they project above the top of their nuts not less than 12 mm. The grip of 'J' or 'L' hook bolt on the side of the purlins shall be not less than 25 mm. There shall be a minimum of three coach screws hook bolt placed at the ridges of corrugation in each sheet on even purlins and their spacing shall not exceed 300 mm.

34.8 All holes for bolts shall be made in the crown of corrugations and shall be drilled (and not punched). The holes in the washers shall be of the exact diameter of the hook bolt or the scan bolt. The nuts shall be tightened from above to give a leak proof roof.

34.9. RIDGES AND HIPS

34.9.1 Ridges and hips shall be covered with ridge and hip sections with a minimum 150 mm lap on either side over the roofing sheets and shall be properly bent to shape and fixed. The end lap of the ridges the hips and between ridges and hips shall be not less than 150 mm.

34.9.2 Ridges and hips shall be fixed to the roof members with GI hook bolts and nuts and bitumen and GI limpet washer, which fix the sheets to the purlins. At least one of the fixing bolts shall pass through the end laps of ridges and hips, on one-side laps shall be set in red lead. The edges of the ridges and hip shall be straight when fixed and to end planes of the roof. The ridges and hips shall fit squarely on the sheets.

PARTICULAR SPECIFICATION CONTD....**35. RAIN WATER PIPES AND ACCESSORIES**

- 35.01 Where ever Rain water pipes shown on drawings, the same shall be of PVC (S.W.R) pipes Type 'A' conforming to IS:13592 and fittings conforming to IS:14735 of makes as specified in Appendix 'F'. The diameter of rain water pipe shown /indicated on drawings as 100mm and 140/150mm, the same shall be read as 110mm and 160mm respectively. The pipes and fittings shall be secured to walls below all joints with mild steel holder bat clamps as specified in Clause 11.34.5 of the MES Schedule Part I.
- 35.02 The grating shall be of CI round type weighing not less than 0.5Kg Each, provided and fixed at the inlet of rain water pipe.
- 35.03 Splash stones as specified hereinbefore shall be provided below the rain water pipe. Top & sides surfaces shall be finished even & smooth using extra cement. The size of splash stones shall be 400x300x100mm if otherwise not shown in drawings.
- 35.04 Spouts and pipe outlet where shown on drawing shall be of GI tubing medium grade as per IS-1239. Size and length shall be as shown on drawing, wherever, the same is not shown on drawing it shall be 50mm bore, projecting 250mm beyond outer face of walls. Spout/ GI Pipe/Conduit wherever passed through beam/RCC, it shall be put in position at the time of casting of beam/RCC.

36. EARTHEN CLAY TILES

- 36.01 These tiles shall conform to the requirements of IS-654. These shall be of class AA. These shall be made from suitable soil of even texture and shall be well burnt. These shall be free from irregularities such as twists, bends, cracks and laminations. These shall be free from impurities all as specified in Clause 11.5 of SSR Part-I. Earthen clay tiles as approved by GE shall be fixed over 10mm thick screed in CM 1:4 as per locations shown in the drawings.

37. CEILING AND LINING

- 37.1 Plywood: Refer para 12.10 and 12.10.1 of MES Schedule Part I.
- 37.2 Particleboards: Refer para 12.13 to 12.13.5 of MES Schedule Part I.
- 37.3 Asbestos cement building boards: - Refer Para 12.2,12.2.1 and 12.2.2 of MES Schedule Part-I.
- 37.4 High pressure steam cured (HPSC) Non asbestos fibre cement reinforced multipurpose board:- The board shall be as per IS-14862 and shall be manufactured from homogeneous mixture of cement, quartz and cellulose and shall be cured with high pressure steam using auto claving process. Everest Designer Ceiling 4 mm (Formerly E-BOARD CLASSIC) of Make " Eternit Everest Ltd." or equivalent as approved by GE in writing.
- 37.5 Gypsum Hard Board: - Refer Para 12.31 of MES Schedule Part-I.
- 37.6 Nails and Screws: Refer 12.17 of MES Schedule Part I.
- 37.7 **Workmanship**:
- 37.7.1 Material: The type of boarding etc in ceiling and lining, their thickness and finish shall be as indicated in Schedule 'A'.
- 37.7.2 Fixing Generally: Refer 12.20.1 to 12.20.8. of MES Schedule Part I.
- 37.7.3 Finishing: Refer para 12.20.9 of MES Schedule Part I.

PARTICULAR SPECIFICATION CONTD....

37.8 Fixing of Plywood, Particleboard and veneered particleboard: Refer para 12.24.1 to 12.24.4 of MES Schedule Part I.

37.9. Fixing of AC building boards: Refer para 12.21.1 and 12.21.2 of MES Schedule Part I.

38. SUNDRY ITEMS, BUILT IN FURNITURE AND MISCELLANEOUS ITEMS**381. NUMBERING OF BUILDINGS/BLOCKS**

38.1.1 Numbering of all blocks [at both end walls] shall be done by the contractor by engraving and painting [black] the exquisite letters/figures on a cement plaster [1:3] plate [format] of size and shape as shown on drgs.

39 Brick Steps

- (i) PCC (1:4:8) type D-2 as in foundation.
- (ii) Brick work in CM (1:4) using old size sub class 'B' bricks.
- (iii) Risers and sides shall be plastered, 15 mm thick in CM (1:4) and treated with two coats of cement base paint.
- (iv) Treads of steps & risers were shown on drawings shall have finish as shown of drawing.
- (v) Rest all as required.

40 **WATER STORAGE TANKS** : Water storage tanks shall be of rotational moulded polyethylene and as per Para 18.60 and 18.60-A of SSR-1991, Part-I (Specifications). Water storage tanks shall be ISI marked (multi layers), as approved by the GE.

41. SANITARY AND TOILET FITTINGS**41.1 GENERAL**

41.1.1 All sanitary appliances shall be of vitreous china (white), first quality and shall conform to IS-2556 for general requirements and the specific requirements as mentioned in relevant clause of MES Schedule. These shall be of an approved make from the list given in Appendix 'B'.

41.1.2 All waste pipes and fittings up to floor/Nahani trap shall be of galvanized steel tubing medium grade conforming to IS-1239 (Part-II). Flush pipe and socket of flushing rim of WC shall be of brass (chromium plated) and shall be jointed with white and red lead (white and red lead in equal proportion by weight) and specified in clause 18.48.2 of SSR Part-I with adding linseed oil in the form of paste.

41.1.3 'P' and/or 'S' trap shall be of centrifugally cast iron and jointed to WC pan with cement joints as specified in clause 18.48.5 of MES Schedule Part -I .

41.1.4 The sizes, given here in after are approximate sizes. The size of sanitary fittings to be provided shall be the nearest size as per manufacturers catalogue as approved by AGE

41.2 **Wash Hand Basin**: Wash hand basin shall consist of :-

- (i) Wash hand basin of size 55 X 45CM, white, Vitreous china glazed ware, flat back type with waste union and perforated grating (both fittings of brass chromium plated).
- (ii) A pair of cast iron brackets.
- (iii) 32mm dia galvanized steel medium grade waste pipe fitted with brass Chromium plated waste coupling outlet complete length of water pipe shall be as indicated on drawing.

PARTICULAR SPECIFICATION CONTD....

- (iv) Chromium plated steel chain and rubber plug.
- 41.2.A. The size of counter top wash basin shall be as per user / site requirement.
- 41.3 **MIRROR OVER WHB**
Mirror of polished sheet glass 5.5mm thick of make as per Appendix 'B' and fixed on 4mm thick, 3 ply, ply wood commercial type backing fixed Aluminium frame chrome plated including necessary provision for fixing. Mirror size shall be of equal length of counter slab/WHB.
- 41.4 **Soap Niche:** Soap niche shall be provided as per requirement. All sides of niche shall be finished with 5.5mm thick white glazed tiles.
- 41.5 **Shelf/Niche for wash hand basin:** Shelf/niche of size 450 X 100 X 100mm for wash hand basin shall be provided. All sides of niche shall be lined with white glazed tiles of 5.5mm thick.
- 41.6 **Indian type WC with cistern:** Vitreous china water closet (squatting pan) shall be white of Orissa pattern of size 630 x 540 mm and shall be as per clause No 18.32.3 of SSR Part I. These shall be provided with cast iron P or S trap and shall be fixed as specified in clause 18.86.1 of SSR part I. 10.00 litres capacity PVC flushing cistern valve-less, white, syphonic action type, low level, manually operated mounted to wall on two nos. CI bracket shall be provided for each WC and connected to type water closets with 32mm dia polythene (low or high density) or PVC flush pipe as per manufacturer instructions.
- 41.7 **WASH DOWN PEDESTAL TYPE WATER CLOSETS (EUROPEAN & ANGLO INDIAN) & CISTERN**
(i) Wash down water closet European type shall be all as per Clause no. 18.32.2 of SSR Part-I with P or S trap. Water closet shall be of pattern-I and of height 390mm and fixed with brass screws to floors.
(ii) Water closet anglo Indian type shall be of suitable size as directed and shall be of vitreous china with S trap in ground floor and providing with long arm 'P' trap in upper floors so that joint is avoided inside sunken portion as well as in walls and outlet straight away come out of wall in intermediate floors all as per IS-2556 (Part-II 1981) and fixed with brass screws to floors.
(iii) Plastic water closet seat & cover shall be provided to all wash down (pedestal) and anglo Indian water closets & shall be of thermosetting material and shall confirm to IS-2548 (Part-I) . Plastic Seat & cover shall be white closed pattern with flat bottom and as per clause no.18.36 of SSR Part-I.
(iv) 10.00 litres capacity PVC flushing cistern valve-less, white, syphonic action type, low level, manually operated mounted to wall on two nos. bracket and connected to all type water closets with 32mm dia polythene (low or high density) or PVC flush pipe as per manufacturer instructions.
- 41.8 (a) **URINALS:** Urinals shall be of vitreous china, bowl urinal flat back of size 465mmx355mmx265mm (minimum) white with 32mm dia GI pipe (medium grade) upto nahani/floor trap shall be provided in the toilets.
(b) Screen wall between urinals shall be of 12 mm thick granite slab of size 450 x 750 mm including rounding of exposed edges and fixing arrangement to wall.
- 41.9 **SINK WITH DRAINING BOARD**
Stainless steel sink with draining board shall be provided. The overall size of sink of single bowl with one drain board shall be minimum 915 X 460mm bowl size 410 X 330 X 160mm made of stainless steel 1mm thick. The overall size of sink of single bowl with double drain board shall be minimum 1600 X 500 mm bowl size 500 X 400 X 200 mm made of stainless steel 1mm thick In case the above size is not manufactured by any particular manufacturer the next higher size manufactured shall be provided by the contractor without any price adjustment.
42. **PLUMBING WORK**

PARTICULAR SPECIFICATION CONTD....**42.1 GENERAL**

Plumbing work shall be carried out as specified in Clause 18.13 to 18.23, 18.40 and 18.62 to 18.67, 18.7,18.8, 18.8.1, 18.13 to 18.22.1, 18.40 18.67.7A of MES Schedule Part - I of MES Schedule (Part-I).

42.2 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.

42.3 JOINTING

42.3.1 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.

42.4 FIXING OF PIPES TO WALLS

42.4.1 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-1.

42.5 NAHANI/FLOOR TRAPS

42.5.1 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.

42.6 SHORTER LENGTH

42.6.1 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.

42.7 GULLY TRAPS

42.7.1 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).

42.7.2 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.

42.8 TRENCHES FOR PIPE LINES

42.8.1 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.

42.9 TESTING

PARTICULAR SPECIFICATION CONTD....

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

43. INTERNAL WATER SUPPLY**43.1 WATER TUBING, BIBTAPS, STOP VALVES AND SHOWER ROSE**

43.1.1 Mild steel galvanised tubes (pipes) and fittings shall be ISI Marked & all as specified in Clause 18.4 of MES Schedule part-1, 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.

43.2 LAYING AND FIXING PIPES

43.2.1 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.

43.2.2 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.

43.2.3 **PP-R WATER SUPPLY PIPES:** Pipe and pipe fittings shall be of 3-layered PP-R [Polypropylene random copolymer] pipes SDR 7.4 [PN-16] UV stabilized and antimicrobial fusion welded having thermal stability for hot & cold water supply including all PP-R plain & brass threaded polypropylene random fittings all as specified in Clause 18.114 of MES Schedule Part – I. Laying, jointing and fixing of pipes shall be carried out all as specified in clauses 18.114.3 and its sub-clauses of MES Schedule Part – I. The Contractor shall use proper bends, elbows, tees etc. at turning corners. Bending of pipes is not permitted except where the pipe has to follow the contour masonry/brick work or where a fitting cannot be inserted. The bends shall be gradual and firm with the written permission of the Engineer-in-Charge. Pipes and fittings shall be of make as approved by the GE. Contractor shall provide screwed plugs to all open ends of pipe on completion of day's work. Contractor shall provide screwed plugs to all open ends of pipe on completion of days work.

43.3 PVC PIPE CONNECTION

43.3.1 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.

43.4 **Fixing of pipes to Walls:** CI pipes and fittings shall be fixed to wall all as specified in clause 18.67.4 to 18.67.6 of MES Schedule (Part-I) irrespective of whatever shown on drawing CI soil/waste pipe shall be provided upto Gully Trap.

43.5 **Nahani/Floor Traps:** Nahani/Floor traps shall be provided in situations as shown on drawings. These shall conform to IS –3989. These shall have nominal dia 50mm & 75mm as indicated and approx weight of Nahani traps shall be not less than 5.50Kgs and 6.50Kgs for traps with outlet dia of 50mm and 75mm respectively. Nahani traps shall be provided with CP grating. Floor traps shall be provided with CP grating.

43.6 **Shorter Lengths:** Except for WC connection, the contractor may use pipe pieces without sockets in shorter lengths (less than one pipe length) if approved by GE and connect these to pipes fitting with double sockets/collars, including additional joints as specified above without extra cost to the Government.

43.7 Gully Traps

(a) Gully traps shall be of salt glazed stone ware complying with the requirements of IS-651.

PARTICULAR SPECIFICATION CONTD....

- (b) Gully traps shall be square mouthed, 100mm size, type 'P' set in PCC of grade M-10 (Nominal Mix) block measuring 45cms square, thickness of bed concrete shall be 10cm jointing to drain pipe shall be done in cement mortar (1:1).
- (c) Cast iron perforated grating shall be 150mm X 150mm bituminous coated and fixed as directed by the Engineer-in-Charge.
- (d) PCC of grade M-15 (Nominal Mix) kerb and RCC cover slabs shall be provided all as directed by the Engineer-in-Charge.

43.8 **HDPE PIPE:** HDPE pipe shall be used as drain pipe.

43.9 **Trenches for Pipe Lines up to "First Man Hole":** The excavation in trenches in any type of soil shall be done as per the width given in SSR Part-II and depth as required at site. The trenches shall be back filled after testing of pipes with excavation earth in layers not exceeding 25cm and surplus spoil disposed to a distance not exceeding 50 metres.

43.10 **Testing:** All soil waste and vent pipes shall be tested as specified in Clause 18.79.1 and 18.79.5 of MES Schedule. Record of testing shall be maintained separately for each building.

44 **INSPECTION CHAMBER/1ST MANHOLE**

44.1 Provide Inspection Chamber /Manhole all as specified here-in-below :-

- (a) **Surface Excavation:** In any type of soil not exceeding 30cm deep and averaging 15cm deep.
- (b) **Excavation & Earth work:** In any type soil and removal of surplus soil to a distance exc. 100M and n.exc.250M all as directed.
- (c) **PCC Foundation:** PCC of grade M-10 (Nominal Mix).
- (d) **PCC Benching/Channel:** PCC of grade M-15 (Nominal Mix) finished even & smooth with using extra cement.
- (e) **Brick work:** All brick work with locally available best class Brick (Class 'B' bricks), in cement mortar (1:4).
- (f) **RCC PRECAST COVER SLAB:** Cover slab shall be precast RCC of grade M-25(Design Mix) 65mm thick reinforced with weld mesh weighing 0.82 Kg/SM.
- (g) **All other PCC work:** All PCC work which are not specified here-in-before shall be of PCC of grade M-15(Nominal Mix).
- (h) **Rendering:** 15mm thick rendering in cement mortar (1:3) finished even & smooth with using extra cement internally and external surface upto 15cm below GL in cement mortar (1:6) 10mm thick.

44.2 **WORKMANSHIP**

44.2.1 Laying of GI pipes (internal works) shall be in accordance with Clause 18.51 of MES Schedule part-1.

44.2.2 The contractor shall use proper bends, elbows, unions etc at turning corner. Bending of pipes shall not be allowed in any case.

44.2.3 Pipe shall not run diagonally.

PARTICULAR SPECIFICATION CONTD....

- 44.2.4 Contractor shall provide screwed plugs to all open ends of pipes on completion of days work.
- 44.3 TESTING : Testing of pipes shall be carried out all as per Clause 18.50.4 of MES Schedule Part-1.
- 44.4 **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.
45. **SHEET GLASS:** Sheet Glass shall be ordinary quality conforming to IS 2835-1977. It shall be flat, transparent and clear as judged by the naked eye. It shall be free from any cracks and other defects.
46. **PAINTING.**
- 46.1 All paints unless otherwise specified shall not be inferior than the specifications as laid down in ISS listed on page 17.1 of MES Schedule Part-I.
- 46.2 The Contractor shall inform to GE the name of manufacturer and their brands of paint he proposes to use in the work and submit the sample there of and obtain prior written approval of GE before their use in the work.
- 46.3 The contractor when so required by GE shall produce certificate from the manufacturer or from their authorized representative to establish that the brand of paint satisfy the requirements of relevant IS.
- 46.4 Paints shall be brought at site in original sealed containers and shall be entered in measurement book before incorporating. Contractor shall produce purchase vouchers in support of paint which has been used.
- 46.5 Shade/tint of paint shall be as existing at site, any change in shade/tint of paint shall be got approved from the Engineer-in-Charge. No extra payment shall be made to the contractor due to change in shade/tint.
47. **PREPARATION OF OLD PAINTED SURFACES.** Old painted wooden and steel surfaces shall be prepared as per clause 17.10.1 and 17.10.2 of MES Schedule Part-I respectively.
48. **WHITE WASHING, COLOUR WASHING ,CEMENT BASE PAINT, AND DISTEMPER**
- 48.1 **GENERAL** : Surfaces shall be prepared as specified in section 15 of MES Schedule Part-I. The workmanship shall be as described in MES Schedule applicable to new works.
- 48.2 White wash 3 coats of white (lime) shall be provided as indicated in Sch of Finishes and as specified in MES schedule. For white washing on ceiling, adequate quantity of zinc oxide shall be added to lime wash for achieving egg white shade, skirting and dado are not to be white. Two coats of colour wash of approved tint shall be applied on external plastered surfaces over a coat white wash shall be provided as indicated in drawings.
49. **WHITE (LIME) WASH.** White wash shall be prepared by slaking freshly burnt class „C“ lime conforming to IS-712-1984, specifications for building lime. Lime wash shall be prepared as per clause 15.12.3 of MES Schedule Part-I and applied as per clause 15.12.5 of MES Schedule Part-I. For white washing on ceiling adequate quantity of zinc oxide shall be added to lime wash for achieving egg white finish. Preparation of surfaces shall be carried all as specified in MES Schedule Part-I. The contractor may use Fevicol DD-1 as per manufacturer's instructions in lieu of gum as specified in MES Schedule Part-I.
50. **OIL EMULSION DISTEMPER.** Oil emulsion distemper shall conform to IS-428, preparation and applications of oil bound distemper shall be carried out all as per clause 15.14 of MES Schedule Part-I except that the treatment shall be applied using hand operated roller brush in lieu of painting brush.

PARTICULAR SPECIFICATION CONTD....

51. **CEMENT BASE PAINT.** Cement base paint shall conform to IS-5410. Surfaces shall be prepared as specified in clause 15.12.2 of MES Schedule Par-I. Preparation, application and curing of cement base paint shall be carried out as per clause 15.15 of MES Schedule Part-I.
52. **WEATHER PROOF PAINT:** Weather proof paint shall be provided as shown in schedule of finishes drawing and as specified in SSR part-I
- 53 **WEATHER PROOF PAINT (EXTERIOR WALLS)**
- 53.1 The acrylic emulsion paint shall be of premium quality. The paint shall be of the following make :-
- | | | | |
|-------|---------------|---|-------------------------------|
| (i) | APEX ULTIMA | : | M/s Asian paints Ltd |
| (ii) | Weather Coat | : | M/s Berger Paints Ltd |
| (iii) | Nerolac Excel | : | M/s Kansoi Nerolac Paints Ltd |
- 53.2 **PREPARATION OF SURFACES**
The surface shall be thoroughly cleaned to removed loose dirt or dust, lichen, algae, fungi or any organic growth by use of stiff brush. Then the surface is washed well and allows water to dry. It shall then be sand papered and apply a thin layer (3 mm thick) of wall care putty of approved make to give smooth and even surface and then the sand papering the same again when surface is dry.
- 53.3 **PRIMER COAT**
Over this prepared surface apply a coat of acrylic primer as per manufacturer's instructions. This shall be allowed to dry for 4 to 6 hours before application of final paint.
- 53.4 **FINISHING COAT**
Acrylic paint of premium quality 100% acrylic shall be applied in at least two coats as per manufacturer's instruction. The acrylic paint shall be prepared as per manufacturer's instruction by adding water in proportion in order as suggested. No other thinner shall be used. Paint shall be applied with brushes or roller and shall be allowed to dry for 3 to 4 hours between subsequent coat.
- 53.5 Where no finish has been shown on drgs, internal plastered surfaces shall be provided with three coats of white wash and external plaster surfaces shall be provided with two coats of weather coat paint over a coat of white base cement primer.
- 53.6 **GUARANTEE AND SECURITY DEPOSIT FOR MINOR RECTIFICATIONS:**
Executed against items of Weather proof paint under the guarantee of contractor for 04 (four) years after the certified physical completion of work. Contractor is fully liable under this guarantee to rectify and redo all defective work intimated to him during this period including all type of materials and labour to the specifications catered for in the contract. In case contractor fails to rectify the defective work, Accepting officer shall get the rectification done as necessary at the risk and cost of contractor and recover the cost in full from the contractor. If the contractor consider that any additional treatment is required over and above that specified here in before in Schedule 'A', the same shall be carried out by the contractor without any extra cost to the Government. Condition 46 of IAFW- 2249 (for defects liability period) for the Guarantee period shall be deemed amended accordingly.
- 53.7 Contractor shall furnish security deposit for periodical services carried out @ 2.5% of amount of Weather proof paint executed under MOU at contract rates for the guarantee period of 04 (four) years in favour of Garrison Engineer. In case the contractor fails to submit the FDR on completion of work, the said amount will be retained from the final bill. The Guarantee money shall be released by the GE after expiry of the guarantee period of 04 (four) years after obtaining clearance from the Engineer-in-Charge by submitting a certificate duly signed by him that no defect has been noticed. This security deposit amount is only for covering the minor repairs/ rectifications required to be executed urgently. This deposit shall not in any way limit the liability of contractor under the guarantee as per clause here above, under which contractor is fully liable for complete rectification / replacement of entire defective work/ material.

PARTICULAR SPECIFICATION CONTD....

54. **Blank.**

55. **DEMOLITION/DISMANTLING/MAKING GOOD**

55.1 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.

55.2 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.

56. **HELICAL WIRE SPRING**

The helical wire spring or flat spiral springs shall be of strength to counter balance the weight of the shutter adequately and shall conform to grade-II of IS-4454. The minimum weight of spring shall not be less than 3.5 Kg/Each spring. The spring shall be made either high tensile spring steel wire or flat spring steel strips.

57. **STEEL SHEETS ROOFING/ STEEL SHEET IN CHAJJA SHED.**

Corrugated galvanised steel sheets and plain galvanised steel sheet shall comply with the requirements of IS-277 and shall be of class as indicated in BOQ/ Schedule 'A'. The thickness of sheet shall be as indicated in BOQ/ Schedule 'A'. Other specifications, laying and fixing of sheets and other workmanship shall be all as specified in clause 10.29 & 11.22 of MES Schedule Part-I (2009).

58. **GALVALUME SHEETS ROOFING/GALVALUME SHEET IN CHAJJA SHED:-**

Galvalume 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 11.3 of MES Schedule Part-I (2009).

59. **ALUMINIUM DOOR/ WINDOW/ CUBICAL PARTITION**

Aluminium doors/ windows/ cubical partition work shall be carried out with the aluminium sections as specified BOQ and in clause 10.37 of MES schedule Part-I (2009).

60. **HYDRAULICALLY DOOR CLOSER & FLOOR DOOR SPRINGS**

The work of hydraulically door closer & floor door spring shall be carried out as specified in clause 9.16 & 9.17 of MES schedule Part-I(2009).

61. **IRON MONGRY AND BUILDERS HARDWARE.**

(a) Iron mongery and brass and aluminium fittings shall be provided and fixed as directed. Screws, bolts etc for fixing shall match with the articles in finishing. All articles of iron mongery and brass fittings shall strictly conform to samples kept in AGE's office in respect of size, shape, weight, quality and finish. Contractor shall produce samples and get them approved by the AGE before incorporation in the work and all as specified in Section 9 of MES Schedule Part-I.

(b) Brass fittings shall be of brass, machine made and/or particular finish as per samples and shall be fixed with screw/bolts to match. Aluminium fittings shall conform to relevant IS.

62. **GI WIRE CLOTH:-**The work of mild steel/GI wire cloth shall be carried out as specified in clause 9.25, 9.32 & 9.33 of MES schedule Part-I(2009).

63. **WOOD WORK AND JOINERY.**

63.01 **TIMBER:-** Timber for all wood work and joinery shall be as per specifications given in clause 7.3 of MES Schedule Part-I and shall be within permissible limits of defects defined in clause 7.4 and 7.5 of MES Schedule Part-I.

PARTICULAR SPECIFICATION CONTD....

- 63.02 Timber shall be well-seasoned air or kiln dried at the Contractor's option but without any price adjustment. The moisture content of the timber shall not exceed the limits laid down in clause 7.7 of MES Schedule Part-I.
64. **SPECIES OF TIMBER**:- Species of timber shall be as described in respective items of BOQ/ Sch'A'. Unless mentioned otherwise in BOQ/ Sch'A', second class hard wood shall be 'Indian sal', Bijasal, Hollock or Benteak and first class hard wood shall be shisham as per the approved samples kept in AGE Office.
- 64.01 Preservative ant termite treatment shall be carried out to all wood works and joinery, Contractor's quoted rates shall be deemed to cater for this provision. Factory made ply wood, particleboards & factory-made shutters ASCU-Vacuum pressure treated are not to be further treated with any chemical against termites.
- 64.02 Chemical used for ant termite treatment to wood work and joinery other than factory made plywood, particle board and factory-made shutters as described above shall be copper Napthanate or any other chemical specified in IS-401 of 1982 applied in any one of the manners specified in ibid IS.
65. **PLY WOOD AND PARTICLE BOARD**.
Veneered particle board where indicated shall be three layers flat pressed with commercial or teak veneer (one side or both sides) as indicated in schedule 'A' and shall be BWP grade bonded with phenol formaldehyde synthetic resin adhesive ISI marked (IS-3097) Grade-I, Type-1 for commercial veneer and Type-2 for decorative veneer all as specified in clause 12.14 of MES Schedule Part-I.
- 65.01 Plywood where indicated shall be BWP grade bonded with phenol formaldehyde synthetic resin adhesive ISI marked, IS-303 for general purpose plywood and IS-1328 for decorative face plywood. Facing shall be of teak veneer or commercial veneer as indicated in Schedule 'A'.
66. **SHUTTERS**
- 66.1 **GENERAL**. Only one type of species of timber shall be used in stiles and rails. Shutters with mixed species will not be accepted.
- 66.2 **FACTORY MADE SHUTTERS**.
Factory made shutters shall be as under: -
(a) Stiles and rails shall be of thickness as described in schedule 'A' ASCU vacuum pressure treated out of kiln seasoned wood (Bijasal/ Sal/ Hollock/ Benteak) and as per IS-1003.
(b) Panels for doors (other than bath and WC) shall be of 12mm thick commercial veneered (both faces) particle board. Panels for doors in bath and WC shall be of 9mm thick commercial veneered plywood.
67. **OTHER THAN FACTORY MADE SHUTTERS**. Door/ window shutters as described in BOQ (other than factory made) shall be made locally all as specified in section 8 (joinery) of MES Schedule Part-I and all as directed by Engineer-in-Charge.
68. **WORKMANSHIP**.
Timber exposed to view shall be wrought and not exposed to view shall be clean sawn. The workmanship and fixing of joinery shall be as specified in clause 8.11 to 8.23 of MES Schedule Part-I.
- 68.1 Timber members upto 3.00 metres length shall be in one piece.
- 68.2 Use of nails in the joinery is prohibited. Wood screw of appropriate size shall be used and shall be of "Nettle fold" brand or any other equivalent brand as approved by GE.
- 68.3 **PRELAMINATED PARTICLE BOARD**
Prelaminated particle board shall be BWP grade, bonded with phenol formaldehyde synthetic resin adhesive with Malamine finish, ISI marked IS 12823 (Gde-I, Type-I). Colour, shade, tint and design of lamination shall be as approved by the GE.

PARTICULAR SPECIFICATION CONTD....

- 68.4 **PVC DOOR FRAME (CHAWKAT) AND SHUTTER:-** It shall be as specified in BOQ and Section-8, Sub Section B of SSR Part- II (2020).
- 68.5 **FLUSH SHUTTERS**
The work of flush shutters shall be carried out as specified in clause 10.11 & 10.25 of MES schedule Part-I (2009).
69. **REPAIRING OF CRACKES IN OLD TERRACED ROOFS**
Workmanship shall be all as specified in clauses 11.29 of MES Schedule Part-I(2009).
70. **AC SHEETS**
The work of AC corrugated sheets shall comply with IS.459. The work of AC sheet shall be carried out as specified in clause 11.24 of MES schedule Part-I(2009).
- 70.1 **PVC WALL LINING & CEILING**
The work of PVC wall lining and ceiling shall be carried out as specified in clause 12.34 of MES schedule Part-I (2009).
- 70.2 **FALSE CEILING**
The work of false ceiling shall be carried out as specified in clause 12.19 & 12.22 of MES schedule Part-I (2009).
71. **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).
72. **STEEL WATER TUBES AND FITTINGS.**
- 72.1 Mild steel galvanised 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.
- 72.2 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.
- 73.3 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.
- 74.4 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.
- 74.5 Work shall be carried out as per Clause No 18.50.1 to 18.50.4 of SSR Part-I.
- 74.6 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.
75. **SANITARY FITTING AND PLUMBING WORK**
- 75.1 **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).

PARTICULAR SPECIFICATION CONTD....

- 75.2 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).
- 75.3 **PVC WATER STORAGE TANKS**
Materials & workmanship for PVC water storage tanks shall be as specified in clause 18.60 SSR Part-I (2009).
- 75.4 **WHB**
Vitreous china WHB works shall be carried out as specified in Para 18.32 & 18.89 MES Schedule part-I (2009).
- 75.5 **WASH DOWN WC PEDESTAL PATTERN**
Materials & workmanship for squatting pans shall be as specified in clause 18.32 & 18.87 SSR Part-I (2009).
- 75.6 **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).
- 75.7 **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).
- 75.8 **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).
- 75.9 **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).
- 75.10 **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).
- 75.11 **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.
- 75.12 **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).
- 76 **BARBED WIRE**
Materials & workmanship for barbed wire shall be as specified in clause 10.32of SSR Part-I (2009).
- 77 **CHAIN LINK FENCE**
Materials & workmanship for chain link fence shall be as specified in clause 10.34 of SSR Part-I (2009).
- 78 **PRECAST INTERLOCKING PAVER BLOCKS**
The work of precast Interlocking paver blocks shall be carried out as specified in clause 13.18 of MES schedule Part-I(2009).
79. **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.

PARTICULAR SPECIFICATION CONTD....

80. **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.
81. **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.

Signature of Contractor

AGE (Contracts)
For Accepting Officer

PARTICULAR SPECIFICATION CONTD....**LIST OF PRODUCTS FOR WHICH SPECIFIC MAKESARE 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	Chloropyriphos ATT Chemicals	
1(a)	Chloropyriphos ATT Chemicals	Dursban /Trishu/ De-Nocil
2	PVC/ UPVC DOOR, WINDOW & CHOWKHAT	
2(a)	PVC/ UPVC Door, Window and Chowkhat	Kumar Arch Tech Pvt Ltd/Sintex India Ltd/Rajshri Plastiwood Ltd/Fenesta/Accura Polytech Pvt Ltd (Accucel)
2(b)	Solid Panel Foam Doors (Solid/ Glazed Panel)	Fenesta/Kesar/LG Hausys
2(c)	FRPDoorShutters	Fibrewats Technology/KraftoDoor SyntexIndia Ltd/Jain Wood Industries (Jayna)
2(d)	Natural FibreThermo Composite Door / Window Shutter and Frames	Duro-sam(AB Composite Pvt Ltd)/ ELCONS
3	WOODENDOORS&WINDOW	
3(a)	Wooden Panel / Flush Doors &Windows	MP Wood Products Indore/KitplyKampur/Ambika Timber Works/ Premier Wood Craft (P) Ltd Kolkata/ Jain Doors Pvt Ltd, Sonipat
4	DOOR&WINDOWFITTINGS	
4(a)	Aluminium door &Window fittings	Bharat/Classic/Alans/Argent/Hettich
4(b)	MS Stove Enamelled	Mowjee/Crown/ Everlite/Harrison/Godrej
4(c)	Floor Springs/Door Closers/ Accessories	Hardwin/Godrej/Dorset/Everest/Universal
5	FALSECEILING&PARTITIONPANELING	
5(a)	PVC False Ceiling	Kumar Arch Tech Pvt Ltd /Rajshri Plastiwood Ltd /Accura/Saint Gobain
5(b)	Gypsum Silicate Tiles in False Ceiling/ Wall lining	Armstrong/India Gypsum/Lafarge/Saint Gobain/ Everest
5(c)	Mineral Fibre False Ceiling	Saint-Gobain India Pvt. Ltd-Gyproc/TwigalInsulation /UP Twigafibre Glass Ltd/ Lloyd Insulation
5(d)	Metal False Ceiling	Armstrong / Unifloors /Nittobo
5(e)	Cement FibreBoard Ceiling.	Everest/Lafarge /Armstrong
5(f)	Anodized AluminiumPartition System with Solid/Glazed panels.	Jindal/Hindalco /Indalco
6	CUPBOARDS,CABINETS&WARDROBE	
6(a)	PVC kitchen(Cupboards, Cabinets &Wardrobes)	Kumar Arch Tech Pvt Ltd/ Rajshri Plastiwood /Sintex/Commander/ Accura
7	PVC,GALVANIZEDSHEETS, PANELLING, PARTITIONS, HUTS&BATHROOMS	
7(a)	RigidfoamPVC sheets from 0.50mm thickness to 40mm thickness	Kumar Arch Tech Pvt Ltd/Rajshri Plastiwood/ Sintex/ Marino
7(b)	AluminiumComposite Panel	Aluimnium Tech industries /Aluco Bond/ AlstoneInternational
7(c)	Polycarbonate Sheets	Pre-star Infrastructure Pvt Ltd/GE/Fibreways Technology
8	SANITARYWARES	
8(a)	CP Bath Fittings & Mixer	Jaquar/ Parryware/ Cera /Marc / Kohler/ Grohe /Blue star/ Crabtree

PARTICULAR SPECIFICATION CONTD....

SI No	DESCRIPTION OF ITEMS	MAKE/BRAND
8(b)	Wash Basins/WCs/ Urinals (Vitreous China sanitary Ware)	Jaquar& Company Pvt Ltd/ Kohler/ Cera (IstQuality) / Hindware (Italian Collection) / Parryware(Superfine) /Johnson Pedder
8(c)	SS Sink / Basins	Diamond /Nirali / Kraus / Grohe / Kohler
8(d)	Stainless Steel Kitchen Sink	Prayag Polymer Pvt Ltd/Jain Brothers Sanitation Pvt Ltd/ Cera/ Kohler
8(e)	PTMT Float valves / Ball cocks, Cockroach Traps, Glass shelf, Bath Fittings.	Prayag Polymer Pvt Ltd /Polytuff
8(f)	SS Plate Rack	Suyog/ Prayag/ Nirali
8(g)	Kitchen Cabinets and Trolleys.	Godrej Interio /Zuari/ Kitchencrafts/ Kitchen concepts/Dream kitchens
8(h)	Concealed Cisterns	Kohler/Grohe/ Hindware/Jaquar
8(j)	NormalorDual-Flow PVC Flushing Cistern.	Hindware/Cera/Parryware/Jaquar& Company PvtLtd
8(k)	Glass Mirror.	Jaquar& Company Pvt Ltd/ Cera/ Saint Gobain /Modiguard
8(l)	PVC/Acrylic Toilet Mirror Cabinet.	Parryware/ Prayag/ Commander/ Kohler
8(m)	Stainless Steel Towel Rail / Towel Rack / Towel Ring / Soap Dish / TPH,etc	Kohler/Grohe/Jaquar/Blue star & silver shine /Cera/ Hindware
8(n)	Toilet Seat Cover.	Parryware/Cera/Hindware/Jaquar
8(o)	Shower Panels.	Grohe/Kohler/Jaquar/Lauret
8(p)	Bath Suites.	Kohler/Grohe/Jaguar
8(q)	Glass WHB.	Zircon/Sparkle glass/Seabird
8(r)	Glass Frameless Shower Enclosures /Cubicles	Cera/Hindware/Lauret/Jaguar
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
9(k)	Epoxy Paint/Polyurethane Paint	Fosroc/STP/Pidilite/Asian/Berger/Johnson &

PARTICULAR SPECIFICATION CONTD....

SI No	DESCRIPTION OF ITEMS	MAKE/BRAND
		Nicholson/Jotun India Pvt Ltd/ Anupam Paints
9(l)	Black Bituminous Paint	Asian/ Berger/ STP
9(m)	White Cement/Wall Putty	Birla white /Berger/J&N/Shalimar paints/ Asian paints
10	PLYBOARD/MDF&HDF BOARDS	
10(a)	Plywood/Pre-laminate Plywood/Marine Plywood/ Veneered	GreenplyIndustires Ltd (Ply-Board Division)/ Kitply/Century /National Plywood Inds Pvt Ltd / Novapan/Jain wood Industries Ltd/ Archidply industries Ltd.
10(b)	Veneered Plain Particle Board/Pre-laminated Particle Board.	Greenply industries ltd (Ply and Board Division)/Kitply/ Anchor / Novapan
10(c)	Gypsum Board.	Lafarge GysumIndia Ltd /Saint-Gobain India Pvt. Ltd /Gyproc Business(Brand : Gyproc)
10(d)	MDF/HDF Boards	Kitply/National / GreenplyIndustiresLtd (Engineered Panel Division) / Balaji Action Buildwell /Novapan
11	TILES	
11(a)	Vitrified Floor Tiles/ Ceramic Glazed Wall Tiles/Ceramic Glazed Floor Tiles/Wall Tiles/Floor and Wall Tiles	Somany , Kajaria Ceramics Ltd/ Asian Granito India Ltd/ Varmora Granito Pvt Ltd / M/s H&R Johnson India/ Nitco/ Orient Bell Ltd
11(b)	Precast Concrete Interlocking Paving Blocks.	Ultra Tiles Pvt Ltd/Anjali Tiles/Terra Firma/Ecco Scope /Nitco
11(c)	Precast Plain Cement tiles/Chequered Cement Tiles for Flooring.	Ultra /Bansal/ Nitco/ Anjali/ Multiwyn
11(d)	Precast Terrazzo Tiles for Flooring.	Johnson/Ultra Tiles Pvt .Ltd /Nitco
11(e)	Wooden Laminated Floor Tiles/ Parquet Tiles	Vista/Pergo/Haro
11(f)	Glazed Mosaic Tiles.	Hindustan tiles/Johnson/ UltratilePvt. Ltd/ M/s National tiles &Industries/Coral /Ceco
11(g)	Heavy duty Exterior vitrified tiles	Johnson (Endura)/Multiwyn /Century/ Cristal / Somany (Durastone) / Orient Bell Ltd
11(h)	Glazed Porcelain elevation wall tiles	Century Porcelain / Porselato Porcelain /Crystal Porcelain
11(j)	Acid resistant Vitrified Tiles	Johnson (Endura)/Somany (Durastone)/Kajaria
11(k)	Metallic Floor hardener for wear –proof topping	Ironite / Stillonite/Hardonate / Maruti Bitumen Pvt Ltd.
11(l)	Non-Metallic Floor hardener	Fosroc /Fibrex/Sika/BASF/Maruti Bitumen Pvt Ltd. / STP
11(m)	Epoxy resin / Polyurethane based floor coating	Silk Fosroc /BASF /Pidilite Industries/STP
12	TILE ADHESIVE	
12(a)	Tile Adhesive	PidiliteIndustries Ltd / SomanyCeramics Ltd/ Kajaria/ Latecreat STP Ltd
13	STEELANDALUMINIUMJOINERY(DOOR/ WINDOWS/ GRILLS/MESH/CUP BOARD/ SHUTTERS/SHELVES ETC.	
13(a)	Pressed Steel Frames for Doors/Windows/Ventilators.	M/s BA Enterprises/M/s MultiwynIndustrial Corporation / M/s DoorwynIndustries / M/s Modern Fabricator/ M/s Madhu Industries / M/s Ajanta Ispat/ Alusys
13(b)	Anodized/Powder-Coated Aluminium Frames.	Jinda/Hindalco/Ajit India/ Indal
13(c)	AluminiumDoors / Windows (Solid/Glazed Panel).	Jindal/ Hindalco/ Balco/ Modern Fabricator / Aluminite Pvt Ltd/ Dhiraj / Ajit India Pvt Ltd / Aluminium Door & Window Systems (Brand : ALUPURE)
13(d)	Frameless Glass Doors	Kesar/Super Aluminium/Haresh Aluminium
13(e)	Metal Rolling Shutters and Rolling Grills/Collapsible Gates.	M/s BA Enterprises / M/s MultiwynIndustrial Corporation / M/s DoorwynIndustries /

PARTICULAR SPECIFICATION CONTD....

SI No	DESCRIPTION OF ITEMS	MAKE/BRAND
		M/s Modern fabricator
14	WINDOWGLAZING, GLASSSHELVING, GLASS URINALPARTITIONS.	
14(a)	Plain Sheet Glass/Float Glass/Frosted Glass.	Saint-Gobain glass/Modi-guard float glass / Asahi India /Hindustan Pilkington glass works
14(b)	Toughened Glass/Laminated Glass.	Safex/Saint Gobain glass /Modiguard float glass /Kesar / Asahi India /Atul Tuf/ Hindustan Pilkington glass works/ Triveni float glass
14(c)	Solar Control and Thermal Insulations Glass.	Evolite/ Envision/SGG EVO
14(d)	Wired Glass.	Saint Gobainglass / Modiguardfloat glass / Triveni/ Safex/ AtulTuf/Hindustan Pilkington glass works / Kesar
14(e)	Black Painted Glass Tiles.	Kesar/ Marvel /Dream walls Color glass Paladio/ Italia /Mridul/ Mehtabtiles
14(f)	Tinted/ ColouredGlass	Modiguard / Saint Gobian / Atul Tuf
14(g)	Glass Tops Shelves	Kesar/Ozone/Sparkle Glass
15	HDPE/LDPE WATER TANK	
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	Neco Centri/ 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/ Asian Paints Limited
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/ KPT

PARTICULAR SPECIFICATION CONTD....

SI No	DESCRIPTION OF ITEMS	MAKE/BRAND
19 (c)	PVC (SWR) Pipes	Supreme / Prince /Kisan Mouldings Limited / Vectus Industries Ltd.
19 (d)	PVC Pipes & fittings	Kisan Mouldings Limited/ Ori-plast/ Supreme / Prince/ Finolex/ FUSION
19 (e)	UPVC/CPVC/RWP	Supreme/ Prince / Finolex/ Ori-plast/ FUSION
19 (f)	Cl 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	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 volts, Aluminium/Copper conductos, solid/stranded as per IS 1554 Pt1: 1998 & IS 7098 Pt1: 1998	Havells India Ltd / Finolex/ KEI Industries Ltd / Polycab
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	KisanMouldings 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	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	Legrand /Havells /Siemens /ABB /L & T / Schneider/ GE / C & S Electric
28(d)	MCCB & Air CB	
28(e)	MCCB	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)	

PARTICULAR SPECIFICATION CONTD....

SI No	DESCRIPTION OF ITEMS	MAKE/BRAND
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 R Kable Ltd /M K Honey Well/ L & T / Schneider/ Hager
30	WATER HEATER / ENERGY SAVER / VARIOUS TYPE FAN	
30(a)	Water Heater (Geysar)	Anchor/Jaquar& Company Pvt Ltd/ Usha/ Ao-Smith/ V-Guard/ Havells/ Recold/ Crompton Greaves/ Bajaj
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 /	

PARTICULAR SPECIFICATION CONTD....

SI No	DESCRIPTION OF ITEMS	MAKE/BRAND
	SELECTOR SWITCH	
43(c)	Indicator Lamp/Selector Switch	L&T / Siemens/ GE/ RR Micro / BCH /Schneider
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	MISCELLANEOUS 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.
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.

PARTICULAR SPECIFICATION CONTD....**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