

**e-TENDER MILITARY ENGINEERING SERVICES****NAME OF WORK: REPAIR AND MAINT OF CHAJJA, ROOF PARAPET WALL, BALCONY, RAILING, SERVICE WATER TANKS AND OTHER CONNECTED B/R REPAIR WORK IN MD ACCN AT PIRU VIHAR AND CERTAIN OTM ACCN IN THE AREA OF AGE B/R-III UNDER GE (WEST) DELHI CANTT-10****CONTENTS**

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Signature of Contractor  
Dated :

AGE (Contracts)  
For Accepting Officer

**Tender forwarding letter**

Garrison Engineer (West)  
Delhi Cantt-10

To  
M/S as uploaded on web portal [www.eprocuremes.gov.in](http://www.eprocuremes.gov.in).

Oct 2024

**NAME OF WORK: REPAIR AND MAINT OF CHAJJA, ROOF PARAPET WALL, BALCONY, RALING, SERVICE WATER TANKS AND OTHER CONNECTED B/R REPAIR WORK IN MD ACCN AT PIRU VIHAR AND CERTAIN OTM ACCN IN THE AREA OF AGE B/R-III UNDER GE (WEST) DELHI CANTT-10.**

Dear Sir,

1. Tender documents in respect of above work are uploaded on the site [www.eprocuremes.gov.in/](http://www.eprocuremes.gov.in/) [www.defproc.gov.in](http://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.(NIT)
2. Bids will be received online by ACCEPTING OFFICER upto 1800 hrs on or before bid submission end date. No tender/bid will be received in physical form and any tender/bid received in such manner will be treated as non bonafide tender/bid.
3. Bid will be opened on or after fixed **bid opening date** in the presence of tenderers/bidders or their authorized representatives, who have uploaded their quotation bid and who wish to be present at the time of opening the bids.
4. Your attention is also drawn to instruction on filling and submission of tender attached herewith. You may forward your points on tender documents and/or depute your technical representative for discussion on tender / drawings and to clarify doubts, if any, on or 05 days before **bid submission start date**. You are requested not to write piece meal points.
5. Un enlisted 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 documents and Appendix 'A' to NIT alongwith EARNEST MONEY DEPOSIT (EMD) and tender fee on e-procurement portal and submit the physical documents in the office of Garrison Engineer (West), Delhi Cantt -10 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.**
6. (a) 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.  
  
(b) Within 28 days of receipt of letter of Acceptance, the successful unenlisted/enlisted contractor would be required to deposit performance security in any of the forms given in clause 19 of IAFW-2249 for an amount equal to 5% of the contract sum. Failure of the successful contractor to comply with the requirements of sub-clause 19.1 of IAFW-2249 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. Enlisted contractors of MES shall submit the scanned copies (pdf file) of enlistment letter, tender fee and all such other documents as mentioned in Appx 'A' to NIT on e-procurement portal and shall submit physical documents in the office of Garrison Engineer (West) Delhi Cantt -10 before date & time fixed for this purpose.

8. The contractor must ensure that the tender/bid on the proper form is uploaded in time as the Accepting Officer will take no cognizance of any quotations/offer received in any other electronic or physical form like email/fax/by hand/ through post from tenderer/bidder even if they are received in time.

9. 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.

10. General Conditions of Contracts (IAFW-2249) (1989 Print) and errata and amendments thereto, Schedule of minimum fair wages and MES SSR Part-I and SSR Part-II(amended up to date ) are not enclosed with these documents. These are available for perusal in the Office of GE (West) Delhi Cantt-10

11. **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.**

Yours faithfully,

.....  
(Signature of Contractor)

Dated: 2024

**AGE (Contracts)**

For Accepting officer

**INSTRUCTIONS OF TENDER 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 Garrison Engineer West Delhi Cantt
- (b) Receipted Treasury Challan, the amount being credited to the Revenue Deposit of Garrison Engineer West Delhi Cantt.

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 Garrison Engineer West Delhi Cantt.

**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 & hard copy before the date & time fixed for opening of BOQ) WILL RENDER THE BID DISQUALIFIED FOR OPENING OF COVER II (FINANCE BID).

2. **PERFORMANCE SECURITY:** Within 28 days of receipt of letter of Acceptance, the successful unenlisted/enlisted contractor would be required to deposit performance security in any of the forms given in clause 19 of IAFW 2249 for an amount equal to 5% of the contract sum. Failure of the successful contractor to comply with the requirements of sub-clause 19.1 of IAFW-2249 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. **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 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 redeipt, 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.**

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**5. GENERAL INSTRUCTIONS FOR COMPLIANCE**

- 5.1 The bids received only in the electronic form will be considered. All bids shall be submitted on 'eprocuremes.gov.in' portal. Documents should be scanned and forwarded in 'pdf' form and 'xls' form as indicated.
- 5.2 Bids shall be uploaded on 'eprocuremes.gov.in' portal 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 Bid should be DIGITALLY signed using valid DSC. All pages of tender documents, corrections/alterations 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 tender/bidder in separate envelope indication 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 tender. Any tender/bid, which proposes alterations to any of the condition 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, scanned copy of 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 a limited company, digital signatory of the bid/tender shall ensure that he is competent to bind the contractor (through CA 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 conforming 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 Partners(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 uploaded 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 opening of the Bid/tender .
- 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 condition 3 referred hereinafter and also conditions 24 & 25 of IAFW 2249 (General conditions of contract).
- 5.11 Tenderers/bidders who uploaded their priced tender/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.

**INSTRUCTIONS OF TENDER ON FILLING AND SUBMISSION OF TENDER**

- 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. REVOKATION/REVISION OF OFFER UPWARD/ OFFERING VOLUNTARY REDUCTION, AFTER OPENING OF FINANCIAL BIDS BY LOWEST BIDDER**

In the event of lowest tenderer/bidder revoking his offer or revising 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 tenderer/bidder on the freak high rates referred for review shall not be treated as voluntary reduction.

**7. C P M (Critical Path Method)**

- 7.1 The project planning for work covered in the scope of tender is bases on CPM.
- 7.2 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.
- 7.3 The tenderer/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.
- 7.4 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.
8. These instructions shall form part of the contract documents.

Yours faithfully,

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(Signature of Contractor)

Dated: 2024

AGE (Contracts)  
For Accepting officer

**MILITARY ENGINEER SERVICES**  
**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 as indicated in aforesaid Appendix „A“. The estimate, however, is not a guarantee and is merely given as a rough guide and if the work cost more or less, a tenderer/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 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 and if the tender/bid submitted by such a tenderer/bidder is accepted, the contractor will be required to lodge with the Accepting Officer the amount of Performance Security for an amount equivalent to 5% of the contract sum in any of the forms prescribed in clause 19.1 of IAFW-2249 within 28 days of receipt of the Letter of Acceptance. Failure of the successful contractor to comply with the requirements of sub-clause 19.1 of IAFW-2249 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. 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 conditions will render the tenders/bids of both the parties liable for rejection.
5. The office of Garrison Engineer (West) Delhi Cantt 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 tenderer/bidder on or before the date & time mentioned in NIT. A scanned copy of DD with enlistment details/documents shall be uploaded as packet 1/Cover-1 („T“ bid) of the tender/bid on e-tendering portal. DD is refundable in case T bid is not accepted resulting in non-opening of „Q“ bid. 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 [eprocuremes.gov.in/eprocure.gov.in](http://eprocuremes.gov.in/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 favour of concerned GE/AGE (I) (see Appendix „A“) by a schedule Bank or in receipted treasury challan the amount being credited to the revenue deposit of the concerned GE/AGE (I) (see Appendix „A“).
- 6.3 -----BLANK-----
- 6.4 -----BLANK-----
- 6.5 The GE/AGE(I) 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 GE/AGE (I) will either return the Earnest Money to the successful tenderer/bidder by endorsing an authority on the deposit-at-call Receipt for its refund on receipt of an appropriate amount of Security Deposit or will retain the same in part or full on account of security deposit if such a transaction is feasible.
- 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 material and stores to be supplied by the contractor will also be available for inspection by the tenderer/bidder at the office of Accepting Officer and concerned GE/AGE (I) during working hours.

**NOTICE INVITING TENDER (NIT) (Contd-----)**

7. The tenderers/bidders are advised to visit the site of work by making prior appointment with GE/AGE (I) 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 other factors having bearing on the execution of the work.
10. Tenderers/bidders 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 the 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 nonvalidation of his „T“ bid assigning reasons thereof through the eprocurement website. The applicant contractor/bidder if he so desires may appeal to the next higher Engineer authority viz HQ Chief Engineer Delhi Zone Delhi Cantt 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 any compensation or otherwise shall be admissible from such tenderer/bidder whose tender/bid is rejected.
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. This Notice Inviting Tender (NIT) including Appendix “A” shall form part of the contract.

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(Signature of Contractor)

Dated: 2024

AGE (Contracts)  
For Accepting officer



**(NIT NO 71/2024-25)****APPENDIX 'A' TO NOTICE INVITING TENDER**

1	Name of Work	Repair and maint of Chajja, Roof parapet wall, balcony, Raling, Service water tanks and other connected B/R repair work in MD Accn at Piru Vihar and certain OTM Accn in the area of AGE B/R-III under GE (West) Delhi Cantt-10.
2	Estimated Cost	<b>45.00</b> Lakhs
3	Period of completion	09(Nine) Months
4	Cost of tender documents	Rs.500/- in the shape of DD / Bankers cheque from any schedule Bank in favour of GE (West), Delhi Cantt-10
5	Website / portal address	<a href="http://www.defproc.gov.in">www.defproc.gov.in</a> and <a href="http://www.mes.gov.in">www.mes.gov.in</a>
6	Type of contract	The tender shall be based on (IAFW-1779-A) and GCC (IAFW 2249) with schedule of wks (list of items of work). The tenderers are required to quote rates against items of Schedule of wks.
7	Information & Details	
	(a) Bid submission start date	Refer critical dates as uploaded on MES web portal mentioned in para 5 above.
	(b) Bid submission end date	
	(c) Bid opening date	
8	Eligibility Criteria	
	(A) For MES enlisted Contractors	Contractors enlisted with MES in Class 'D' and above and category <b>a (i)</b> satisfactory remarks wrtperformance in respect of works in hand as reflected in work Load return (WLR) or any other report circulated by competent engineer authority..
	(B) For contractors not enlisted with MES.	<p>(i) Contractor not enlisted with listed MES should meet the enlistment criteria of 'D' Class &amp; '<b>a(i)</b>'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 andother requirement given in para1.4 &amp; 1.5 of section 1 of MES Manual of Contracts 2020 as available in all MES formation as well as MES website (<a href="http://www.mes.gov.in">www.mes.gov.in</a>).</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 PSU or any Autonomous Body under Central/State Government PSU or any Local Body as on the bid submission end date.</p>

**APPENDIX 'A' TO NOTICE INVITING TENDER**

9	Tender issuing and Accepting Officer	Name: Shri Anuj Kumar Kuchchel Address: GE (West) Delhi Cantt Phone No. : 7085791530 Email ID : <a href="mailto:wdcntdz4-mes@nic.in">wdcntdz4-mes@nic.in</a>
10	Executing Agency	<b>GE (West) Delhi Cantt</b>
66	<b>EARNEST MONEY DEPOSIT (EMD)</b>	<b>Rs. 90,000.00 in favour of GE in the form of Deposit at call receipt, FDR not acceptable.</b>

**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 07 (seven), applications in respect of MES contractors of one class or two classes (in case of remote and difficult area to be decided as per list circulated by CE command/ADG) below the eligible class shall 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 area) 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 fulfil 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-1 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 formation 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 considered, who have application 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 upgradation 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 detail given in Manual on 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 national 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 following documents in cover 1 for checking eligibility:-

- Application for tender on firm's letterhead.
- Enlistment letter issued by the Registering Authority duly renewed for the cycle period in vogue.
- 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.
- Any other document required as describe in this Appendix.

**APPENDIX 'A' TO NOTICE INVITING TENDER**

- (5) Contractors not enlisted with MES will be required to upload following documents in Cover 1 for checking eligibility.
- (6)
- (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 Certification 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) Detail of works being executed in MES, if any.
  - (f) Any other document required as described in this Appendix.
- (7) Tenders not accompanied by scanned copies of requisite DD/Bankers Cheque toward 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.
- (8) Contractors should ensure that their original physical DDs and Earnest Money Deposit (EMD) instruments (as applicable) reach the office of Accepting Officer within 5 days of bid submission end date (\* The number of days to be mentioned shall be as decided by the Accepting Officers, but it shall not be less than 5 days) failing which following action shall be taken.
- (a) In case of tenders from an enlisted contractor of MES, where scanned copies of requisite DD/Bankers Cheque toward cost of tender have been upload 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 willful negligence of the tenderer with ulterior commencing from the date of opening of Financial Bid ( Cover 2)
  - (b) In case of tenders from unenlisted 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 along with 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 bid ( Cover 2).
  - (c) In case of tenders from enlisted and unenlisted 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 quality for opening of financial bid (Cover 2).
- (9) 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/Director and firm's own employees, director, project manger provided they are not having a separate enlisted firm in MES in their name as Proprietor/Partner/Director.

**APPENDIX 'A' TO NOTICE INVITING TENDER**

- (10) After opening of Cover 1 and during its technical evaluation, in case any deficiency is noticed in the documents required to be upload by the tenderers 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.
- (11) Invitation for e-tender does not constitute any guarantee for validation of Technical bid and subsequent opening of financial bid of any applicant/bidder merely by virtue of enclosing DD. Accepting Officer reserves the right to reject the Technical bid and not to open the financial bid of any applicant/bidder. Technical bid validation shall be decided by the Accepting Officer based on eligibility of the firm as per criteria given in this Appendix. Tenderer/bidder will be informed regarding non-validation of his technical bid assigning reason therefore through tender evaluation report which shall be upload on the website. Such tender, if desires, may appeal to the next higher engineer Authority (NIEA) viz. CWE No. 2 on email id mcs@nic. in with copy to the Accepting Officer on email before the scheduled date of opening of Cover 2 . NHEA shall decide the matter within a period of seven working days from the date of receipt of appeal. The decision of the NHEA shall be final and binding. The tenderer/bidder shall not be entitled for any compensation whatsoever for rejection of his bid.
- (12) In case an unenlisted contractor is already executing works in MES 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 upload in the Cover – 1 of the bid and shall be checked/verified by the Accepting Officer.
- (13) In case the BOQ is revised through the corrigendum and the bidder has failed to quote on revised BOQ (ie he has quote on pre revised 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 from amongst the valid/bonafide bids only. Accepting Officer may decide whether to re-tender or consider the lowest bonafide tender for acceptance.
- (14) the rates upward or offering voluntary reduction by the lowest tenderer after opening of Cover 2 shall be considered as a willful default . For this default a penalty of an amount equal to Earnest Money shall be levied. In case of an unenlisted 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.
- (15) 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.

Signature of contractor  
Case No. :8041/GE/DW-71/2024-25/ /E8  
Garrison Engineer (West)  
Station: Delhi Cantt-10

(Atul Mohan Agarwal)  
AE (QS & C)  
AGE (Contracts)  
For Accepting Officer

Dated : Oct 2024

**(In Lieu of IAFW-1779-A) (Revised 1955)**

(To be used in conjunction with General Conditions of Contracts (IAFW-2249-1989-Print)

**MILITARY ENGINEER SERVICES**

(Authorization letter to bidder/tenderer to fill the tender)

☎ : 25691063

Garrison Engineer (West)  
Military Engineer Services  
Delhi Cantt-110010

Oct 2024

**NAME OF WORK: REPAIR AND MAINT OF CHAJJA, ROOF PARAPET WALL, BALCONY, RALING, SERVICE WATER TANKS AND OTHER CONNECTED B/R REPAIR WORK IN MD ACCN AT PIRU VIHAR AND CERTAIN OTM ACCN IN THE AREA OF AGE B/R-III UNDER GE (WEST) DELHI CANTT-10.**

M/S - (as uploaded on web portal <https://defproc.gov.in>) is/are hereby authorized to submit quoted bid /e- tender for the subject work. The tender is to be submitted through web portal **<https://defproc.gov.in>** portal on or before bid submission end date as mentioned for the subject tender on the portal.

All correspondence concerning this tender should be addressed as indicated at the top of this sheet quoting the reference as given.

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

Signature of the officer issuing the documents  
Appointment: AGE (Contracts)

(FOR & ON BEHALF OF THE PRESIDENT OF  
INDIA)

**SCHEDULE “A” (LIST OF ITEMS AND PRICES)****(BOQ)****SCOPE OF WORK :-**

The scope of work under this contract comprises of full, final and entire completion of following works and services as described in schedule `A/ BOQ and as specified in particular specifications, general specifications and in the Contract Agreement else where :-

<b>Ser No</b>	<b>Job Nos</b>	<b>Name of Work</b>
(i)	Maint Grant Head 2024-2025	REPAIR AND MAINT OF CHAJJA, ROOF PARAPET WALL, BALCONY, RALING, SERVICE WATER TANKS AND OTHER CONNECTED B/R REPAIR WORK IN MD ACCN AT PIRU VIHAR AND CERTAIN OTM ACCN IN THE AREA OF AGE B/R-III UNDER GE (WEST) DELHI CANTT-10.

**SCHEDULE ‘A’ : Notes:-**

- The quantities shown in column 4 are provisional and inserted as guide only. However, these shall not be varied beyond the limits laid down in condition 7 of IAFW-2249 (General Condition of Contracts).
- Rates in column 13 are to be quoted in figures by the tenderers.
- Total amount in column 54 is not firm but will be treated as “CONTRACT SUM” and net contract sum shall be arrived at after deducting amount of Sch of credit if any from total amount of BOQ.
- Contractor’s attention is invited to the method of measurements and preambles in MES Schedule 2009 (Part –I) & SSR 2020 (Part-II) including amendment thereto.
- PERIOD OF COMPLETION**: The entire work under this contract shall be completed within **09 (Nine)** months from the date of commencement as shown in Work Order No 01.
  - DEFECT LIABILITY PERIOD**. (Refer condition 46 of IAFW-2249 (General Conditions of Contracts) : Defect liability period shall be “**Twelve**” calander months from the date(s) of completion as certified by the Garrison Engineer

**SCHEDULE “A” (LIST OF ITEMS AND PRICES)**  
**(BOQ)**

- (c) **PERFORMANCE SECURITY:** Within 28 days of receipt of letter of Acceptance, the successful unenlisted/enlisted contractor would be required to deposit performance security in any of the forms given in clause 19 of IAFW 2249 for an amount equal to 5% of the contract sum. Failure of the successful contractor to comply with the requirements of sub-clause 19.1 of IAFW-2249 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. **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 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 redeipt, 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.**
6. Site will be handed over as per site requirement. Contractor is advised to make regular liaison with EIC/concerned JE during currency of contract regarding execution of work.
  7. The Tenderers quoted rates in column 13 (i.e, basic rate) shall deemed to be included all the charges as applicable viz. All taxes/cesses viz GST, duties, royalties, octrol and other levies , Insurance if any, Packing, Unpacking if any, Transport and delivery, Entire supply, erecting/installation and execution or work including commissioning, testing all as specified, Labour cess as per Govt of NCT notification, (g) The contractor shall strictly adhere to constructions activities in terms of NGT order dt 10 Apr 2015. and no claim whatsoever on account of these taxes shall be admissible.
  8. Whether specified or not in Schedule “A”, the site shall be left clean and tidy by removing any debris / rubbish outside defence land before completion. Contractor’s quoted rates shall be deemed to include the necessary cost in this regard.
  9. **Site for execution of works shall be made available to the contractor as soon as WO No 1 is placed by GE. In case it is not possible for the Department to make the entire site available immediately after WO No 1 is placed, the contractor will have to arrange his working programme accordingly. No claim whatsoever for not giving the entire site on placement of WO No 1 and for giving the site gradually will be tenable. The tenderers are advised to visit site of work before submission of their tenders to ascertain nature of work, site conditions, height of buildings where work to be carried out, approach to site etc. No extra claim on this account shall be admissible..**
  10. Makes of the materials/fittings to be incorporated in the work shall be one of the approved make as indicated in Appendix ‘D’ to Particular Specifications except where specific Cat Part/make is mentioned against respective item in Schedule of works/BOQ. Other make, for the items where Cat Part/make is mentioned in Sch ‘A’/BOQ shall be approved by GE only after non availability of the same in the market, for which contractor shall submit all the relevant documents in support of non availability of the said item in the market.
  11. The description of items of works given in Schedule of works are in brief. These shall be read in conjunction with special conditions, particular specifications and MES Schedule Part I (2009) and Part II 2010 (Rates).
  12. Disturbed surface due to cutting / chasing / dismantling / taking down of items wiring etc shall be made good matching with existing surface by the contractor without any extra cost as directed . This element shall deemed to be included in the unit quoted rate(s) of individual item.
  13. All safety device/measures, T&P, ladder, Jhula etc shall be provided to workman/tradesmen by contractor without any extra cost of department. This element shall deemed to be included in unit rate of respective item of Sch of works.

**SCHEDULE 'A' (Contd..)**

14. The work under this contract comprises of cleaning of sewers/sewage line/septic tank/man hole/ soak well/soak pit etc. and in foul conditions. All safety device/measures to the workmen shall be provided by the contractor before execution of work and all the workers shall be fully insured from a reputed insurance company. Contractor shall submit necessary certificate/policy to the Engineer-in- Charge before commencing such works. The rates quoted by the tenderer shall deemed to be included this aspect into account and nothing extra shall be admissible.
15. In case the BOQ is revised by the deptt & bidder has failed to quote in revised BOQ, such bid shall be treated as willful negligence by the bidder and his quotation shall be considered "Non bonafide", No claim on this account shall be admitted by the Deptt.
16. In case wherever scaffolding/ props are required to execute the work, the unit rate quoted against respective item (s) shall deemed to include provn of scaffolding/ props. The steel scaffolding shall be used. No claim whatsoever shall be admitted by the Deptt at later stage on this account.
17. The work covered under this contract is to be carried out in buildings/ area under occupation. Therefore the contractor shall plan and progress the work with least disturbance to the occupants. The above aspect shall be deemed to be taken into consideration by the tenderer's while quoting the rates and no compensation whatsoever shall be admissible on this account.
18. Please ensure that at the time of uploading of e-tender, a copy of documents mentioned here in before shall be mandatory, if the bidder has not uploaded these documents he shall be disqualified in 'T' bid evaluation and his financial bid shall not be opened.
19. **EPF Code & UAN**. The contractor shall have provident fund code number, if applicable and ensure compliance of the EPF & MP Act, 1952. The contractor shall also ensure compliance of the EPF & MP Act, 1952 by the Sub-Contractor for the said work.
20. **Minimum Wages Act & Contract Labour Regulation**. Refer special condition clause No 22 here-in-after.
21. **Payment of Running Account Receipt (RAR) & Final Bills**. The payment to labour engaged by the contractor shall be made through AADHAR linked bank account/ NEFT. The documents held by the contractor shall be subject to scrutiny by law enforcement agencies. Proof of crediting wages in the bank account to employee by the contractor shall be pre-requisite to enable the GE to release the RAR/ Final Bill. The contractor shall also provide payment details under EPF & ESI with account numbers alongwith RAR/ Final Bill, which shall be verified by GE. In case RARs are not claimed on monthly basis, the contractor shall bound to submit monthly accounts of payments to employees under above regulations. 'No' payments to the contractors/ firms will be made unless proof of payment of wages, EPF & ESI of labour/ workmen through Aadhar linked bank account/ NEFT alongwith EPF & ESI is submitted by the contractor/ firms to Accepting Officer.
22. The contractor shall remove the demolished /dismantled materials/debris (other than reused in work) whether serviceable /unserviceable from the site beyond MD Land. Rates quoted by the contractor under BOQ/Schedule 'A' shall deemed to included this fact into account and nothing extra shall be admissible for the same.
23. The Net amended Contract Sum shall be calculated after deduction of Credit as given in Sch of Credit.

.....  
(Signature of Contractor)

Dated: 2024

AGE (Contracts)

For Accepting officer



**(SCHEDULE OF CREDIT)**

**NAME OF WORK: REPAIR AND MAINT OF CHAJJA, ROOF PARAPET WALL, BALCONY, RALING, SERVICE WATER TANKS AND OTHER CONNECTED B/R REPAIR WORK IN MD ACCN AT PIRU VIHAR AND CERTAIN OTM ACCN IN THE AREA OF AGE B/R-III UNDER GE (WEST) DELHI CANTT-10.**

**Notes:-** Following notes shall be applicable to Schedule of Credit

1. The quantities catered for under column 5 of Schedule of Credit here-in-below are PROVISIONAL and derived from quantity of relevant item of Schedule 'A'. Unless otherwise specified elsewhere in tender documents, quantity of this credit Schedule shall be considered same as equivalent to its relevant item of schedule 'A' during execution measured and paid irrespective of the material, what so ever retrieved from work.
2. The quantities of the dismantled/demolished materials under Schedule of credit shall become property of the contractor and shall be recorded in the MB. The rates inserted by MES are fixed and net. The contractor will have no claim whatsoever against the Govt if the actual cost of salvaged materials varies from the cost worked out by the department. The amount given in Credit Schedule is tentative, however the same shall be considered to arrive at the Contract Sum.
3. Materials obtained from demolition/dismantling/taking down etc from different items of Sch 'A' for which credit is not given in credit Sch shall become Govt property which shall be deposited by the contractor in MES store Yard of the concerned Engineer-in-Charge without any extra cost to the govt.
4. The contractor shall not be allowed to remove the credit material from site of work unless the credit amount of the materials are recovered from payment of RAR/ Final bill. Further recovery of old retrieved materials at the rate fixed in credit schedule shall be made from the respective RAR's (advance payment) even if the material has not been removed from site.
5. The contractor is required to visit the site and ascertain the value and condition of the old material to be obtained before quoting his rates, no claim what so ever against the position of salvaged material will be entertained later on.
6. Material credited to contractor under this Schedule shall be handed over to the contractor on proper gate pass by the Engineer in Charge.
7. The contractor shall remove the demolished /dismantled materials/debris (other than reused in work) whether serviceable /unserviceable from the site beyond MD Land. Rates quoted by the contractor under BOQ/Schedule 'A' shall deemed to included this fact into account and nothing extra shall be admissible for the same.

Contd..

**SCHEDULE 'A' PART II****(SCH OF CREDIT)**

Ser No	Description of Work	Unit	Qty	Rate	Amount
1	2	3	4	5	6
1	U/s brick tiles	Sqm	1250.00	25.00	31250.00
2	Scrap iron	Kgs	480.00	35.00	16800.00
3	U/s 20 mm bore GI pipe incl all fittings	RM	300.00	30.00	9000.00
4	U/s 80 mm bore GI pipe incl all fittings	RM	100.00	80.00	8000.00
5	U/s 110mm bore PVC pipe incl all fittings	RM	300.00	50.00	15000.00
6	100mm bore CI Pipe	RM	270.00	120.00	32400.00
7	U/s CI bend 100 mm	each	50.00	40.00	2000.00
8	U/s CI trap 100 mm	each	20.00	20.00	400.00
9	old U/S CI tee	each	10.00	40.00	400.00
10	old u/s brick work	cum	10.00	500.00	5000.00
11	WHB except fitting	nos	10.00	25.00	250.00
12	Seat cover	nos	20.00	10.00	200.00
13	Old PVC cistern 10ltrs	nos	20.00	20.00	400.00
				<b>Total</b>	<b>121100.00</b>

.....  
 (Signature of Contractor)  
 Dated: 2024

AGE (Contracts)  
 For Accepting officer

**SCHEDULE – B**

ISSUE OF MATERIALS TO THE CONTRACTOR  
(SEE CONDITION 10 (B) OF IAFW-2249)

Sl No	Particulars	Rate at which materials will be issued to the contractor <u>Unit</u> <u>Rate</u>		Place of issue	Remarks
1	2	3	4	5	6

-Nil-

**SCHEDULE –C**

**(LIST OF TOOLS & PLANTS OTHER THAN TRANSPORT)**  
**WHICH WILL BE HIRED TO THE CONTRACTOR**

(See Conditions 15, 34 & 36 of IAFW-2249 (1989 Print)

Srl No	Qty	Particulars	Details MES crew supplied	Hire charges per unit per working day	Stand by charges per unit per off day	Place of issue by name	Remarks
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-----NIL-----

**SCHEDULE –D**

**TRANSPORT TO BE HIRED TO THE CONTRACTOR**  
(See Conditions 16 & 35 of IAFW-2249(1989 Print)

Srl No	Qty	Particulars	Rate for unit per working days	Place of issue by name	Remarks
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-----NIL-----

Signature of Contractor

AGE (Contracts)  
for Accepting Officer

Dated :            2024

**TENDER**

Having examined and perused the following documents:-

1. Specifications signed by AGE (Contracts)
2. Drawing details referred in the list of drawing (as applicable)
3. Schedule 'A', 'B', 'C', 'D' attached hereto.
4. MES Standard Schedule of Rates 2009 (Part –I) (Specifications) together with amendment No 1 (a, b) for SSR Pt-I & MES standard Schedule of Rates 2020 Part II (Rates) together with amendment Nos (here-in-after and in IAFW-2249-1989 Print referred to as the "MES Schedule")
5. General Conditions of Contract (IAFW-2249), 1989 Print together with Errata Nos 1 to 20 and amendment Nos 1 to 48.
6. Water refer Condition 31 of IAFW-2249-1989 print (General Conditions of Contract)  
\* Water will not be supplied by the MES.
7. **SHOULD THIS TENDER BE ACCEPTED, I/WE AGREE**

\* (a) That the Sum of Rs\_\_\_\_\_ Rupees\_\_\_\_\_ ) forwarded as Earnest money shall either be retained as a part of individual security deposit or to be refunded by the Govt on receipt of an appropriate amount of Individual security deposit all as per condition 22 of IAFW-2249.

(b) To execute all the works referred to in the said documents upon the terms and conditions contained or referred to therein as detailed in general summary and carryout such deviations as may be ordered vide condition 7 of IAFW-2249 upto a maximum of 10% (TEN PERCENT) and further agree to refer all disputes as required vide condition 95 of IAFW-2249 to the sole Arbitration of a Serving Officer, having degree in Engineering or equivalent or having passed final/direct final examination of Sub Division II of the Institution of Surveyors (India) recognized by the Govt of India to be appointed by the Chief Engineer Western Command, Chandimandir or in his absence the officer officiating as Chief Engineer Western Command, Chandimandir whose decision shall be final, conclusive and binding.

\* Delete if not applicable.

Signature \_\_\_\_\_ in the capacity of ..... duly authorised to sign the tender for and on

BEHALF OF M/S ..... dated .....

Address: .....

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Witness .....

(Signature)

Address: .....

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

#### ACCEPTANCE

\_\_\_\_\_ Alternations have been made in these documents and as an evidence that these alterations were made before the execution of contract Agreement, these have been initialed by the contractor and **Shri Atul Mohan Agarwal , AGE (Contracts)**. The said officer is hereby authorized to sign and initial on my behalf the documents forming part of this contract.

The above tender was accepted by me on ..... day of .....on behalf of the PRESIDENT OF INDIA at

the item rates contained in Schedule 'A' for the contract sum of Rs.....

Rupees.....

.....)

Signature..... dated this ..... day of .....2024

Appointment: Garrison Engineer (West), Delhi Cantt-10  
(FOR & ON BEHALF OF THE PRESIDENT OF INDIA)

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

1. A copy of General conditions of contracts (IAFW-2249-1989 Print) together with amendments 1 to 48 of IAFW-2249 (1989 Print) alongwith errata Nos 1 to 20 has been supplied to 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 agree that I/we shall abide by the terms and conditions thereof as notified, if any else where in these tender documents.
  
2. It is hereby further agreed and declared by me that the General Conditions of Contracts (IAFW-2249-1989 Print) including conditions 95 there of pertaining to settlement of dispute by arbitration containing 34 pages (Serial Page No ..... to ..... ) with erratas 1 to 20 and amendments No 1 to 48 of IAFW-2249-1989 Print) containing 20 pages (Srl Page No ..... to ..... ) shall form part of these tender documents.

AGE (Contracts)

for Accepting Officer

Signature of Contractor

Dated:

**SCHEDULE OF MINIMUM FAIR WAGES**

A copy of the latest schedule of minimum wages has been supplied to me/us and is in my/our possession. I/we have read and understood the provisions contained in the aforesaid schedule of minimum wages before submission of the tender and I/We agree that I/We shall abide by the terms and conditions there of as notified, if any else where in these tender documents. Although latest notification of labour wages as available with the accepting officer has been supplied to me/us. In case government further revised the wages, the latest received wages shall only be applicable.

It is further agreed and declared by me/us that schedule of minimum wages shall form part of these tender documents.

AGE (Contracts)

for Accepting Officer

Signature of Contractor

Dated:

**SPECIAL CONDITIONS****1. GENERAL**

- 1.1 The following special Conditions shall be read in conjunction with General Conditions of Contracts, IAFW-2249 and IAFW-2159/IAFW-1779 'A' including Errata/amendments thereto. If any provision in these Special Conditions is at variance with that of the aforesaid documents, the former shall be deemed to take precedence there over.
- 1.2 The work under this contract shall be carried out in accordance with Schedule 'A'/BOQ, the Particular Specifications, Drawings and other provisions in MES Schedule.
- 1.3 The term 'General Specifications' referred to here in before, as well as referred to in General Conditions of Contracts (IAFW-2249) shall mean the specifications contained in the MES schedule.
- 1.4 General Rules, Specifications, Special Conditions and all preambles in the MES Schedule shall be deemed to apply to the works under this contract. In case of any discrepancy, the provisions in these tender documents shall take precedence over the aforesaid provision in the MES Schedule.

**2. INSPECTION OF SITE BY THE TENDERER**

- 2.1 The tenderer is advised to contact the Garrison Engineer for the purpose of inspection of site(s) and relevant documents other than those sent herewith, who will give reasonable facilities for the purpose. The tenderer shall also make themselves familiar with the working conditions, accessibility of site (s), availability of materials and other cogent conditions, which may affect the entire completion of the work under this contract.
- 2.2 The tenderer shall be deemed to have inspected the site (s) and made themselves familiar with the working conditions, whether they actually inspected the site (s) or not.

**3. EMPLOYMENT OF PERSONNEL**

- 3.1 Contractor shall employ only Indian Nationals as his representatives, servant and workmen after verifying their antecedents and loyalty. He shall ensure that no person of doubtful antecedents and nationality is in any way, associated with the work. If for the reasons of technical collaboration or other considerations the employment of foreign national(s) is unavoidable, the contractor shall furnish full particulars to this effect to the Accepting Officer at the time of submission of the tender. As a proof that the contractor has employed only Indian Nationals, he shall render a certificate to GE within one month from the date of acceptance of tender to this effect. In case the GE desires, contractor will have the police verification done of personnel employed by him.
- 3.2 The GE shall have full powers and without giving any reason to order the contractor immediately to cease to employ, in connection with his contract, any agent, servant or employee whose continued employment is, in his opinion, undesirable. The contractor shall not be allowed any compensation on this account.
- 3.3 The contractor's attention is also drawn to condition 25 of IAFW-2249 in this connection.

**4. CONDITIONS FOR WORKING IN UNRESTRICTED/RESTRICTED AREA**

- 4.1 **CONDITION FOR WORKING IN UNRESTRICTED AREA:** All works lie in **Unrestricted Area**. The restrictions for entry to work site and conditions of working in unrestricted area shall be as under:-
  - 4.1.1 The work lies in **UNRESTRICTED AREA**. However, the contractor, his agents, servants, workmen and vehicles may pass through the unit lines, in which case, the Engineer-in-Charge at his discretion has the right to issue the passes, control their admission to the site of work or any part thereof. The contractor shall, on demand by the Engineer-in-charge shall submit a list of personnel etc. concerned and any other information called for by the Engineer-in-Charge and shall satisfy the Engineer-in-Charge as the bonafide of such people. Passes shall be returned at any time on demand by the Engineer-in-Charge and in any case on completion of work.
  - 4.1.2 The contractor and his work people shall observe all the rules promulgated from time to time by authority controlling the area where the work is to be carried out e.g. prohibition of smoking etc. Any person found violating the security rules laid down by the authority shall be immediately expelled from the area without assigning any reasons what so ever and the contractor shall have no claim on this account. Nothing shall be admissible for any man hours lost on this account.

**5. MINIMUM WAGES PAYABLE**

- 5.1 Refer Conditions 58 of General conditions of contracts (IAFW-2249). The contractor shall not pay wages lower than minimum wages for labour as fixed by the Govt of India/State Govt/Union Territory, whichever is higher.
- 5.2 Contractor's attention is also drawn, amongst other things to the "explanation" to the schedule of minimum wages referred above.
- 5.3 The fair wages referred to in Condition 58 of IAFW-2249 will be deemed to be the same as the minimum wages, referred to above as up to date from time to time.
- 5.4 Schedule of minimum wages is not enclosed along with tender documents. However contractor shall be deemed to have verified the minimum fair wages payable as on the last due date of receipt of tender
- 5.5 The contractor shall have no claim what so ever, 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.



**6. ROYALTIES**

- 6.1 Condition 14 of General Conditions of Contracts (IAFW-2249) stipulates as under: -  
"No royalty will be recovered for materials, where the contractor may be allowed to remove from quarries situated on land which is in charge of the MES authorities or from land in Cantonments in charge of the Defence Estate Officers".

**7. ALLOTMENT OF DEFENCE LAND FOR STORAGE OF MATERIALS, WORKSHOP ETC (INCLUDING TEMPORARY SHEDS)**

- 7.1 Refer to conditions 24 of IAFW-2249. The contractor shall be permitted to store his materials including erecting temporary sheds, workshop etc. there for at the areas of land marked on the site plan and he shall pay a license fee for Re. 1/- per year or part thereof in respect of each and every separate area of land so allotted to him.
- 7.2 The contractor shall submit the application to Station HQ, Delhi Cantt through GE for allotment of temp land.

**8. WATER**

Refer to condition 31 of IAFW-2249. **Water will not be supplied by the MES.** The tenderers are advised to visit the site of works to ascertain availability of water from civil sources or from nearby natural sources outside Ministry of Defence land. The contractor shall be allowed, if he so desires to install hand pumps, tube wells at site of work at places as approved by Engineer-in-Charge and nothing shall be charged from the contractor. The responsibility of obtaining permission for boring from the concerned competent authority shall lie with the tenderer and nothing extra shall be admissible on this account. The contractor shall remove the hand pumps, tube wells as and when asked to do so by engineer-in-charge/GE and in any case on completion of the work and before issue of completion certificate, unless GE desires that these hand pumps, tube wells left in position and the contractor agrees to do so without claiming cost thereof from department. No compensation, whatsoever shall be admissible to the contractor, if he is required to remove the pumps tube wells before completion of work. Use of water from such sources shall only be permitted if, found after testing, portable and fit for use in the work. The water from such sources shall be got tested by the contractor from laboratory approved by the GE, who shall after satisfying himself permit the contractor to use the water from such sources. Testing charges shall be borne by the contractor.

9. **CO-ORDINATION WITH OTHER AGENCIES:** The contractor shall permit free access and afford normal facilities and usual convenience to other agencies or departmental workmen to carry out connected works of services under separate arrangements. The contractor will not be allowed any extra payment on this account.

**10. ELECTRIC SUPPLY**

- 10.1 In case the contractor desires to buy electricity from the MES, he shall be charged for the electric energy consumed at the following rates: -

- (i) At Rs. 9.00 (Rupees nine only) per KWH for lighting purpose.
- (ii) At Rs. 9.00 (Rupees nine only) per KWH for power purpose.

- 10.2. Electric supply required for works up to a maximum of 20 KW single phase 50HZ shall be made available by the MES at the incoming terminal of the main switch marked on the site plan. The main switch and KWH meters to register to electric energy supplied shall be provided and installed by the MES. The contractor shall provide all necessary cables, fittings etc. from the main switch in order to ensure a proper and suitable supply of electricity for execution of work.
- 10.3 The MES do not guarantee continuity of supply and no compensation what so ever shall be allowed for supply becoming intermittent or for breakdown in the system.
- 10.4 GE or his representative shall be free to inspect all the power consuming devices or any electric lines provided by the contractor. Any device or electric lines provided by the contractor, which is not to the satisfaction of the GE shall be disconnected from the supply if so desired by him.

**11. NET WORK ANALYSIS (CPM)**

**SPECIAL CONDITIONS (Contd.....)**

- 11.1 The time and Progress Chart to be prepared as per Condition 11 of General Conditions of contracts (IAFW-2249) shall consist of detailed net work analysis and a time schedule. Contractor in consultation with GE soon after acceptance of contract shall prepare the entire **Scope Of Work** in MS Project clearly defining Stages of completion, Resources, Constraints, and Activities involved. The entire work shall be divided into further stages of completion. The resources shall consist of following broad heads viz. Materials, Manpower, and Equipment. These heads shall be further sub divided into details eg. Material shall consist of cement, steel, 12.5 mm aggregate, 20 mm aggregate, bricks etc. Man power shall include Engineer, Supervisors, Mason, Carpenter, Mazdoor, Equipment shall consist of Concrete mixer, Shuttering material, Trucks etc. The output of the resources shall be judicially decided keeping in view the realistic output under the circumstances. The critical path net work will then be derived from the work jointly by the GE and the contractor. The time scheduling of the activities will be done by the contractor so as to finish the work within the stipulated time. On completion of the time schedule, a firm calendar date schedule will be prepared and submitted by the contractor to the GE who will approve it after the due scrutiny. The schedule will be submitted in four copies within two weeks from the date of handing over the site.
- 11.2 During the currency of the work, the contractor is expected to adhere to the time schedule and this adherence will be apart of the contractor's performance under the Contract. During the execution of the work the contractor is expected to review and update the net work finalized in consultation with GE. Contractor shall also employ a trained operator for working on MS Project, who will prepare the resource and activities schedule and shall update it on weekly basis.
- 11.3 These reviews may also be undertaken at the discretion of GE either as periodic appraisal measure or when the quantum of work ordered on the contractor is substantially changed through deviation orders or amendments. Any revision of the schedule as a result of the review will be submitted by the contractor to the GE within a week who will approve it after due scrutiny. The contractor will adhere to the revised time schedule thereafter. GE's decision shall be final, conclusive and binding. GE's approval to the revised schedule resulting in a completion date beyond the stipulated date of completion shall not automatically amount to a grant of extension of time. Extension of time shall be considered and decided by the appropriate authority mentioned in Condition 11 of IAFW-2249 and separately regulated.
- 11.4 The contractor shall mobilise and employ sufficient resources to achieve the detailed schedule within the broad frame work of the accepted methods of working and safety.
- 11.5 No additional payment will be made to the contractor for any multiple shift work or other incentive methods contemplated by him in his work schedule even though the time schedule is approved by the department.

**12. MATERIAL AND SAMPLE**

- 12.1 Refer Condition 10 of IAFW-2249.
- 12.2 The materials and articles, which have been specified from certain makers/manufacturers, shall be of makes/manufactures as specified in Appendix 'D' here-in-after. If the manufacturers specified in tender documents make both ISI marked and conforming to ISI, the materials/articles shall be ISI marked.
- 12.3 ---Blank--
- 12.4 The materials and articles, which have not been specified in tender documents by makes/manufacturers, shall be as under:
- (i) If ISI marked materials are being manufactured the same shall be ISI marked. For list of ISI marked manufacturers refer website of BIS i.e. [www.bis.org.in](http://www.bis.org.in).
- (ii) If ISI marked materials are not being manufactured, the same shall be conforming to IS specifications.
- 12.5 Materials of local origin shall be as specified and conforming to samples kept in GE's office. The tenderer is advised to inspect sample of materials which are displayed in the office of 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.
- 12.6 The contractor shall not procure materials and articles unless the samples are first got approved from the Garrison Engineer.

**13. TESTING OF MATERIALS**

**SPECIAL CONDITIONS (Contd.....)**

- 13.1 **'A' LEVEL TESTS FOR WORKS COSTING RS 100 LAKHS AND ABOVE:** The contractor shall set up site laboratory for testing of materials (except Sch 'B' materials) for 'A' level tests as listed in Appendix 'C' hereinafter. The contractor shall arrange all equipment/machines for the tests specified in Appendix 'C' hereinafter as 'A' level tests at his own cost with prior approval of GE. This cost shall be included in the item's costs quoted by the contractor. The contractor shall employ a competent technical representative as approved by the GE for the purpose of testing and all such tests shall be carried out in the presence of Engineer-in-Charge. The successful tests result thereof shall be recorded and signed jointly by the contractor and the Engineer-in-Charge. The charges for these tests i.e. 'A' level tests carried out in site laboratory of the contractor shall not be recovered. In case, the contractor has not set up the site laboratory and the tests are carried out in zonal or any other laboratory setup/approved by GE, the recovery shall be made at rates applicable i.e. as given in Appendix 'C' hereinafter.
- 13.2 **'B' & 'C' LEVEL TESTS:** For tests of 'B' and 'C' level as indicated in Appendix 'C' hereinafter, the contractor shall provided all facilities for testing of materials at Zonal laboratory/Govt. approved laboratories or test house/Engg Colleges at his own cost. The rates quoted by the contractor shall deemed to be inclusive of these tests. The rates of various tests conducted in Laboratory of MES are indicated in Appendix 'C' hereinafter. The contractor shall bear the actual charges of 'C' level tests (to be done in labs other than MES labs) irrespective of rates indicated in Appendix 'C' hereinafter. Wherever, it is convenient to get 'B' level test done at approved test house/Engg. College, the same can be done at the cost of the contractor and no separate recoveries will be made by the Department for the same.
- 13.3 The recoveries on account of testing charges wherever applicable shall be effected from the running account payments due to the contractor payable after completion of the respective tests or whenever the test is due whichever is earlier.
- 14 **PERIOD FOR KEEPING THE TENDER OPEN:** The tender shall remain open for acceptance for a period of **60 (Sixty) days** from the date specified for its submission.
15. **ADVANCE ON ACCOUNT OF MATERIALS (FOR WORKS WHOSE ESTIMATED COST AT MARKET RATE EXCEEDS RS 50 LAKHS):**
- 15.1 Refer to condition 64 of IAFW-2249- Advance on Account.
- 15.2 The contractor may be paid advance on account to the full value of the under mentioned materials only, brought on the site, on his furnishing Bank Guarantee Bond(s) from a Scheduled Bank for the amount of the retention money which should otherwise be recoverable from him under contract:-
- Factory made door shutters.
  - Factory made steel windows/Vents.
  - Sanitary fittings.
  - Iron Mongery
  - Electrical fittings/fixtures
  - Water supply pipes and pipe fittings/fixtures
  - Steel.
  - Cement
  - SGSW Pipes and Reinforced cement concrete pipes
- 15.3 The Bank Guarantee Bond(s) shall be executed on a Stamp Paper for a period and on a form as directed by the Accepting Officer. The contractor shall further arrange to extend the period of Guarantee Bond(s) if and when necessary, as directed by the Accepting Officer or shall furnish fresh Guarantee Bond(s) of similar value in lieu.
16. **RECORD OF CONSUMPTION OF CEMENT:**
- 16.1 The contractor shall maintain a "bound register" with serially numbered pages with all pages initialed by Engineer-in-Charge against numbering showing quantities of cement received, used in work and balance at the end of each day. The form of record shall be as approved by representative of MES and the contractor in token of verification of its correctness and will be checked by Engineer-in-Charge, at least once a week and on the day, cement is brought by the contractor to the site.
- 16.2 The register shall be kept at site in safe custody of the contractor's representative during the progress of the work and shall on demand be produced for verification to the inspecting officer(s).
- 16.3 On completion of the work, the contractor shall deposit the cement register with the Engineer-in-Charge for record.

**SPECIAL CONDITIONS (Contd.....)****17 SECURITY OF CLASSIFIED DOCUMENTS**

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

**18. RECORD OF MATERIALS AND PURCHASE VOUCHERS**

- 18.1 The quantity of materials such as cement, steel, paints, water proofing compound, chemicals for anti-termite treatment and the like, as directed by 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.
- 18.2 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.
- 18.3 Contractor shall produce vouchers/invoices from the manufacturers and/or their authorised agents for the full quantity of the following materials as applicable as a pre-requisite before submitting claims for payment for advance on account of the work done and/or materials collected in accordance with Condition 64 of General Conditions of Contracts (IAFW-2249):-
- (i) Water proofing compound.
  - (ii) Chemicals for Anti-termite Treatment.
  - (iii) Paints, Distempers, Cement base paints & like.
  - (iv) Cast iron pipes and fittings.
  - (v) Sanitary fittings.
  - (vi) Steel windows/ventilators.
  - (vii) Factory made door shutters.
  - (viii) Floor/Wall tiles
  - (ix) Iron Mongery
  - (x) Tarfelt/bituminous products.
  - (xi) Salt glazed stoneware pipes.
  - (xii) Electrical and Water Supply fittings/fixtures where names of manufacturers/brands are specified or approved.
  - (xiii) Cables.
  - (xiv) Cement
  - (xv) Steel
- 18.4 The contractor shall, on demand, produce to the GE, original receipted vouchers/invoices in respect of the materials other than as stated in condition 18.3 above. 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 manufacturer's marking except in the case of the requirement of materials(s) being less than smallest packing.
- 18.5 Bitumen shall be purchased directly from manufacturers only. These vouchers/invoices shall be defaced by the Engineer-in-Charge, indicating reference to the contract number, under his dated signature, and CTC thereof shall be kept on record so as to avoid their being used again.
- 18.6 The vouchers/invoices will clearly indicate the contract number and the IS No., specific alternative to which the material conforms in case of various alternative in IS.

**SPECIAL CONDITIONS (Contd.....)****19. SECURITY AGAINST LOSS OR DAMAGES**

- 19.1 The contractor shall furnish to the Engineer-in-Charge every morning distribution return of his plants/equipments on the site of work stating the following particulars:-
- (a) Particular of plants/equipments, their make, manufacturers, Model No. if any, Registration No. if any, capacity, year of manufacture and year of purchase etc.
  - (b) Total No (quantity) on site of work
  - (c) Location, indication No (quantity) at each location of site of work.
  - (d) Purchase value on the date of purchase, for the purpose of the condition, plants/ equipment's shall be given vehicle No i.e. trucks and lorries but neither the workman's tools nor any manually operated tools/equipment's. The Engineer-in-Charge shall record the particulars supplied by the contractor in the works diary and send the return to the GE for record in his office.

**20. RELEASE OF ADDITIONAL SECURITY DEPOSIT**

- 20.1 Refer Condition 22 and 68 of IAFW-2249.
- 20.2 The contractor, in case he has to deposit Additional Security for the contract is advised to deposit the Additional Security in two equal parts so as to facilitate its release in accordance with Condition 68 of General Conditions of Contracts (IAFW-2249).

- 21 **OFFICIAL SECRET ACT:** The contractor shall be bound by the Official Secret Act 1923.

22. **CLEANING DOWN:** Refer Condition 49 of General Conditions of Contracts (IAFW-2249). The Contractor shall clean all floors, remove cement, lime or paint drops, clean joinery, glass panels etc, touch up all paint work and carryout all necessary items of work in connection therewith and have the whole premises clean and tidy to the entire satisfaction of Engineer-in-Charge before handing over the items/works. No extra payment shall be admissible to the contractor for the operation.

23. **OCTROI, SALES TAX AND OTHER DUTIES:** The tenderer's rates shall be deemed to include all Duties, such as Octroi, GST, Excise, etc as referred in condition 10 of General Conditions of Contracts (IAFW-2249) and also include state Govt. sales tax on works contracts payable under respective states according to the condition (46th Amendment Act 1982). Any other conditions stipulated by the tenderer regarding sales tax on works contracts would not be considered and such tender shall be liable for rejection.

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

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

**26. BLANK**

27. **WATCH/LIGHTING:** The contractor shall at his own cost take all possible precautions to ensure safety of life and property by providing necessary fencing, barrier, light, watchmen etc., during the progress of work and as directed by the Engineer-in-Charge.

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

**SPECIAL CONDITIONS (Contd.....)**

29. **QUALIFIED TRADESMEN** In compliance with the condition 26 of IAFW-2249 (General Condition 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)/National Academy of Construction (NAC) Hyderabad, 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 along with requisite certificate 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 what so ever on this account shall be admissible.

30. **SPECIAL CONDITION FOR CONCILIATION**

30.1 **SCOPE OF CONCILIATION:** The scope of conciliation shall be restricted to the following types of disputes with financial limits as indicated therein:-

- (a) Disputes relating to levy of compensation for delay in completion-actual amount of compensation.
- (b) Disputes relating to technical examination of works.
- (c) Disputes relating to interpretation of the provisions of the contract with reference to their application to parties.
- (d) Disputes relating to non return of Schedule 'B' stores over-issued to contractor.
- (e) Any other dispute having fair chances of being resolved by conciliation and considered fit to be referred to conciliation by the parties.

**Note:** For item (b, (c), d) and (e) each as stated above the financial limit shall be Rupees two lakhs or one percent of the contract amount whichever is less.

30.2 **COMMENCEMENT OF CONCILIATION PROCEEDINGS**

30.2.1 The party initiating conciliation shall send to the other party written invitation to conciliate, briefly identifying the subject of the dispute.

30.2.2 Conciliation proceedings shall commence when the other party accepts in writing the invitation to conciliate.

30.2.3 If the other party rejects the invitation, there will be no conciliation proceedings. If the party initiating conciliation does not receive a reply within 30 days from the date on which he sends or within such other periods of time as specified in the invitation, he may elect to treat this as a rejection of the invitation to conciliate and if he so elects, he shall inform in writing the other party accordingly.

30.3 **NUMBER OF CONCILIATORS:** There shall be a Sole Conciliator.

30.4 **APPOINTMENT OF CONCILIATOR:** All disputes brought out in condition 30.1(a) to (e) above shall be referred to the Sole Conciliation viz Serving Officer not below rank of Superintending Engineer/Superintending Engineer (QS & C) having degree in Engineering or equivalent or having passed final/direct final examination of Sub division II of Institution of Surveyors (India) to be appointed by the Engineer-in-Chief, Army Headquarters, New Delhi or in his absence the Officer officiating as Engineer-in-Chief or Director General of Work specifically delegated by the Engineer-in-Chief in writing.

30.5 **STATUS OF EFFECTS OF SETTLEMENT AGREEMENT:** The settlement agreement signed by the parties as a result of conciliation proceedings shall have the same status and effect as it is an arbitral award on agreed terms.

31. **-----BLANK -----**

32. **RE-IMBURSEMENT /REFUND ON VARIATION IN TAXES DIRECTLY RELATED TO CONTRACT VALUE**

32.1 The rates quoted by contractor shall be deemed to be inclusive of all taxes/cesses viz. GST, duties, Royalties, Octroi and 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 (b) here-in-below.

**SPECIAL CONDITIONS (Contd.....)**

- 32.2 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 imposition of any new "taxes directly related to Contract Value" after the last due date for receipt of tenders shall be reimbursed to the contractor and abolition of any "taxes directly related to Contract value" prevailing on last due date for receipt of tenders shall be refunded by the Contractor to the Govt/deducted by the Govt from the payments due to the Contractor.
- 32.3 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 GE stating that the same is given pursuant to this Special Condition, together with all information relating thereto which he may be in a position to supply. The Contractors shall submit the other documentary proof/information as the GE may require.
- 32.4 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 in such a manner as the GE may require, any documents so kept and such other information as the GE may require.
- 32.5 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.
33. **PERFORMANCE SECURITY:** Within 28 days of receipt of letter of Acceptance, the successful unenlisted/enlisted contractor would be required to deposit performance security in any of the forms given in clause 19 of IAFW 2249 for an amount equal to 5% of the contract sum. Failure of the successful contractor to comply with the requirements of sub-clause 19.1 of IAFW-2249 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. **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 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 redeipt, 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.**

\_\_\_\_\_  
Signature of contractor  
Dated: \_\_\_\_\_

**AGE (Contracts)  
for Accepting Officer**

**PARTICULAR SPECIFICATIONS****1. GENERAL**

1.1 Work under this contract shall be carried out in accordance with Schedule 'A', Particular Specifications, drawings, IAFW-2249 (General Conditions of contracts), General Specifications and other provisions contained in MES SSR (Schedule) Specifications Part-I (2009) and Rates Part-II (2010) read in conjunction with each other.

1.2 Term "General specifications" referred to hereinbefore as well as referred in IAFW-2249 (General Conditions of contracts) shall mean the specifications contained in the MES SSR (Schedule) Specifications Part-I (2009).

1.3 General Rules, specifications, special conditions and all preambles in the MES Schedule shall be deemed to be applicable to the work under this contract, unless specifically stated otherwise in these documents and in case of any conflicting provisions in MES schedule and in these tender documents, the provisions in these documents shall take precedence over the aforesaid provisions in the MES Schedule. The term "as specified" wherever appears in the tender documents and drawings, relates to relevant particular specifications and in its absence, general specifications. All references to MES Schedule/SSR in these specifications relate to Part-I of MES Schedule 2009 unless otherwise mentioned. Reference to only some paragraphs of MES Schedule have been made in these particular specifications but other paragraphs and provisions, as applicable, are also to be followed for all parts of Schedule 'A', if any, though not particularly mentioned hereinafter.

1.4 Where specifications for any item of work are not given in MES Schedule or in these Particular Specifications, specifications as given in relevant Indian Standard Code of Practice shall be followed.

1.5 Rates for the item quoted by the tenderer under BOQ shall be deemed to be included for all minor details/items of work and/or constructions which are obviously and fairly intended and which may not have been included in these documents but which are essential for the execution and entire completion of work. Decision of the Accepting Officer as to whether any minor detail of work and/or construction is obviously and fairly intended to be included in the contract or not, shall be final, conclusive and binding. In the absence of any other similar or near details, minimum essential requirement for completion of the work from structural and utility point of view shall be deemed to be included in the quoted rate. In the event of any dispute, decision of the Accepting Officer shall be final, binding and conclusive.

**1.6 MATERIALS**

1.6.1 Unless specific makes/manufacturers are specified in the tender documents all the materials to be procured by the contractor for incorporation in the work under this contract (with the exception of local materials like bricks, stone aggregate, stones, sand etc) shall be with ISI certifications mark. For materials of specific make/manufacturer's names refer Para 1.6.2 herein - below.

1.6.2 If any specific makes/manufacturers names are specified in Sch 'A' or Particular specifications or in Appendix 'D' & 'E' to particular specifications, materials shall be of these specific makes/manufacturers only. However, makes specified in Sch 'A', if any, shall take precedence over Appendix 'D'. ISI marking will not be mandatory for such items where makes/manufacturers have been specified unless the items of makes/manufacturers specified are available both with ISI marking and without ISI marking. If any material is not manufactured with ISI certifications mark in the country, it shall be confirming to relevant ISI and other specifications specified elsewhere and shall also conform to samples displayed in GE's office as applicable. However steel windows/ventilators and doors shutters shall be of makes specified in Appendix 'D' to these particular specifications' and conforming to relevant ISI (ISI marking is not mandatory).

1.6.3 Indian Standard (ISI) of the year of publication/edition listed or specified in the SSR (part-I) or revised thereafter shall be applicable for the work under this contract unless specifically indicated otherwise elsewhere in these tender documents.

**1.6.4 LOCAL MATERIALS:**

Irrespective of actual distance involved, local materials such as stones, aggregates, sand, road metals etc shall conform to or superior to the specifications given here in after and to the samples kept in the office of GE. The tenderers are advised to inspect these samples. The tenderers shall be deemed to have inspected the samples and have full knowledge thereof whether they inspected them or not before quoting their tender.

**1.6.5 SAMPLES OF MATERIALS: -**

(a) Refer condition 10 of IAFW-2249(General Conditions of contracts).

(b) Specific requirements regarding dimensions, strength, weight and finishes, as per ISI, MES SSR and the Particular Specifications given hereinafter vis-à-vis actual properties check, tests carried out, reference to test certificates and markings, etc based on which samples of each materials are approved as conforming to relevant specification shall be recorded in the sample approval register.

(c) The contractor shall produce samples of all materials and shall obtain approval in writing from GE before he places bulk order for the materials for incorporation in the work. The contractor shall not procure materials unless the samples are first got approved from the Garrison Engineer.



**PARTICULAR SPECIFICATIONS (Contd...)****1.6.6 RECORD OF MATERIALS (Refer Special conditions here-in-before)**

(a) The quantity of all the proprietary materials (including the materials 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 at site for incorporation in the work.

(b) Materials brought to site shall be stored as directed by the Engineer-in-Charge and shall be suitably marked for identification.

(c) The contractor shall procure all the materials (where specific makes/manufacturer's specified) directly from their manufacturers or from their authorised dealers only. 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 material(s) being less than smallest packing.

(d) The contractor shall produce to the GE original printed and machine numbered purchase vouchers/invoices including manufacturer's test certificate (where applicable) for all the materials mentioned here-in-before in Special Conditions. Copies of orders placed on the manufacturer/authorized dealers shall also be provided by the contractor to Engineer in Charge along with above documents. Whenever procured and brought to site of work for incorporation in the work, a Xerox copy of such vouchers/invoices shall be stamped (office stamp) and defaced in ink by the Engineer-in-Charge stating "verified for materials purchased and brought to the site of work for incorporation in the work under CA NO...." and signed with date before allowing payment for these materials through RAR.

(e) Payment for the materials shall neither be made in the RARs nor will these be allowed for incorporation in the work unless documents as stated above are produced by the contractor and are verified by the Engineer-in-Charge. In case of any disputes on account of above Accepting Officer's decision shall be final and binding.

**1.7 STANDARD OF WORKMANSHIP**

To determine the acceptable standard of workmanship and of fittings, wiring etc, the GE shall order the contractor to execute certain typical portion of work (different trades) and services sufficiently in advance of other work in one portion of the building. These shall be executed and completed under the close supervision of the Engineer-in-charge and shall be got approved from GE. On approval by the GE of such items, these items shall signed and/or suitably identified by the GE and labeled as guiding samples. The record of such inspection and passing of each stage of these samples shall be recorded by GE under his dated signatures. Work on such sample/portion of the building shall be progressed well ahead (minimum two stages ahead) of other portions of the building. Approved finishes/workmanship shall be followed in the work as a whole.

**1.8 MAKING GOOD :-**

The contractor shall cut, leave or form holes, recesses, chases etc, in concrete, brick work, walls, ceilings, floors and in any other situations as required or as directed by the Engineer-in-Charge and make good in cement and sand mortar (1:3)/PCC (1:2:4) type B-0 as decided by Engineer-in-Charge and finish to match the adjoining surfaces without extra cost to the deptt.

**1.9 SCOPE OF WORK :-**

The scope of work under this contract comprises of full, final and entire completion of works and services described in schedule 'A' and as specified in these particular specifications, general specifications and in the Contract Agreement else where.

**2. EXCAVATION AND EARTH WORK****2.2 EXCAVATION :**

**PARTICULAR SPECIFICATIONS (Contd...)**

2.1 (a) Unit rates for shall be deemed to include for excavation and earth work in type of soil for foundation (i.e. loose/soft/hard/dense) as described under respective item of Schedule 'A'/ BOQ.

(b) If rock (soft/hard/disintegrated) is met at site, contractor shall immediately notify the fact to the GE in writing, who will after due verification, regularize the change through a proper deviation order along with provisions read in conjunction with Schedule 'A' Notes. It shall be excavated by chisel cutting or by use of mechanical plant or by any other suitable method/techniques which have been evaluated by contractor as ordered, in lieu of blasting by a prior written approval of GE. Blasting of hard rock by using explosives shall not be permitted. Payment shall however, be made as per respective items of SSR subject to provisions of clause 3.12 on page 23 of SSR-2010, Part II and percentage for pricing of deviation as specified in Schedule 'A' Notes.

(c) Boulders and stones (size 80mm and above) 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 become contractor's property once the recovery for same as indicated in Sch 'A' Notes is effected from payments due to the contractor, these boulders may be used in the work after breaking them into specified size as approved by Engineer-in-charge or alternatively disposed off from the site for further disposal as deemed appropriate by the contractor..

(d) Excavation in any type of soil/rock shall be carried out to the extent shown in drawings or as ordered. Any extra excavation done by the contractor on his own shall be made good with PCC (1:5:10) type E-2 at the bottom without any extra cost to the department.

(e) In case timbering for excavation is essentially required and directed by the Engineer-in-Charge in writing this shall be without any extra cost to the department.

## 2.2 **METHOD OF MEASUREMENTS OF EXCAVATION**

(i) Where soft/loose soil, hard/dense soil, soft/disintegrated rock and hard rock are mixed, the measurement for the total quantity shall be made by taking levels of the ground as directed by GE and the total quantity of excavation shall be computed from these levels. The soft/disintegrated rock and the hard rock excavated shall then be stacked separately and measured in stacks. The quantity of soft/disintegrated rock and hard rock so measured shall be reduced by 50% to allow for voids. These reduced quantities of soft/ disintegrated rock and hard rock shall only be admissible for payment under item of excavation of soft/disintegrated rock and hard rock respectively. From the total qty of the mixture the quantity of soft disintegrated rock and hard rock excavated thus arrived and shall be deducted to work out the quantity of soil i.e. soft/loose/hard dense soil excavated.

(ii) Where only soft /disintegrated rock and hard rock are mixed, the measurement for the total quantity shall be made by taking levels of the ground as directed by EIC and the total quantity of the excavation shall be computed from these levels. The hard rock excavated shall then be stacked and measured in stacks. The quantity of hard rock so measured shall be reduced by 50% to allow for voids. This reduce quantity of hard rock shall only be admissible for payment under item of excavation of hard rock. From the total quantity of the mixture, the quantity of hard rock excavated thus arrived at, shall be deducted to work out the quantity of soft/disintegrated rock excavated.

(iii) All excavation shall be measured in successive stages of 1.5 meter depth starting from the commencing level. In case of excavation in rocks, if the depth of successive stage slightly exceeds 1.5 meter the levels shall be taken at that stage but excavated rock though obtained from this deeper depth, shall be measured in the previous successive stage only.

(iv) Hard rock obtained from excavation shall become property of the contractor for which he will be charged @ Rs.350.00 per cum. The method of measurement shall be as laid down in clause 3.1 on page 18 & 19 of SSR-2010 Part -II. The measurement shall be properly recorded in MB and signed by the Engineer -in-Charge and contractor.

2.3 The contractor's quoted rates for item of excavation shall include for dewatering/pumping/bailing out water, if met with during excavation due to high water table and no extra payment shall be admissible to the contractor on any such account.

2.4 **Site levels:** Before the work commenced, the contractor shall carry out a survey of the levels of the site and obtain verification from Engineer in Charge of these levels. Levels shall be taken on a grid at 3 mtr interval and record of level shall be jointly signed by the contractor and the EIC.

## 2.5 **FILLING IN TRENCHES / UNDER FLOORS:**

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 for building(s)/items in respect of Schedule 'A' shall be arranged by the contractor at contract rates from outside of MD land.

2.6 Filling under floors/sides of trenches shall be in layers not exceeding 25cm thick, and each layer shall be watered and well rammed.

**PARTICULAR SPECIFICATIONS (Contd...)**

**2.7 Surplus spoil shall be removed, spread and leveled at places as directed by the Engineer-in-Charge outside the MD land.**

**2.8 TRENCHES FOR FOUNDATIONS AND PIPES :**

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 mix (1:5:10) without extra cost to the Govt.

2.8.1 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.

**2.9 HARD CORE:**

Unless otherwise specified, the 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 levelled 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.

**2.10 ANTITERMITE TREATMENT**

2.10.1 The Antitermite treatment shall be carried out in strict compliance with IS 6313 (Part I to III) of 1981 for pre-construction treatment using chemical Chloropyrriphos/Chlordane emulsifiable concentrate. The chemical used for Anti termite treatment shall be got tested from approved test house /Laboratories.

2.10.2 The scope of work pertaining to Antitermite treatment shall be restricted to the provision in para 6.2.1, 6.2.2, 6.2.3, 6.4, 6.5 and 6.6 of IS 6313 (Part II). The provisions of chemical in other paragraphs of the said IS will also apply to the extent they are applicable to the items of works, specified in various paras of IS mentioned above. The rate of application for different locations shall be as given in respective paras of IS.

2.10.3 The contractor shall obtain approval of the GE for the chemical he proposes to use in the work out of those specified in para 2.10.1 above. A record of chemicals obtained in sealed containers shall be maintained in the measurement book duly signed by Engineer-in-Charge and the contractor.

2.10.4 The work of Antitermite treatment shall be got executed by the contractor through an approved agency (as approved by the Accepting Officer) who is a member of PCAI (Pest Control Association of India) holding valid license as per clause 12 of Insecticides Act 1968 and persons employed to do the Antitermite treatment shall be qualified as per Rule 10 of the rules framed under insecticides Rule 1991".

2.10.5 With reference to paras 6.2.2 and 6.3 of the IS the contractor shall note that earth filling to be done by him shall be carried out in layers not exceeding 25cm each, watered and rammed as specified

2.10.6 In order to facilitate the watch of satisfactory fulfillment of guarantee, the following information will be inscribed on each building on a plate of 900mm x 600mm size prepared by plastering on the brick surface with 15mm thick in cement and sand mortar (1:4) at such a place and in such a manner as approved by the GE. Date of expiry of guarantee shall be commuted from the physical date of completion of the buildings as certified by the GE. Contractor's quoted rates shall deemed to be included this aspect into account.

Antitermite treatment carried out during \_\_\_\_\_  
(Month & Year)

Chemical used \_\_\_\_\_

Agency who executed the work \_\_\_\_\_

Guarantee expires on \_\_\_\_\_

**3. CONCRETE**

**3.1 Materials for Concrete**

I **LIME** Lime shall be eminently hydraulic lime (Class 'A') and shall conform to IS: 712 as specified in para 4.2 of SSR (Part I).

II. **CEMENT** Cement shall not be issued under Sch 'B'. The contractor shall procure cement from manufacturer as specified here-in-after. Cement shall be stored in dry a place covered all round and no stacks shall be more than 15 bags high.

III. **COARSE AGGREGATE:** Coarse aggregate shall be crushed stone aggregate and shall conform to specifications given in para 4.4 of SSR (Part I). However in case of controlled quality concrete the provisions made in IS-456-2000 shall be applicable.

**PARTICULAR SPECIFICATIONS (Contd...)**

3.2 **CEMENT:** - Cement to be used in all types of works shall be ordinary Portland cement Grade 43 conforming to IS: 8112-1989 (Latest revision) or Portland Pozzolana Cement, conforming to IS 1489-1991. The Contractor shall procure cement for all work required for this contract as the work proceeds at site.

3.2.1 Cement shall be procured by the contractor from the main producers of cement enumerated as under: -

Sl No	Name of Producer	Address	Type of Cement
1	2	3	4
1	M/S Sanghi Industries Ltd. Brand : "SANGHI"	10 <sup>th</sup> Floor, Kataria Arcade, Of S G Highway, PO- Makarba, Dist- Ahmedabad, Pin-380051 Mo-09825803690, Tel-079 26838000 Fax-079-26838111 Web site : <a href="http://www.sanghicement.com">www.sanghicement.com</a>	(a) OPC 53 Gr (b) PPC
2	M/s Cement Manufacturing Company Ltd Brand 'STAR'	Mayur Garden, 2nd Floor, opp-Rajuv Bhawan, GS Road, Guwhati-7810005 Ph-0361-2462215/216/513 Fax- 0361-2462217, Email: cmclghy@cml.co.in	(a) OPC 43 Gr (b) OPC 53 Gr (c) PPC
3	M/s Ultra tech Cement Ltd Brand : "ULTRATECH"	'B' Wing 2nd Floor Mahakali Caves Road, Andheri (East), Mumbai-400093 Ph- 022-66917800	(a) OPC 43 Gr (b) OPC 53 Gr (c) PPC
4	M/s OCL India Ltd. Brand: "KONARK"	Rajgangpur, Distt- Sundargarh Orissa, Pin- 795017 Ph-0361-2668504, Fax- 2662131 Website <a href="http://www.calcom.co.in">www.calcom.co.in</a>	(a) OPC 43 Gr (b) PPC
5	M/s Dalmia Cement (Bharat Ltd) Brand "DALMIA CEMENT"	Dalmiapuram Distt-Truchirappalli, Tamil Nadu- 621651	(a) OPC 43 Gr (b) PPC
6	M/s Chettinad Cement Corporation Ltd. Brand : " CHETTINAD"	4th Floor, Rani Seethai hall Building, 603, Anna Salai Hall, Chennai-600006 Tele No. 044-42951800, Fax No. 044-28291558 Email: <a href="mailto:info@chettinadcement.com">info@chettinadcement.com</a> Website : <a href="http://www.chettinadcement.com">www.chettinadcement.com</a>	(a) OPC 43 Gr (b) PPC
7	M/s Heidelberg cement India Ltd. Brand : "MYCEM"	9th Floor, Infinity Tower –CII DLF Cyber City, Gurgaon, Haryana-122002 Ph- 0124-4503950 Fax- 0124-4147698	(a) PPC
8	M/s My Home Industries Ltd. Brand "MAHA SHAKTI" for PSC, "MAHA" for OPC 43 Gr, "MAHA SHAKHI" for PPC	9th Floor, My Home Hub, Madhapur, Hyderabad- 500081 Ph-040-66929696 Fax-040-66929797/98	(a) OPC 43 Gr (b) PPC
9	M/S Parasakti Cements Ltd. Brand " PARASAKTI"	123/3RT, Plot # 8-3-214/21 Srinivasa Nagar Colony (west) Hyderabad-500038 Tel-040-44119100/200 Fax- 040-23747562	(a) OPC 43 Gr (b) PPC
10	M/S Zuari Cement Ltd Brand " ZUARI"	No. 6 MC Nichols Road Chetpet Chennai-600031 Ph- 044-28363958	(a) OPC 43 Gr (b) PPC
11	M/s Toshali Cements Pvt. Ltd. Brand " GAJAPATI"	123/3RT 2nd Floor, Sanjeeva Reddy Nagar, Hyderabad-500038 Ph- 0402300675	(a) OPC 43 Gr (b) PPC
12	M/S Saifco cement Pvt Ltd Brand " SAIFCO"	Opposite Post Office, Batwara Srinagar-190004 (J&K) Ph-01942466061	(a) OPC 43 Gr
13	M/S Prism cement Ltd Brand " PRISM"	3/113, Vivek Khand, Gomto Nagar Lucknow-226010 Ph-05222396847/2397589	(a) OPC 43 Gr (b) PPC
14	M/s Shree Guru Kripa Cement Pvt. Ltd. Brand " SARTAJ"	4/4 Trikuta Nagar Jammu Ph-0191-2472043.	(a) OPC 43 Gr (b) PPC

**PARTICULAR SPECIFICATIONS (Contd...)**

15	M/S Barak Valley Cements Ltd Brand " BVCL "	Debendra Nagar Badarpur Ghat Distt Karimganj Assam-788803 Ph-03845269258	(a) OPC 43 Gr (b) PPC
16	M/S Dhruv Industrial Company Ltd Brand " DHRUV "	49/27 Sinha Market General Ganj Kanpur-208001	(a) OPC 43 Gr (b) PPC
17	Madras Cement Brand " MADRAS "	Auras Corporate Centre, 98-A, Dr. Radhakrishnan Salai, Mylapora, Chennai-600004 Ph-044-28478666	(a) OPC 43 Gr (b) PPC
18	Saurashtra Cement Brand " SAURASHTRA "	Gala No. A-1 Ground Floor, Udhog Sadan No 3 MIDC, Central Road, Andherei (East), Mumbai- 400093 Ph-022 32955557/67	(a) OPC 43 Gr (b) PPC
19	Lafarge cement (Lafarge india Pvt Ltd) Brand " LAFARGE "	Crescenozo, 1004, B-Wing, 10th Floor C-38/39, G Block, Bandra Kurla Complex, bandra (east), Mumbai-400051	(a) OPC 43 Gr (b) PPC
20	The Associated cement Company Brand: "ACC"	414/421, Splendor Forum (4th Floor), 3, Distt Centre, Jasola, New Delhi-110044 Ph-011-46583600	(a) OPC 43 Gr (b) PPC
21	Grasim Industries Ltd. Brand: "GRASIM"	Birlagram, Nagda, Madhya Pradesh, Pin-456331 Ph-09566246760/246766	(a) OPC 43 Gr (b) PPC
22	The India Cement	Dhun Building, 827, Anna Salai, Chennai-600002	(a) OPC 43 Gr (b) PPC
23	Andhra Cement Ltd	Durga Cement Works Durgapuram, Dechepalli Guntur, AP, Pin-522414 Ph-0863257429	(a) OPC 43 Gr (b) PPC
24	Century Cements Brand: "CENTURY"	Industry House, 159 Church gate Reclamation, Mumbai-400020 Ph-022-22023936	(a) OPC 43 Gr (b) PPC
25	Binani Cements Ltd. Brand: "BINANI"	Mercantile Chambers, 12 J.N Heredia Marg, Ballard Estate, Mumbai-400001 022-22690506/10	(a) OPC 43 Gr (b) PPC
26	Mangalam Cement Ltd. Brand: MANGLAM"	PO-Adityanagar, Morak, Dist-Kota, Rajasthan-326520 Mob-9351468076	(a) OPC 43 Gr (b) PPC
27	Birla Corporation Ltd Brand: "BIRLA"	Birla Building (3rd & 4th Floor) 9/1 R.N Mukherjee Road Kolkata-950001 Ph-033-30595950	(a) OPC 43 Gr (b) PPC
28	Orient Cement Brand: "ORIENT"	5-9-22/57/D, 2nd and 3rd Floor, GP Birla Centre, Adarsh Nagar, Hyderabad-500063 Ph-04423688600	(a) OPC 43 Gr (b) PPC
29	Shree Cement Brand: "SHREE"	Bangur Nagar, Beawar, Distt-Ajmer, Rajasthan- 305901 Ph-01462228101/06	(a) OPC 43 Gr (b) PPC
30	JK Cement Brand: "J&K"	Kamla tower Kanpur-208001	(a) OPC 43 Gr (b) PPC
31	JK Lakshmi Cement Ltd Brand: "J K Lakshmi"	Jaykaypuram, Dist-Sirohi, Rajasthan Ph-02971 244409/10	(a) OPC 43 Gr (b) PPC
32	Jaypee Rewa Cement Brand: "JAYPEE"	Jaypee Nagar, P.O-Jaypee Nagar Rewa-486450 M.P	(a) OPC 43 Gr (b) PPC
33	Ambuja Cement Ltd. Brand: "AMBUJA"	Kodinar, PO-Ambujanagar, Taluka-Kodinar, Distt- Junagadh, Gujrat-362715 Ph-02795239500	(a) OPC 43 Gr (b) PPC

**PARTICULAR SPECIFICATIONS (Contd...)**

The particulars of the manufacturer / supplier of cement along with the date of manufacture shall be produced by the contractor for every lot of cement separately. The documents in support of the purchases of cement shall be produced before the Engr-in-Charge for verification by the GE.

3.2.1.1 The following conditions shall have to be satisfied before PPC can be allowed to be used in the work:-

PPC should meet the strength criteria as per IS-8112-1989. The minimum period before striking off formwork while using PPC shall be as given in PS Clause 3.8 here in after. In case cold climate where temperature is lower than 15 °C, only OPC shall be used. Mixing of OPC & PPC shall not be allowed in a work. However with the strict control of Engineer in Charge, different buildings can have different types of cement. While procuring PPC, the following requirements are to be ensured and certificate to the effect is to be obtained by the contractor for each batch from the manufacturer and the same shall be submitted to the GE for approval to procure PPC.

- (i) The quality of fly ash is strictly as per IS-1489 (Part-I) – 2002
- (ii) Fly ash is inter-ground with clinker and not mixed with cement.
- (iii) Dry fly ash is transported in closed containers and stored in Silos. Only pneumatic pumping should be used.
- (iv) The fly ash received from thermal power plants using high temperature combustion above 1000°C should be used.

3.2.2 **TESTING:-**

The contractor shall submit the manufacturer's test certificate in original along with the Test Sheet giving the result of each physical test as applicable and the chemical composition of the cement or authenticated copy thereof, duly signed by the manufacturer with each consignment clearly bringing out lot No. The Engineer-in-Charge shall record these details in the cement acceptance register as given in Appx 'A' here-in-after after due verification. The GE shall also organize independent testing of random samples of cement (both physical and chemical properties) drawn from various lots for each consignment to cement brought out by the contractor before incorporation in the work from the National Test House, SEMT, Regional Research Laboratories, Government approved laboratories, as per IS: 3535-1986 (Method of sampling Hydraulic cement), IS: 4031 (Method of physical test for Hydraulic Cement) and IS: 4032-1985 (Method of chemical analysis of Hydraulic cement.)

3.2.3 Following mandatory tests shall be carried out for cement procured by the Contractor: -

- (i) Initial and final setting time
- (ii) Soundness test
- (iii) Compressive strength test at 3, 7 & 28 days as specified in relevant IS code.

3.2.4 The cement shall conform to chemical requirements and physical requirements as specified in clause 4 & 5 respectively of IS: 269-1976. The tests carried out as per provisions of IS codes specified herein before shall be the criteria for acceptance of cement by Engineer-in-Charge. If samples from a lot/lots are not within the acceptance limits of Indian standard, the lot/lots shall be rejected without any claims or compensation to the contractor for the lot/lots purchased. The contractor shall replace the lot/lots with the fresh one, which shall be tested again for acceptance. The cost of all tests carried out on cement before acceptance for incorporation in the work shall be borne by the contractor whether the results are acceptable or not.

3.2.5 **STORAGE :-**

Cement shall be stored over dry platform at least 20cm high in such a manner as to prevent deterioration due to moisture or intrusion of foreign matter. In case of store rooms, the stock should be at least 20cm above from floors and 60 cm away from walls in addition to precautions specified in clause 4.3.1 of SSR Part-I. Inspections shall be carried out once a day by the Engineer-in-Charge. It shall be ensured by the Engineer-in-Charge that tested and untested cement are segregated and stored separately with distinct identification. The cement godown shall be provided with two locks on each door. The key of one lock at each door shall remain with the Engineer-in-Charge or his representative and that of the other lock with the contractor's authorised representative at site of works so that cement is removed from the godown only according to daily requirement with the knowledge of both the parties.

**PARTICULAR SPECIFICATIONS (Contd...)****3.2.6 DOCUMENTATION :-**

The contractor shall submit original vouchers from the supplier for the total quantity of cement supplied under each consignment to be incorporated in the work. All consignments received at the work site shall be inspected by 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 records in the office of GE duly authenticated and with cross-reference to the control number in the cement Acceptance Register. The cement Acceptance Register will be signed by Supdt B/R Gde-I/ 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 all types cement shall also be suitably recorded in the Measurement Book for record purpose, 'NOT TO BE ABSTRACTED' before incorporation in the work and shall be signed by the Engineer-in-Charge and the contractor.

**3.2.7 SCHEDULING OF SUPPLY:-**

Schedule of procurement of cement shall be finalised by the contractor with GE and shall be incorporated in the CPM chart so that procurement is in accordance with the progress contemplated in the CPM prepared. The complete requirement of cement shall be worked out before making any RAR payment and procurement of cement by the contractor shall be completed sufficiently in advance of the execution of work.

**3.3 FINE AGGREGATE (SAND)**

Fine aggregate for all concrete work shall be Badarpur sand and /or Ghaggar river sand (from near Chandigarh area or any other Sand as approved) conforming to samples, complying with the requirement as specified in para 4.4.7.2 for grading zone I of SSR (part I). Sand in the zone II grading may also be permitted provided mix design is done and the requisite strength of the concrete is achieved.

Note: Wherever Badarpur sand has been specified in the tender documents, the Contractor, if he so desire due to inadequate supply/non availability of Badarpur sand, shall be permitted to use Ghaggar sand (near from Chandigarh area) at his own cost. No price adjustment shall be made on this account. Sample of sand shall however, be got approved from the GE before incorporation in the work. Other provisions in the respective clauses shall remain unchanged.

3.4 All mixes of concrete and mortar mentioned in this tender document shall be by volume except design mix concrete conforming to IS-456 of 2000 for which all the ingredients are proportioned and mixed by weight.

**3.5 MIX OF CEMENT CONCRETE**

3.5.1 Cement concrete shall be of the mix as described in BOQ/Schedule 'A'

3.5.2 Minimum cement content and max water cement ratio for PCC nominal mix of various grades shall be as per Table 5 and 6 of IS-456-2000.

3.5.3 Unless otherwise mentioned elsewhere, all RCC work in buildings covered under Schedule 'A' Part I shall be M-25 (Design mix concrete) except under ground sump for which it shall be M-30 grade (Design mix concrete).

**3.6 DESIGN MIX CONCRETE**

3.6.1 Where the concrete is specified by grade i.e. M-25, M-30, M-35 and M-40 the same shall be design mix. The design concrete mix shall be as per IS 456: 2000, IS-10262-1982, SP-23 (S &T) 1982 and as specified hereinafter. Design Mix M-25 & M-30 shall be carried out on recommended guide lines for concrete mix design with following stipulations:-

(a)	Grade of Concrete	:	M-25/M-30
(b)	Characteristic compressive strength Compliance requirement	:	As per IS-456: 2000 Table 11
(c)	Type of cement	:	Ordinary Portland Cement 43 grade or Port land pozzolona cement
(d)	Maximum size of aggregate	:	20mm (Crushed aggregate) for sections more than 75 mm and 10mm (Crushed aggregate) for sections less than or equal to 75 mm
(e)	Type of exposure	:	Moderate: as per IS-456: 2000 Table 3
(f)	Maximum water cement ratio	:	0.50
(g)	Degree of quality Control	:	Very Good(Refer table 40 of SP23 -1982)
(h)	Degree of workability	:	As per IS-456: 2000 with slump for pumped and non pumped concrete
(i)	Minimum quantity of cement	:	As per IS 456: 2000 Table-5

**PARTICULAR SPECIFICATIONS (Contd...)**

At the time of tendering, the contractor after taking into account the type of aggregate, plant and method of laying, he intends to use, shall allow for the water cement ratio which he consider will achieve the strength requirement specified and will produce workability which will enable concrete to be properly compacted for its full depth.

3.6.2 Actual proportion of cement, aggregate and water to obtain the required strength shall be determined by preliminary tests as specified here in after. The water cement ratio may be reduced in the trial mix design but not increased.

3.6.3 As soon as possible, after receiving the order to commence the work, the Contractor shall procure sufficient quantities of the aggregate and cement samples for testing and mix design. The optimum mix to achieve the target mean strength shall be determined in the laboratory conditions and the concrete shall conform to relevant IS specifications. Design mix shall got done from National Test house, IIT or any other Govt approved laboratory, approved by GE. Cost of materials and transportation and testing charges are to be borne by the contractor and same shall deem to be included in the rates quoted by the Contractor. Details/results of trial mixes from the engineering establishment along with their recommendations regarding quantities of cement, water, sand and coarse aggregates to be used in the work to achieve requisite strength in the field at 28 days shall be submitted by the contractor to the GE for final approval.

**Govt approved laboratories for testing Mix Design for concrete and all type of building materials:**

- (a) Shri Ram Institute for Industrial Research (NABL certified): 19 Cavalary Line University Road, Delhi-110007.
- (b) Bharat Test House (NABL certified): 454/2 1st floor Timber market Near Azadpur Chowk, Delhi-110033.

3.6.4 The approval of the GE will not absolve the contractor of his responsibilities to obtain the required minimum strength of concrete at any stage.

3.6.5 Contractors unit rates shall include for the above provisions and as brought out here-in-after. Further, in case there is any change in source of local materials viz sand/aggregates or grade of cement etc, the procedure as in Para 3.6.5 & 3.6.6 here-in-before shall be repeated.

3.6.6 In proportioning design mix concrete, the quantity of both cement and aggregate shall be determined by mass and all in accordance with clause 9.2 and sub clauses thereon of IS-456-2000 as applicable. All the materials shall be tested at a frequency as laid out in relevant IS. Use of weigh batcher is compulsory for all grades of concrete.

**3.6.7 MIXING OF CONCRETE**

The contractor shall use power driven mechanical concrete mixer of adequate capacity with hopper of approved type of mixing. The coarse and fine aggregate for mixing of cement concrete shall be put in the hopper after measuring the same by weigh batching, the drum shall be loaded with about the half of the coarse aggregate, then with the fine aggregate, then with the cement and finally with remaining coarse aggregate at the top. Water shall be added immediately before the rotation of the drum is started. The period of mixing shall be not less than 2 minutes after adding all the materials in drum and shall continue till the resulting concrete is uniform in appearance.

**3.6.8 WEIGH BATCHING:**

(i) In Design Mix concrete, the quantity of cement and aggregate shall be determined by weight. In no case volume batching of aggregates based on weight-volume conversion in the mix design shall be allowed. Water shall be either measured volume in calibrated tanks or by weight. Due care shall be given to adhere to maximum free water cement ratio indicated here in before. All measuring equipment shall be maintained in clean serviceable condition and their accuracy periodically checked. In this connection also refer clause 4.11.3.1 to 4.11.3.5 of SSR Part-I.

(ii) Quantity of concrete mixed in any one batch shall not exceed the rated capacity of the mixer. The whole of the mixed batch shall be removed before adding new batch. Concrete mixed above shall not be modified by addition of water or otherwise in order to facilitate handling or for any other purpose.

(iii) On cessation of work and other stoppages exceeding 20 minutes, the mixer and other plant used for the wet mix shall be thoroughly washed with clean water. Pick up and throw over blades in the drums of the mixer, which are worn down 20mm or more in depths shall be replaced with new blades.

**3.7 Ready Mix Concrete ( RMC)**

3.7.1 Ready Mix Concrete (RMC) as indicated in Schedule 'A' shall be with Ready Mix Concrete (RMC) of design Mix as specified here in before from approved manufacturers having fully automatic batching plants installed of capacity over 30 cum/hr or from fully automatic batching plant installed at site of capacity not less than 12 Cum per hour with tested and calibrated water meter, control panel and provision for computer generated batch report all as per IS-4925 (amended up to date).



**PARTICULAR SPECIFICATIONS (Contd...)**

3.7.2 The relevant details of Design Mix Concrete as specified earlier shall be applicable along with the following specific details for Ready Mix Concrete. The contractor shall use ready mix concrete (RMC) of grades as specified. RMC shall conform to the requirements as per IS-4926 (amended up to date) and IS 456-2000.

3.7.3 RMC shall be procured by the contractor from any one of RMC manufacturer given below as per IS-4925 (amended up to date), having fully automatic computerized batching plant of capacity over 30 cum/hr with tested and calibrated water meter, control panel and provision for computer generated batch report all as per IS-4925 (amended up to date), as approved by Engineer in Charge after verification of the plant and various infrastructure, facilities testing and quality control of materials and concrete at the plant lab and their method of transportation and placing of concrete at site, etc:-

- (a) M/S Larsen & Toubro Ltd: ECC Division (L&T Concrete) (Now M/S Lafarge)
- (b) M/S RDC Concrete (India) Ltd
- (c) M/S Grasim Industries Ltd (UltraTech Concrete)
- (d) M/S Associated Cement Co. Ltd

3.7.4 Alternatively, contractor shall install at site one or more fully automatic computerized batching plant of capacity 12 cum/hr with tested and calibrated water meter, control panel and provision for computer generated batch report all as per IS-4925 (amended up to date).

3.7.5 In proportioning design mix concrete, the quantity of both cement and aggregate shall be determined by mass and all in accordance with clause 9.2 and sub clauses thereon of IS-456-2000 as applicable. The mix design shall be revised with change in properties of cement and aggregate. All the materials shall be tested at a frequency as laid out in relevant IS. Use of weigh batcher is compulsory for all grades of concrete. The contractor shall ensure that concrete is manufactured under computer-controlled operations, pumped and placed at site using sophisticated equipments and methods. For that the various operations of production of concrete like weigh batching of all ingredients, adjustment for moisture, water cement ratio control, admixture dose if required, auto timer for mixing, delivery slips etc shall be fully computerized. **This record of quality assurance shall be submitted to the GE and shall be kept on record.** Fully automatic batching plant at site shall conform to relevant IS and shall be of standard make as approved by Accepting Officer. The concrete produced from the batching plant shall be pumped using pumps of suitable capacity. Admixtures / plasticizers of make as given below can be added (as per mix design) to make concrete plastic for facilitating pumping.

3.7.6. Specification for all materials / ingredients, etc as given earlier shall hold good for RMC.

3.7.7 Admixture / plasticizers : Admixtures / plasticizers @ not more than 1% of weight of cement at no extra cost to the Department may be used conforming to IS 9103-1999 (Revised) and shall be from any one of the following firms:-

- (a) MC Bauchemi (India) Pvt Ltd
- (b) Fosroc Chemicals (India) Ltd
- (c) STP Speciality Chemicals Ltd
- (d) CICO Technologies Ltd
- (e) Fairmate Chemicals Pvt.Ltd.

3.7.8 Initial mix design from RMC manufacture shall be submitted by the contractor in quadruplicate with complete data adopted for mix design along with test results of all materials and concrete. The initial mix design should take into account the aspects such as loss of workability and strength during transportation, till placement of concrete.

3.7.9 RMC manufactured and supplied shall be in conformity with the initial mix design approved by the Accepting Officer. Any change shall be made only with approval of Accepting Officer after necessary revision in design mix.

3.7.10 The contractor shall ensure that all facilities are made available by the manufacturer of RMC at the plant for the departmental officials to inspect the materials incorporated, test carried out for all materials, concrete etc. Copies of all tests carried out for materials used / concrete shall also be made available to the department.

3.7.11 The concrete shall be transported in concrete transit agitators conforming to IS-5892.

3.7.12 The concrete shall be delivered and placed by pumping using BOOMER. The decision as to whether RMC can be placed by pumping or otherwise shall be decided by GE, whose decision shall be final and binding. The tenderer will have no extra claim on this account.

3.7.13 The pump and pumping arrangement shall be inspected and approved by GE, while approving the RMC manufacturer.

3.7.14 No water/admixture shall be allowed after initial mixing of concrete at the plant. The use of PPC / Fly ash / mineral based admixture in RMC shall not be permitted.

3.7.15 Slump test shall be carried out at site by the department in the presence of contractor and representative of RMC manufacturer. The concrete shall be placed in position within the designed initial setting time and at the end of initial setting time, the remaining concrete shall be rejected.

**PARTICULAR SPECIFICATIONS (Contd...)**

3.7.16 In addition to the tests carried out by RMC manufacturer at the plant site, sampling and testing of concrete shall be carried out at the site before delivery as per IS-456-2000 by the department along with the representative of the contractor and RMC manufacturer. However, the cost of testing shall be borne by the contractor. The concrete, which does not meet the requirement of acceptance criteria as per IS-456-2000 shall be rejected and the contractor shall make good the same at his risk and cost.

3.7.17 The records indicating following details duly signed by the competent representative of RMC manufacturer / contractor and Engineer-in-Charge shall be maintained.

- (a) Date of delivery
- (b) Time of mixing
- (c) Time of delivery at site.
- (d) Quantity and Grade of RMC.

3.7.18 The contractor shall enter into an agreement with the approved RMC manufacturer to ensure compliance of above aspects. The overall liability to the department, for the RMC supplied shall rest with the contractor only. The department shall not be liable for any breakdown or problems with the RMC manufacturer.

3.7.19 The department will recommend to the traffic Police to issue entry permits for the entry of vehicles in to the working area. However, absence of such permits will not be treated as reason for delay in completion of work.

3.7.20 **SAMPLING AND ACCEPTANCE CRITERIA FOR CONCRETE :** The criteria for sampling and acceptance of the concrete shall be as per Para 15.1 to 16.1 of IS-456:2000, (Code of practice for plain and reinforced concrete). The minimum frequency for the work tests shall be as specified therein and as specified here in after.

3.7.21 **PACKING AND TRANSPORTATION OF SAMPLES:** The Contractor must, at his own expenses, properly pack the samples. The Contractor shall bear the cost of transportation of the samples required to be tested from site of work to the laboratory of Chief Engineer Delhi Zone or any other laboratory.

3.7.22 **TESTS:** The following tests shall be carried out during the execution of work. Tests shall be carried out in accordance with IS-516 and IS-1199. The contractor shall provide all facilities and equipment for casting and curing of test cubes.

(A) **SLUMP TEST:** The frequency of the test shall be decided by the GE. The slump for the vibrated concrete shall be as specified in IS-456. The GE, however, reserves the right to vary the limit which will be ascertained at the time of deciding the mix design for each grade. Any batch from which a slump test is being made shall not be transferred to the places of laying until the slump in excess of the required for the particular batch is not removed from the site.

(B) **COMPRESSIVE STRENGTH TEST :** Three cubes shall be tested at 7 days and three at 28 days for crushing and the remaining three cubes shall be kept as reserved exclusively for Govt use for subsequent testing (if so desired by Govt) and preserved for one year from certified date of completion of work under the contract. The contractor cannot object testing of other cubes for the purpose as a matter of right.

(C) For the purpose of subsequent identification of the work test cubes, the concrete to which these pertains shall be cross referred and record of this maintained and signed by the Engineer-in-Charge and Contractor or his authorized representative.

3.7.23 **TRANSPORTING, PLACING, COMPACTION and CURING :**

(i) It should be as per clause 13 of IS 456:2000. Concrete shall be transported without delay and incorporated in works at the position of laying within 20 minutes from the time of discharge from the mixer.

(ii) Mixed concrete shall be deposited in final position and solidly packed around reinforcement, carefully poured and consolidated by means of portable vibrators or mechanically operated and of the kind as suitable for a particular situation as directed by the GE. Care shall be exercised that no voids or honey comb pockets are formed. The concrete shall not be laid in position for more than 1 metre in height in one concrete operation. The compaction of concrete in RCC roof and floor slabs shall be done with plate vibrators.

(iii) Exposed surfaces of concrete shall be kept continuously in a damp or wet Condition by pounding or by covering with a layer of sack, canvas, lenin and kept constantly wet for at least 14 days. The concrete shall be protected from premature drying for at least 8 days after pouring and shall be cured as directed by the Engineer-in-Charge for a period of not less than 14 days.

**PARTICULAR SPECIFICATIONS (Contd...)****3.7.24 SITE LABORATORY :-**

(A) The contractor shall establish a laboratory at site of work consisting of the equipments – Sieves, Core Cutter, Cone for slump test, Compression Testing Machine, Vicats apparatus, Weighing Machine, Spirit Level, Smoke Test Equipments, Jars for silt content of sand, Cube moulds in sufficient numbers, Efflorescence test tray, Multi meter Earth resistance test kit, Vernier calipers, Screw gauge, Oven of required capacity, Timber moisture tester, Electronic dimension / verticality tester

(B) Inspection & testing of structure shall be as per clause 17 of IS: 456:2000. The Contractor & GE shall implement quality assurance plan for its participation in the project. A quality assurance plan shall define the tests and responsibilities of all persons involved, adequate control and checking procedure and the organisation and Maintaining adequate documentation of the building process & its results. The following documents shall be maintained by the Contractor & GE at site jointly:-

- (a) Test reports and manufacturers certificate for materials, concrete mix design details.
- (b) Pour cards for site organisation & clearance for concrete placement.
- (c) Record of site inspection of workmanship, field tests.
- (d) Non-conformance reports, change orders.
- (e) Quality control charts.
- (f) Statistical analysis.

**3.8 CURING AND MINIMUM PERIOD FOR STRIKING OF FORM WORK WITH POZZOLANA CEMENT USED**

3.8.1 Where Pozzolana cement is used for RCC works in various locations, the minimum period for curing and striking off form work shall be as under in lieu of that specified in clause 4.11.6.3 of MES Schedule Part-I :-

- (a) Curing : Structural RCC work, PCC work, Plastering etc. : 14 days
- (b) Striking off Form Work Walls, columns and vertical sides of beams : 3 to 4 days
- (c) Slabs (Props left under) : 8 days
- (d) Beams soffits (Props left under) : 9 days
- (e) Removal of props to slab/beam
  - (i) Spanning upto 6 M span : 16 days
  - (ii) Spanning beyond 6 M span : 22 days

(f) For cantilever portion of slab form work with support shall be retained until the completion of the casting of the entire frame work of the building.

3.8.2 In case of bad weather, periods mentioned above may be revised at the discretion of the Engineer-in-Charge. The contractor shall be deemed to have considered the above provision before tendering and quote lump sum accordingly. No claim will be entertained if longer periods required for striking off form work and curing and all such effected matters is looked into upon the use of pozzolana cement as a result being issued to the contractor in full or in part or for bad weather.

3.8.3 Curing shall be carried out using pump of suitable capacity at no extra cost to the Govt. all as directed by Engineer-in-Charge.

3.8.4 However, for smaller quantity i.e. for concreting to lintels, chajjas, shelves, etc mechanical mixer may be used with prior approval of the GE and mixing of concrete shall be as per clause 10.3 of IS:456-2000.

**3.9 FORM WORK**

3.9.1 Formwork shall comply with the requirement specified in para 11 of IS-456:2000 & IS 14687 used, deformed and dented steel sheets shall not be permitted for use as form work.

**PARTICULAR SPECIFICATIONS (Contd...)**

3.9.2 All formwork including plates and props shall be of Steel of adequate strength. Props shall be adjustable type, to avoid slant props. However, the form work to be used for surfaces specified in these specifications to be plastered shall be such that after application of the specified thickness, fair finished surface is achieved as specified herein. Wall thickness shall not be made use of as formwork. Wall shall be built after the columns are cast. In the event of deviation, rates in MES Schedule for clean sawn formwork will be applicable. In this connection also refer to para 7.15 of SSR Part I. In case of bad weather stripping time for form work as specified may be increased as directed by Engineer-in-charge without additional payment to contractor

3.9.3 The Contractor shall excavate for the RCC footing, walls to their exact size after accounting for formwork to sides. If the excavation is more than required size extra excavation shall be made good as mentioned in clause 3.13.4 and 3.15.5 of SSR Part I. However, form work shall be provided to vertical sides of column pedestals as necessary and as directed by Garrison Engineer. Slopped portion & RCC Column footing if any, under brick work shall be filled with PCC M15 Nominal mix using 40mm aggregate to maintain continuity and level of brick work and rates quoted by the Contractor shall deemed to be included for the same.

3.10 **CASTING OF CONCRETE:** PCC cills, RCC lintels (except these with chajjas), RCC shelves and fins may be cast-in-situ or Precast at the discretion of the Contractor without any extracost to the Deptt.

3.11 **PLINTH PROTECTION** Plinth protection shall be laid to a slope of 1 in 24 in alternate bays system. Each bay shall not exceed 3m in length. 12 mm wide and 75mm deep joint shall be formed between the bays which shall be filled with mastic filling to full depth, comprising a mixture of 1 part of heated hot blown bitumen 85/25 penetration and two parts of heated Badarpur Sand (by volume).

3.12 **DAMP PROOF COURSE :** Damp proof course shall be provided on brick walls and brick pillars for their full length. Damp proof course shall also be provided under openings/door opening at depressed level including vertical faces of depressed level and including vertical faces of depressed portion of opening as per requirement of clause 5.8.1.3 of IS-2212. However damp proof course shall not be provided over dwarf walls / RCC columns.

3.13 **SPLASH STONE:** The top surface shall be prepared even and smooth using extra cement.

3.14 **RCC JALLI :**

RCC Jalli (with mix 1:2:4 using aggregates of size 6mm and below) shall be precast with wire reinforcement and jointed in cement mortar (1:4). Thickness shall be as mentioned in Schedule 'A'. Faces of RCC Jalli shall have fair and even surfaces. The type of RCC Jalli shall be as approved by GE. The edges of RCC shelves shall be rounded off to a minimum radius of 5mm.

#### **4. BRICK WORK**

##### **4.1 MATERIALS**

4.1.1 Bricks to be used in this contract & **any brickwork below ground level in the building works of Sch 'A' BOQ** shall be best available kiln burnt clay bricks of size 230 x 115 x 75 mm with frog size 100x40x10-20mm having minimum compressive strength of 75 Kgs per sqcm and shall comply with the requirements of Sub Class 'B' as specified in IS-1077. However, Fly ash Bricks can be used in the works, after written approval of GE. Fly ash Bricks shall be Fly Ash cement bricks of size 230x115x75mm with frog size 100x40x10-20mm having minimum compressive strength 75Kg/Cm<sup>2</sup>, best locally available and shall comply with the requirements as specified in IS- 12894: 2002 for all aspects except that the word 'lime' shall be replaced with the word 'cement' in the above code. Cement shall be OPC 43 Grade and shall be minimum 10% by weight.

4.1.2 Fly ash to be used in the manufacturer of fly ash cement bricks shall conform to Grade 1 or 2 of IS-3812-1981.

4.1.3 Minimum percentage of fly ash to be used in the fly ash cement bricks shall not be less than 25%. Manufacturers and test certificate and independent testing conforming chemical and physical requirement / characteristics and proportion of fly ash shall be produced by the contractor to the GE for approval. Fly ash shall be procured from coal / lignite based thermal power plants.

4.1.4 Water absorption for the fly ash cement bricks shall not be more than 20% of weight.

4.1.5 Efflorescence when tested according to IS-3495(Part III) 1976 shall have the rating of efflorescence not more than 12.5%.

4.1.6 Testing of fly ash cement bricks shall be carried out in accordance with procedures listed in IS-13757-1993. Frequency of test shall be as per IS-1077 and IS-5454.

4.1.7 Handling and storage of bricks shall be as per clause 5.6.9 of SSR Part I.

4.1.8 Sand for mortar in all the brick work shall be 50% Badarpur/Ghaggar sand or any other sand satisfying IS requirement (from near Chandigarh area) and 50% Jamuna Sand.

**PARTICULAR SPECIFICATIONS (Contd...)****4.2 WORKMANSHIP**

All brick work unless mentioned otherwise in particular specifications shall be built in CM as indicated in Schedule 'A'.

4.2.1 Brick shall be uniform in colour, texture and shall have rises so that true horizontal and vertical joints are formed in the facing. Nothing extra shall be admissible on this account.

4.2.3 Nominal width of brick shall be considered 115mm

**5. WOOD WORK (CARPENTERS WORK)**

5.1 Maximum permissible moisture content in timber used for various purposes is 14%. The contractor shall get the timber (except that required for temporary use such as formwork etc kiln seasoned to ensure that permissible moisture content is not exceeded.

5.2 SURFACE FINISH :- Exposed faces of carpenters work shall be wrought except surfaces buried or in contact with concrete/ brickwork etc which shall be left clean sawn.

5.3 TOLERANCE :- Tolerance upto 1.5mm for each wrought face for carpenter work shall be allowed except for fillets, beads and wooden shutters, which should be of specified thickness/size.

5.4 PLY WOOD :- Plywood shall comply with IS-303 and shall be BWP superior grade and shall be as indicated in item of schedule 'A'/BOQ. The bonding shall be done with phenol formaldehyde synthetic resin.

5.5 VENEERED PARTICLE BOARD :- Veneered particle board shall be of exterior grade, solid core three layered flat pressed teak wood particle board with commercial veneered facing on both sides and bonded with BWP type phenol formaldehyde synthetic resin and shall conform to IS-3097. Thickness of veneered particle board shall be as indicated in Schedule 'A'. Edges of all particleboards shall be sealed with tipping/beading as directed by the Engineer-in-Charge.

5.6 PRELAMINATED PARTICLE BOARD : Prelaminated Particle Board shall be melamine faced both sides, three layered, flat pressed, exterior grade bonded with phenol formaldehyde synthetic resin. The board shall be grade-I, Type-I, conforming to IS-12823 –1990 and shall be ISI marked. Shade shall be as approved by GE.

**5.7 JOINERY**

5.7.1 TIMBER FOR JOINERY: For seasoning of timber for Joiners work refer Clause 7.6 & 7.7 of SSR Pt I.

5.7.2 Provision of clause 7.7 of SSR Pt I regarding moisture contents shall equally apply to timber for factory made shutters.

**5.8 PANELLED GLAZED AND GAUZED SHUTTER**

5.8.1 Refer to Para 8.2.1 of MES Schedule Part I. All paneled and glazed/wire gauzed shutters shall conforming to IS : 1003 (Part-I) manufactured from well selected kiln seasoned chemically treated for anti-termite second class hard wood with frame (except Mango). The panel inserts shall be 12 mm thick exterior grade wood veneered particle board as specified in Para 8.8 of MES Schedule Part I and shutters shall be of approved make as per Appendix 'D'. Shisham wood may be used by the contractor in styles and rails of doors without any price adjustment.

5.8.2 All shutter shall be flush shutter. Cost of testing, transportation & materials used in testing for paneled shutters shall be borne by the contractor and no extra claim what so ever shall be admissible whether the results are acceptable or not. The GE shall organize testing at frequency as laid down in IS `1003 from CBRI Roorkee/National Test House/IIT Kanpur/Regional Research Lab/NABL approved Lab for each lot at random from samples of doors brought out by the contractor before making his payment or incorporating in the work.

5.9 FLUSH SHUTTERS :- Flush shutters shall have teak wood edging/lipping conforming to IS-2202 Part- I. The flush shutters shall be non-decorative commercial type, ISI marked. The makes of flush shutters shall be got approved from the Accepting Officer.

5.10 TOLERRANCE AND WIDTH OF BOARDS:- Frames (styles, rails etc) for glazed and gauzed shutters shall be out of one plank upto 230mm width, Boards exceeding 230mm width shall be out of one plank or shall be in two equal planks with a central tongued and grooved joint.

**PARTICULAR SPECIFICATIONS (Contd...)****5.11 TREATMENT WITH CHLOROPYRIPHOS/ CHLORDANE**

5.11.1. All woodwork and joinery except plywood, veneered particle boards and timber formwork shall be given treatment with Chloropyriphos / chlordane. The quantity of Chloropyriphos / Chlordane to be used and method of application shall be as given in clause here in after. The cost of Chloropyriphos /Chlordane treatment specified in the clause shall be deemed to be included in the unit rates of buildings in Schedule 'A' Section I.

5.11.2 The components of joinery and wood work as mentioned in clause above before their assembling, shall be dipped completely in solution of Chloropyriphos / Chlordane and Kerosene oil in the proportion as mentioned in the relevant IS for at least one hour.

5.11.3 After the operation as specified in clause above the components of the aforesaid joinery and wood work shall be assembled as required and planning and sand papering done if required, at any portion of the surface, a coat of the solution mentioned in above shall be properly applied with brush on the assembled surfaces of joinery and wood work.

**5.12. BUILDERS HARDWARE FITTINGS**

5.12.1 Iron mongery (Hardware fittings) shall ISI marked or shall be of approved make and as specified here in after. All fittings (Aluminum alloy anodised) shall be ISI marked and as approved by GE. All screws shall be of cadmium plated steel.

5.12.2 The dia of conduit pipe shall be 19/20 mm and wall thickness shall not be less than 1.0mm.

5.12.3 Hinges shall be as described below: -

5.12.3.1 Butt hinges shall be cold rolled pressed mild steel ISI marked (IS-1341) and shall be medium weight. Hinges for steel windows shall be box type and as specified in clause 10.25.3 of SSR Part I.

5.12.3.2 Single action spring hinges of mild steel with steel wire spring enameled black, ISI marked.

5.12.3.3 Hinges shall be fixed to wood and wood based members with CP steel screws. Hinges shall be welded to mild steel frames irrespective of what is shown on drawings.

5.12.4 Mild steel pressed handle shall be ISI marked {IS-208 (Revised)}. Mild steel handles shall be pressed oval type with 32mmx 3mm plate. The handles for steel windows shall be steel heavy duty mounted on steel plate and shall have a two point nose which shall engage with steel striking plate on the fixed frame and all as specified in clause 10.25.4 of SSR Part I.

5.12.5 Stainless steel sliding bolts (aldrop bolts).

5.12.6 Tower bolt shall be barrel tower bolt, ISI marked (IS-204). However, the diameter of the bolts shall be 10mm.

5.12.7 Double action spring hinges shall be of mild steel with steel wire spring stove enameled and shall be ISI marked (IS-453).

5.12.8 Hasps and staples shall be ISI Marked (IS-363). These shall be anodised aluminium safety type, including bolt to hinge plate and fixed with chromium plated steel screws.

5.12.9 Flush bolt shall comply with IS-5187. It shall be type 2, aluminum with cast aluminum alloy or extruded aluminium alloy body and plate & extruded aluminum alloy bolt and steel strip spring.

5.12.13 Aluminum alloy (anodised) aldrop bolts (Sliding bolts) shall be ISI marked (IS-2681).

5.12.15 Ball catch spring shall be of brass heavy duty complying with the requirement of IS-8756.

5.12.16 Hook and eye shall be of mild steel chromium plated type 2 and of size as shown in Sch 'A'.

**5.13 WIRE CLOTH :-**

The edges of wire gauze (in the case of wooden shutters) shall be bent over wooden beads and the beads pressed well into the angle of the rebate to hold the gauze on two faces. The wooden beads shall be fixed to the wooden members of the shutters with steel panel pins. In case of steel windows/CSWs, the edges of wire gauze should be bent over MS Beads and the heads pressed well into the angle of the steel section to hold the gauze on two faces and fixed to steel window with round headed steel screws all as specified.

5.14 **Door Closers**:- These shall comply with IS-3564-1975. Door closers shall have aluminum extruded body. Closers shall be universal type suitable for both anti clockwise and clockwise doors, without any change in parts of the closers.

**PARTICULAR SPECIFICATIONS (Contd...)**

5.15 **HYDRAULIC DOOR CLOSER / FLOOR SPRING** (Floor Type) :- These shall be of approved brand and manufacturer as above (Confirming to IS 6315) for aluminium door including cost of cutting floor as required, embedding in floors and cover plate etc. These shall be provided to aluminum door.

**NOTE :-**

(i). One sample piece of each fitting shall be produced for approval of GE. The bulk supply order shall be placed by the contractor only after approval is accorded by GE.

(ii). It shall be ensured that all builder's hardware are from one manufacturers only for the entire work, However, if due to any reason contractor proposes to provide part quantity from other manufacturer given in Para 2 hereinbefore, then he may be permitted but he will have to obtain specific approval of GE for this change in brand. This will be subject to that all items and fixtures in any particular blocks/building shall be always of one manufacturer only. In no circumstances items of two manufacturers shall be used in any of the particular blocks/Building.

(iii). Contractor shall obtain the approval for the name of the manufacturer of builder's hardware from the GE before placing the supply order. While asking for the approval, copy of the "Bureau of Indian Standard" letter under which manufacturer has been authorised to mark the product with ISI marking should be attached. GE before giving the approval shall ensure that the validity date of license has not expired.

6. **STEEL AND IRON WORK:** 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 -277

(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

## 6.1 **PROCUREMENT**

### 6.1.1 (a). **REINFORCEMENT STEEL**

TMT reinforcing steel bars of all sizes shall be procured directly from main producers as under :-

SI No	Company 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	-
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	-
3	Steel Authority of India Ltd. Brand : "SAIL"	Central Marketing Organisation, Northern Region, 17th Floor, scope Minar, Laxmi Nagar Distt Centre, Delhi-110092	
4	M/S Jai Balaji Industries Ltd. Brand : "JAI BALAJI"	5 Bentek street, Kolkata-950001 Delhi Office 510, Block-b, Navraung House 21 Kasturba Gandhi Marg, New Delhi-110001 011-43620219, 43620220 Mob:783827772/9958936103 E-mail-info@jiabalajigroup.com	TMT Bars of Gde Fe 500, Fe 500D

**PARTICULAR SPECIFICATIONS (Contd...)**

5	M/S Shyam Steel Industries Ltd. Brand : " SHYAM TMT"	Shyam Towers EN-32, Sector-V, Salt Lake, Kolkata-950091 Tel : 033-40074007, Fax-033-40074010, E-mail-marketing@shyamsteel.com	TMT Bars of Gde Fe 500/Fe 500D Fe 550 CRS
6	M/S SPS Steel Rolling Mills Ltd. Brand : " ELEGANT TMT"	68A, Ballygunge Circular Road, Kolkata-950019 Ph-033-2895160/67, Fax-033-22894386 E-mail-spsdelhi@spsgroup.co.in	TMT Bars of Gde Fe 500, Fe 500D & Fe 550
7	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
8	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
9	M/S SRMB Srijan Ltd. Brand : "SRMB"	Srmb House, ;7, khetra das lane, Kolkata-950012 Tel : 033-66006600, Fax : 033-2211 0483	TMT Bars of Gde Fe 500/Fe 500D Fe 550/Fe 550D (size 8-32mm)
10	M/S Concast Steel & Power Ltd, Kolkata Brand : "CONCAST MAXX"	21, Hemant Basu Sarani Suit Nos-511 & 512, 5th Floor, Kolkata-950001 Phone : 91-33-2213 0481-87-88 Email. info@concastgroup.com	TMT Bars of Gde Fe 500 (size 8-32mm)
11	M/S Adhunik metaliks Ltd. Brand : "ADHUNIK MET"	Lansdowne Towers, 2/1A Sarat Bose Road, Kolkata-950020 Tel 033 30517100 Fax: 9133 2289 0285 Email. info@adhunikgroup.com	TMT Bars of Gde Fe 500 Fe 500D (size 8-32mm)
12	M/S Shri Bajrang Power & Ispat Ltd, Brand : "GOEL TMT"	Vill : Borjhara, Urla Industrial Area, Raipur-493221, Chhatisgarh Tele : 0771 4288019/29/39	TMT Bars of Gde Fe 500 Fe 500D (size 8-32mm)
13	M/S JSW Steel Ltd, Karnataka Brand : "JSW TMT PLUS"	Jindal Mansion, 5A Dr G Deshmukh Marg Mumbai-400026 Tel: 022-2351-3000 022-2352-6400	TMT Bars of Gde Fe 500 Fe 500D CRS (size 8-40mm)
14	M/S Electrosteel Steels Ltd Brand : "ELECTRO STEEL"	GK Tower, 2nd & 3rd Floor, 19 Camac Street, Kolkata, WB-950017 Board No : 91-33-2283-9990 91-33-7103-4400 91-33-2290-2882	TMT Bars of Gde Fe 500D (size 8-36mm)
15	M/S Shyam Metalics & Energy Ltd. Brand : "SEL"	Viswakarma, 1st Floor, 86 C, Topsia Road, Kolkata-950046 Ph: 33 2285 2212 Website www.shyamgroup.com	TMT Bars of Gde Fe 500, Fe 500D (size 8-32mm)



**PARTICULAR SPECIFICATIONS (Contd...)**

16	M/S Kamachi Sponge & Power Corporation Ltd. Brand : "KAMACHI"	ABC Trade Centre 3rd Floor (inside Devi Theatre Complex) Old No. 50, New No. 39, Anna Salai, Chennai – 600002, Indain Tel 044-42961100 Fax 044-42961122 E-mail : <a href="mailto:sales@kamachitmt.com">sales@kamachitmt.com</a> Website : <a href="http://www.kamachitmt.com">www.kamachitmt.com</a>	TMT Bars of Gde Fe 500, Fe 500D Fe 550, Fe 500D HCRM (size 8-40mm)
17	M/S Gallantt Metal Ltd, Gujarat Brand : "GALLANTT TMX"	Ward 10BC, Plot No. 123, Ground Floor, Gandhi Dham, Kutch, Gujrat-395201 Ph-+91-2836-228164 Website :- <a href="http://www.gallant.com">www.gallant.com</a>	TMT Bars of Gde Fe 500, Fe 500D CRS (size 8mm-32mm)
18	M/S BDG Metal & Power Ltd, Kolkata Brand : "BDG6"	HMP House, 4 Fairlie Place, 5 <sup>th</sup> Floor, Kolkata-950001 Ph-+91-33-4005-9005	TMT Bars of Gde Fe 500, Fe 500D & Fe550D (size 8mm-32mm)

(b) **STRUCTURAL STEEL** : Structural steel sections of all sizes shall be procured directly from main/primary producer SAIL, TISCO or Rashtriya Ispat Nigam Limited (RINL) only. In case of non-availability of Structural steel sections of any size with any of the main producers i.e SAIL, TISCO or Rashtriya Ispat Nigam Limited (RINL) (non-availability signed by auth reps of each main producer i.e SAIL, TISCO and RINL) the same can be procured from approved secondary producers (who manufacture structural steel out of ISI marked billets and are having BIS Certification/ ISI Marking on their products) with minus price adjustment of 5% (five percent) of quoted rate by the contractor of structural steel. In case the desired section of structural steel is not rolled/ manufactured by primary producer there shall be no price adjustment in use of structural steel procured from approved secondary producer.

(c) **GALVANISED STEEL SHEETS & FABRIC REINFORCEMENT OF CONCRETE** : These shall be procured directly from main producers and shall be ISI marked. Testing provisions are given here in after in these particular specifications.

6.1.2 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.

6.1.3 Structural steel, Galvanized steel sheets and Fabric reinforcement for concrete may be procured from authorized dealers of main producers in case total requirement of structural steel/ Galvanized steel sheets / Fabric reinforcement for concrete is less than 05 Tones.

6.1.4 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.

6.1.5 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.

6.1.6 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.

6.1.7 Tolerance in size and weight of reinforcement bars shall be as specified in para 10.17.4 and 10.17.5 of MES Sch. Part I.

## **6.2 TESTING OF STEEL**

**PARTICULAR SPECIFICATIONS (Contd...)**

6.2.1 The contractor shall submit the manufacturers test certificate in original along with the test sheet giving the results of each mechanical test as applicable and the chemical composition of the steel or authenticated copy thereof, duly signed by the manufacturer with each consignment. The Engineer-in-Charge shall record these details in steel Acceptance register, as given at Appendix 'B' after due verification and send a certified true copy of test sheet to GE for his records. The EIC shall also organise independent test of random samples of steel drawn from various lots from National Test House, SEMT wing CME, Regional Research Labs, NABL approved labs etc as per the recommended minimum frequency shown in Table at Appendix below. Sample from each lot should be tested for quality and elongation. The elongation shall not be less than 18%. Cost of samples, transportation and testing shall be borne by the contractor. The records of such checks shall be maintained in steel test register.

**Note :** For various tests, acceptance criteria, tolerance etc refer to Appendix below and relevant BIS code.

Sl No	Nominal size of steel for concrete Reinforcement	Quantity
1.	Bars of size less than 10mm	1 sample ( 3 specimen ) 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
<b>STRUCTURAL STEEL</b>		
4.	Tensile Test	1 Test for every 25 tonne of steel or part thereof
5.	Bend Test	1 Test for every 25 tonne of steel or part thereof

6.2.2 Independent testing of reinforcement steel by GE is optional at the discretion of GE in case of procurement of steel from main producers and in case of testing, testing charges shall be borne in accordance with condition 10 A of IAFW-2249. i.e. testing charges shall be borne by the Deptt if test results are found in order otherwise these shall be borne by the contractor.

6.2.3 Independent testing of reinforcement steel by the GE is mandatory in case of procurement of steel from conversion Agents, authorized dealers and testing charges shall be borne by contractor irrespective of outcome of test results.

6.2.4 Independent testing of structural steel by GE is optional at the discretion of GE in case of procurement of steel from main producers and in case of testing, testing charges shall be borne in accordance with condition 10 A of IAFW-2249. i.e. testing charges shall be borne by the Deptt if test results are found in order otherwise these shall be borne by the contractor.

6.2.5 Independent testing of Structural steel by the GE is mandatory in case of procurement of steel from secondary producers and testing charges shall be borne by contractor irrespective of outcome of test results.

6.2.6 In all cases, the contractor at his own cost shall provide all facilities required for testing and cost of material consumed in tests and transportation charges shall be borne by contractor.

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

6.3.1 The Steel 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.

**6.4. LIST OF APPROVED SECONDARY PRODUCERS OF STRUCTURAL STEEL**

S.No	Name of Secondary Producers
1.	M/S Shri Badrinarain Alloy and Steel Ltd., 95 Stephan House 4 BBD Bag, Kolkata
2.	M/S KL Steel Pvt Ltd, Post Box No 61, Lal Kuan, Bulandshahr Road Gaziabad UP
3.	M/S Pushpak Steel Industries Pvt Ltd, Gate No 119, Alandi Market Road , Dhanore, Tahkhed Pune
4.	M/S Shree Parashnath Re-rolling mills Ltd, 4C, Maharshi Devendra Road, 3 <sup>rd</sup> Floor, Kolkata-950007
5.	M/S KL Concast Pvt Ltd, Z-18, Naraina, New Delhi
6.	M/S SRMB Udhog Ltd 46 BB Galguly street Kolkata
7.	M/s Karam Steel Corporation, Nasrali Road, PO Box No 56 Mandi Gobindgarh- 149501 (PB)

**PARTICULAR SPECIFICATIONS (Contd...)**

6.5 **STEEL IN COILS ETC** :- Any bar of any dia for reinforcement may be procured in round bundles or coils and the cost of straightening the same shall be borne by the contractor. When bars are procured in bundles, the length of each bundle shall be worked out on the basis of unit weight predetermined by the EIC by getting suitable length (not less than 3 meters) out of each consignment received, getting it straightened, length measured and weighed in presence of contractor's 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.

6.6 **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. All section of steel that has deteriorated and corroded or if considered defective by Engineer-in-Charge shall not be used in the work and shall be removed immediately 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.

6.7 **SCHEDULING AND SUPPLY** : Schedule of supply of steel shall be finalised 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.**

6.8. Assembly of reinforcement shall be as per clause 12 of IS 456-2000.

6.9. **Normal cover to reinforcement** : Nominal cover shall be as under :-

Exposure	Nominal cover in mm and 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 456:2000.

6.10. **WELDING** :- Welding where specified or shown on drawings shall be gas or arc electric welding at the contractor's option and as per IS: 816 and IS: 1323 as applicable.

6.11 **EXPANDED METAL** : - Where indicated XPM shall be conforming to IS: 412.

6.12 **STEEL WINDOWS/VENTS** :

6.12.1 Steel window/vents shall conform to IS-1038 and shall be procured from any of the approved firms/manufacturers specified in Appendix 'D'. Process of flush butt-welding may be adopted for fabrications. However the contractor is permitted to use electric arc welding in lieu of flash butt welding without any price adjustment. Fixing of steel windows/vents shall be done in accordance with IS-1081. However instead of mastic filling specified in IS, cement and Yamuna sand mortar (1:1) mixed with 5% crude oil by weight of cement can be used. Lugs to steel windows/vents shall be provided as specified in IS. However no lug will be provided in lintels and cills. Sub dividing bars of units shall be tenanted & riveted to the frame. Before fixing both the steel window (fly proof and glazed shutter) shall be jointed with spacer bars of 10mm dia MS bar.

6.12.2 Side hung shutters shall be provided with projecting type/non projecting type steel hinges as shown on drgs. Handles for stay arms and casement stays shall be mild steel stove enameled black japanned. For fly proof shutter the hinges shall also be projected/non projected type steel hinges but the handles shall be of one point type. Hardware fittings/iron mongery for steel windows/vents shall be provided as specified in relevant IS.

**PARTICULAR SPECIFICATIONS (Contd...)**

6.12.3 Sample for each type of window/vents with complete fittings shall be produced for approvals of the GE. Manufacturer's certificate to the effect that their product conforms to IS specifications, shall be produced by the contractor at the time of submitting samples for approval before procurement of bulk quantity of the materials for incorporation in the works. Samples shall be retained in the sample room of the GE till completion of the work.

6.12.4 Steel windows/vents shall be obtained for any one of the makes as specified in Appendix 'D'.

6.12.5 Steel windows/vents shall be obtained from the firm of which the samples have been approved by the GE.

**6.13 Steel Angle Iron Chowkhats & Pressed Steel Chowkhats For Doors & Cupboards**

6.13.1 Pressed steel frame Chowkhats where specified to be provided shall be made out of mild steel sheet (PBI) of 1.25 mm thick and shall comply with requirements of IS-4351 of 1976 (specification for steel doors frames). The threshold to the feet of frames shall be provided & including providing shock absorbers all as specified in clause 10.27 on page 16-17 of SSR part-I (1991). To avoid bulging of frame during back fill, 2 Nos flat iron 25x3mm horizontal member and 3 Nos each in vertical member to be provided in each frame & shall be 200 mm long. Frames shall be of cold formed section manufactured by standard rolling mills as specified in clause 6.16.3 hereinafter. Pressed steel framed Chowkhats shall be factory made from any of the firms as specified in Appendix 'D'.

6.13.2 Angle iron frame where specified to be provided shall be of mild steel angle iron frame of sizes as directed. Hold fasts shall be welded with the angle frame as indicated. Vertical members of chowkhats shall be connected at bottom by means of 10mm dia MS round bars welded to both the verticals. The round bar shall be embedded in floors.

6.13.3 Frames of pressed steel chowkhats shall be of cold framed section manufactured by standard rolling mills i.e. from any of the following firms :-

SAIL or their authorized agents.

6.13.4 Pressed steel framed chowkhats shall be factory made from any of the make as specified in Appendix 'D' here-in-after.

6.14 **Rolling Shutters** : Rolling shutters shall conform to IS: 6248 -1979. These shall include necessary locking arrangement and handles etc. These shall be suitable for fixing in the position as specified i.e. outside or inside on or below lintel or between jambs of the opening. The door shall be either push and pull type or operated with mechanical device supplied by the firm.

6.15 **Shutter** : The shutter shall be built up of interlocking lath section formed from cold rolled steel strips. The thickness of the sheets from which the lath sections have been rolled shall be not less than 0.90mm for the shutters upto 3.5m width and not less than 1.20 mm for shutters above 3.5 m width. Shutters above 9 meters in width should be divided in 2 parts with provision of one middle fixed or movable guide channel or supported from the back side to resist wind pressure. The lath section shall be rolled so as to have interlocking curls at both edges and a deep corrugation at the centre with a bridge depth of not less than 12mm to provide sufficient curtain of stiffness for resisting manual pressures and normal wind pressure. Each lath section shall be continuous single piece without any welded joint. When interlocked, the lath sections shall have a distance of 75mm rolling centers. Each alternate lath section shall be fitted with malleable cast iron or mild steel clips securely riveted at either ends, thus locking the lath section at both ends and preventing lateral movement of the individual lath sections. The clips shall be so designed as to fit the contour of the lath sections.

6.16 **Spring**: The spring shall be of coiled type. The spring shall be manufactured from high tensile spring steel wire or strips of adequate strength conforming to IS: 4454-Part I 1981.

6.17 **Roller & Brackets** : The suspension shaft of the roller shall be made of steel pipe conforming to heavy duty as per IS:1161-1979. For shutter up to 6 metre width and height not exceeding 5 metre, steel pipes of 50 mm nominal bore shall be used. The shaft shall be supported on mild steel brackets of size 375 x 375x3.15mm for shutters up to a clear height of 3.5 metre. The size of mild steel brackets shall be 500 x 500 x 10 mm for shutters of clear height above 3.5 m and up to 6.5m. The suspension shaft clamped to the brackets shall be fitted with rotatable cast iron pulleys to which the shutter is attached. The pulleys and pipe shaft shall be connected by means of pretension helical springs to counter balance the weight of the shutter and to keep the shutter in equilibrium in any partly open position.

6.18.1 When the width of the opening is greater than 3.5 meter, the cast iron pulleys shall be interconnected with a cage formed out of mild steel flats of at least 32 x 6mm and mild steel dummy rings made of similar flats to distribute the torque uniformly. Self aligning two row ball bearings with special cast iron castings shall be provided at the extreme pulley and caging rings shall have a minimum spacing of 15mm and at least 4 number flats running throughout length of roller shall be provided.

6.19.2 In case of shutters of large opening with mechanical device for opening the shutter, the roller shall be fitted with a purion wheel at one end which in contact with a worm fitted to the bracket plate, caging and pulley with two ball bearing shall be provided.

**PARTICULAR SPECIFICATIONS (Contd...)**

6.20.3 Guide Channel: The width of guide channel shall be 25mm the minimum depth of guide channels shall be as follows:

**Clear width of Shutters**

Upto 3.5 m  
3.5 m upto 8 m  
8 m and above

**Depth of guide Channel**

65 mm  
75 mm  
100 mm

6.21.4 The gap between the two legs of the guide channels shall be sufficient to allow the free movements of the shutter and at the same time close enough to prevent rattling of the shutter due to wind.

6.22.5 Each guide channel shall be provided with a minimum of three fixing cleats or supports for attachment to the walls or column by means of bolts or screws. The spacing of cleats shall not exceed 0.75m. Alternatively, the guide channels may also be provided with suitable dowels, hooks or pins for embedding in the walls.

6.23.6 The guide channels shall be attached to the jambs, plumb and true either in the over fashion or embedded in grooves, depending on the method of fixing.

6.24.7 **Cover** : Top cover shall be mild steel sheets not less than 0.90 mm thick and stiffened with angle or flat stiffeners at top and bottom edges to retain shape.

6.25.8 Lock plates with sliding bolts, handles and anchoring rods shall be as per IS 6248-1979.

**Fixing :**

a) The arrangement for fixing in different situations in the opening shall be as per IS -6248-1979.

b) Brackets shall be fixed on the lintel or under the lintel as specified with rawl, plugs, and screws bolts etc. The shaft along with the spring shall then be fixed on the brackets.

c) The lath portion (Shutter) shall be laid on ground and the side guide channels shall be bound with ropes etc. The shutter shall then be placed in position and top fixed with pipe shaft with bolts and nuts. The side guide channels and covers frames shall then be fixed to the walls through the plate welded to guides. These plates and bracket shall be fixed by means of steel screws bolts, and rawl plugs concealed in plaster to make their location invisible. Fixing shall be done accurately in a workman like manner that the operation of the shutter is easy and smooth.

(d) Make of Rolling Shutter shall be as under:-

- (i) M/S Rama Rolling Shutter, MM Road, Paharganj New Delhi
- (ii) M/S Prakash & Co. 48, MM Road, Paharganj, New Delhi
- (iii) M/S Ishwar Industries, Bombay Bazar, Meerut (U.P)

7.0 **PVC SHUTTER** :- These shall be factory made solid panel PVC door shutter consisting of frame, If not mentioned in BOQ/sch of works the frame shall be made out of MS tubes of 19mm x 19mm for stiles, and 15mm x 15mm for top and bottom rails and shall be covered with 5mm thick heat moulded plain PVC sheet 'C' channel having a 5mm thick PVC sheets for top rail, lock rail and bottom rail on either side, and 10mm (5mm x 2) thick, 20mm wide cross PVC sheet as gap insert for top rail and bottom rail and single side prelaminate PVC sheet and stile and rail having one side feathered edge and on other side 10mm 90 degree bent edge. PVC door shutter shall be all as shown on sketch on SI Page No 156 (for item No 08080) of SSR Part II and all as specified on Serial page No.142 to 146 of SSR Part II.

7.1 **ALUMINIUM JOINERY DOOR/WINDOWS/VENTS:** All aluminium sections and fittings shall be anodised aluminium with minimum anodizing thickness of 15 micron. Aluminium sections shall conform to IS: 957 and IS: 1285. Aluminium sections shall be smooth, rust free, straight, mitred and jointed mechanically wherever required including cleat angle, Aluminium snap beading for glazing/paneling, 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.

7.1.1 The size of various components such as frame, styles and rails, beading and other components, the thickness of aluminium sheet out of which these are fabricated shall be all as directed by the EIC.

7.1.2 The aluminium fittings shall be fitted/fixed all as per manufacturer's instructions and as directed by EIC.

**PARTICULAR SPECIFICATIONS (Contd...)**

7.1.3 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.

7.1.4 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.

7.1.5 **Grill for Aluminium Windows/Vents.** Aluminium gills shall be of the designed DG-205 of HINDALCO. The aluminium grills shall be anodized with minimum thickness of 15 micron.

7.1.6 **DOOR CLOSER (HYDRAULICALLY REGULATED):** Door closer shall be of EVERITE make, suitable for doors weighing 45 to 90 Kg. Door closer shall be of aluminium extruded section, universal type suitable for both anticlockwise and clockwise doors, without any change in parts of closers all as specified in clause 9.16 of MES Schedule Part I.

8.1 BLANK

8.2 **WATER PROOFING TREATMENT TO ALL RCC ROOF SLABS:-** Water proofing treatment to RCC roof slabs including terrace as per IS: 7290-1979 Clause 6 & 7 shall be provided with following modifications, if not specified in BOQ/Schedule of Works :-

- (a) Prepare surface even, smooth and clean for laying APP modified water proofing membrane 3.5 mm thick (weighing not less than 3.00 Kg/Sqm).
- (b) Provide 10 mm thick screed bed in cement mortar 1:4 mixed with water proofing compound as per manufacturer's instructions while the concrete is green.
- (c) The surface shall be painted with one coat of bitumen primer conforming to IS : 3384 - 1965 @ 0.3 Kg/Sqm.
- (d) Apply a layer of APP based polymeric membrane 3 mm thick (minimum) and weighing not less than 3.00 Kg/Sqm reinforced with polyester non woven mat 160 GSM thick. The membrane will be laid by torch application side over lap of 75 mm and end lap of 100 mm shall be provided. The joints /overlap shall be sealed with torch application. For parapet, the membrane shall be taken up to 30 cm and then inserted inside the parapet in a groove.
- (e) Apply semi-hot straight run bitumen grade 30/40 (Grade S-35) conforming to IS 95-1961 @ 0.95 Kg/SM over the APP membrane.
- (f) 20-22 mm thick PCC tiles laid over 20 mm thick cement screed in cement mortar (1:4) by mixing water proofing compound as per manufacturers instructions.

**NOTES :**

- (i). Roof projection beyond the wall, junctions of roof with parapet and opening to rain water pipes shall be treated as per Clause 7.26 of IS : 7290-1979.
- (ii). Wherever APP membrane is to be tucked into a chase cut in vertical wall (as shown in fig.5 and fig 6 of IS: 7290 – 1979), The bottom of such chase shall be 150 mm above the top level of roof slab.
- (iii) Before taking up roof treatment, RCC roof slab shall be tested by ponding with 25mm height of water for 72 hours. Testing by ponding shall be done after completion of curing of slab and removal of formwork.
- (iv) Roof surface over masonry shall not be provided brick tiles over mud plaster.
- (v) The contractor shall give a written guarantee for a period of 10 years from the certified date of completion of work for the effectiveness of waterproofing treatment. GE shall retain an amount of 5% of cost of water proofing treatment or Rs 10,000/- whichever is more for a period of 10 years till expiry of guarantee period.
- (vi) Should GE at any time during construction or prior to the expiry of the guarantee period, find that there is leakage /seepage in the buildings, the contractor shall on demand in writing from the GE specifying the building complained of notwithstanding that the same may have been inadvertently passed, certified and paid for, undertake to carry out such treatment as may be necessary forthwith to render the building(s) free from all leakage/seepage at his own expense, till expiry of the guarantee period. In the event of his failure to do so, within the specified period to be specified by the GE in his aforesaid demand, the GE may undertake such treatment at the risk and expense in all respects of the contractor. The liability of the contractor under this condition shall not extend beyond the period of ten years from the certified date of completion, unless the GE had previously given notice to the contractor to rectify the defects.

**PARTICULAR SPECIFICATIONS (Contd...)**

8.2.1 The work shall be carried out by any of the listed manufacturer (i.e. approved list of makes) and through their authorised applicators only. The responsibility for carrying out work in respect of waterproofing treatment shall rest with the main manufacturer and in case of any adverse effect of treatment (i.e. leakage, seepage) on account of default of their respective applicator, stern action shall be taken against the main firm for removal from the approved list of makes. No claim whatsoever shall be entertained on this account."

8.2.2 The overall responsibility for rendering the work of waterproofing treatment within the guarantee period of ten years shall remain with the main contractor only. No claim whatsoever shall be entertained on this account."

**8.3 WATER PROOFING TREATMENT RCC OH WATER TANKS:**

**Special Water proofing treatment shall be provided to the entire RCC work for base, walls, slab and roof slab as under :-**

**8.3.1 Application for two coats of 'TAPECRETE' Slurry Coating – polymer modified cementations composite or two coats of Pidierete or two coats of Roff Supererete or three coat of "VEMIPROOF101" cement based (plastic water proofing compound) over internal faces of the base slab, wall and top face of top slab surfaces.**

**8.3.2 Placing and fixing 18mm dia threaded nozzles of suitable length in an approximate grid pattern of 1.0 metre c/c on the entire base slab and wall prior to or during concreting. Similar threaded nozzles shall also be provided at regular intervals not exceeding 1 metre apart along the construction joints and at critical points as may be necessary. Adequate precaution shall be taken to keep the nozzles plugged at both to prevent them from getting clogged by concrete.**

8.3.3 Casting of all RCC work admixed with :CICO SUPAPLAST – Super plasticiser-cum-integral cement water proofer at the rate of 0.3 Ltr. Per bag of 50 kg cement or Pidiproof manufactured by M/S Pidilite or Roof Hyproof manufactured by Roff. The admixture shall carry the ISI marking positively.

8.3.4 Injection of 'CICO NON-SHRINK POLYMERIC WATER PROOF GROUTING COMPOUND' or equivalent manufactured by Pidilite or Roff Industries admixed with cement milk through the nozzles under pressure by pump.

8.3.5 Sealing off the nozzles after the injection Operation is over with suitable to the base slab, wall etc, 'CICO/Pidilite/Roff admixture.

8.3.6 At all construction joints PVC water stops 200mm of FIXOPAN shall be provided and placed as per manufacturers instructions to ensure no water leakages.

Note :

(i) The contractor shall submit original purchase vouchers of water proofing materials to the GE for verification before releasing of the payment.

(ii) The contractor shall give written guarantee for a period of ten years for the effectiveness of water proofing treatment. The GE shall retain an amount of 2% of cost of water proofing treatment for a period of ten years till expiry of guarantee period. The contractor may give Bank Guarantee Bond for release of this money.

**9. RAIN WATER PIPES**

9.1 Rain water pipes shall be UPVC (SWR) pipes conforming to IS –13592-1992 of pressure rating 4 kg/Sqcm and as specified in clause 18.27A, 18.27 A I to 4 of MES Schedule Part I. Wherever "PVC" is specified in these clauses shall be read as "UPVC (Un-plasticized polyvinyl chloride). The colour of pipes shall be as decided by GE. The pipes shall be jointed with rubber rings and fixed to wall as indicated. All rain water pipes shall have mild steel grating flat or dome type weighing not less than ½ Kg each.

9.2 Where the pipes have been encased in masonry/brick work/concrete works, bracket/bricks bats/clamps etc. need not be provided for fixing the pipes. Bends will be acceptable In lieu of shoe or nose, with out any price adjustment. Irrespective of what is shown on drg. The gap between shoe/bend & plinth protection/splash stone shall be packed with PCC (1:2:4) type B-1. Sealing compound "M" seal or equivalent shall be provided around rain water pipes passing through RCC chajjas/roof projections as directed by EIC. Rates for quoted by the contractor for PVC (SWR) pipes shall deemed to be included this factor in to account and nothing extra shall be admissible.

**PARTICULAR SPECIFICATIONS (Contd...)****10.1 FALSE CEILING**

10.2 False ceiling shall be carried out as mentioned in respective item of Sch of Wks and as specified in SSR Part-I 2009

10.3 **GI Frame for False Ceiling.** Unless otherwise mentioned in 'Schedule of Works', the GI Frame work for seamless ceiling shall comprise of GI Perimeter channel 0.55 mm thick with two unequal flanges of 20mm & 30mm & web of 27mm fixed to surrounding wall using mylon sleeves & screws at 450mm c/c intermediate channel 0.9mm thick having two equal flanges of 15mm each & web of 45mm suspended using 6mm dia GI hanges (upto 1200mm length) from soffit at appx 900mm c/c with GI cleat made out of GI flat 40 x 3mm size 60mm long and steel expansion hold fastners 12.50mm dia, 40mm long with & incl ceiling section (nexc 1.2mm long) of 0.55mm thickness having kurl web of 50mm and flange of 26mm each with lips of 10.5mm fixed to intermediate channel with connecting lips across the intermediate channel at 457mm c/c complete all as directed.

**11. FLOORING GENERAL**

11.1 Floor finish shall be carried over all openings and dwarf walls.

11.2 Surface of concrete floors specified finished even & smooth using extra cement shall be using with steel trowels.

11.3 Concrete sub base shall be laid in bays not exceeding 20 square metres.

11.4 Cement concrete sub base or sub base floor and wearing coat shall be laid separately and not monolithically.

11.5 PCC floor topping shall be laid in square or rectangular panels with each side not exceeding 1.2 metres.

11.6 If any extra thickness of concrete is required to provide to maintain slope in the floor as directed by the Engineer-in-Charge, the same shall be provided by the contractor at no extra cost to the department.

11.7 Surface of concrete floors, PCC skirting/ dado shall be treated with sodium silicate all as specified in para 13.35 SSR Part-I without extra cost to the department.

**11.8 NON SKID CERAMIC TILES FLOORING**

Non skid ceramic tiles shall be ceramic rectified tiles Ist Quality of shade as approved by GE, hydraulically pressed, high temperature (around 1200 degree °C) in single operation having breaking strength 350 to 400 kg per sq.m and weighing not less than 14 kg per Sqm and shall be laid and jointed/with white cement paste with pigment to match.

**11.9 GLAZED CERAMIC TILE SKIRTING/DADO:-**

The workmanship and laying of tiles shall be all as specified in clause 13.40 of MES Sch Part-I.

Glazed tiles shall be free from crack twist, uneven edge, crazing and such other defects. The tiles shall, be grooved and/or recessed to provide an adequate key for the screed. The tiles shall be firm set in the mortar bedding. The joints shall be tight regular uniform. After fixing, tiles shall be thoroughly washed and cleaned to the satisfaction of the GE.

**11.10 TERRAZZO TILES.**

The specifications of terrazzo/chequered tiles shall be as per SSR Part I. Laying grinding and polishing shall be done as described in Para 13.39 of SSR Part I. Grinding shall be done by machine and wax polishing shall be done with mansion polish. Size of marble aggregate used in tiles shall be 7 to 10mm of grade No. 1.

11.11 **KOTA STONE SLAB FLOORING/SKIRTING/DADO:** Kota stone slab flooring shall be provided as described under item of Schedule 'A'/BOQ. Stone shall be hard, durable, regular in shape, of uniform colour and free from cracks, decay and weathering as approved by the GE. The size of slabs and thickness shall be as indicated and shall be set, jointed and pointed in neat cement slurry mixed with pigment to match with the colour of stone. The slabs used in one location shall be of uniform size. Kota stone slabs shall be machine cut and shall have polished top surface with glossy finish and true fine cut dressing on all sides up to full depth. All angles and edges shall be true, square and free from chipping and surface shall be true and plain. Kota stone flooring shall be cut to achieve mirror finish. The pattern of flooring shall be as directed by GE. The joints of the stone slab shall not be more than 1mm.



**PARTICULAR SPECIFICATIONS (Contd...)**

11.12 **GRANITE STONE SLAB**:-The granite stone slab shall be provided with 18 to 20 mm thick machine cut granite stone slab, if otherwise not mentioned in Schedule 'A'. The stone slab shall be provided in one piece or to the requirement as directed by GE. The edges of stone should be bull nosed/plain as directed.

11.13 **VITRIFIED TILES**. These shall be of double charged/utra charged dark shade vitrified ceramic tiles (Acid & Alkali Resistant) of size as indicated of approved shade. Grouting material manufactured by Roffe Construction Chemical or Ball Adhesive or Dr. Back shall be filled up to depth of the tiles. All the work shall be neatly finished & completed as per the manufacturer specifications & as directed by the GE.

11.14 **INTERLOCKING TILES/PAVERS**. Interlocking tiles/pavers shall be solid rock pavers of 'OASIS' pattern of if otherwise not mentioned in Schedule 'A'. The pavers shall be laid and jointed as directed. The void space in between pavers shall be filled with Cement mortar (1:3). The pavers shall be cemented in cement mortar (1:3) along the periphery to avoid shifting at the edges.

11.15 **MARBLE STONE SLAB IN FLOORS/ DADO/SKIRTING**. Marble stone slab flooring shall be set, jointed and pointed as specified in SSR Part I. Polishing shall be Glossy finish and as directed by Engineer-in-Charge. The thickness of joints shall not exceed 1mm. Marble skirting shall be wax polished. Marble tiles laid in each room shall be uniform.

11.16 **CEMENT CONCRETE CHEQUERED TILES :-**

11.16.1 These shall be of type as specified & shall conform to IS-13801-1953.

11.16.2 Material and workman ship of cement concrete tiles shall be as specified in clause No 13.17, 13.17.1, 13.17.1, 13.39, 13.39.1 TO 13.39.5 of SSR Part – I unless otherwise specified.

12. **PLASTERING AND POINTING**

12.1 **GENERAL**

12.1.1 External finish shall be taken 15cm below the ground level except where plinth protection/ ramp and the like is provided, in which case, it shall be taken up to the bottom of the plinth protection/ramp etc.

12.1.2 Plaster/pointing, skirting/dado shall be returned to in jambs reveals and soffits of lintels/windows etc.

12.1.3 All plastered/rendered surfaces shall be trowled to even and smooth surface with steel trowel (without using extra cement).

12.1.4 Only Badarpur sand is used for plastering

12.1.5 12mm deep 10mm wide groove shall be formed on the internal and external surface shall be provided with chicken wire mesh 150 mm wide at places like junction of RCC Columns, beams, lintel, etc and brick work.

12.2 **PLASTERING**

12.2.1. Cement plaster on internal/external surfaces shall be done in cement and sand mortar as specified in Schedule 'A' in one coat and shall be of fair finished surface unless specified otherwise elsewhere in particular specifications. Irrespective of unless specified otherwise elsewhere plaster shall be provided with WPC below GL 15 cm depth on external surface of the brick wall and below DPC level 15 cm depth on internal wall surface.

13. **WHITE WASHING/COLOUR WASHING**

13.1 White wash/colour wash shall be provided where shown on drawings. A lime wash/colour wash shall be done in no of coats as mentioned in Schedule 'A'/BOQ. The colour of colour washes (off white shade No 3.033 or No 4.05 as per IS-1650). Lime/Colour was shall be carried out all as specified in 15.2 & 15.11 & 15.12 of SSR Part I). Pigment for colour wash shall be pidilite colour strainer as approved by GE. To achieve better finish of white wash Zinc oxide shall be mixed with lime wash at the rate of 2 percent of slaked lime. In final coat of white wash fevicol DDL shall be mixed as per manufacturers instructions. No ultramarine blue shall be mixed in any coat. However, sodium chloride, as specified in clause 15.12.3 on page 15-2 of SSR part I shall be mixed in first and second coats. White/colour wash shall be applied with the brush in place of Moonj brush as per clause 15.12 of SSR Part-I. The finish shall be true and mixture without patches and brush marks.

**PARTICULAR SPECIFICATIONS (Contd...)**

14. **ALUMINIUM PAINT:** Aluminium paint shall be of first and best quality and shall be applied as directed.
15. **DRY DISTEMPER:** Dry distemper shall be provided of approved make : Good Less Nerolac/Shalimar/Jenson & Nicholson/Asian/Berger and shall be applied as specified in SSR Part I DDL. Fevicol/Synthetic resin in the preparation as recommended by manufacturer shall also be added in distemper solution.
16. **GLAZING**
- 16.1 The glazing shall be done with selected quality float glass conforming to IS-2835, unless otherwise specified in particular specifications here-in-after. All glass shall be of good quality, free from specks, bubbles, smoke wanes, air holes and other defects.
- 16.2 Glass shall be fixed to steel windows/vents with oil putty all as specified in clause 16.10 of SSR (PART-1).
- 16.3 The glass shall be fixed to wooden shutters with wooden beads as shown on drawings and as specified in clause 16.9 of MES Schedule (Part-I). Wooden beads shall be of teak of size shown on drawings.
- 16.4 The contractor shall produce vouchers/certificates from suppliers/manufacturers to the GE as a proof that the putty conforms to IS-419.
17. **PAINTING**
- 17.1 **GENERAL**
- 17.1.1 The word "Paint and/or painting" wherever specified/indicated/shown on drawing shall be deemed to be synthetic enamel paint.
- 17.1.2 The tint of the paint shall be as approved by GE.
- 17.1.3 The Contractor shall use fresh and best quality paint. The Contractor's rates shall also be deemed to include for the preparation of surfaces and application of primer. The Contractor shall obtain the permission of GE in writing well in advance for the makes/brands of paint that he will use in the work. He shall also submit samples thereof. The synthetic enamel paint shall be from any of the following firms/brands: -
- 17.1.4 The Contractor shall, if so required by the GE, produce certificate from the manufacturers or their representatives to establish that the brands of paints used by him are of the approval make. Paints shall be brought at the site in manufacturer's drums with seal intact.
- 17.1.5 Paints used in priming coat, under coat and finishing coat shall be of the same manufacturer. The paints shall be applied first using vertical strokes until the surfaces are covered and then brushed cross wise for complete coverage with light strokes so as to smooth out laps and brush marks and finally laid off with vertical strokes. This constitutes single coating of paint.
- 17.1.6 Surfaces painted shall be passed by the EIC and marked as such before each coat is applied. Each coat shall be of slightly varying shade (not applicable to white shade) and shall be passed by the EIC before next coat is applied.
- 17.1.7 Unless specified to be treated otherwise in specifications here-in-after, all wood based surfaces shall be given the priming coat of pink primer, one under coat and one finishing coat of synthetic enamel paint. The priming coat of paint shall be applied before fixing.
- 17.1.8 If the under coat of the paints is not executed within six months after applying the priming coat of paint, the priming coat shall be done again by the Contractor at no extra cost to the Govt.
- 17.2 **CEMENT BASE PAINT:** cement paint & shall be of approved tint and applied as specified in para 15.7 & para 15.15 of MES Schedule (part-I). First quality brand of the following makes shall be used: -
18. **OIL BOUND DISTEMPER:** Oil bound distemper shall be applied as specified in SSR Part I. The gypsum powder shall be ISI marked.

**PARTICULAR SPECIFICATIONS (Contd...)****19. EXTERIOR ACRYLIC EMULSION PAINT.**

19.1 Exterior acrylic emulsion paint shall be of quality conforming the relevant Indian Standard. These shall be procured directly from manufacturer's or their authorized dealer in sealed & in tacked container.

**20 PLUMBING, DRAINS & SANITARY FITTINGS**

20.1 **MATERIALS/ FITTINGS/ FIXING ACCESSORIES** : All Sanitary fittings (except flushing cistern) shall be of white vitreous china of best quality ISI marked. The samples of sanitary fittings, fixing accessories shall be approved by the GE before bulk procurement for incorporation in the work. Sanitary fittings shall be of one of the brands/ manufacturers as mentioned in Appendix 'D/E' conforming to the catalogue numbers where referred to in these tender documents. ISI marked sanitary fittings of the brands shall be provided instead of those without IS marking.

20.2 All the specials viz single & double branch pieces, bends, ducks foot bends etc shall be provided with access door fitted with 3mm rubber washer screwed with set screws. The outlet of 'P' trap of WC shall be jointed with connecting pipe/branch piece.

20.3 The Contractor shall employ qualified & licensed plumber for supervision of installation & testing of the sanitary fitting & plumbing. The connection shall be provided conform to sound engineering practice. The layout of soil, waste vent & anti syphonage pipes shall be marked on the walls in coloured chalk & approved by the GE before execution of work.

**20.4 Sinks**

**Kitchen Sink and Drain Board**: Stainless steel kitchen sinks and draining boards (Salem Stainless Steel ISI-304, 1mm thick) shall be provided in kitchen of all residential blocks, pantries in school building and canteen pantry of multipurpose hall. The sink and drain board shall be in one piece and of over all size 510x1155mm and bowl size of 508x405x200mm complete with 40mm dia. C.P. waste with chain and rubber plug and PVC waste pipe, if otherwise not described in BOQ/item of Schedule 'A'

20.5 **EUROPEAN TYPE WATER CLOSET**: All European type water closets shall be vitreous China, white glazed of shape and size ( with provision of health faucet of approved make)

20.5.1 **CISTERN**: Low level flushing cistern 10 liter capacity : Hindustan Sanitary ware Cat No. 21001 or equivalent of other make as specified in Appendix 'D' HDPE, 'Feather touch' operated, conforming to IS-7231. The cistern shall with 32 mm bore polythene flush pipe of sufficient length internal fittings (valve less symphonic) brass handle and pair of painted cast iron brackets HDPE Dual flush with 10 liters also be provided to conserve water complete including all accessories.

20.5.2 Seat and cover shall be solid Bakelite ISI marked type IA (IS-2548-1983) with CP brass hinges COMMANDER or equivalent MAKE of colour as approved.

20.6 **INDIAN STYLE WATER CLOSET**: All Indian style water closet shall be vitreous China, white glazed of size as indicated, Orissa pattern as per Hindustan Sanitary Ware Cat. No. 20004 with P or S trap no. 21003 without vent horn (as required at site) or equivalent of other makes as specified in Appendix 'D/E'. The pan shall be set in the lime concrete (1:2) at least 15cm around and finished just below the rim to receive the specified thickness of floor finish. Where flushing cistern cannot be fixed in wall due to window/lintel as per sanitary plan, the same shall be fixed in the side wall with additional bend. The cost of bend shall be deemed to be included in the lump sum cost of buildings given in schedule 'A' Section-I

20.6.1 **URINALS** : shall be Large Flat Back of size as indicated, white, with CP brass angle valve and bottle trap as with GI waste pipe 32 mm bore is to be provided all as directed by EIC/GE.

20.6.2 **MARBLE PARTITION SLAB FOR URINALS**; shall be 20-25 mm thick white marble (Makrana/Rajnagar) stone slab in one piece of size 750x400mm, as approved by GE. Marble slab shall be hard, even, durable, of uniform colour and shall not show disintegration or cracks. It shall have round corners, duly machine cut and polished all as specified in SSR Part I. Marble partition slab shall be fixed all as directed by GE.

20.6.3 **TOILET PAPER HOLDER** Toilet paper holder as per Hindustan sanitary ware Cat. No. 40051 or equivalent of other makes as specified in Appendix 'D/E' shall be provided with screwed to wall with brass screws to lugs embedded in walls/fixing material such as dotofix, rod of toilet paper holder shall be of steel chromium plated 19mm dia with a spring complete all as specified.

20.7 **Wash Hand Basins** : All wash hand basins (except oval type WHB) shall be of size as indicated, wall mounting type of shape as per Hindustan Sanitary ware Cat. No. 10001 or equivalent of other makes as specified in Appendix 'D'. The brackets shall be embedded in walls in cement concrete (1:2:4) type BI block of size 10 cm x 10 cm x 23 cm. Oval type wash hand basin shall be of Hindustan Sanitary ware or equivalent make as specified in Appendix " D" of size as indicated. These WHB shall be fixed with Granite Stone counter of size as per sample. The rate quoted by the tenderer shall include for this provision.

**PARTICULAR SPECIFICATIONS (Contd...)**

20.8 **TOWEL RAIL:** Towel rail, shall be of mild steel chromium plated of 19mm bore tube conforming to sample. These shall be fixed to walls with steel cadmium screw or wooden plugs/fixing material, such as deta-fix. The length of towel rail shall be as.

20.9 **GRATINGS:** All floor traps (FT) and floor drains (FD) shall be provided of approved design and shape. The weight of 125mm dia and 100 mm dia gratings shall not be less than 130 grms and 100 grms respectively. Gratings for floor drain (FD) below sunken kitchen shall have paintable holes for passing PVC pipe (water) from sink.

20.10 **MIRROR OVER WASH HAND BASIN :** Thickness of mirror shall be as indicated. The mirror shall be tested by the Engineer in Charge by viewing in at distance up to 3 meters from its face to make sure that the image is undistorted. If found other wise, the mirror shall be rejected. It shall be free from all flaws, specks or pebbles. The glass shall be uniformly silver plated on the back silvering shall have a uniform protective coating of red lead paint. Aluminium angles at sides and plain AC Sheet 6mm thick backing shall be given for Mirrors. Mirror shall be any of the following manufacturers viz (a) Atul Glass House (b) AIS (c) Hindustan safety Glass works Pvt Ltd (d) Saint Gobain, Fixing of mirror shall be as specified in Clause 18.91 of SSR (Part-I)

20.11 **PIPE AND FITTINGS :** Detailed lay out shall be marked on the walls in coloured chalk approved by GE before execution of work.

20.12 Cast iron soil, waste, vent and anti syphonage pipes including fittings shall be of spigot and socket spun pipes conforming to IS-3989. Jointing shall be done with lead caulked joints except vent pipes fittings which shall be jointed with cement joints. The pipes and fittings shall be either without ears or with ears.

20.13 All other specifications regarding materials and workmanship shall be as per clause 18.23 and 18.67 of MES Schedule (part-I) respectively.

20.14 The vent pipes shall be taken from soil pipes to a height of 120 cm, height measured from top of roof (of last storey) to the bottom of the cowl, CI cowl shall be provided on top of vent pipes and shall be fixed with cement joints.

20.15 Cost iron bends/branches and other junctions shall be provided with oval pattern access doors with bolts as per relevant IS and 3mm rubber insert packing to make them air and water tight.

20.16 The branch connection with the vertical pipes shall be so arranged that the vertical pipe is at least 5 cm away from the face of the wall. It should also be ensured that no joint between branch piece and vertical pipe terminates in the wall thickness. Irrespective of what is shown on drawings, separate stacks for soil, waste and anti syphonage pipes shall be provided.

20.17 If otherwise not described elsewhere in tender, sizes of cast iron pipes shall be as follows:-

- |     |                                      |                    |
|-----|--------------------------------------|--------------------|
| (a) | Soil pipes                           | - 100mm dia (bore) |
| (b) | Waste pipes                          | - 75mm dia (bore)  |
| (c) | Anti syphonage pipes and vent pipes. | - 50mm dia (bore)  |

## 20.18 **SALT GLAZED STONE WARE (SGSW) PIPES**

20.18.1 Salt glazed stone ware pipes and fittings shall be grade 'A' conforming to 'I.S : 651 and shall be laid all as specified in clause 18.69 and 18.95 of SSR (Part I).

20.18.2 **CONCRETE BEDDING HAUNCHING FOR SGSW PIPES.** Bedding , haunching and surrounding/encasing to salt glazed stone ware pipes shall be with PCC (1:3:6) type C-2 all as directed by Engineer-in-Charge and all as specified under clause 18.68 of MES schedule Part I 1991. However thickness of concrete bed below pipe shall be 10cm for pipes upto and including 150mm dia and 15 cm for pipes more than 150,mm dia.

## 21 **TRAPS**

21.1 **FLOOR TRAP :** - Floor trap shall conform to IS-3989 and shall be of cast iron with CI grating (without hinges) & outlet with nominal diameter of 75mm if otherwise not indicated in BOQ/Schedule 'A'. The outlet of floor trap shall be with long arm and shall be jointed to connecting pipe/branch pieces with lead joint. Floor trap shall be provided in lieu of nahani trap wherever shown/specified on drawings.

21.2 **GULLY TRAP :** If otherwise not indicated in BOQ/Schedule 'A,' Gully trap shall be salt glazed stone ware with rebated top and 100mm dia (bore) outlet and cast iron or mild steel grating of size 15cm x 15 cm. It shall be set in cement concrete (1:3:6) type 1 C-1 foundation of size 53cm x 53cm with overall depth equal to depth gully trap + 10cm (10cm below gully trap) and kerb of P.C.C (1:2:4) type B-1 on top of PCC foundation block around CI or MS grating of size 32.5cm x 32.5cm. Gully trap shall be provided in the situations where shown on the drawings.

**PARTICULAR SPECIFICATIONS (Contd...)**

21.3 Weight of jointing material of cast iron pipes shall be as under:-

<u>Dia bore of Pipe/fittings</u>	<u>Spun yarn/jute per joint</u>	<u>Pig lead per joint</u>
i) 100mm	0.04Kg	1.30 Kg
ii) 75mm	0.03Kg	1.00Kg
iii) 50mm	0.02Kg	0.80Kg

In case the quantity of lead and spun yarn/ jute mentioned above is insufficient or it can not be accommodated in joints, the variation of quantity of lead specified above and actually provided in joint shall be regularised through deviation order.

22. **SMOKE TEST** :- Soil waste vent and anti-syphonage pipes shall be subject to smoke test of specified in MES Schedule Part I.

23. **INTERNAL WATER SUPPLY**

23.1 **SOCPE OF WORK**

23.1.1 Internal water supply includes water meters, all water tubing and tube fittings, except those specified in particular specifications here-in-before such as flush pipes, waste pipes and over flow pipes of overhead tank and cutting chases and making good which are included in the quoted rate in BOQ/Schedule 'A'.

23.1.2 Work under this contract shall consist of furnishing all labour materials equipment and appliances necessary and required for all items of works given in Schedule 'A' /BOQ. The contractor is required to completely furnish all the plumbing and other specialized services as described.

24.2 **Site clearance and cleanup**

24.2.1 The contractor shall from time to time, clear away all debris and excess materials accumulated at the site.

24.2.2 After the fixtures, equipment and appliances have been installed and commissioned, contractor shall clean-up the same and remove all plaster, paints, stains, stickers and other foreign matter or discoloration leaving the same in a ready to use condition.

24.3 **License permits and authorities**

24.3.1 Contractor must hold a valid plumbing or any other as required license by the municipal authority or other competent authority under whose jurisdiction the work falls.

24.3.2 Contractor must keep constant liaison with the municipal/statutory authority and obtain approval of all drainage, water supply and other works carried out by him.

24.3.3 to 24.3 BLANK

24.4 **Cutting of water proofing Membrane : -**

Cutting of water proofing membrane shall be done very carefully so as other portion of water proofing is not damaged. On completion of work at such place the water proofing membrane shall be made good and ensured that the opening/cutting is made fully water proof as per direction of EIC, contractor's quoted rates shall deemed to be included this fact in to account, and nothing extra shall be admissible.

24.5 **Cutting of structural members : -**

No structural member shall be chased or cut without the written permission of the Engineer-In-Charge.

24.7 **Materials**

24.7.1 Unless otherwise specified and expressly approved in writing by the GE, only materials of makes and specification as mentioned in the list of approved makes attached with the specifications shall be used. If required, the contractor shall submit samples of materials proposed to be used in the works. Approved samples shall be kept in the office of the Engineer-In-Charge and returned to the contractor at the appropriate time.

24.9 **Galvanized steel tubing : -** Pipes shall be provided with all required fittings e.g. tees, couplings, bends, elbows unions reducers nipples plugs all GI waste pipes shall be terminated at the point of connection with the appliances with an outlet of suitable diameter. Pipes in chase shall be painted with two coats of red oxide primer and two or more coats of synthetic enamel paint contractor's quoted rates shall deemed to be included this fact in to account, and nothing extra shall be admissible.

**PARTICULAR SPECIFICATIONS (Contd...)****24.10 G.I. pipes fittings & valves**

24.10.1 Galvanized steel tubes medium grade shall be conforming to I.S. 1239 of class C of approved make as specified.

24.10.2 Fittings shall be of malleable iron galvanized of approved make. Each fitting shall have manufacturer's trade mark stamped on it. Fittings for G.I pipes shall include couplings, bends tees, reduced nipples unions bushes. Fittings shall conform to IS 1879- (Part – I to X).

24.10.3 Pipes and fittings shall be jointed with screwed joints. Care shall be taken to remove burr from the end of the pipe after cutting by a round file. Genuine red lead with grommet and a few strands of fine hemp shall be applied. All pipes shall be fixed in accordance with layout and alignment as directed. Care shall be taken to avoid air pockets.

24.10.4 Pipe protection :- Whether specified or not all pipes in chase or below floor shall be protected against corrosion by the application of two coats of bitumen's paint covered with polythene tape and a final coat of bitumen paint contractor's quoted rates shall deemed to be included this fact in to account, and nothing extra shall be admissible.

24.10.5 All water supply pipes below ground shall be protected against corrosion by one layer of 4 mm thick multilayer anticorrosive polymeric mix tape applied over a coat of primer as per recommendations of the manufactures.

**24.11 Gun metal's valves**

24.11.1 Valves 65 mm dia and below shall be heavy gunmetal full way valves or globe valves conforming to IS 778 class I. Valves shall be tested at manufacturer's work shop and the same stamped on it.

24.11.2 All valves shall be approved by the Garrison Engineer before they are allowed to be used on work.

24.12 **Ball Valve**. The ball valve shall be brass high-pressure type and shall conform to IS-1953. The ball shall be of high quality polythene to with stand the required pressure with all necessary fittings and shall conform to relevant IS.

24.13 **TESTING OF PIPE LINES**. Pressure and leakage tests of pipelines and fittings shall be carried out as per clause 18.48.7 on page 18-17 & 18.18 of MES Schedule (Part-I).

25 **GRIT WASH FINISH** :- If not specified in schedule 'A' / BOQ, the grit wash finish shall be provided as under:-

(a) Washed grit plaster shall be provided in two layers.

(b) Apply under layer of 12mm thick plaster of cement mortar (1:4) as under layer (1 cement : 4 badarpur sand/Jamuna sand 50:50) after thoroughly wetting the surface. The surface shall be kept wet till top layer is applied. GI chicken wire mesh 24 gauge and 20mm mesh shall be fixed all along RCC and brick joints in a width of 150 mm with cement slurry pegs before applying under layer plaster.

(c) Make the surface broom finish by steel brush or scratching tool.

(d) Grooves of size 15mm wide and 15mm deep (slightly tapered for easy removal) to be formed of uniform size in top layer of plaster using hard wood battens nailed to under layer, to desire patterns of panels truly vertical and horizontal as directed by the eic.

(e) Make the surface broom finish by steel brush or scratching tool.

(f) Top layer shall be 15mm thick comprising OF cement coarse sand and stone grit (Dholpur stone and Red sand stone chippings obtained by crushing hard stones. Hard stone shall be free of dust and deleterious material 10mm nominal size stone chippings shall pass 100% through 12.5mm sieve and fully retained on 6.3mm sieve.) In proportion of (1:0.5:2) (1 cement : 0.5 coarse sand : 2 stone chips, 10mm nominal size) mixed with pigment (300gm to 500gm per 50 kg bag of cement) as required of approved shade of approved manufacturers as approved by eic. Before application of top coat the surface of the under coat shall be cleaned and a coat of cement slurry @ 3 Kg. of cement per sqm shall be applied. The top layer shall be applied in uniform thickness and sufficiently pressed with wooden float for proper bonding with the under coat and finished to a true and plumb surface. Finished surface of top coat after the mix has taken the initial set shall be scrubbed.

- (g) Scrub and wash the top layer by clean water with brushed to expose the stone chippings to its natural colour.
- (h) The wooden battens to be removed very carefully by a special tool so that the edges of frit wash are not damaged. After removing of wooden battens, the top surfaces of grooves shall be pointed with cement mortar (1:3) mix with water proofing compound of approved quality as per manufacturer's/instructions.
- (i) Suitable scaffolding shall be used and shall have sound and strong supporters tied together with horizontal pieces over which scaffolding planks shall rest to ensure that for horizontal support no holes are made in the walls.
- (j) Before application of under coat of plaster the surfaces shall be prepared by racking out joints properly and brushing out the dust and loose mortar and washed thoroughly with water and kept wet.
- (k) Contractor to get a sample approved prior to start the work by the GE.

## 26. **CPVC PIPES & FITTINGS**

26.1 Refer specification on sl page 374 of SSR 2010 (Part-II). Solvent for CPVC Pipe shall be ISI marked and as approved by GE.

## 27. **Solid PVC Sheet**

27.1 The work shall be carried out by the approved manufacturer's fabricator only.

27.2 Contractor shall submit test report/ test certificate obtained from the manufacturer along with purchase vouchers with every payment.

27.3 The guarantee period for effectiveness of these works shall be 05 yrs. The contractor shall give a written guarantee for a period of 05 years from the certified date of completion of work.

27.4 A guarantee amount of 5% of cost of work executed under these items or Rs 10,000/- whichever is more shall be retained for a period of 05 years till expiry of guarantee period. Contractor may submit FDR/Term Deposit for Guarantee money in favour of Accepting Officer.

## 28.. **INTERNAL ELECTRIC SUPPLY**

The internal electrification shall be as specified in the particular specifications here-in-after including testing and commissioning and also includes any other connected items of work required for entire completion, testing and commissioning, but not specifically mentioned.

## 28.1 **GENERAL**

- (a) Particular specifications given here in after are brief and are only to particularise, amend and emphasize the specifications of MES Sch (which are not repeated).
- (b) The IS mentioned in the MES Schedule and in the tender documents shall be deemed to be changed/modified as per latest amendments issued to IS upto date of receipt of tender.
- (c) The internal electrification work shall strictly comply with the provisions contained in the latest edition of the Indian Electricity Rules and Code of Practice, and IS-952 for electrical wiring and fittings in buildings (as applicable to these works) except where such regulations and rules are modified by these specifications.
- (d) All electrical works shall be executed properly by skilled and licensed electricians under the supervision of suitable, qualified electrical supervisors. The contractor shall produce to GE evidence of such qualifications of his workmen & supervisor(s) at the time of commencement of the work and if required by the deptt, at any time thereafter during contract period, on demand by Engineer-in-charge.
- (e) Wiring shall be done strictly in conformity with IS rules and specifications and lay outs shall be in conformity with modern engineering practice. Loop-in type of wiring shall invariably be adopted.
- (f) No twisting/jointing in earth wire is allowed. All continuous earth wires shall be connected to main earth / switch boxes / DBs / MCCB, socket outlets, fittings etc by use of suitable size lugs/sockets and application of crimping tools only.
- (g) Cables shall be connected to a terminal only by crimping using suitable sleeves, lugs or ferrules and application of proper crimping tools. In case where this is not feasible, the ends may be soldered together. Cables in each circuit shall be bunched together.
- (h) Proper phase identification code should clearly be provided at the main in-coming switch.

**PARTICULAR SPECIFICATIONS (Contd...)**

- (i) The name of functions of each distribution board like 'POWER' 'LIGHT' or 'SUB-MAIN DB' as applicable shall be clearly and neatly painted on the distribution boards with white synthetic enamel paint.
- (j) The height of the incoming & distribution switch boards and various electrical fittings / sockets outlets / switch boards etc shall be as per E-in-C's TI. However, the height of the distribution boards shall not be less than one metre. Socket outlets may be installed at the height of one metre from the finished floor level.
- (k) General conditions and specifications as given in para 19.2 of MES Schedule (Part-I) shall be complied with.
- (l) The main supply in the buildings shall be LT AC 50 Hz single phase (230V) or three phase (415 V)

**28.2 MATERIAL AND SAMPLES**

- (a) The main items to be incorporated in work like cables, switches, sockets, fittings, MCBs, DBs etc shall invariably be ISI marked. Where ISI marked products are not available in the country, these shall conform to relevant BS specifications.
- (b) Approval of GE referred to in clause 19.2 of MES Sch (Part-I) shall be in writing.
- (c) Samples of all materials, fittings & fixtures to be supplied by the contractor shall be submitted to GE for his approval. The contractor shall procure the items in bulk and commence the work only after the samples are approved in writing by the GE. The contractor shall ensure that all the materials incorporated in the work are identical in all respect. Samples approved and samples destroyed in testing shall be returned to the contractor after completion of contract. No payment shall be made for samples destroyed in testing.
- (d) All manufactured articles required for incorporation in work shall be brought to site in the manufacturer's original packing with the seal intact. The materials shall be procured from the manufacturer (s) or their authorized dealers only and original purchase vouchers (duly machine numbered & bearing the ST/CST/GST number) and manufacturer's test certificates shall be submitted by the contractor to the deptt for inspection and perusal before approval of material. Incorporation shall be done after material is approved by GE in writing.
- (e) Executives and the contractor are to clearly understand that **"sample approval" and "material approval" are two distinct activities & phases** and proper record for both these activities in a proper sample and material approval register is to be kept.

**28.3 SCREWS AND NAILS ETC:** All screws and nails used in the point / sub main wiring work shall be cadmium plated steel. Screws which are visible such as over switch boxes, laminated sheet top covers etc shall be of brass chromium plated.

**28.4 SYSTEM OF WIRING**

- (a) Wiring shall be of the type with conductor size as described in Schedule 'A'/BOQ.
- (b) Cables used for point and sub main wiring shall be of FRLS variety, with multistranded copper conductors and invariably be ISI marked.
- (c) Wiring shall be done without any junction or connection boxes on line.
- (d) Special attention is drawn to termination of cable ends of point and sub main wiring cables. All exposed ends of multistranded cables, whether terminating at MCBs or switches (including piano switches) or at electrical fittings shall be crimped together with suitable lugs using proper crimping tools. In exceptional, cases where the Engineer-in-charge is convinced that crimping / provision of lugs is not possible, these ends shall be soldered together.
- (e) Proper colour coding viz red / yellow / blue wires for phases, black wire for neutral and green wire for earthing, shall be adopted strictly in point wiring.
- (f) The conduits and casing-capping shall be ISI marked and proper accessories at junctions, bends and successive lengths shall be provided. For fixing of conduits / casing-capping and their accessories etc, PVC sleeves and cadmium plated screws shall invariably be used.

**28.4.1 POINT WIRING****28.4.1.1**

**Note:** In case of call bell points A point (other than socket outlet point) shall include all work necessary in complete wiring to the following outlets from the controlling switch or MCB. The scope of wiring for a point shall, however, include the wiring work necessary in tapping from another point in the same distribution circuit.

- (a) Ceiling rose or connector (in the case of points for ceiling/ exhaust fan points, prewired light and call bells)
- (b) Ceiling rose.
- (c) Back plate.

, the words **"controlling switch or MCB"** shall be read as **"from the ceiling rose meant for connection to bell push"**.



**PARTICULAR SPECIFICATIONS (Contd...)**

28.4.1.2 Following shall be deemed to be included in point wiring.

- (a) Supplying and fixing/ drawing of cables including connections.
- (b) Metal switch boxes for control switches, regulators, sockets etc. recessed or surface type,
- (c) Laminated sheet covers over the same for piano type switches.
- (d) Modular covers over the same for modular type switches and MCBs.
- (e) Supplying and fixing all accessories such as screws, clips, plugs, clamps etc. as specified for securing, cables, battens, conduits etc. to walls, steel joists etc.
- (d) Supplying and fixing of bushed conduit or porcelain tubing for wiring to pass through walls, floors, etc.
- (e) Supplying and fixing of joint and junction boxes.
- (g) Cutting holes in or through walls, taking up and re-fixing floor boards, notching or drilling holes thorough joists and making good all disturbed work to match the existing.
- (h) Shellac varnishing as specified to wood battens, wood blocks and other wood fittings and fixtures.
- (i) Pointing of battens and cables or surface conduits along with painting of walls.
- k) Testing as specified.
- (l) The rates for wiring includes for:-
- (i) Cutting chases for conduits and sinking's for boxes and making good to walls; floors etc. in case of recessed or concealed conduit wiring.
- (ii) Supplying and fixing terminal boxes for power plugs, fan regulators, switches, socket outlet etc., fixed flush to the walls, as specified for surface wiring on wood battens.

28.4.1.3 **MEASUREMENT**

**(a) Point wiring (other than socket outlet point)**

- (i) Unless other wise specified there shall be no linear measurement for point wiring, light points, fan points, exhaust fan points & call bell points. These shall be measured on unit bases by counting.
- (ii) No separate measurement shall be made for inter connections between points in the same distribution circuits & for the circuit protective (loop earthing) conductors between metallic switch boxes.

**(b) Point wiring for socket outlet points:-**

- (i) The light plug 5A/ 6A & power plug 15A/ 16A points wiring shall be measured on unit bases by counting, as per SCHEDULE 'A', from the respective tapping point of live cable viz switch box, another socket outlet points, or the sub distribution board as the case may be upto the socket outlet. The metal box with cover, switch/ MCB, socket outlet & other accessories shall be measured and paid as a separate item.
- (ii) The power point outlet may be 15A/ 15A or 16A/ 16A six/ three pin socket outlet, where so specified in the tender documents.

**(c) Group control/ Loop Points wiring:-**

- (i) In the case of points with more than one point controlled by the same switch, the same point shall be measured in parts i.e. (a) from the switch to the first point outlet as one point and (b) for the subsequent points, shall be treated as separate point(s).
- (ii) No recovery shall be made for non provision of more than one switch/ MCB.

**(d) Twin control light points wiring.**

- (i) A light point controlled by 2 Nos. of two way switches shall be measured as two separate points from the fitting to switches on either side.
- (ii) No recovery shall be made for non provision of more than one ceiling rose or connector in such cases.

**(e) Multiple controlled call bell points.**

- (i) In the case of call bell with a single call bell outlet, controlled from more than one place, the points shall be measured in parts i.e. (a) from the call bell outlet to the nearest ceiling rose meant for connection to bell push treated as one point and (b) from that ceiling rose to the subsequent points, shall be treated as separate point(s).
- (ii) No recovery shall be made for non provision of more than one ceiling rose or connector for connection to call bell in such cases.

**PARTICULAR SPECIFICATION (Contd...)**

28.4.1.4 PVC insulated copper conductor cable as mentioned in Schedule shall be run in the conduit as continuous earthing and connected to all light fittings, ceiling fans, socket points and regulators. The cost of the same shall be deemed to be included in the unit rates of point wiring.

**28.5 OUTLET BOXES**

The switch box shall be made of metal on all side except on the front. In the case of cast iron boxes, wall thickness shall be at least 3 mm and incase of welded mild steel/ G.I. boxes the wall thickness shall not be less than 2 mm for boxes upto a size of 20 x 30 cm and above this size 2 mm M.S. boxes shall be used. Clear depth of the box shall not be less than 50 mm and this shall be increased suitable to accommodate mounting of fan regulators in flush pattern. All fitting shall be fitted in flush pattern. Outlet boxes shall be suitable for light & power accessories as specified elsewhere. Cost of outlet boxes, modular cover plates (for modular switches/ sockets & MCB points) & laminated sheets (for piano type switch/ sockets) shall deemed to be included in the rate of points wiring. In case of piano type switches 3 mm thick laminated sheet shall be fixed on the front with brass screws.

28.6 **LIGHT FITTINGS** The blocks used for fixing 'SK' type light fittings shall be of first class hard wood, cost of attachment of fittings shall be deemed to be included in the rates of point wiring.

These fittings shall be fixed on walls/ceiling with GRIP' brand or equivalent nylon plugs (sleeves) with suitable cadmium plated brass screws. Minor items of fittings like screws etc shall be of standard quality, gauge and easy for operation.

Heavy duty brass lamp holders shall be incorporated with fittings.

Wherever specifications have not been specified, the materials/component shall comply with relevant IS specifications. In its absence of such specifications, code of practice or good engineering practice shall be followed.

The surface finish on the outside surfaces of all fittings with black stove enameled CRCA sheet shall be 'MAT DULL'. Light fittings such as 'L' type fittings, utility fittings and bulk head fittings shall be ISI marked and of make as specified in Appendix 'D'.

**28.7 SWITCHES, SOCKET- OUTLETS, BUZZER / BELL PUSH**

Switches, socket-outlets and bell push shall be flush piano type, white ivory finish and shall be of the makes specified in the tender. Switches shall have marking for 'LIGHT', 'FAN' 'Bell' etc and shall invariably be ISI marked.

**28.8 SK TYPE FITTINGS**

These shall be of standard construction as described in MES schedule.

**28.9 EARTHING**

Earthing shall be provided of the types as mentioned in Schedule 'A' and shall be executed as per IS-3043 and clause 19.137 to 19.146 of MES schedule Part-I. The overall earth resistance of the earthing system (electrode) shall not exceed one ohm. Earthing shall be done in a manner that the inner edge of earth pit is at least 2 metre from the building foundation (extreme outside end) and the minimum distance between two earth electrodes shall be regulated as per IS-3043. All pipes used shall be of medium grade, IS-1239 marked. It shall be ensured that, as per NEC-85, the size of earth continuity conductor shall not be less than half the size of main current carrying conductor subject to a minimum of 1.5 sq mm for copper and 2.5 sq mm for aluminium.

For checking the efficiency of earthing the following tests shall be carried out, preferably during the summer months :-

- (a) The earth resistance of each electrode shall be measured.
- (b) The earth resistance of earthing grid shall be measured.
- (c) All electrodes shall be connected to the grid and the earth resistance of the entire earthing system shall be measured.

28.10 **MCBs & DBs:** MCBs shall be of 10 KA rupturing capacity, duly IS-8828 marked. DBs shall be manufacturer's factory made and shall be of the same make as the MCB.

**28.11 SWITCH DISCONNECTOR FUSE**

These shall be of standard construction and of makes as per contract.

**28.12. TESTING ON COMPLETION**

On completion, the electrical work shall be tested jointly by the contractor and the Engineer-in-charge as per IS-952 and the results, duly signed by both, shall be submitted to GE for approval. Completion shall not be issued till testing is done and results approved by GE. The following tests shall invariably be done:-

- (a) Insulation resistance
- (b) Earth resistance
- (c) Testing of earth continuity path
- (d) Testing of polarity of non-linked, single pole switches

All arrangements including labour, material and equipment required for testing shall be made by the contractor and no extra payment shall be admissible to him on this account since his quoted rates are deemed to include for these.

**28.13 Lighting circuits shall be tested in the following manner:**

- (a) All switches 'on' and consuming devices in circuit, both polls connected together, to obtain resistance to earth.
- (b) Between polls with lamps and other consuming devices remove and switches 'on'.
- (c) With lamps and other consuming devices in position but switches 'off'.

**29 DEMOLITION/DISMANTLING / TAKING DOWN**

29.1 The contractor shall carry out demolition/dismantling carefully without any damages to the existing structure. In the event of any loss or damage, the contractor shall at his own expense reinstate and make good to the full satisfaction of Engineer-in-Charge. During demolition/dismantling all necessary precaution shall be taken by the contractor as per "MES Safety Code" mentioned in General Condition of contracts (IAFW-2249). The demolition/dismantling materials which are not covered under Schedule of credit shall remain Govt. property and the contractor shall remove the materials to the MES Store/places outside of the Defence land as directed by Engineer-in-Charge without any extra cost to the Govt.

**30. CONTRACTOR'S SUPERVISION**

- 30.1 Contractor's contention is drawn to condition 25 of IAFW-2249 forming part of contract agreements.
- 30.2 Contractor shall employ site Engineer having requisite qualification & experience falling which a penalty @ Rs 500/ per day per vacancy (absence) upto first 30 days period shall be levied from contractor. There after GE shall have the option to either suspend the work or employ Engineer at contractor's cost & recover the amount from contractor's dues.

**31. PRODUCTION OF VOUCHERS**

31.1 The contractor shall to submit original purchase vouchers duly machine numbered and dated in respect of items to be claimed in RAR as material lying at site. Purchase voucher for cement, steel, E/M equipments, Bitumen shall also be submitted in variably. However if the cost of particular item of material in a contract exceed Rs 1 (one) Lakhs, these materials shall be procured only from the manufactures or from their authorized dealers/stockiest (except in case of material of local origin) and the contractor shall furnish proof (i.e. purchase vouchers) there of to the satisfaction of the GE that the material so comply.

\_\_\_\_\_  
SIGNATURE OF CONTRACTOR  
DATED: \_\_\_\_\_

AGE (CONTRACTS)  
FOR ACCEPTING OFFICER

1. CA NO & Name of work : \_\_\_\_\_

2. Control No\* : \_\_\_\_\_

3. Name of Manufacturer/Brand/Gde of Cement (A) Manufacturer \_\_\_\_\_ (B) Brand \_\_\_\_\_ (C) Grade :

4. Qty of cement & Lot No/Week No (in bags) : (A) (Qty \_\_\_\_\_) (B) Lot No/Week No \_\_\_\_\_

5. Manufacturer's test certificates no \_\_\_\_\_

6. Random Test details (a) Physical test report from \_\_\_\_\_ vide their letter No \_\_\_\_\_ (Name of approved Lab/Engg College)

(b) Chemical test report from \_\_\_\_\_ vide their letter No \_\_\_\_\_ (Name of approved Lab/Engg College)

7. Details of Physical & Chemical properties :

[illegible]

Accepted/Rejected

Garrison Engineer

\* To be allotted Serially by GE consignment wise

**STEEL SUPPLY ACCEPTANCE FORM**

Contract No  
Name of Work  
Control No  
Details of Purchase

- (a) Particulars of Manufacturer
- (b) Details of suppliers (if any)

Details of test Certificate

- (a) No and date
- (b) Particulars of Issuing Authority

SI NO	Nomenclature and size of steel	IS Ref	Quantity(T)		Physical Properties			IS	Test sheet	Random test	Bond test	Remarks
			Actual	Conversion	UTS (N/Sq mm)							
					IS	Test sheet	Random test					
1	2	3	4	5	6	7	8	9	10	11	12	13

\*As ordered Remarks with signature

Sudpt B/R Grade I /JE (Civil)  
Engineer-in-Charge

Contractor.

Accepted/Rejected.  
Signature

Garrison Engineer

Remarks of B.O.O/Inspecting Officer/CWE

**Appendix 'C'**  
**RECOVERY CHARGES FOR TESTING OF MATERIALS**

**Legend :- A-Site Lab, B- Zonal Lab, C-National Test House/ SEMT/ Govt approved lab/Engg College**

Srl No	Materials	Test	Method of Testing	Frequencies of Test	Level of Test	Rate in Rs	Remarks
1	2	3	4	5	6	7	8
1	Bricks			As per IS 5454 as given under:	Permissible % of defective Bricks		Check for visual and dimensional characteristic shall also be allowed out as per IS-5454
				Lot Size	Sample Size	0	
				1001 to 10000	5	0	
				10001 to 35000	10	1	
				35001 to 50000	15		
	(i) Compressive Strength		IS-3495 (Part-II)		A	180	
	(ii) Water Absorption		IS-3495 (Part-II)		A	150	
	(iii) Efflorescence		-do- (Part-I)		A	180	
2	Coarse Aggregate	(i) Sieve Analysis	IS-2386 (Part-I)	One Test for every 15 cum of Aggregate or part thereof.	A	120	
		(ii) Flakiness Indices	-do-	One Test for every 15 cum of Aggregate or part thereof.	A	90	
		(iii) Estimation of deleterious materials	-do-	One Test for every 100 cum of Aggregate or part thereof.	A	120	
		(iv) Organic Impurities	-do-	One Test per source of supply.	C	120	
		(v) Moisture Content	IS-2386 (Part-II)	Regularly as required.	A	120	

**Appendix 'C' (Contd..)**  
**RECOVERY CHARGES FOR TESTING OF MATERIALS**

3	Fine Aggregate	(vi) Specific Gravity	-do- (Part-III)	One Test per source of supply.	B	120	
		(i) Sieve Analysis	(IS-2386) (Part-I)	(I) One Test for every 15m <sup>3</sup> of EA or part when brought to site.	A	180	
		(ii) Test for clay silt impurities	-do-	(I) One Test for every 15m <sup>3</sup> of EA or part when brought to site.	A	90	
		(iii) Specific Gravity	-do-	One for each source of supply	B	180	
		(iv) Moisture Content	-do- (Part-III)	Regularly as required subject to 2 tests/day when being used.	A	180	
4	Cement	(v) Test for Organic Impurities	-do- (Part-II)	One test for each source of supply.	C	180	
		(i) Setting Time	IS-4031 (Latest Edition)	Once for each Consignment	B	180	
		(ii) Soundness	IS-4031 (Latest Edition)	Once for each Consignment	C	120	
		(iii) Compressive Strength	IS-4031 (Latest Edition)	Once for each Consignment	B	360	
		(iv) Fineness	IS-4031 (Latest Edition)	Once for each Consignment	C	120	
5	Structural Concrete	(i) Slump Test or Compacting Factor Test of Vee Bee Time	IS-1199	The minimum frequency of sampling of concrete of each grade shall be as under:			(i) Random sampling shall be carried out to cover all mixing units
				<u>Qty of Concrete in the work</u>	A	180	
				<u>No of Samples</u>			
				(M3)			
				1-5			
				1			
				6-15	A	120	
				2			
				16-30			
				3			
				31-50			(ii) Refer IS-456-1978, Clause 14.2 for frequency of sample
				4			
				51 and above 4+1 for each additional 50 cubic metre or part thereof.	A	180	
		(ii) Compressive Strength	IS-516		A	120	

**Appendix 'C' (Contd..)**  
**RECOVERY CHARGES FOR TESTING OF MATERIALS**

6	(a) RCC Block for walling (Hollow block)	(i) Compressive Strength	IS-2185 (Appx 'B')	8 Block out of total of 14	A	60	Sample: 18 Blocks from consignment of every 5000 blocks or part thereof.
		(ii) Water Absorption	-do-	3 –do-	B	120	
		(iii) Density	-do- (Appx 'A')	3 –do-	B	90	
	(b) RCC Solid	(i) Compressive Strength	IS-2185 (Appx 'A')	12 Block out of total of 18	A	60	Sample: 18 Blocks from consignment of every 100000 blocks or part thereof.
		(ii) Water Absorption	-do-	3 –do	A	120	
		(iii) Density	-do-	3 –do-	B	120	
7	Cement flooring tiles/terrazzo tiles	(i) Water Absorption	IS-1237 1980 (Appx 'D')	6 tiles out of total of 18	B	180	Sample 18 tiles from each source of supply selected at random
		(ii) Wet transverse strength	-do- (Appx 'E')	6 tiles out of total of 18	B	144	
		(iii) Resistance to wear	do (Appx 'F')	6 tiles out of total of 18	C	540	
8	Burnt clay roofing tiles (Hand made) as per IS-2690 (Part-II) Length – 150 mm to 250 mm Width – 100 mm to 200 mm Thickness – 35 mm to 50 mm	(i) Water Absorption	IS-3495 (Part-II)	6 tiles out of total of 18	B	216	Sample: 12 tiles from each source of supply selected at random.
		(ii) Compressive Strength	-do-	6 tiles out of total of 18	A	180	

Contd..



**Appendix 'C' (Contd..)**  
**RECOVERY CHARGES FOR TESTING OF MATERIALS**

9	Mangalore pattern roofing tiles	(i) Water Absorption	IS-654 (Appx 'A')	16 tiles out of total 32	B	120	Sample: 32 tiles from each consignment of every 3000 tiles or part thereof. These tiles shall be checked for dimension & weight.
		(ii) Breaking load	IS-654 (Appx 'C')				
10	Timber	(i) Specific Gravity and weight	IS-1958- 1960	Minimum 3 samples from a lot of 4 cubic meters or 250 pieces of seasoned timber.	B	120	Also refer Clause 4.8 of IS-456 & its subsequent sub clauses regarding suitability of water
		(ii) Moisture content	IS-1958- 1960		A	120	
11	Water for construction purpose	(i) Test for acidity	IS-456 & 3025	Once the stage of approval	B	240	
		(ii) Test for alkalinity	IS-456 & 3025		B	240	
		(iii) Test for Solid contents.	IS-456 & 3025		C	300	Specialised tests their method and frequency to be decided on consideration of their importance by the Accepting Officer
12	Welding of Steel work	Visual Inspection Test	IS-818-1995, Clause 7.1	100 % by visual inspection	A	360	
13	Timber panelled and glazed door (wooden shutters) (Including factory made shutters).			Frequency of sampling from each lot shall be as under:			
				<u>Lot Size</u>	<u>Sample Size</u>		
				20 to 50	05		
				51 to 100	08		
				101 to 150	13		
				151 to 300	20		
				301 to 500	32		
				501 to 1000	50		
				1001 and above	80		

**Appendix 'C' (Contd..)****RECOVERY CHARGES FOR TESTING OF MATERIALS**

	(a) Dimensions, sizes, workmanship and finish	IS-1003-1977 (Part-I)		A	180	
	(b) Strength test		From each lot 5 % of the factory made shutters shall be tested for strength test.	Manufacturer		
	(i) Slamming	IS-1303-1990				
	(ii) Impact Indication	-do-				
	(iii) Shock resistance	-do-				
	(iv) Edge loading	-do-				
14	Ply Wood	(a) Moisture Contents	IS-1954 (Part-VI)	6 Test pieces from each of the board selected.	B	120
		(b) Water resistance	IS-1954 (Part-I)	As per Table-I shall be subjected to tests.	C	240
15	Work particles board (Medium density) IS-3087-1988	(a) Density	IS-2380-1977	Three test specimen each sample (size-150mmx75mm)	A	60
		(b) Moisture content	-do-	-do-	With Moisture Meter A & B	60
		(c) Water absorption	-do- (Part 16)	-do- (size-300mmx300mm)	A	60
		(d) Swelling to surface absorption	-do- (Part 17)	~-do- (size-125mmx100mm)	A	60
		(e) Swelling in water	-do-	-do- (size 200mmx100mm)	A	60
		(f) Modulus of rupture	-do- (Part 4)	Three test specimen as per IS-2380-1977	B	90
		(g) Screw withdrawal strength	-do- (Part 14)	~-do- as per IS-2380	C	120

Sampling shall be as per IS-7838 1978 (Table-I)

Signature of the Contractor

Dated: \_\_\_\_\_

AGE (Contracts)

for Accepting Officer

**LIST OF APPROVED MANUFACTURERS/MAKES**

<b>SL NO</b>	<b>NAME OF PRODUCT</b>	<b>MAKES/ BRANDS/ MANUFACTURER</b>
<b>B/R ITEMS</b>		
01	PRESSED STEEL DOOR FRAMES/ CHOWKHATS FOR DOORS/ CUPBOARD AND WINDOW FRAMES	SHAKTI, MADHU INDUSTRIES, NCL SECOLOR, SHIVAM METAL SHAPERS, ASHISH INDUSTRIES , PARSHOTAM STEEL INDUSTRIES, TRISHUL INDUSTRIES, CHANDNI INDUSTRIES
02	GALVANISED COLOUR/POWDER COATED STEEL WINDOWS, DOORS, PARTITIONS & STRUCTURAL GLAZING	ASHISH INDUSTRIES OR EQUIVALENT AS APPROVED BY GE
03	STEEL WINDOWS / VENTS	SHAKTI, MADHU INDUSTRIES, NCL SECOLOR, SHIVAM METAL SHAPERS, ASHISH INDUSTRIES , PARSHOTAM STEEL INDUSTRIES, TRISHUL INDUSTRIES, CHANDNI INDUSTRIES
04	ROLLING SHUTTERS & ROLLINGS GRILLS	PARSHOTAM STEEL IND(PSI) OR EQUIVALENT AS APPROVED BY GE
05	FACTORY MADE PANELLED DOOR SHUTTERS	JAIN DOOR PVT LTD, PARSHOTAM STEEL IND(PSI), A-1 TEAK PRODUCTS, EVEREST
06	PVC DOOR FRAME / SHUTTERS	ACCUCEL, POLYINE, ECOCELL, RAJSHRI PLASTIWOOD,
07	PVC PANEL DOOR / WINDOWS	ECOCELL OR EQUIVALENT AS APPROVED BY GE
08	UPVC WINDOWS / DOORS	YASHPOLY, ACCUCEL, APARNA VENESTER/OKOTECH, MADHU INDUSTRIES, NCL VEKA, H2O SOLUTION, FENESTA, ENCRAFT, SUPREME, RAJSHRI PLASTWOOD
09	ANODISED ALUMINIUM DOORS/ WINDOWS/ FRAMES/ PARTITIONS	ASHISH INDUSTRIES, JINDAL, KALCO, ALPURA , CHANDNI INDUSTRIES
10	GALVANISED STEEL SHEETS & COLOUR COATED GALVANIZED STEEL SHEETS	JSW, KAMADHENU, TATA, JINDAL
11	POLYCARBONATE PROFILES ROOFING SHEETS IN COMPACT & EMBOSSED MULTI SHEETS	FIBREWAYS, ROFFIT OR EQUIVALENT AS APPROVED BY GE
12	TERRAZZO TILES/ PPC TILES / PPC CHEQUERED TILES	MOHINDRA INDUSTRIES, SURYA K, SWASTIK ALW, GPT, SVRCC
13	INTERLOCKING TILES/ EXTERIOR TILES/ PAVER BLOCKS	SITCO, MOHINDRA INDUSTRIES, POOJA CONCRETE, KB SPUN , SARAL IMPEX, SURYA K, HARI OM TILES AND PAVERS, SVRCC, GPT

**LIST OF APPROVED MANUFACTURERS/MAKES**

14	ROOF TILES, KERB STONE	MOHINDRA INDUSTRIES, HARI OM TILES AND PAVERS, SVRCC,GPT
15	FLY ASH CEMENT BRICKS	KB SPUN, SVRCCOR EQUILIVENT AS APPROVED BY GE
16	GLAZED CERAMIC/ NON SKID WALL/ FLOOR TILES	AGL, ORIENT BELL, SOMANY, JOHNSON, NITCO, VITERO TILES, RAK CERAMICS, SUNHEART CERAMIK, VARMORA, ACE HARMONY
17	VITRIFIED TILES (NORMAL / ANTI-SKID)	AGL, ORIENT BELL, SOMANY, JOHNSON, NITCO, VITERO TILES, RAK CERAMICS, SUNHEART CERAMIK, VARMORA, ACE HARMONY
18	HDPE & LLDPE STORAGE WATER TANKS	VECTUS, SINTEX, SUPREME, ASTRAL, SHEETAL, DUTRON
19	STAINLESS STEEL KITCHEN SINK WITH OR WITHOUT DRAINING BOARD, PLATE RACK	CERA, SHAKTI, PRAYAG, SILVER SHINE, NIRALI, JAINCO, SPC, DIAMOND
20	BALL VALVES (HORIZONTAL PLUNGER TYPE)	PRIMA, JAINKO, PRAYAG
21	BRASS VALVES	PRIMA, JAINKO, PRAYAG, AMCO, VIP VALVES
22	SHOWER ROSES CHROMIUM PLATED (SWIVEL TYPE)	JAINKO, SHAKTI, SILVERSHINE, VITERO, SOMANY, PRAYAG, PRIMA, PLAYER,
23	CP BATH ROOM FANCY FITTINGS	JAINKO, SHAKTI, SILVERSHINE, VITERO, SOMANY, PRAYAG, PRIMA, PLAYER,
24	BIB TAPS AND STOP VALVES (CP) FANCY FITTINGS	JAINKO, SHAKTI, SILVERSHINE, VITERO, SOMANY, PRAYAG, PRIMA, PLAYER,
25	PTMT FITTINGS	SHAKTI, SILVERSHINE, PRIMA, PRAYAG
26	READYMADE BATHROOM CABINETS	PRAYAG, JAYNAM OR EQUILIVENT AS APPROVED BY GE
27	HDPE PIPES / SNR PIPES (WATER / SEWAGE)	PLASTO, SFMC, SUPREME, UTKARSH, DURALINE
28	SAND CAST IRON SPIGOT & SOCKET SOIL WASTE, VENT PIPES & FITTINGS	SKF, RPMF, BENGAL IRON CORPORATION
29	RCC HUME PIPES	KB SPUN, SVRCC, KALOHA SPUN PIPE
30	CEMENT BASED PAINTS	ASIAN, BERGER, DULUX, SNOWCEM
31.	DECORATIVE PAINT (EXT & INT)	ASIAN, DULUX , SNOWCEM, JK MAXX PAINTS
32	PLASTIC EMULSION PAINT	ACRO PAINTS, JK MAXX PAINTS

**LIST OF APPROVED MANUFACTURERS/MAKES**

33	HIGH BUILT TEXTURE & WALL FINISHES (EXT& INT)	ACRO PAINTS, SNOWCEM, ASIAN, BERGER, DULUX, JK MAXX PAINTS
34	SYNTHETIC ENAMEL PAINT	ACRO PAINTS, JK MAXX PAINT, ASIAN PAINTS
35	RED OXIDE ZINC CHROMATE PRIMER	EVERLAC, ACRO PAINTS, JK MAXX PAINT, ASIAN PAINTS
36	FRP DOOR FRAME & SHUTTER	FIBERWAYS , SPC, ROFFIT
37	PVC WALL PANELLING / PVC CEILING	POLYLINE, ECOCELL, HR ENTERPRISES, RAJSHRI PLASTIWOOD, DECOINN, SUNBEAM
38	HDF / PVC DOOR FRAME SHUTTER MOULDED	POLYLINE, ECOCELL, HR ENTERPRISES, ECHON, ALCAD, DECOINN
39	PVC SHEET CLADDING	POLYLINE, ALCAD, DECOINN
40	CI CENTRIFUGALLY PIPES & FITTINGS	SKF, RPMF, BENGAL IRON CORPORATION
41	ACOUSTIC PANELS	HIMALYAN ACCOUSTICS, GYPTECH OR EQUILIVENT AS APPROVED BY GE
42	UPVC CEILING & PANELLING	YASHPOLY, ACCUSEL, HR ENTERPRISES, GIZA
43	PRE FAB PANEL BOARDS/ WALL LINING CEILING TILES	DEXUNE, AEROLITE, HI-STEEL, RAJSHIR PLASTIWOOD
44	FALSE CEILING TILES / BOARD (GYPSUM BOARD / POP / MINERAL FIBRE/JOINTING AND FINISHING MATERIAL	DEXUNE, HI-STEEL, GYPCORE, USG BORAL , RAJSHRI PLASTIWOOD, GYPCORE, ARMSTRONG
45	FALSE CEILING / METAL FALSE CEILING/METAL FRAMING	HI-STEEL, GYPCORE, ARMSTRONG, RAJSHRI PLASTWOOD, GYPTECH
46	PARTICLE BOARD (VENEERED AND UNVENEERED LAMINATED)	AEROLITE, RELIANCE, THERMO PLAST OR EQUILIVENT AS APPROVED BY GE
47	ROAD MARKING PAINT WATER BASED / THERMOPLASTIC	3M, VERTEX OR EQUILIVENT AS APPROVED BY GE
48.	WPC DOOR FRAMES, PANELS, HYBRID SHEET/FLOORING/JALLI	EROCELL/ECHON RAJSHRI PLASTIWOOD OR EQUILIVENT AS APPROVED BY GE
49	ROAD FURNITURE & REFLECTIVE SIGN BOARDS (ROAD STUDS, SOLAR STUDS, SPEED BREAKER, TRAFFIC CONE, SPRING POST, MEDIAN MARKER, DELINERATOR, SAFETY CONES, SAFETY CONVEX MIRROR, Q-MANAGER, REFLECTIVE JACKETS, LIGHTS BETON, BOLLARD, ROAD BARRICADES, CAUTION TAPE ETC)	3M, SHAKTI, SHEETAL
50	ASBESTOS CEMENT PIPES (MAZZA PROCESS)	KIRTI (MAZZA PROCESS) OR EQUILIVENT AS APPROVED BY GE
51	FRP CHAJJAS	FIBREWAYS, ROFFIT OR EQUILIVENT AS APPROVED BY GE

**LIST OF APPROVED MANUFACTURERS/MAKES**

52	FRP PLAIN/ PROFILE ROOFING & CLADDING SKYLIGHT SHEETS	FIBREWAYS, ROOFIT OR EQUIVALENT AS APPROVED BY GE
53	FRP CHEMICAL RESISTANT PROFILE SHEETS/ FRP RAIN WATER GUTTER/ FRP CHEMICAL LINING/ FRP GRATINGS	FIBREWAYS, ROOFIT OR EQUIVALENT AS APPROVED BY GE
54	WIND DRIVEN ROOF TURBO VENTILATORS WITH MATCHING FRP BASE PLATE IN ANY PROFILE	FIBREWAYS OR EQUIVALENT AS APPROVED BY GE
55	CPVC PIPES & FITTINGS	ASTRAL, SUPREME, FINOLEX, FUSION, SENTNI FLOW PIPE, PRAYAG, DUTRON
56	UPVC PIPES & FITTINGS	ASTRAL, SUPREME, FINOLEX, FUSION, SENTNI FLOW PIPE, PRAYAG, DUTRON
57	SANITARYWARE	CERA, KOHLER , JAQUAR, SOMANY, PRAYAG, HINDWARE, SS GLOBAL
58	PRE PAINTD GALVALUME STEEL SHEETS/ GALVALUME SHEETS	JSW, KAMDHENU, TATA, JINDAL, DYNA ROOFING PVT LTD
59	DI FLANGED PIPES & FITTINGS	CHANDRANCHAL OR EQUIVALENT AS APPROVED BY GE
60	CI / DI VALVES	CHANDRANCHAL OR EQUIVALENT AS APPROVED BY GE
61	CHAIN LINK FENCING / BARBARD WIRE / PUNCHED TAPE CONCERTINA COIL / RAZOR BLADE TAPE FENCING	A-1 FENCE, ARMOSTRONG WIRES, MAIMOM ROGER
62	GALVANISED STEEL WELD MESH FENCING	A-1 FENCE OR EQUIVALENT AS APPROVED BY GE
63	PLAIN & PRE LAMINATED MDF & HDF BOARDS	PDE COR(PIONEER PANEL PRODUCT)
64	PROWUD MDF BOARD	CENTURY PLY OR EQUIVALENT AS APPROVED BY GE
65	SELF SUPPORTED STEEL ROOFING	PROFLEX OR EQUIVALENT AS APPROVED BY GE
66	GLASS REINFORCED GYPSUM (GRG) CEILING TILES	DIAMOND CEILING, GYPCORE, MARUTI GYPSUM, SHERA, HI STEEL
67	GYPSUM BOARDS / JOINTING & FINISHING MATERIAL / PARTITION & CEILING FRAMING WORK / PLASTERING MATERIAL/ GYPSUM CEILING TILES	GYPROC, GYPCORE , HI-STEEL
68	GLASS WOOL TILE AND PANELLING	ECOPHON, GYPCORE
69.	AAC BLOCKS & JOINTING ADHESIVE	MODCRETE , CLAVECON
95	MS BUTT HINGES	SURYA OR EQUIVALENT AS APPROVED BY GE
71	LAMINATES & PLYWOOD	VIRGO OR EQUIVALENT AS APPROVED BY GE
72	ALUMINIUM ROLLED PRODUCTS (SHEETS & COILS)	VIRGO OR EQUIVALENT AS APPROVED BY GE

**LIST OF APPROVED MANUFACTURERS/MAKES**

73	ACP (ALUMINIUM COMPOSITE PANEL)	ALUCOBOND, EUROBOND, ALUDECOR, ALEX PANEL
74	MARINE PLYWOOD & PLYWOOD FOR CONCRETE SHUTTERING WORKS	ALLIANCE, GL PLY
75	ERW/MS PIPES, TUBE & HOLLOW SECTIONS, HRC-100	JYOTI HRC 100
76	PVC FLUSHING CISTERNS	SHAKTI, PRAYAG, RAK CERAMICS, HINDWARE, PARRYWARE, SUPREME, PRAYAG
77	TOILET SEAT COVER	CERA, KOHLER , JAQUAR, RAK CERAMICS, SILVERSHINE, PRAYAG, PRIMA, PARRYWARE
78	UV PRINTED CUPBOARD	HR ENTERPRISES
79	ALUMINIUM TOWERBOLT, HINGES, HANDLES & SLIDING DOOR BOLT	CROWN OR EQUIVALENT AS APPROVED BY GE
80	SS TOWERBOLT & SLIDING DOOR BOLT	CROWN OR EQUIVALENT AS APPROVED BY GE
81	MS TOWERBOLT & SLIDING DOOR BOLT	CROWN OR EQUIVALENT AS APPROVED BY GE
82	BRASS TOWERBOLT	CROWN OR EQUIVALENT AS APPROVED BY GE
83	DOOR HANDLES (BRASS, ZINC & SS)	DORSET OR EQUIVALENT AS APPROVED BY GE
84	LOCKING SYSTEM (MOTRICE LOCK, NIGHT LATCHES, CYLINDRICAL, LOCK , EURO PROFILE CYLINDERS)	DORSET OR EQUIVALENT AS APPROVED BY GE
85	DOOR HARDWARE (DOOR CLOSURE, FLOOR SPRING, TOWERBOLT & HINGES)	DORSET OR EQUIVALENT AS APPROVED BY GE
86	UNIVERSAL WATERPROOF PUTTY(WALLMAX X, SHIELDMAX X)/COARSEEVELMAX X)/WHITE CEMENT BASED PRIMER (JK PRIMAX X)/PREMIUM GYPSUM PLASTER(GYPSUM MAX X)/ VERMICULATE BASED LIGHT WEIGHT BYPSUM PLASTER(PLASTOMAX X)/PERLITE BASED LIGHT WEIGHT GYPSUM PLASTER (BONDMAX-X/TILE ADHESIVE (TILEMAX X)	JK WHITE CEMENT OR EQUIVALENT AS APPROVED BY GE
87	MS, RHS ,SHS AND ROUND BLACK PIPE	AVON STEEL OR EQUIVALENT AS APPROVED BY GE
88	PUF PANELS	SYNERGY TELECOMMUNICATIONS, ROOFFIT
89	PULLEY SYESTEM, WALL STANDS, FLOOR STANDS & ACCESSOREIS OF PULLEY SYSTEM	EASY DRY OR EQUIVALENT AS APPROVED BY GE
90	FLAT, GLASS(FLOAT GLASS, MIRROR FROSTED GLASS, LACQUERED GLASS, EXTRA CLEAR GLASS, SOLAR CONTROL REFLECTIVE GLASS, HIGH PERFORMANCE LOW E GLASS, TINTED GLASS	SISECAM OR EQUIVALENT AS APPROVED BY GE
91	BOX TYPE STEEL WINDOWS	FRIENDS MANUFACTURING CO, LUXMI WELDING WORKS, JEW, TEE PEE
92	WOODEN PANEL DOORS WINDOWS & FRAMES FLUSH DOORS , WIRE MESH DOORS	SATISH KUMAR & CO, GL PLY, JAIN DOORS, A-1 TEAK PRODUCTS
93	PCC MANHOLE & DRAIN COVER EARTH PIT, CABLE ROUTE INDICATOR	VENUS, HARIOM TILES AND PAVERS, MOHINDRA, SVRCC
94	PVC KITCHEN CABINETS & CUPBOARDS	RAJSHRI PLASTIWOOD, ECOCELL/ECHON, GIZA

**LIST OF APPROVED MANUFACTURERS/MAKES**

95	WOODEN SLAT, WOODEN CEILING	PROLAD OR EQUIVALENT AS APPROVED BY GE
96	MAGNETIC WOOD WOOL TILES	PROLAD OR EQUIVALENT AS APPROVED BY GE
97	ACOUSTIC DOORS AND MOVABLE WALLS	PROLAD OR EQUIVALENT AS APPROVED BY GE
98.	PREPAINTED GALVANISED COLOUR/POWDER COATED STEEL WINDOWS, DOORS, PARTITIONS, VENTILATORS & STRUCTURAL GLAZING	CHANDANI INDUSTRIES ELIXIR OR EQUIVALENT AS APPROVED BY GE
99.	ALUMINIUM EXTRUSIONS (WITH ANODIZING & POWDER COATING)	BHORUKA EXTRUSIONS OR EQUIVALENT AS APPROVED BY GE
100	WOODEN FLOORING	A1 TEAK PRODUCTS OR EQUIVALENT AS APPROVED BY GE
101	PVC FOAM SHEET	RAJSHRI PLASTIWOOD OR EQUIVALENT AS APPROVED BY GE
102	HDPE DWV PIPES	DUTRON, GEMINI PIPES OR EQUIVALENT AS APPROVED BY GE
103	SUCTION & DELIVERY HOSE	KANAFLEX OR EQUIVALENT AS APPROVED BY GE
104	BRAIDED HOSE	DUPLOM OR EQUIVALENT AS APPROVED BY GE
105	VENEERED DECORATIVE PLYWOOD	GL PLY OR EQUIVALENT AS APPROVED BY GE
106	BLOCK BOARDS	GL PLY OR EQUIVALENT AS APPROVED BY GE
107	ALL TYPE OF GRANITE & MARBLE	ACE HARMONY OR EQUIVALENT AS APPROVED BY GE
108	FLY ASH BRICKS	SWASTIK ALWST, INDERBIR INDUSTRIES, SHRI RAM FLY ASH BRICKS
109	ELECTRIC CABLE COVERS	INDERBIR INDUSTRIES, SHRI RAM FLY ASH BRICKS
110	PRECAST RCC COVERS	SWASTIK, ALW
111	MODULAR FURNITURE (STEEL / WOODEN)	ROYAL KOAS OR EQUIVALENT AS APPROVED BY GE
112	WOODEN FURNITURE BRANDED	ZUARI FURNITURE, GODREJ & BOYCE DURIAN
113	GI PIPES / MS PIPES	VPL, JINDAL, TATA, OSWAL
114	HDPE/UPVC/PPR PIPES	VPL, DUTRON, FINOLEX, SFMC, PRINCE , SUPREME
115	BRONZE SLUICE VALVES/NON RETURN VALVES/AIR RELEASE VALVES/PRESSURE REDUCING VALVE/FIRE HYDRANT VALVE/SPRING RELIEF VALVE/BALL VALVE/STEAM VALVE /SPRING RELIEF VALVE /FLOAT	PRAYAG , SHAKTI, KIRLOSKAR, ZOLOTO, LEADER , L & T (AUDCO)
116	FLOAT VALVE	PRAYAG ,SHAKTI, AIRAEURO ,AGROTECH , TELEFLO, TECHNO INTERNATIONAL
117	BUTTERFLY VALVES/CHECK VALVES	QINN
118	GUN METAL GATE VALVE/GLOBE VALVE/HORIZONTAL & VERTICAL CHECK VALVE	KIRLOSKAR , LEADER , L&T (AUDCO)



**LIST OF APPROVED MANUFACTURERS/MAKES**

119	PPR/PVC PIPES AND FITTINGS	KPT, VECTUS
120	DI PIPES	JINDAL, TATA
121	CI PIPES & FITTINGS	JINDAL, TATA METALIKS, TATA KUBOTA
122	READY MIX PLASTER	SIKA / DR FIXIT / ASCOLITE OR EQUIVALENT AS APPROVED BY GE.
123	APP MEMBRANE	M/S SIKA INDIA PVT LTD., M/S STP LIMITED, M/S IWL INDIA LIMITED, M/S TORCHTAR MEMBRANES & BITUMEN PRODUCT PVT LTD, M/S TIKI TAR DANOSA (INDIA) PVT LTD, M/S SHIVAM TAR PRODUCTS, M/S ASIAN PAINTS LTD
124	GI FITTING	JINDAL, TATA, BST
125	LED LIGHTS AND FITTINGS & LUMINARIES FOR ROAD AND STREET LIGHTING	EVEREADY, POLYCAB, BELNO, HPL, WIPRO, ORIENT ELECTRIC, JAQUAR, SSK, GOLD MEDAL, OSRAM HAVELLS, HALONIX, PHILIPS, CROMPTON, BAJAJ,
126	LED LIGHTS, PANELS & LUMINARIES INDOOR	EVEREADY, POLYCAB, BELNO, HPL, WIPRO, ORIENT ELECTRIC, JAQUAR, SSK, GOLD MEDAL, OSRAM HAVELLS, HALONIX, PHILIPS, CROMPTON, BAJAJ,
127	LED LAMPS	EVEREADY, POLYCAB, BELNO, HPL, WIPRO, ORIENT ELECTRIC, JAQUAR, SSK, GOLD MEDAL, OSRAM HAVELLS, HALONIX, PHILIPS, CROMPTON, BAJAJ,
128	SMART STREET LIGHTS AND CONTROL SYSTEM	ORIENT ELECTRIC, KCSAD, EVEREADY, ASCENTECH
129	LED FLOOR LIGHTS	WIPRO, KCSAD, EVEREADY, JAQUAR, ASCENTECH, GOLD MEDAL
130	BOX TYPE DECORATIVE TUBE LIGHT FITTINGS	Polycab, havells, halonix
131	FANS CEILING, EXHAUST, TABLE WALL MOUNTING, PEDESTAL	GOLD MEDAL, POLYCAB, HAVELLS, ANCHOR, CROMPTON, BAJAJ, KHAITAN, USHA, ORIENT
132	STORAGE WATER HEATERS	JAQUAR, GOLD MEDAL, AO SMITH, USHA, CROMPTON, RAMCO, BAJAJ
133	PT SWITCH/ SOCKETS/ CEILING ROSES/ FAN REGULATORS	LEGRAND, CRABTREE, SCHNEIDER, PHILIPS, ANCHOR, BAJAJ, KINJAL, SSK, GOLD MEDAL

**LIST OF APPROVED MANUFACTURERS/MAKES**

134	MODULAR SWITCH/ SOCKETS/ CEILING ROSES/ FAN REGULATORS	LEGRAND, CRABTREE, SCHNEIDER, PHILIPS, ANCHOR,BAJAJ, SSK, GOLD MEDAL, BELNO, HPL, HAVELLS, POLYCAB
135	PVC WIRE AND CABLES	POLYCAB, GLOSTER, FINOLEX, STANDARD, HAVELLS, HPL, GOLD MEDAL, V-MARC, PLAZA CABLES, LS CABLE
136	RIGID PVC CONDUIT PIPES AND FITTINGS	VPL, KALINGA/ PLAZA
137	GI/MS CONDUIT/ ERW CONDUIT PIPE	VPL, AKG, BEC, BHARAT STEEL TUBES
138	MCB/ ELCB/ RCCB/ RCBO/ ISOLATORS/ MCB DISTRIBUTION BOARDS	INDO ASIAN, HAVELLS, C&S ELECTRIC, ANCHOR, BELNO,HPL, SSK
139	MCCBs	STANDARD, INDO ASIAN, HAVELLS, C&S ELECTRIC, BELNO, HPL

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SIGNATURE OF CONTRACTOR

DATED: \_\_\_\_\_

AGE (CONTRACTS)  
FOR ACCEPTING OFFICER