MILITARY ENGINEER SERVICES

CA NO. GEN /TOKEN-14/2026-27 **REPAIRS/REPLACEMENT OF PERIMETER SECURITY LIGHTS, FLOOD LIGHTS WITH OTHER CONNECTED ITEMS AT VARIOUS LOC UNDER GE NAGROTA**

Tender Id: 2026_MES_764624_1

CONTENTS

Ser No	Description	Page No
1	**2**	**3**
1.	Contents	1
2.	Forwarding letter including instructions to tenderer	02 to 06
3.	Notice of tender IAFW-2162 including Appx 'A' to notice of tender.	07 to12
4.	Tender and item rate contract for works required IAFW-1779A (Revised 1955)	13 to 25
5.	General Conditions of Contract IAFW-2249 (1989 Print) incl Errata/Amendments to General Conditions of Contract, IAFW-2249 (1989 Print)	26 to 58
6.	Schedule of Minimum fair wages	59
7.	Special Conditions	60 to 71
8.	Particular Specifications.	72 to 114
9.	Errata/Amendments to tender documents	
10.	Relevant correspondence	
11.	Acceptance letter	
	Total Pages	

Drawing_____Sheets

Signature of contractor
Dated:

AGE (Contracts)
for Accepting Officer

ONLINE
Garrison Engineer NAGROTA
Military Engineer Services
Nagrota
Pin 901208 C/o 56 APO

8605/GEN/ T-14/2026-27/ 03 /E8 23 May 2026

Shri/ M/s _____

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CA NO. GEN /TOKEN-14/2026-27 **REPAIRS/REPLACEMENT OF PERIMETER SECURITY LIGHTS, FLOOD LIGHTS WITH OTHER CONNECTED ITEMS AT VARIOUS LOC UNDER GE NAGROTA**

Tender Id: 2026_MES_764624_1

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

2. Bids will be received online by ACCEPTING OFFICER upto the date and time mentioned in the **NOTICE INVITING TENDER** (NIT). 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 due date and time fixed for opening in the presence of tenderers/bidders or their authorized representative, 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 before bid submission. You are requested not to write piece meal points and forward your points duly consolidated before due date viz bid submission.

5. Unenlisted contractors are required to submit the scanned copies (in pdf file) of documents required as per eligibility criteria mentioned in instructions for filling the tender 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 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. 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 the purpose. In case of failure to abide by any of these two requirements, the finance bid will not be opened.

7. Enlisted contractors of MES shall submit the scanned copies (pdf file) of enlistment letter, tender fee and such other documents as mentioned in Appx 'A' to NIT on e-procurement portal and submit physical documents in the office of GE Nagrota 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.

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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 Part-II) are not enclosed with these documents. These are available for perusal in the office of GE concerned and this office.

11. ANY TENDERER, WHICH PROPOSES ALTERATIONS TO ANY OF THE CONDITION SPECIFICATIONS LAID DOWN IN THE TENDER DOCUMENTS OF ANY NEW CONDITION, WHATSOEVER, IS LIABLE TO BE REJECTED.

Yours faithfully,

Encls :- (As above)

AGE (Contracts)
for Accepting Officer

Signature of Contractor

Dated

INSTRUCTIONS ON FILLING AND SUBMISSION OF TENDER

1. **EARNEST MONEY DEPOSIT (EMD)**

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

(a) Deposit at Call Receipt from a Scheduled Bank in favour of Garrison Engineer.

(b) Receipted Treasury Challan, the amount being credited to the Revenue deposit of Garrison Engineer.

It is advisable that Earnest Money is deposited in the form of e-deposit call receipt from and approved Schedule bank for easy refund. In case the tenderer/bidder wants to lodge "EARNEST MONEY DEPOSIT" in any other form allowed by MES, 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 concerned GE.

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 DEPOSIT**

2.1 The successful contractor shall be required to lodge with the Accepting Officer 'PERFORMANCE SECURITY DEPOSIT', for an amount equivalent to 5% of the contract sum in any one of the following forms, within 28 days of receipt of the Letter of Acceptance (See Condition 19 of IAFW-2249 and amendment No 47) :-

(a) A Bank Guarantee in the prescribed form issued by Nationalized / Scheduled Indian Bank, but its confirmation shall be done only the Head Office of the Bank.

(b) Government Securities, FDR or any other Government instruments stipulated by the Accepting Officer in favour of **GE Nagrota.**

2.2 (a) The defect liability period for the work shall be Twelve calendar months after the works have been handed over to the Government (hereinafter referred to as the defects liability period).

3. **GOODS AND SERVICES TAX (GST) RGISTRATION NUMBER**

3.1 Bidders (both enlisted and un-enlisted) shall mandatorily upload scanned copy of details of Goods and Services Tax (GST) Registration Number in addition to other documents in technical bid stipulated in tender documents. Bidders not in possession of Goods and Services Tax (GST) Tax Registration Number shall be disqualified in T-Bid evaluation (Tech bid evaluation) and their financial bid will not be opened.

4. **GENERAL INSTRUCTION FOR COMPLAIANCE**

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

4.2 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/b hand/through post will be considered.

4.3 Bid should be DIGITALLY signed using valid DSC. All pages of tender documents, corrections/alterations shall be signed/initalled by the lowest bidder after acceptance.

INSTRUCTIONS ON FILLING AND SUBMISSION OF TENDER

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

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

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

4.7 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 & Articles of Association.

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

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

4.10 The contractor shall employ only Indian Nationals after verifying their antecedents and loyalty, Attention is also drawn to special condition 3 referred here-in-after and also conditions 24 & 25 of IAFW-2249 (General Conditions of Contract).

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

4.12 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.

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

5 BOQ :-

5.1 The tenderer shall quote his rates on the BOQ EXCEL FILE only as per guide line of eprocure web portal. No alteration to the format will be accepted and such bid will be disqualified.

5.2 In case any tenderer wishes to revise/modify the rates quoted in the BOQ file, he can do sonly in the BOQ files before uploading the tender through **https://defproc.gov.in**site only before closing date & time.

5.3 After the uploading of tender, Department may upload the errata/ amendment through corrigendum. The tenderer / bidder should submit their offer considering the errata/amendment carried out through corrigendum issued from time to time.

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INSTRUCTIONS ON FILLING AND SUBMISSION OF TENDER

5.4 While uploading the bid, the tenderers / bidders should specifically check whether any **revised BOQ** has been uploaded by department through corrigendum prior to **Bid submission start date**. Tenderers / bidders attention is specifically drawn to the fact that they should submit their offer on revised BOQ only. In case any tenderer submits offer on pre-revised BOQ in lieu of Revised BOQ, **it will be considered as a willful negligence by the tenderer/bidder and quotation shall be considered non-bonafide**.

6. **REVOCATION/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 of revising his rates upward/offering voluntary reduction, after closing of bid submission date & time, his offer will be treated as revoked and he 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 Contractor/bidder 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 tendered/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.

Signature of Contractor
Dated:

AGE (Contracts)
for Accepting Officer

MILITARY ENGINEER SERVICES

NOTICE OF TENDER

1. A tender is invited for the work as mentioned in Appendix 'A' to this NOTICE INVITINGTENDER (NIT).

2. The work is estimated to cost as indicated in aforesaid Appendix 'A'. This estimate, however, is not a guarantee and is merely given as a rough guide and if the work cost more or less, a tenderer/bidder will have no claim on that account.

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. Contractors whose names are on the MES approved list and within whose financial category the estimated amount would fall and unenlisted contractors may submit tender/bid subject to other criteria mentioned in Appendix A. tender/bid but However in case of term contracts, enlisted contractors of categories SS to E may submit tender/bid. Not more than one tender/bid shall be submitted/uploaded by one contractor or one firm. Under no circumstances will a father and his sons (s) or other close relations who have business dealing with one another be allowed to tender/bid for the same contract as separate competitors. Two firms shall be deemed to have business dealing if any of the partners/proprietor/director is common among both of them. A breach of this condition will render the tenders/bids of both the parties liable for rejection.

5. The office of The GE Nagrota will be the Accepting Officer here- in-after referred to as such for purpose of the contract.

6. Not more than one tender/bid shall be submitted/uploaded by one bidder firm. Under no circumstances will a father and his son(s) or other close relations who have business dealing with one another be allowed to tenser/bid for the same tender as separate competitors. A breach of this condition will render the tenders/bids of both the parties liable for rejection.

7. The Technical Bid and Financial Bid (Cover-1 and Cover-2) shall be uploaded by the contractor on or before the date & time mentioned in NIT. A scanned copy of DD with enlistment details and other documents as specified in Appendix A shall be uploaded as Cover-1 (Technical bid) of the tender/bid on e-tendering portal. DD is refundable in case the contractor is not considered eligible in technical evaluation of Cover-1 resulting in non-opening of Cover-1. The applicant contractor shall bear the cost of bank charges for procuring and en-cashing the DD including revalidation of DDs and shall not have any claim from Govt. whatsoever on this account.

8 Tender form and conditions of contract and other necessary documents shall be available on www.defproc.gov.in/ for download and shall form part of contract agreement in case the tender/bid is accepted.

9. In case of MES enlisted contractor who has not executed the Standing Security Bond and un-enlisted contractor, the Cover-I shall be accompanied by Earnest Money for the amount mentioned in Appendix "A" in the form of deposit as call receipt in favour of concerned GE (Appendix "A") by a Scheduled Bank or in received treasury Challan the amount being credited to the revenue deposit of the concerned GE (Appendix "A"). The GE will return the Earnest Money, wherever applicable, to all unsuccessful tenderers/bidders by endorsing an authority on the deposit at call receipt for it's refund, on receipt of intimation from the Accepting Officer to do that.

10. In Case of successful contractor i.e. the lowest contractor having submitted EMD, he shall have the option of converting the EMD instrument into Part of the Performance Security to be deposited by him within 28 days from the receipt of intimation of acceptance of tender from Accepting Officer.

11. Sample of Materials and stores to be supplied by the contractor will also be available for inspection by the bidder at the office of concerned GE during working hours. The bidder is advised to visit the site of work by making prior appointment with GE, Who is the Executing Agency of the work (See Appendix A). The bidder shall be deemed to have full knowledge of all relevant documents, samples site etc whether he has inspected them or not.

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

13. The uploading of bid by a bidder 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 (as applicable), etc will be issued to him and local conditions and other factors having bearing on the execution of the work.

14. The Tenderers/bidders must be in possession of a copy of the MES Standard Schedule of Rates (SSR) (Part –I & Part-II of latest edition) including amendments and errata thereto.

NOTICE OF TENDER contd…

15. 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 non-validation of his 'T' bid assigning reasons thereof through the www.defproc.govin. website. The applicant contractor /bidder if he so desires may appeal to the next higher Engineer authority viz **HQ CWE Nagrota** on email id ngrta3-mes@nic.in with copy to the Accepting Officer on email ngrta4-mes@nic.in 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 /bidders shall be not be entitled for any compensation whatsoever for rejection of his bid.

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

17. The Accepting officer reserves the right to accept a tender submitted by a public undertaking/Small & Medium Enterpriese (SMEs), giving a price preference/purchase preference over other Tender (s)/bids which may be lower, as are admissible under the Govt Policy. No claim for any compensation or otherwise shall be admissible for such tenderer/bidder whose tender/bid is rejected.

18. This **Notice Inviting Tender** (NIT) including Appendix 'A' and Annexures thereto, if any, shall form part of the contract agreement.

(Signature of Contractor) AGE (Contracts)
Dated : For Accepting Officer

APPX 'A' TO NOTICE OF INVITING TENDER (NIT)

1	Name of work	:	CA NO. GEN /TOKEN-14/2026-27 **REPAIRS/REPLACEMENT OF PERIMETER SECURITY LIGHTS, FLOOD LIGHTS WITH OTHER CONNECTED ITEMS AT VARIOUS LOC UNDER GE NAGROTA Tender Id: 2026_MES_764624_1**
2	Estimated Cost	:	**Rs. 45.00 Lakhs** (At Par Market)
3	Period of completion	:	**180 days**
4	Cost of Tn ender documents	:	**Rs 500.00** in the form of DD/Bankers cheque from any Schedule/Nationalized bank in favour of **GE Nagrota** payable at **Nagrota** (Note : In case of retendering the contractor, who had quoted in the previous call is not required to submit the cost of tender.)
5	Website/portal address	:	www.defproc.gov.in
6	Type of contract	:	The tender shall be based on drawing and specifications (IAFW-1779A) and GCC (IAFW-2249) with Schedule 'A' (list of items of work) to be priced by contractor. The tenderers are required to quote their rates against each item of Schedule 'A' (**BOQ**)
7	Information & details	:	Refer critical dates on the website.
		:	
	(a) Bid submission start date	:	
	(b) Bid submission end date	:	
	(c) Date of bid opening	:	
8	**Eligibility criteria** (a) **For MES enlisted contractors**	:	All contractors enlisted with MES in **Class 'D'** & above and Category **b(i) Low Tension Electric Works (upto 1100 Volts)** subject to the remarks wrt performance in respect of wks in hand reflected in Work Load Return (WLR) or any other report circulated by competent engineer authority.
	(b) **For Contractors not enlisted with MES.**	:	(i) The firms not enlisted with MES should meet the enlistment criteria of **Class 'D'** & above and Category **b(i) Low Tension Electric Works (upto 1100 Volts)** i.e. with regard to having satisfactorily completed requisite value works with Central/State Government/Central/State PSUs/AWHO/AFNHB/CGEWHO/DGMAP. Annual turnover, bank solvency, working capital, and other requirements given in para 1.4 and 1.5 of section 1 of MES Manual on Contracts – 2020 as available in all MES formations as well as MES website (www.mes.gov.in) (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 (iii) Not suspended/debarred/blacklisted (either permanently or temporarily) from participating in any bid or for business dealings by any Central/State Government Department PSU or any Autonomous Body under Central/State Government or any Local Body as on the bid submission end date. (iv) Details of works completed and under progress in MES be submitted in the following format:

Srl No.	CA No. & Name of work	Value of CA (Rs.)	Date of commencement as per W.O. No.1	Date of completion as per W.O. No.1	Extended date of completion, if any	Actual date of completion	% Progress

(v) Un-enlisted Contractors who have secured two works in MES should get themselves registered in the appropriate designated Class with any Registering Authority, else these firms will not be eligible for participation in the tender unless & until the firms are enlisted with the MES.

D	**Tender issuing and Accepting Officer**	:	**GE Nagrota**
10	**Executing agency**	:	**GE Nagrota**
11	**Earnest Money**	:	**Rs. 90,000.00** in favour of **GE Nagrota** in the form of Deposit at call receipt, FDR not acceptable. payable at **Nagrota.**

APPENDIX 'A' TO NOTICE OF TENDER (CONTD…)

NOTES :-

(1) In case after opening of Cover 1, the number of MES enlisted contractors of eligible class as well as eligible un-enlisted contractors, if any, fulfilling the other eligibility criteria given in NIT is less than 7 (Seven), applications in respect of MES contractors of one class or two classes (in case of remote and difficult areas to be decided as per list circulated by CE command/ADG) below the eligible class shall also be considered subject to fulfilment of other eligibility criteria given in the NIT. Therefore, MES contractor's one class below (two classes below in case of remote and difficult areas) may also bid for this tender. Such contractors (contractors of one/two classes below the eligible class) shall not be considered in case their present residual work in hand is more than FIVE TIMES their present tendering limit. However, in case such contractors 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 fulfil the criteria of upgradation shall also upload the requisite information/documents in support of upgradation. These details shall be verified by the Tender Issuing Authority from concerned formations in case bids of such contractors are considered for evaluation.

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

(3) Unenlisted contractor shall be considered provided he meets the criteria. Foreign firms shall not be eligible for this tender. However Indian Firms having foreign national/Indian nationals staying broad/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: -

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

(5) Contractors not enlisted with MES will be required to upload following documents in Cover 1 for checking eligibility.

(a) Application for tender on Firm's letterhead.
(b) Scanned copy of DD/ Bankers cheque toward cost of tender and Earnest Money Deposit (EMD) instrument.
(c) Copy of Police Verification Report/Police Clearance Certificate/ Character Certificate from the Police Authority of the area where the registered office of the firm is located/notarized copy of valid passport of Proprietor/each Partner/each Director.
(d) All document required for enlistment in MES for the class mentioned in Para 8(b) above as per Para 1.5 of Section 1 of MES Manual on Contracts 2020.
(e) Details of works being Executed in MES, if any.
(f) Any other document required as described in this Appendix.

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

(7) Contractors should ensure that their original physical DDs and Earnest Money Deposit (EMD) instruments (as applicable) reach the office of Accepting officer within 07 (Seven) days of bid submission end date 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 towards cost of tender have been uploaded in Cover 1 but physical copies are not received within the stipulated period, their financial bids (Cover2) will be opened. However non-submission of physical copies of cost of tender shall be considered as willful negligence of the tenderer with ulterior motives and such tender shall be banned from bidding for a period of **six months** 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 contractor's 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 he same are not received in physical form within stipulated period. Such tenders shall not qualify for opening of financial bid (Cover 2).

APPENDIX 'A' TO NOTICE OF TENDER (CONTD…)

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

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

(10) Invitation for e-tender does not constitute any guarantee for validation of 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 reasons therefore through tender evaluation report which shall be uploaded on the website. Such tenderer, if desires may appeal to the next higher Engineer Authority (NHEA) i.e HQ CWE Nagrota on email id ngrta3-mes@nic.in with copy to the Accepting Officer on email on email id ngrta4-mes@nic.in 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 bidding. The tenderer/bidder shall not be entitled for any compensation whatsoever for rejection of his bid.

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

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

(13) Revoking the offer or revising the rates upward or offering voluntary reduction by the any participating bidders after last date and time of bid submission (i.e, cover-I) 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 he notified to the tenderer tor depositing through MRO and consideration of such tenderer in tender evaluation for future works shall remain suspended till the aforementioned amount is deposited in the Government Treasury. No other disciplinary/administrative action shall be taken against such tenderers. In such a situation, the next lowest offer shall not be considered for acceptance. Instead, retendering shall be resorted to in a transparent and fair manner and the defaulting tenderer and his related firm, if any, shall not be eligible for this tender in second call or subsequent calls.

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

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

AGE (Contracts)

Signature of Contractor For Accepting Officer

File No : 8605/GEN/ T-14/2026-27/ 02 /E8

Date : May 2026

Garrison Engineer Nagrota
Military Engineer Services
Nagrota
Pin 901208 c/o 56 APO

In lieu of IAFW-1779A (Revised 1955)
to be read in conjunction with General
condition of Contract IAFW-2249)

MILITARY ENGINEERS SERVICES

ONLINE
Garrison Engineer NAGROTA
Military Engineer Services
Nagrota
Pin 901208 C/o 56 APO

8605/GEN/T-14/2026-27/03 /E8 May 2026

TENDER AND ITEM RATE CONTRACT FOR WORKS BY MEASUREMENT REQUIRED IN THE EXECUTION FOR CA NO. GEN /TOKEN-14/2026-27 **REPAIRS/REPLACEMENT OF PERIMETER SECURITY LIGHTS, FLOOD LIGHTS WITH OTHER CONNECTED ITEMS AT VARIOUS LOC UNDER GE NAGROTA**

Tender Id: 2026_MES_764624_1

1. Shri/M/s_____ is/are hereby authorized to tender for the above work.

2. The Complete quoted tender to be uploaded in the www.defproc.gov.in site as per critical dates in NIT.

3. All correspondence concerning to this tender shall be addressed as indicated on the top of this letter quoting the reference as given.

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

Signature of the Officer

Issuing the documents

Appointment : AGE (Contracts)

SCHEDULE 'A'

LIST OF ITEMS OF WORKS

CA NO. GEN /TOKEN-14/2026-27 **REPAIRS/REPLACEMENT OF PERIMETER SECURITY LIGHTS, FLOOD LIGHTS WITH OTHER CONNECTED ITEMS AT VARIOUS LOC UNDER GE NAGROTA**

Tender Id: 2026_MES_764624_1

NOTES:-

1. Schedule 'A' of this contract is divided into three parts as follows: -
   (a) Schedule 'A' Part – I (E/M Works at Nagrota)
   (b) Schedule 'A' Part – II (Schedule of Credit)

2. The quantities shown in col-4 are approximate and are inserted as guide only. They shall however, not be varied beyond the limit in Condition 7 of IAFW-2249, General Condition of contract.

3. Rates in Col-13, shall be filled in by the contractor in figures.

4. Total amount of Col-55 is not firm but shall be treated as 'the contract sum'. Referred to in IAFW-2249.

5. Unless otherwise specified method of measurement for various items of works shall be as stipulated in the MES Standard Schedule of Rates, Part-I, 2009 and Part-II, 2020.

6. The entire work under this contract shall be completed within the period of **180 Days** from the date of commencement of work as ordered by GE in First work order.

7. Unless otherwise specified in this documents, the unit rate quoted in Schedule 'A' shall be deemed to include all materials and labours, T & P or Machineries and all taxes such as GST and labour welfare cess etc. The descriptions of items given in the Schedule are in brief, these are deemed to be amplified and read in conjunction with special Condition, Particular Specification, Specifications for materials and workmanship given in MES Schedule (Part-I, 2009 and preambles to items given for relevant trade section of MES Schedule Part-II, 2020).

8. Unit rates quoted by the contractor against the various items of Schedule 'A' shall interalia deemed to include for any minor details of construction which are obviously and fairly intended and which may not have been specifically stated in the tender documents, but which essential for the execution and completion of the works. In case of difference in opinion between the contractor and GE as to whether or not, any items of works constitute minor details of construction; the decision of the Accepting officer shall be Final, Conclusive and Binding.

9. The tenderer shall quote only for indigenous plants and equipment's. No foreign exchange and import license will be arranged by MES.

10. Consequent to implementation of Goods and Service Tax (GST) the contractor's quotation shall be deemed to include Tax under GST, as applicable to the goods procured for execution of contract and services rendered under the contract as works contract. This provision shall supersede all other provisions mentioned elsewhere in the tender documents and General Conditions of Contracts (IAFW-2249). In addition to GST, as brought out above, the contractor's quotation shall be deemed to include labour welfare cess, Seignior Oge for mining tax, if not included in GST. Any other taxes, not brought out above but are applicable as on date of submission of tender, shall be deemed to be included in the tender. In this connection, the provisions as brought out under condition 51 of IAFW 2249 shall be applicable. The increase / decrease in any taxes / duties, statutory or otherwise after submission of tender and during the execution of the works shall be adjusted as provided in relevant clause of Special conditions herein after. The various taxes mentioned in Special Conditions, Condition 10 of IAFW-2249, shall be deemed to be amended as applicable as on date of submission of tender. Tax deduction at source on works contracts shall be deducted at source, on payments made to the contractor as specified in the GST Act.

11. **EMPLOYEES PROVIDENT FUND & MISCELLANEOUS PROVISIONS (EPF & MP) ACT- 1952 REG** .:- The contractor shall have invariably provident Fund code Number and also ensure that all the workers deployed by him are enrolled as members of provident Fund and should be given the universal Account Number (UAN).While clearing the bills of the contractor, certificate be obtained that all workers employing directly or indirectly by him are registered for EPF and the due contribution have been credited into their account. If contractor fails to deposit EPF/ESI contribution on behalf of workers & employees, the same shall be retained from their due payment till deposit the same with concerned Deptt.

Contd…

12. The total amount shown is not firm but will be treated as contract sum referred thereto in IAFW-2249. The amount of schedule of credit shall be deducted from the Total amount of BOQ for arriving at Contract sum. Contract sum shall be arrived accordingly for finding out L-1.

13. If any tenderer offers any lump sum discount on summary or through letter, such amount shall be converted into a uniform percentage with respect to overall quoted amount. Such uniform percentage shall have the same effect in case of any variation in quantities. The amount of work done shall be adjusted accordingly.

14. The quoted rates shall be deemed to include all taxes levied by Central and state Government at the prevailing rates such as IT, GST and Labour Welfare Cess etc. GE shall recover taxes, which have to be deducted at source, at applicable rates.

15. In case of loss/damage of any of the items obtained from demolition while under custody of contractor, recovery shall be affected from the contractor at double the market rate as decided by GE.

16. **Defects Liability Period**:-
(a) The defect liability period for the work shall be Twelve calendar months after the works have been handed over to the Government (hereinafter referred to as the defects liability period).

17. **The work shall be carried out as per site requirement/ direction of Engineer-In-Charge on day to day maintenance in respect of any quantities.**

18. **Requirement of Electric License.**

18.01 Prior to commencement of electrical work/ electrical component of works, copy of valid Electrical License in the name of the contractor or copy of agreement with agency having valid Electrical License issued by the concerned State Government alongwith agency's Electrical License shall be submitted by the contractor to the Accepting Officer through Engineer-in-Charge. In case contractor does not possess valid Electrical License and he intends to get such work executed through agency having valid Electrical License and with whom he has agreement, prior approval of such agency in subject contract shall be get done.

18.02 In addition, Supervisor for execution of electrical works/electrical component of works employed by the contractor shall possess Supervisor certificate of competency issued by concerned State Government and the worker/tradesmen for execution of electrical works/ electrical component of works shall hold necessary permit issued by the State Government.

18.03 Reference of Electrical License and details of Supervisor's certificate of competency and permit of Tradesmen employed for execution of electrical works/electrical component of work shall be duly incorporated in the Works Diary and relevant site documents respectively for the whole period during this work is executed.

19. **MAKES OF ITEMS**
(a) In case Sch A' items indicate makes then same shall be from any one of the makes specified therein alongwith the makes mention in Apps E (list of makes and as specified in note No. 19 (e) here below at the option of contractor.

(b) In case manufacturer of the item makes both ISI and non-ISI marked items, then ISI marked item shall only be used. Please note that even if any makes are given in Particular Specifications, they shall stand superseded (except makes of cement & steel) and only the makes given in Appendix E (list of makes) (B/R & E/M) shall be applicable for all purposes.

Contd…..

SCHEDULE 'A' CONTD….

(c) Materials/items for which no make have been specified shall be ISI marked, contractor will download list of BIS marked manufacturer from BIS site www.bis.org.in and submit name of manufacturer meeting the contract specifications criteria and hand over the report with a request letter to Engineer-in-charge with his signature for approval of makes. The material shall only be procured by Contractor after approval of makes by GE concerned. In case ISI marked materials/ items are not manufactured then same shall conform to relevant IS amended upto date

(d) Irrespective of makes, manufacturers specified in tender documents, material(s) should not be procured from/ of the makes, manufacturers, brands models etc, if as on date, there is ban on the manufacturer due to technical defaults or not operating/ manufacturing for a long time or nonexistent etc. No claim whatsoever on this account shall be admissible to the contractor later-on.

(e) In addition to the makes mentioned in Appx E (list of makes,) any other make approved (as Group-I /Category-I/Group-X i.e. superior group) by E-in Cs Branch (CMPT-I), CENC (CMPT-II)/ any other Command or ADG) and HQ CE UDHAMPUR ZONE (CMPT-III) upto bid submission end date shall also be deemed included in the list of makes brands/manufacturers here- in -after.

(f) In case makes of any item(s) are not specified in any of the aforesaid documents, such items shall be of reputed make as approved by Accepting Officer in writing and shall bear ISI marking.

(g) In order to decide the equivalency of cat part of different makes, model and manufacturers, cost, specifications and parameters etc. shall be taken into consideration by the GE. In case of difference in the opinion of GE and Contractor decision of the concerned CWE shall be final, conclusive and binding. No claim whatsoever on this account shall be admissible to the contractor later on

(h) Contractor will intimate in writing to GE the name of make of material, brand model No/ Cat Part No which he intends to procure. GE will approve the same within 10 days of receipt of such request after due verification of documents supplied by contractor with his request letter.

20 . Production of purchase vouchers and test certificates of main producers mentioned in particular specifications are mandatory for the all consignments of reinforcement steel supplied by the contactor before making any payment and incorporation of steel in work. In case of structural steel, production of purchase vouchers and test certificates of main producers or secondary producers as mentioned in particular specifications are mandatory before making any payment and incorporation of steel in work.

21. PRICING OF DEVIATION

(a) In case of any deviation, mode of pricing shall be decided by the Accepting Officer in terms of Condition 62 of IAFW-2249.

(b) In the event of a deviation order involving fixation of Special (star) rate, Draft star rate shall be prepared, by GE (within a maximum period of 30 days) while initiating the proposal for deviation seeking approval of Accepting Officer and notified to contractor. While notifying the Draft Rate, it will be clearly stipulated that the same is merely an estimated rate and firm rate shall be fixed based on actual and receipt of supporting documents from the contractor such as vouchers/literature of product/test certificates etc. (as applicable) on completion of the work involving Star Rate. Any objection to the method of fixing Star Rate will be dealt as per condition 7 of IAFW-2249.

(c) Draft Star Rates shall be made based on market enquiry through telephonic enquiry/quotations/email/rate lists/ internet-based sources, material & labour constants available in various Civil Engg books and record available in respect of Star Rates approved in the past for similar items of work etc. Contractor may also assist GE's office in preparation of draft Star Rate.

(d) The draft Star Rate shall be purely a draft rate and shall not be used for claiming final payment during execution of work. However, GE shall allow part payment to the tune of 80% during execution to avoid any financial hardship to contractor.

(e) After completion of the item of work involving Star Rate, contractor shall submit the vouchers/literature of product/test certificates (as applicable), decision of GE being final in case of any disagreement) for finalization of Star Rate. The Star Rate shall be technically checked by DCWE(C)/Director(C) depending upon the financial effect & approval by competent authority within a period of one month from submission of the relevant documents by contractor as mentioned above.

(f) The Star Rate as approved by competent authority after technical check by DCWE(C)/Director (C) depending upon the financial effect shall be referred as "the rate decided by GE under Para 62(G) of IAFW-2249.

22. The tenderer are advised to visit the work site by taking prior appointment with GE before submission of tender. The tenderer shall have no claim what-so-ever on this account at a later stage whether he has actually inspected the work site or not.

SCHEDULE 'A' CONTD….

23. The Contract does not include the provision of Reimbursement/ Refund in variation of prices and no escalation shall be paid. However, Condition 63 of IAFW -2249 shall be applicable in this contract. The contractor shall consider this aspect while quoting the rates. No claim whatsoever on this account shall be entertained at later stage.

24. In case any item is repeated in BOQ, lowest rate quoted by bidder shall be considered for payment purpose only.

25. The fine aggregate, coarse aggregate, bricks and other materials shall be procured only from legal sources.

26. The items for excavation and earthwork as catered in the provisional schedules are meant to be executed through mechanical means (unless otherwise specifically mentioned in the particular item) i.e. Hydraulic excavator, if due to any reason, whatsoever, excavation is done manually (or any other means), nothing extra shall be admissible to contractor on this account. The contractor shall consider this aspect while quoting his rates. No claim whatsoever on this account shall be entertained at later stage**.**

27. In terms of provisions of the Contract Labour Regulations and Abolition Central Rules, 1971, tenderers are requested to obtain a license from the Labour Commissioner, Jammu for the labour employed under subject work and the same shall be submitted to the Engineer-in-Charge before commencement of work. Further, contractor has to submit an indemnity bond to the GE immediately after acceptance of his tender.

28. If and when rock (soft/disintegrated or hard) is met at site, contractor shall immediately notify the fact to the GE in writing, who will after the verification, allow the work to proceed if item is included in BOQ otherwise, regularize the change through a proper deviation order. No work in excavation in rocks shall be carried out without written approval of GE. Hard Rock / Soft and disintegrated rock shall be properly segregated and measured only after approval of GE.

29. Blasting shall not be permitted in this work.

30. All the stones/boulders or rocks (soft/hard/disintegrated) obtained from site during excavation shall become property of the government and the same shall be issued/sold to the contractor under Schedule of credit @ Rs 500.00 per cum.

31. **T&P**

31.1 The requirement of T&P, Machinery and Transport shall be as under:-

(a)	One Bag capacity concrete mixer (diesel)	-	1 No
(b)	Vibrator (Needle and Plate Type)	-	2 Nos
(c)	Steel shuttering with spans, props etc.	-	500 Sqm

31.2 Please note that successful bidder/contractor will be required to strictly ensure engagement of Engineers as per condition 25 of General Conditions of Contracts and deployment of T&P, Machinery & Transport is stipulated in Para 7.1 above.

31.3 Inadequate engagement of engineers/deployment of T&P, Machinery & Transport as per Contract Condition shall be considered as serious lapse attracting ban/removal/downgrading department of the firm/company.

SCHEDULE 'A' PART-II

SCHEDULE OF CREDIT

1. The following dismantled/demolished old and unserviceable materials shall be considered as contractor's property as credit shown under respective columns. It is an expressed condition that, the contractor shall be allowed to remove the dismantled materials from the site of work after adjusting the amount of credit/proportional amount of credit depending upon the qty of dismantled materials.
2. The total cost of materials obtainable for the purpose of credit has been assessed by the department. It is however made explicitly clear that the cost assessed by the department is only a rough indication and contractor will have no claim whatsoever against the department if the actual cost of materials turn out to be different from the cost given by the department.

Ser No	Description of materials	Unit	Approx qty	Unit Rate of recovery Rs	Amount Rs
1	2	3	4	5	
1	Old U/S LED Street light driver/LED Chips of any capacity	Each	3800.00	5.00	19000.00
2	Old Unsv Timers/Automatic Street light switch	Each	5.00	100.00	500.00
3	Old U/S street /flood light fitting any watt	Each	934.00	50.00	46700.00
4	Old U/S junction box	Each	50.00	50.00	2500.00
5	Old U/S GI bracket	Each	50.00	35.00	1750.00
6	Old U/S UG Cables of any size	RM	1000.00	10.00	10000.00
7	Old U/S MCBs any cap	Each	105.00	20.00	2100.00
8	Old U/S PVC wire 4/6/10/16 Sqmm & 2 Core 1.00 sqmm	RM	6900.00	2.00	13800.00
9	Old U/S sensor	Each	30.00	10.00	300.00
10	Old u/s bricks	Each	8600.00	0.50	4300.00
Total					**100950.00**

Signature of Contractor

AGE (Contracts)
for Accepting Officer

SCHEDULE 'B'

ISSUE OF MATERIALS TO THE CONTRACTOR

(See condition 10 of IAFW-2249)

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

----------NIL----------

SCHEDULE 'C'

LIST OF TOOLS PLANT (OTHER THAN TRANSPORT) WHICH WILL BE HIRED BY CONTRACTOR

(See condition 13, 34 and 35 of IAFW-2249)

Sl No	Qty	Particulars	Pertains tomes crow supplied	Hire charges per unit per working day	Stand by, place charges of per unit, issue per day	Remarks
1	2	3	4	5	6	7

----------NIL----------

SCHEDULE 'D'

TRANSPORT TO BE HIRED TO THE CONTRACTOR

(See condition 16 & 35)

Sl No	Qty	Particulars	Rate per unit working day	Place of issue (ByName)	Remarks
1	2	3	4	5	6

----------NIL----------

Signature of Contractor
Dated:

AGE (Contracts)
for Accepting Officer

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

TENDER

To

THE PRESIDENT OF INDIA

Having examined and perused the following documents: -

1. Specifications signed by AGE (Contracts), GE Nagrota.

2. Drawings detailed in the specifications.

3. Schedule 'A' (BOQ), 'B', 'C' and 'D' attached hereto.

4. MES Standard Schedule of Rates 2009 (Part-I specifications) with amendment No. 1 to 3 and Part-II (2020) with amendment No. 1 to 122 (here-in-after referred to as the MES Schedule) as applicable to the above said schedule.

5. General conditions of contracts, IAFW-2249 (1989 Print) together with amendments 1 to 49 and errata 1 to 20.

6. **WATER: CONDITION 31 OF IAFW 2249 GENERAL CONDITIONS OF CONTRACT**

   Refer condition 31 of IAFW-2249 General condition of contracts. Water will be supplied by the MES @ Rs. 3.75 for every Rs 1000/- worth of work done priced at contract rates.

7. **SHOULD THIS TENDER BE ACCEPTED**

   * I / We agree

   (a) That the sum of **Rs. 90000.00** (**Rupees Ninety thousand only**) forwarded as Earnest money shall either be retained in Part or full as the case may be, **on account of Performance Security or be refunded by the Government on receipt of the appropriate amount as Performance Security within the time specified in condition 19, amendment No. 47 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 at the item rates contained in the aforesaid Sch 'A' or at such other rates as may be fixed under the provisions of condition 62 of IAFW-2249 and to carry out such deviations as may be ordered vide condition 7 of IAFW-2249 up to a maximum of **± 10 % (Ten percent)** and further agree to refer all disputes as required by condition 70 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 Institution of Surveyor (India) recognized by Govt of India to be appointed by the Chief Engineer Udhampur Zone P.O: Garhi, Udhampur-182121 or in his absence the officer officiating as Chief Engineer Udhampur Zone P.O: Garhi,, Udhampur-182121 , Udhampur , whose decision shall be final, conclusive and binding.

* Delete whichever is not applicable.

Contd……..

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

SIGNATURE _____ in the

capacity of _____duly

authorized to sign the tender for and on behalf of _____
(IN BLOCK LETTERS)

Date: _____

Postal address: _____
_____
_____

Telephone No._____

FAX No. _____

WITNESS
Signature _____

Address _____
_____
_____
_____

ACCEPTANCE

_____alterations have been made in this document and as evidence that these alterations were made before the execution of the Contract Agreement, they have been initialed by the Contractor and Shri Rajeev Kumar, AGE (Contracts). The said Officer(s) is/are hereby authorized to Sign and initial on my behalf the documents forming part of this contract.

The above tender was accepted by me on behalf of the President of India at the item rates contained in the Schedule 'A' for Rs……..……(Rupees…….…….

…….) on

the ……..…day of ……..……2026.

SIGNATURE……

Dated this……..day of ……2026

Appointment: GARRISON ENGINEER.

(FOR AND ON BEHALF OF THE PRESIDENT OF INDIA)

In lieu of IAFW-2249

GENERAL CONDITIONS OF CONTRACTS (IAFW-2249-1989 PRINT)

FOR

LUMPSUM CONTRACT (IAFW-2159)*

TERM CONTRACTS FOR ARTIFICERS WORK (IAFW-1821)*

MEASUREMENT CONTRACTS (IAFW-1779 AND 1779A)*

A copy of the GENERAL CONDITIONS OF CONTRACTS (IAFW-2249-1989 print) with errata 1 to 20 and amendment Nos 1 to 49 has been supplied to me/us and is in my/our possession. I/we have read and understood the provision contained in the aforesaid GENERAL CONDITIONS OF CONTRACTS before submissions of this tender and I/we agree that I/We shall abide by the terms and conditions thereof, as modified, if any elsewhere in these tender documents.

It is hereby further agreed and declared by me/us that the GENERAL CONDITIONS OF CONTRACTS (IAFW-2249-1989 Print) including Condition 70 thereof pertaining to settlement of disputes by Arbitration, containing 33 pages (Serial Page Nos 26 to 58) with errata 1 to 20 and amendment Nos 1 to 49 forming part of these tender documents.

* as applicable

AGE (Contracts)
For Accepting Officer

Signature of Contractor
Dated:

SCHEDULE OF MINIUM FAIR WAGES

1 It is hereby agreed that "**Schedule of Minimum Fair Wages**" as published by Govt of India/ State Government/ Government local authorities whichever is highest and which specifies minimum rates of wages for various categories of workman as applicable on the last due date of receipt of this tender shall form part of these tender documents.

2. The minimum rates of wages shall consist of all inclusive rates and include also the wages for weekly day of rest.

3. My/Our signature here under amount to my/our having signed the aforesaid documents forming part of this tender.

Signature of Contractor
Dated:

AGE (Contracts)
for Accepting Officer

SPECIAL CONDITIONS

1. GENERAL

1.1. The following Special conditions shall be read in conjunction with General Condition of Contracts, IAFW-2249(1989 Print) including errata and amendments thereto IAFW-1779A (Revised 1955) including all errata and amendments thereto. If any provision in this Special Conditions is at variance with the provisions in the above-mentioned documents the former shall take precedence there over.

2. GENERAL SPECIFICATIONS

2.1. The term General Specification used in any of the documents forming part of this contract refers to the specifications contained in MES Schedule.

3. INSPECTION OF SITE

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

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

4. AVAILABILITY OF LAND FOR STORAGE OF MATERIALS, ACCOMMODATION FOR LABOUR ETC.

4.1. Delete the following in Para 1 of Condition 24 of IAFW-2249(1989 Print) General Conditions of Contracts “In the event of the areas of land ……..... allotted to him” and the following shall be read in conjunction with Condition 24 of IAFW-2249 :-

4.2. The contractor shall be permitted to store his materials including erecting temporary sheds thereof, temporary workshops and the like at the area of land, marked for this purpose on the site plan shown by the GE free of rent, if it is in class A-1 land, for other types of land he shall be charged license fee of Re 1/- per year or part of year for each and every separate area of land allotted to him. No land shall be allotted to the contractor for construction of huts for accommodation of labour.

5. ROYALTIES

5.1 Condition 14 of General Conditions of Contracts (IAFW-2249) is not applicable to this contract.

6. Restriction for entry to work site.

6.1 All work lies in RESTRICTED AREA. The restriction for entry to work site and conditions of working in restricted area shall be as under:-

(a) The contractor/his agents/representatives / workmen etc. and his material carts, trucks or other means of transport etc. will be allowed to enter through and leave from such gate or gates and at such times as the GE or authorities in charge of restricted area may at their sole discretion permit to be used. Contractor's authorized representative is required to be present at the places of entry and exit for the purpose of identify his carts, trucks etc, to the personnel in-charge of the restricted area.

(b**) Identity of workmen**: Every workman shall be in possession of an identity card. The identity cards shall be issued after a thorough investigation of the antecedents of the laborers by the contractor and attested by officer in charge of the units concerned in accordance with the standing rules and regulations of the unit. Contractor shall be responsible for conduct of his workmen, agent or representatives.

(c) **Identity cards or passes**: The contractor, his agents and representatives are required individually to be in possession of an identity card or pass which will be examined by the security staff at the time of entry into or exit from the restricted area at any time or number of times inside restricted area.

(d) **Search:**
Thorough search of all persons and transport shall be carried out at each gate and for as many times gate is used for entry or exit and may also be carried out any number of times at the site within the restricted area.
(e) **Working hours**: The units controlling restricted area usually work during six days in a week and remain closed on the seventh day. The working hours available to the contractor's labour staff gets reduced because of the time of entry and exit during working hours. The exact working hours, working days and non- working days observed for these restricted area (s) where works are to be carried out shall be deemed to have been ascertained by contractor before submitting his tender. The tenderer’s attention is invited to the fact that numbers of working hours for a unit are prescribed in regulations and that they cannot be increased by the GE or authorities controlling the restricted area. The definition of working days as given under Condition 1 (1) of IAFW-2249 does not apply in case where the works are carried out in restricted area. However, following working hours shall be available to the contractor's labour inside the unit area:

(i) Working hours 0830 hours to 1630 hours
(ii) Half day 0830 hours to 1400 hours

SPECIAL CONDITIONS (Contd.....)

(f) Fire Precautions
(i) The contractor, his agents, representatives, workmen etc. shall strictly observe the orders pertaining to fire precaution prevailing within the restricted area.
(ii) Motor transport vehicles, if allowed by the authorities to enter the restricted area must be fitted with the serviceable fire extinguisher and spark arrestor.

(g) **Female searcher** If the contractor desires to employ female labour on works to carry out inside the area of factory, depot, park etc. and a female searcher is not borne on the authorized strength of the factory, depot, park etc. at the time of submission of tender, he shall be deemed to have allowed in his tender for pay and allowances etc. for a female searcher (class IV servant) calculated for the period female labourer(s) employed by him inside the area. If more than one contractor employ female labourer(s) during any month and female searcher(s) has/have to be employed in addition to the authorised strength of the factory, depot, park etc. the salary and allowances paid to the additional female searcher(s) shall be distributed on equitable basis between the contractors employing female labour taking into consideration the values and period of completion of their contracts. The GE's decision in respect of the amount recoverable on this account from any contractor shall be final and binding.

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

(a) The rates quoted by the contractor shall deemed to be inclusive of all taxes (including GST on materials, on works contracts, Turnover Tax, Labour welfare cess etc.), duties, Royalties, Octroi & other levies payable under the respective statutes. No reimbursement/refund for variation in rates of taxes, duties, Royalties, Octroi & other levies, and/or imposition/abolition of any new/existing taxes, duties, Royalties, Octroi & other levies shall be made except as provided in sub para (b) here-in-below.

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

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

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

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

8. CONTRACTOR'S REPRESENTATIVES AND WORKMEN

8.1 The contractor shall employ only Indian Nationals as his representative, Servants and workmen after verifying their antecedents and loyalty. He shall ensure that no person of doubtful antecedents and Nationality is, in any way, associated with the works. If for any reasons of technical collaboration or consideration, the employment of any foreign National is unavoidable, the contractor shall furnish full particulars to this effect to the Accepting Officer at the time of submission of his tender. 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 the tender to this effect. In case the GE desires, contractor will have the police verification done of personnel employed by him.

8.2 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 his account.

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

9. OFFICIAL SECRET ACT

9.1 Refer condition 2A of General Conditions of Contracts IAFW-2249. The Contractor's attention is invited to the Indian Official Secret Act 1923 (XIX of 1923), particularly Section 5 thereof. The contractor shall be bound by the provisions of this Act.

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SPECIAL CONDITIONS (Contd.....)

10. SECURITY OF CLASSIFIED DOCUMENTS

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

11. MINIMUM WAGES PAYABLE

11.1 Refer Condition 58 of IAFW-2249. The contractor shall not pay wages lower than minimum wages for labour as fixed by the Government of India/State Govt/Union Territory whichever is higher.

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

11.3. The fair wages referred to in Condition 58 of IAFW-2249 will be deemed to be the same as the minimum wages, refered to above as upto date from time to time.

11.4. Schedule of minimum wages are not enclosed alongwith 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.

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

11.6 No payments will be made unless proof of payment of wages to the workmen is submitted by the contractors /firms. In case payments are made in current coins or currency notes, certificate will be submitted by the contractor/ firm along with undertaking by the concerned workmen asking for payment other than by cheque or by crediting in the bank account of the employee/ workmen.

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

12.1 The contractor shall permit free access and generally afford reasonable facilities and usual conveniences to other agencies or department workman to carry out their part of the work, if any, under separate arrangements. The contractor shall not be allowed any extra payments on this account.

13 WATER

13.1 Refer Condition 31 of General Conditions of Contracts (IAFW-2249) and clause No. 4.9, 5.18 & 14.11 of MES Schedule of Rates Part-I. If the contractor desires to buy water from Govt, the same will be supplied by the department. Water at the flat rate of Rs 3.75 for every Rs 1000/- worth of work done priced at contract rate. The supply of water may however not be continuous; the contractor shall be deemed to have ascertained the hours of availability of water before submitting his tender. MES do not guarantee the output of water supply or breakdown in the system or supply if insufficient.

13.2 The contractor, if he so desires, will be allowed to augment the water supply by boring wells at his own cost at site(s) approved by the Garrison engineer. On completion of the work, the contractor shall remove pipes etc installed and make good the site as directed by Engineer-in-Charge without any extra cost to the Government. The contractor shall, however, ensure that water drawn from such sources is clean and free from all impurities and is suitable for mixing of concrete, mortar, washing, aggregate and curing of concrete as specified in IS-456

14. SUPPLY OF ELECTRICITY

14.1 If the contractor desires to buy electricity, the electric supply will be made available by the MES and shall be charged for the electric energy consumed for execution of works at the following rates :-

(a) At **Rs. 12.67** per unit for lighting/power.

14.2 Electric supply required for works shall be made available by MES at the point(s) as shown on site plan/near site of work (exact location to be ascertained from the GE before tendering) up to a maximum load of 5 KW 3 phase. The main switch and meters to register the electric energy supplied shall be provided and installed by MES. The contractor shall provide all necessary connections, cables, fittings etc from the main switch in order to ensure a proper and suitable supply of electricity for the execution of work. Contractor's all installation shall conform to and be strictly in accordance with Indian Electricity Act and moreover the layout of cable etc. shall be as per plan approved by the Engineer-in-Charge. Any risk either for materials or personnel will be the contractor's responsibility.

14.3 GE or his representative shall be free to inspect the power consuming devices or any electrical line provided by the contractor. Any devices or electrical lines provided by the contractor which is not to the satisfaction of the GE, shall be disconnected from the supply, if so required by him.

14.4 MES do not guarantee for continuity of supply and no compensation whatsoever shall be allowed for supply becoming intermittent or for break down in the system.

Contd…

SPECIAL CONDITIONS (Contd.....)

15. SAMPLES OF MATERIALS

15.1 Refer condition 10 of IAFW-2249 and clause 1.6 and 1.7 of MES Schedule, Part- I.

15.2 Materials provided by the contractor for incorporation in the work shall be of makes as given in PS.

15.3 The contractor shall not procure materials unless the samples are got approved by the GE.

15.4 The tenderer is advised to inspect the 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 actually inspected them or not.

15.5 The order of precedence for acceptance of materials shall be as under:-

15.5.1 Materials of makes as given in Schedule 'A'.

15.5.2 Materials of makes given in Particular Specifications.

15.5.3 Materials whose makes are not given in Schedule 'A' / Particular Specifications, then such material shall be ISI marking. IS means Indian Standards as issued by the Bureau of Indian Standards. Wherever in the specifications IS is referred to, it means the edition with all amendments, current on the due date of receipt of the tender documents. In case of non manufacture of ISI marked materials, materials shall confirm to relevant ISI.

15.5.4 In case of non-availability of materials at (a), (b) & (c) above, best available materials in the market as desired in clause 1.3 (b) of SSR 2009 Part I and approved by GE.

15.6 The cost of particular item of material in a contract exceed Rs. 1 Lakh, these materials shall be procured only from the manufactures or from their authorized dealers / stockiest (except in case of materials of local origin) and the contractor shall furnish proof thereof to the satisfaction of the GE that the material so comply.

16. RECORD OF MATERIALS AND PURCHASE VOUCHER

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

16.2 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.

16.3 The Contractor shall produce vouchers /invoices from the manufacturers and /or the authorized agents for the full quantity of the materials before submitting claims for payment for advances on account of the work done and/or materials collected in the accordance with condition 64 of General Conditions of Contracts-IAFW-2249.

16.4. The contractor shall on demand produce to the GE the original receipted vouchers/invoices in respect of the supplies Vouchers/invoices so produced and verified shall be stamped by the Engineer-in-Charge indicating contract number, name of work, under his dated signature. 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 material being less than smallest packing.

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

17. RECORD OF CONSUMPTION OF CEMENT

17.1 The contractor shall maintain a pucca bound register with serially numbered pages with all pages initialed by the 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 the Engineer-in-Charge. The register shall be signed daily by representatives of MES and the contractor in token of verification of its correctness and will be checked by the Engineer-in-Charge, at least once in a week.

17.2 The register shall be kept at site in the 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).

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

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SPECIAL CONDITIONS (Contd.....)

18. **TIME AND PROGRESS CHART.**

18.1 The time and progress chart, to be prepared as per Condition 11 of IAFW-2249. General Conditions of Contracts (IAFW-2249), shall consist of detailed network analysis and a time schedule. The critical path network will be drawn jointly by the GE and contractor soon after acceptance of the tender. 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 if after due scrutiny. The schedule will be submitted in four copies within two weeks from the date of handing over the site.

18.2 During the currency of the work the contractor is expected to adhere to the time schedule and this adherence will be a part of the contractor's performance under the contract. During the execution of the work, contractor is expected to participate in the reviews and updating of the network undertaken by the GE. These reviews may be undertaken at the discretion of the GE either as a periodical 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 review will be submitted, by the contractor to the GE within a week who will approve after due scrutiny. The contractor will adhere the revised schedule thereafter. In case of contractor disagreeing with the revised schedule, the same will be referred to the Accepting Officer whose decision will 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.

18.3 The Contractor shall mobilize and employ sufficient resources to achieve the detailed schedule within the broad frame work of the accepted methods of working and safety.

18.4 No additional payment will be made to the contractor for any multiple shift work or other intensive methods contemplated by him in his work schedule even though the time schedule is approved by the department.

19. VALIDITY OF TENDER.

19.1 The tender shall remain open for acceptance for a period of 90 (Ninety) days from the date of its submission.

20. RELEASE OF PERFORMANCE SECURITY DEPOSIT.

20.1 Refer Condition 68 of IAFW-2249 General Conditions of contracts

20.2 The Performance Security Deposit shall be refunded to the contractor after the expiration of the defects liability period by the GE, provided always that the contractor shall first have been paid the final bill and have rendered a No-Demand Certificate (I.A.F.W. - 451). (See Condition 68 of IAFW-2249).

20.3 **Defects Liability Period**:-

(a) The defect liability period for the work shall be Twelve calendar months after the works have been handed over to the Government (hereinafter referred to as the defects liability period).

21. TAXES.

21.1 Tender's rates are inclusive of all taxes and levies payable under the respective statutes including construction labour welfare tax and nothing extra shall be payable to the contractor on this account. The tenderers rates shall also be inclusive of GST on works contracts fixed under Sales tax Act Rule amended up to date as applicable to the concerned State. The Labour Welfare tax shall also be deemed to include in the quoted amount.

22. RETENTION MONEY AND COMPENSATION FOR DELAY.

22.1 Reference: Condition 64 of IAFW-2249 (Advance on Account) and Condition 50 of IAFW-2249 (Compensation for delay). For the purpose of calculating retention money under Condition 64 of IAFW-2249 and compensation for delay in completion of work under Condition 50 of IAFW-2249, the value of contract as revised by above mentioned price variation under modified Condition 63 of IAFW-2249 shall be taken into account.

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SPECIAL CONDITIONS (Contd.....)

23. DAMAGE TO EXISTING STRUCTURE/BUILDING AND CLEANING DOWN.

23.1 Any damage caused to the existing structure during the execution of work shall be made good by the contractor at his own cost. The contractor shall clean all floors, walls, remove cement/lime/paint marks/drops etc., clean the joinery/glass panes etc., touch up all paint work and carryout all other necessary items of work in connection therewith and leave the site of work clean and tidy on completion. Rectification/making good etc. shall conform to the standard of materials and workmanship originally used in the work and finished work shall match with existing work in all respects to the entire satisfaction of the Engineer-in-Charge. In case of any dispute on this account, the matter shall be referred to the GE whose decision in writing shall be final, conclusive and binding.

24. EMPLOYMENT OF FEMALE LABOUR.

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

25. WATCH/LIGHTING .

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

26. CLEANING DOWN .

26.1 Refer condition 49 of IAFW-2249. The contractor shall clean all floors, remove cement, lime or paint drops, clean joinery, galss panels etc., touch up all paint work and carry out 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 this operation.

27. HANDING OVER OF SITE .

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

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28. **PROPRIETARY MATERIAL/ARTICLES**

(a) The proprietary items such as Antitermite chemicals, tar, tar felt, water-proofing compound, paint etc., when brought to site shall be inspected and approved by the Engineer-in-Charge.

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

(c) The proprietary materials shall be stored as directed. Those already recorded in the Measurement Book shall be marked suitably for identification.

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

(e) The chemical required for Ant termite treatment shall be purchased from manufacturers/authorized dealers only and contractor shall produce the cash voucher etc. to prove the genuineness of the same. GE will also ensure that proper quality/quantity of chemicals are brought and incorporated in the work.

(f) Under no circumstances payment on account (RAR) shall be made to the contractor as material lying at site for incorporation in the work, unless the contractor produces original purchase vouchers/invoices for the following items of materials as applicable: -

SPECIAL CONDITIONS (Contd.....)

(i) Water proofing compound

(ii) Paint

(iii) G.I tubing and fittings

(iv) Sanitary fittings and appliances

(v) Switches

(vi) Cables

(vii) Particle board

(vili) Timber

(ix) Standard steel windows

(x) Factory made shutters

(xi) Bitumen for roof treatment

(xii) Brass stop cock/bib cock/pillar cock

(xiii) C.I. D/F siulce valve

(xiv) Steel tubular electric poles

(xv) ACSR conductors

(xvi) All types of insulators

(xvii) Transformers

(xviii) All types of light fittings

(xix) Cement

(xx) MCCB/MCB

(xxi) Chemical for Antitermite treatment

(xxil) Steel including reinforcement

(xxiii) Voltage Stabilizers

29. **Production of purchase voucher**: -

Attention of the contractors are invited that purchase vouchers of the following items shall be submitted: -

(a) Cement, Steel major E/M equipment's like Transformer, DG sets, Pumps, Motors, AC and lift equipment's.

(b) Materials/articles as clause 29(a) as above.

30. Refer condition 70 of IAFW 2249

The request for invocation of arbitration and appointment of arbitrator by either party shall be done mandatorily on MES Arbitration online platform (MIMAMSA). All proceedings related to such arbitration including submission of all documents shall be conducted on the subject platform and as per its applicable SOP. All procedural orders, interim award, final award or any other information or directions given by the arbitrator shall be published by him/her on the platform. Publishing and uploading of final award on the platform shall satisfy the requirements of Sec 31 (5) of the Arbitration and Conciliation Act 1996. For purpose of calculating limitation period as per Sec 34(3) of the Arbitration and Conciliation Act 1996, the date of uploading of final award on the platform by the arbitrator shall be applicable.

31. **TESTING OF MATERIALS**

31.1 Contractor shall carry out the testing of materials in Site Lab/Zonal Lab/SEMT, Pune/Engineering College as specified in respective clauses and Appendix 'B' to Particular specifications here-inafter. The contractor shall provide all the materials required for the purpose of testing including labours, moulds and transportation facilities without any extra cost to the Department. The contractor shall bear the cost of testing charges of materials in Zonal Lab/SEMT, Pune/Engineering College.

SPECIAL CONDITIONS (Contd.....)

'A' LEVEL TEST AT CONTRACTOR'S SITE LAB:

31.2 The contractor may set up a Site laboratory at his option for testing of materials (except Schedule 'B' materials) for 'A' level Testing as listed in Appendix 'C' here-in-after. The contractor shall arrange all equipment/machines for the tests specified in Appendix 'C' here-in-after as 'A' level tests at his own cost with prior approval of GE. This cost shall be included in the quoted unit rate/lump-sum 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 by the Govt. In case, the contractor has not set up the site laboratory and the tests are carried out in zonal or any other MES laboratory setup/approved by GE, the recovery shall be made at rates applicable i.e as given in Appendix 'C' here-in-after.

31.2.1 'B' & 'C' Level Tests: For tests of 'B' and 'C' level as indicated in Appendix 'A' here-in-after, the contractor shall provide all facilities for testing of materials at Zonal laboratory/Govt. approved laboratories or Test House/Engineering Colleges at his own cost. The quoted unit rates/lump sum/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'. 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'. Wherever it is convenient to get 'B' level test done at approved test house/ Engineering 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.

31.2.2 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.

31.2.3 This clause supersedes all other stipulations, if any, with regard to testing of materials, specified elsewhere in the tender documents.

32. **Bank Guarantee Bond (BGB):** -

32.1 The contractor may submit bank guarantee bond (BGB) in lieu of retention money in terms of Condition-64 of IAFW 2249 as per format given in Annexure-I. The BGB shall be submitted upto original date of completion of work as applicable. In case date of completion is extended in terms of Condition- 11 of IAFW-2249, the contractor will be required to extend the BGB upto extended date of completion as per format given in Annexure-II. Contractor will be required to further extend the BGB upto payment of final bill on account of retention money for amount of Rs 1.5 lakhs or 1% of contract amount as executed whichever is more in case amount available in the final bill is not sufficient. For details provision given in Condition-64 of IAFW-2249 shall be referred.

32.2 The contractor may submit bank guarantee bond (BGB) in lieu of performance security in terms of Condition-19 of IAFW 2249 as per format given in Annexure-III. The BGB shall be submitted upto and including the scheduled date of expiry of defects liability period of two years. In case date of completion is extended in terms of Condition- 11 of IAFW-2249, the contractor will be required to extend the BGB upto two years after extended date of completion as per format given in Annexure- IV. The BGB shall be extended before the date of expiry of validity. If the contractor fails to do so, the BGB will be en-cashed before expiry. The BGB will be released as stipulated in Condition-68 of IAFW-2249 provided that no recovery is outstanding against the contractor.

32.3 The BGB shall be issued by Nationalized/Scheduled Indian Bank but its confirmation will be done by the Accepting officer only from the Head office of the bank.

Signature of Contractor
Dated:

AGE (Contracts)
for Accepting Officer

SPECIAL CONDITIONS (Contd.....)

Appendix "C"

SL No	Material	Tests	Method of Testing	Frequency of tests	Level of test	Rate (Rs)	Remarks
1	2	3	4	5	6	7	8
1	Bricks	(i) Compressive strength	IS-3495 (Part-II)	As per (IS-5454) as given under :- Lot Size / Sample Bricks / Permissible No of defective bricks 1001 to 10,000 / 5 / 0 10001 to 35000 / 10 / 0 35001 to 50000 / 15 / 1	"A"	330.00	Checks for visual and Dimensional characteristics shall also be carried out as per IS-5454. LEGEND "A":- Site Lab of "B":- Zonal lab of CEPZ Pkt "C" :- National test house/ SEMT WING PUNE/ /Engineering College.
		(ii) Water absorption	-do-	-do- -do- -do-	"A"	330.00	
		(iii) Efflorescence	-do- (Part-II)	-do- -do- -do-	"A"	330.00	
2.	Coarse aggregate	(i) Sieve analysis	IS-2386 (Part-I)	one test for every 15 Cum of aggregates or part there of brought to site	"A"	660.00	
		(ii) Flakiness Index	-do	-do	"A"	250.00	
		(iii) Examination of deleterious material	IS-2386 (Part-I)	One test for every 100 Cum of aggregates Or part thereof.	"A"	600.00	
		(iv) Organic Impurities	-do-	One test per source of supply	"B"	275.00	
		(v) Moisture content	-do- (Part-II)	Regularly as required	"A"	330.00	
			-do- (Part-I)				
		(vi) Specific Gravity		One test for each source of supply	"B"	330.00	
3.	Fine aggregate	(i) Sieve analysis	IS-2386 (Part-I)	One test for every 15 Cum of fine aggregate or part there of when brought to site.	"A"	660.00	
		(ii) Test of clay silt and impurities	-do-	-d0-	"A"	500.00	
		(iii) Specific Gravity	-do-(Part-II)	One for each source of supply	"B"	330.00	
		(iv) Moisture content	-do-	Regularly as required subject to 2 tests/day when being used.	"A"	330.00	
		(v) Test for organic impuirities	-do-	One test for each source of supply	"B"	275.00	
4.	Cement	(i) Setting time	IS-4031-63 Reaffirmed 1980	Once for each consignment of as and when required.	"B"	500.00	
		(ii) Soundness	-do-	-d0	"B"	550.00	
		(iii) Compressive strength	-do-	-do-	"B"	550.00	
		(iv) Fineness	-do-	-do-	"B"	275.00	

SPECIAL CONDITIONS (Contd.....)

Appendix "C"

Sl No	Material	Tests	Method of testing	Frequency of tests	Level of test	Rate (Rs)	Remarks
1	2	3	4	5	6	7	8
5.	Structural concrete (M-15 Grade and above)	(i) Slump test or Compacting Factor test or Vee-Bee time	IS-1199	The minimum frequency of sampling of concrete of each grade shall be under :- Qty of concrete inNo of samples The work (Cubic Metre	"A"	300.00	Random sampling shall be carried out to cover all mixing units.
		(II) Compressive strength	IS-516	1-5 1 6-15 2 16.30 3 31.50 4 51 and above 4+1 for each Addl 50 Cum Metre or part thereof.	"A"	900.00	As per Refer IS-456-2000 clause 14 for frequency of sampling.
6.	(a) PCC Block for walling (Hollow block)	(i) Compressive strength	IS-2156-1984 (Appx –B)	8 blocks out of 14	"A"	900.00	Samples :- 14 blocks from consignment of every 5000 block or part thereof.
		(ii) Water absorption	-do- (Appx `E')	3 blocks out of 14	"B"	330.00	
		(iii) Density	-do- (Appx `A')	3 blocks out of 14	"B"	300.00	
	(b) PCC solid Blocks for walling.	(i) Compressive strength	IS-2185	12 blocks out of 18	"A"	900.00	Samples :- 18 blocks from consignment of every 1000 blocks or part thereof. These blocks to be checked for Dimensions and weight.
		(ii) Water absorption	-do-	3 blocks out of 18	"B"	330.00	
		(iii) Density	-do-	3 blocks out of 18	"B"	330.00	
7.	Cement flooring tiles Terrazzo tiles	(i) Water absorption	IS-1237 Appx "D"	6 tiles out of 18	"B"	330.00	Samples of 18 tiles from each source of supply selected at random.
		(ii) Wet transverse strength	-do-(Appx "E")	6 tiles out of 18	"B"	660.00	
		(iii) Resistance of wear	-do- (appx 'F')	6 tiles out of 18	"B"	1000.00	
8.	Burnt clay roofing tiles (Handmade) as per IS-2690 (Part-II)	(i) Water absorption	(Appx "F") IS-3495 (Part-II)	6 tiles out of 12	"B"	216.00	Samples :- 12 tiles from each source of supply selected at random.
	Length 150mm to 250mm **Width** 100mm to 200mm Thickness 35mm to 50mm	(ii) Compressive strength	-do- (Part-I)	-do-	"A"	180.00	

Contd……

SPECIAL CONDITIONS (Contd.....)

Appendix "C"

Sl No	Material	Tests	Method of testing	Frequency of tests	Level of test	Rate (Rs)	Remarks
1	2	3	4	5	6	7	8
9	Mangalore Pattern Roofing tiles	(i) Water absorption (ii) Breaking load	IS-654 (Appx "A") -do-(Appc "C")	6 tiles out of 32 -do-	"B" "B"	180.00 120.00	Samples :- 32 tiles from each consignment of 3000 tiles or Part thereof.These tiles shall be checked for dimension and weight.
10.	Timber	(i) Specific gravity and weight (ii) Moisture content	IS-1708-1960 -do-	Minimum 3 samples from a lot of 4 Cum or 250 pieces of seasoned timber -do-	"B" "A"	120.00 120.00	
11.	Water for construction purpose	(i)Test for Acidity (ii) Test for Alkalinity	IS-456 & 3050 -do-	Once at the state of approval of source of water -do-	"B" "B"	500.00 500.00	Also refer clause 43 of IS-456 and its subsequent sub clauses regarding suitability of water.
		(iii) Test for solid content	-do-	-do-	"B"	500.00	
12.	Welding of steel work	(i) visual inspection test.	IS-822-1970Clause 7.1	100% By visual Inspection	Work site	360.00	Specialized tests, their method and frequency to be decided on consideration of their importance by the Accepting Officer.
13.	Timber panelled and Glazed Door/ Window shutters (including factory made shutters	(a) Dimensions, Sizes Workmanship and finish (b) Strength Test (i) Slamming (ii) Impact Indentation (iii) Shock Resistance (iv) Edge Loading (c) Chemical Treatment test	IS-1003-1977 (Part-I) IS-1303-1990 -do- -do- -do- -	Frequency of sampling from each lot shall be as under :- Lot SizeSample Size 26 to 50 5 51 to 100 8 101 to 150 13 151 to 300 20 301 to 500 32 501 to 1000 50 1001 and above 80 From each lot 5% of the factory made Shutters shall be manufacturer tested for strength tests. -	"A" "A" -	180.00 60.00 -	

Contd……

SPECIAL CONDITIONS (Contd.....)

Appendix "C"

Sl No	Material	Tests	Method of testing	Frequency of tests	Level of test	Rate (Rs)	Remarks
1	2	3	4	5	6	7	8
14.	Ply-wood (IS-303-1989) Veneered	(a) Moisture content	IS-1734-1983 (Part-I)	Six test pieces cut from each of the boards selected as per Table I shall be subjected to tests.	"B"	240.00	Sampling shall be as per IS-7835 1975 Tables
15.	Venered work particle board (medium density) IS-3097-1985	(a) Density (b) Moisture content (c) Water absorption (d) Swelling due to surface absorption (e) Swelling in water (f) Modulus of Rupture (g) Screw withdrawal strength	IS-635(Part-I) -do- -do- (Part-16) -do- Part-17) -do- (Part-4) -do- (Part-4) -do- (Part-4)	Three test specimens from each sample (Size 150mm x 75mm) -do- -do- (Size 300mm x 300mm) -do- (size 125mm x 100mm) -do- (Size 200mm x 100mm) Three test specimens as per IS-2380-77 -do- As per IS-2385	"C" 'A' &B "A" "A" "A" "B" "C"	60..00 60.00 60.00 60.00 60.00 90.00 120.00	Sampling shall be as per IS-3087-1983 with moisture meter.
16.	Reinforcement Steel Bars	(a) Proof Bars (b) Tensile strength (c) Elongation (d) Bent test (e) Rebent test	IS-1786	As per Appx given in Particular Specifications of Tender documents.	B	2500	Testing Charges as per set of test per diameter

Signature of the Contractor
Date:

AGE(Contracts)
For Accepting Officer

PARTICULAR SPECIFICATIONS

1. **GENERAL REQUIREMENT**

1.1 These particular specifications shall be read in conjunction with MES Schedule.

1.2 General specifications referred to/mentioned in IAFW-2249 and in other tender documents mean specifications including these provision and preamble given in MES Schedule.

1.3 Reference to some paragraphs of MES schedule has been made in these particular specifications but other paragraphs and provisions as applicable are also to be followed e.g., reference to paras pertaining to general workmanship for brick work, joinery, iron and steel work etc. have not been made but provisions therein as required for work are applicable.

1.4 Where specifications for any item of work are not given in MES Schedule or in these particular specifications, specifications given in relevant Indian Standard Specifications or mode of practice shall be followed.

1.5 Where specifications/provisions given in these particular specifications are at variance with the provisions/specifications given in these particular specifications shall be followed.

1.6 **SCOPE OF WORKS**. This contract included for full final and entire completion of works described in Schedule 'A', specifications in these particular specifications and/or shown on drawings, if any, forming part of the tender documents.

1.7 **MATERIALS**.

1.7.1 All materials to be supplied by the contractor for incorporation in the work shall conform to relevant specifications. In case specification of any materials needed for incorporation in work is not contained in any of the contract documents, the specifications of such materials proposed to be incorporated in the work shall be got approved in writing from the GE before their incorporation in work, whose decision with regard to quality shall be final and binding. The contractor shall not procure materials unless the samples are first got approved from the competent Engineer Authority.

1.7.2 As far as practicable all manufactured materials/articles other than these manufactured in contractor's workshop and those of local origin, shall bear IS certification mark. In case, any articles does not bear any IS certification marks being not manufactured with IS marks but conforming to the relevant IS specification and is proposed to be incorporated in the work, samples of the same shall be got approved in writing from GE before incorporation in the work. The contractor shall submit sufficient evidence to the GE to show that such articles conform to the relevant IS specification and no adjustment shall be made on this account.

1.7.3 Manufactured materials/articles shall be brought at site in original sealed containers/packing bearing manufacturer's marking unless the quantity required is a fraction of the smallest packing.

1.7.4 Materials of proprietary nature such as lime, water proofing compound, paint and the like, quantity of which cannot be checked after incorporating in the work shall be entered in MB under heading 'NOT TO BE ABSTRACTED' as soon as these are brought at site. These records shall be signed both by the Engineer-in-Charge and the authorised representative of the contractor. The contractor is required to obtain these materials direct from manufacturers or their authorised dealers. The contractors shall submit to Engineer-in-Charge original stamped receipt bills along with the relevant invoice of the manufacturer's or their authorised dealers (if any) in support of having brought the full quantity required for incorporating in the work. These vouchers shall be endorsed, dated and initialled by the Engineer-in-Charge giving CA NO and Name of work etc and certified copy of each of such vouchers signed by both the Engineer-in-Charge and the contractor shall be kept in MES Records with GE.

1.7.5 Further, the contractor shall be liable to produce any other voucher etc, in respect of other items/materials as and when asked by the GE/Engineer-in-Charge. The Engineer-in-Charge shall keep the xerox copies duly certified by him and return the originals to the contractors, and shall deface such vouchers to prevent its misuse.

1.7.6 When the cost of each category of materials is less than Rs. 1000/- production of vouchers may not be insisted upon if the GE is otherwise satisfied with the quality and quantity of materials.

Contd....

PARTICULAR SPECIFICATIONS (Contd…..)

1.7.7 The contractor shall carryout such instructions that are given to him in writing by the Engineer-in- Charge to ensure that full quantity of such materials goes into the work.

1.7.8 Materials such as sand, aggregate etc shall generally conforming to the samples kept in GE's office in addition to their conformity with relevant specifications given in the tender documents. The samples of all such materials shall be got approved from GE in writing before these materials are brought to site in bulk. In case of any difference between samples kept in GE's office and as that specified in respective IS, the specifications laid down in IS shall take precedence. In case of any difference in opinion between GE and contractor in this regard, the decision of CWE shall be final and binding.

1.7.9 Lime shall conform to IS-712-1984. Lime for white/colour wash shall be fresh burnt fat lime (Class 'C').

1.7.10 Letters conveying approval of samples/materials of GE/Engineer-in-Charge will, interalia, mention sources of supply, name of manufacturer's trade name/brand (as applicable) and reference to clause of tender documents containing specifications of particular materials.

2.1 **EARTH WORK AND EXCAVATION**

2.1.1 **Excavation in Trenches for Foundations:-** Excavation in Trenches for Foundations not exceeding 1.5 mtr in width and excavation for manholes, shafts, cess-pits, wells and the like not exceeding 10 Sqm on plan shall be described as excavation in trenches'.

2.1.2 **Filling Excavated Earth in Foundation Trench, in Plinth and Under Floor etc:-**The earth used for filling shall befree from salts, organic or other deleterious matter. Highly expensive soils like black cotton soil shall not be used, unless so specified. All clods of earth exceeding 50mm shall be broken or removed. Earth obtained from borrow pits and surplus earth from excavation, if any, shall be directly used for filling and double handling avoided.

2.1.3 **Excavation in Post Holes:-**Excavation in independent post holes (or similar holes) each not exceeding 0.5 cum shall be described as _excavation as post holes' and shall include return, fill in, ram and removal of surplus spoil.

2.1.4 **Surface Dressings:-** Trimming of Natural ground, rough excavated surfaces and filled up area to remove vegetation and/or small inequalities not exceeding 15 cm deep shall be described as surface dressing '.

2.1.5 **Removal of Surplus Soil:-**Surplus soil or rubbish obtained from excavation shall be deposited to a distance not exceeding 50 mtr as specified in BOQ.

2.1.6 Earth obtained from excavation shall be used for returning filling and free from salts, organic or other deleterious matter and surplus soil shall be deposited at low laying area in defence land.

2.1.7 **Hard Core:-**The material used in hardcore shall be crushed/broken stone aggregates of gauge not exceeding 63mm conforming to IS 383.The hardcore shall be spread, watered and well rammed and each layer not exceeding 75 mm.

2.1.8 Excavation and earth work involved in this contract shall be soft/loose soil to the depth and gradient as required at site and ordered by Engineer-in-Charge. If hard rock is met within excavation, the same shall become the property of the Government and entered in the measurement book duly signed by Engineer-in-Charge and the contractor.

3. **CEMENT CONCRETE**

3.1 **Cement**: Refer paras 4.3, 4.3.1, 4.3.2 and 4.3.3 of MES Schedule Part-I, Portland ordinary, Portland slag and Portland pozzolana cement shall be supplied by the contractor.

3.2 **Coarse and fine aggregate for cement concrete**: Refer paras 4.4.1 to 4.4.6 of MES Schedule Part-I. The coarse aggregate shall be broken/crushed stone aggregate at the option of contractor and fine aggregate shall be sand. Use of sand conforming to grading Zone-IV of IS-383 shall not be allowed in RCC/PCC work.

3.3 **Water proofing compound**: Refer para 4.8 of MES Schedule Part-I.

3.4 **Water**: Refer paras 4.9 and 4.9.2 of MES Schedule Part-I.

3.5 **Workability of concrete** : Refer para 4.11.4 of MES Schedule Part-I.

PARTICULAR SPECIFICATIONS (Contd…..)

3.6 **Mixing of concrete** : Refer para 4.11.5 of MES Schedule Part-I.

3.7 **Form work** : Refer para 4.11.6 to 4.11.6.5 of MES Schedule Part-I.

3.8 Where portland pozzolana cement or portland slag cement is used period of curing and removal of form work as given in Para 4.11.6.3 of MES Schedule Part-I shall be increased as directed by the Engineer-in-Charge without any extra cost of Government.

3.9 **Transporting of concrete** : Refer para 4.11.9 of MES Schedule Part-I.

3.10 **Placing of concrete** : Refer paras 4.11.10, 4.11.10.1 to 4.11.10.3 of MES Schedule Part-I.

3.11 **Curing of concrete** : Refer para 4.11.13 of MES Schedule Part-I.

3.12 **Protection and inspection of concrete** : Refer paras 4.11.14 and 4.11.15 of MES Schedule Part-I.

3.13 **Finishing of exposed surfaces of concrete** : Refer paras 4.11.16.1, 4.11.16.2 (a), (b), (c), (d), (e) and 4.11.16.3 of MES Schedule Part-I. If thickness of plaster in cement mortar (1:3) as specified in para 4.11.16.2 (b) of MES Schedule Part-I is required to be increased in excess of 5mm to achieve fair and even surface, it shall be provided by the contractor without any extra cost of the Government.

4. **MIX OF CONCRETE**

4.1 **VOLUMETRIC MIX CONCRETE** – Wherever the Concrete is specified/ordered in Volumetric Proportion the same shall be provided by Volumetric Mix. Volumetric Mix shall be done all as specified in Clause No. 4.11.2.4 of MES Schedule Part-I.

4.2 **DESIGN MIX CONCRETE**

4.2.1 Refer Clause 4.11.2.1 of MES Schedule Part-I. M-25 Mix Design shall be carried out as per provisions of IS-456 :2000/IS 3370/IS 2911where as applicable and guidelines given in IS-10262 and SP 23 with the following conditions unless otherwise specified:-

(i) Exposure Condition for Mix Design M-25 : Moderate
(ii) Degree of Quality Control for Mix Design M-25 : Good.

4.2.2 For Design Mix Concrete of M-25 Grade, the Minimum Cement Content and water cement ratio shall be as per IS 456/IS 3370/IS 2911. The Contractor is required to Design each Grades of Concrete as per IS 456/IS 3370/IS 2911and IS-10262 to work out the Cement Content of the above Grade of Design Mix.

4.2.3 Design Mix shall be got designed from National Test House, SEMT Wing CME, Regional Research labs, IITs, National Institutes of Technology, Command Test Laboratory, Govt Engineering College and NABL Certified Lab.

4.2.4 In case Design Mix got other than Command Test Laboratory, the Design Mix Concrete shall be approved by the Accepting Officer prior to incorporation in the work.

4.2.5 The Design Mix furnished by the laboratory shall include the following details :-

(i) Grading of individual coarse and fine aggregate used in Design ix .
(ii) Proportion by weight of each component of aggregate of Design Mix.
(iii) Water cement ratio for recommended proportions of aggregates.
(iv) Slump and compaction factor values for the recommended Design Mix.
(v) Use of plasticiser/ super plasticiser is permitted to the extent allowed in clause No. 10.3.3 of IS 456-200
(vi) Initial standard deviation to be adopted for acceptance criterion as per IS-456 of 2000.
(vii) 28 days Compressive strength of cement supplied for Design Mix.
(viii) Actual cement content in the Design Mix.
(ix) The maximum free water cement ratio shall be as per table 5 of IS 456-2000.Sampling and acceptance of concrete shall be as per clause 15 & 16 of IS-456 of 2000. The maximum size of aggregate for reinforced cement concrete shall be 20mm.
(x) Recommendation of mixed proportions at site.

4.2.6 Cost of designing the mix shall be borne by the Contractor. All material required for carrying out the design shall be provided by the contractor at the laboratory. In case of design mix is carried out from Command Test Laboratory and cost testing charge shall be recovered from RARs bill.

4.2.7 In case contractor fails to submit the samples of design mix soon after commencement of work, the delay shall solely be attributable to the contractor and no claim of whatsoever nature shall be admissible on this account.

PARTICULAR SPECIFICATIONS (Contd…..)

4.2.8 The Tenderer shall quote their Lump Sum Amount/Rate for the applicable Items considering the Actual Quantity of Cement required to be incorporated in the Work which is to be assessed by them.

4.2.9 No Plus DO (Deviation Order) shall be admissible even if the required/approved quantity ofCement is more than specified in IS 456/IS 3370/IS 2911. Contractor shall be responsible/guarantor to that provide M-25 Design Mix Concrete. This shall not be considered as misrepresentation of fact and no claim what so ever on this provision shall be admissible.

4.2.10 The Contractor is advised to assess the realistic quantity of Cement for the Design Mix specified above before quoting. If considered necessary, they may get the Design Mix done on their own before quoting the Tender. However, the Design Mix done prior to quoting of Tender shall not be considered for incorporation in the Work after conclusion of Contract and shall have to be done as specified above.

4.2.11 A re-verification of Mix proportions for Design mix concrete shall be essential for any different brand of cement. Nothing extra shall be paid on this account. With any change in aggregate source, mix design or grade of cement, fresh design mix shall be done by the contractor. The decision of GE regarding the necessity for re verification or redesign of mix will be final and binding.

4.3 **BATCHING**

4.3.1 Refer Clause No. 4.11.3 of MES Schedule Part I.

4.3.2 Concrete for all PCC and RCC (design mix and nominal mix) shall be mixed in Semi-automatic movable weigh batching machine of capacity not less than 4 cum/Hour. The batching machine shall have digital display weighing gauge with weighing accuracy of + 1% (One Percent). The plant shall be located in the vicinity of the site where the area is marked for contractor's store/shed as shown in site plan. The plant shall produce the concrete required as premix design and complete quality assurance and control shall be maintained by the contractor in accordance to IS-456:2000 and best modern Engineering practice. The record of quality assurance tests shall be submitted to the GE for approval and record.

4.3.3 Where requirement of concrete is less than 1 cum in a day, the same can be mixed using normal weigh batcher and hopper type mixer.

4.4 **SAMPLING AND TESTING OF CONCRETE OF GRADE M-25 (DESIGNMIX)**

4.4.1 Refer Clause No. 4.11.17 of MES Schedule Part-I and as per IS-456. Testing of Concrete shall be carried out by the Contractor as directed by the GE without any Extra Cost to the Department and usages of following Test Equipment at Site shall deemed to be included in Unit Rate of Schedule 'A' (a) A set of IS Sieves for Fine Aggregate Sieve Analysis (Reference IS-2386).

(b) A set of IS Sieve for Coarse Aggregate Sieve Analysis (Reference IS-2386).
(c) Two graduated Jars of 500 ml capacity for Silt Test (Reference IS-2386).
(d) A set of 6 No. Cube moulds of 7.06 cm size for Testing Strength of Cement.
(e) Vicat Needle Apparatus for testing Initial and Final Setting Time.
(f) Physical Balance.
(g) Three set of 6 Standard 15 Cm Cube Moulds for testing Compressive Strength.
(h) Slump Test Apparatus.
(j) Compressive Strength Testing Machine (Automatic operated).
(k) Electric Oven.
(l) Flakiness Index Testing Apparatus

5. **CEMENT:**

5.1 The Use of Pozzolana Portland Cement (PPC) as also OPC for the MES works is now permitted. The guidelines for use of cement in MES works are as elucidated in subsequent paras. These may be read in conjunction with the provisions contained in SSR Part-I 2009, Section 4 (Para 4.3). The points/ guidelines may be suitably incorporated in the contract, documents with immediate effect.

5.2 **TYPE OF CEMENT:** The types and grades of cement available along with relevant IS provisions are enumerated below.

(a) Ordinary Portland Cement, Grade 43 (IS: 8112-1989)3
(b) Ordinary Portland Cement, Grade 53 (IS: 12269-1987)
(c) Rapid Hardening Portland Cement (IS: 8041-1990)
(d) Portland Pozzolana Cement (IS: 1489-1991 Pt-I)
(e) High Allumina Cement (IS: 6452-1989)
(f) Sulphate Resisting Portland Cement, Grade 43 (IS: 12230-1988)

5.3 The type of cement to be selected for use will invariably depend upon the specific usage in the work (s). 33 grade OPC will not be used in works. Use of PPC of required strength with the fly ash content as per IS 1489-1991 Pt-I is also permitted.

PARTICULAR SPECIFICATIONS (Contd…..)

5.4 **USE OF PPC:** While using PPC, the following conditions will generally be met:-

(a) Strength criteria for PPC cement will be as per IS-8112-1989.

(b) Stripping time shall be 14 days.

(c) Both OPC and PPC shall not be permitted for use in the same building except for plaster and mortar.

(d) Mandatory certificates of testing and quality assurance will continue to be submitted as hither –to- fore, with fly ash content as per IS 1489-1991-Pt-I.

(e) The specifications for use of PPC would be complied and incorporated suitably by Accepting Officers for inclusion in tender documents.

(f) The Accepting Officers are required to ensure that PPC meets the criteria of 43 Grade OPC as laid down in IS-8112-1989.

(g) In cold climate regions, where temperature is lower than 15-degree centrigrate, only OPC shall be used (However during working seasons in cold climate regions, where OPC is not available use of PPC may be permitted provided it shall be ensured that while using PPC, atmospheric temperature should be more than 15 degree centigrade.

(h) Mixing of OPC and PPC shall not be allowed in a work. However, with the strict control of the ground executives, different buildings can have different type of cement.

(j) While procuring PPC, the following requirements are to be ensured and certificate to that effect is to be obtained for each batch from the manufacturer.

(aa) The quality of fly ash is strictly as per IS 14989 (part I) -2002.
(ab) Fly ash is inter-ground with clinker not mixed with clinker.
(ac) Dry fly ash is transported in closed containers and stored in silos. Only pneumatic pumping should be used.
(ad) The fly ash received from thermal power plants using high tempareture combustion above 1000 degree centrigrate should be used.

5.5 **PROCUREMENT, STORAGE, TESTING AND DOCUMENTATION**

(a) **PROCUREMENT:** The cement supplied by the Contractor will only be procured from main producers or authorized dealers of cement. The particulars of the manufacturer of cement along with the date of manufacture shall be obtained from the contractor for each lot of cement separately. The documents in support of the purchase of cement shall be recorded and verified by GE and site staff.

(b) **TESTING:** The manufacturer will carry out inspections and testing of cement in accordance with the relevant BIS provisions. The Contractor shall submit the Manufacturer's Test certificate in original along with the Test Sheet given the result of each physical test as applicable and chemical composition of the cement or authenticated copy thereof, duly signed by the manufacturer with each consignment. The Engineer-in-Charge shall record these details in the Cement Acceptance Register, as given at Appendix `B' after due verification. The GE shall also organise independent Physical Tests from NABL Laborites as National Test House, SEMT Wing CWE, Regional Research Laboratories IITs, MES Zonal Laboratories, Govt. Engg Colleges and National Institutes of Technology as per IS 3535 (Method of Sampling Hydraulic Cement) IS-4031 (Method of Physical Test for Hydraulic Cement) and IS4032-1985 (Method of Sampling Hydraulic Cement) In order to undertake departmental testing, requisite facility shall be organized. For repair, maintenance and works where entire requirement of cement is less than 1200 bags, same can be procured from authorized dealers of the firms approved by E-in-C's Branch.

(c) **STORAGE:** Cement shall be stored over dry platform at least 20 cm high in such a manner as to prevent deterioration due to moisture of intrusions of foreign matter. In case of store rooms, the stack should be at least 20 cm away from floors and walls. The stacking of cement shall not be more than 10 bags high. It shall be ensured that tested and untested cement are segregated and stored separately with distinct identification.

(d) **DOCUMENTATION:** The Contractor shall submit original vouchers from the manufacturer or authorized dealers as the case may be 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 and documents verified before acceptance. The original vouchers and the Test certificates shall be defaced by the Engineer-in-Charge, signed by contractors and kept on record in the Office of GE duly authenticated and with cross reference to the Control Number recorded in the Cement Acceptance Register. This register will be signed by JE, 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 cement shall also be suitably recorded in the Measurement Book (Not to be abstracted) for record purpose before incorporation in the work and shall be signed by the Engineer-in-Charge and the Contractor.

PARTICULAR SPECIFICATIONS (Contd…..)

5.6 **CONTRACT SPECIFICATIONS:** Particular specifications for supply of cement by the contractor shall be carefully framed so that no ambiguity is left with regard to its quality, testing, storage and source of procurement in the contract. Specifications should cover the entire relevant requirement specific for the particular work and should not have general specifications covering all types of works and grade of cement. For details on Delivery, Inspections, testing facilities, identifications and marking of cement bags by the manufacturers, reference be made to the relevant BIS Codes. Following points, inter alia, shall be suitably covered in the contract Specifications: -

(a) Source of Procurement.

(b) Testing and Test certificates. Also provision/procedure should be made if test result of samples is not within the acceptable limits.

(c) The cost of the test, samples etc shall be governed as per condition of the contract.

(d) Schedule of supply shall be so ensured and specified so as to match with the progress contemplated in the CPM prepared for that project.

(e) Procedure for making payments for cement including accounting, weighting etc.

PARTICULAR SPECIFICATIONS (Contd…..)

Sl.No	Company Name	Address	Type of Cement
1.	The Associated Cement Companies Ltd. **Brand: "ACC"**	414-421, Splendor Forum (4th Floor), 3, District Centre, Jasola, New Delhi — 110044 Ph- 011 46583600	All
2.	Ultra Tech Cement Ltd. **Brand: "ULTRATECH"**	'B' Wing, 2nd Floor, Mahakali Caves Road, Andheri (East), Mumbai — 400093 Ph- 022-66917800	All
3.	The India Cement	Dhun Building, 827, Anna Salai, Chennai -600002	All
4.	Dalmia Cement (Bharat) Ltd. **Brand: "DALMIA CEMENT"**	Dalmiapuram Distt- Truchirappalli, - Tamil Nadu 621651	All
5.	Century Cements. **Brand: "CENTURY"**	Industry House, 159 Church gate Reclamation, Mumbai -400020 Ph- 022 22023936	All
6.	Saurashtra Cement **Brand: "SAURASHTRA"**	Gala No A-1, Ground Floor, UdhyogSadan No 3 MIDC, Central Road, Andheri (East), Mumbai- 400093 Ph- 022 32955557/67 **Mo- 9320290081**	All
7.	The Ramco Cements Ltd. (Formerly Madras Cement) **Brand: "RAMCO"**	Auras Corporate Centre, 98-A, Dr. Radhakrishnan Salai, Mylapore, Chennai -600004 Ph- 044 28478666	All
8.	Mangalam Cement Ltd **Brand: "MANGALAM"**	**PO Adityanagar, Morak, Dist- Kota,** Rajasthan — 326520 Ph- 9351468076	All
9.	Birla Corporation Ltd **Brand: "BIRLA"**	Birla Building (3rd & 4th Floor) 9/1, R.N Mukherjee Road Kolkata — 700001 Ph- 033 30573700	All
10.	Orient Cement **Brand: "ORIENT"**	5-9-22/57/D, 2nd and 3rd **Floor, GP** Birla Centre, Adarsh Nagar, Hyderabad-500063 Pin- 044 23688600	All
11.	Nuvoco Vistas Corporation Ltd (Formerly Lafarge Cement) **Brand: "NUVOCO"**	Equinox Business Park Tower-3, East Wing, 4th Floor LBS Marg, Kurla (West), Kurla Mumbai, Maharashtra-400070	All
12.	Shree Cement **Brand: "SHREE"**	Bangur Nagar, Beawar, Dist- Ajmer, Rajasthan- 305901 Ph — 01462 228101-06	All
13.	J K Cement **Brand: "J K"**	Kamla Tower Kanpur-208001	All
14.	J K Lakshmi Cement Ltd **Brand: "J K LAKSHMI"**	Jaykaypuram, Dist-Sirohi, Rajasthan - Ph 02971 244409/10	All
15.	Jaypee Rewa Cement **Brand: "JAYPEE"**	Jaypee Nagar P.O.- Jaypee Nagar,Rewa-486450 M.P	All
16.	Ambuja Cement Ltd **Brand: "AMBUJA"**	Kodinar, PO- Ambujanagar, Taluka-Kodinar, Dist- Junagadh, Gujarat- 362715 Ph- 02795 237000	All
17.	M/s Chettinad Cement Corporation Ltd. **Brand: "CHETTINAD CEMENT"**	4th Floor, Rani Seethai Hall Building, 603, Anna Salai Hall, Chennai-600006 Tel No. 044-42951800 Fax No. 044-28291558 EMail:-info@chettinadcement.com Website- www.chettinadcement.com	OPC 43 & PPC
18.	M/s My Home Industries Pvt Ltd Brand: " MAHA CEMENT"	M/s My Home Industries Pvt Ltd 9th floor, Block-3 My home Hub, Madhapur Hyderabad-500081, Telangana. Tele-+91-40-66929696 Fax-m+91-40-23118000 Email-corp@myhomegroup.in Website-www.myhomeindustries.com	OPC-43, PPC & PPC
19.	M/S Wonder Cement Ltd **Brand: "WONDER Cement"**	17, Old Fatehpura Seva Mandir Road, Udaipur-313004 Rajasthan (India) Tele: +91-294-33991133 Fax: +91-294-3006333 Email:Corp.office@wondercement.com	OPC 43, OPC 53 and PPC

PARTICULAR SPECIFICATIONS (Contd…..)

6. **PAYMENT**

6.1 Only when the test results of independent tests carried out of the cement are found satisfactory and it is permitted to be stored in the "Second Godown" and quantity entered in MB, then only this lot shall be considered for payment in RARs.

6.2 Payments shall be restricted as per provisions in clause "Advance on Account" of General Conditions of Contract (IAFW-2249)

7. **BRICK WORK**

7.1. **Materials**

7.1.1 **Cement**– Cement shall be as specified for Cement Concrete Work here-in-before.

7.1.2 **Sand**– Sand for Mortar shall be as specified in Clause No. 5.4, 5.4.1 of MES Schedule Part I.

7.1.3 **Bricks**

7.1.4 **Bricks:-** Brick for brick work shall the burnt bricks of normal size of bricks shall be specified in Appx 'C' and should have minimum crushing strength of 75 Kg/Cm2 when tested in accordance with clause 26 of IS-1077. The dimension of bricks when tested in accordance with clause no 6.2.1 of IS-1077 shall be within the following tolerance limits per 20 bricks:

For 250x 125x 75 mm	For 230x 115x 75 mm
(a) Length 4920 mm to 5080mm (5000±80 mm)	4520 mm to 4680mm (4600±80 mm)
(b) Width 2460 mm to 2540mm (2500±40 mm)	2260 mm to 2340mm (2300±40 mm)
(c) Height 1460 mm to 1540mm (1500±40 mm)	1460 mm to 1540mm (1500±40 mm)

7.1.5 **Compressive strength**: The bricks when tested in accordance with the procedure laid down in IS-3495 shall have a minimum average compressive strength as 75 Kg/cm2.

7.2 In this work size of Full Brick thick as 230mm and Half Brick thick as 115 mm and deviation if any shall also be priced on this basis irrespective of actual size of bricks used.

7.3 All brick work shall be built in English bond except in half brick walls which shall be in Stretcher bond.

7.4 Deviation for brick work shall be priced at the rates for sub class 'B' brick in MES Schedule Part II subject to Contractor's derived percentage for concerned Part of SCHEDULE 'A'.

7.5 **Water**– Refer Clause No. 5.18 of MES Schedule Part- I.

7.6 **Workmanships**

7.7 **Brick Work –** Mix of mortar for brick work unless otherwise specified here-in-after, shall be as follows :

(a) Brick work in Half Brick thick Walls, Isolated Pillars, Parapet Walls, Steps shall be built in Cement Mortar 1:4.

(b) All other brick work in various situations unless otherwise specified shall be built in Cement Mortar 1:6 or 1:4.

7.8 **Half Brick Thick Walls**

7.9 Refer Clause No. 5.36 of MES Schedule Part I. Brick work in Half Brick Walls exceeding 1200 mm in height from Floor Level, shall be reinforced with 2 No. 8 mm dia TMT Bars at every Fourth Course with Ends embedded at least 75 mm in the adjoining Walls/Columns, starting from top of the First Course from Floor Level.

PARTICULAR SPECIFICATIONS (Contd…..)

7.10 **Honey Comb Brick**:- Honey comb brick work shall be carried out all as specified as per 5.38 of SSR MES Schedule 2009 and directed by Engineer-in-Charge.

8. **Form Work & Scaffolding**

8.1 **General**

8.1.1 Form work shall comply with the requirements of clause No. 4.11.6 & 7.15.1 to 7.15.12 of MES Schedule Part I. The shuttering shall be of steel only except at places where it is not feasible to use steel shuttering on technical grounds plywood shuttering can be used with written approval of GE.

8.1.2 Exposed Surfaces of RCC Lintel, Beams, Columns and the like which are continuous with plastered surface of Wall shall be Plastered as that for adjoining Walls Surfaces.

8.1.3 Exposed Surfaces of Concrete such as Soffits/Sides of RCC Chajja, Beams, Stairs Case and Shelves, etc. which are not in continuation with the Adjoining Plastered Surfaces shall be finished as specified in Clause No. 4.11.16.2(a) of MES Schedule Part-I. However, the Soffit of RCC Roofs/Floor Slab shall be finished as specified in Clause No. 4.11.16.2(b) of MES Schedule Part- I. Refer Clause No. 14.14.3 of MES Schedule Part-I in this connection.

8.2 **Cleaning & Treatment of Forms**

8.2.1 Refer Clause No. 4.11.6.2 of MES Schedule Part-I (as applicable) and as directed by the Engineer-in-Charge.

8.3 **Stripping Time Where Portland Pozzollana Cement Is Used**

8.3.1 Refer Clause No. 4.11.6.3 of MES Schedule Part-I. Where Pozzolana Cement is used for RCC Works in various Locations, the Minimum Period for Striking Off Formwork shall be as under in lieu of that specified in MES Schedule Part-I :- Walls;

Columns and Vertical Sides of Beams	:	3 to 4 Days
Slabs (Props left under)	:	8 Days
Beams Soffits (Props left under)	:	9 Days

Removal of Props to Slab/Beam
(aa) Spanning upto 6.0 METRE Span **:** 16 Days
(ab) Spanning beyond 6.0 METRE Span **:** 22 Days

For Cantilever Portion of Slab Formwork with Support shall be retained until the completion the Casting of the Entire Frame Work of the Building.

8.4 **Removal of Formwork**

8.4.1 Refer Clause No. 4.11.6.4 and 4.11.6.5 of MES Schedule Part-I and as directed by the Engineer in-Charge.

8.4.2 In case of Bad Weather, Periods mentioned here-in-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 Formwork 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 Part of for Bad Weather.

8.5 **Finishes**

8.5.1 Refer Clause No. 4.11.16 of MES Schedule Part-I (as applicable) and as directed by the Engineer-in-Charge. Form work (as required) for Concrete surface where exposed to view shall be 'Rough Finished'

8.6 **Assembly of Reinforcement –** Refer Clause No. 4.11.7 of MES Schedule Part-I (as applicable) and as directed bythe Engineer-in-Charge.

PARTICULAR SPECIFICATIONS (Contd…..)

8.7 **Cover to Reinforcement –** Refer Clause No. 4.11.8 of MES Schedule Part-I (as applicable) and as directed by theEngineer-in-Charge.

8.8 **Transporting –** Refer Clause No. 4.11.9 of MES Schedule Part-I (as applicable) and as directed by the Engineer-in-Charge.

8.9 **Placing –** Refer Clause No. 4.11.10 and 4.11.10.3 of MES Schedule Part-I (as applicable) and as directed by theEngineer-in-Charge.

8.10 **Compaction –** Refer Clause No. 4.11.11 of MES Schedule Part-I. Compaction of Concrete in RCC Slab, BeamWalls and Columns shall be done with Approved Mechanical Vibrator. In other Locations Hand Compaction may be permitted by Tamping or Rodding as approved by the GE.

8.11 **Curing :-**Refer Clause No. 4.11.13 of MES Schedule Part-I (as applicable) and as directed by the Engineer-in-Charge. Curing shall be carried out using Pump of suitable capacity at no Extra Cost to the Govt. all as directed by Engineer-in-Charge.

8.12 **Protection –** Refer Clause No. 4.11.14 of MES Schedule Part-I and as directed by Engineer-in-Charge.

8.13 **Inspection –** Refer Clause No. 4.11.15 of MES Schedule Part-I and as directed by Engineer in- Charge.

9. **WOOD WORK (CARPENTER'S & JOINERY WORK)**

9.1 **Materials**

9.2 **Timber**– Refer Clause No. 7.3 of MES Schedule Part-I.

9.2.1 **Defects In Timber**– Refer Clause No. 7.4 of MES Schedule Part-I for 'STRUCTURAL & CARPENTER'S WORK' and Clause No. 7.5 of MES Schedule Part-I for JOINER'S WORK.

9.2.2 **Seasoning –** Refer Clause No. 7.6 of MES Schedule Part-I.

9.2.3 **Moisture Content**– Refer Clause No. 7.7 of MES Schedule Part-I. Moisture Contents shall be as specified for Zone.

9.3 **Wooden Chowkats or Frame**

9.3.1 Refer Clause No. 8.18 of MES Schedule Part–I for Timber Frames and Chowkats and shall be of Second-Class Hard Wood and as approved by GE.

NOTE: The Surfaces of Wooden Chowkats or Frame. coming in contract with Concrete or Brick Works, etc. shall be treated with Paint after thoroughly cleaned from Dirt, Oil, etc

9.4 **Workmanship**

9.4.1 **Generally**– Refer Clause No. 7.13 of MES Schedule Part-I for 'STRUCTURAL & CARPENTER'S WORK' and Clause No. 8.15 of MES Schedule Part-I for JOINER'S WORK.

9.5 **Fixing of Timber Frames &Chowkats**

9.5.1 Fixing of Chowkhat Frame is permitted as per 'Prepared Opening Method' without any Price Adjustment as specified in Clause 8.19.2 of MES Schedule Part I.

9.5.2 **Fixing of Shutters**

9.5.2.1 Refer Clause No. 8.20 and 8.21 of MES Schedule Part-I as applicable and as directed by Engineer-in-Charge.

9.6 **Standard Dimensions of Shutters for Doors, Windows, Etc.** – Refer Clause No. 8.24 of MES Schedule Part-I as applicable for Paneled, Glazed, Gauzed or Partly Paneled and Glazed Shutters.

PARTICULAR SPECIFICATIONS (Contd…..)

9.7 **Fabrication**

9.7.1. Refer to relevant Clause No. of MES Schedule Part-I and as directed by Engineer-in-Charge.

9.7.2 Styles and Rails including Lock Rail of Shutters shall be One Piece only and shall be Jointed to each other by Mortise and Tenon Joints at Right Angles. Rails more than 150mm width shall have Two Tenons. The Bottom, Lock and Up Rails shall be inserted 25mm short of the width of the Styles.

9.7.3 The Edges of the Panel shall fit into groove to the full depth leaving an Air Gap of 1.5mm. Edges of the Panel insert shall be sealed by application of Glue.

9.7.4 All Members of the Shutter shall be straight without any Warp or Bow. They shall have smooth well planned surfaces at Right Angle to each other. The Right Angles of the Shutter shall be checked by measuring the True Diagonals from One Extreme Corner to the Opposite One and the surfaces of Mortise and Tenon Joints shall be Glued before putting together. All Joints shall be Pinned with Bamboo Pins Two per Tenon in staggered position.

10. **Flush Door Shutter**

10.1 30 mm thick flush door shutter shall be solid core type with block board construction and shall conform to IS 2202(Part I) -1999. It shall be factory made shutter and procured from any of the approved make given in make list of PS. All timber shall be well seasoned and chemically treated. Adhesive shall be phenol formaldehyde synthetic resin BWP type specified in IS 848-2006.All dimension shall be finished dimension and Manufactures test certificate for test specified in IS 2202(Part I)-1999 shall be rendered. Flush door to be provided with teakwood beading and painted to match the door shutter.

11 **FACTORY MADE PVC FRAME AND SHUTTER**

11.1 **SOLID SINGLE PVC DOOR FRAME :** Solid PVC Door frame of the size 50 x 47 mm made out of 5 mm PVC sheet. The door profiles are to be reinforced with 19 x 19 mm M.S. Square tube. EPDM rubber gasket weather seal to be provided throughout the frame. The profile shall be mitre cut at two corners and jointed by inserting 2 Nos of 150 mm long brackets of 15 x 15 mm M.S square tube inside the 19 mm x 19 mm MS square tube and suitably screwed.

11.2 **FACTORY MADE SOLID PANEL PVC DOOR SHUTTER** 30 mm thick factory-made solid panel PVC Door shutter consisting of frame made out of M.S. tubes of 19 mm x 19 mm for stiles, & 15 mm x 15 mm for top & bottom rails. M.S. frame shall be covered with 5 mm thick heat moulded PVC sheet 'C' channel having a 5 mm thick PVC sheets strip of 20 mm width stuck inside with solvent cement, forming stiles, and 5 mm thick PVC sheets for top rail, lock rail & bottom rail on either side, and 10 mm (5 mm x 2) thick, 20 mm wide cross PVC sheet as gap insert for top rail & bottom rail. Paneling of 5 mm thick PVC sheet to be fitted in the M.S frame welded/sealed to the stiles & rails with PVC sheet beading, and joined together with solvent cement adhesive etc, complete as per direction of Engineer-in-charge, manufacturer's instructions and drawing. The width of stiles & rails will be in proportion to the width of the door shutter as detailed below: -

Door width (in feet)	**Stiles size**	**Rails size**	**Remark**
Feet	**Mm**	**Mm**	
1.5' up to 2'	50 mm	50 mm	
More than 2' up to 2.5'	50 mm	75 mm	
More than 2.5' up to 3'	75 mm	100 mm	Gap insert of 15 mm to be provided between stiles and rails & panel
More than 3'	100 mm	125 mm	

PARTICULAR SPECIFICATIONS (Contd…..)

11.3 For doors of sizes larger than 17.5 sq ft an additional 15 mm x 15 mm, 19-gauge M.S. square tube shall be welded to the M.S. frame below the top rail square tube keeping a gap of 50 mm between the two M.S. square tubes. In the case of double leaved shutters, the meeting stiles shall be rebated 20 mm as shown on drawing. The rebating shall be square, as directed. Factory Made solid panel PVC door shutters shall conform to the below mentioned permissible limit as per testing methods provided in IS 4020.

S No	Test	Permissible Limit
01.	Dimensions and squareness	Width + 3 mm Height + 3 mm Difference in Diagonals: Not more than 3 mm
02	General flatness test	No twisting cupping or warping shall be observed
03	Local planes test	Depression on all 10 points at the panel areas shall be less than 0.5 mm
04	Impact indentation test (steel ball impact test)	Indentations shall be less than 0.3 mm
05	Edge loading test	Initial max deflection shall not be more than 5 mm residual deflection shall be not more than 0.5 mm
06	Shock resistance test	No visible damage shall be observed
07	Buckling test	Initial deflection shall not be greater than 90 mm. Residual deformation after 15 minutes of unloading shall not be greater than 5 mm.
08.	Slamming test	No visible damages shall be observed to any part of the door
09	Misuse test	No permanent deformation of the fixing or any other part of the door shutter in hindering its normal working shall be observed
10.	Screw withdrawal resistance test	Face : 1400 N Edge : 1500 N.

12. **PRE-LAMINATED PARTICLE BOARD**

12.1 Pre-laminated particle board shall be of melamine faced, flat pressed, three layered pre-laminated wood based particle board BWR exterior grade bonded with phenol formaldehyde synthetic resin duly stamped IS-12823 Grade-I type II with prelamination of approved shade as decided by GE/Engr-in-Charge and thickness shall be as mentioned in respective Schedule 'A'/ BOQ items. Wherever prelaminated particle board with one side lamination mentioned in Schedule 'A'/ BOQ items, it shall be one side decorative teak face and other side with white balancing lamination. Where the thickness of pre-laminated particle board specified are not in the manufacturing range, then the near higher thickness manufactured/ available shall be used without any extra cost to the Government.

13 **PRESSED STEEL DOOR FRAME**

13.1 Pressed steel frames shall be as per IS-4351 and as specified in clause 10.27 of SSR Part I. Size of frame shall be described in BOQ. The tolerance over the profile size shall be +2 mm. The thickness of sheet shall be 1.25 mm/0.91 mm. The inner surface of the frames shall be treated with a coat of tar. Shop coat and red oxide shall be applied outside before erecting in position. The bar of 25 x 3 mm MS flat shall be provided at bottom to hold the frame. The frame shall be filled with PCC 1:3:6 (Nominal Mix) using 12.5 mm graded crushed stone aggregate. Cold rolled steel hinges as per IS shall be bolted to pressed steel frame. The Mild Steel Tie Bar of 16 mm dia Round Bars shall be provided at the bottom of frames by welding to the frame and this tie bar shall be embedded and left inside floor. The Frames, Fittings, Hinges and Shock Absorber shall conform to specification given in IS-4351.Mild Steel Conduit 20mm dia of 16 gauge closed at one end shall be welded to inner face of frame for receiving shoot of bolt. M.S. sockets for housing shoot of tower bolt shall also be provided as directed by Engineer-in-Charge. The fixing lugs and inner surfaces of door frames coming in contact with concrete shall be treated with two coats of bituminous paint. The door frame shall be thoroughly cleaned, made free from rust, dirt, oil, etc. and exposed surfaces shall be painted with two coats of synthetic enamel paint over a coat of red oxide zinc chrome primer.

13.2 The fixing of Pressed Steel Door Frames shall be done as per Clause No. 5.34.5(A) of MES Schedule Part -I. All Door Frames shall be fixed while Masonry Work is in progress.

PARTICULAR SPECIFICATIONS (Contd…..)

14 **STEEL WINDOWS/VENTILATOR**

14.1 Refer clause No. 10.25 of MEs Schedule Part-I.

14.2 **PRESSED STEEL WINDOW/ VENTILATOR**:

14.2.1 Pressed steel windows/ventilators shall be provided as per BOQ.

14.2.2 Steel required for steel window shall be of cold reduced low carbon steel sheet of designation CR2 and grade D as per IS 513 : 2008.

14.2.3 Steel windows shall be fixed as per IS-1081 embedding in cement concrete block of appropriate size.

14.2.4 All steel windows, ventilators shall be factory made and of approved make and shall be procured from any of the approved firms listed in herein after.

14.2.5 Glass and frame shall be joint with 6x6 mm silicone polymer base sealant.

14A. **Anodised Aluminium Doors, Windows, Ventilators, Partitions, Composite units etc**

14A.01 All aluminum doors, windows, ventilators, partitions shall be as per SSR Part I clause No.10.37(a),(b),(c),(d),(e),(f) ,(g).

14A.02 All aluminium frame works shall be as per SRR Part I clause No.10.38.

15. **STEEL TRUSS/TUBULAR TRUSS & PURLINS**

15.1.1 **GENERALLY**

15.1.1 The steel member used for trusses and other places shall be manufactured as per specification given in relevant IS. Tolerance in thickness and weight shall be as per IS. The steel shall beprocured from any of the manufacturers mentioned here-in-after. Steel member exposed to views shall be painted with two coats of synthetic enamel paints over a coat of primer. Steel members not exposed to eye shall be painted with two coats of red oxide primer.

15.1.2 Component member of steel tubes shall be as shown on drawings.

15.1.3 All structural plate shall confirm to IS : 2062.

15.1.4 All RHS/SHS shall confirm to IS : 4923 (latest) Grade –Yst 210, 240 or 310.

15.1.5 All gusset plate shall be 8 mm thick unless otherwise mentioned.

15.1.6 All bolts are 20 Ø and grade (B) class 4.6.

15.1.7 All MS black bolts & nuts shall confirm to IS : 1363.

15.1.8 Open ends of all members shall be sealed.

15.2 **COMPONENT MEMBERS**: All component member shall be neatly fabricated true to shape according to dimensions/size shown on respective drawings. A marking diagram allotting distinct identification mark to each separate piece of steel work shall be prepared to ensure correct assemble and erection at site. The component parts shall be assembled in such a manner that they are neither twisted nor otherwise damaged.

15.3 **DRILLING HOLES**:-Work shall be carried out all as specified in Clause No. 10.11 of MES Schedule Part-I and as per IS. Holes shall not be formed by gas cutting process.

PARTICULAR SPECIFICATIONS (Contd…..)

15.4 **CUTTING**

15.4.1 Cutting may be effected by shearing, cropping or sawing gas cutting by mechanically controlled torch will be permitted but after gas cutting edges shall be cleared of slag, burnt metal and made free from local protection and depressions exceeding 1mm by grinding. Hand frame cutting maybe permitted subject to the approval of Garrison Engineer.

15.4.2 Shearing, cropping and gas cutting shall be clean, free any distortion and if it is not so, the edge shall be ground without any additional payment. Holes where required in steel members shall be done using suitable drilling machine and punches. Making holes with gas cutting is not permitted.

15.5 **CONNECTIONS** :- All connections of steel work shall be welded except bolting where specifically shown on BOQ.

15.6 **JOINTS**:- The joints surface shall be prepared as specified in IS. Every member of the various types of steel trusses, roof girders, stanchions etc shall be in one piece without joint. However, additional splice joints, if required due to site conditions shall be carried out on written approval of Garrison Engineer without extra cost to Government. Splicing of members shall be done all as shown on drawings.

15.7 **FABRICATION**

15.7.1 Fabrication of all components including notching, cutting, punching/drilling and welding shall be carried out exactly in accordance with the detailed drawings and with the best workmanship. Sufficient steel work shall be trial fitted by the contractor in his workshop at site to eurocurrency of various components, as work failing to fit accurately at site will be liable for rejection by the Garrison Engineer.

15.7.2 All fabrication shall be done at site and in position where necessary.

15.7.3 Erection shall be carried out as specified in Clause No. 10.16 of MES Schedule Part-I.

15.7.4 Contractor's particular attention is drawn to IS-7205 (Safety Code for erection on structural steelwork). Anchor bolts for fastening of steel structure shall be set in designed position and groutedalongwith foundation. Also refer Clause No. 10.16.2 and 10.16.3 of MES Schedule Part-I.8.4.6.5. Damaged structural members shall be examined and rectified or replaced as directed by Engineer-in- Charge.

15.7.5 The erected parts of structure shall be stable during all the stage of erection and the structural elements to be erected, shall be stable and strong to bear erection load.

15.7.6 Working on the already erected structure is permitted only after they are finally fixed. Erection of structures of each tier of high structure shall be executed only after the relevant fastening of lower ties by the permanent or temporary fastening devices as clarified for safety.

NOTE : The contractor shall at his option may get the truss components fabricated at the manufacturer’s shop and transport the same to the work site without any extra cost. However the fabricated truss will be erected only after the same is approved by Garrison engineer.

PARTICULAR SPECIFICATIONS (Contd…..)

16 **STEEL AND IRON WORK**

16.1 **GENERAL**

All steel including structural steel, steel sheets etc for entire completion of work shall be procured by the contractor at his own cost.

16.2 **MATERIALS:**

Items of steel and iron brought to site by the contractor for incorporation in the work shall be free from defects all as specified in clause 10.4.3 and 10.17.6 of SSR Part-I and shall be conforming to IS specifications as given below :-

(a)		**STRUCTURAL STEEL**	:	Gde E-250 (Fe410W) quality 'A' or 'B' ISI marked (IS-2062)
(b)		**STEEL FOR REINFORCEMENT**		
	(i)	High strength deformed steel bars produced by Thermo Mechanical Treatment process	:	TMT steel bars of Grade Fe 500/500D meeting all requirements of IS-1786
	(ii)	Mild Steel as in fencing posts, Hold fasts, grills, guard Bars,steel door ,railing, steel gate, members of steel windows , doors and the like.	:	Gde E-165 (Fe-290) ISI marked (IS-2062)
	(iii)	Fabric reinforcement for concrete	:	Conforming to IS-1566.
	(iv)	Black/Galvanised steel sheets	:	Conforming to IS-277. Galvanised steel sheets (plain & corrugated) shall have Class 8 coating.

16.2.1 **PROCUREMENT:**

16.2.1.1 TMT steel bars irrespective of size shall be procured from main/ primary producer(s) i.e. SAIL/ RINL/ TISCO/ and other manufacturers as per list of manufacturers mentioned here-in-after.

16.2.1.2 All structural steel shall be procured from main/ primary producer(s) i.e. SAIL/ RINL/ TISCO and as per list of manufacturers mentioned here-in-after

Note: - Steel section for railings, gates, fencing, guard bar, steel chowkhats and holdfasts etc, which do not constitute structural members, can be procured from main producers/secondary producers/BIS marked manufacturers or their authorized dealers at the option of contractor without any minus price adjustment. These should also conform to IS-1732 for general engineering purpose. However, tests will not be insisted upon for such steel sections.

16.2.1.3 The galvanized iron sheets & fabric reinforcement for concrete shall be ISI marked & shall be procured from main producers.

16.2.1.4 Main producers of steel and the primary producers/ manufacturers are specified in Appendix 'E' to these particular specifications.

16.2.1.5 Reinforcement shall be fabricated, placed in position all as shown on drawings and specified in clause 10.17 to 10.22 of MES Schedule (Part-I) without application of heat.

10.2.1.6 All laps and crossings shall be tied with mild steel wire (annealed) of size not less than 0.9mm dia and the cost thereof deemed included in the quoted amount of the contractor.

16.2.1.7 For the purpose of calculating the lump sum and making adjustment arising out of deviations involving reinforcement bars, the length of each bar shall be taken as 10 (Ten) metre for the purpose of calculating lap length.

16.2.1.8 All finished steel shall be well and clearly rolled to the dimensions, section and weights specified. The finished material shall be reasonably free from cracks, surface flaws laminations, rough, jagged and imperfect edges and other harmful defects and shall be finished in a workman-like manner.

16.2.1.9 Tolerance on size and weight of reinforcement bars shall not be more than specified in clause 10.17.4 & 10.17.5 of MES Schedule (Part-I).

16.2.1.10 Steel shall be procured from the storage depots of the manufacturers and not from their authorized agents/ dealers

16.2.1.11 The GE for every lot of steel shall obtain the particulars of the manufacturer/ supplier of steel from the contractor separately. The form given at Appendix 'B' shall be issued for this purpose.

16.2.1.12 The site staff and GE shall verify the original documents in support of the purchase of steel and shall retain certified true copy of the results in GE's office.

16.2.1.13 The GE shall ensure that contractors place their demand/requisition of steel with adequate lead-time. The steel shall be procured from the storage depots of the main producers and not from their authorised agents/dealers as the authorized agents deal with the steel manufactured by more than one manufacturer.

16.2.1.14 The contractors shall place their demand/requisition of steel with adequate lead time.

16.3 **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. All consignments received at the work site shall be inspected by the GE along with the relevant documents before acceptance. The original vouchers and the Test Certificates shall be defaced by the Engineer-in-Charge and kept on record in the office of the GE duly

PARTICULAR SPECIFICATIONS (Contd…..)

authenticated and with cross reference to the control number recorded in the Steel Acceptance Register. The Steel Acceptance Register shall be signed by JE, Engineer-in-Charge, GE and contractor. The Accepting Officer may order board of officers for random check of steel and verification of connected documents. The entire quantity of all steel items shall also be suitably recorded in the Measurement Books for record purposes as ' NOT TO BE ABSTRACTED' , before incorporation in the work and shall be signed by the Engineer-in-Charge and the contractor**.**

16.4 **TESTING OF STEEL**:

16.4.1 The manufacturer is to carry out inspections and testing of steel in accordance with the relevant BIS provisions The contractor shall submit the manufacturer's 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 (**Appendix 'B'**) after due verification and send a certified true copy of test sheet to GE for his records. The GE/CWE shall also organize independent testing of random samples of steel drawn from various lots as applicable and detailed in sub para (A) & (B) below from a National Test House , SEMT wing CME Pune, Regional Research Labs and NABL approved Labs. Government approved labs, Engineering college, Zonal Labs, Command Labs etc as per the recommended minimum frequency as shown in Table at **Appendix 'F'**. Samples from each lot shall be tested for quality and elongation. The elongation shall not be less than 18%. In order to undertake Department testing, requisite facilities shall be organized by the contractor. In Addition to above tests, the TMT steel received from secondary producers shall be tested by GE/CWE in person , before incorporation in the works by simple field tests and records shall be maintained . However, CWE shall carry out random checks where GE has not tested the steel. The records of such random checks shall be maintained in the steel test register. Simple field test involves sand papering the X-section of the TMT bars and dipping the same in chemical solution to give a clearly defined annular ring of tempered steel. The contractor at his cost shall arrange facilities for such tests. The record of such checks shall be maintained in the steel test register.

(A) **Reinforcement Steel**

(i) Independent testing of steel shall be optional at the discretion of GE, in case of procurement of steel from main producers and 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 the test results are found in order otherwise these shall be borne by the contractor.

(ii) In case at sub para 10.4.1 (A) (i) above, the contractor at his cost shall provide all facilities required for the testing and cost of materials consumed in tests shall also be borne by the Contractor.

(B) **Structural steel**

(i) Independent testing of structural steel by the GE shall be optional at the discretion of the GE in case of procurement from main producers and 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 the test results are found in order otherwise these shall be borne by the Contractor.

(ii) Independent testing of structural steel by the GE shall be mandatory in case of procurement from secondary producers and testing charges shall be borne by the Contractor irrespective of the outcome of test results.

(iii) In both the case at Sub Para 10.4.1 (B) (i) & (ii) above, the contractor at his cost shall provide all facilities required for the testing and cost of materials consumed in tests shall also be borne by the Contractor.

16.4.2 Testing of steel as referred above is an essential requirement before the payment is released to contractor as material lying at site or before incorporation in the work and no recovery in lieu of testing shall be accepted.

16.4.3 Quality of steel shall be ascertained by following tests:-

(i) **THERMO MECHANICALLY TREATED BARS**:

Tensile test, bend test and re-bend test shall be carried out as per clause 8 of IS-1786-1985. Test specimen shall be taken as per clause 10 of IS-1786-1985.

(ii) **MILD STEEL BARS**:

Tensile test and bend test shall be carried out as per clause 9 and delivery inspection as per clause 10 of IS-432(Part-I) 1982. Minimum yield stress shall be 250 N/Sqmm.

(iii) **STRUCTURAL STEEL (E-250 AND MILD STEEL SECTION E-165)** :

Tensile test and bend test shall be carried out as per IS-226/ IS-2062/IS-1977 as applicable. Minimum yield stress shall be 250 N/Sqmm.

(iv) **CHEMICAL TEST**:

Chemical test shall be carried out to ascertain chemical composition, which shall conform to the norms laid down in relevant ISI codes. For TMT bars, chemical composition shall be as given in relevant Appendix 'C' attached to these particular specifications.

16.5 **TOLERANCE**

Rolling and cutting tolerance of structural steel products shall be as specified in IS-1852 of 1985 Tolerance on size and weight of reinforcement bars shall be as specified in clause 10.17.4 and 10.17.5 of SSR part-I. Steel with less weight than permissible shall not be used.

PARTICULAR SPECIFICATIONS (Contd…..)

16.6 **SCHEDULE OF SUPPLY**:
The contractor shall ensure that procurement action is taken immediately after acceptance of contract so as to adhere to schedule of activities as per CPM network.

16.7 **STORAGE, ACCOUNTING, PRESERVATIONS AND MAINTENENANCE**:

16.7.1 Structural steel/bars of different classification, section, sizes and lengths shall be stacked separately. Steel shall be marked with distinct painting marks for easy identification. Steel shall be recorded in MB for record purpose only.

16.7.2 All steel shall be stored on Dunnage at-least 15cm above ground level. Steel reinforcement shall be stored properly to prevent distortion and corrosion. In case of long time storage, suitable protective measures like cement coating, provision of temporary shelter etc to save it from rusting/distortion etc shall be taken. Any item of steel that has deteriorated or corroded or considered defective by Engineer-in-Charge shall not be used in the work and shall be removed from the site of work.

16.8 **METHOD OF MEASUREMENT:**

All items of steel brought at site shall be entered in MB as "Not to be abstracted" indicating the diameters and length of bars, quantities, voucher number with dates. It shall form the basis to allow advances on account through RAR's. While allowing advance on such materials, quantities so entered in MB shall be reduced by 2% to account for waste and off cuts and every care shall be taken to ensure that all quantities will be utilised in the work.

16.9 **RECORD OF MEASUREMENTS**:

Before casting of concrete, reinforcement incorporated shall be measured by Engineer-in-charge and contractor jointly. These measurements shall be entered in a register for the purpose of record and shall be signed by contractor's rep and Engineer-in-Charge. Proper reference of Drg. No, location, date etc shall be given therein.

16.10 **WEIGHT CONVERSION**:

Conversion factor for various sections/sizes of steel shall be as per conversion tables given in SSR. Where conversion table is not available in SSR, IS conversion tables shall be followed.

NOTES:-

(a) Mixing of different types and grades of bars shall not be done in the same RCC member as main reinforcement to satisfy clause 26.1 of IS-456 of 2000.

(b) TMT bars of grade 500 MPa will be used .

(c) TMT shall not be treated as corrosion resistant steel bars.

16.11 **STEEL REINFORCEMENT**:

16.11.1 Reinforcement of TMT bars (refer Sch 'A' note here-in-before) etc. shall be provided as shown on drawings and in the absence thereof in accordance with the provision of IS-456-2000.

16.11.2 Reinforcement shall be fabricated and placed in position all as shown on drawings and specified in clause 10.17 to 10.22 of MES Schedule (Part-I) without application of heat.

16.12 **WELDING** :

Welding wherever shown on drawings shall be by metal arc process in accordance with IS-816 and IS-823.

16.13 **HOLD FASTS/LUGS** :
Flat iron hold fasts/lugs shall be provided by welding as and where shown on drawings, except those, to be provided to wooden chowkhats which shall be fixed with bolts/nuts as per details shown on drawings. Holes in wooden chowkhats shall be plugged with hard wood plugs.

16.14 **EXPANDED METAL** Where XPM is shown on drawings, it shall be expanded metal conforming to IS-412 and weight exceeding 4 kg but not exceeding 5 kg per square metre.

16.15 **MS RUNGS** : MS rungs, wherever indicated in drawings, shall be provided as per details given in drawings. These shall be of 16mm dia MS round bars embedded in PCC blocks 250 mm C/C staggered

16.16 **STAINLESS STEEL RAILING:-** The stainless steel railing (SS railing) shall be provided in lumpsum buildings on locations as shown on drawing. The detail of same are shown on drawings. The stainless steel shall be of approved make and shall be **304 grade** of steel. The requisite test report and test certificate for grade of steel shall be produced by the contractor before incorporation in the work. The quoted rates against lumpsum buildings shall be inclusive of aforesaid provisions. Make of SS railing:- Makwana world, Jindal, Amardeep steel, Bajrang Steel Railings, Vardhman, Tata.

16.17 **MILD STEEL RAILING**
Mild Steel railing where indicated shall be provided at the locations all as per details shown in drawing and directed by Engineer in charge and as specified in MES Schedule (Part-I).

16.18 **BIRD PROOFING**:- Bird proof net shall be provided in workshop at ceiling level. Details for fixing arrangement of bird proof net to truss shall be as shown on drawing. Bird proof netting shall be HDPP Wire-netting made out of nylon (not recycled) with size of aperture not more than 20 mm & dia of Nylon thread not less than 1.25 mm. Colour shade shall be as approved by GE. Steel wire retainers or other supporting mechanism shall be provided for preventing any sag in Bird proofing net.

16.19 **STEEL ROLLING SHUTTER**:

Steel rolling shutter shall be as indicated in drawings and shall be provided as per clause 10.23 of MES Schedule Part-I. These shall be self-coiling type (push-pull manual type) with or without ball bearing/Gear operated type shutters (mechanical type) depending upon the clear area as stipulated in clause 10.23.1 of SSR Part I. The thickness of curtain lath shall be of 1.25mm. The rolling shutter shall conforming to requirement of IS-6248 and shall be obtained from the manufacture/factory as approved in writing by the GE. Rolling Shutters shall be painted with two coats of synthetic enamel paint over a coat of red oxide zinc chrome primer

PARTICULAR SPECIFICATIONS (Contd…..)

APPROVED TMT STEEL MANUFACTURER FOR MES WK

Sl.No	Company Name	Address	Type of Steel
1.	Rashtriya Ispat Nigam Limited (RINL) **Brand: "RINL"**	Visakhapatnam Steel Plant Visakhapatnam - 530 031, India Tel: (91 891) 518226, 518376 Fax: (91 891) 518316, Email: cmdvspitpvis.ap.nic.in	All
2.	Tata Iron & Steel Company (TISCO, or Tata Steel) **Brand: "TATA"**	Bombay House, 2, 4 Homi Modi Street Mumbai - 400 001, India, Tel: (91 22) 204 9131 Fax: (91 22) 204 9522. 287 0840 Email: corpcomm@jsrtatasteel.com (Br office for North : Jeevan Tara Bldg, Patel Chowk , New Delhi)	All
3.	Steel Authority of India Limited (SAIL) **Brand: "SAIL"**	Central Marketing Organization, Northern Region 17th Floor, scope Minar,Laxmi Nagar Distt. Centre, Delhi – 110092	All
4.	M/S Jai Balaji Industries Ltd. **Brand: "Balaji Shakti"**	5 Bentek Street, Kolkata-700001 Delhi office 510, Block-b, Navraung House 21 Kasturba Gandhi Marg, New Delhi-110001 011-43620219, 43620220 Mob: 7838272772/9958936103 E-mail: info@jaibalajigroup.com	TMT Bars of Gde Fe 500 & Fe 500D CRS (Size 8-32mm)
5.	M/S Shyam Steel Industries Ltd. **Brand: "SHYAM"**	Shyam Towers EN-32, Sector-V, Salt Lake, Kolkata-700091 Tel-033-40074007, Fax-033-40074010, E-mail: marketing@shyamsteel.com	MT Bars of Gde Fe 500 Fe 500D CRS
6.	M/S SPS Steels Rolling Mills Ltd. **Brand: "ELEGANT TMT"**	Elegant Towers, 68A, Ballygunge Circular Road, Kolkata-700019, Ph- 033- 2895160/67 Fax- 033- 22894386 E-mail: spsdelhi@spsgroup.co.in	TMT Bars of Gde Fe 500D
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 HSCRM
8.	M/S Jindal Steels and Power Ltd., Haryana **Brand: "JINDAL PANTHER"**	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 & CRS with (Sizes 8mm to 40mm)
9.	M/s Shri Bajrang Power & Ispat Ltd. **Brand: "GOEL TMT"**	Vill -Borjhara, Urla Industrial Area, Raipur-493 221, Chhattisgarh. Tel : 0771 4288019 / 29 / 39	TMT Bars of Gde Fe 500, Fe 500D (Size 8-32mm) Fe-500D CRS (Size 10-25mm)
10.	M/s ShyamMetalics& Energy Ltd. **Brand: "SEL TIGER"**	Viswakarma, 1St Floor, 86 C, Topsia Road, Kolkata -700046 Ph: +91 33 2285 2212 Website: www.shyamgroup.com	TMT Bars of Gde Fe 500, Fe 500D (Size 8-32mm)
11.	M/s Real Ispat& Power Ltd **Brand: "G K TMT"**	Vrindavan, Near IDBI Bank Civil Lines Raipur-492001, C.G. Tel: +91-771-4224000 Fax: +91-771-4224010 E-mail: real@realispat.com Website: www.realispat.com	TMT Bars of Gde Fe 500 Fe 500D (Size 8-36mm)
12.	M/s Super Smelters Ltd, Kolkata. **Brand: "SUPER SHAKTI"**	Premlata, 39, Shakespeare Sarani 3rd Floor, Kolkata-700017 Tele/Fax: +91-33-2289-2734/36E-mail: info@supershakti.inWebsite: www.supershakti.in	TMT Bars of Gde Fe 500 Fe 500D, Fe 550 (Size 8-32mm)
13.	M/s MSP Steel Rolling Mills Ltd, (WB) Brand: "**MSP TMT 500D**"	M/s MSP Steel & Power Limited, Chattisgarh 16/S, Block-A, New Alipore Kolkata 700053. Tele-033 4005 7777/2398 2239 Mob-7381028976 E mail-contactus@mspsteel.com Website-www.mspsteel.com	TMT Bars of Gde Fe 500D (Size 8-32mm)

PARTICULAR SPECIFICATIONS (Contd…..)

14	M/s Sugna Metals Limited, Hyderabad **Brand: "SUGNA TMT"**	M/s Sugna Metals Limited, Plot No 76, Vemireddy Enclave Road No 12, Banjara Hills, Hyderabad-500 034 (Telangana) Tel: 040 27664502/27663527 E-mail: info@sugnatmt.com	TMT Bars of Gde Fe 550D (Size 8-32mm)
15	M/s Tulsyan NEC Limited, Chennai **Brand:"TULSYAN TMT"**	M/s Tulsyan NEC Limited, Chennai APEX Plaza 1sr floor Old no 3, New No. 77, Nungambakkam High Road, Chennai-600 034(TN) Website: www.tulsyannec.in Tele-044-61991060/61991045 Mob-9840354010,9677088334	TMT Bars of Gde Fe 500 Fe 500D & Fe 550with (Size 8-32mm)
16	M/s Electrotherm (India) Ltd, Gujarat **Brand:" ET TMT"**	M/s Electrotherm (India) Ltd, Gujarat Tel: +91-2717-234553/660550 Mob-+91-9687-234866 Website:www.electrotherm.com	TMT Bars of Gde Fe 500,Fe 500D, & CRS with(Size 8-32mm)

APPROVED STRUCTURAL STEEL MANUFACTURER FOR MES WK:-

Sl.No	Company Name	Address	Type of Steel
1.	Rashtriya [spat Nigam Limited (RINL) **Brand: "RINL"**	Visakhapatnam Steel Plant Visakhapatnam - 530 031, India Tel: (91 891) 518226, 518376 Fax: (91 891) 518316 Email: cmdvspitpvis.ap.nic.in	Structural Steel (Hollow Sections, Angle, Beam, Column, Channel, Plate)
2.	Tata Iron & Steel Company (TISCO, or Tata Steel) **Brand: "TATA"**	Bombay House, 2, 4 Homi Modi Street Mumbai - 400 001, India Tel: (91 22) 204 9131 Fax: (91 22) 204 9522. 287 0840 Email: corpcomm@jsrtatasteel.com (Br office for North : Jeevan Tara Bldg, Patel Chowk , New Delhi)	-do-
3.	Steel Authority of India Limited (SAIL) **Brand: "SAIL"**	Central Marketing Organization, Northern Region 17th Floor, scope Minar, Laxmi Nagar Distt. Centre, Delhi- 110092	Structural Steel (Hollow Sections, Angle, Beam, Column, Channel, Plate)
4.	M/S Jindal Steels and Power Ltd.**Brand: "JINDAL"**	Jindal centre, Plot No 2, Sector- 32, Gurgaon-122001, Haryana Tele - 0124 661 2000 Fax - 0124 661 2125 Website: www.jindalsteelpower.com	-do-

PARTICULAR SPECIFICATIONS (Contd…..)

17. **Application of Mortar and Finishing: -** The mortar shall be pressed firmly into the raked out joints, with a pointing trowel according to the type of pointing required. The mortar shall not spread over the corners, edges or the surfaces of the masonry. When pointing is air dry, it shall be rubbed smooth with the trowel and shall then be finished with proper tool. The surface of masonry shall be cleaned of all mortar.

18 **Integral water proofing compound**: - Integral water proofing compound shall be mixed with as per manufacturer instruction. When not indicated it shall be 3% by weight of cement. Care shall be taken to ensure water proofing material gets well and integrally mixed with cement and does not run out separately when water is added.

19 **PAINTING**

19.1 **Painting and allied materials**: Refer para 17.2 of MES Schedule Part-I. Paint shall be synthetic enameled paint or as specified in Schedule 'A'.

19.2 **Painting work generally:** Refer Para 17.3 of MES Schedule Part-I.

19.3 **Painting to wood work:** Refer para 17.6 of MES Schedule Part-I. Filler coat is not required to be applied. Painting shall be done as specified in Schedule 'A'. Primer for woodwork shall be pink primer and painting shall be done with synthetic enamelled paint.

19.4 **Painting to steel and iron work:** Refer para 17.8 of MES Schedule Part-I. Filler coat is not required to be applied. Primer for steel surfaces shall be red oxide and under coat and finishing coat shall be of synthetic enamel paint.

20. **ELECTRIFICATION GENERAL**

20.1 **Execution of work** : Unless otherwise exempted under the rule of the Indian Electricity rules the work of electrical installation shall be carried out under the supervision of a person holding a certificate of competency issued by the recognized authority. The workmen shall also hold certificate of competency. Good workmanship is an essential requirement for compliance with these specifications.

20.2 The work shall be executed in such sections and in a manner as directed by Engineer-in-Charge to suit the building operations or the convenience of users/occupants.

20.3 **Testing generally** : All electrical work shall be systematically tested by the Contractor in the presence of Engineer-in-Charge to ensure compliance with the specifications laid down. Test results shall be recorded and signed by the Contractor and the Engineer-in-Charge. If the test results are not acceptable, the contractor at his expense and installation retested, until test results indicate compliance with the prescribed requirements, shall carry out all repairs and replacement and extra work of removal and relaying or refixing. The contractor shall supply the necessary apparatus, labour and instruments or equipment required for testing.

20.4 **Fire safety** : All electrical equipment shall satisfy the requirements laid down in IS 1646-1982 Code of Practice for fire safety of buildings (general) electrical installations and IS 3034-1981 Code of practice for fire safety of industrial buildings, electrical generating and distributing stations, to the extent applicable.

21. **DISTRIBUTION / FEEDER PILLARS BOX**

21.1 Refer clauses 19.21 of MES Schedule Part-I. , IS 5039.

21.2 The feeder pillars box shall be factory made and CPRI approved. Feeder pillars box shall be obtained from the specified manufacturers and shall be epoxy powder coated factory made and tested as per IS. All feeder pillars boxes shall have extra space for installing one MCCB in future.

21.3 The contractor shall design & submit drawings of panel board before bringing same to the site.

21.3.1 The cable chamber of the board shall be with adequate space for housing cable and connecting for safety of working and for avoiding accidental contacts with live parts by providing barriers.

21.3.2 In case nothing is mentioned in Sch 'A' bus bar shall be copper.

21.3.3 In case mounting of panel board has not been mentioned in Sch 'A' the same shall be floor mounted and the fixing arrangement shall be provided by the contractor and the unit rate quoted shall be deemed to inclusive for the same.

PARTICULAR SPECIFICATIONS (Contd…..)

22. **STEEL TUBULAR POLES**

22.1 Refer paras 19.3.1 and 19.3.2 of MES Schedule part-I. The poles shall be of reputed manufacturers approved.

22.1.1 The size and dimension of the poles shall be as specified in Sch 'A' and as specified in MES Schedule Part-I.

22.1.2 Pole shall be built up of steel sections and welded all as shown on drawings and directed by Engineer-in-Charge.

22.1.3 Painting- Exposed surface of steel shall be painted two coats of aluminum paint over a coat of red oxide zinc chrome primer including preparation of surfaces only. Embedded portion of steel pole internally and externally and all internal surfaces shall be painted with two coats of black bituminous paint after preparation of surfaces.

22.1.4 Erecting of poles shall be carried in accordance with IS-5613 Part-I.

22.1.5 The pole shall be erected with due care in such manner that they are truly in vertical position as directed by Engineer-in-Charge. These shall be erected exactly in a line except where line changes direction. Proper erection equipment such as derricks, cranes chairs etc. shall be used by the contractor in erecting poles so that they are not improperly strained or damaged during erection and are firmly stayed till the foundation has properly set and secured.

22.1.6 Finials and base plate – Refer para 19.3.5 of MES Schedule Part-I.

22.1.7 Steel tubular poles shall comply with the requirements of IS-2713 (Revised) (Specification for tubular steel poles for over head power lines). These shall be of swaged type and shall be electrically welded or seam less. Poles shall be made from tubes of suitable length swaged together when hot. Tensile strength of steel shall not be less than 42 Kg f/mm. Ends of poles shall be cut square. These shall be straight smooth and cylindrical; planting depth of poles i.e. length of poles to be embedded in ground shall be as shown on drawings. However, steel pole may be welded at sites per IS-2713 at the discretion of the GE under close supervision.

22.1.8 The poles shall be erected truly vertical and at exact location all as directed by Engineer-in-Charge and as per clause 19.52 Part-I of MES Schedule. Painting shall be carried out as indicated in subsequent clause to the entire satisfaction of Engineer-in-Charge. The depth of foundation belowground level shall be as shown on drawings.

22.1.9 For tying conductors to pin type insulators aluminum binding wire of suitable size for different conductors as per manufacturer's instruction shall be provided.

22.1.10 Connection of service wire and jumpers shall be carried out to maintain line conductor with approved quality PG clamps.

23 **ACSR CONDUCTOR**

23.1 The erection of overhead lines shall be carried out in accordance with IS-5613. Layout shall be as directed by Engineer-in-Charge.

23.2 The ACSR conductor for overhead lines shall be conforming to IS-398 part-II and as specified in SSR (Part-I).

23.3 While calculating the weight of ACSR, no extra allowance shall be made for jumpers etc at turning shackles points. However 3% allowance for sagging of conductor shall be added.

PARTICULAR SPECIFICATIONS (Contd…..)

23.4 Splicing / jointing of ACSR shall be done by aluminum binding wire 2mm dia to provide requisite strength. The spliced / joints shall not be located within 3 metres from the point of supports of poles and they shall be aligned properly with conductors at the end of splicing / joints.

23.5 LT line shall be protected by suitable guarding as directed by Engineer-in-Charge and shall be paid under relevant item of Sch 'A'.

24. **MCB AND DISTRIBUTION BOARD DISTRIBUTION BOARD AND MCB** : These shall be all as described in Schedule-A' /BOQ and of approved make.

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

24.2 All MCB, DBs shall be located at Load Centre (as per as possible) irrespective of whatever is shown on Drawings.

25. **EARTHING**

25.1 Earthing shall be carried out by Earth Electrodes as shown in Electrical Plate No. 3 of MES Schedule Part-I and as specified in IS-3043 including upto date amendments thereto. The Earth Electrodes shall be placed all as specified in Sch-A/BOQ. The surplus soil obtained from the excavation shall be removed to distance not exc. 50 Metre. The Concrete for Chamber shall be PCC 1:3:6 (using 20 mm graded stone aggregate) and exposed surfaces need to be finished fair. Funnel shall be prepared out 3.15mm thick PGI Sheet by welding and shall be leak proof. It shall be provided with wire gauge with 1.18mm average width of aperture and 0.45mm average dia of wire soldered to Funnel Cover. Dust shall be used for Medium Grade 20mm with 12mmdia holes drilled staggered @ 300mm C/C through out Pipe. The bottom of Pipe shall be layed at an angle of 45º. Two numbers Earthing shall be interconnected with 32 x 6mm into GI Strip/4mm dia GI wire.

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

(a) Earth Resistance Test : Resistance of each Earthing shall be measured individually and shall not exceed 0.5 Ohm in ordinary soil and 3 Ohm in Rocky situation.

(b) In case the Resistance is more than as specified, the Contractor shall increase the depth of the Bore hole, quantity of Charcoal, Salt and length of Electrodes to bring the Resistance of Earth to the Value specified above, without any Extra Cost to the Government.

26. **LEDLIGHTS/LUMINARIES(Any type of light fittings):**

26.1 All LED lights/luminaries shall be as described in Sch 'A' / BOQ of approved make having illumination minimum 100 lumen/ watt and meet the provision laid down in IS No-16101, IS No -16102 Part I/II, IS No -16130 Part I, IS No -15885 Part II/ Sec 13, IS No -16104, IS No - 16105, IS No - 16106, IS No - 16108: 2012 and having LM 79 & LM 80 certification from NABL accredited lab. LED lights and driver shall be of same manufacturer.

26.1.1 All LED light products shall be with replacement **warranty of 50000 Hrs** from the date of completion. The product will replace free of cost in the following cases :-

(a) Manufacturing defects.
(b) Failure due to mechanical and electrical impact.
(c) Drop in lumen (or lux at lm) below 90% of claimed values of lumen (or lux at 1m) of the LED/ Luminaries.

26.1.2 The above warranty shall not include natural disaster, sudden surge in voltage recorded by digital electronic meter or due to wrong handling of light fittings

PARTICULAR SPECIFICATIONS (Contd…..)

26.1.3 Manufacturer‘s test certificate of LED light fitting shall be submitted by the contractor before any payment.

26.1.4 Guarantee certificate of LED light fitting shall be submitted by the contractor before any payment. Contractor shall be responsible for replacing at his cost any parts which are rendered defective and unserviceable during the above period.

27 **ELECTRICAL TEST**

27.1 On completion of wiring, following tests shall be carried out conforming to IS 732.

(a) Insulation Test.
(b) Polarity Test
(c) Testing of Earth Continuity

28 **INSULATION TEST**

28.1 The insulation resistance shall be measured by applying between earth and the whole system of conductor or any section thereof with all fuses in place and all switches closed, and except in earthed concentric wiring, all lamps in position or both poles of installation otherwise electrically connected together, a DC voltage of not less than twice the working voltage, provided that it does not exceed 500 volts for medium voltage circuits. Where the supply is derived from three-wire (AC or DC) or a poly-phase system, the neutral pole of which is connected to earth either direct or through added resistance the Working Voltage shall be deemed to be that which is maintained between the outer or Phase Conductor and the Neutral.

28.2 The insulation resistance in megohms of an installation measured as in Particular Specification Clause No. 2.6.2.1 here-in-above shall not be less than 50 divided by the number of points on the circuit, provided that the whole installation need not be required to have an insulation resistance greater than one megohm.

28.3 **POLARITY TEST:-** Each Switch of Light Fitting, Ceiling Fan, Exhaust Fan and other Fixtures shall be connected with phase and not with neutral. For this Each Point should be tested by opening Switch Boxes and recorded in the Test Sheet.

28.4 **EARTH CONTINUITY TEST**

(a) The Earth Resistance of Each Electrode shall be measured.

(b) The Earth Resistance of Earthing Grid shall be measured.

(c) All Electrode shall be connected to the Grid and the Earth Resistance of the entire Earthing System shall be measured.

(d) These Test shall preferably be done during the Summer Months.

28.5 **CABLES**:- Cable installation shall be checked as follows :-

(a) It shall be ensured that the Cables conform to the relevant Indian Standards. Tests shall also be done as laid down in IS:1255-1983. The insulation resistance before and after the Tests shall be checked.

(b) The Insulation Resistance between each Conductor and against Earth shall be measured. The Insulation Resistance varies with the type of insulation used and with the type of insulation used and with the length of Cable.

(c) The following empirical Rule gives reasonable guidance Insulation resistance in megohms 10 x voltage in KV Length in KM

PARTICULAR SPECIFICATIONS (Contd…..)

28.5.1 The Test Results shall be recorded and signed by Engineer-in-Charge and the Contractor.

28.5.2 The contractor shall design & submit drawings of panel board before bringing same to the site.

28.5.3 The cable chamber of the board shall be with adequate space for housing cable and connecting for safety of working and for avoiding accidental contacts with live parts by providing barriers.

28.5.4 In case nothing is mentioned in Sch-A' bus bar shall be copper.

28.5.5 In case mounting of panel board has not been mentioned in Sch A' the same shall be floor mounted and the fixing arrangement shall be provided by the contractor and the unit rate quoted shall be deemed to inclusive for the same.

28.6 If hard rock is met within excavation, the same shall become the property of the Government and entered in the measurement book duly signed by Engineer-in-Charge and the contractor.

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

28.8 Unless otherwise exempted under the rules of the Indian Electricity rules the work of Electrical installation shall be carried out under the supervision of a person holding a certificate of competency issued by the recognized authority. The workmen shall also hold certificate of competency. Good workmanship is an essential requirement for compliance with these specifications as per the discretion of Engineer-in-Charge.

28.9 The work shall be executed in such a manner as directed and as per existing layout and drawings.

29. TEST CERTIFICATE

29.1 The contractor shall supply CTC of test certificate of all electrical equipment's including cables in a neatly bound folder. This will be in addition to production of original test certificates at the time of receipt /payment through RAR without any extra cost to the Govt.

(a) Complete equipment shall be tested jointly by Engineer-in-Charge and contractor's qualified Engineer. Record of all test results shall be complied and submitted to GE for approval.GE shall ensure that all the test results are with in the specified limits of Indian Standard or laid down specification as describe in clause No19.2 of SSR Part-I and compare favorable with the original test certificates supplied by the manufacturers of equipment's.

30. TESTING OF ELECTRICAL EQUIPMENTS AND CABLE

30.1 Complete equipment shall be tested jointly by Engineer-in-Charge and contractor's qualified Engineer. Record of all test results shall be complied and submitted to GE for approval.GE shall ensure that all the test results are within the specified limits of Indian Standard or laid down specification as describe in clause No19.2 of SSR Part-I and compare favorable with the originates certificates supplied by the manufacturers of equipment's.

31. EXTERNAL ELECTRIFICATION

31.1 **General**: Refer para 19.2 of SSR part-I.

32. CABLE WORK

PARTICULAR SPECIFICATIONS (Contd…..)

32.1 **GENERAL:-**Refer clauses 19.19 & 19.73 to 19.96 of MES Schedule Part-I. Where the cables are to be laid in the trenches, 80 mm thick cushion of clean dry sand shall be provided below the bottom of cable. The cable shall be covered by a further layer of clean dry sand above the bottom of the Cable, to the height as mentioned in MES Schedule. The Cable Cover shall be laid dry and side by side to protect the cable from Mechanical Injury, the cables shall be looped at ends for furthers joints. The above additional length of cable as directed by Engineer-in-Charge shall also be measured and paid for under the respective items of cable in Schedule ’A'. Laying Bricks at places where Cables are laid, shall be done as directed by the Engineer-in-Charge shall also be Measured and Paid for under the respective Items o in Schedule ‘A'. Cable gland shall be provided at Cable Termination in the DBS and Feeder Pillar Box, the cost of which is deemed to be included in the Rate of Cable.

32.1.1 All Jointing Materials such as Tape, Cables Compound and Cable Boxes, etc. for Straight Joints shall be provided by Contractor without Extra Cost to Government.

32.1.2 The cables being of Short Length for various Connections, there shall be no Straight Through Joints. The cable shall be terminated in Switch Fuse Units through suitable Pin Type Lugs.

32.1.3 The cost of cutting through Roads/Drains/Path for laying cable under the Road/Drain/Path and Making Good shall be deemed to be included in the Unit Rate/Amount quoted against GI Pipes.

33. **SAND CUSHIONING**: The sand shall be local sand as approved by GE. For laying of Cable in trenches, provision of cushioning shall be carried out all as specified in Clause No. 19.75 and 19.77 of MES Schedule Part-I.

34. **LAYING OF CABLES**

34.1 The LT underground cables shall be of 1100 volts, grade, XLPE insulated aluminium conductor armoured, heavy duty underground cable, conforming to IS-7098 (Part I) 1988 with upto date amendments. The cable should be laid at a depth of not less than 460 mm.

34.2 LT cable shall be of approved manufacturer and bear ISI certification mark.

34.3 Both ends of pipe protecting the cable shall be sealed with wooden bushes cut into two halves of appropriate size.

34.4 The cable shall be protected by means of 15 cm of Sand Cushion on top and under the cable as described in MES Schedule Part-I. On top of Sand Cushion, over burnt dry brick shall be provided as protection.

34.5 Earth Work, Sand Cushioning and Cable Protection shall be Measured and Paid separately.

34.6 Cable path indicators shall be provided at a distance of 30 Metre and Every Turning Point and Cost of the same is deemed to be included in Unit Rates/Amount.

34.7 The scope of work will include proper laying of Cable in trenches/in pipes/on wall, fixing Identification Tags, crimping with Crimping Lugs, fixing Compression Glands at Termination Point in Panel/Marshalling Box. The above shall be deemed to be part of the installation work and the Contractor shall not be eligible for any Extra Charges other than those specifically mentioned in Schedule ‘A’.

34.7.1 Cable installation shall be checked as follows :-

(a) It shall be ensured that the Cables conform to the relevant Indian Standards. Tests shall also be done as laid down in IS:1255-1983. The insulation resistance before and after the Tests shall be checked.

(b) The Insulation Resistance between each Conductor and against Earth shall be measured. The Insulation Resistance varies with the type of insulation used and with the type of insulation used and with the length of Cable.

PARTICULAR SPECIFICATIONS (Contd…..)

(c) The following empirical Rule gives reasonable guidance Insulation resistance in megohms 10 x voltage in KV Length in KM

34.8 The Test Results shall be recorded and signed by Engineer-in-Charge and the Contractor.

35 **GI TUBES & FITTINGS**

35.1 **GI tubes and fittings** : Refer clauses Nos 18.4.3 to 18.4.5 of SSR Part-I.

35.2 **General requirement** : Refer para 18.41 of MES Schedule Part-I. The exact position of water supply line and fittings shall be directed by the Engineer-in-Charge.

35.3 **Laying of GI pipes** : Refer paras 18.50 and 18.51 of MES Schedule Part-I. Unions shall be provided at suitable places as directed by the Engineer-in-Charge so that in case of repair long length of pipes are not disturbed.

36 **ACSR CONDUCTOR :** ACSR conductors for overhead shall conform to IS 398-1976 & all as specified in MES Schedule 2009 clause 19.10 & 19.56 & all as directed

37 TUBULAR STEEL POLES SWAGED : Tubular steel poles shall be swaged type & shall conform to IS 2713 (Parts 1 to 3) 1980 & all as specified in MES Schedule 2009 clause 19.3 & 19.50 & all as directed

38. CROSS ARMS : Cross arm shall conform to IS specification & all as specified in MES Schedule 2009 clause 19.9 & 19.53 & all as directed

39. DRIVERS : Drivers shall conform to IS specification & all as specified in BOQ & all as directed

40. **PRODUCTION OF TEST CERTIFICATE**

40.1 After completion of work the contractor shall guarantee that materials and workmanship of the equipment, power system and connected items offered and installed by him are new and best quality in every respect and he will make good the defects, damages which are not attributed to normal wear and tear or misuse for which decision of the GE is final and binding. Contractor shall be responsible for repairing and or replacing at his cost any parts which are rendered defective and unserviceable during the defect liability period.

40.2 Manufacturer's test certificate in respect of **LT cables, Lights** and other items as directed by GE are to be submitted to the GE by the contractor before any payment from Department.

41. TESTING : The work shall be tested as per Indian electricity rules to the entire satisfaction of GE / Engineer -in-Charge & test results shall be kept on record duly signed by all concerned.

42 **DEMOLITION AND DISMANTLING**

42.1 During demolition or dismantling every precaution shall be taken by the contractor to prevent damage to any adjacent structures which are to be left in fact damage caused to structure and fittings due to carelessness, negligence of the contractor shall be made good by him at his own expense. He shall also take preventions if necessary to keep coarse due to nuisance etc. while carrying out demolition/dismantling.

42.2 The contractor shall be responsible for safe custody of serviceable materials which shall be reused in the work. The contractor shall return all other dismantled materials to MES store yard at Masimpur except items of credit Schedule.

42.3 In case of any damage or loss of stores mentioned above while in custody of the contractor the panel rate of recovery @ two time of market rate shall be charged.

PARTICULAR SPECIFICATIONS (CONTD…/-)

43 **MAKES OF PRODUCTS TO BE INCORPORATED IN WORKS APPENDIX"E"(Ref Schedule-A notes Clause 19)**

Materials to be incorporated in the work shall be from any one of the following manufacturer or other equivalent approved by Garrison Engineer.

Ser. No.	Product	Group of Products Based on Makes/Brands
1.	CHEMICALS FOR ATT	CHLORO PYRIPHOS 20 ES
2.	ATT AUTH CO	PEST CONTROL SERVICES OF INDIA PVT LTD PEST CONTROL SERVICES DELHI INDIA PESTICIDES LUCKNOW TATA CHEMICALS PEST CONTROL
3.	STEEL DOOR/WINDOW FRAMES/CHOWKAT STEEL DOORS/ VENTILATOR/ CUPBOARDS AND WINDOW	M/S AGEW STEEL MANUFACTURER PVT LTD AHMEDABAD M/S SHIV MULAR NARODA AHMEDABAD GODREJ AND BOYCE MFG MUMBAI SEN HARVIC MUMBAI M/S SHIVAM METAL SHAPER INDUSTRIES (BRAND-SHIVAM METAL)
4.	ROLLING SHUTTERS/ COLLAPSIBLE GATES/ GRILLS	SHRI KRISHNA ASSOCIATES PANCHKULA ISHWAR INDUSTRIES MEERUT CANTT M/S STEELMAN INDUSTRIES JALANDHAR M/S SHIVAM METAL SHAPER INDUSTRIES (BRAND-SHIVAM METAL)
5.	FACTORY MADE WOODEN PANELLED/GLAZED/ WIRE GUAGE DOOR SHUTTERS	M/S MP WOOD PRODUCT INDORE M/S GOYAL INDUSTRIES CORPORATION 8743 DESH BANDHU GUPTA ROAD NEW DELHI M/S JAIN WOOD INDUSTRIES MURTHAL SONIPAT M/S PIONEER TIMBER PRODUCT CHANDIGARH
6.	HDF PRELAINATED/ MATT FINISH DOOR SHUTTERS	M/S HR ENTERPRISES, OLD DALHOUSIE ROAD NEAR DAV SCHOOL, PATHANKOT (PB) M/S TECHNOFAB INDIA LTD AMBALA(HR)
7.	UPVC WINDOW/DOORS/FRAME/ SHUTTERS	FENESTA INDIA PVT LTD VEKA INDUSTRIES PVT LTD MUMBAI H2O SOLUTION(WINDOW & DOORS)
8.	FACTORY MADE FLUSH DOOR SHUTTERS	M/S GREEN PLY INDUSTRIES, M/S CENTURY PLY SWASTIK PLYWOOD DURAPLY
9.	PVC DOOR/ WINDOW/ FRAME/ SHUTTERS	SINTEX INDUSTRIES RAJASHRI PLASTIWOOD LTD M/S DURA PLAST EXTRACTION PVT LTD MUMBAI FENESTA POLYTUFF
10.	DOOR/ WINDOW STEEL FITTINGS	MOWJEE M/S KITCH ARCHITECTURAL PRODUCTS LTD RS INDUSTRIES
11.	MORTECH LOCK	GODREJ HARRISON LINK EVEREST
12.	HYDRAULIC DOOR CLOSER/ SPRING	EVEREST GODREJ DROMA INDIA DYANA
13.	ANODIZED ALUMINIUM DOORS/ WINDOW/ FRAMES/ PARTITIONS	JINDAL INDAL HINDALCO
14.	ALUMINIUM FITTINGS FOR WOODEN/ ALUMINUM / PVC DOORS AND WINDOWS	ALUTRAC CROWN JINDAL CLASSIC DROMA INDIA GLOBAL
15.	ALUMINUM COMPOSITE PANELS	ALCO BOND ALSTRONG ARMSTRONG

PARTICULAR SPECIFICATIONS (CONTD…/-)

MAKES OF PRODUCTS TO BE INCORPORATED IN WORKS APPENDIX"E"(Ref Schedule-A notes Clause 19)

16.	FABRICATIONS FOR ALUMINUM WORK	DADA INDUSTRIES JALANDHAR M/S GUPTA ALUMINIUM JAMMU ALUPLEX INDUSTRIES DIGIANA JAMMU
17.	DRAPERY RODS	VISTA LEVALOR AEROLUX MAC DECOR
18.	VENETIAN BLINDS	VISTA NEHA TOUCH DECORE
19.	PRE LAMINATED PARTICLE BOARD	NOVA PAN GREEN PLY BHUTAN BOARD MYSORE WOOD BOARD CENTURY PLYWOOD
20.	PLYWOOD FOR GENERAL PURPOSES	DURA PLY BHUTAN BOARD GREEN PLY DURA CENTURY DURIAN
21.	LAMINATED SHEETS	CENTURI DURA MARINO SUNMICA GREEMLAM SUNGILOSS MERINO
22.	FIBRE BOARD (MEDIUM DENISTY / HDF)	NOVAOAN BHUTAN BOARD KIT PLY MYSORE CHIP BOARD LTD
23.	CALCIUM SILICATE BOARDS/ WALL LINING CEILING TILES	AEROLITE CEILING SYSTEM M/S BHARAT STEEL ROLL BAHADUR GARH (CALSI BRAND)
24.	FIBRE CEMENT CEILING BOARD	EVEREST ARMSTRONG GYPROC
25.	METASHEET TILES CEILING	ARMSTRONG DURLUM HUNTER DOUGLAS SAINT GOBAIN
26.	GYPSUM BOARD FALSE CEILING	NATIONAL GYPSUM ARMSTRONG SANT GOBIN
27.	THERMAL INSULATION CEILING BOARDS	EVEREST JINDAL ARMSTRONG
28.	GALVANIZED STEEL SHEETS	SAIL TATA JSW STEEL
29.	POLYCARBONATE SHEETS	DURTUFF LEXAN VMT PLASTEC LTD M/S COXWELL DOMES ENGG PVT LTD
30.	COLOUR COATED GALVALUME SHEETS	TATA BLUE SCOPE (JINCALUME) JSW STEEL (GALVALUME) CRIL
31.	PVC TILES/ SHEETS	PRIMER VINYL POLYFILM LTD WONDER FLOOR ARMSTRONG

PARTICULAR SPECIFICATIONS (CONTD…/-)
MAKES OF PRODUCTS TO BE INCORPORATED IN WORKS APPENDIX"E"(Ref Schedule-A notes Clause 19)

32.	WOODEN LAMINATED FLOORING	GREEN PLY ACTION TESA. CENTURI
33.	TERRAZO TILES/ PPC TILES/ PPC CHEQUERRED TILES	NTC NITCO EUROCON DURACRETE M/S EVEREST CEMENT PRODUCTS (BRAND-EVEREST)
34.	INTERBLOCKING TILES/ EXTERIOR TILES/ PAVER BLOCKS	NTC NITCO ULTRA JOHNSON M/S EVEREST CEMENT PRODUCTS (BRAND-EVEREST)
35.	ACID RESISTANT TILES	SOMANY NITCO KAJARIA ORIENT BELL
36.	GLAZED CERAMIC/ NON SKID WALL/ FLOOR TILES	KAJARIA H&R JOHNSON CERA NITCO SOMANI
37.	VITRIFIED TILES	KAJARIA JOHNSON ORIENT BELL NITCO SOMANI
38.	VITREOUS CHINA SANITARY APPLIANCES/ FITTINGS (SANITARIWARE)	JAQUAR ROCA KOHLER HR JOHNSON
39.	WATER CLOSET SEATS AND COVER TOILET SEAT COVER	JAQUAR SOMANI PRAYAG CERA NEYCER JOHNSON PRIMA POLYPLAST
40.	PVC FLUSHING CISTERN	HINDWARE JOHNSON PRAYAG KAJARIA PRIMA POLYPLAST
41.	SHOWER ROSES CHROMIUM PLATED	JAQUAR MARC PARCO ESS ESS XEN
42.	BATHROOM FANCY FITTINGS	JAQUAR MARC KOHLER JOHNSON XEN
43.	BIB TAPS/ STOP COCK (CP) & FANCY FITTINGS	JAQUAR PARKO MARC ESS ESS ROCA CERA KOHLER PRIMA XEN

PARTICULAR SPECIFICATIONS (CONTD…/-)
MAKES OF PRODUCTS TO BE INCORPORATED IN WORKS APPENDIX"E"(Ref Schedule-A notes Clause 19)

44.	SENSOR OPERATED FLUSH VALVES	TOSHI UTEC IDROLL JAQUAR KOHLER
45.	HAND DRIER	OPAL ATMAS TOSHI HAIER
46.	TOILET/ BATHROOM CABINETS	JAQUAR CERA PRAYAG
47.	LOOKING MIRROR	SANT GOBIN MODI GUARD TRIVENI FLOAT GLASS
48.	STAINLESS STEEL SINK WITH OR WITHOUT DRAINING BOARD/ PLATE RACK	NIRALI NEELKANTH JAYNA SILVERSHINE JINDAL PRIMA XEN
49.	PVC RAIN WATER PIPE/ SEWAGE PIPE/ CPVC PIPES	SUPREME ASHIRWAD FINOLEX SFMC ASTRAL
50.	WATER STORAGE HDPE TANKS	SINTEX POLYWELL ROTEX POLYCON
51.	PUF INSULATED WATER STORAGE TANKS	SINTEX ROTEX HATICH JS POLYPLAST
52.	FLOAT VALVES	PRAYAG SHAKTI WILSON
53.	PVC BATH FITTINGS/ PVC GRATING/ PVC CONNECTION	PRAYAG SHAKTI POLYTUF POLYPLAST
54.	MANHOLE COVER & FRAME	NECO SKF RAJ KK
55.	SAND CAST IRON SPIGOT & SOCKET SOIL WASTE, VENT PIPES & FITTINGS	SRIF (GOLA CASTINGS) NECO (JAYSWAL) HIF MATHURA SKF
56.	GLASSES (PLAIN/PINHEAD/ FROSTED)	SAINT GOBIN MODI GUARD .ATUL ASASHI
57.	WALL PUTTY	ASIAN PAINTS BIRLA WHITE NEROLAC JK CEMENT BERGER PAINT
58.	ACRYLIC DISTEMPER	NEROLAC PAINTS JENSON & NICHOLSON BERGER PAINTS ICI DULUX ASIAN PAINTS

PARTICULAR SPECIFICATIONS (CONTD…/-)
MAKES OF PRODUCTS TO BE INCORPORATED IN WORKS APPENDIX"E"(Ref Schedule-A notes Clause 19)

59.	PLASTIC EMULSION PAINT	BERGER (SILK, RANGOLI EASY CLEAN) ASIAN (ROYALE) NEROLAC (IMPRESSION ECOCLAN) DULUX ICI
60.	EXTERIOR EMULSION PAINT	BERGER (WEATHER COAT ALL GUARD) ASIAN (APEX ULTIMA) NEROLAC (EXCEL TOTAL) JOHNSON & NICHOLSON DULUX ICI
61.	SYNTHETIC ENAMEL PAINT	GOODLASS NEROLAC PAINTS JENSON & NICHOLSON BERGER PAINTS ICI INDIA DULUX ASIAN PAINTS

E/M ITEMS MAKES/ MANUFACTURERS/ PRODUCERS

Ser. No.	Product	Group of Products Based on Makes/Brands
1.	POWER TRANSFORMER 66/33/11KV 500KVA AND ABOVE	BHEL SCHNEIDER ABB BHARAT BIJILEE ALSTOM ANDREW YULE M/S INDIAN TRANSFORMERS & ELECTRICLAS PVT LTD. GURGAON
2.	DISTRIBUTION TRANSFORMERS 11KV ABOVE & BELOW 500KVA CAPACITY COPPER WINDING	BHEL SCHNEIDER ABB SIEMENS BHARAT BIJILEE ALSTOM ANDREW YULE M/S INDIAN TRANSFORMERS & ELECTRICLAS PVT LTD. GURGAON
3.	DISTRIBUTION TRANSFORMERS UPTO 100KVA CAPACITY COPPER WINDING	RAJASTHAN TRANSFORMER JK TRANSFORMER CONTINENTAL M/S INDIAN TRANSFORMERS & ELECTRICLAS PVT LTD. GURGAON
4.	CURENT & POTENTIAL TRANSFORMER 11 & 33 KV	ABB SIEMENS CROMPTON GREAVES ENGLISH ELECTRIC SCHENEIDER
5.	TRANSFORMER OIL	M & I MATERIAL (MIDEL) POWER LINK POWER OIL SAVITA
6.	HT SWITCH GEAR PROTECTION RELAYS (ELECTRO MECHANICAL/ NUMERICAL)	L & T ABB SIEMENS SCHNEIDER BHEL M/S INDIAN TRANSFORMERS & ELECTRICLAS PVT LTD. GURGAON
7.	HT SWITCH GEAR 66/33/11 KV GAS (INDOOR/ OUTDOOR) SF6	ABB SIEMENS SCHNEIDER ENGLISH BHEL ELECTRIC

PARTICULAR SPECIFICATIONS (CONTD…/-)

MAKES OF PRODUCTS TO BE INCORPORATED IN WORKS APPENDIX"E"(Ref Schedule-A notes Clause 19)

8.	COMPACT SUB STATION	ABB SIEMENS BHEL SCHNEIDER VOLTAMP ALSTOM M/S INDIAN TRANSFORMERS & ELECTRICLAS PVT LTD. GURGAON
9.	HT 11KV AUTOMATIC SWITCH FUSE UNIT	SOUTHERN SWITCH GEAR ANDREW YULE CROMPTON GREAVES SCHNEIDER
10.	AIR BREAK GANG OPERATED SWITCH DEVICE	BHEL PACTIL ANDREW YULE MYSORE ELECTRIC ABB JAIPURIA BROS UNIVERSAL
11.	LIGHTENING ARRESTORS	PACTIL CROMPTON GREAVES M EI ELECTRICAL ALSTOM SCHNEIDER
12.	DSC/ PIN INSULATORS	BHEL PACTIL MASORE PORECEILIN JAIPURIA
13.	HT XLPE CABLES 66/33 KV & 11KV	UNIVERSAL CABLES ASIAN CABLES KEI INDUSTRIES LTD FINOLEX POLYCAB GLOSTER CABLES LTD CCI NICCO
14.	LT CABLES 1100 VOLTAS XLPE	FINOLEX UNIVERSAL RPG CABLES KEI INDUSTRIES PVT LTD POLYCAB GLOSTER SCI GRANDLAY
15.	LT/ HT CABLE JOINTS HEAT SHRINKABLE / PUSH ON TYPE	DENSON M-SEAL BIRLA 3M RAYCHEM CABSEAL
16.	ACSR CONDUCTOR	JAIPURIA ALUMINIUM IND ICC NICCO ALIND
17.	HT/LT PCC POLES	HINDUSTAN PRE STRESSED CONCRETE KASHMIR CEMENT PRE CAST CEMENT PRODUCT CONCRETE UDYOG LTD.
18.	HT/LT STEEL TUBULAR SWAGED POLES	NATIONAL TUBING CO KANPUR BHARAT CONDUIT & STEEL WORKS KANPUR JINDAL STEEL PRODUCT STEEL TUBULAR SWAGED POLES M/S SHIVAM METAL SHAPER INDUSTRIES, JAMMU
19.	HIGH MAST LIGHTS	BAJAJ PHILIPS CROMPTON GE
20.	LT PANELS/ AC CONTROL PANEL / PUMP HOUSE PANELS FOR SS	SIEMENS L&T ABB SCHNEIDER LEGRAND HANGER HENSAL CROMPTON GREAVES M/S INDIAN TRANSFORMERS & ELECTRICLAS PVT LTD. GURGAON DVEPL

PARTICULAR SPECIFICATIONS (CONTD…/-)

MAKES OF PRODUCTS TO BE INCORPORATED IN WORKS APPENDIX"E"(Ref Schedule-A notes Clause 19)

21.	PVC FEEDER PILLAR BOX AC BOX/ JUNCTION BOX	L&T HPL SINTEX HAVELLS HENSAL
22.	HIGH VOLTAGE INSULATING RUBBER MAT	JYOTI DUNLOP ELECTROMATE
23.	HT RING MAIN UNIT VCB 11KV	SIEMENS MEI ABB SCHNEIDER
24.	LT AIR CIRCUIT BREAKERS	ABB SIEMENS L&T SCHNEIDER LEGRAND HAGER GEC CROMPTON
25.	MCCB MICRO PROCESSOR	ABB SIEMENS L&T SCHNEIDER LEGRAND HANGER C & S ELECTRIC BENLO
26.	POWER CONTACTORS	L&T ABB SCHNEIDER SIEMENS LEGRAND GE POWER AE
27.	VOLTMETER/ AMMETER/FREQUENCY METER/ PF METER (ANALOG TYPE)	L&T AE ABB SECURE
28.	DIGITAL VOLTMETER/ AMMETER/ PF METER	L&T (RISHAB) SECURE C&S ELECTRIC MECO
29.	ELECTRONIC ENERGY METER	L&T HPL HAVELLS SECURE JAIPUR METER AE LEGRAND BENLO
30.	VACCUM CIRCUIT BREAKER 11KV/33KV	ABB SIEMENS SCHNEIDER ENGLISH ELECTRIC BHEL M/S INDIAN TRANSFORMERS & ELECTRICLAS PVT LTD. GURGAON DVEPL
31.	CHANGE OVER SWITCHES	SIEMENS ABB L&T SCHNEIDER LEGRAND HAGER GE HPL
32.	VOLTAGE STABILIZERS UPTO 05 KVA	AE ANDREW YULE GODREJ ELECTRIC FIELD M/S INDIAN TRANSFORMERS & ELECTRICLAS PVT LTD. GURGAON

PARTICULAR SPECIFICATIONS (CONTD…/-)

MAKES OF PRODUCTS TO BE INCORPORATED IN WORKS APPENDIX"E"(Ref Schedule-A notes Clause 19)

33.	VOLTAGE STABILIZERS UPTO 05 KVA (SERVO CONTROLLED)	AE ANDREW YULE BENTFORD BENTEK V GUARD ELECTRIFIELD. M/S INDIAN TRANSFORMERS & ELECTRICLAS PVT LTD. GURGAON
34.	UPS	TATA LIBERT APLAB CROMPTON
35.	DG SETS	ENGINE/ CROMPTON GREAVES/ MAHINDRA & MAHINDRA/ TATA RUSTON /CUMMINS/ KIRLOSKAR OIL ENGINES/ ASHOK LEYLANDALTERNATOR BAHARAT BIJILI / SIEMENS/ CUMMIN ELECTRIC / STAMFORD/ VOLVO
36.	DG SET SOUND PROOF CANOPY	C&S PARKINS CATER PILLERS STERLING
37.	LT CAPACITOR APFC PANEL	L&T ABB SCHNEIDER SIEMENS GE DVEPL M/S INDIAN TRANSFORMERS & ELECTRICLAS PVT LTD. GURGAON
38.	PF IMPROVEMENT CAPACITOR BANKS	ABB L&T SCHNEIDER SIEMENS LEGRAND
	INTERNAL ELECTRIC SUPPLY	
39.	RIGID PVC CONDUIT	PLAZA FINOLEX SUPREME PRESTO PLAST
40.	MS CONDUIT PIPE	BHARAT STEEL JINDAL TATA
41.	PVC FLEXIBLE COPPER WIRES	L&T FINOLEX GRANDLAY ANCHOR POLYCAB BENLO SCI
42.	SWITCH/ SOCKETS/ CEILING ROSES/ FAN REGULATOR	ANCHOR LEGRAND CRABTREE(HAVELLS) BENLO
43.	MCB/ELCB/ RCCB/ RCBO/ INSOLATORS/ MCB DISTRIBUTION BOARD	ABB SIEMENS L&T SCHNEIDER LEGRAND HAGER CROMPTON HPL BENLO
44.	LAMINATED SHEET COVER	HYLUM SUNMICA FORMICA GREENLAM
45.	MODULAR SWITCH/ SOCKETS/ FAN REGULATORS	LEGRAND SIEMENS CRABTREE(HAVELLS) ROMA (ANCHOR)
46.	STREET LIGHT FITTINGS & ACCESSORIES / LAMPS-HPSV(70/150/250/400) HPMV (80/125/250/400) METAL HALIDE	PHILIPS CROMPTON GREAVES WIPRO MYSORE GE LIGHTING
47.	TUBE LIGHT / STREET LIGHT FITTING/ ROD	PHILIPS CROMPTON WIPRO GE LIGHTING

PARTICULAR SPECIFICATIONS (CONTD…/-)

MAKES OF PRODUCTS TO BE INCORPORATED IN WORKS APPENDIX"E"(Ref Schedule-A notes Clause 19)

48.	PVC CASING CAPING	CG BAJAJ FINOLEX POLYCAB
49.	LED FITTINGS/ LAMPS	PHILIPS CROMPTON BAJAJ WIPRO SURYA SYSKA GE BENLO ASCENTECH HPL
50.	CEILING FANS (EXHAUST / WALL MOUNTED FAN/ AIR CIRCULATORS)	BAJAJ CROMPTON GEC KHAITAN ORIENT
51.	WATER HEATER GEYSER	BAJAJ CROMPTON GREAVES USHA LEXUS JAQUAR RECOLD
52.	WATER TRUNKING SYSTEMS	SCHNEIDER SIEMENS GE L&T CROMPTON
53.	BATTERY CHARGER	SU-KAM AMCO SINETRAC EXIDE BCH
54.	LEAD ACID BATTERIES	AMARON STANDARD EXIDE TATA GREEN MICROTEK
55.	FLAME PROOF LIGHT FITTINGS & FANS	BAJAJ CROMPTON GREAVES SUDHIR
56.	SOLAR STREET LIGHT FITTINGS	BAJAJ PHILIPS CG TATA PHOTAN
57.	STREET LIGHT TIMERS	L&T LEGRAND BAJAJ SIEMENS ABB AE GE
58.	AVIATION OBSTRUCTION LIGHT	BAJAJ CROMPTON GREAVES PHILIPS WIPRO
59.	SHADOWLESS LIGHT	PHILIPS CG WIPRO GEC HALONIX
60.	UNDER WATER LIGHT	WIPRO PHILIPS SURYA BAJAJ CROMPTON GREAVES
61.	GI PIPES	JINDAL PIPES TATA BST PRAKASH SURYA
62.	HDPE/UPVC/DWC PIPES	FINOLEX SFMC PIPE JAIN PIPE RELIANCE(RPPPL) SWASTIK KISAN

PARTICULAR SPECIFICATIONS (CONTD…/-)

MAKES OF PRODUCTS TO BE INCORPORATED IN WORKS APPENDIX"E"(Ref Schedule-A notes Clause 19)

63.	CI PIPES	ELECTRO STEEL KESORAM(BILAGP) KAPILANSH TATA
64.	DI PIPES	ELECTRO STEEL JINDAL KESORAM TATA
65.	MS PIPES	TATA GST BST JINDAL PRAKASH SURYA
66.	PPR PIPES	SFMC SAFE SUPREME FINOLEX ASTRAL RELIANCE
67.	AIR RELEASE VALVES	KIRLOSKAR LEADER ZOLOTO L&T (AUDCO) TATA
68.	SLUICE VALVES/ NON RETURN VALVES/ BUTTERFLY/ CHECK/ GLOB VALVES	KIRLOSKAR LEADER ZOLOTO L&T (AUDCO) KARTAR
69.	CI PIPE FITTINGS	SKF SRIF JINDAL SAW NECO (JAYAWAL) KAPILANSH TATA
70.	GI PIPE FITTINGS	JINDAL TATA UNCO INDUS BHARAT STEEL TUBE DELHI
71.	PUMP SET MONO BLOCK	KIRLOSKAR CROMPTON BEACON MATHER & PLANT GRANDFOS KSB JYOTI
72.	CENTRIFUGAL PUMPS	KIRLOSKAR BEACON MATHER & PLANT GRANDFOS JYOTI
73.	SUBMERSIBLE PUMPS	CALMA KIRLOSKAR BEACON KSB GRANDFOS JYOTI
74.	NON CLOG SEWAGE PUMP	KIRLOSKAR BEACON KSB CROMPTON JYOTI
75.	VERTICAL TURBINE PUMP	KSB KIRLOSKAR WASP GRANDFOS JOHNSON MATHER & PLANT
76.	MOTOR STARTERS	L&T BCH SIEMENS C&S ELECTRIC ABB GE

PARTICULAR SPECIFICATIONS (CONTD…/-)

MAKES OF PRODUCTS TO BE INCORPORATED IN WORKS APPENDIX"E"(Ref Schedule-A notes Clause 19)

77.	ELECTRIC MOTOR	BAHARAT BIJILEE KIRLOSKAR ENGLISH ELECTRIC CROMPTON GREAVES ABB SIEMENS GE
78.	SUBMERSIBLE CABLE	FINOLEX PLAZA HAVELLS ASIAN POLYCAB
79.	SINGLE PHASE PREVENTER	L&T INDO ASIAN HPL LEGRAND
	AIR CONDITIONING	
80.	CHILLERS/ CHILLING UNITS	DAIKIN CARRIER VOLTAS
81.	ALUMINIUM EXTRUDED ALUMINIUM FRILL/ DIFFUSER/ FIRE DAMPER	DYNA CRAFT RAVISTAR MAPRO CARRYAIRE SERVEX GREEN HECK BRIGHT FLOW RUSKIN
82.	AIR HANDLING UNIT COOLING COIL FOR AHU	VOLTAS CARRIER DAIKIN KIRLOSKAR
83.	COOLING TOWERS	MIHIR PAHARPUR VOLTAS DELTA
84.	FRACTIONAL HP MOTORS	ALUE SIEMENS JYOTI ABB
85.	VARIABLE FREQUENCY DRIVES(VFD)	DANFOSS SIEMENS ABB
86.	INSULATION (PUF) FOR PIPES	OMKAR TWIGA LLOYD MALANPUR
87.	PRESSURE GUAGE/ DIA TYOE THERMOMETERS	FIEBIG H GURU EMERALD ANERGY
88.	INSULATION(EXPANDED POLYETHYLENE)	MATTUR BEARDSELL TOSHIBA STYRENE PACKAGING LLOYD
89.	INSULATION(CROSS POLYETHYLENE FOAM)	SUPREME THERMOFLEX TROCELLONE BASF LLOYD ARMAFLEX
90.	INSULATION (INITRILE RUBBER)	ARMAFREX AROFLES LLOYD
91.	CONTROLS (3WAY VALVES) THERMOSTATS	ANERGY SIEMENS HONEYWELL
92.	GI SHEETS FOR DUCTING (COMMERCIAL)	SAIL TATA JINDAL
93.	ACTUATOR	JEVENTA BELIMO SIEMENS ADVANCES

PARTICULAR SPECIFICATIONS (CONTD…/-)

MAKES OF PRODUCTS TO BE INCORPORATED IN WORKS APPENDIX"E"(Ref Schedule-A notes Clause 19)

94.	CENTRIFUGAL FANS	NICOTRA KRUGER AIRFLOW GREENHECK
95.	STRIP HEATERS	RAYCOLD DASSPASS AUE HONEYBEE PENN DANFOSS HONEYWELL SIEMENS JOHNSON RAPIDCOOL ANERGY
96.	AIR FILTER/ HEPAN FILTER	TENACITY PUROLATOR LLOYD MIHIR DANFOSS INDFOSS KLENZOID JOHN FOWLERS
97.	DUCT FLANGE	ZECO ROLSTAR ECODUCT
98.	EXPANSION VALVE	DANFOSS HONEYWELL RAPID CONTROL SIEMENS
99.	FLOW SWITCH	RAPID COOL SIEMENS BCH L&T
100.	AUTOMATIC AIR VENT	RAPID CONTROL ANERGY
101.	3 WAY MODULATING VALVE	HONEYWELL SIEMENS ANERGY SUZLON INDFOSS DANFOSS
102.	ROOM THERMOSTAT/ AHU THERMOSTAT	HONEYWELL SIEMENS DASPASS ESCORTS INDFOSS
103.	HP/LP CUTOUTS/ CONTROLS	HONEYWELL PENN DANFOSS INDFOSS
104.	AIR WASHERS	BREEZE AIR NICOTRA PECMA AIREF AIRFLOW
105.	BUTTERY VALVE	AUDECO ADVANCE DEEPAK ZOLOTO
106.	FIRE HYDRANT	MINIMAX FIREX SAFEX FLAME GUARD
107.	RRL HOSE PIPE	NEWAGE DUNLOP COSMOS FLAME GUARD MINIMEX
108.	FIRE PANEL	MATHER & PLANT MINIMAX SAFEX AGNI HONEYWELL SYSYTEM SENSOR FIREX NOTEFIRE

PARTICULAR SPECIFICATIONS (CONTD…/-)
MAKES OF PRODUCTS TO BE INCORPORATED IN WORKS APPENDIX"E"(Ref Schedule-A notes Clause 19)

109.	HOOTER/ SIREN	MINIMAX MELTRON AHUJA PHILIPS AGNI
110.	MANUAL CALL BELL POINT	AGNI SURAKSHA MINIMAX FIREX
111.	SMOKE/ HEAT/ IONISATION/ DETECTOR	APPOLO EDWARDS HONEYWELL SYSTEM SENSER
112.	WATER SPRINKLER HEAD	TYCO CEASEFIRE SAFEX MINIMAX
113.	FIRE EXTINGUISHER	MINIMAX FIREX NEWAGE GODREJ & BOYCE CEASEFIRE
114.	FIRE DAMPER	DYAN CRAFT RAVISTAR MAPRO CARRY AIR AIRFLOW RUSKIN
115.	WINDOW TYPE/ SPLIT TYPE AIR CONDITIONERS	VOLTAS HITACHI DAIKIN CARRIER FEDDERS LLOYD WHIRLPOOL
116.	REFRIGERATOR	WHIRLPOOL LG SAMSUNG VOLTAS
117.	DESERT COOLERS	SYMPHONY KHAITAN KENSTAR
118.	DEEP FREEZER	BLUESTAR VOLTAS SHRI RAM (USHA)
119.	AIR CURTAIN	CROMPTON GRAVES ALMONARD VOLTAS CARRIER
120.	WATER COOLER	BLUESTAR VOLTAS SHRI RAM (USHA)
121.	HOT WATER GENERATOR ELECTRIC FIRED	RAPIDCOOL BRASCH INDEECO DYNAFLOW SUNTEC
122.	HOT WATER GENERATOR (OIL FIRED)	THERMAX MAKTEK RAPDTHERM ECOFLAME REILLO ZENITH WESTERN

Note All manufactured materials shall be brought at site in sealed packing having manufacturer's mark and shall be opened at site in presence of Engineer-in-Charge/GE. Original purchase voucher/test certificate and excise duty, gate pass etc. for the manufactured items shall be submitted by the contractor to Engineer-in-Charge before taking any payment. Any other makes as approved by any MES Command/ HQ/ ADG can be procured subject to prior approval of GE.

Signature of contractor

AGE (Contracts)
for Accepting Officer

Annexure 'D'

FREQUENCY FOR NORMAL MASS, TENSILE, BEND AND REBEND TESTS OF STEEL

Ser No	Nominal size	Quantity
STEEL FOR CONCRETE		
1.	Bar size less than 10mm	1 sample (3 specimens) for each test for every 25 tonnes or part thereof.
2.	Bar size 10mm to 16mm inclusive.	1 sample (3 specimens) for each test for every 35 tonnes or part thereof.
3.	Bar size over 16mm.	1 sample (3 specimens) for each test for every 45 tonnes or part thereof.
STRUCTURAL STEEL		
1.	Tensile Test	1 Test for every 25 tonnes of steel or part thereof.
2.	Bend Test	1 Test for every 25 tonnes of steel or part thereof.

Note :-

1. For various tests, acceptance criteria, tolerance etc, refer to Appendix 9.1 a and relevant BIS codes.
2. Testing by the GE as per above frequency is mandatory before payment is released to the contractor or steel is incorporated in the work. However, tests will not be insisted upon for the steel required for guard bars, holdfasts, grills and such other allied items. Any items of steel, not meeting the requirements, shall be rejected and the particular consignment removed from the site by the Contractor at his own cost. The contractor will have no claim on this account. Cost of tests and test samples as per above frequency shall be borne by the contractor irrespective of test results.
3. The GE may also increase frequency and number of samples/tests for his satisfaction. The cost of these additional tests shall be governed as per condition 10(A) of IAFW-2249. However cost of samples, transportation and other overheads shall be borne by the contractor irrespective of test results.

ANNEXURE 'E'

CHEMICAL COMPOSITION IN PERCENT (MAXIMUM)

Description	I IS - 1786-1985 All Grades	TMT All Grades
(a) Carbon	0.30	0.25
(b) Sulphur	0.06	0.05
(c) Phosphorous	0.06	0.05
(d) Sulphur and phosphorous	0.11	0.10
(e) Manganese	-	-

Signature of Contractor
Dated_____

AGE (Contracts)
for Accepting Officer

PARTICULAR SPECIFICATION (Contd…….)

Appendix 'A'

CEMENT SUPPLY AND ACCEPTANCE REGISTER

1. Contract No:
2. Name of work:
3. Control No*:
4. Name of Manufacturer/Brand Name/Gde of Cement (a) Manufacturer_____(b) Brand___(c) Grade____
5. Qty of cement and Lot No/Week No (in Bags): (Qty_____ (b) Lot No/week No_____
6. Manufacturer's test certificates No_____
7. Random Test Details (a) Physical test report from …….vide their letter No_____ (Name of approved Lab/Engg College) date_____
   (b) Chemical test report from _____vide their letter No_____ (Name of approved Lab/Engg College) date_____
8. Details of Physical & Chemical properties:

	Physical Requirements (As per IS 4031)										Chemical Requirements (As per IS 4032)							
						Compressive Strengths (Mpa)												
	Specifics Surface Area (M2/Kg)	Soundness by Le Chatellar	Soundness by Auto Clave	Initial Setting Time (Minutes)	Final Setting Time (Minutes)	03 Days (Mpa)	07 Days (Mpa)	28 Days (Mpa)	Temp during testing ^{0}C	Standard Consistency (%)	Lime Saturation factor (Ratio)	Alumina Iron Ratio (Ratio)	Insoluble Residue (%)	Magnesium (%)	SulphuricAnhydride(%)	Loss on ignition (%)	Alkalies (%)	Chlorides(%)
As per relevant IS																		
As per manufacturer's test certificate																		
As per random test certificate																		

Remarks with Signature

Contractor Junior Engineer Engineer-in-Charge GE Nagrota

Remarks of BOO/Inspecting Officer/CWE

*To be allotted serially by GE Nagrota, consignment wise

Signature of the Contractor
Date:

For Accepting Officer

PARTICULAR SPECIFICATION (Contd…….)

Appendix '**B**'

STEEL SUPPLY AND ACCEPTANCE REGISTER

1. CA No: and Name of work:
2. Name of work::
3. Name of Manufacturer's T.C. No
4. Manufacturer
5. Random Test Details (a) Physical test report from …….vide their letter No_____ (Name of NABL approved Lab/Engg College)
(b) Chemical test report from _____vide their letter No_____ (Name of NABL approved Lab/Engg College)
Types of Steel Dia& Qty (a) type: TMT/CRS (b) Dia-mm (c) Actual wt _____MT (d) Conversion wt_____MT

	Chemical Test						Mechanical Test						
	Carbon %	Sulphur %	Phosphorus %Sulphur+ Phosphorus%	Manganese %	Silicon %	CorrosionResistant element	Wt per meter	Yeild Stress(N/mm2)	Tensile Strength(N/mm2)	PercentElongation (Min18%)	Bend test	Rebend Test	Remarks
As per relevant IS 1786-2008													
As per manufacturer's test certificate													
As per independent test													

Remarks with Signature

Contractor Junior Engineer Engineer-in-Charge GE Nagrota

Remarks of BOO/Inspecting Officer/CWE
*To be allotted serially by GE
Nagrota, consignment wise

Signature of the Contractor

For Accepting Officer

Date: