

MILITARY ENGINEER SERVICES

CWE (ARMY) AHMEDABAD

NAME OF WORK: REPAIR TO INTERNAL ROADS UNDER AGE B/R-II AT MIL STN BHUUJ

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Signature of Contractor

DCWE (Contracts)
For Accepting Officer

Tele Civil: (079) 22863702
(Email id: ahbd3-mes@nic.in)

MILITARY ENGINEER SERVICES
Headquarters
Commander Works Engineer (Army)
Hanuman Camp
Ahmedabad – 380 004

87299/ /E8

Aug 2024

M/s -----

NAME OF WORK: REPAIR TO INTERNAL ROADS UNDER AGE B/R-II AT MIL STN BHUJ

Dear Sir,

1. Tender documents in respect of above works are forwarded herewith as uploaded on the site www.defproc.gov.in. Tender documents are uploaded in two parts, one being in BOQ format and another in pdf format.
2. Tender/ bids will be received online by ACCEPTING OFFICER upto the date and time mentioned on the site. No tender will be received in physical form and any tender received in such manner will be treated as non bonafide tender.
3. Tender/ bids will be opened on due date and time fixed for receipt of tender in the presence of tenderers or their authorised representatives, who have uploaded their quotation bid and who wish to be present at the time of opening the tenders.
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 date mentioned. You are requested not to write piece meal points and forward your points duly consolidated before due date as per NIT.
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 Appx A to NIT along with earnest money deposit (EMD) and tender fee on e-procurement portal and submit the physical documents in the office of **Commander Works Engineer (Army), Hanuman Camp, Ahmedabad-380004** within time limit specified in NIT. Inadequacy/deficiency of documents shall make the bid liable for rejection and in such event BOQ shall not be opened.
6. Contractor having not executed standing security bond and standing security deposit in any MES formations 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 and time fixed for this purpose. In case of failure to abide by any of these two requirements, the finance bid will not be opened.
7. Tender/ bid from contractor having not executed standing security bond and standing security deposit in any MES formation shall be accompanied with EARNEST MONEY mentioned in Notice of Tender, failing which the tender will be treated as non-bonafide.
8. Enlisted contractors of MES shall submit the scanned copies (pdf file) of enlistment letter and 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 CWE (A) Ahmedabad.

9. 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 even if they are received in time.
10. In view of delays due to system failure or other communication related failures, it is suggested that the tender (Cover-I and Cover -II) be uploaded, if necessary, sufficiently in advance of the last due date and time fixed for receipt of the tender.
11. 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.
12. ANY TENDERER, WHICH PROPOSES ALTERATIONS TO ANY OF THE CONDITION, SPECIFICATIONS LAID DOWN IN THE TENDER DOCUMENTS OR ANY NEW CONDITION, WHATSOEVER, IS LIABLE TO BE REJECTED.
13. **Tenderer is advised to cross check his quotation in BOQ after uploading and before the Bid closing time and date. If he fails to quote the rate for any item, in terms of amendment 21 (c) (ii) to condition 6-A (A) of IAFW-2249, his overall quotation shall deem to include cost of execution of these items for the quantity mentioned in BOQ. No representation on this account shall be entertained.**
14. In case the BOQ is revised by the department and the bidder has failed to quote in revised BOQ (i.e. he has quoted in previous BOQ), such bid shall be treated as willful negligence by the bidder and his bid shall be non bonafide. In such case the lowest tender shall be determined by the lowest among the valid/ bonafide bids only.
15. **Jurisdiction of courts:** Irrespective of the place of submission of e-bid by the bidder the courts of Ahmedabad/ High Court at Ahmedabad only shall have jurisdiction with reference to any matter pertaining to this tender.

Yours faithfully,

Signature of Contractor

**DCWE (Contracts)
for Accepting Officer**

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

1.1 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, along with their tender/ bid :-

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

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

1.2 It is advisable that Earnest Money is deposited in the form of deposit call receipt from an approved Schedule Bank for easy refund. In case the tenderer wants to lodge 'EARNEST MONEY DEPOSIT' in any other form allowed by MES, a confirmation about its acceptability will be obtained from the Accepting Officer well in advance of the date and time of receipt of the tender. Earnest Money 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 and hard copy before the date and time fixed for opening of BOQ) WILL RENDER THE BID DISQUALIFIED FOR OPENING OF COVER-II (FINANCE BID).

2. PERFORMANCE SECURITY DEPOSIT: -

2.1. Within 28 days of receipt of the letter of Acceptance, the successful contractor shall deliver to the Accepting Officer a performance security in any of the forms given below for an amount equivalent to 5% of the contract sum:-

(a) A Bank Guarantee in the prescribed form issued by a Nationalized/ Scheduled Indian Bank duly confirmed from the Head Office of the Bank.

(b) Government securities, FDR or any other Government instruments stipulated by the Accepting Officer.

2.2 Blank.

2.3 Blank.

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

2.5 Failure of the successful contractor to deliver the performance security within the prescribed 28 days of receipt of the letter of Acceptance shall constitute sufficient grounds for cancellation of the award of work and forfeiture of the Earnest Money. In case of MES enlisted contractor, amount equal to the **Earnest Money stipulated in the Notice Inviting Tender**, shall be notified to the contractor for depositing the amount through MRO. Issue of tender to such contractor shall remain suspended till the aforesaid amount equal to the Earnest Money is deposited in Government Treasury.

INSTRUCTIONS ON FILLING AND SUBMISSION OF TENDER (CONTD..)**3. CONTRACTORS ENLISTED IN MES FORMATIONS OTHER THAN CE SOUTHERN COMMAND.**

- 3.1 Contractors whose names are on the approved list of any MES formation i.e. other than CE Southern Command and who have deposited Standing Security and have executed Standing Security Bond may tender without depositing Earnest Money with the tender.

4 GENERAL INSTRUCTIONS FOR COMPLIANCE.

- 4.1 The bids received only in the electronic form will be considered. All bids shall be submitted on 'www.defproc.gov.in' portal. Documents should be scanned and forwarded in 'pdf' form and 'xls' form as indicated. Any tender, which proposes alterations to any of the conditions whatsoever, is liable to be rejected.
- 4.2 Bids shall be uploaded on 'defproc.gov.in' portal on or before the bid closing date mentioned in the tender. No tender/ bid in physical form or any other form like email/ fax/ by hand/ through post will be considered.
- 4.3. Tender/ Bid should be DIGITALLY signed using valid DSC. All pages of tender documents, drawings, corrections and alterations etc. shall be signed/ initialed by the lowest bidder after acceptance.
- 4.4 In case the BOQ is revised by the department and the bidder has failed to quote in revised BOQ (i.e. he has quoted in previous BOQ), such bid shall be treated as willful negligence by the bidder and his bid shall be non bonafide. In such case the lowest tender shall be determined by the lowest among the valid/ bonafide bids only.
- 4.5 The tender shall be signed, dated and witnessed at all places provided for in the documents after acceptance. All pages of tender documents, corrections/ alterations and amendments issued and uploaded as corrigendum shall be signed/ initialed by the tenderer after acceptance. Contractor shall also sign all drawings forming part of the tender.
- 4.6 In 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 of partnership concern or a limited company, 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. An 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 signing the tender on behalf of another partner(s) or on behalf of a firm or company shall attach 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 by 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 tenders/ bids are being uploaded/ signed by such person as a routine, fresh Power of Attorney duly executed in his favor 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 submitted in 'pdf' form with the tender/bid; unless such authority has already been given to him by the Firm or the Company. It shall be ensured that power of attorney shall be executed in accordance with the constitution of the company as laid down in its Memorandum & Article of Association.
- 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 shall be uploaded online well in time.

INSTRUCTIONS ON FILLING AND SUBMISSION OF TENDER (CONTD...)

- 4.10 The contractor shall employ Indian Nationals after verifying their antecedents and loyalty. Attention is also drawn to special condition 3 referred hereinafter and also conditions 24 & 25 of IAFW 2249 (General conditions of contract).
- 4.11 The tenderer shall quote his rate on the BOQ file only. No alteration to the format will be accepted and the bid with any alteration will be disqualified and summarily rejected.
- 4.12 In case the tender has to revise/ modify the rates quoted in the BOQ (excel sheet) he can do so only in the BOQ, through defproc.gov.in site only before the bid closing date & time.
- 4.13 **Tenderer is advised to cross check his quotation in the BOQ, after uploading and before the Bid closing time & date. If he fails to quote his rate for any item, in terms of amendment No 21 (c) (ii) to condition 6-A (A) of IAFW-2249, his overall quotation shall deem to include cost of execution of these items for the quantity mentioned in the BOQ. No representation on this account shall be entertained.**

5. **C P M (Critical Path Method):**

- 5.1 The project planning for work covered in the scope of tender is based on CPM.
- 5.2 The tenderer is expected to be fully conversant with the CPM technique and employ technical staff who can use the technique in sufficient details. Sufficient books and other literature on the subject are widely available in the market which the tenderer may make use of.
- 5.3 The tenderer's attention is drawn to special condition of the tender regarding preparation of the detailed network analysis and time schedule for the work and his liability for employing sufficient resources to adhere to this schedule. Any inability on the part of the tenderer in using the technique will be taken as his technical inefficiency and will affect his class of enlistment and future prospect/invitation to tenders for future works.
- 5.4 Department may issue amendments/ errata in form of corrigendum to tender/ revised BOQ to the tender documents before due date & time of submission of tender. The tenderer is requested to read the tender documents in conjunction with the errata/ amendments/ corrigendum, if any, issued by the department.
- 5.5 The tenderer will not make, of the own, any alteration in tender documents issued to him by the Department. In this connection tenderers special attention is drawn to Para 8 of notice of tender. It is expressly brought to the notice of the tenderers that if he makes any alteration in tender documents and does not specifically bring out the alteration to the notice of the Accepting Officer, through a letter along with the tender and his tender is accepted by the Accepting Officer, the alteration(s) made by the tenderer shall be deemed to become null and void and the original provisions in the tender documents as originally made by the department or amended subsequently through amendments to tender documents issued by the department shall hold good and the contractor will not have any claim on this account.
- 5.6 In the event of any bidder revoking his offer or revising his rates upward/ offering voluntary reduction, after opening of Cover 2, his offer will be treated as revoked and the Earnest Money deposited by him shall be forfeited. In case of MES enlisted Contractors, the amount equal to the Earnest Money stipulated in the Notice of tender, shall be notified to the tenderer for depositing the amount through MRO. Bids of such contractor/ Bidders shall not be opened by any other MES formation till the aforesaid amount equal to the earnest money is deposited in Govt Treasury. In addition, bids of such tenderer and his related firm shall not be opened in second call or subsequent calls. Reduction offered by the tenderer on the freak high rates referred for review shall not be treated as voluntary reduction.
- 5.7 These instructions shall form part of the contract documents and shall be signed and returned along with the tender.

Signature of Contractor

**DCWE (Contracts)
For Accepting Officer**

MILITARY ENGINEER SERVICES**NOTICE OF TENDER (NOT)**

1. A tender is invited for the work as mentioned in Appendix "A" to this NOTICE INVITING TENDER (NIT).
2. The work is estimated to cost as indicated in aforesaid Appendix "A". 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. The tender shall be based on as mentioned in aforesaid Appendix "A".
3. The work is to be completed within the period as indicated in aforesaid Appendix "A" in accordance with the phasing, if any, indicated in the tender from the date of handing over site, which will be on or about two weeks after the date of Acceptance of tender.
4. Normally contractors whose names are on the MES approved list for the area in which the work lies, and within whose financial category the estimated amount would fall, may tender but in case of term contracts, contractors of categories SS to E may tender. Contractors whose names are on the MES approved list of any MES Formation and who have deposited standing security and have executed standing security bond may also tender without depositing Earnest money along with the tender. Not more than one tender shall be submitted by one contractor or one firm of contractors. Under no circumstances will a father and his son(s) or other close relations who have business dealing with one another be allowed to tender for the same contract as separate competitors. A breach of this condition will render the tenders of both parties liable for rejection.
5. The Office of Commander Works Engineer (A), Hanuman Camp Ahmedabad-380004 will be the Accepting Officer here in after referred to as such for purpose of the contract.
- 5A. The Tenders/ bids shall be uploaded on the eprocuremes.gov.in site in two packets i.e the Technical Bid and Financial Bid upto the last date & time of submission of bids indicated in **NOT** therein. Bids shall be opened at time & date mentioned on www.defprocure.gov.in.
6. The Technical Bid and Financial Bid (**Cover-1 and Cover-2**) shall be uploaded by the tenderer/ bidder on or before the date & time mentioned in NIT. A scanned copy of DD with enlistment details/ documents shall be uploaded as packet 1/ cover-1 (T-Bid) of the tender/ bid on e-tendering portal. DD is refundable in case T Bid is not accepted resulting in Non-opening of Q bid. The applicant contractor shall bear the cost of bank charges for Procuring and encasing the DD and shall not have any claim from Government whatsoever on this account.
 - 6.1. Tender form and conditions of contract and other necessary documents shall be available on www.defprocure.gov.in site for download and shall form part of contract agreement in case the tender/ bid is accepted.
 - 6.2. In case of contractor who has not executed the Standing Security Bond, the Cover-1 shall be accompanied with by Earnest Money of amount as mentioned in Appendix "A" in the form of deposit at call receipt in favour of concerned CWE/ GE (see Appendix "A") by a scheduled Bank or in receipted treasury Challan the amount being credited to the revenue deposit of the concerned CWE/ GE (see Appendix "A").
 - 6.3. A contractor who is not enlisted for the area in which the work lies but whose name is in the MES approved list of any MES formation and who has deposited standing security and executed standing security Bond may bid without depositing earnest money along with the tender.
 - 6.4 **---BLANK---**

NOTICE OF TENDER (NOT) (CONTD.....)

- 6.5 The CWE AHMEDABAD will return the Earnest Money whatever applicable to all unsuccessful tenderers/ bidders by endorsing an authority on the deposit-at-call receipt for its refund. On production by the tenderer, bidder a certificate of the Accepting Officer that a bonafide tender/ bid was received and all documents were returned.
- 6.6 The CWE/ GE will either return the Earnest Money to the successful tenderer/ bidder by endorsing an authority on the deposit at call Receipt/ CDR/ FDR for its refund on receipt of an appropriate amount of Security Deposit or will retain the same in part or full on account of security deposit if such a transaction is feasible.
- 6.7 Copies of the drawings and other document pertaining to the work signed for the purpose of identification by the Accepting Officer or his accredited representative, sample of materials and stores to be supplied by the contractor will also be available for inspection by the tenderer/ bidder at the office of Accepting Officer and concerned GE during working hours.
- 6.8 The tenderers/ bidders are advised to visit the site of work by making prior appointment with GE who is also the Executing Agency of the work (see Appendix 'A'). The tenderers/ bidders are deemed to have full knowledge of all relevant documents, samples, site etc, whether they have inspected them or not.
- 6.9 Any tender/ bid which proposes any alteration to any of the conditions laid down or which proposes any other condition or prescription whatsoever, is liable to be rejected.
- 6.10 The uploading of bid implies that bidder has read this notice and the Conditions of Contract and has made himself aware of the scope and specification of work to be done and of the conditions and rates at which stores, tools and plants etc will be issued to him and local conditions and other factors having bearing on the execution of the work.
- 6.11 Tenderers/ bidders must be in possession of a copy of the MES Standard Schedule of Rates (see appendix 'A') including amendments and errata thereto.
- 6.12 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 defprocuremes website. The applicant contractor/ bidder if he so desires may appeal to the next higher Engineer authority viz **CE JODHPUR ZONE JODHPUR** on email id cezip2-mes@nic.in with copy to the Accepting Officer on email ahbd3-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/ bidder shall not be entitled for any compensation whatsoever for rejection of his bid.
- 6.13 The Accepting Officer reserves the right to accept a tender submitted by a Public Undertaking, giving a price preference over other Tender(s)/ bids which may be lower, as are admissible under the Government Policy. No claim for any compensation or otherwise shall be admissible from such tenderer/ bidder whose tender/ bid is rejected.
- 6.14 Accepting Officer does not bind himself to accept the lowest or any tender/ bid or to give any reason for not doing so.

Signature of Contractor**For Accepting Officer**

APPENDIX “A” TO NOTICE OF TENDER

1	Name of work	REPAIR TO INTERNAL ROADS UNDER AGE B/R-II AT MIL STN BHUJ									
2	Estimated Cost	Rs. 28.25 Lakhs									
3	Period of completion	120 days from the date of handing over site as indicated in work order No 1									
4	Cost of tender documents	Rs 500.00 in the shape of DD/ Bankers cheque from any schedule Bank in favour of GE (A) Bhuj and payable at Bhuj									
5	Website/ portal address	www.defproc.gov.in									
6	Type of contract	The tender shall be item rate contract based on IAFW-1779A & GCC (IAFW-2249) with list of works to be quoted by the contractor.									
7	Time line details	Refer critical date 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 contactor	Contractors shall be enlisted with MES in Class “D” and above, Category a (v) (Roads) subject to satisfactory remarks with respect to performance in respect of Works in hand as reflected in work load return (WLR) or any other report circulated by competent engineer authority.									
	(b) For contractor not enlisted with MES	<p>(i) The firms not enlisted with MES shall meet the enlistment criteria of ‘D’ Class & ‘a (v)’ categories contactor with regarded to satisfactory completion of requisite valve with central/ State Government/ Central/ State PSUs/ AWHO/ AFNHB/ CGEWHO/ DG MAP, annual turnover, bank solvency, working capital and other requirement given in Para 1.4 &1.5 of section 1 of MES manual of contacts 2020 as applicable in all MES formation as well as MES website (www.mes.gov.in). The Details of criteria for enlistment is as per Annexure A to this appendix.</p> <p>(ii) Not carrying adverse remark in Work Load Report (WLR) or any other report circulated by any competent authority, if already working in MES.</p> <p>(iii) Not suspended/ debarred/ blacklisted (either temporarily or permanently) from participating in any bid or for business dealing by any central/ State Government Department or any Central/ State Government PSU or any Autonomous Body under Central/ State Government or any Local Body as on the bid submission end date.</p> <p>(iv) Details of works completed and under progress in MES be submitted in the following format:-</p> <table><tr><td>Sr No</td><td>CA No & Name of Work</td><td>Value of CA</td><td>Date of Commence-ment</td><td>Date of Completion</td><td>Extended date of completion</td></tr></table> <p>(v) Un-enlisted contractor who have secured two works in MES should get themselves registered in the appropriate designated class with any Registering Authority, else the firm will not be eligible for participation in the tender unless until the firm is enlisted with the MES.”</p>					Sr No	CA No & Name of Work	Value of CA	Date of Commence-ment	Date of Completion
Sr No	CA No & Name of Work	Value of CA	Date of Commence-ment	Date of Completion	Extended date of completion						
	(c) Technical PQC criteria	NA									

APPENDIX “A” TO NOTICE OF TENDER (CONTD---)

9.	Tender issuing and Accepting Officer	CWE (Army) Ahmedabad Hanuman Camp, Shahi baug Ahmedabad Tele-07622863701 Email:- ahbd3-mes@nic.in
10.	Executing Agency	GE (A) Bhuj
11.	Earnest Money	Rs 56,500/- in favour of GE (A) Bhuj
Note:-		
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 fulfillment of other eligibility criteria given in the NIT. Therefore, MES contractor's one class below (two classes below in case of remote and difficult areas) may also bid for this tender. Such contractors (contractors of one/ two classes below the eligible class) shall not be considered in case their present residual work in hand is more than FIVE TIMES their present tendering limit. However, in case such contractors fulfill the criteria of upgradation to the stipulated eligible class based on past experience of completed works (individual work experience and/ or average annual turnover, as applicable) and financial soundness (solvency/ financial soundness and working capital), the ceiling of present residual work will not apply and they will be considered for issue of tender. Such bidders shall upload in their Cover-1 bid details related to residual work in hand like details of works in hand showing names of work, names of Accepting Officers, Contract amounts, dates of commencement and completion (stipulated) and progress as on bid submission date. Such contractors, if claim to fulfill the criteria of upgradation shall also upload the requisite information/ documents in support of upgradation. These details shall be verified by the Tender Issuing Authority from concerned formations in case bids of such contractors are considered for evaluation.	
2.	In case after opening of Cover I, the number of MES enlisted contractors of eligible class as well as un-enlisted contractors, if any, fulfilling the other eligibility criteria given in NIT, are 7 (Seven) or more, applications of only those one class below the eligible class bidders shall be considered, who have previously completed similar works satisfactorily and are meeting the criteria of up gradation in respect of past experience of completed works (individual work experience and/ or average annual turnover as applicable) and financial soundness (solvency/ financial soundness and working capital) as per details given in Manual on Contracts. Therefore, such contractors shall upload the requisite information/ documents in the Cover-I.	
3.	Unenlisted contractor shall be considered provided he meets the criteria. Foreign firms shall not be eligible for this tender. However Indian Firms having foreign national/ Indian nationals staying abroad/ Indian nationals 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 I for checking eligibility: - (a) Application for tender on Firm's letter head. (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) Copy of GST Registration Certificate. (f) Copy of EPFO Registration Certificate. (e) Any other document required as described in this Appendix.	

APPENDIX "A" TO NOTICE OF TENDER (CONTD---)

5.	<p>Contractors not enlisted with MES will be required to upload following documents in Cover I for checking eligibility.</p> <ul style="list-style-type: none">(a) Application for tender on Firm's letter head.(b) Scanned copy of DD/ Bankers cheque toward cost of tender and Earnest Money Deposit (EMO) instrument.(c) Copy of Police Verification Report/ Police Clearance Certificate/ Character Certificate from the Police Authority of the area where the registered office of the firm is located/ notarized copy of valid passport of Proprietor/ each Partner/ each Director.(d) All documents required for enlistment in MES for the class mentioned in Para 8 (b) above as per Para 1.5 of Section I of MES Manual on Contracts 2020.(e) Details of works being executed in MES, if any.(f) Copy of GST Registration Certificate.(g) Copy of EPFO Registration Certificate.(h) Any other document required as described in this Appendix.
6.	<p>Tenders not accompanied by scanned copies of requisite DD/ Bankers Cheque towards cost or 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.</p>
7	<p>Contractors should ensure that their original physical DDs and Earnest Money Deposit (EMD) instruments (as applicable) reach the office of Accepting Officer within 5 days of bid submission end date (*The number or days to be mentioned shall be as decided by the Accepting Officers. but it shall not be less than 5 days) failing which following action shall be taken.</p> <ul style="list-style-type: none">(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 (Cover 2) will be opened. However non-submission of physical copies of cost of tender shall be considered as willful negligence of the tenderer with ulterior motives and such tenderer 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 contractors along with complete address shall be circulated for not opening of their bids for a period of six months commencing from the date of opening of Financial bid (Cover 2).(c) In case of tenders from enlisted and unenlisted contractors, where scanned copies of instruments for Earnest Money Deposit (as applicable) have been uploaded in Cover I but the same are not received in physical form within stipulated period, such tenders shall not qualify for opening of financial bid (Cover 2).
8.	<p>Contractor will not be allowed to execute the work by subletting or through power of attorney to a third party/another firm on his behalf. However, a contractor can execute the work through power of attorney to sons/ daughters/ spouse of Proprietor/ Partner/ Director and firm's own employees, director, project manager provided they are not having a separate enlisted firm in MES in their name as Proprietor/ Partner/ Director.</p>
9.	<p>After opening of Cover I and during its technical evaluation, in case any deficiency is noticed in the documents required to be uploaded by the tenderers as per NIT, a communication in the form or email/ 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.</p>

APPENDIX “A” TO NOTICE OF TENDER (CONTD---)

10	Invitation fore-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. Chief Engineer Jodhpur Zone on email cezjp2-mes@nic.in . Chief Engineer Jodhpur Zone with the copy to the Accepting Officer i.e. Commander Works Engineer, Hanuman Camp, Ahmedabad-380004 on email <u>ahbd3-mes@nic.in</u> before the scheduled date of opening of Cover 2. NHEA shall decide the matter within a period of seven working days from the date of receipt of appeal. The decision of the NHEA shall be final and binding. The tenderer/ bidder shall not be entitled for any compensation whatsoever for rejection of his bid.
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 failed to quoted 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-bonafide. In such cases the lowest tender shall be determined from amongst the valid/ bonafide bids only. Accepting Officer may decide whether to re-tender or consider the lowest bonafide tender for acceptance.
13	Revoking the offer or revising the rates upward or offering voluntary reduction by the lowest tenderer after opening of Cover 2 shall be considered as a willful default. For this default a penalty of an amount equal to Earnest Money shall be levied. In case of an unenlisted tenderer, Earnest Money deposited by him shall be forfeited. In case of MES enlisted tenderer having deposited the Standing Security Bond, an amount equal to the earnest money stipulated in the NIT, shall be notified to the tenderer for depositing through MRO and consideration of such tenderer in tender evaluation for future works shall remain suspended till the aforementioned amount is deposited in the Government Treasury. No other disciplinary/ administrative action shall be taken against such tenderers. In such a situ ati on, 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.
14	Tender to related firms shall not he issued simultaneously. Firms shall be termed as related if Proprietor/ one or more Partners/ Directors are common. Decision of Accepting Officer on issue/ deny the tender to any one of the related firms shall be final and binding.
15	Blank.

Signature of contractor

EE (QS&C)
DCWE (Contracts)
for Accepting Officer

File No 87299/ /E8

Date Aug 2024

Address of Accepting Officer
HQ Commander Works Engineer (A)
Hanuman Camp
Ahmedabad – 380 004
Email: ahbd3-mes@nic.in

IN LIEU OF IAFW-1779-A (REVISED-1947)

(TO BE USED IN CONJUNCTION WITH GENERAL CONDITION OF CONTRACTS IAFW-2249)

Tele Civil: (079) 22863702
(Email id: ahbd3-mes@nic.in)

MILITARY ENGINEER SERVICES
Headquarters
Commander Works Engineer (Army)
Hanuman Camp
Ahmedabad – 380 004

87299/ /E8

Aug 2024

**ITEM RATE TENDER AND CONTRACT FOR “REPAIR TO INTERNAL ROADS
UNDER AGE B/R-II AT MIL STN BHUI”**

1. Shri/ S” Shri of is/ are hereby authorized to tender for the above work. The tender is to be forwarded on **defproc.gov.in** portal on or before the **scheduled date and time for bid closing** mentioned in the tender details on the portal.
2. All documents must be uploaded while forwarding the bid on abovementioned portal.
3. Any correspondence on clarification concerning this tender shall be communicated as per information available on the e-portal mentioned above by due date.
4. **THE PRESIDENT OF INDIA DOES NOT BIND HIMSELF TO ACCEPT THE LOWEST OR ANY TENDER.**

**Signature of Officer
Issuing the documents
Appointment
DCWE (Contracts)**

SCHEDULE “A” (BOQ)
(List of Items of Work)

NAME OF WORK: REPAIR TO INTERNAL ROADS UNDER AGE B/R-II AT MIL STN BHUJ

NOTES: -

1. The quantities shown in column 3 are approximate and are inserted as a guideline only. These shall however, not be varied beyond the limits laid down in condition 7 of IAFW-2249 General conditions of contracts.
2. Rates under column 6 shall be filled by bidder.
3. Total amount in column 7 is not firm but will be treated as contract sum referred to in IAFW-2249.
4. The work shall be carried out as mentioned in BOQ description as specified in particular specification. The unit rates quoted by the tenderer shall be deemed to include the above provision and no extra payment will be admissible. The works pertain **REPAIR TO INTERNAL ROADS UNDER AGE B/R-II AT MIL STN BHUJ**
Auth: Maint Pgme 2024-25 and revised CPP for FY 24-25 approved vide this office letter No 20228/49/E2 dt 23 Jul 24 Srl No 02 of Appx B Code Head 84/461/01 (Road Maint).
5. Unless otherwise specified the rates quoted by the tenderer against Schedule ‘A’/ BOQ items of work are deemed to include supplying, laying, fixing, connecting up and testing etc including provision of all necessary materials, testing equipment and labour for the testing, all as directed all taxes octroi, sale tax and like and nothing extra shall be paid to the contractor on the above account.
6. The entire work under this contract shall be completed within **120 days** from date of commencement as indicated in WO No. 1.
7. Descriptions of items given in the BOQ are in brief. These are deemed to be amplified and read in conjunction with special conditions, particulars specifications, specification for materials and workmanship and conditions in relevant sections of MES Standard Schedule of Rates Part-I-Specifications 2009 and MES Standard Schedule of Rates 2020 (Part-II) and the work is to be carried out as per standard engineering practice.
8. Unit rates quoted shall be deemed to be inclusive of all taxes and levies of Govt. Certain taxes such as central excise duty, service tax, additional custom duty, state level value added tax, octroi and other levies which were applicable on interstate transportation of goods are subsumed by **GST**. Special Condition as per **Condition 24** for Reimbursement/ refund on variation in prices in taxes directly related to contract value of tender shall be deemed to be amended incorporating **GST** in lieu of taxes mentioned in the condition but subsumed by **GST**. etc and nothing extra shall be paid on this account. Necessary deduction at source shall be made by the GE as applicable as per the mandatory statutory requirement of Central, State Government and local bodies.
9. The rate quoted by the tenderer shall be inclusive of all type of taxes, levies, including GST, labour welfare cess, etc as prevailing on date of submission of tender, GST at the rate as notified by Govt of India shall be deducted at source.
10. In the event of the tender become lowest and revoke his offer, after opening of bids, the following actions shall be taken:-
 - (a) If the tenderer is an un-enlisted contractor with MES, the Earnest Money deposited by him shall be forfeited.
 - (b) If the tenderer is an enlisted contractor with MES, the amount equal to the earnest Money stipulated in the notice of tender, shall be notified to the tenderer for depositing the amount through MRO, failing which the amount shall be recovered from payment due to such contractor or shall be adjustable from his standing security deposit. In addition, such tender and his related firm shall not be issued the tender in second call or subsequent calls.

SCHEDULE "A" (BOQ) (CONTD.....)**(List of Items of Work)**

11. **Mode of Payment.** The payments shall be made into AADHAAR linked bank account of the employees by the contractor. Where the employee insists on being paid in coins or currency notes or by cheque, the same will not be denied. An undertaking may be obtained from such employees. However, efforts shall be made to educate the employees on benefits of bank/digital payments and pursue with the individual(s) to shift towards banking system/digital modes.
12. Defect liability period for this work shall be **24 months** from the certified date of completion issued by GE.
13. Work order will be placed only after submission of performance security of adequate value by the contractor.

SCHEDULE OF CREDIT

NAME OF WORK: REPAIR TO INTERNAL ROADS UNDER AGE B/R-II AT MIL STN BHUJ

NOTES:-

1. The tenderer shall be deemed to have visited the site and acquainted themselves with nature, extent, and quality of material that will become contractor property as per this Schedule.
2. All material indicated in the Schedule of credit shall become the property of the contractor and credit therefore shall be recovered from the contractor’s payment.
3. For purpose of recovery, the measurement shall be the same as the net measurements for demolition/ dismantling/ taking down/ replacement. Contractor shall have no claim in case the actual value of retrieved material is more/ less than the rate specified herein.
4. The quantity shall depend upon the quantity of items in BoQ (Under Col 3) actually executed at site and credit shall be adjusted accordingly.
5. Contractor shall remove all the materials from site only after realization of credit from RARs/ FB.
6. The rates shown for credit are firm.
7. The old unserviceable material obtained will not be allowed to be reused. Any item obtained from demolition/ taking down which are not listed below shall be deposited in MES Store Yard.
8. Weight of old reinforcement, chain link fencing and any other scraps shall be ascertained by Board of Officers.
9. **The amount of Sch of Credit shall be deducted from the contract sum works out under BOQ at the time of acceptance of tender.**

SI No	Description of items	Unit	Qty	Rate	Amount	Remarks
1	Old unserviceable Road bumps	RM	13.00	10.00	130.00	
2	Solar Cat Eye/ Cat Eye Solar reflective	Each	60.00	10.00	600.00	
3.	Old unserviceable Kerb Stone	Cum	2.00	200.00	400.00	
	Total Rs.				1,130.00	
	Say Total Rs.				1,130.00	
	Total Amount of Sch ‘A’ Part-I B/F from BOQ					
	Deduct Sch of Credit B/F from Page No 16				(-) 1,130.00	
	Net Contract Sum					

Signature of Contractor

EE (QS&C)
DCWE (Contracts)
for Accepting Officer

SCHEDULE ‘B’

ISSUE OF MATERIALS TO THE CONTRACTORS
(See conditions 10 of IAFW – 2249)

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

Signature of Contractor

Dated :

EE (QS&C)
DCWE (Contracts)
for Accepting Officer

SCHEDULE ‘C’

LIST OF TOOLS AND PLANT (OTHER THAN TRANSPORT) WHICH WILL BE HIRED TO THE CONTRACTOR

(SEE CONDITIONS 15,34 AND 35 OF IAFW 2249)

SI No	Quantity	Particulars	Details of MES crew supplied	Hire charges per unit per working day (Rs.)	Stand by charges per unit per off day (Rs.)	Place of issue by name	Remarks
1	2	3	4	5	6	7	8
NIL							

Signature of Contractor

Dated :

EE (QS&C)
DCWE (Contracts)
for Accepting Officer

SCHEDULE ‘D’

TRANSPORT WHICH WILL BE HIRED TO THE CONTRACTOR
(SEE CONDITIONS 16 & 35 OF IAFW 2249)

Sr No.	Quantity	Particulars	Rates per unit per working day	Place of issue by name	Remarks
1	2	3	4	5	6
NIL					

Signature of Contractor

Dated :

EE (QS&C)
DCWE (Contracts)
for Accepting Officer

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

To,

The President of India,

Having examined and perused the following documents: -

1. Specifications signed by DCWE (Contracts).
2. Drawings as detailed in the specifications.
3. Schedule 'A', 'B', 'C', and 'D' attached hereto.
4. MES Standard Schedule of Rates Part-I (Specifications) 2009 together with the amendments 1 to 3 and MES standard schedule of Rates Part-II (Rates) 2020) together with the amendments 1 to 122 including Section Number 30 for "Runway & Pavement" containing item Numbers 30001 to 30053, as applicable to above said Schedule. (here-in-after) and in IAFW-2249 referred to as the MES SCHEDULE.
5. General conditions of Contracts IAFW-2249 [1989 Print] together with Errata 1 to 20 and Amendments 1 to 49.
6. Water. Water will not be issued by MES.
7. **SHOULD THIS TENDER BE ACCEPTED.**

I/ WE AGREE

*** (a) That the sum of **Rs 56,500.00** forwarded as Earnest Money which shall either be retained as part of Security Deposit or be refunded by the Government on receipt of an appropriate amount of Security Deposit, within the time specified as per condition 22 of IAFW-2249.

*** (b) To execute all the works referred to in the said documents upon the terms and conditions or referred to therein at item rates contained in the aforesaid BOQ OR at such rates as may be fixed under condition 62 and to carry 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 and 71 to the sole Arbitrator of 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. to be appointed by Chief Engineer Army Jodhpur or in his absence the officer officiating as Chief Engineer Army Jodhpur whose decision shall be final, conclusive and binding

*** Delete whichever not applicable.

SIGNATURE_____IN THE CAPACITY OF _____duly
authorised to sign the tender for and on behalf of M/s _____.

(BLOCK CAPITALS)

Name of the Signatory: _____

Date : _____

Postal Address : _____

Witness _____

Telegraphic Address _____

Address _____

Telephone _____

ACCEPTANCE

_____ alterations have been made in these documents and as evidence that these alterations were made before the execution of the Contract Agreement these have been initiated by the contractor and Shri Praveen Kumar Meena, EE (QS&C) DCWE (Contracts). The said officer/officers is/ are hereby authorised to sign and initial on my behalf the documents forming part of this contract.

The above tender was accepted by me on behalf of the President of India in respect of
Schedule 'A' attached hereto at the price quoted therein on _____ day of _____ 2024.

Signature _____ dated this _____ day of _____ 2024.

Appointment:

COL
CWE AHMEDABAD
ACCEPTING OFFICER
(FOR AND ON BEHALF OF THE PRESIDENT OF INDIA)

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

FOR MEASUREMENT CONTRACTS (IAFW-1779 & 1779-A)

(MILITARY ENGINEER SERVICES)

A copy of the GENERAL CONDITIONS OF CONTRACTS – IAFW 2249. (1989 Print) with errata 1 to 20 and amendment No.1 to 49 has been supplied to me/ us, has been perused by me/ us and is in my/ our possession. I/ We have read and understood the provisions contained in the aforesaid GENERAL CONDITIONS OF CONTRACTS before submission of this tender and I/ We shall abide by the terms and conditions thereof, as modified if any, else where 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 & 71 thereof pertaining to settlement of disputes by arbitration, containing 33 pages (Serial Page Number 20 to 52) with errata 1 to 20 and amendment Nos.1 to 49 containing 07 pages (Serial Page Number 53 to 59) form part of these tender documents.

(SIGNATURE OF CONTRACTOR)

Dated:

EE (QS&C)
DCWE (Contracts)
for ACCEPTING OFFICER

SCHEDULE OF MINIMUM FAIR WAGES

It is hereby agreed that the “Schedule of Minimum Fair Wages” as published by Government of India or provincial Government: Notification (whichever is higher) issued upto date of submission of tenders shall form part of these tender documents. (Serial Page Number 60 to 65).

My/ Our signature hereunder amounts to my/ our having read and understood the provisions contained therein and I/ We agree that I/ We shall abide by the same and that aforesaid documents form part of this tender. We also here by agree that payment to labours shall be made as per minimum wages notified by State Government or central Government whichever is high.

(SIGNATURE OF CONTRACTOR)

Dated :

EE (QS&C)
DCWE (Contracts)
for ACCEPTING OFFICER

SPECIAL CONDITION

1. **GENERAL.** These special conditions shall be read in conjunction with the General Conditions of Contracts (IAFW-2249) and (IAFW-2159) including errata and amendments thereto. Any provisions in these special conditions if at variance with the provisions in the above mentioned documents shall be deemed to take precedence there over.
2. **VISIT TO SITE OF WORK.** Refer Para's 7 and 10 of notice of tender (IAFW-2162) and condition 4 of IAFW-2249. The tenderer shall be deemed to have satisfied himself before submitting his tender as to the nature of the ground and substrata soil (so far as practicable), the climatic conditions, the form and nature of the site, nature of the work and means of access to the site, the accommodation he may require and in general shall be deemed to have himself obtained all necessary information on inspection of site as to risks, contingencies and other circumstances which may alter his tender. No extra payment consequent to any mistake, or misunderstanding or otherwise on this account will be allowed.
3. **OTHER AGENCIES.** Contractor's attention is invited to the fact that during the currency of this contract, works on other service, which are outside the scope of work of this contract, may be entrusted for execution to other agencies. The contractor shall permit full access and afford all facilities for such other agencies or departmental workmen, if any, engaged by Government to carry out their part of work in the area. No extra payment shall, however, be made to the contractor on this account whatsoever.
4. **CONTRACTOR'S REPRESENTATIVE, AGENTS SERVANT AND WORKMEN.**

Contractor shall employ only Indian Nationals as his representatives, agents servants and workmen and verify their antecedents and loyalty before employing them for the works. He shall ensure that no person of doubtful antecedents and nationality is, in any way associated with the works. If for reasons of technical collaborations or other consideration, 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 the tender. The GE shall have full power and without giving reasons to required contractor immediately to cease to employ in connection with this contract any representative, agent, servant, workmen or employees whose continued employment is, in his opinion is undesirable. The contractor shall not be allowed any compensation on this account.
5. **SECURITY OF CLASSIFIED DOCUMENTS.** Contractor's special attention is drawn to conditions 2A and 3 of General conditions of contracts (IAFW-2249). The contractor shall not communicate any classified information regarding works either to sub contractors or others without prior approval of the Engineer-in-Charge. The contractor shall also not make copies of the design/ drawings and other documents furnished to him in respect of works and he shall return all documents on completion of the works or on earlier termination of the 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 3 of General Conditions of contracts (IAFW-2249).
6. **ACCEPTANCE OF TENDER:** The tender shall remain open for acceptance for a period of 60 days from the date specified for its submission.
7. **CRITICAL PATH METHOD (CPM) NET WORK:**
 - 7.1 The time and progress chart to be prepared as per condition 11 of General Condition of Contracts (IAFW-2249) shall consist of detailed network analysis and a time Schedule. The GE and contractor will draw the critical path network jointly soon after acceptance of tender. The contractor so as to finish the work within the stipulated time will do the time scheduling of activities. On completion of the time schedule a firm calendar date schedule will be prepared and submitted by the contractor to GE, who will approved it after due scrutiny. The schedule will be submitted in four copies within two weeks from the date of handing over site.

SPECIAL CONDITION (CONTD.....)

- 7.2 During 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 work contractor is expected to participate in the reviews and updating of the network under taken by the GE. These review may be under taken at the discretion of the GE either as a periodic appraised measure or when the quantum of work ordered on the contractor is substantially changed through deviation orders or amendments. Any revision of the schedule as a result of the review, will be submitted by the contractor to GE within a week who will approve it after due scrutiny. The contractor will adhere to the revised schedule thereafter. In case of contractor disagreeing with the revised schedule, the same will be referred to the Accepting Officer who's 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 should 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.
- 7.3 Contractor shall mobilize and employ sufficient resources to achieve the detailed schedule within the broad framework of the accepted methods of working and safety.
- 7.4 No additional payment will be made to the contractor for any multiple shift work or other incentive method contemplated by him in his work schedule even though the time schedule is approved by the department.
8. —BLANK—
9. —BLANK—
10. **SAMPLE OF MATERIALS AND INDIAN STANDARDS.**

- (a) In case where materials are specified to conform to samples, the tenderer is advised to inspect samples of the materials, which are displayed in the office of the GE before submitting his tender. The tenderer shall be deemed to have inspected the samples and satisfied himself so as to the nature and quality of materials he is required to incorporate in the work irrespective of whether he has actually inspected them or not. The materials to be incorporated in the work by the contractor, shall conform to or shall be superior in quality to the samples displayed and shall comply with the specification given here in after.
- (b) The contractor shall produce sample of materials and get them approved from the GE before commencement/incorporation in the work.
- (c) Contractor shall provide items/ articles from the firms mentioned in particular specifications. Where a firm listed in particular specification is manufacturing both ISI/ Non ISI marked materials, only ISI marked items/articles shall be provided. In case of material which are not manufactured with ISI marking, the same shall conform to relevant IS or superior to IS and the contractor shall produce sufficient proof to satisfy that these items/articles are conforming to relevant IS or Superior to IS. Wherever IS number is mentioned in the tender documents, the year of IS shall be the latest upto and including the date of receipt of tender. GE shall also verify the availability of ISI marked materials in the market.

11. **RECORD OF MATERIALS.**

- 11.1 Contractor will be required to submit original purchase vouchers only in respect of items for which payment is claimed in RAR as "Material lying at Site". Purchase vouchers in respect of balance items will not be required to be submitted. However, vouchers in respect of cement, steel, major E/M equipments like transformers, DG Sets, pumps, motors, AC and lift equipments will be submitted invariably.

Production of original paid vouchers under mentioned items/ materials are required to be produced for verifications irrespective of claimed in RAR or Not :-

- (a) Paver Block
- (b) Road Furniture
- (c) Bitumen
- (d) Road Marking Paint
- (e) Solar reflective type and solar cat eyes
- (f) Metal tubular delineator

SPECIAL CONDITION (CONTD.....)

- 11.2 Vouchers signed both by Engineer-in-Charge and the contractor shall be kept on record.
12. **QUARRIES.** Reference condition 14 of IAFW-2249. Quarries are not available on Defence Land for use by the contractor.
13. **BLANK.**
14. **AVAILABILITY OF LAND FOR STORAGE OF MATERIALS/ TEMPORARY WORKSHOP OFFICE (REFERENCE CONDITION 24 OF IAFW-2249).** Delete the following in Para 1 of condition 24 of IAFW-2249, In the event of Areas of land allotted to him, and following shall be read in conjunction with condition 24 of IAFW-2249.
- The contractor shall be permitted to store his materials including erection of temporary sheds thereof and also to erect his temporary workshops, and the like at the area of land marked for the purpose on the site plan free of rent if it is on class A-1 land. For other types of land, he shall be charged a license fee of Rs.1/- per year or part of year for each & every separate area of land allotted to him.
15. **AVAILABILITY OF LAND FOR ACCOMMODATION OF LABOUR AND CANTEEN.** Reference condition 24 of IAFW-2249. No land will be allotted for labour camp and canteen.
16. **FAIR WAGES.** The contractor shall have no claim whatsoever if, for any reasons (other than these mentioned in condition 63 of IAFW-2249 and Clause 27 here-in-after) he is required to pay wages in excess of minimum wages as laid down by the Government of India (shown in the Schedule of Minimum rates of wages) or the minimum wages as fixed by the State Government whichever is higher.
17. **SECURITY AGAINST LOSS OR DAMAGE.** The contractor shall furnish to the Engineer-in-Charge every morning distribution/ return of his plant equipments on the site of work stating the following particulars:-
- (a) Particulars of plants/ equipments, their make, manufacture No., model No. if any, registration No. if any, capacity, year of manufacture and year of purchase, etc.
 - (b) Total No. (Quantity) on site of work.
 - (c) Location, indication No., quantity at each location of site of work.
 - (d) Purchase value on the date of purchase. For the purpose of this condition plant/ equipment shall be given vehicle number of trucks and lorries but not the workmen's tools or any manually operated tools/ equipments. The Engineer-in-Charge shall record the particulars supplied by the contractor in the work diary and send the return to the GE for record in his office.
18. **OFFICIAL SECRET ACT.** The contractor shall be bound by the Official Secret Act 1923.
19. **WATER (Refer condition 31 of IAFW -2249).** Water will not be supplied by MES. The contractor shall at his own cost arrange water for construction purpose and for his workmen from the source as approved by GE. However, the contractor if he so desires, will be permitted to drill bore well (s) in the area at his own cost. The water either brought from outside source or from bore well shall be tested at contractors cost from recognised Govt laboratory about the portability of water and produce the test certificate to GE for approval. No charges will be levied for taking water from bore well(s). However if water quality after tests is not found satisfactory, contractor shall make another bore well(s) till the satisfaction level of water achieved without any cost to the Govt alternatively treated water may be used in water after approval of GE. Cost of treatment shall be borne by contractor.

SPECIAL CONDITION (CONTD.....)

On completion of the work, bore with motor shall be handed over to the MES in working condition duly capped and same shall become property of the MES. This aspect is deemed included in the quoted rates of contractor and no claim whatsoever on this account shall be admissible

20. CONDITION OF WORKING IN UNRESTRICTED AREA.

(a) The work lies in UNRESTRICTED AREA. However, the contractor, his agent, servants, work people and vehicle may pass through the unit lines in which case the Engineer-in-Charge shall at his discretion has the right to issue passes, control their admission to the site of work or any part thereof. The contractor shall on demand by the Engineer-in-Charge submit a list of personnel, etc. Concerned and shall satisfy the Engineer-in-Charge as the bonafides of such people. Passes shall be returned at any time on demand by the Engineer-in-Charge and in any case on completion of work.

(b) The contractor and his work people shall observe all the rules promulgated from the authority controlling the area in which the work is to be carried out e.g. prohibition of smoking, lighting and fire precaution, restricted hours of working etc. Any person found violating the security rules laid down by the authority, shall be expelled from the area without assigning any reasons what so ever and the contractor shall have no claim on this account. Nothing shall be admissible for any man-hours lost of this account.

21. ELECTRIC SUPPLY.

(a) In case the contractor desires to buy electricity from MES he shall be charged for the electric energy consumed Rs. 9.5 per KWH for lighting and power each.

(b) The above rates are exclusive of duty/tax, if any levied by the local state Government and/ or Electricity Undertaking and the like on the electricity charges will be borne by the department.

(c) Electric supply required for works shall be made available by MES at the point(s) as directed by GE. The exact location of the electric point(s) shall be shown by the GE. The main switch and KWH meter to be register the electric energy supplied shall be provided and installed by MES Contractor shall provide all necessary connection, cables fittings etc, from the main switch in order to ensure a proper and suitable supply of electricity for the execution of work.

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

(e) The supply shall be AC, 3 Phase, 3 wire, 400 to 440 volts (within permissible limits) 50 cycles up to 20A at point of supply.

22. TESTING. Irrespective of what is specified in SSR & the tender documents, the cost of all tests specified shall be borne by the contractor. In case any implements and equipment for the testing on site of work are required, the same shall be also be provided by the contractor without any extra cost to the Government.

23. DAMAGES TO EXISTING WORKS. Any damage done to the existing structure during the execution of work shall be made good by the contractor at his own cost and the site of work left clean and tidy on completion. Rectification/reinstatement/ making good etc shall conform to the standard of materials originally used in the work and finished work shall match the GE. In case of any dispute on this account, the matter shall be referred to the CWE whose decision, in writing, shall be final conclusive and binding.

24. RETENTION MONEY/ COMPENSATION FOR DELAY. Refer Condition 64 and 50 of IAFW-2249. For the purpose of calculating retention money/ compensation under Condition 64 & 50 of IAFW-2249, the value of contract as revised by price variation in terms of Condition 13 and 14 of here-in-after under modified condition 63 of IAFW-2249 shall be taken into account.

SPECIAL CONDITION (CONTD.....)**25. RE-IMBURSEMENT/ REFUND ON VARIATION IN “TAXES DIRECTLY RELATED TO CONTRACT VALUE”.**

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

(b) (i) The taxes/ cesses which are levied by Govt at certain percentage rates of Contract Sum/ Amount shall be termed as “taxes directly related to Contract value” such as GST, Labour Welfare Cess/ tax and like but excluding Income Tax. The tendered rates shall be deemed to be inclusive of all “taxes directly related to Contract Value” with existing percentage rates as prevailing on last due date for receipt of tenders. Any increase in percentage rates of “taxes directly related to Contract Value” with reference to prevailing rates on last due date for receipt of tenders shall be reimbursed to the Contractor and any decrease in percentage rates of “taxes directly related to Contract value” with reference to prevailing rates on last due date for receipt of tenders shall be refunded by the Contractor to the Govt/ deducted by the Govt from any payments due to the Contractor. Similarly, imposition of any new “taxes directly related to Contract value” after the last due date for receipt of tenders shall be reimbursed to the Contractor and abolition of any “taxes directly related to Contract value” prevailing on last due date of 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 Value” give written notice thereof to the GE stating that the same is given pursuant to this Special Condition together with all information relating thereto which he may be in a position to supply. The contractors shall submit the other documentary proof/ information as the GE may require.

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

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

26. TESTING OF MATERIALS.

26.1 It will be mandatory for the contractor to carry out all the tests specified in the Annexure I to III in addition to other tests specified else where such as cement, steel etc in the tender documents. The cost of material and transportation to different laboratories will be borne by the contractor in addition to testing charges unless specified otherwise elsewhere.

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26.2 TESTS UNDER ANNEXURE-I.

- 26.2.1 It will be mandatory for the contractor to establish his own laboratory, at his own cost at site on commencement of work for carrying out the tests of materials specified in Annexure „I” herein after for the works costing Rs 1 crore and above. The contractor will be permitted to set up a site laboratory at his own cost for the works costing less than Rs 1 crore at his option. All equipment of the laboratory will be got calibrated by the contractor from the authorised test house at commencement of work and thereafter on yearly basis and tests certificate produced to the GE.
- 26.2.2 The contractor shall employ a competent technical representative having minimum qualification of Diploma in Civil Engineering for carrying out tests in site laboratory. This will be in addition to Engineers(s) required to be employed for supervision of works as required vide condition 25 of IAFW-2249. All tests shall be carried out in the presence of Engineer-in-Charge.
- 26.2.3 There will be no recovery by the department for the tests carried out in site laboratory established by the contractor as per Annexure-„I”.
- 26.2.4 If the GE decides to carryout some tests under Annexure-I in MES lab, notwithstanding facilities for the same being available in the site lab of the contractor, the recovery shall be made as per rates given in Annexure-I.

However if testing is done in other than MES lab (Govt Approved laboratory/ Engg Collage/ SEMT Pune/ National Test House) due to contractor not having facilities in his own site lab, the testing charges as actually charged by these agencies shall be paid by the contractor directly to the testing agencies.

- 26.2.5 A percentage/ selective checks as desired by the Accepting Officer shall be got done independently in the Zonal/ Govt Approved laboratory/ Engg Collage/ SEMT Pune/ National Test House, the expenditure for such tests shall be borne by the Department. However, the cost of material and transportation charges shall be borne by the contractor. In case the test results are found at variance from the site laboratory, then the results obtained from the Zonal/ Govt approved laboratory/ Engg Collage/ SEMT Pune/ National Test House will be final and binding.
- 26.2.6 For works costing less than Rs 1 crore, if the contractor does not opt to establish site laboratory, the materials required to be tested in site laboratory as indicated in Annexure „I” shall be got tested by the contractor in site laboratory if established by the Department or in the Zonal laboratory and the recovery as specified in Annexure „I” shall be effected from the contractor.
- If facility for these tests is not there in the site lab established by the Deptt or Zonal lab, the tests shall be carried out in Govt approved lab/ Engg Collage/ SEMT Pune/ National Test House and cost of testing as charged by these agencies shall be borne by the contractor and no additional reimbursement shall be made to the contractor.

26.3 OUTPUT OF ROAD ROLLER (8 TO 12 TONNE).

Output per day of 8 hours work

(a)	Consolidation of formation surfaces/ sub base		:	1850 Sqm
(b)	Consolidation of stone soling of crushed or broken stone:-			
	(i)	10 cm thick (Spread thickness)	:	1000 Sqm
	(ii)	15 cm thick (Spread thickness)	:	800 Sqm
	(iii)	23/20 cm thick (Spread thickness)	:	518 Sqm

SPECIAL CONDITION (CONTD.....)

(c)	Consolidation of water bound macadam (Stone metal) including Spreading and consolidation with binding materials.			
(i)	7.5 cm thick (Compacted thickness)	:	248 Sqm	
(ii)	10 cm thick (Compacted thickness)	:	744 Sqm	
(iii)	11.5 cm thick (Compacted thickness)	:	160 Sqm	
(d)	Consolidation of premixed carpet including seal coat.			
(i)	2 cm thick (Compacted thickness)	:	744 Sqm	
(ii)	2.5 cm thick (Compacted thickness)	:	600 Sqm	
(e)	Consolidation of 15 cm thick (Spread thickness earth/ moorum berms.			: 1800 Sqm
(f)	30 mm thick SDAC			: 500 sqm
(g)	Bituminous Macadam			

27. Reference Condition No 25 of IAFW-2249.

27.1 The requirement of Engineering Staff for this tender shall be as under :-

COST OF WORK UPTO 25 Lakhs

One degree holder in Civil Engineering from Govt recognized Institution

OR

One diploma holders in Civil Engineering from Govt recognized Institution or equivalent with 2 Year practical experience of works.

COST OF WORK MORE THAN 25 Lakhs & UPTO 50 Lakhs

One degree holder in Civil Engineering from Govt recognized Institution or equivalent with at least 2 years practicable experience of works.

OR

One diploma holders in Civil Engineering from Govt recognized Institution or equivalent with 4 Year experience practical experience of works.

COST OF WORK MORE THAN 50 Lakhs upto 100 Lakhs

One degree holder in Civil Engineering from Govt recognized Institution or equivalent with at least 2 years practicable experience of works.

AND

One diploma holders in Civil Engineering from Govt recognized Institution or equivalent with 4 Year experience practical experience of works.

COST OF WORK MORE THAN 100 Lakhs upto 300 Lakhs

One degree holder in Civil Engineering from Govt recognized Institution or equivalent with at least 4 years practicable experience of works.

AND

One diploma holders in Civil Engineering from Govt recognized Institution or equivalent with 5 Year experience practical experience of works.

SPECIAL CONDITION (CONTD.....)

- 27.2 The provision above shall be applicable irrespective of the fact whether contractor himself is a Qualified Engineer or not.
- 27.3 Contractor shall employ additional Engineers as directed by GE where there are scattered sites.

 The minimum requirement of T&P, Machinery and Transport shall be as follows, as applicable for the respective eligible class of work as indicated in the NIT.

28. REFUND OF PERFORMANCE SECURITY DEPOSIT.

- 28.1 The performance security deposit mentioned in Condition 19 of IAFW-2249 may be refunded to contractor after the expiration of the defect liability period (vide condition-46) by the GE provided always that the contractor shall first have been paid the final bill and have rendered a no demand certificate (IAFA-451).

29. T & P REQUIREMENT.

Ser No	Special T & P/ Machinery/ Transport	Minimum Nos required for respective class				Remarks
		B	C	D	E	
Category a (i) Building & Road Category						
1	One bag capacity concrete mixer (diesel)	3	2	1	1	
2	Vibrators (Needle and Plate type)	4	4	2	2	
3	Tower/ builder's hoist	1	1	-	-	
4	Steel shuttering with spans, props etc. (Sqm)	1500	1000	500	200	
5	Truck/ Tippers	1	-	-	-	
6	DG Sets 5/10 KVA	1	-	-	-	
7	Total Stations	1	-	-	-	
8	Concrete cube testing machine (Hydraulically operated)	1	-	-	-	
9	Fully automatic concrete batching plant	-	-	-	-	
10	Transit Mixers	-	-	-	-	
11	Concrete Pumps	2	1	-	-	
12	Concrete mobile weigh batchers	2	1	-	-	
13	Cranes	1	-	-	-	
14	Excavators (Power shovels/ draglines	1	-	-	-	
15	Bulldozers	1	-	-	-	
16	Pneumatic vibratory type roller 8 to 15 tonne	2	2	2	2	
17	Drilling Machines	1	-	-	-	
18	Boring rig	2	1	1	1	
19	Pile driving equipment (sets)	2	1	1	1	
20	Pipe vice	2	1	1	1	
21	Bench vice	2	1	1	1	
22	LT meger 500 Volts	2	1	1	1	
23	Tong Tester	2	1	1	1	
24	Earth Tester	2	1	1	1	
25	Portable Drilling Machine	2	1	1	1	
26	Multimeter	2	1	1	1	
27	Thermometer Digital	2	2	2	2	
28	Bitumen Extraction appratus	1	1	1	1	
29	Weighing platform 100 Kgs	1	1	1	1	
30	Bitumen Sprayer	1	1	1	1	
31	Air compressor 350 cfm	1	1	1	1	
32	Steel scale	2	2	2	2	
33	Set for wire brush	2	2	2	2	
34	Sample extractor	2	2	2	2	
35	Straight edge 3 m	1	1	1	1	
36	Self propelled mechanical paver with electronic sensing device	1	1	1	1	

SPECIAL CONDITION (CONTD.....)

ANNEXURE-I

MATERIALS AND THEIR TESTS SITE LAB

Ser No	Material	Test	Method of testing	Frequency of tests			Rate (in Rs)	Remarks
1	2	3	4	5			6	7
1	Bricks	(i) Compressive strength	IS-3495 (Part-I)	As per IS 5454 as given under			330	Checks for visual and dimensional characteristics
		(ii) Water absorption	IS-3495 (Part-II)	Lot size	Sample size	Permissible % age of defective bricks	330	Shall also be carried out as per IS5454
		(iii) Efflorescence	IS-3495 (Part-II)	2001 to 10000	6	0	330	
				10001 to 27000	10	0		
				27001 to 50000	15	1		
2	Coarse aggregate	(i) Sieve analysis	IS-2386 (Part-I)	One test for every 100 cum of aggregate or part thereof brought to site			660	
		(ii) Flakiness Index	IS-2386 (Part-I)	One test for every 100 cum of aggregate or part thereof brought to site			250	
		(iii) Estimation of deleterious materials	IS-2386 (Part-II)	One test for every 100 cum of aggregate or part thereof			600	
		(iv) Moisture content	IS-2386 (Part-III)	Regularly as required			330	
3	Fine aggregate	(i) Sieve analysis	IS-2386 (Part-I)	One test for every 100 cum of FA or part when brought to site			660	
		(ii) Test for clay silt and impurity	IS-2386 (Part-II)	One test for every 100 cum of FA or part when brought to site			500	
		(iii) Moisture content	IS-2386 (Part-III)	Regularly as required subject to 2 tests/ day when being used			300	
4	Structural concrete (M-20 Grade and above) or quality concrete design for flexural concrete	(i) Slump test or compacting factor test or Vee-Bee time	IS-3999	The minimum frequency of sampling of concrete of each grade shall be as under			300	For number of cubes, samples etc., please refer particular specifications
		(ii) Compressive strength	IS-516	Qty of concrete in the work (Cum)		No of sample	900	
				1-5		1		
				6-15		2		
				16-25		3		
				26-50		4		
				51 and above 4 + 1 for each additional 50 Cum or part thereof				
5	PCC block for walling (Hollow block)	Compressive strength	IS 2185 -1983 (Appx B)	3 Block out of 20			900	Sampling 20 blocks from consignment of every 5000 block or part thereof

SPECIAL CONDITION (CONTD.....)

ANNEXURE-I (Cont....)

MATERIALS AND THEIR TESTS SITE LAB

Ser No	Material	Test	Method of testing	Frequency of tests		Rate (in Rs)	Remarks
1	2	3	4	5		6	7
6	PCC solid block walling	Compressive strength	IS2185	8 Blocks out of 20		900	Sampling 20 blocks from consignment of every 5000 blocks or part thereof
7	Burnt clay roofing tiles (handmade) as per IS 2690 (Part-II) length 150-250 mm width 100-200 mm	Compressive strength	IS 3495 (Part-II)	6 tiles out of 12		180	Samples 12 tiles from each source of supply selected at random
8	Welding of steel work	Visual inspection test	IS 8280-1970 clause 7.1	100% by visual inspection		360	Specialized test, their method and frequency to be decided or consideration or thereof
9	Timber	Moisture content	IS-1708 1960	Maximum three samples from a lot of 4 Cum or 250 pieces of seasoned timber		120	
10	Timber panelled and glazed door wooden shutters (including factory made shutters)	(a) Dimensions sizes, workmanship and finish	IS-1003-1977 (Part-I)	Frequency of sampling from each lot shall be as under		180	
				Lot Size	Sample Size		
				20-50	5		
				51-100	8		
				101-150	13		
				151-300	20		
				301-500	32		
				501-1000	50		
				1001 and above	80		
11	Wood particle board (Medium density)	(a) Density	IS 2380 1977 (Part-III)	Three test specimens from each sample (size 150 x 75 mm)		60	Sample shall be as per IS 3087-1983 with moisture meter
		(b) Moisture content	IS 2380 1977 (Part-III)	Three test specimens from each sample (size 150 x 75 mm)		60	
		(c) Water absorption	IS 2380 1977 (Part-XVI)	Three test specimens from each sample (size 300 x 300 mm)		60	
		(d) Swelling due to surface absorption	IS 2380 1977 (Part-XVII)	Three test specimens from each sample (size 125 x 100 mm)		60	
		(e) Swelling in water	IS 2380 1977 (Part-XVII)	Three test specimens from each sample (size 200 x 100 mm)		60	

SPECIAL CONDITION (CONTD.....)

ANNEXURE-II

MATERIALS AND THEIR TESTS SITE LAB

Ser No	Material	Test	Method of testing	Frequency of tests	Rate (in Rs)	Remarks
1	2	3	4	5	6	7
1.	Coarse aggregate	Specific gravity	IS-2386 (Part-II)	One test for each source of supply	330	
		Organic impurities			275	
2.	Fine aggregate	Specific gravity	IS-2386 (Part-III)	One test for each source of supply	330	
		Organic impurities			275	
3	Cement	(a) Setting time	IS 402663 Reaffirms 1988	One for each consignment or as and when required	500	
		(b) Compressive strength	IS 402663 Reaffirms 1988	One for each consignment or as and when required	550	
		(c) Soundness	IS 402663 Reaffirms 1988	One for each consignment or as and when required	550	
		(d) Fineness	IS 402663 Reaffirms 1988	One for each consignment or as and when required	275	
4	(i) PCC block for walling (Hollow)	(a) Water absorption	IS 21861983 (Appx B)	3 block out of 20	330	Sample 20 blocks from consignment of every 5000 blocks or part thereof. These blocks to be checked for dimensions & weight
		(b) Density	IS 21851983	3 block out of 20	330	Sampling 20 blocks from consignment of 5000 blocks or part thereof. These blocks to be checked for dimensions & weight
	(ii) PCC solid block for wall	(a) Density	IS 21851983	3 block out of 20	330	be checked for dimensions & weight
		(b) Water absorption	IS 21851983	3 block out of 20	330	
5	Cement flooring tiles/terrazzo tiles	(a) Water absorption	IS 12371980 (Appx E)	6 tiles out of 18	330	Sample 18 tiles from each source of supply select at random
		(b) Wet transverse strength	IS 12371980 (Appx E)	6 tiles out of 18	660	
6	Brunt clay roofing (Hand made) as per IS 2690 (Part-II) break line length 150 to 250 mm width 100 to 200 mm thickness 27 to 50 mm	Water absorption	IS 3495 (Part-II)	6 tiles out of 12	216	Sample 12 tiles from each source of supply selected at random

SPECIAL CONDITION (CONTD.....)

ANNEXURE-II (Cont...)

MATERIALS AND THEIR TESTS SITE LAB

Ser No	Material	Test	Method of testing	Frequency of tests	Rate (in Rs)	Remarks
1	2	3	4	5	6	7
7.	Mangalore pattern roofing tiles	(a) Water absorption	IS 654 (Appx A)	6 tiles out of 32	180	Samples 32 tiles from each consignment of 3000 tiles or part thereof. These tiles shall be checked for dimension & weight
		(b) Breaking load	IS 654 (Appx A)	6 tiles out of 32	120	
8.	Timber	Specific gravity & weight	IS17081960	Maximum three sample from a lot of 4 Cum or 250 pieces of seasoned timber	120	
9	Water for construction purpose	(a) Test for acidity	IS 456 & 3025	Once at the stage of approval of source of water	500	Also refer clause 43 of IS-456 and its subsequent sub clause regarding suitability of water
		(b) Test for alkalinity	IS 456 & 3015	Once at the stage of approval of source of water	500	
		(c) Test for TDS content			500	
10	Wood particle board (Medium density) IS 3097-1085	(a) Modulus of rupture	IS 2380 of 1977 (Part-IV)	Three test specimens as per IS-2380-1977)	90	Sample shall be as per IS 3087-83 class with moisture meter
		(b) Moisture content	IS 2380 of 1977 (Part-III)	Three test specimens from each sample (size 150 x 75 mm)	60	Sample shall be as per IS 3087-83 class with moisture meter
11	Reinforcement steel	(a) Physical test upto 16 mm dia (Normal mass, tensile elongation, bend & rebend)			2500	
		(b) More than 16 mm dia			2750	

SPECIAL CONDITION (CONTD.....)

ANNEXURE-III

MATERIALS AND THEIR TESTS (NATIONAL TEST)

HOUSE/ SEMT WING/ ENGG COLLEGE

Ser No	Material	Test	Method of testing	Frequency of tests	Rate (in Rs)	Remarks
1	2	3	4	5	6	7
1.	Coarse aggregate	Organic impurities	IS-2386 (Part-II)	One test for each source of supply	120	
2.	Fine aggregate	Test for organic impurities	IS-2386 (Part-II)	One test for each source of supply	180	
3.	Cement flooring tiles/ terrazzo tiles	Resistance to wear	IS 1237-1980 (Appx F)	6 tiles out of 18	1000	Sample 18 tiles from each source of material selected at random
4.	Water for construction purpose	Test for TDS content	IS 456 & 3025	Once at the stage of approval of source of water	300	Also refer clause 43 of IS-456 and sub clause regarding suitability of water
5	Plywood (IS 303-1989)	Moisture Content	IS 1734-1983 (Part-6)	Six test pieces cut from each of the boards selected as per 1 shall be subject to tests	240	Sampling shall be as per IS 7533 (1975) tables
6	Wood particle board (medium density) IS 30971985	Screw withdrawal strength	IS 2309 (Part-14)	Three test specimens as per IS 2380	120	
7	Timber panelled and glazed door wooden shutters (including factory made shutters)	Strength test			180	
		(i) Slamming	IS 1303-1990	From each lot 5% of the factory made shutters shall be tested for strength tests		
		(ii) Impact indentation	IS 1303-1990	From each lot 5% of the factory made shutters shall be tested for strength tests		
		(iii) Shock resistance	IS 1303-1990	From each lot 5% of the factory made shutters shall be tested for strength tests		
		(iv) Edge loading	IS 1303-1990	From each lot 5% of the factory made shutters shall be tested for strength tests		

PARTICULAR SPECIFICATIONS**1.0 GENERAL.**

- 1.1 Work under this contract shall be carried out as detailed in schedule 'A' and in accordance with particular specification drawings, general specifications, other provisions given in MES schedule and General Summary.
- 1.2 Term "General Specifications" referred to in this documents as well as referred to in IAFW-2249 (General conditions of Contracts) shall be in the specifications contained in the MES Schedule.
- 1.3 General Rules, specifications special conditions and all preambles in the MES schedule shall be deemed to be applicable to the work under this contract unless stated otherwise in these documents in which case the provisions in these documents shall take precedence over the aforesaid provisions in the MES Schedule. All references to MES Schedule (Standard Schedule of Rates) Part-II 2010 and in the specifications relate to MES Standard Schedule of Rates Part-I-Specifications 2009 unless otherwise mentioned. Reference to only some paragraphs of MES Schedule has been made in the particular specifications but other paragraphs and provisions as applicable are also to be followed for all items of Schedule 'A' even though not particularly mentioned here in after.
- 1.4 Rates quoted by the tenderer shall be deemed to include for any minor details/ items of work and/ or construction which are obviously and fairly intended and which may not have been included in these documents out which are essential for the execution and entire completion of work.
- 1.5 Where specifications for any items of work are not given in MES Schedule or in the Particular Specifications, specifications given in relevant Indian Standard code of practice shall be followed.

2 SCOPE OF WORK.

- 2.1 The tender (contract when accepted) includes for the full, final and entire completion of all the work described in schedule 'A' as specified hereinafter and or shown in the drawings forming part of this tender, general specifications of MES Standard Schedule of Rates and all as directed by Engineer-in-Charge.
 - 2.2 The exact location of items of Schedule 'A' shall be shown by the Engineer-in-Charge at site before commencement of work.
 - 2.3 Probable sources of local materials are given in Appendix 'C' to the particular specifications. However, the samples shall be got approved by the contractor from the GE before bulk procurement of the material. The contractor may bring material conforming to the specifications from other sources without price adjustment. If the contractor proposes to use materials from such other sources sample thereof shall be submitted to the GE and the same shall be got approved in writing from the GE before procurement in bulk and incorporation in the work.
 - 2.4 In appendices/ Annexure to particular specifications, list of manufactures of items have been given. Contractor shall obtain these items from one of the approved manufacturers only. However, it will not absolve the contractor from ensuring that the products supplied are conforming to the relevant IS in all respects before procuring the same for approval by the GE and before procuring bulk product for incorporation in work.
- 3 **LOCAL MATERIALS.** Irrespective of actual distance involved, local materials such as stones, aggregates, sand, road metals etc shall conform to or superior to the specifications given here in after and to the samples kept in the office of GE. The tenderers are advised to inspect these samples. The tenderers shall be deemed to have inspected the samples and have full knowledge thereof whether they inspect them or not before quoting the tender.

PARTICULAR SPECIFICATIONS (CONTD...)

- 4 **PROBABLE SOURCES OF MATERIALS.** Probable sources of local materials are given below. However, the samples shall be got approved from GE before bulk procurement of the material. The contractor may bring material conforming to the specifications from other sources without price adjustment. If the contractor proposes to use materials from such other sources, sample thereof shall be submitted to the GE and the same shall be got approved in writing from the GE before procurement in bulk and incorporation in the work:-

SOURCES OF MATERIALS

Ser No	Name of Materials	Sources of materials for works at station*
1	Coarse aggregate for all RCC and PCC works	Best locally available
2	Sand for mortar in masonry, Concrete, Plastering	Best locally available
3	Stone for soling Pitching, hardcore and WBM	Best locally available

* Sources indicated are for guidance only.

NOTES:-

(a) Sources of materials shall be as above or in the vicinity thereof. The tenderer shall ascertain the actual position/ exact location of source before submitting his tender and no additional payment shall be made on account of misunderstanding of its distance from site of works. Contractor may bring material conforming to contract specifications from other sources without any price adjustment after obtaining written approval of GE.

5 **SAMPLES AND MATERIAL.**

- 5.1 In case specification of any material needed for incorporation in work is not contained in any of the contract documents, the specifications of such materials proposed to be incorporated in work shall be got approved in writing from the GE before their incorporation in the work.
- 5.2 The contractor at his own discretion if intends to provide materials items conforming to IS specifications and bearing IS certification mark from any other manufacturers other than those listed in the tender, such material shall be allowed to be incorporated with prior approval of GE and without any price adjustment, However, this option shall be applicable only if none of the manufacturer listed in the tender emboss IS certification mark on materials/ articles.
- 5.3 The contractor and the executives will ensure that the materials incorporated in work are identical with the approved sample.

6 **CEMENT.**

- 6.1.1.Cement required for the work under the contract shall be procured, supplied and incorporated in the work by the contractor under his own arrangement. Cement shall be of tested quality and shall comply with the requirements mentioned in the SSR, IS Specifications and particular specifications given hereinafter.

6.1.2 **TYPE OF CEMENT.**

Cement shall be Ordinary Portland Cement (OPC) Grade 43 (confirming to IS 8112-1989 (Latest revision) or Portland Pozzolana Cement (PPC) conforming to IS-1489-1991.

- 6.1.2.1The checks and procedures for procurement and testing as specified hereinafter shall be followed before the cement supplied by the contractor is accepted and is approved for incorporation in the works.
- 6.1.2.2(a) Where estimated requirement of cement is less than 1200 Bags, contractor can procure cement from the authorized distributors/ dealers of the approved firms. However, contractor will have to submit test certificate for the batch, issued by the manufacturer.
- (b) In the above case, the independent testing of cement will be at the option/ discretion of the GE, if the manufacturer’s test certificates are produced by the contractor. If contractor does not produce the manufacturer’s test certificate, the testing of cement by GE will be mandatory. However, the testing shall be restricted to IS -4031 (Methods of physical test for hydraulic cement) only.

PARTICULAR SPECIFICATIONS (CONTD...)**6.1.3 PROCUREMENT.**

Cement shall be procured from the manufacturers/ main producers as mentioned in Appx 'B'. Also refer clause 4.1.2.2 here-in-before.

6.1.3.1 The contractor shall furnish the particulars of the manufacturers of cement along with the date of manufacture to the GE for every lot of cement separately. The document in support of the purchases of cement shall be verified by the site staff and GE. The cement so brought shall be fresh and in no case older than 60 days from the date of manufacture. Before placing the order for cement by the contractor, he shall obtain written approval from the GE regarding name of manufacturer, quantity of cement etc. Cement shall be procured for requirement of not more than two months at a time. The cement shall be consumed in the work within three months after receipt. Cement shall conform to the requirements of IS specification and each bag of cement shall bear relevant ISI mark. The weight of each consignment shall be verified by the GE and recorded. The content of cement shall be checked at random to verify the actual weight of cement per bag.

6.1.4 USE OF PPC. For using PPC, the following requirements should be met: -

- (a) PPC should meet the strength criteria of 43 Grade OPC as laid down in IS-8112-1989.
- (b) In cold climate regions, where temperature is lower than 15° C, only OPC shall be used.
- (c) In underground sump, overhead reservoir, concrete pavement (PQC) and building with span 10 metre and more, only OPC shall be used.
- (d) Mixing of OPC & PPC shall not be allowed in a work. However, with strict control of the ground executives, different buildings can have different types of cement.
- (e) While procuring PPC the following requirements are to be ensured and certificate to the effect is to be obtained by the contractor for each batch from the manufacturer and the same shall be submitted to the GE for approval to procure PPC:-
 - (i) The quality of fly ash is strictly as per IS 1489 (Part I) – 2002.
 - (ii) Fly ash is inter-ground with clinker not mixed with clinker.
 - (iii) Dry fly ash is transported in closed containers and stored in silos. Only pneumatic pumping should be used.
 - (iv) The fly ash has been received from thermal power plants using high temperature combustion above 1000°C should be issued.
 - (v) The fly ash content in PPC does not exceed 25% to ensure consistency.
- (f) Contractor may at his discretion use "OPC" or "PPC" in the work without any extra cost to the department.

6.1.5 TESTING OF CEMENT.

(a) The manufacturer/ main producer shall 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 giving the result of each physical test as applicable in accordance with relevant IS provisions and the chemical composition of the cement or authenticated copy thereof, duly signed by the manufacturer with each consignment.

(b) The Engineer-in-Charge shall record these details in the Cement supply and Acceptance Register given here in below, after due verification:-

Signature of Contractor**For Accepting Officer**

PARTICULAR SPECIFICATIONS (CONTD...)

CEMENT SUPPLY & ACCEPTANCE REGISTER

1. CA No & Name of Work
2. Control No/ Consignment No.*
3. Name of Manufacturer/ Brand Name/ Gde of cement (a) Manufacturer _____
(b) Brand _____ (c) Grade _____
4. Qty of cement & Lot No/ Week No. (in Bags): (a) Qty _____ (b) Lot No./Week No. _____
5. Manufacturer's test certificates No. _____
6. Random Test Details:-
(a) Physical Test Report from _____ vide their letter No _____ (Name of approved lab/ Engg College)
(b) Chemical test report from _____ vide their letter No. _____ (Name of approved lab/ College)
7. Details of Physical & Chemical properties :-

	Physical Requirements (As per IS-4031)								Chemical Requirements (As per IS-4032)									
	Specific Surfaces area	Soundness by Le Chatelier	Soundness by Autoclave	Initial setting time	Final setting time	Compressive Strengths (Mpa)			Specific gravity	Standard consistency (%)	Initial setting time (Ratio)	Alumina Ratio	Insoluble Residue (%)	Magnesium (%)	Sulphuric Anhydride (%)	Loss on ignition (%)	Alkalies (%)	Chlorides (%)
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
As per relevant IS																		
As per manufacturers test																		
As per random test																		

Remarks with Signature

Accepted/ Rejected

Contractor Junior Engineer Engineer-in-Charge

GE

Remarks of BOO/ Inspecting Officer/ CWE

* To be allotted serially by the GE consignment wise

Signature of Contractor

For Accepting Officer

PARTICULAR SPECIFICATIONS (CONTD...)

(c) The GE shall also organize independent physical testing of random samples of cement drawn from each lot if sample fails in 7 days compressive strength from the NATIONAL TEST HOUSE, SEMT WING CME, REGIONAL RESEARCH LABORATORIES, GOVERNMENT APPROVED LABORATORIES, ZONAL LABORATORIES as per IS 3535-1986 (Method of sampling hydraulic cement) IS-4031 (Method of physical test for hydraulic cements) and IS-4032-1985 (Method of chemical analysis of hydraulic cement) and record the results in the relevant portion of Cement supply and Acceptance Register. In order to undertake departmental testing requisite facilities along with materials, conveyance etc shall be organized by the contractor without any extra cost to the Govt. The random samples of cement to be tested shall be drawn as per Quality Assurance manual. The contractor shall be required to set up adequate testing facilities at site to the entire satisfaction of Garrison Engineer for conducting setting time test and compressive strength test as per IS codes referred to hereinbefore for the samples collected from the lot brought at site. These test shall be carried out within 7 days of receipt of cement at site. The tests can alternatively be carried out at the Zonal laboratory, or any other recognized Government laboratory so designated by GE. The contractor shall be allowed to use the cement only after satisfactory compressive strength of 7 days. 7 days strength will be replied up on to accept the lot of cement. 28 days compressive strength test will be the final criteria to accept/ reject the lot.

(d) The cost of materials for testing, samples, conveyance etc shall be borne by the contractor irrespective of the test result. However, the cost of testing charges shall be governed in terms of condition 10 (A) of IAFW-2249. In case as per the result of independent test, the cement is found to be not of requisite standard despite manufacturer's test certificate, the contractor shall remove the total consignment from the site within 24 hours at his own cost after written rejection order of consignment by the GE.

(e) The record of random samples selected by the GE for testing shall be properly maintained in the cement testing register giving cross reference to relevant consignment of cement and quantity received etc.

6.1.6 STORAGE/ ACCOUNTING/ PRESERVATION OF CEMENT.

6.1.6.1 Cement shall be stored in covered godown over dry platform at least 20cm high in such a manner as to prevent deterioration due to moisture or intrusion of foreign matter. In case of storeroom, the stack should be at least 20 cm away from floors and walls. The stacking of cement shall be done as specified in relevant IS. The storage, accounting and preservation of cement supplied by the contractor shall be done as per standard engineer practice till the same is incorporated in the work and the cost of the same shall be deemed to be included in the unit rate/ amount quoted by the tenderer. The EIC shall inspect once a day to verify that cement lying at site is stored, accounted, preserved and maintained as per the norms. The cement shall be stored so as to differentiate each tested and untested consignment separately with distinct identification. If the GE is not satisfied with the storage/ preservation of cement, he may order for any test(s) of cement as applicable for that consignment to ensure its conformity to the quality mentioned in the manufacturer's test certificate. The contractor shall bear the cost of necessary testing (s) in this regard and no claim whatsoever shall be entertained.

6.1.6.2 Stacking of cement shall be done as per relevant IS and as under:-

(a) Each cement consignment shall be stacked separately and removal shall be made on the basis of 'First in First out'.

(b) Adequate top cover will be provided.

(c) Stacks in no case shall be higher than 10 bags. The maximum width of each stack shall be 3.00m. If the stack is to be more than 7 or 8 bags high, the bags shall be arranged in header and stretcher fashion, i.e. alternatively lengthwise and crosswise so as to tie the piles together and avoid danger of toppling over.

(d) Adequate space shall be kept between two stacks.

Signature of Contractor**For Accepting Officer**

PARTICULAR SPECIFICATIONS (CONTD...)

- 6.1.6.3 Cement godown shall be provided with two locks on each door. The key of one lock of each door shall remain with the EIC or his representative and that of the other lock with the contractor's authorized agent at site or works so that cement is removed from the godown only according to daily requirement with the knowledge of both the parties. During the period of storage, if any cement bag(s) found to be in damaged condition due to whatsoever reason the same shall be removed from the cement godown on written orders of the GE and suitable replacement for the cement bags so removed shall be made and no claim whatsoever shall be admissible on this account.
- 6.1.6.4 Cement shall be removed from the store only according to daily requirement with the knowledge of both the parties and daily consumption of cement shall be recorded in cement consumption register which shall be signed by Engineer-in-Charge and the contractor. Cement constants given in Appendix 'A' to E-in-C's Branch letter No 19280/E8 dated 03 May 1976 shall form the basis of consumption of cement for various items of works unless specifically indicated otherwise.
- 6.1.6.5 In case the consumption of cement as per cement consumption register is found to be more than the estimated quantity of cement due to whatsoever reason, the contractor shall not have any claim whatsoever for such excess consumption of cement.
- 6.1.7 **SCHEDULE OF SUPPLY.** The contractor shall procure the cement timely as required in accordance with CPM chart agreed between GE and the Contractor. The contractor will forfeit his right to demand extension of time if the supply of cement got delayed due to his failure in placing order in time to the manufacturer.
- 6.1.8 **DOCUMENTATION.** The contractor shall submit original vouchers from the main producer/ manufacturer 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 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 GE duly authenticated and with cross reference to the Control Number recorded in the Cement Supply and Acceptance Register. The Cement Supply and Acceptance Register will be signed by JE (Civil), Engineer-in-Charge, GE and the contractor. The Accepting Officer may order Board of Officers for random check of cement and verification of connected documents. Identification of cement bags by the manufacturer shall be as per relevant BIS codes.
- 6.1.9 **MEASUREMENT AND PAYMENT OF CEMENT.**
- 6.1.9.1 Random sample of 5 bags per 100 bags shall be got weighed by Engineer-in-Charge in presence of representative of contractor from each consignment to arrive at average weight per bag for calculating total quantity of cement brought at site for incorporation in the work. All arrangement for weighing of cement bags including labour etc shall be provided by the contractor at his own cost.
- 6.1.9.2 The quantity of cement arrived at as aforesaid shall be considered for payment as applicable in accordance with IAFW-2249, General Conditions of Contracts.
- 6.1.9.3 The entire quantity of cement shall also be suitably recorded in the Measurement Book 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.
- 6.1.9.4 The payment shall only be allowed after production of original purchase vouchers, certified copies of test certificates from manufacturer for each consignment and result of testing carried out in laboratory on receipt of cement (7 day compressive test) are found satisfactory after testing as specified here in before. Cement shall be paid as material lying at site as per Condition 64 of IAFW-2249. Rate of cement given in SSR shall be applicable for cement irrespective of grade of cement specified for use in the work.

PARTICULAR SPECIFICATIONS (CONTD...)**7.0 CONCRETE**

- 7.1 (a) **CEMENT.** Refer clause 4.1 hereinbefore.
- (b) **AGGREGATE.** Coarse aggregate for all cement concrete work, unless otherwise specified, shall be crushed or broken graded hard stone coarse aggregate and fine aggregate (sand) shall be from the source as mentioned in Appendix 'C' and approved by the GE and shall conform to the sample kept in the office of the GE.
- (c) **WATER.** Water used for constructions purpose shall have PH value between 6 & 9 and shall meet all requirements of IS and SSR.

7.2 CEMENT CONCRETE

- (a) Types of cement concrete required for works in various situations shall be as specified in Schedule 'A'.

7.3 MIXING AND COMPACTION OF CEMENT CONCRETE.

- (a) Mixing and compaction of cement concrete will be as per clause 9.3 and 12.3 of IS-456-2000. The mixer will be mechanical mixer complying with IS-1971.
- (b) The mixer must also have a water container with a water meter for adding measured quantity of water in each batch.
- (c) All RCC work shall be consolidated with approved mechanical vibrators except where not practicable in opinion of Engineer-in-Charge. RCC in roof slab shall be compacted with plate/ surface vibrator only. Precast/ cast in situ plain cement concrete may however be transported, deposited, rammed and consolidated by tamping and rodding as specified in MES Schedule.

7.4 IMPORTANT REQUIREMENT OF REINFORCED CEMENT CONCRETE/ PLAIN CEMENT CONCRETE.

- 7.4.1 (a) All the materials, workmanship, inspection and testing for cement concrete of Grades mentioned above shall be as per the requirement given in IS-456, IS 10262 and SP-23.
- (b) The rates of various grades of cement concrete (design mix) quoted by the tenderer are deemed to be based on mix designed as per IS 456 for applicable Parameters required for design of the particular grade of concrete mix including applicable environmental exposure conditions.
- 7.4.2 All cement concrete, both plain and reinforced shall be mixed in mechanical mixer of approved type in accordance with IS 456:2000 (Clause 10.3).
- 7.4.3 All concrete for RCC work shall be consolidated/ compacted by mechanical vibrators of approved type. Precast/ cast-in-situ, plain cement concrete may however, be transported, deposited rammed and consolidated by tamping and rodding as specified in MES Schedule Part-I.
- 7.4.4 All RCC beams resting on masonry work shall be provided with PCC bed blocks cast in PCC 1:2:4 type B1. Bed blocks shall be twice the width of beams in length covering the entire thickness and of depth 150mm, unless otherwise shown on drawings.
- 7.4.5 All flat surfaces exposed to weather shall be given adequate slope for smooth run of rain water all as shown on drawing.

PARTICULAR SPECIFICATIONS (CONTD...)**7.5 BATCHING.**

7.5.1 The mixing of cement & aggregate for cement concrete for all grades and type of RCC work shall be done by weigh batching.

7.5.2 The batching shall be as per clause 10.2 of IS 456:2000 and clause No.4.11.3 (excluding provision vide sub clause 4.11.3.1) of MES Schedule part I.

8.0 SOLING.

8.1 Soling shall be done all as described in Schedule 'A' and as specified in Para 20.A.20.1 of SSR Part-I.

9.0 BAJRI PATH.

9.1 Bajari Path shall be done all as described in Schedule 'A' and as specified in Para 20.A.31.1 of SSR Part-I.

10.0 **DEMOLITION AND DISMANTLING.** Demolition and dismantling shall be carried out carefully as directed by Engineer-in-Charge without damaging the portions which are to be kept in tact. In case the portions, which are to be kept in tact and other structures nearby are damaged they shall be made good at no extra cost to the Govt. Un-serviceable materials, if any, shall be removed off the site as directed by Engineer-in-Charge and entire surface to be cleaned, filled and levelled to match the adjacent/ surrounding ground level.

11.0 THERMOPLASTIC MATERIAL.

11.1 **GENERAL.** The thermoplastic material shall be homogeneously composted of aggregate, pigment, resins & glass beads reflectorising.

11.2 **REQUIREMENT. COMPOSITION.** The pigment glass beads and aggregate shall be uniformly dispersed in the resin. The material shall be free from all skins, dirt & foreign objects & shall comply with requirement indicate in Table 800.3 of MOST specification.

11.3 **APPLICATION.** Before application, the surface should be thoroughly dry free from dust, moisture, grease, oil, loose particles or earliest coating. All road surface repair should be carried out before applying the Thermoplastic materials. The compound is preheated to around 180 degree (± 10 degree C) & transferred into machines. It reaches the surface by gravity and glass beads can be super imposed through a dispenser or manual spray for reflectivity. Alternatively, the compound can be screeded/ extruded out from larger motorized machine as well. Normal application thickness is 2.5mm as per M.O.S.T (INDIA) spec, the use of suitable primer is recommended when Road marking compound is to be applied on concrete surfaces.

11.4 **APPLICATION PRECAUTION.** Before application the surface should be free from dust, oil spillage, grease, loose particles, moisture cracks/unfilled space, excessive bleeding of Bitumen. Previous cold paint marking must be removed by wire brushes before application. At the time of application road should be closed for at least 30min, for traffic passing. For better result use pre Heater to melt the compound instead of directly heating the material in a Trolley machine. Frequently check that the Glass beads dispenser sprinkles required quantity uniformly. Thermoplastic can be applied over both types of surfaces like asphalt bituminous and concrete surface. For concrete surface recommended primer should be used.

12.0 SOLING.

12.1 Soling shall be done all as described in Schedule 'A' and as specified in Para 20.A.20.1 of SSR Part-I.

PARTICULAR SPECIFICATIONS (CONTD...)

- 13.0 **BAJRI PATH.**
- 13.1 Bajari Path shall be done all as described in Schedule ‘A’ and as specified in Para 20.A.31.1 of SSR Part-I.
- 14.0 **WATER BOUND MACADAM (WBM).**
- 14.1 WBM shall be done all as described in Schedule ‘A’ and as specified in Para 20.A.21 of SSR Part-I.
- 14.2 **BITUMEN.** Bitumen/ binder for priming coat and Semi Dense Asphaltic Concrete (SDAC) shall be bitumen of grade (VG 10) and VG-30 respectively conforming to IS:73-2006 and shall be contractor’s supply. The contractor shall produce original paid vouchers and test certificated of bitumen before claiming and payment in RAR/ Final bill. Bitumen shall be obtained from any one of the following manufacturer or from their authorized dealers/ stockiest as approved by GE.

(a) Indian Oil Corporation Ltd.
(b) Bharat Petroleum.
(c) Hindustan Petroleum Corporation Ltd.
- 15.0 **TACK COAT.** Bitumen used for tack coat shall be paving bitumen. The workmanship for tack coat shall be all as specified in Clause No.20-A-24.2, 20-A-24.3 of SSR Part I (1991) and all as described on Sch ‘A’.
- 16.0 **REPAIRS TO POT HOLES.** Repairs to pot holes shall be carried out as specified in Schedule ‘A’ and clause No. 20.A.29.2 of SSR Part I and as directed by Engineer-in-Charge. Water bound macadam for filling in pot holes shall be as specified.

The measurement of pot holes shall be recorded in measurement book got signed by Engineer-in-Charge and the contractor before laying premix carpet. Certain percentage of measurement shall also be initialed by GE as a token of site work.
- 17.0 **SEMI DENSE ASPHALTIC CONCRETE (SDAC).**
- 17.1 **MATERIALS.**
- 17.1.1 **BITUMEN.** Bitumen/ binder for priming coat and Semi-dense asphaltic concrete (SDAC) shall be bitumen of grade VG 10 and VG-30 respectively conforming to IS:73-2006 and shall be contractor’s supply. The contractor shall produce original paid vouchers and test certificate of bitumen before claiming and payment in RAR/ Final bill. Bitumen shall be obtained from any one of the following manufacturer or from their authorized dealers/ stockiest as approved by GE.

(a) Indian Oil Corporation Ltd.
(b) Bharat Petroleum.
(c) Hindustan Petroleum Corporation Ltd.
- 17.1.2 **COARSE AGGREGATES.** The coarse aggregates shall be as specified in Clause 20.B.2.5.1 of SSR Part-I, meeting with physical requirement as per table 1. The aggregate shall be tested at frequency & tests as per table - 1 given below.

TABLE 1. PHYSICAL REQUIREMENTS FOR COARSE AGGREAGATE FOR SEMI DENSE BITUMINOUS CONCRETE PAVEMENT LAYERS.

Srl No	Property	Test	Specification	Frequency
1	Sieve Analysis	IS-2386 Part-I	-	1 for 100 cum
2	Particle shape	Flakiness Index IS-2386 part-I	Max 30%	1 for 100 cum
3	Strength	Aggregate impart value (IS-2386 part-IV)	Max 27%	1 for 100 cum
4	Water Absorption	Water absorption IS-2386 part-III	Max 2%	1 for 100 cum
5.	Soundness	Sodium suphate – Magnesium sulphate (IS-2386-part-5).	Max 12% Max 18%	1 for every 250 cum

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- 17.1.3 **FINE AGGREGATES.** The fine aggregates shall be all as specified in Clause 20.B.2.5.3 of SSR Part-I.
- 17.1.4 **FILLER.** Filler shall be hydrated lime or cement and shall be as specified in Clause 20.B.2.5.4 of SSR part-I.
- 17.1.5 **AGGREGATE GRADING AND BINDER CONTENT.** When tested in accordance with IS:2386 Part I (Wet sieving method), the combined grading of the coarse and fine aggregates and added filler shall fall within the limits shown in Table 2 herein below for grading 2 as specified.

TABLE -2. COMPOSITION OF SEMI DENSE BITUMINOUS CONCRETE PAVEMENT LAYERS

Grading	2
Nominal aggregate size	10 mm
Layer Thickness	As per Sch ‘A’
IS Sieve (mm) *	Cumulative % by weight of total aggregate passing
45	-
37.5	-
26.5	-
19	-
13.2	100
9.5	90-100
4.75	35-51
2.36	24-39
1.18	15-30
0.6	-
0.3	9-19
0.15	-
0.075	3-8
Bitumen content % by mass of total mix **	Minimum 5.5
Bitumen grade (pen)	80/100(for Priming) and 60/70 (for SDAC)

Note : * (i) The combined aggregate grading shall not vary from the low limit on one sieve to the high limit on the adjacent sieve.

 **(ii) Determined by the Marshall method.

17.2 **MIX DESIGN.**

- 17.2.1 **REQUIREMENTS FOR THE MIXTURE.** Apart from conformity with the grading and quality requirements for individual ingredients the mixture shall meet the requirements set out in Table 3 as follows.

Table 3 Mix design criteria for Bituminous Macadam/ Semi Dense Asphaltic Concrete.

The design requirement shall be as under:-

SI No	Properties	Bitumi-nous Maca-dam	Dense Bituminous Macadam/ Semi dense Asphaltic Concrete	Asphaltic Concrete	Method of Test
(a)	Marshall stability (75 blows) at 60 ^o C minimum	545	1050	1200	ASTMD: 1559-1979
(b)	Marshall flow at 60 ^o C, mm	2.0 - 4.0	2.0 - 4.0	2.5 - 4.0	ASTMD: 1559-1979

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SI No	Properties	Bitumi-nous Maca-dam	Dense Bituminous Macadam/ Semi dense Asphaltic Concrete	Asphaltic Concrete	Method of Test
(c)	Marshall quotation, Kg/mm	-	250 - 500	250 - 500	Stability + Flow
(d)	Voids in compacted mix, %	10 -15	3.0 - 5.0	3.0 - 5.0	-
(e)	Requirement of retained stability after 24 hours in water at 6 ⁰ C % minimum	-	90	90	ASTMD: 1075-1979
(f)	Binder content percent by weight of total mix	3.5 – 4.5	4.5 – 5.5	5.0 – 6.5	-

17.2.2 **JOB MIX FORMULA.** The procedure for formulating the job mix formula shall be generally as specified below and the results of tests enumerated in Table 3 as obtained by the contractor. The cost of design mix shall be borne by contractor. The design mix shall be approved by GE.

- (a) Source and location of all materials.
- (b) Proportions of all materials expressed as follows where each is applicable.

(i) Binder type and percentage by weight of total mixture.

(ii) Coarse aggregate/ Fine aggregate/ Mineral filler as percentage by weight of total aggregate including mineral filler.
- (c) A Single definite percentage passing each sieve for the mixed aggregate.
- (d) The individual grading of the individual aggregate fractions, and the proportion of each in the combined grading.
- (e) The results of tests enumerated in Table-4 as obtained by the Contractor.
- (f) Where the mixer is a batch mixer, the individual weights of each type of aggregate and binder per batch.
- (g) Test results of physical characteristics of aggregate to be used.
- (h) Mixing temperature and compacting temperature.

While establishing the job mix formula, the Contractor shall ensure that it is based on a correct and truly representative sample of the materials that will actually be used in the work and that the mixture and its different ingredients satisfy the physical and strength requirements of these Specifications.

Approval of the job mix formula shall be based on independent testing by the GE for which samples of all ingredients of the mix shall be furnished by the Contractor as required by the GE. The approved job mix formula shall remain effective unless and until a revised Job Mix Formula is approved. Should a change in the source of materials be proposed, a new job mix formula shall be forwarded to the GE for approval before the placing of the material.

TABLE-4 REQUIREMENTS FOR DENSE GRADED BITUMINOUS MACADAM

Minimum stability (KN at 60 degree Salacious	9.0
Minimum flow (mm)	2
Maximum flow (mm)	4
Compaction level (Number of blows)	75 blows on each of the two faces of the specimen
Per cent air voids	3-6
Per cent voids in mineral aggregate (VMA)	See Table-5 below
Per cent voids filled with bitumen (VFB)	65-75

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TABLE -5 MINIMUM PER CENT VOIDS IN MINERAL AGGREGATE (VMA)

Nominal Maximum Particle Size' (mm)	Minimum VMA, Per cent Related to Design Air Voids, Per cent		
	3.0	4.0	5.0
9.5	14.0	15.0	16.0
12.5	13.0	14.0	15.0
19.0	12.0	13.0	14.0
25.00	11.0	12.0	13.0
37.50	10.00	11.0	12.0

- Notes.**1. The nominal maximum particle size is one size large than the first sieve to retain more than 10 percent.
2. Interpolate minimum voids in the mineral aggregate (VMA) for design air voids values between those listed.

17.2.3 **RECOMMENDED INSTITUTE FOR DESIGN MIX.** The contractor is required to get his design mix for semi dense asphaltic concrete prepared from the following institutions under his own arrangements and cost. The unit rate quoted shall be deemed to be inclusive of cost of Design Mix.

- (a) Govt approved laboratories (b) Government Engg Colleges
- (c) SEMT wing of CME Pune (d) GERI (e) AERI
- (f) Any Govt approved Lab and NABL accredited Lab.

17.2.3.1 After obtaining the design mix the same shall be checked/ tested in the field laboratory. if the same found not meeting the specified criteria, the same shall be got redesigned and again checked and tested. The cost of such redesigning shall be borne by the contractor.

17.2.3.2 The percentage content of bitumen specified in descriptions of item in Schedule 'A' is for guidance only. Actual percentage of bitumen by weight of mix to be followed in the work shall be as per the approved job mix formula. The aggregate and it's source shall be first got approved by GE before forwarding the same for necessary design of job mix formula. A particular job mix formula will be applicable for only that particular source of material. The percentage of bitumen and density of mix shall be got checked by GE regularly during the execution to ascertain their conformity with the approved job mix formula.

17.3 **BINDER CONTENT.** The binder content shall be optimized to achieve the requirements of the mixture set out in Table 3. The Marshall method for determining the optimum binder content shall be adopted as described in the Asphalt Institute Manual MS-2, replacing the aggregates retained on the 26.5 mm sieve and retained on the 22.4 mm sieve, as approved by GE.

17.4 **CONSTRUCTION OPERATIONS.**

17.4.1 **WEATHER AND SEASONAL LIMITATIONS.** Laying shall be suspended while free-standing water is present on the surface to be covered, or during rain, fog and dust storms, After rain, the bituminous surface, prime or tack coat, shall be blown off with a high pressure air jet to remove excess moisture, or the surface left to dry before laying shall start, Laying of bituminous mixtures shall not be carried out when the air temperature at the surface on which it is to be laid is below 10 degree Celsius or when the wind speed at any temperature exceeds 40 km/h at 2 m height unless specifically approved by the GE.

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- 17.4.2 **PREPARATION OF BASE.** The surface on which the Semi Dense Bituminous materials is to be laid shall be prepared in accordance with Clause 20.B-4.1 of SSR part-I using mechanical brooms & compressed air and as directed by the Engineer-in-Charge. The surface shall be thoroughly swept clean by mechanical broom and dust removed by compressed air, In locations where a mechanical broom cannot access, other approved methods shall be used as directed by the Engineer-in-charge.
- 17.4.3 **TACK COAT.** Tack coat shall be applied in accordance with the Clause 20-B.3-2 of SSR part-I.
- 17.4.4 **PREPARATION OF MIX.** Mix shall be procured in hot mix plant as per clause 20.B.4.4 of SSR Part-I. It is mandatory to use automatic mixing plant, mechanical paver & compactors.
- 17.4.5. **TRANSPORTATION OF MIX.** Bituminous materials shall be transported in clean insulated vehicles, and unless otherwise agreed by the GE, shall be covered while in transit or awaiting tipping. Subject to the approval of the GE, a thin coating of diesel or lubricating oil may be applied to the interior of the vehicle to prevent sticking and to facilitate discharge of the material. The general provision of Clause 20.B.4.5 of SSR Part-I shall be apply.
- 17.4.6 **SPREADING.** The general provisions of Clause 20.B-4-6 of SSR part-I shall apply.
- 17.4.7 **ROLLING.** The general provisions of Clause 20-B-4.7 of SSR part-I shall apply.
- 17.5 **OPENING TO TRAFFIC.** The newly laid surface shall not be open to traffic for at least 24 hours after laying and the completion of compaction.
- 17.6 **QUALITY CONTROL.** The quality control shall be ensured by GE as per clause 20-B 4.9 of SSR Part-I.
- 17.6.1 Adequate quality control at every stage of work is essential and the contractor shall establish a Field Laboratory or got it tested at Hot mix plant laboratory which shall be suitably staffed and headed by a Material Engineer with sufficient experience in conducting day-to-day quality control tests as enumerated in succeeding clauses. The laboratory in-charge shall work under the direction of GE and Engineer-in-Charge and test are to be conducted as per their approval. This shall be in addition to any other tests which will be required by the GE and Engineer-in-Charge through approved laboratory/ Test House. Expenses on all tests etc shall be borne by the contractor.
- 17.6.2 Quality control tests on the materials, the method and frequency shall be as indicated under Table 1 and others as listed below.

SI No	Test	Test Method	Frequency
1	2	3	4
1.	Sieve test for filler	IS-2386 (Part - III)	For every 25 cum of fillers.
2.	Bulk Density	IS-2386 (Part - III)	One test minimum for each source of supply or whenever the material is having changed texture, weathered or visual impurities.
3.	Mix Grading	IS-2386	One set of test on individual consignment & mixed aggregate for each 100 tonnes of mix subject to a min of two tests per plant per day.
4.	Control of temp of the binder in boiler, aggregates in drier & mix at the time of paving & rolling.	-	Periodic check, regularly the difference of temp between aggregates and binder not to exceed 14' C. The aggregate shall not be heated to more than 163' C. The temp of the mix shall not exceed 160 deg and shall not be less than 120 at the time of laying. Rolling operation shall be completed before mix temp falls below 100 deg C.

PARTICULAR SPECIFICATIONS (CONTD...)

SI No	Test	Test Method	Frequency
5.	(a) Stability of Mix (b) Flow value (c) Void content (d) Bitumen content	Marshal (ASTM-1559)	Min one sample for every 100 tones of semi dense asphaltic concrete/ discharged at the plant chute or two sample per day which ever is more shall be collected and 3 Marshall specimen shall be tested for these test
6.	Thickness & density of compacted layer of semi dense asphaltic concrete	-	One set per 500 CUM. The bulk density achieved shall not be less than 98% of lab density.
7.	Test for clay, silt & Impurities in Aggregate	IS-383IS-2386 (Part-III)	One test for 100 Cum
8.	Penetration test of bitumen	-	One test for every 20 Tones.
9.	Softening point test of bitumen	-	One test for every 10 Tones.

17.6.3 **TEMPERATURE OF MIXING IN DEGREE CELSIUS.**

Sl. No.	Description	Checking Frequency	Temperature in degree Celsius
1.	Aggregate	Regularly	153 – 163
2.	Bitumen	Regularly	150 – 170
3.	Temperature of mix at laying	Regularly	120 – 160
4.	Temperature of rolling	Regularly	80 -120

(a) All necessary temperature measuring instruments shall be provided by the contractor to ensure production, transportation, laying and rolling of bitumen and bitumen mixed at proper temperature as required.

(b) The permissible variation should be within the limits as brought out in Para 10.5.3.

17.7 **ARRANGEMENTS FOR TRAFFIC.** During the period of construction temporary arrangements for traffic shall be made to avoid any inconvenience, as directed by GE.

17.8 **RATE.** The contract unit rate shall be all as specified in Schedule ‘A’ except that the rate shall include the provision of bitumen at 5.5 percent by weight of total mix for semi dense asphaltic concrete. The variance in percentage of bitumen as per approved Design Mix shall be adjusted @ Rs 54.00 per kilogram only on minus side, in case as per design mix bitumen content required is more than the percentage specified in the Schedule ‘A’ the same shall be provided by the contractor without any extra cost to Govt and in case as per design mix bitumen content required is less than the percentage specified in the Schedule ‘A’ the same shall be adjusted at the rate of bitumen as mentioned here-in-before.

17.9 The quantity of Semi Dense Asphaltic Concrete will be entered in Measurement Book in terms truck load as “**Not to be Abstracted** “.

PARTICULAR SPECIFICATIONS (CONTD...)

18.0 **BITUMINOUS MACADAM.**

18.1 **BITUMEN.**

18.2 Bitumen/ binder for priming coat and Bituminous Macadam (BM) shall be bitumen of grade VG 10 & VG 30 respectively if not indicated in BOQ confirming to IS:73-2006 and shall be contractor’s supply. The contractor shall produce original paid vouchers and test certificate of bitumen before claiming and payment in RAR/ Final bill. Bitumen shall be obtained from any one of the following manufacturers or from their authorized dealers/ stockiest as approved by GE.

- (a) Indian Oil Corporation Ltd.
- (b) Bharat Petroleum.
- (c) Hindustan Petroleum Corporation Ltd.

18.3 **COARSE AGGREGATES.** The coarse aggregates shall be as specified in Clause 20.B.2.5.1 of SSR Part-I, meeting with physical requirement as per table.

1. The aggregate shall be tested at frequency & tests as per table - 1 given below.

TABLE 1. PHYSICAL REQUIREMENTS FOR COARSE AGGREAGATE FORBITUMINOUS MACADAM.

S No	Property	Test	Specification	Frequency
1	Sieve Analysis	IS-2386 Part-I	-	1 for 100 cum
2	Particle shape	Flakiness Index IS-2386 part-I	Max 15%	1 for 100 cum
3	Strength	Aggregate impart value (IS-2386 part-IV)	Max 30%	1 for 100 cum
4	Water Absorption	Water absorption IS-2386 part-III	Max 2%	1 for 100 cum
5.	Soundness	Sodium suphate – Magnesium suphate (IS-2386-part-5).	Max 12% Max 18%	1 for every 250 cum

18.4 **FINE AGGREGATES.** The fine aggregates shall be all as specified in Clause 20.B.2.5.3 of SSR Part-I.

18.5 **AGGREGATE GRADING AND BINDER CONTENT.** When tested in accordance with IS: 2386 Part-I (Wet sieving method), the combined grading of the coarse and fine aggregates shall fall within the limits shown in Table in Clause No. 20.B.2.5.4 (b) of SSR Part-I for 40mm nominal aggregate size.

18.6 **REQUIREMENTS FOR THE MIXTURE.** As per Table 3 of Para 12.2.1.

18.7 **JOB MIX FORMULA.** The procedure for formulating the job mix formula shall be generally as specified below and the results of tests enumerated in Table 3 as obtained by the Contractor. The cost of design mix shall be borne by contractor. The design mix shall be approved by GE.

- (a) Source and location of all materials.
- (b) Proportions of all materials expressed as follows where each is applicable.
 - (i) Binder type and percentage by weight of total mixture.
 - (ii) Coarse aggregate/ Fine aggregate/ Mineral filler as percentage by weight of total aggregate including mineral filler.

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- (c) A Single definite percentage passing each sieve for the mixed aggregate.
- (d) The individual grading of the individual aggregate fractions, and the proportion of each in the combined grading.
- (e) The results of tests enumerated in Table-4 as obtained by the Contractor.
- (f) Where the mixer is a batch mixer, the individual weights of each type of aggregate and binder per batch.
- (g) Test results of physical characteristics of aggregate to be used.
- (h) Mixing temperature and compacting temperature.

While establishing the job mix formula, the Contractor shall ensure that it is based on a correct and truly representative sample of the materials that will actually be used in the work and that the mixture and its different ingredients satisfy the physical and strength requirements of these Specifications.

Approval of the job mix formula shall be based on independent testing by the GE for which samples of all ingredients of the mix shall be furnished by the Contractor as required by the GE. The approved job mix formula shall remain effective unless and until a revised Job Mix Formula is approved. Should a change in the source of materials be proposed, a new job mix formula shall be forwarded to the GE for approval before the placing of the material.

18.8 RECOMMENDED INSTITUTE FOR DESIGN MIX.

- 18.8.1 The contractor is required to get his design mix for semi dense asphaltic concrete prepared from the following institutions under his own arrangements and cost. The unit rate quoted shall be deemed to be inclusive of cost of Design Mix.
 - (a) Govt approved laboratories
 - (b) Government Engg Colleges
 - (c) SEMT wing of CME Pune
 - (d) GERI
 - (e) AERI
 - (f) Any Govt approved Lab and NABL accredited Lab.
- 18.8.2 After obtaining the design mix the same shall be checked/tested in the field laboratory. if the same found not meeting the specified criteria, the same shall be got redesigned and again checked and tested. The cost of such redesigning shall be borne by the contractor.
- 18.8.3 The percentage content of bitumen specified in descriptions of item in Schedule 'A' is for guidance only. Actual percentage of bitumen by weight of mix to be followed in the work shall be as per the approved job mix formula. The aggregate and it's source shall be first got approved by GE before forwarding the same for necessary design of job mix formula. A particular job mix formula will be applicable for only that particular source of material. The percentage of bitumen and density of mix shall be got checked by GE regularly during the execution to ascertain their conformity with the approved job mix formula.
- 18.8.4 **BINDER CONTENT.** The binder content shall be optimized to achieve the requirements of the mixture set out in Table 3. The Marshall method for determining the optimum binder content shall be adopted as described in the Asphalt Institute Manual MS-2, replacing the aggregates retained on the 26.5 mm sieve and retained on the 22.4 mm sieve, as approved by GE.
- 18.8.5 **CONSTRUCTION OPERATIONS.**
- 18.8.5.1 **WEATHER AND SEASONAL LIMITATIONS.** Laying shall be suspended while free-standing water is present on the surface to be covered, or during rain, fog and dust storms, After rain, the bituminous surface, prime or tack coat, shall be blown off with a high pressure air jet to remove excess moisture, or the surface left to dry before laying shall start, Laying of bituminous mixtures shall not be carried out when the air temperature at the surface on which it is to be laid is below 10 degree Celsius or when the wind speed at any temperature exceeds 40 km/h at 2 m height unless specifically approved by the GE.

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- 18.8.5.2 **PREPARATION OF BASE.** The surface on which the Semi Dense Bituminous materials is to be laid shall be prepared in accordance with Clause 20.B.3.1 of SSR part-I using mechanical brooms & compressed air. and as directed by the Engineer-in-charge. The surface shall be thoroughly swept clean by mechanical broom and dust removed by compressed air, In locations where a mechanical broom cannot access, other approved methods shall be used as directed by the Engineer-in-charge.
- 18.8.5.3 **TACK COAT.** Tack coat shall be applied in accordance with the Clause 20 B.3.2 of SSR part-I.
- 18.8.5.4 **PREPARATION OF MIX.** Mix shall be procured in hot mix plant as per clause 20.B.3.3 of SSR part-I. It is mandatory to use automatic mixing plant, mechanical paver & compactors.
- 18.8.5.5 **TRANSPORTATION OF MIX.** Bituminous materials shall be transported in clean insulated vehicles, and unless otherwise agreed by the GE, shall be covered while in transit or awaiting tipping. Subject to the approval of the GE, a thin coating of diesel or lubricating oil may be applied to the interior of the vehicle to prevent sticking and to facilitate discharge of the material.
- 18.8.5.6 **SPREADING.** The general provisions of Clause 20.B.3.6 of SSR part-I shall apply.
- 18.8.5.7 **ROLLING AND COMPACTION.** The general provisions of Clause 20.B.3.8 of SSR part-I shall apply.
- 18.8.5.8 **OPENING TO TRAFFIC.** The newly laid surface shall not be open to traffic for at least 24 hours after laying and the completion of compaction.
- 18.8.5.9 **QUALITY CONTROL.** The quality control shall be ensured by GE as per clause 20.B.3.10 of SSR part-I.
- 18.8.5.10 **RATE.** The contract unit rate shall be all as specified in Schedule 'A' except that the rate shall include the provision of bitumen at 4.0 per cent, by weight of total mix for Bituminous Macadam. The variance in percentage of bitumen as per Design Mix approved shall be adjusted only on minus side @ Rs 52.00 per kilogram, in case as per design mix bitumen content required is more than the percentage specified in the Schedule 'A' the same shall be provided by the contractor without any extra cost to Govt and in case as per design mix bitumen content required is less than the percentage specified in the Schedule 'A' the same shall be adjusted at the rate of bitumen as mentioned here-in-before.
- 19.0 **TESTS.** All the cost of testing of materials, mix, etc as specified in tender shall be borne by the contractor, including cost of material and transportation to laboratory. The test shall be carried out in laboratory as approved by GE.
- 20.0 **PQC/ RIGID PAVEMENTS.** The specification of SSR Part-I 2009 shall be applicable. In this connection refer 20.B.7 and other relevant provisions of MES Schedule with reference to applicability of specification & measurement shall be applicable.
- 21.0 **WET MIX MACADAM (WMM).** Wet Mix Macadam shall be provided as per clause 20.B.5 including all applicable sub clauses of SSR Part-I of 2009.
- 22.0 **ROAD MARKING PAINT, CAT EYE SOLAR REFLECTIVE TYPE METAL BODY ALLOY, SPEED BREAKER, SOLAR DELINATORS AND SOLAR CAT EYE ALUMINIUM ALLOY.** These items shall be provided as per described in BOQ and as per relevant clauses of SSR Part-I 2009 (specifications) and as per latest relevant IS specifications.

Signature of Contractor

DCWE (Contracts)
for Accepting Officer

PARTICULAR SPECIFICATIONS (CONTD...)

SOURCES OF MATERIALS

Sr No	Name of Materials	Source of material for works at station
1	2	3
1	Coarse aggregate for cement concrete	Phalara/ Kukma/ Baladia
2	Coarse stone aggregate for premix carpet, soling, hard core & WBM	Phalara/ Kukma/ Sadava/ Baladia
3	Fine aggregate (sand) for all works	Khari River/ Rudramada
4	Coarse Sand for masonry	Khari River/ Rudramada
5	Stone for stone masonry	Phalara/ Kukma/ Sadava/ Baladia
6	Stone/ Kerbs, berms, cills, coping and lintel etc.	Phalara/ Kukma/ Sadava/ Baladia
7	Burnt clay Bricks	Best locally available as approved by GE
8	Fly Ash Bricks	Best locally available as approved by GE
9	Lime	Jodhpur/ Gotan/ Sojat/ Best locally available as approved by GE

NOTES:-

1. Sources of materials shall be given in Ser No 1 to 9 above or in the vicinity thereof. The tenderer shall ascertain the actual position/ exact location of source before submitting his tender and no additional payment shall be made on account of Misunderstanding or its distance from site of work. Contractor may bring material conforming to contract specifications from other sources without any price adjustment after obtaining written approval of GE.
2. The tenderer shall amongst other things also ascertain all information such as royalties, taxes, duties and other charges etc on the materials and no additional payment shall be made on account of the foregoing.
3. However, if due to any ban imposed by the state Govt authority on obtaining the materials from the sources specified above and or specified materials is not available at the sources mentioned above these materials conforming to specifications as given in particular specifications will be procured from any other place/ source after getting the same approved from GE in writing and without any extra cost to Govt.

Signature of Contractor

For Accepting Officer

APPROVED LIST OF PRODUCTS & MAKES/ BRANDS: B/R & E/M ITEMS

S. No	ITEM / PRODUCT	COMPANY NAME / BRAND NAME
1	2	3
<u>B/R ITEMS</u>		
<u>SECTION-4: CONCRETE</u>		
1	Ready Mix Concrete (RMC)	Lafarge, Ultra Tech, ACC, RMC Ready Mix, Remco
1A	PCC Solid Block	Sukhi Enterprises (SUKHI)
1B	AAC Block	Siporex, HIL limited (Birla Aerocon), Greenway Building Materials India Pvt Ltd, DLITE Blocks Pvt Ltd (DLITE Blocks)
<u>SECTION-5: BRICK</u>		
1C	Fly Ash Bricks	Vaishnavi Developers (Vaishnavi Developers)
<u>SECTION-8: JOINERY</u>		
2	Factory Made Wooden Shutter	M/s Goel Brothers Raipur, M/s Pioneer Timber Chandigarh, M/s Goyal Industries New Delhi, M/s Jain Doors Pvt Ltd Haryana, M/s India Wood & Wood Products Mangalore, M/s M P Wood Products Indore, M/s A-1 Teak Products Indore
2A	Factory made Paneled Door, Shutters, Wire Gauge Shutters, Glazed Shutter	Jain Wood Industries (JAYNA), Ashish Enterprises (Ashish)
3	Factory made PVC, FRP Shutters and Frames	M/s Rajshri Plastiwood Indore (Rajshri), M/s Sintex Industries Ltd (Sintex), M/s Dura Plast Exfousion (Duraplast), M/s Madhu Industries (Madhu Industries), M/s Navratna Co Speciality Chemicals (GIZA), M/s Accura Polytech (ACCUCEL)
3A	UPVC Doors, Windows and Ventilators	M/s Poly Windows Pune, M/s Aparna Profiles Pvt Ltd (APARNA Venstar OKOTECH), M/s Rajshri Plastiwood (Rajshri), M/s Madhu Industries (Madhu Industries),
4	Steel Windows, Ventilators, Door Frames, Shutters	M/s Madhu Industries (Madhu Industries), M/s Jangid Engg Jaipur (JEW), M/s Deccan Structural Pvt Ltd Bangalore, M/s Chandni Industries, M/s Ashwani & Sons (Ashwani & Sons), M/s Anoop Industries, M/s Trisul Industries (Trisul Ind), M/s Ashish Industries
4A	BLANK	
4B	PVC Foam Sheets/ Boards	M/s Rajshri Plastiwood (Rajshri), M/s Navratna Speciality Chemicals (GIZA)
4C	WPC Boards	M/s Rajshri Plasiwood (Rajshri), M/s Kumar Arch Tech Pvt Ltd (Echon), M/s Navratna Speciality Chemicals (GIZA)
4D	Extruded PVC Profile Doors and Frames	M/s Rajshri Plastiwood (Rajshri), M/s Kumar Arch Tech Pvt Ltd (Echon)
5	Aluminium Section of Shutters/ Frames for door/ Window/ Ventilators	M/s Hindalco Ind Ltd (Hindalco), M/s Indian A1 Company (Indal), M/s Jindal

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5A	Rolled Formed GI Section Pre-Painted/ Pre-Coated Windows	M/s NCL ALLTEK & SECCOLAR Elexir Met (SECCOLAR Elexir Met), M/s Ashwani & Sons (Ashwani & Sons & Co)
6	Steel Rolling Shutters Grills & Collapsible Gates	M/s Shree Laxmi Engg Works Bangalore, M/s Prakash & Co. New Delhi, M/s Senthil Rolling Shutters & Engg Co Chennai, M/s Swastik Rolling Shutters Mumbai, M/s Jayraj Industries Chennai
6A	Pulley System Wall Stands Floor Stands & Accessories	M/s EASY DRY Systems Pvt Ltd (EASY DRY)
6B	Manual/ Motorized Sliding Gate	M/s Avians Innovation Technology Pvt Ltd (AVIANS)
6C	Motorized Single Wall Rolling Shutters	
6D	Fire rated rolling Shutters (2 Hrs fire rating)	
6E	Fire rated sliding door (2 Hrs rating)	
<u>SECTION-9: BUILDER’S HARDWARE</u>		
7	Hydraulic Door Closer	M/s Everlite, M/s Universal, M/s Hardwin, M/s Dyna
7A	Stainless Steel Plate Rack	M/s Prayag (Prayag), M/s Nirali, M/s Bluestar Sanitary Industries Pvt Ltd (SILVERSHINE)
7B	PTMT Bathroom and Hardware Fittings	M/s R S Industries (Polytuf), M/s Prayag
7C	Aluminium Tower Bolt/ Aldrops/ Door Handle/ Butt Hinges	M/s Argent Industries (ARGENT/ DOOR GLOW)/ M/s Aluminium Udyog
7D	Towel Rails	M/s Jaquar (Jaquar), M/s KICH, M/s Swastik, M/s Crown, M/s Prayag, M/s ESS ESS
7E	Mortice Locks	M/s Harrison (Harrison), M/s Godrej & Boyee Co Ltd, M/s RP Lock Co, New Delhi, M/s KICK
7F	Drapery Rod	M/s Vista Levolor, M/s MAC-DÉCOR, M/s Sophia
7G	Venetian Blinds	M/s Vista Levolor, M/s MAC, M/s Aeroluxe
<u>SECTION-10: STEEL, ALUMINIUM & IRON WORK</u>		
7H	Galvanised Steel Chain Link Fence Fabric	M/s A1 Fence Products Company Ltd (A1FENCE)
7J	Barbed wire, (Galvanised steel) Mechanically Woven double twisted Hexagonal wire mesh for Gabions, Revet Mattress and Rock fall netting (Galvanised)	M/s A1 Fence Products Company Ltd (A1FENCE)
7K	FRP Manhole Covers, Frames & Gratings	M/s FIBROCAST (FIBROCAST)
<u>SECTION-11: ROOF COVERING</u>		
8	Mangalore Tiles	M/s Charminar, M/s Raja, M/s RECHO, M/s Prajapati, M/s Kerala Tiles Works

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<u>CORRUGATED SHEETS</u>		
8A	Non Asbestos Fibre reinforced (Poly Propylene) 6 mm Cement Corrugated Sheets	M/s Everest Industries Ltd (Everest), M/s Charminar Fortune (M/s HIL Ltd) (Charminar Fortune), M/s RAMCO Indus Ltd (RAMCO)
8B	Prepainted Galvalume/ Galvanised Corrugated Steel Sheets	M/s TATA, M/s JSW, M/s ESSAR
8C	Galvanised Plain/ Corrugated Steel Sheets	M/s TATA, M/s JSW, M/s ESSAR
8D	Cold Rolled Closed Annealed (CRCA) Steel Sheet	M/s Indian Steel Corporation Ltd
8E	Pre Moulded Non Bitumous Joint Filter board	M/s Elcon, M/s Duron Board HD-100
8F	Pre Moulded Bitumous Joint Filter Board	M/s STP Ltd, M/s Tikitar Industries Ltd, M/s Sikka
8G	AC Sheets & Ridges	M/s Charminar (Charminar), M/s Everest, M/s UP Asbestos, M/s Ramco
8H	Water Proofing Company	M/s Pidilite Industries Ltd (Pidilite), M/s FOSROC, M/s Dr Fixit
8J	APP Membrane	M/s STP Ltd, M/s Texsa India Ltd, M/s IWL Ltd, M/s Tiki Tech
<u>SECTION-12: CEILING AND LININGS</u>		
9	Perforated Particle Board/ Tiles for Insulation and Acoustic	M/s Anchor Ceiling Tiles, M/s Armstrong Wood Ind, M/s GYP Board, M/s Bison Panel, M/s Lagyp
9A	PVC False Ceiling, Wall Lining & Solid PVC Partitions	M/s Rajshri Plastiwood (Rajshri), M/s Kumar Arch Tech Pvt Ltd (Echon), M/s Navratna Speciality Chemicals (GIZA), M/s Accura Polytech Pvt Ltd (Accucel)
9B	Metal False Ceiling	M/s HI Steel (Hi-Steel)
9C	Dry Walling Panels	M/s Hil Ltd (Birla Aerocon)
10	Plywood	M/s Kitply (Kitply), M/s Century Plywood, M/s Archid Ply (Archid), M/s Green Ply (Green Ply), M/s Anchor (Anchor)
11	Particle Board Gypsum	M/s Mangalam Timber Products, M/s Gypsum Board, M/s Jolly BD Mumbai, M/s Indian Gypsum Products, M/s Armstrong Wood Industries
11A	Particle Board Cement Bonded	M/s NCL Indus Ltd (BISON PANEL)
12	Laminated Sheets	M/s Formica, M/s Sungloss, M/s Sunmica, M/s Backlite Hylum, M/s Eco Board
12A	Thermal Insulation (Nitrile Rubber)	M/s Armacell India Pvt Ltd (ARMA FLEX)
12B	Accoustic Insulation (Nitrile Rubber)	M/s Armacell India Pvt Ltd (ARMA SOUND)
12C	Insulation Covering System	M/s Armacell India Pvt Ltd (ARMA CHECK)
12D	Adhesives	M/s Pidilite (Pidilite), M/s Fevicol, M/s Vermicol

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13	Pre laminated Particle Board.	M/s Nova Pan, M/s ECO Board Industries Pune, M/s Kitply, M/s Green Ply, M/s Anchor Lam, M/s Century Plywood
13A	Non Asbestos Fibre Reinforced cement	M/s RAMCO Indus Ltd (RAMCO), M/s Visaka Industries Ltd (V-BOARD)
14	Block Boards and Veneered Particle Board	M/s Bajaj Boards, M/s NU Wood, M/s A1 Boards, M/s Bhutan Boards (Bhutan), M/s Charminar (Charminar)
<u>SECTION-13: FLOOR FINISHING & PAVINGS</u>		
15	Glazed Ceramic Wall/ Flooring tiles	M/s Kajaria, M/s Somany, M/s Asian Granite Ind Ltd (AGI TILES), M/s Johnson Tiles, M/s RAK Cements Ltd (RAK CERAMICS)
16	Non Skid Ceramic tiles	M/s Kajaria (Kajaria), M/s Somany (Somany), M/s Johnson Tiles (JOHNSON), M/s Orient Bell Ltd (Orient Bell)
17	Vitrified Tiles	M/s Kajaria, M/s Somany, M/s Asian Granite Industries Ltd (AGL Tiles), M/s Johnson Marbonite, M/s RAK Ceramics Ltd (RAK CERAMICS), M/s Orient Bell Ltd (Orient Bell)
18	Mosaic/ Cement Flooring Tiles	M/s NITCO Mumbai, M/s Ultra, M/s Duracrete, M/s Mehtab Tiles Indore, M/s National Tiles, M/s Bharat Tiles and Engg Co Bangalore, M/s Modern Tiles and Marbles
19	Acid Resistant Tiles	M/s Johnson Mumbai (Johnson), M/s Somany (Somany), M/s Kajaria (Kajaria), M/s Burn Standard Co Jabalpur, M/s Purshottam Pottery Wks Marvi
20	Cement Concrete Interlocking Paver Blocks/ Tiles	M/s Mehtab Tiles Indore (Mehtab), M/s NITCO (NITCO), M/s ULTRA Tiles (ULTRA), M/s Navya Tiles Jodhpur (Navya), M/s Patel Fur Mart (Patel Fur Mart), M/s SAP Paver Jodhpur, M/s Sagar Tiles Saharanpur (Sagar), M/s CEME, M/s Topaz Tiles, M/s Swami Tiles, M/s Sukhi Enterprises (SUKHI), M/s Supreme Tiles (SUPREME), M/s Lucky Cement Block Works (LC), M/s Vaishnavi Developers (Vaishnavi Develop)
21	PVC Sheet and Tile Flooring	M/s Armstrong (Armstrong), M/s Marbles Tiles, M/s Polyfin Tiles, M/s Square Foot, M/s Krishna Vinyl Tiles
22	Aluminium Composite Panel/ Materials	M/s Umiya Flexifoam Pvt Ltd (Flexibond)
22A	Porcelain Tiles	M/s Orient Bell Ltd (Orient Bell)
22B	Laminated Flooring	M/s Green Ply Industries Ltd (Green Flamax)
<u>SECTION-15: WHITE WASHING, COLOURING & DISTEMPERING</u>		
23	Distemper Oil Emulsion (OBD)	M/s Asian Paints (Asian), M/s Nerolac (Narolac), M/s Berger Paints (Berger), M/s Akzo Nobel (Dulux)
24	Plastic Emulsion Paint and Exterior Emulsion Paint	M/s Asian Paints (Asian), M/s Berger Paints (Berger), M/s Nerolac (Narolac), M/s Akzo Nobel (Dulux)
25	Cement Base Paint	M/s Super Snowcem, M/s Duracem, M/s Aquacem, M/s Shalimar Paints (Shalimar), M/s Berger Paints (Berger)
26	Cement Putty	M/s Birla Cement, M/s J K White Cement (JK White), M/s Asian Paints (Asian), M/s Johnson & Nicolson, M/s Shalimar Paints (Shalimar), M/s Golden Mohar (Golden Mohar)
<u>SECTION-16: GLAZING</u>		
27	Sheet Glass Plain	M/s Saint Gobin, M/s Asahi Works, M/s Atul Glass Industries, M/s Gold Fish, M/s Trupti, M/s Modi Guard, M/s Modi Float, M/s Hindustan Pilkigton Glass

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28	Sheet Glass Frosted	M/s Saint Gobin, M/s Asahi Works, M/s Atul Glass Industries, M/s Gold Fish, M/s Trupti, M/s Modi Guard, M/s Modi Float, M/s Hindustan Pilkington Glass, M/s Modi Float
29	Heat Absorbing Glass and Reflective Solar Control Film	M/s Saint Gobin, M/s Modi Float, M/s Modi Guard, M/s Hindustan Pilkington Glass
30	Rough Cast Wired Glass	M/s Saint Gobin, M/s Modi Float, M/s Modi Guard, M/s Hindustan Pilkington Glass
31	Oil Putty	M/s Johnson & Nicolson, M/s Asian Paints (Asian), M/s Berger Paints (Berger)
31A	Wall Putty	M/s Dalmia Magic Premium Skin Coat Bharat Ltd (Dalmia Cement), M/s Walplast Product Pvt Ltd (Walplast)
32	Mirror	M/s Modi, M/s Atul, M/s Saint Gobin
<u>SECTION-17: PAINTING</u>		
33	Synthetic Enamel Paint	M/s Asian Paints (Asian), M/s Nerolac Paints (Nerolac), M/s Akza Nobel (Dulux)
34	Thermocool Cool Coating	M/s Thermogreen Cool Coating (Thermocool)
<u>E/M ITEMS</u>		
<u>SECTION-18: WATER SUPPLY, PLUMBING, DRAIN & SANITARY APPLIANCES</u>		
1	CI Pipe and Fittings	M/s Electrosteel Casting Ltd, M/s Kejriwal, M/s NECO, M/s Kesoram
2	GI Pipes & Fittings	M/s Tata (Tata), M/s Jindal (Jindal), M/s BST, M/s Surya (Surya), M/s KS Engineering Works (KS), M/s Zenith, M/s Swastik, M/s Prakash
3	DI Pipes & Fittings	M/s Jindal Ltd Gujarat, M/s Electro steel Castings Ltd, M/s Tata Metalics Kolkata, M/s Saw Pipes
3A.	Hubless Centrifugally	M/s Jayswal NECO Industries Ltd (NECO), M/s Singhal Iron Foundry Pvt Ltd (SKF), M/s Raj Pattern Matress & Founders Pvt Ltd (RPMF)
4	MS Pipes & Fittings	M/s Tata, M/s Jindal Ltd Gujarat, M/s Swastik, M/s Prakash, M/s Surya, M/s BST, M/s Zenith
4A	MS Tubes & Fittings	M/s APL Apollo Tubes Ltd (APL APPOLLO)
4B	Steel Tube for Structural purpose	M/s APL Apollo Tubes Ltd (APL APPOLLO)
5	HDPE Pipes& Fittings	M/s Finolex, M/s Kissan Irrigation & Infrastructure Ltd (Kissan), M/s Prince Pipes Fittings Ltd (Core Fit), M/s Supreme, M/s Jain Irrigation System
6	CPVC Pipes and fittings (Chlorinated Polyvenyl Chloride)	M/s Prince Pipes & Fittings (Smart Fit), M/s Finolex, M/s Dutron, M/s SFMC, M/s Birla Aerocon (HIL Ltd)
7	PVC Soil, Waste Mini Water (SWR & Drainage Pipes)	M/s Supreme, M/s Prince (Ultra fit), M/s Kisan, M/s Finolex
7A	PPR Pipes & Fittings	M/s Prince Pipes & Fittings Ltd (Green Fit), M/s Finolex, M/s Supreme, M/s Savoir Fairo Mafg Co Pvt Ltd (SFMC)

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7B	PVC Pipes & Fittings	M/s Prince Pipes & Fittings Ltd (Aqua Fit), M/s Kissan Irrigation & Infrastructure Ltd (Kissan), M/s Finolex, M/s Supreme, M/s HIL Ltd (Birla Aircon)
7C	UPVC Pipes and Fittings	M/s Prince Pipes & Fittings Ltd (Aqua Fit), M/s Finolex, M/s Supreme, M/s Kissan Irrigation & Infrastructure Ltd (Kissan), M/s HIL Ltd (Birla Aircon)
7D	UPVC Pipes & Fittings for SWR	M/s Prince Pipes & Fittings Ltd, M/s Finolex, M/s Kissan Irrigation & Infrastructure Ltd (Kissan), M/s Supreme, M/s HIL Ltd (Birla Aircon)
7E	Polyethylene/ Aluminium/ Polyethene Composite Pressure Pipes	M/s Prince, M/s Finolex, M/s Supreme
7F	Plastic Pipe for Non Pressure Drainage & Sewage	M/s Prince (Foamfit), M/s Finolex, M/s Supreme
8	CI Soil, Waste Rainwater (SWR) & Drainage Pipe	M/s NECO Nagpur, M/s Singhal Iron Foundry Mathura (SKF), M/s Bengal Iron Co, M/s Dhatu Udyog, M/s Kapilansh Nagpur (Kapilansh), M/s Anand Founder & Engineers, M/s Raj Pattern Makers Founders (RPMF)
9	AC Soil, Waste/ Rainwater (SWR) & Drainage pipes.	M/s Everest Asbestos Hyderabad, M/s Visaka India Ltd, M/s Hyderabad Asbestos (Charminar), M/s Ramco
9A	Steel Pipes for Water & Sewage	M/s APL Apollo Tube Ltd (APL APOLLO), M/s Laxmi Balaji Ceremics (Laxmi Balaji)
10	RCC pipes, Drain Pipes	M/s Indian Hume Pipes, M/s Everest Asbestos Hyderabad, M/s Himalaya, M/s Thuluvananikal Pipes
11	Air Release Valves	M/s Leader (Leader), M/s BIR (BIR), M/s Kirloskar (Kirloskar), M/s Sant, M/s L&T (L&T), M/s Upadhyay
12	Foot Valves	M/s Upadhyay, M/s Leader, M/s Kirloskar, M/s Sant
13	Reflex Valves	M/s Kirloskar, M/s Leader, M/s Sant, M/s L&T
14	Sluice Valves	M/s Leader, M/s Kirloskar, M/s Zoloto, M/s L&T, M/s BIR, M/s Upadhyay
15	Butterfly Valves/ Disc Valves	M/s Leader (Leader), M/s Zoloto (Zoloto), M/s Sant, M/s Larsen & Turbo (L&T), M/s Kirloskar (Kirloskar) M/s Upadhyay (Upadhyay)
16	Gate Valves	M/s Leader (Leader), M/s Zoloto (Zoloto), M/s Sant (Sant)
16A	Automatic Confoot Valves	M/s BAMO Electronics (Jalniyantrak)
17	Water Meter	M/s Capstan, M/s Dashmesh, M/s Kaycee, M/s Capital, M/s Anand Asahi, M/s Kirloskar (Kirloskar)
18	PVC Water Tanks/ Polythelene	M/s Sintex Industries (Sintex), M/s Polycon Jaipur (Polycon), M/s Rotex (Rotex)
19	CP Bib cock, Stop cock Pillar cock and Accessories	M/s Jaquar (Jaquar), M/s Marc (Marc), M/s CERA Sanitaryware (CERA), M/s Kohler
19A	Copper/ Brass Alloy Bib Tap, Pillar Tap, Angle Valve & Stop Valves and Accessories	M/s Soma, M/s Leader (Leader), M/s Zoloto (Zoloto), M/s Jaquar Co Pvt Ltd (JAQUAR)
20	PVC Stop Cock and Bib Cock/ Float valves and Accessories	M/s Jaypee, M/s GMP (GMP), M/s Neta, M/s Zoloto (Zoloto), M/s Prayag Polymers (Prayag), M/s Symet

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21	Gun Metal Globe/ Gate Valves/ Angle Valves	M/s Leader (Leader), M/s Bir (BIR), M/s Zoloto (Zoloto), M/s Kirloskar (Kirloskar)
22	Shower Rose	M/s Jaquar (Jaquar), M/s Kohler, M/s Crabtree, M/s Cera Sanitaryware (CERA)
22A	CI/ Brass Ball Cocks (Float Valves)	M/s Leader (Leader), M/s Neta (Neta), M/s Zoloto (Zoloto)
23	Water Closet Viterous China (European/ Indian) Squatting Pan Orissa Pattern.	M/s CERA Sanitaryware (CERA), M/s Parryware (Parryware), M/s Jaquar (Jaquar), M/s Kajaria Sanitaryware (KEROVIT), M/s Hindware (Hindware), M/s Johnson, M/s RAK Ceramics (RAK CERAMICS)
24	Flushing Cistern, PVC Low Level incl Flush Valves and Fittings for WC and Urinals	M/s Parryware (Parryware), M/s CERA Sanitaryware (CERA), M/s Johnson Peddar (Johnson), M/s RAK Ceramics India Pvt Ltd (RAK CERAMICS)
25	Plastic Seat Covers for EWC	M/s CERA (CERA), M/s Neycer (Neycer), M/s Parryware (Parryware)
26	Urinals - Vitreous China	M/s CERA (CERA), M/s Parryware (Parryware), M/s Neyveli Ceramics (NYCER), M/s Hindware, M/s Jaquar & Co Pvt Ltd (JAQUAR), M/s Johnson, M/s Kajaria Sanitaryware Ltd (KEROVIT)
27	Wash Basin Vitreous China	M/s Kajaria Sanitaryware Ltd (KEROVIT), M/s CERA (CERA), M/s RAK Ceramics India Pvt Ltd (RAK CERAMICS), M/s Parryware (Parryware), M/s Hindware, M/s Neyveli Ceramics (Neycer), M/s Jaquar (Jaquar), M/s Shakti Enterprises (Shakti), M/s Prayag (Prayag), M/s Johnson, M/s Simpolo Vitrified Pvt Ltd, M/s Somany Ceramics Ltd (SOMANY), M/s Ambani Vitrified Pvt Ltd (Ambani), M/s Glint Faucets Inc (GLINT)
28	Sink Steel	M/s Jayna (Jayna), M/s Nirali, M/s Neelkanth, M/s Parryware (Parryware)
28A	GI & Stainless Steel Wire Mesh	M/s Selected Products Co (SPC)
29	Centrifugal/ Mono Block Pump	M/s Kirloskar (Kirloskar), M/s Beacon (Beacon), M/s CRI Pumps (CRI), M/s Crompton Greaves (Crompton), M/s KSB Pumps (KSB), M/s Wilo Mather Platt (Wilo Mather), M/s Jyoti (Jyoti), M/s V Guard (V Guard)
30	Submersible Pump/ Open Well Pumps	M/s Kirloskar (Kirloskar), M/s KSB (KSB), M/s Wilo Mather Platt (Wilo Mather), M/s Jyoti, M/s V Guard (V Guard), M/s CRI Pumps (CRI)
31	Verticle Turbine Pumps	M/s Kirloskar (Kirloskar), M/s KSB (KSB), M/s Wilo Mather Platt (Wilo Mather), M/s Jyoti (Jyoti)
32	Non Clog Sewage Submersible Pumps	M/s KSB (KSB), M/s Kirloskar (Kirloskar), M/s Wilo Mather Platt (Wilo Mather)
33	Pumps for Fire Fighting	M/s Kirloskar (Kirloskar), M/s Wilo Mather Platt (Wilo Mather), M/s Crompton Greaves (Crompton), M/s Bharat Bijlee (Bharat Bijlee)
<u>SECTION-19: ELECTRICAL WORK</u>		
34	Pole Prestressed Concrete	M/s Cement Fabric India Jodhpur, M/s Hindustan Prestressed Concrete Faridabad, M/s India PCC Poles, M/s Concrete Udyog Jhansi, M/s Sankla Udyog Jhansi
35	Pole Steel Tubular	M/s India Tube & Co, M/s India Electric Poles Mfg Co MH, M/s Bombay Tubes, M/s National Tubing Co Kanpur, M/s Kalinga Tubes, M/s Singh Profile Pune

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36	Insulators HT/ LT Disc/ Pin/ Shackle/ Loop/ String Type	M/s BHEL, M/s Jayshree, M/s W/s insulators, M/s Southern Insulators, M/s MEI, M/s Modern Insulators
36A	RMU & PSS	M/s Lucy Electric India Pvt Ltd (Lucy Electric), M/s Larsen & Turbo (L&T), M/s Megawin Switchgear (MEGAWIN), M/s Voltech System & Switchgear VOLTECH, M/s C&S Electric Ltd (C&S Electric)
37	Air Circuit Breaker (ACB) LT 1100 Volts	M/s Larsen & Turbo (L&T), M/s Siemens (Siemens), M/s ABB (ABB), M/s Schneider Electricals (Schneider), M/s Crompton Greaves (Crompton), M/s GEC (GEC), M/s English Electric (English)
38	Vacuum Circuit Breaker (VCB) suitable for 36 KV, 22 KV and 12 KV system incl accessories	M/s SIEMENS (Siemens), M/s Crompton Greaves Mumbai (Crompton), M/s ABB Ltd Bangalore (ABB), M/s Alsthom, M/s BHEL, M/s Larsen & Tourbo (L&T), M/s Schneider Electricals (Schneider)
39	Automatic Power Factor Correction (APFC) Panel	M/s Larsen & Turbo (L&T), M/s Siemens (Siemens), M/s GEC (GEC), M/s ABB (ABB), M/s Epcos (Epcos)
39A	PCC/ MCC Panels/ LV Switch Board	M/s Electro Control Systems India Pvt Ltd (Electro Control System), M/s Voltech Manufacturing Co Ltd (Voltech), M/s Tenco System & S/ gear (Tenco System), M/s Neptune Systems Pvt Ltd (Neptune), M/s C&S Electric Ltd (C&S Electric)
39B	Busbar Trunking System	M/s C&S Electric Ltd (C&S Electric)
40	Power Factor Improvement Capacitor Banks	M/s Larsen & Turbo (L&T), M/s Siemens (Siemens), M/s EPCOS (Epcos), M/s GE (GE), M/s ABB (ABB)
41	HT Switch Gear 66/ 33/ 11 KV 3 Phase, Gas Circuit Breaker SF-6 Type	M/s Crompton & Greaves Mumbai, M/s Schneider Mumbai (Schneider), M/s ABB Ltd, Bangalore (ABB), M/s Siemens Ltd Mumbai (Siemens)
42	HT 11 KV, 3 Ph Automatic Switch Fuse Unit	M/s ABB Ltd Bangalore (ABB), M/s ARREVA T&D India Ltd (ARREVA), M/s Crompton & Greaves Mumbai, M/s Schneider Mumbai (Schneider), M/s C&S Electric Ltd (C&S Electric)
43	Air Break Switch Gang (Isolators) Operated (33 KV/ 11KV)	M/s Pacfit Mumbai, M/s Jaipuria Brothers, M/s HEI
44	Air Break Switch Gang (Isolators)	M/s Mysore Electrical industries (MEI), M/s Southern Switchgear Mumbai, M/s Andrew Yule, M/s Crompton & Greaves Mumbai (C&G)
45	Arresters Lightning LT/ HT	M/s Oblum, M/s BHEL, M/s GEC Elpro, M/s Crompton & Greaves Mumbai (C&G), M/s AREVA T&D (AREVA)
45A	Chemical Earthing Electrode	M/s U-protec Earthing (U-Protec Earthing), M/s Shivangi Engineering Works (Earth SOL-3)
45B	Maintenance Free Earthing Lightning & Serge Protection System	M/s JEF Techno Solution Pvt Ltd (JEF ECOSAFE)
46	Change Over Switch/ Starter/ Contactor DOL/ Star Delta/ Synchronising Panel/ Single Phase Preventor	M/s Siemens (Siemens), M/s Larsen & Turbo (L&T), M/s ABB (ABB), M/s Crompton & Greaves Mumbai (C&G), M/s GE (GE)
47	Main Switch Iron Clad Switch Fuse Unit Fuse Switch Unit	M/s Siemens (Siemens), M/s L&T (L&T), M/s Crompton & Greaves Mumbai (C&G), M/s C&S Electric Ltd (C&S Electric)

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48	Transformers 66/ 11 KV, 33/ 11 KV, 33/ 0.433 KV, 22 KV/ 11 KV, 22/ 0.433 KV Copper Wound all rating	M/s ABB Ltd Bangalore (ABB), M/s Siemens (Siemens), M/s Bharat Bijlee Ltd Mumbai (Bharat), M/s Crompton & Greaves Mumbai (C&S Electric), M/s Schneider Electricals (Schneider), M/s Alstom (GEC), M/s Kirloskar Electric (Kirloskar), M/s EMCO, M/s BHEL (BHEL), M/s Andrew Yule
48A	Transformer 11 KV/ 433 Volts Step Down, Indoor/ Outdoor type upto 1000 KVA capacity dry resin type	M/s Schneider, M/s Crompton (Crompton), M/s Kirloskar (Kirloskar), M/s ABB (ABB)
49	Transformers 33 KV & 11 KV Current & Potential	M/s L&T (L&T), M/s Siemens (Siemens), M/s Schneider (Schneider), M/s Crompton Greaves Mumbai (C&S Electric)
50	BLANK	
50A	Isolation Transformer	M/s Vintek Electronics (Volina), M/s Power one Micro System Pvt Ltd (Power One), M/s India Techno Industries (Spectron)
50B	Transformers 6.6 KV/ 433 V three phase upto and including 100 KVA	M/s Indian Transformer Gurgaon, M/s Voltech Manufacturing Co Ltd (Voltech)
51	Transformers 11 KV or 6.6 KV Copper wired 500 KVA and above	M/s Crompton Greaves, Mumbai (C&G), M/s Bharat Bijlee Ltd Mumbai (BHARAT), M/s Andrew Yule, M/s ABB (ABB), M/s Schneider (Schneider), M/s Kirloskar (Kirloskar), M/s ECE (ECE)
52	Transformers 11 KV/ 0.433 KV Copper Wound, below 500 KVA	M/s Volt Amp Ltd, Baroda (Volt Amp), M/s Indo Tech Transformers, M/s Alstom (GEC), M/s ABB (ABB), M/s Schneider (Schneider), M/s Bharat Bijlee Ltd Mumbai (Bharat), M/s ESSENAR Transformer (P) Ltd (ESSENAR), M/s Silvar Line Electricals Pvt Ltd (Silverline Elect), M/s Rajasthan Transformers & Switchgear Ltd New Delhi (Rajasthan Transformer), M/s Paston Transformers Bharuch, M/s Indian Transformers Electricals, M/s PME, M/s Jaybee Ind (Jaybeeti), M/s Everest, M/s Transtrom
52A	Transformer 11 KV/ 0.433 copper wound 100 KVA & below	M/s PME, M/s Rajasthan transformers (Rajasthan Transformer), M/s Everest, M/s RK industries, M/s Pactil, M/s Kotson, M/s Hi-Tech industries, M/s Jaybee Ind (Jaybeeti)
53	Cable Jointing Kit for 11 KV/ 22 KV	M/s Raychems, M/s Densons, M/s M-Seal, M/s Birla- 3M
54	UG HT XLPE, PVC Insulated Conductor for 3.3/ 33/ 22/ 11 KV System	M/s Cable Corporation of India Mumbai (CCI), M/s Havells India Pvt Ltd (Havells), M/s Universal Cables Ltd (Universal), M/s Asian Cables (Asian), M/s Gloster (Gloster), M/s APAR Industries, M/s RPG Cables Ltd, Thane (RPG), M/s Finolex Cable Ltd Pune (Finolex), M/s RR Kabel (RR Kabel), M/s KEI Ind (KEI), M/s Polycab Pvt Ltd (Polycab)
54A	HT Armoured XLPE Cable 132 KV Grade	M/s Polycab Pvt Ltd (Polycab)
55	UG LT XLPE, PVC Insulated Conductor for 1100 Volts	M/s Cable Corporation of India Mumbai (CCI), M/s Asian Cable Co Chhattisgarh, M/s Finolex Cable Ltd Pune (Finolex), M/s Polycab (Polycab), M/s Gloster (Gloster), M/s Universal (Universal), M/s RR Kabel (RR Kabel), M/s RPG Cables Ltd, Thane (RPG), M/s Havells India Ltd Alwar (Havells), M/s KEI Ind (KEI)
56	Aluminum Conductor Steel Reinforced (ACSR)	M/s All Ind, M/s ICC (ICC), M/s Bharat Conductors, M/s NICCO, M/s Indian Aluminium Co

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57	Street Light Fittings (LED)	M/s Bajaj (Bajaj), M/s Philips (Philips), M/s Wipro, M/s Crompton (Crompton), M/s GE (GEC), M/s Havells India Ltd (Havells), M/s Luker (Luker), M/s Jaquar (Jaquar), M/s FIEM Ind Ltd (FIEM), M/s Pyrotech Electronics Pvt Ltd (Pyrotech), M/s Bentec India Ltd (BENLO), M/s Eveready Indus India Ltd (EVEREADY), M/s Orient Electric (ORIENT), M/s Poly cab (Poly cab), M/s Surya Roshni (SURYA), M/s Halonix Technologies Pvt (Halonise), M/s Shri Sant Krupa Appliances (SYSKA)
57A	Programmable Street Light Capacity Switch	M/s JILCO Jain Indus Lighting Corporation (JILCO)
58	Solar Street Light Fitting	M/s Havells (Havells), M/s Philips (Philips), M/s BHEL, M/s Tata, M/s Bajaj (Bajaj)
59	High Mast light	M/s Bajaj (Bajaj), M/s Philips (Philips), M/s Crompton (Crompton)
60	Fluorescent tube light fittings/ LED/ Lamp holder	M/s Wipro (Wipro), M/s Bajaj (Bajaj), M/s Crompton (Crompton), M/s Phillips (Philips), M/s Havells (Havells)
61	Flame Proof Light Fittings (LED/ Fan/ Well glass/ bulk head incl accessories)	M/s Sudhir, M/s Flexipro Electricals Nasik, M/s Shyam Switchgears, Mumbai, M/s Bajaj (Bajaj), M/s Crompton (Crompton), M/s Batiga
62	Florescent Lamp Lt Lamp	M/s Phillips (Philips), M/s Wipro (Wipro), M/s Bajaj (Bajaj), M/s GE Lighting (GEC), M/s Osram (Osram), M/s Havells (Havells), M/s Crompton (Crompton)
63	Light Fittings LED	M/s Crompton (Crompton), M/s Phillips (Philips), M/s Havells (Havells), M/s Osram (Osram), M/s Fiem Ind Ltd (FIEM), M/s Pyrotech Electronics Pvt Ltd (Pyrotech), M/s Wipro, M/s Bajaj (Bajaj), M/s GE (GEC), M/s Luker (Luker), M/s Jaquar & Co Pvt Ltd (Jaquar), M/s Bentec Pvt Ltd (BENLO), M/s Eveready Industries India (EVEREADY), M/s Orient Electric (ORIENT), M/s Polycab Pvt Ltd (POLYCAB), M/s Surya Roshni (Surya), M/s Halonix, M/s SYSKA Shri Sant Kripa (SYSKA)
63A	LED Tube Lights & Bulbs	M/s Phillips (Philips), M/s Havells (Havells), M/s Osram Lighting Pvt Ltd (Osram), M/s Wipro, M/s Bajaj (Bajaj), M/s GE, M/s Luker (Luker), M/s Bentec Pvt Ltd (BENLO), M/s Eveready Industries India (EVEREADY), M/s Orient Electric (ORIENT), M/s Polycab Pvt Ltd (POLYCAB), M/s Surya Roshni (Surya), M/s Jaquar & Co Pvt Ltd (Jaquar), M/s Hatonix Technologies Pvt Ltd (Halonix), M/s Pyrotech Electronics Pvt Ltd (Pyrotech), M/s Fiem Ind Ltd (FIEM), M/s SYSKA Shri Sant Kripa (SYSKA)
64	Electronic/ Photoelectric Switch for Auto Op of Street Lights	M/s Larsen & Turbo (L&T), M/s General Electric Co (GEC), M/s Siemens India (Siemens), M/s Bajaj Electricals (Bajaj) M/s Legrand (Legrand)
65	DBs/ MCB (Miniature Circuit Breakers) & MCCB (Moulded Case Circuit Breakers).	M/s Larsen & Turbo (L&T), M/s Legrand India Pvt Ltd (Legrand), M/s ABB (ABB), M/s Siemens (Siemens), M/s Schneider, M/s Havells (Havells), M/s Novatour Electricals & Pipe (INDO ASIAN), M/s C&S Electric Ltd (C&S Electric)
66	Microprocessor based MCCB/ RCCB LT 415 Volts	M/s Larsen & Turbo (L&T), M/s Schneider, M/s ABB India Ltd, M/s Legrand India Pvt Ltd (Legrand), M/s Siemens (Siemens), M/s Novatour Electricals & Pipe (INDO ASIAN)
66A	Electrical Panel (LT)	M/s L&T (L&T), M/s Legrand India Pvt Ltd (Legrand), M/s Standard (Standard)

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67	Electric Accessories, Piano Switches, Celing Rose, Call Bells, Buzzers, Lamp Holders/ Socket Outlet etc Plug & Socket Boards	M/s Panasonic Life Solutions (Panasonic Anchor), M/s Crabtree, M/s Leader (Leader), M/s Legrand India Ltd (Legrand), M/s Havells (Havells), M/s C&S Electric Ltd (C&S Electric)
68	Ammeter/ Voltmeter/ Power Factor/ Frequency Meters	M/s IMP, M/s Automatic Electric, M/s L&T (L&T), M/s Havells India Ltd (Havells), M/s MECO
68A	Static Frequency Meter	M/s Power One (Power One)
68B	DC Power Supply	M/s Power One (Power One), M/s Liveline Electronics K Cutta live line
69	Digital Meters with built in selector switches for Voltmeter, Ammeter, Frequency Meter, KWH Meter Power Analyses	M/s Larsen & Turbo (L&T), M/s Automatic Electric (AE), M/s Enercon, M/s Secure Meter, M/s Havells India Ltd (Havells)
69A	Modular Switches/ Sockets	M/s Anchor Electricals (Anchor Roma), M/s Legrand (Legrand), M/s Crabtree, M/s Havells (Havells), M/s Indo Asian (Indo Asian), M/s Polycab India Ltd (Polycab), M/s Larsen & Tourbo (L&T), M/s Panasonic Life Solutions (Panasonic Anchor)
70	Electronic Energy Meters Tamper Proof	M/s Larsen & Turbo (L&T), M/s Jaspuria Meters, M/s Havells Electricals (Havells), M/s Secure Meters India (Secure), M/s Elemeasure (Elmeasure), M/s Bentec India Ltd (BENLO)
70A	SCADA System	M/s Schneider, M/s Elemeasure (Elemeasure), M/s Forbes Marshal Pvt Ltd (Forbes Marshal)
71	Celling Fan (*5 star rating)	M/s Bajaj (Bajaj), M/s Crompton (Crompton), M/s Polar (Polar), M/s Khaitan (Khaitan), M/s Orient (Orient), M/s Havells India Ltd (Havells), M/s V Guard Industries Ltd (V Guard), M/s Polycab (Polycab), M/s Panasonic Life Solutions (Panasonic)
71A	BLDC Ceiling Fan & Wall Fan	M/s Atomberg Technologies Pvt (GORILLA)
72	Exhaust Fan/ Air Circulators	M/s Crompton (Crompton), M/s Khaitan (Khaitan), M/s Usha (Usha), M/s Bajaj (Bajaj), M/s Almonard, M/s Havells India Ltd (Havells), M/s Polycab (Polycab)
73	Fan Regulator	M/s Anchor (Anchor), M/s Havells India Ltd (Havells), M/s Bajaj (Bajaj), M/s Usha (Usha), M/s Khaitan (Khaitan), M/s GEC (GEC), M/s Legrand (Legrand)
73A	Electronic Type Fan Regulator	M/s Legrand (Legrand), M/s Crompton (Crompton), M/s Havells India Ltd (Havells), M/s Bajaj (Bajaj), M/s Orient (Orient), M/s V Guard, M/s Polycab (Polycab)
74	Geyser	M/s Havells India Ltd (Havells), M/s Bajaj (Bajaj), M/s Racold, M/s Usha (Usha), M/s Venus, M/s Jaquar (Jaquar), M/s V Guard (V Guard)
74A	Water Heater (Only Five Star Rating)	M/s Jaquar & Co Pvt Ltd (Jaquar)
75	PVC Insulated Copper/ Aluminium Cable 1100 Volts of all types	M/s Plaza Cable (Plaza), M/s Finolex Cables (Finolex), M/s Anchor Electricals (Anchor), M/s Havells India Ltd (Havells), M/s NICCO (Nicco), M/s Polycab Wires (Polycab), M/s RPG Cables (RPG), M/s Gloster (Gloster), M/s RR Kabel (RR Kabel), M/s KEI Ind (KEI)

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76	AC Static Watt Hour Meter	M/s Niksun Automation (Niksun)
77	PVC Conduits (Rigid or Flexible) FRLS Rigid PVC Conduits/ Fittings	M/s Anchor (Anchor), M/s Modi (Modi), M/s Pressfit Pipe & Profile (Pressfit), M/s Precision, M/s Astral, M/s Panasonic Life Solutions (Panasonic Anchor), M/s Polycab Wires Pvt Ltd (Polycab)
78	BLANK	
78A	PVC Tape	M/s GM Modular Pvt Ltd (GM), M/s Panasonic Life Solutions (Panasonic Anchor)
79	MS Conduit	M/s BEC Industries, M/s Kalinga Tubes (Kalinga), M/s Jindal (Jindal), M/s Bharat, M/s AKG Conduit Pipe (AKG)
80	Casing Capping & Accessories	M/s Precision, M/s Modi (Modi), M/s Presto Plast (Presto Plast), M/s Supreme (Supreme), M/s Polycab (Polycab) M/s Plaza Cables, M/s Pressfit Pipe & Profile (Pressfit)
81	Indicating Lamps Neon/ LED Type	M/s Siemens (Siemens), M/s ABB (ABB), M/s Schneider (Schneider), M/s Larsen & Turbo (L&T), M/s EPCOS India Pvt Ltd (EPCOS), M/s Jaipuria
82	LT Relay Numerical/ Static/ Protective/ Auxillary	M/s Siemens (Siemens), M/s ABB (ABB), M/s Schneider (Schneider), M/s Larsen & Turbo (L&T), M/s EPCOS India Pvt Ltd (EPCOS), M/s Jaipuria
83	Thermoplastic Polycarbonate Cable Junction Box DB, LT Panel, Feeder Pillar, MCC Panel	M/s Hansel Electric India Pvt Ltd (HENSEL ENY CASE) (HENSEL ENY BOARD)
84	UPS	M/s Tata Liebert, M/s APLAB, M/s Luminous, M/s Sukam, M/s Protect Services, M/s Microtech, M/s Labotech, M/s Power Conservation Tech, M/s Sinetrac, M/s Liveline Electronics K Cutta (Liveline), M/s Power One (Power One)
85	Automatic Voltage Stabilizer (Servo Controlled)	M/s Automatic Electric (AE), M/s Vinitec Electronic Laboratory (Vinitec), M/s Aplab, M/s V Guard Industries Ltd (V Guard), M/s Vintek Electronics (Valina)
85A	Solar Inverters	M/s Polycab India Ltd (Polycab), M/s Power One Micro System (Power One)
86	DG Set (Engine)	M/s Kirloskar (Kirloskar), M/s Sterling Gen (Sterling), M/s Cummins (Cummins), M/s Greaves Cotton, M/s Ashoka Leyland (Leyland), M/s Caterpillar, M/s Mahindra (Mahindra)
87	DG Set (Alternators)	M/s Kirloskar (Kirloskar), M/s Stamford, M/s Jyoti (JYOTI), M/s Crompton Greaves (Crompton), M/s Alstom (Alstom), M/s AREVA (AREVA), M/s Bharat Bijlee (Bharat Bijlee)
88	DG Set Assembled with Sound Proof Canopy	M/s Kirloskar (Kirloskar), M/s Jackson (Jackson), M/s Sudhir, M/s Greaves Cotton, M/s Cummins India (Cummins), M/s Mahindra (Mahindra)
89	Induction Motors	M/s Crompton Greaves (Crompton), M/s Kirloskar Electric (Kirloskar), M/s Bharat Bijlee, M/s Siemens (Siemens), M/s NGEF, M/s ABB (ABB)
90	Gang operated devices (GOD)	M/s Pactil (Metro), M/s Jaipuria, M/s Atlas, M/s ECE, M/s AREVA
90A	Precast Concrete Cable Cover	M/s Mehtab Tiles, M/s Patel Furniture Mart (Patel Furniture), M/s Lucky Cement Block Works (LC), M/s Sukhi Enterprises (SUKHI)

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<u>SECTION-22: HEATING & VENTILATION</u>		
91	Air Handling Unit	M/s Bluestar, M/s National, M/s Zeco, M/s Voltas,
92	Air Curtains	M/s Almonard, M/s Aircon, M/s Crompton Greaves
93	Cooling Towers	M/s Paharpur, M/s Mihir, M/s Delta (Delta), M/s Advance
93A	Centrifugal Chillers & Screw Chillers	M/s Carrier (Carrier), M/s Voltas (Voltas), M/s Daikin, M/s Hitachi, M/s Blue Star Industries Pvt Ltd (Blue Star)
94	Window type Air Conditioners	M/s Carrier (Carrier), M/s Voltas (Voltas), M/s Daikin, M/s Hitachi (Hitachi), M/s Blue Star (Blue Star)
95	Split Type Air Conditioners	M/s Carrier (Carrier), M/s Voltas (Voltas), M/s Daikin, M/s Hitachi (Hitachi)
<u>SECTION-26: SOLAR WATER SYSTEM</u>		
96	Solar Water System	M/s Tata BP Solar System, M/s BHEL, M/s Best & Crompton Novel
<u>SECTION 27: FIRE FIGHTING EQPT</u>		
97	Fire Fighting Eqpt like Hose reel, nozzles, couplings, Valves etc	M/s Ceasfire, M/s Safex, M/s Flame Guard Indus, M/s Nitin
97A	Higher Capacity Fire Extinguisher (Trolley Trailer/ Stud/ Vehicle Mounted/ Portable Fire Extinguisher	M/s Vimal Fire Control Pvt Ltd
97B	Fire Hose Delivery couplings, Brunch Pipes Nozzle & Nozzle Spanners with all accessories etc	M/s Vimal Fire Control Pvt Ltd
97C	Functional requirement for stand post type water monitor for Fire Fighting (Water/ Foam/ DCP)	M/s Vimal Fire Control Pvt Ltd
<u>SECTION 28: MECHANICAL LAUNDRY</u>		
98	Mechanical Laundry	M/s Supershine Laundry System (Supershine)
<u>ROAD WORKS</u>		
99	Road Marking Paint	Asian, Shalimar, SNI Infratech Pvt Ltd Delhi/ Maruti Reflo Mark. Automark
100	Road Delineator, Cat Eye, Speed Breakers	Dark Eye, 3M, Tata, BP, Road Star, Oscar
<u>Note:</u> In case there are less than 3 makes in the approved list for any material/ item/ product then only generic description/ specification of the material/ item/ product as specified in tender and relevant codal provision shall be followed.		