

NAME OF WORK: PROVN OF FIRING RANGE AT AF STN SRINAGAR.

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Drawings_____ Sheets

Note: The documents mentioned at Ser No. 8 and 9 above are not attached with the tender documents. Tenderer is advised to read these documents in any MES formations on any working day during office hours.

(SIGNATURE OF THE CONTRACTOR)
DATED: _____

For Accepting Officer

Tele: 01992-234056/234037
FAX: 01992-234040
Email id: jtdircontcezafu2-mes@gov.in

HQ Chief Engineer (AF) Zone
Military Engineer Services
C/o 39 Wing, AF
PIN-936839
C/O 56 APO

85024/CEAFU-22/2024-25/ 05 /E8 14 Jan 2025

M/S.....
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e TENDER FOR PROVN OF FIRING RANGE AT AF STN SRINAGAR

Dear Sir(s),

1. Tender documents in respect of above work are uploaded on the site www.defproc.gov.in. The tender is on single stage two cover e-tendering system. The contents of Cover I & Cover II are specified in NOTICE OF TENDER.
2. Bids will be received online by ACCEPTING OFFICER upto the date and time mentioned in the **NOTICE INVITING TENDER (NIT)**. No tender/bid will be received in physical form and any tender/bid received in such manner will be treated as non bonafide tender/bid.
3. Bid will be opened on due date and time fixed for opening in the presence of tenderers/bidders or their authorized representatives, who have uploaded their quotation bid and who wish to be present at the time of opening the bids.
4. Your attention is also drawn to instructions on filling and submission of tender attached herewith. You may forward your points on tender documents and /or depute your technical representative for discussion on tender/drawings and to clarify doubts, if any, on or before bid submission start date .You are requested not to write piece meal points and forward your points duly consolidated before final due date .
5. Unenlisted contractors are required to submit the scanned copies (in pdf file) of documents required as per eligibility criteria mentioned in instructions for filling the tender documents and Appendix 'A' to **NIT** alongwith tender fee on e-procurement portal and submit the physical documents in the office of **Chief Engineer (Air Force) Zone, Military Engineer Services, C/o 39 Wing AF, PIN – 936839 C/o 56 APO** within time limit specified in NIT. Inadequacy/deficiency of documents shall make the bid liable for rejection resulting in disqualification for opening of finance bid.
6. Enlisted contractor of MES shall submit the scanned copies (pdf file) of enlistment letter, tender fee and such other documents as mentioned in Appx 'A' to NIT on e-procurement portal and submit physical documents in the office of **Chief Engineer (Air Force) Zone, Military Engineer Services, C/o 39 Wing AF, PIN – 936839 C/o 56 APO** before date & time fixed for this purpose.
7. 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 quotation/offer received in any other electronic or physical form like email/fax/by hand/through post from tenderer/ bidder even if they are received in time.

8.

In view of delays due to system failure or other communication related failures, it is suggested that the tender/bid be uploaded, if necessary, sufficiently in advance of last due date and time fixed.
9.

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.
10.

PERFORMANCE SECURITY DEPOSIT
- 10.1

After acceptance of the Tender, the contractor will be required to lodge with the Accepting Officer PERFORMANCE SECURITY DEPOSIT @ 5% of CONTRACT Amount. The amount is required to be lodged within 28 (Twenty eight) days of the receipt by the contractor of notification of acceptance of tender/bid , failing which action as stipulated in Condition 19 of GCC (IAFW-2249) shall be taken.
- 10.2

BLANK
11.

Any tender, which proposes alterations to any of the condition, specification laid down in the tender documents or any new condition, whatsoever, is liable to be rejected.

Yours faithfully,

For Accepting Officer

(Signature of the Contractor)
Dated: _____

INSTRUCTIONS ON FILLING AND SUBMISSION OF TENDER

1. PERFORMANCE SECURITY

1.1 In case, the tender submitted by contractor is accepted, the contractor will be required to lodge “Performance Security Deposit” for an amount equivalent to **5%** of the Contract Sum/Lump Sum in favour of the Accepting Officer within 28 (Twenty-Eight) days of the receipt by the contractor of notification of acceptance of his tender/bid. The Performance Security shall be in the form of ‘Bank Guarantee’ or FDR. Failure of the contractor to comply with the requirements of Performance Security shall constitute sufficient grounds for cancellation of the contract and award of work and forfeiture of the Earnest Money. In case of MES enlisted contractor who have not deposited the Earnest Money as per requirement, 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 {See Condition 19 of General Conditions of Contract (IAFW-2249) (as amended under amendment No. 47 to IAFW- 2249)}.

- (a) FDR issued by Nationalized/Scheduled Indian Bank.
- (b) Bank Guarantee given by Nationalized/Scheduled Indian Bank.

If the Contractor failed to deposit above said performance security within 28 days the Accepting Officer has right to cancel the Contract and earnest money in case of unenlisted contract shall be forfeited. Similarly amount equal to earnest money given in NIT shall be recovered from the enlisted contractor.

Govt shall not be responsible for any loss of security or any depreciation in the value of securities/loss of interest while in custody of Govt.

1A ACCEPTABLE FORMS OF EARNEST MONEY DEPOSIT (EMD)

(a) Acceptable forms of EMD are as follows: -

(i)	Government Securities	At 5 percent below market price or at face value, whichever is less.
(ii)	Deposit Receipts of the State Bank of India & its Subsidiaries or other Nationalised banks & Scheduled banks.	At market price
(iii)	Post Office cash certificates	At market price
(iv)	Post Office Saving Bank Account pass book	At market price
(v)	National Savings Certificates	At market price

Notes: - (i) National Saving Certificate mentioned at a serial (v) above and Post Office Saving Bank Account at Serial (iv) above when accepted by Central government as deposit should be pledged in favour of the President of India.

(b) Earnest Money can also be in the form of deposit at call receipt of a Scheduled Bank or where facilities exist, it may be paid into a Government Treasury, a branch of the Reserve Bank of India or the State Bank of India.

(c) As the procedure for depositing and encasing National Savings Certificates is rather cumbersome, it would be in the interest of the contractor himself to lodge Earnest Money in the form of treasury challan or deposit at call receipt of Scheduled Bank because Earnest Money is generally required by MES for a very short period.

1A.1 In respect of “Piece Works” and “Specific Jobs” for which tenders are invited on IAFW-1780 and IAFW-1780-A, contractors will not be required to deposit any Earnest Money. Performance Security Deposit will however be obtained from them.

1A.2 In exceptional cases, Chief Engineers Zone are authorised to exempt specialist firms from depositing earnest money as laid down above. Such discretion will, however, be exercised with the prior concurrence of E-in-C. As per present instructions of Government India, MSMEs are not exempted from submission of EMD.

1A.3 Earnest Money submitted by tenderers other than the lowest tenderer shall be refunded immediately.

2. GENERAL INSTRUCTIONS FOR COMPLIANCE

2.1 The bid received in the electronic form only will be considered. All bids shall be submitted on ‘defproc.gov.in’ portal. Documents should be scanned and forwarded in ‘pdf’ form and ‘xls’ form as indicated.

2.2 Bids shall be uploaded on ‘eprocuremes.gov.in’ portal on or before the bid closing date mentioned in the tender. No tender / bid in any other electronic or physical form like email/fax/by hand/through post will be considered.

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

2.4 Blank.

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

INSTRUCTIONS ON FILLING AND SUBMISSION OF TENDER (Contd/-)

2.6 In the technical bid, a scanned copy of power of attorney in favour of the person uploading the bid using his/her DSC shall be uploaded. In case the digital signatory himself is the sole proprietor, scanned copy of an affidavit on stamp paper of appropriate value to these effects stating that he has authority to bind the firm in all matters pertaining to contract including the Arbitration Clause shall be attached in 'pdf' form. In case of partnership concern or a limited company, digital signatory of the bid/tender shall ensure that he is competent to bind the contractor (through partnership deed, general power of attorney or Memorandum and Articles of Association of the Company) in all the matters pertaining to the contract with union of India including arbitration clause. A scanned copy of the documents confirming of such authority shall be attached with the tender/bid in 'pdf' form, if not submitting earlier. The person uploading the bid on behalf of another partner(s) or on behalf of a firm or company using his DSC shall upload with the tender/bid a scanned copy (in pdf form) of power of attorney duly executed in his favour by such other or all of the Partner(s) or in accordance with constitution of the company in case of company, stating that he has authority to bind such other person of the firm or the company, as the case may be, in all matters pertaining to the contract including the Arbitration Clause.

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

2.8 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.

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

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

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

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

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

3 REVOCATION/REVISION OF OFFER UPWARD/ OFFERING VOLUNTARY REDUCTION, AFTER CLOSING OF BID SUBMISSION DATE AND TIME

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

4 C P M (Critical Path Method)

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

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

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

INSTRUCTIONS ON FILLING AND SUBMISSION OF TENDER (Contd/-)

- 4.4 Department may issue amendments/errata in form of **CORRIGENDUM** to tender/ revised BOQ to the tender documents. The tenderer /bidder is requested to read the tender documents in conjunction with all the errata/amendments/corrigendum, if any, issued by the department.
- 4.5 The CPM network and the various construction activities shall be updated on Primavera and BIM Software for monitoring each and every activity
5. Bidders should check the website periodically for any modified/Revised BOQ uploaded by the Department through Corrigendum and it is bidder’s responsibility to ensure uploading of correct BOQ. The bidder whose bid is not on correct BOQ shall be treated as NON-BONAFIDE.
- 6 These instructions shall form part of the contract documents.

Signature of Contractor

For Accepting Officer

MILITARY ENGINEER SERVICES
NOTICE INVITING TENDER (NIT)

1. A tender in TWO BID SYSTEMS under [www. defproc.gov.in](http://www.defproc.gov.in) is invited for the work from the reputed and experienced contractors meeting the criteria 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 of site, which will be on or about two weeks after the date of acceptance of tender.
4. In case, the tender submitted by enlisted as well as un-enlisted contractor is accepted, the contractor will be required to lodge '**Performance Security Deposit**' for an amount equivalent to **5% of the Contract Sum/Lump Sum in favour of the Accepting Officer in the form of 'Bank Guarantee' or FDR. Work Order No. 01 shall be placed only after submission of Performance Security of adequate value by the Contractor.** In case, a Fixed Deposit Receipt (FDR) of any Bank is furnished by the contractor to the Government as part of the Performance Guarantee and the Bank is unable to make payment against the said Fixed Deposit Receipt, the loss caused there by shall fall on the contractor and the contractor shall forthwith on demand furnish additional security to the Government to make good the deficit. The period of validity of the Bank Guarantee Bond against Performance Security shall be initially valid up to the stipulated date of expiry of Defects Liability Period plus minimum 60 days beyond that. In case final bill 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. Normally contractors whose names are on the MES approved list for the area in which the work lies, and within whose financial limit the estimated amount would fall, may tender/bid but in case of term contracts, contractors of class SS to E may tender/bid. Contractors whose names are on the MES approved list of any MES formation and who have deposited Standing Security and have executed Standing Security Bond may also tender/bid without depositing Earnest money along with the tender/bid.
5. Not more than one tender/bid shall be submitted/uploaded by one contractor or one firm of contractors. Under no circumstances will a father and his son(s) or other close relations who have business dealing with one another be allowed to tender/bid for the same contract as separate competitors. A breach of this condition will render the tenders/bids of both the parties liable for rejection.
6. The office of **Chief Engineer (Air Force) Zone, Military Engineer Services, C/o 39 Wing AF, PIN – 936839 C/o 56 APO** will be the Accepting Officer here in after referred to as such for purpose of the contract.
7. The Technical Bid (Cover- 1) and Financial Bid (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 encashing the DD and shall not have any claim from Government whatsoever on this account.
 - 7.1 Tender form and conditions of contract and other necessary documents shall be available on defproc.gov.in site for downloading and shall form part of contract agreement in case the tender/bid is accepted.
 - 7.2 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.
 - 7.3 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.

NOTICE INVITING TENDER (NIT) (CONTD,,,))

8. The tenderers/bidders are advised to visit the site of work by making prior appointment with **GE (P) AF Srinagar** who is also the Executing Agency of the work (see appendix 'A'). The tenderer/bidders are deemed to have full knowledge of all relevant documents, samples, site etc. whether they have inspected them or not.
- 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.
- 10 The uploading of bid implies that bidder has read the notice and the Conditions of Contracts and has made himself aware of the scope and specification of work to be done and 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.
- 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.
- 11 Invitation for e- tender does not constitute any guarantee for validation of 'T' bid and subsequent opening of finance bid of any applicant/bidder, even of enlisted contractors of appropriate class, merely by virtue of enclosing DD. Accepting officer reserves the right to reject the 'T' bid and not open the finance bid of any applicant/bidder. 'T' bid validation shall be decided by the Accepting officer based on, inter alia, capability of the firm as per criteria given in **Appx 'A'** to this **NIT**. The applicant contractor/bidder will be informed regarding non-validation of his 'T' bid assigning reasons thereof through the defproc website. The applicant contractors/bidder if he so desires may appeal to the next higher Engineer authority **ADG(N)** on email id adgnjm-mes@gov.in with copy to the Accepting officer on email ID jtdircontcezafu2-mes@gov.in before the schedule 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 of any compensation whatsoever for rejection of his bid.
- 12 The Accepting officer reserves the right to accept a tender submitted by a Public Undertaking, giving a price preference over other Tender(s)/bids which may be lower, as are admissible under the government Policy. No claim for any compensation or otherwise shall be admissible for such tenderer/bidder whose tender/bid is rejected.
- 13 Accepting Officer does not bind himself to accept the lowest or any tender/bid or to give any reason for not doing so.
- 14 The tenderer/bidder regarding clarifications on provision in e-tender documents and other request in connection with bidding process can contact on Tele No: **01992-234056** (Dir Contracts), email to HQ CE (AF) Udampur Zone (Email ID: - jtdircontcezafu2-mes@gov.in).
15. Court of the place, from where tender has been issued, shall alone have jurisdiction to decide any dispute out of or in respect of this tender. After acceptance of tender, Condition **72 (Jurisdiction of Courts) of IAFW-2249** shall be applicable.
- 16 This **Notice Inviting Tender (NIT)** including Appendix 'A' shall form part of the contract.

Signature of Contractor

For Accepting Officer

APPENDIX`A' TO NOTICE INVITING TENDER (NIT)

1	Name of the work	PROVN OF FIRING RANGE AT AF STN SRINAGAR
2	Estimated Cost	Rs. 1547.90 lakhs (At Par Market)
3	Period of completion	23 (Twenty Three) months
4	Cost of tender Document	Rs 3000.00 in the shape of DD/Bankers cheque for any schedule Bank in favour of GE (P) AF Srinagar and payable at Srinagar (Note: In case of retendering, the contractor who had quoted in the previous call is not required to submit the cost of tender.)
5	Website/Portal address	www.defproc.gov.in and www.mes.gov.in
6	Type of contract	The tender shall be based on drawings and specifications (IAFW-2159) and GCC (IAFW-2249) and General Conditions of Contract (IAFW-2249) with Schedule 'A' (list of items of work) Pre priced by MES. The Tenderers are required to quote the Lump Sum amounts for parts of Schedule 'A' and quote their rates against each item in BOQ
6(a)	Integrity Agreement	Refer Appx 'B' TO NOTICE OF TENDER enclosed herewith
7	Information & details:-	
	(a) Bid submission start date	Refer critical dates
	(b) Bid submission end date	
	(c) Date of bid opening of bid (Cover – 1)	
8	Eligibility Criteria	They shall satisfy the following criteria :-
	(a) For MES enlisted contractors	(i) They shall have enlistment in Class 'SS' and category 'a(i)' . (ii) They shall not carry adverse remarks in WLR or any similar report circulated by the competent engineer authority.
	(b) For other contractors	The firm not enlisted with MES shall satisfy the following criteria:- (i) Contractor not enlisted with MES should meet the enlistment criteria of 'SS' Class and 'a(i)' category contractor with regard to satisfactorily completion of requisite value works with Central / State Government / Central / State PSUs / AWHO / AFNHB / CGEWHO / DGMAP, annual turnover, bank solvency, working capital and other requirements given in Para 1.4 & 1.5 of Section 1 of MES Manual on Contracts 2020 as available in all MES formations as well MES website (www.mes.gov.in). (ii) Not carrying adverse remarks in Work Load Report (WLR) or any other similar report circulated by any competent authority, if already working in MES. (iii) Not suspended/debarred/blacklisted (either permanently or temporarily) from participating in any bid or for business dealings by any Central/State Government Department 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.

APPENDIX 'A' TO NOTICE INVITING TENDER (NIT) (CONTD...)

8	(c) Technical PQC criteria for All Contractors (MES enlisted or un-enlisted)	Not applicable
9	Tender issuing and Accepting officer	Chief Engineer Air Force Zone HQ CEAUF, Udhampur Contact details: V K S Baghel, Offg Director (Contracts) Phone No:- 01992-234040 Email Id:- jtdircezafu2-mes@gov.in (Phone No:- 01992-234056 Email Id:- jtdircezafu2-mes@gov.in Chief Engineer (AF) Udhampur Zone
10	Executing agency	Garrison Engineer (P) AF Srinagar
11	Earnest Money Deposit	Rs 11,00,000.00 in favour of GE (P) AF Srinagar

NOTES:

1. In case after opening of Cover 1, the number of MES enlisted contractors of eligible class as well eligible Un-enlisted contractors, if any, fulfilling the other eligibility criteria given in NIT is less than 7 (seven), applications in r/o 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 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 the 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 work in hand showing names of work, names of accepting officers, contract amounts, dates of commencement and completion(stipulated) and progress as on bid submission date. Such contractors, if claim to fulfill the criteria of upgradation shall also upload the requisite information/documents in support of upgradation. These details shall be verified by the tender issuing authority from concerned formation in case bids of such contractors are considered for evaluation.
2. In case after opening of Cover-1, the number of MES enlisted contractors of eligible class as well as un-enlisted contractors, if any, fulfilling the other eligibility criteria given in NIT are 7 (Seven) or more applicable of only those one class below the eligible class bidders shall be considered, who have previously completed similar works satisfactorily and are meeting the criteria of upgradation in respect of past experience of completed works (individual work experience and/or average annual turnover as applicable) and financial soundness (solvency/financial soundness and working capital) as per details given in Manual on Contracts. Therefore such contractors shall upload the requisite information/documents in the Cover-1.
3. Unenlisted contractor shall be considered provided he meets the criteria. Foreign firms shall not be eligible for this tender. However Indian Firms having foreign national/Indian nationals staying abroad/Indian national having taken foreign citizenship as director(s) shall be considered subject to security clearance from the concerned authorities.
4. **Contractors enlisted with MES will upload following documents in Cover 1 for checking eligibility.**
(a) Application for tender on Form's letterhead.
(b) Enlistment letter issued by the Registering Authority duly renewed for the cycle period in vogue.

APPENDIX 'A' TO NOTICE INVITING TENDER (NIT) (CONTD...)

(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) Scanned copy of EPF Registration certificate issued by EPFO

(e) GST Registration Number

(f) Integrity Pact (**Refer to Srl Note No 15**) hereinafter.

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

(a) Application for tender on Firm's letterhead.

(b) Scanned copy of DD/Bankers cheque toward cost of tender and Earnest Money Deposit (EMD) instrument.

(c) Copy of Police Verification Report/Police Clearance Certificate/Character Certificate from the Police Authority of the area where the registration 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) of Appendix 'A' here-in-before as per Para 1.5 of Section 1 of MES Manual on Contracts 2020.

(e) Details of works being executed in MES, if any.

(f) Scanned copy of EPF Registration certificate issued by EPFO

(g) GST Registration Number

(h) Integrity Pact (**Refer to Srl Note No 15**) hereinafter.

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

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

(a) In case of tenders from an enlisted contractor of MES, where scanned copies of requisite DD/Bankers Cheque towards cost of tender have been uploaded in Cover 1 but Physical copies are not received within the stipulated period, their financial bids (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/Banker Cheque towards cost of tender have been uploaded in Cover 1 but physical copies are not received within the stipulated period, their financial bids (Cover 2) will not be opened. Name of such contractors along with complete address shall be circulated for not opening of their bids for a period of six months commencing from the date of opening of Financial bid (Cover 2).

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

(d) If original DD against tender cost is not received from MES enlisted contractors within a period of **5 (five) days** from the Bid submission end date and time, subject to satisfying other prequalifying criteria, the financial bid shall be opened. The amount of cost of tender shall be recovered from any amount due to the MES enlisted contractor. Failure of non submission of hard copy of DD tantamount to willful negligence with ulterior motive and therefore the tenderer shall be barred to tender during the period of 6 (six) months commencing from the date of opening of financial bid and in case of un-enlisted contractors, if original DD is not received within the time stipulated above, **the cover 1 ('T' bid) shall not be validated for opening of financial bid. Name of such contractors alongwith complete address shall be circulated to all MES formations for non opening of bids for the period of six months commencing from date of opening of financial bid.**

APPENDIX 'A' TO NOTICE INVITING TENDER (NIT) (CONTD...)

(e) Integrity pact duly signed on each page by the bidder shall be uploaded as a part of tech bid cover I. Hard copies of these documents will be submitted within 5 days of last date and time of opening of 'T' bid. Hard copy of original integrity pact duly signed on each page and authenticated by the witnesses shall be forwarded by post along with above mentioned documents. Bid of all the bidder who do not upload signed copy of integrity pact along with Tech bid cover I shall be rejected.

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

(g) **Performance Security:-**

(i) **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.**

(aa) A Bank Guarantee in the prescribed form.

(ab) Government Securities, FDR or any other Government Instruments stipulated by the Accepting Officer.

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

(iii) Failure of the successful contractor to comply with the requirements brought out under sub para (g)(i) above shall constitute sufficient grounds for cancellation of the award of work. An amount equal to the Earnest Money as stipulated in the Notice Inviting Tender shall be notified to such bidders for depositing the amount through MRO.

Issue of tender to such tenderers shall remain suspended till the aforesaid amount equal to the Earnest Money is deposited in Government Treasury. In addition, bids of such tenderers /bidders and his related firm shall not be opened in second call or subsequent calls. Issue of tender to such tenderers shall remain suspended till the aforesaid amount equal to the Earnest Money is deposited in Government Treasury.

(iv) All compensation or other sums of money payable by the contractor to the Government under the terms of this contract or under any other contract with Government may be deducted from, or paid by the sale of a sufficient part of the Performance Security or from the interest arising there from or from any sums which may be due or become due to the contractor by the Government on any account whatsoever and in the event of his Performance Security being reduced by reason of any such deduction, or sale as aforesaid, the contractor shall within ten days thereafter make good in cash or securities, endorsed as aforesaid, any sum or sums which may have been deducted from or realized by the sale of his Performance Security or any part thereof. Government shall not be responsible for any loss of securities or any depreciation in the value of securities while in their charge nor for loss of interest thereon.

(v) In the event of contract being cancelled under Condition 52, 53 & 54 of General Conditions of Contract, the Performance Security shall be forfeited in full and shall be credited into Consolidated Fund of India.

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

9. After opening of Cover 1 and during its technical evaluation, in case any deficiency is noticed in the documents required to be uploaded by the tenderers as per NIT, a communication in the form of e-mail/SMS/Speed Post etc shall be sent to the contractor to rectify the deficiency with 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.

APPENDIX`A` TO NOTICE INVITING TENDER (NIT) (CONTD...)

10. Invitation for e-tender does not constitute any guarantee for validation of Technical bid and subsequent opening of financial bid of any applicant/bidder merely by virtue of enclosing DD. Accepting Officer reserves the right to reject the Technical bid and not to open the financial bid of any applicant/bidder. Technical bid validation shall be decided by the Accepting Officer based on eligibility of the firm as per criteria given in this Appendix. Tenderer/bidder will be informed regarding non-validation of his Technical bid assigning reasons therefore through tender evaluation report which shall be uploaded on website. Such tenderer, if desire, may appeal to next higher Engineer Authority (NHEA) viz. **ADG (North) Jammu on e-mail ID adgnjm-mes@gov.in** with copy to the Accepting Officer on email before the scheduled date of opening of Cover 2. NHEA shall decide the matter within a period of seven working days from the date of receipt of appeal. The decision of the NHEA shall be final and binding. The tenderer/bidder shall not be entitles 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. Any un-enlisted contractor shall not be allowed to execute more than two works at a time. For this purpose, details of the works being executed by such a contractor shall be uploaded in the Cover-1 of the bid and shall be checked/verified by the Accepting Officer.
12. In case the BOQ is revised through the corrigendum and the bidder has failed to quote on revised BOQ (i.e. he has quoted on pre revised BOQ), such bid shall be treated as wilful negligence by the bidder and his quotation shall be considered non-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 unlisted tenderer. Earnest Money deposit by him shall be forfeited. In case of MES enlisted tenderer having deposited the Standing Security Bond, an amount equal to the earnest money stipulated in the NIT shall be notified to the tenderer for depositing through MRO and consideration of such tenderer in tender evaluation for future works shall remain suspended till the aforementioned amount is deposited in the Government Treasury. No other disciplinary/administrative action shall be taken against such tenderers. In such a situation, the next lowest offer shall not be considered for acceptance. Instead, retendering shall be restored 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 be issued simultaneously. Firms shall be termed as related if Proprietor/one or more Partners/Directors are common. Decision of Accepting Officer on issue/deny the tender to any one of the related firms shall be final and binding.
15. **INTEGRITY PACT** *(Refer Appendix 'B' to Notice of Tender (NIT) e-tender documents enclosed herewith as **serial page No** to of tender documents).*

OBLIGATION

For Accepting officer

Dated_____

(Signature of Contractor)
File No _____

Email id: jtdircontcezafu2-mes@gov.in
HQ Chief Engineer (AF) Zone
Military Engineer Services
C/o 39 Wing, AF
PIN-936839C/O 56APO

INTEGRITY PACT

GENERAL.

1. Whereas the President of India represented by Chief Engineer (CE) here-in-after referred to as Principal/Owner and the first part, has floated the Tender (NIT No) and intend to award, under laid down organizational procedure, contract **PROVN OF FIRING RANGE AT AF STN SRINAGAR** (Name of work) hereinafter referred to as works/service and M/s _____ represented by _____ (which term unless expressly indicated by the contract, shall be deemed to include its successors and its assignees), hereinafter referred to as the Bidder/Contractor and the second part is willing to carry out the works / services.

2. Whereas the Bidder is a Proprietorship Concern/Partnership Firm / Limited Liability Firm/Private Limited company / Limited Company / Joint Venture constituted in accordance with the relevant law in the matter and the Principal / Owner is Chief Engineer (CE) performing its function on behalf of the President of India.

Objectives

3. Now, therefore, the Principal / Owner and the Bidder agree to enter into this pre-contract agreement, referred to as INTEGRITY PACT (IP), to avoid all forms of corruption by following a system that is fair, transparent and free from any influence / prejudiced dealings prior to, during and subsequent to the conclusion of the contract to be entered into with a view to: -

3.1 Enabling the Principal / Owner to get the desired works / service at a competitive price in conformity with the defined specifications of the Services by avoiding high cost and the distortionary impact of corruption on public procurement.

3.2 Enabling Bidder to abstain from bribing or any corrupt practice in order to secure the contract by providing assurance to them that their competitors will also refrain from bribing and other corrupt practices and the Principal / Owner will commit to prevent corruption , in any form, by their officials by following transparent procedures..

Commitments of the Principal / Owner

4. The Principal/Owner commits itself to the following:-

4.1 The Principal / Owner undertakes that, no official of the Principal / Owner connected directly or indirectly with the contract will demand, take a promise for or accept, directly or through intermediaries, any bribe, consideration, gift, reward, favour or any material or immaterial benefits or any other advantage from the Bidder, either for themselves or for any person, organization or third party related to the contract; in exchange for an advantage ; in the bidding process, bid evaluation, contracting or implementation process related to the Contract.

4.2 The Principal / Owner will, during the pre-contract stage, treat all Bidders alike and will provide to all Bidders the same information and will not provide any such information to any particular bidder which could afford an advantage to that particular Bidder in comparison to other Bidders.

4.3 All the officials of the Principal/Owner will report to the appropriate Government office any attempt(s) or completed breach(s) of the above commitments as well as any substantial suspicion of such a breach.

5. In case of any such preceding misconduct on the part of such officials(s) is reported by the Bidder to the Principal/Owner willful and verifiable facts and the same is prima facie found to be correct by the Principal/Owner, necessary disciplinary proceedings , or any other action as deemed fit. Including criminal proceedings may be initiated by the Principal/Owner and such a person shall be debarred from further dealing related to the tender/contract process. In such a case while an inquiry is being conducted by the Principal/Owner the tender process /proceedings under the contract would not be stalled.

Commitments of Bidder

6. The Bidder commits himself to take all measures necessary to prevent corrupt practices unfair means and illegal activities during any stage of his bid or during any pre-contract or post-contract stage in order to secure the contractor in contract in furtherance to secure it, and in particular commits himself to the following:-

INTEGRITY PACT

6.1 Bidder will not offer, directly or through intermediaries, any bribe, gifts, consideration, reward, favour any material or non-material benefit or other advantage, commission, fee brokerage or inducement to any official of the Principal/Owner, connected directly or indirectly with the bidding process, or to any person, organization or third party related to the contract in exchange for any advantage in the bidding, evaluation contracting and implementation of the Contract.

6.2 The Bidder further undertakes that he has not given, offered or promised to give directly or indirectly any bribe, gift, consideration, reward, favour any material or non-material benefits or other advantage, commission, fees brokerage or inducement to any official of the Principal/Owner or otherwise in procuring the Contract of forbearing to do or having done any act in relation to the obtaining or execution of the contract or any other Contract with the Government for showing or forbearing to show favour or disfavour to any person in relation to the contract or any other contract with the Government.

6.3 The Bidder will not collude with other parties interested in the contract to impair the transparency, fairness and progress of the biddings process, bid evaluation, contracting and implementation of the contract.

6.4 The Bidder will not accept any advantage in exchange for any corrupt practice, unfair means and illegal activities.

6.5 The Bidder would not enter into conditional contract with any Agent(s), broker(s) or any other intermediaries wherein payment is made or penalty is levied directly or indirectly, on success or failure of the award of the contract.

6.6 The Bidder commits to refrain from giving any complaint directly or through any other manner without supporting it with full and verifiable facts. Complaint will not processed as per Guidelines for Handling of Complaints in vogue. In case the complaint is found to be vexatious, frivolous or malicious in nature. It would be construed as a violation of integrity Pact.

7. Previous Transgression

7.1 The Bidder declares that no previous transgression occurred in the last three years immediately before signing of this integrity Pact with any other company in respect of any corrupt practices envisaged hereunder or with any Public Sector Enterprise in India or any Government Department in India.

7.2 If the Bidder makes incorrect statement on this subject, bidder can be disqualified from tender process or the contract and if already awarded, same can be terminated for such reason.

8 Company Code of Conduct

8.1 Bidders are advised to have a company code of conduct (clearly rejecting the use of bribes and other unethical behavior) and a compliance program for the implementation of the code of conduct throughout the country.

9 Sanction for Violation

9.1 Any breach of the aforesaid provisions by the Bidder or any one employed by him or acting on his behalf (whether with or without the knowledge of the Bidder) or the commission of any offence by the Bidder or any one employed by him or acting on his behalf, as defined in Chapter IX of the Indian Penal Code 1860 or the Prevention of Corruption Act 1988 or any other act enacted for the prevention of corruption shall entitle the Principal/Owner to take all or any one of the following actions, wherever required:-

(i) Technical bid of the Bidder will not be opened. Bidder will not be entitled to or given any compensation. However, the proceedings with the other Bidder(s) would continue.

(ii) Financial bid of the Bidder will not be opened, Bidder will not be entitled to or given any compensation. However, the proceedings with the other Bidder(s) would continue

(iii) The Earnest Money Deposit shall stand forfeited either fully or partially, as decided by the Principal / Owner, in case contract is not awarded to the Bidder and the Principal/Owner shall not be required to assign any reason therefore. For enlisted contractors an amount less than or equal to Earnest Money Deposit as decided by the Principal/Owner shall be deducted from any amount held with the Department / any payment due.

INTEGRITY PACT

- (iv) To immediately cancel the contract, if already concluded /awarded without any compensation to the Bidder.
- (v) To encash the Performance Security furnished by the Bidder
- (vi) To encash all or any other Contract(s) with the Bidder.
- (vii) To temporarily suspend or temporarily debar/permanently debar the bidder as per the extent policy
- (viii) If adequate amount is not available in the present tender / Contract, the deficient amount can be recovered from any outstanding payment due to the Bidder from the Principal/Owner in connection with any other contract for any other works / services.
- (ix) If the Bidder or any employee of the Bidder or any person acting on behalf of the Bidder, either directly or indirectly, is closely related to any of the officers of the Principal / Owner, or alternatively if any close relative of an officer of the Principal/Owner has financial interest/stake in the bidder's firm, the same shall be disclosed by the Bidder at the time of submission of tender. Any failure to disclose the interest involved shall entitle the Principal / Owner to debar the Bidder from the bid process or rescind the contract without payment of any compensation to the Bidder. The term 'close relative' for the purpose would mean spouse whether residing with the Government servant or not, but does not include a spouse separated from the Government servant by a decree or order of a competent Court. , son or daughter or step son or step daughter and wholly dependent upon government servant, but does not include a child or step child who is no longer in any way dependent upon the government servant or of whose custody the Government servant has been deprived of by or under any law any other person related, whether by blood or marriage, to the Govt servant or to the Government servant's wife or husband and wholly dependent upon Government servant.
- (x) The Bidder shall not lend to or borrow any money from or enter into any monetary dealings or transactions, directly or indirectly, with any employee of the Principal / Owner and if he does so, the Principal / Owner shall be entitled forthwith to cancel the contract and all other contracts with the Bidder

9.2. The decision of the Principal / Owner to the effect that a breach of the provision of this integrity Pact has been committed by the Bidder shall be final and binding on the Bidder. However, the Bidder can approach the independent External Monitor(s) (IEMs) appointed for the purposes of this Pact.

10. **Independent External Monitors (IEMs)**

10.1 MoD has appointed the following Independent External Monitors for this Pact in consultation with the Central Vigilance Commission:-

SI NO	Name of IEM	e-mail id
1	Shri Narayan Murthy Ganapathy , IFoS (Retd)	Gana_narayan@yahoo.com.
2	Shri Lalatendu Mohanti , IPS (Retd)	L.mohanti@gmail.com.

10.2 Details of Nodal officer nominated by E-in-C's Branch are as follows:-

Name : Shri P K S Sengar, Director (Contracts)
e-mail id : dircont1einc-mes@nic.in
Mobile no : 9131948501
Tele (Office) : 011-23019154
Postal Address : Room No 158
Dte of Contract Management/E8
Engineer-in-Chief's Branch
Kashmir House, Rajaji Marg
New Delhi-110011

10.3 In case of any complaint with regard to violation of integrity Pact, either party can approach IEMs with copy to the Nodal Officer and the other party. If any such complaint from bidder is received by the Principal / Owner, the Principal / Owner shall refer the complaint to the independent External Monitors for their recommendations / inquiry report.

INTEGRITY PACT

10.4 If the IEMs need to peruse the relevant records of the Principal / Owner and / or of the Bidder / Contractor in connection with the complaint sent to them, the Principal/ Owner and / or the Bidder/ Contractor shall make arrangement for such perusal of records by the IEMs as demanded by them including unrestricted and unconditional access to the project documentation and minutes of meeting. If records / documents of Sub- Contractor(s) are also required to be perused by the IEMs, the Bidder shall make arrangement for such perusal of records by the IEMs as demanded by them. IEMs are under obligation to treat the information and documents of the Principal / Owner and Bidder / Contractor / Sub – Contractors with confidentiality.

10.5 The task of the IEMs is to review independently and objectively, any complaint received with regard to violation Integrity Pact and offer recommendations or carry out inquiry as deemed fit . The IEMs are not subject to any instructions by the representative of the parties and shall perform their functions neutrally and independently. The report of inquiry, If any, made by the IEMs shall be submitted to either of the followings for a final and appropriate decision in the matter keeping in view the provision of this Pact:-

(a) Engineer –in Chief in normal cases.

(b) CVO (MES & BRO) / MoD in cases involving vigilance matter.

11. Examination of Books of Accounts

In case of any allegation of violation of any provision of this integrity pact or payment of commission, the Principal / Owner or its agencies shall be entitled to examine the Books of Account of the Bidder and the Bidder shall provide necessary information of the relevant financial documents in English and shall extend all possible help for the purpose of such examination.

12. Law and place of Jurisdiction

This Pact is subject to Indian Law. The place of performance and jurisdiction is the seat of the Principal / Owner.

13. Other Legal Actions

The actions stipulated in this integrity pact are without prejudice to any other legal action that may follow in accordance with the provision of the extent law in force relating to any civil or criminal proceedings.

14. Signing of Integrity Pact on behalf of Bidder

(a) Proprietorship Concern – The Integrity Pact must be signed by the proprietor or by an authorized signatory power of attorney signed by the proprietor.

(b) Partnership firm – The integrity Pact must be signed by all partners or by one or more partner holding power of attorney signed by all partners.

(c) Limited Liability firm – The Integrity Pact must be signed by all partners or by one or more partner holding power of attorney signed by all partners.

(d) Private Limited / Limited Company – The Integrity Pact must be signed by a representative duly authorized by board resolution.

(e) Joint Venture – The Integrity Pact must be signed by all partners and members to joint Venture or by one or more partner holding power of attorney signed by all partner and members to the Joint Venture.

15. Validity

15.1 The validity of this Integrity Pact shall be from date of its signing. It will expire for the contractor after the final payment under the contract has been made or till the continuation of Defect liability periods, whichever is later and for all other bidders, till the Contract has been awarded.

15.2 Should one or several provisions of this Pact turn out to be invalid; the remainder of this Pact remains valid. In this case, the parties will strive to come to an agreement to their original intentions.

INTEGRITY PACT

To

Sub-Tender ID No _____ for the work PROVN OF FIRING RANGE AT AF STN SRINAGAR

Dear sir,

It is hereby declared that MES is committed to follow the principle of transparency, equity and competitiveness in public procurement.

The subject Notice inviting Tender (NIT) is an invitation to offer made on the condition that the Bidder will sign the Integrity Pact, which is an integral part of tender/bid documents, failing which the tender/bidder will stand disqualified from the tendering process and the bid of the bidder would be summarily rejected.

This declaration shall form part and parcel of the integrity Pact and signing of the same shall be deemed as acceptance and signing of the integrity Pact on behalf of MES.

Yours faithfully,

Chief Engineer (CE)

INTEGRITY PACT

To,
Chief Engineer (AF) Udhampur Zone,
Udhampur

Sub: Submission of Tender for the work of '**PROVN OF FIRING RANGE AT AF STN SRINAGAR**'

Dear Sir,

I /We acknowledge that MES is committed to follow the principles thereof as enumerated in the integrity Pact enclosed with the tender/bid document.

I/We agree that the Notice Inviting Tender (NIT) is an invitation to offer made on the condition that I/We will sign the enclosed integrity Pact, which is an integral part of tender documents, failing which I/we will stand disqualified from the tendering process. I/We acknowledge that THE MAKING OF THE BID SHALL BE REGARDED AS AN UNCONDITIONAL AND ABSOLUTE ACCEPTANCE of this condition of the NIT.

I/We confirm acceptance and compliance with the Integrity Pact in letter and spirit and further agree that execution of the said Integrity Pact shall be separate and distinct from the main contract, which will come into existence when tender/bid is finally accepted by MES.

I/We acknowledge and accept the validity of the integrity Pact, which shall be in the line with para 15 of the enclosed integrity Pact.

I/We acknowledge that in the event of my/our failure to sign and accept the integrity Pact, while submitting the tender/bid, MES shall have unqualified, absolute and unfettered right to disqualify the tenderer/bidder and reject the tender/bid in accordance with terms and conditions of the tender/bid.

Yours faithfully

(Duly authorized signatory of the Bidder)

In lieu of IAFW-2159 (REVISED 1947)

TO BE READ IN CONJUNCTION WITH GENERAL CONDITIONS
OF CONTRACTS, IAFW- 2249 (1989 Print)

MILITARY ENGINEER SERVICES

Tele: 01992-234056
FAX: 01992-234040
Email id: jtdircezafu2-mes@gov.in

Military Engineer Services
Headquarters
Chief Engineer (AF) Zone
C/O 39 Wing, AF
PIN-936839
C/O 56 APO

85024/CEAFU-22/2024-25/ 05 /E8 **14 Jan 2025**

e-TENDER for

PROVN OF FIRING RANGE AT AF STN SRINAGAR

Dear Sir(s),

1. M/s _____ of _____ is/are hereby authorised to tender for the above work.
2. The complete tender documents are uploaded on MES portal www.defproc.gov.in . Tender shall be uploaded in two covers viz., Cover-1 and Cover-2. The Cover 1[Technical Bid] and Cover 2 [Finance Bid] will be opened online only as per critical dates given.
3. Any correspondence concerning this tender shall be addressed as indicated at the top of this sheet, quoting the reference as given.

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

(SIGNATURE OF THE OFFICER ISSUING
THE TENDER DOCUMENTS)

APPOINTMENT:
DATED _____

(SIGNATURE OF THE CONTRACTOR)
DATED: _____

SCHEDULE ‘A’ NOTES
NAME OF WORK: PROVN OF FIRING RANGE AT AF STN SRINAGAR.

1. Scope of this contract consists of the following works: -

(i)	Part -I	:	Building works (to be quoted by the tenderer in BOQ)
(ii)	Part-II (Section-I)	:	Internal electrical supply works
(iii)	Part-II (Section-II)	:	Internal electrical supply works (to be quoted by the tenderer in BOQ)
(iv)	Part-III	:	Flame proof wiring
(v)	Part-IV	:	Internal water supply work
(vi)	Part-V	:	Plumbing work
(vii)	Part-VI	:	Road and Path works
(viii)	Part-VII	:	Area drainage works
(ix)	Part-VIII (Section-I)	:	Sewage disposal works
(x)	Part-VIII (Section-II)	:	Sewage disposal works (to be quoted by the tenderer in BOQ)
(xi)	Part-IX	:	External water supply works
(xii)	Part-X (Section-I)	:	External electrification works
(xiii)	Part-X (Section-II)	:	External electrification works (to be quoted by the tenderer in BOQ)
(xiv)	Part-XI	:	Site clearance, excavation and earth work

2. Items and quantities given in Schedule ‘A’ Part-I is firm and the items and quantities (approximate No of units required) for all items of Schedule ‘A’ Parts II to XI as indicated are “provisional”.

3. (a) Sch A Part I has not been pre priced by MES and the tenderers are required to work out and quote their lump sum against each item of building/structure based on drawings, specification, special conditions and other provision of the contract. The contractor shall calculate their own lumpsum price in the manner set out in Condition 6A (D) of IAFW-2249 and quote their lumpsum in BOQ.

(b) Schedule ‘A’ Part II (Sec-I), Part –III, Part-IV, Part-V, Part-VI, Part-VII, Part-VIII (Section-I), Part-IX, Part-X (Sec-I) and Part-XI have been pre-priced by the MES. The tenderers shall calculate their own lump sum price for these parts in the manner set out in Condition 6A (B) of IAFW-2249 and quote their lump sum in BOQ and arrive at a percentage for each of these parts above/below the lump sum price inserted by the MES and insert the same against respective parts in the place provided for in the BOQ.

SCHEDULE 'A' NOTES (CONTD....)

4. The unit rates for all the schedules listed at schedule 'A' Note No 1 here-in-before {except the schedules as listed under Note No 3(b) here-in-before} are to be quoted by the tenderers. The tenderers shall workout their own price for each item of these Parts/Sec of Schedule 'A' and quote their unit rate under Col 6. The unit rates quoted by the tenderer against respective items of Sch 'A' shall deem to allow for provision of all material, labour, processes, operations, testing and requirements as detailed in special conditions and particular specifications.

5. Method of measurement for all items listed in Sch 'A' Part II to XI of Schedule 'A' shall be as given in MES Standard Schedule of rates unless specifically stated otherwise here-in-after for any particular item(s) of work.

6. **Period of completion:**

6.1 The entire work under this contract comprising building work described in Schedule 'A' Part-I together with the connected services catered for in Schedule 'A' Part II to Part XI shall be completed **within 23 (Twenty Three) Months** from the date of commencement of work as stipulated in work order No 1 to be placed by GE. Work order No 1 shall be placed only after submission of performance security of adequate value by the contractor which are mentioned here-in-after. Work order may be placed by the GE in any month of whole year. The contractor shall have no claim whatsoever on this account.

7. Description of building work and items of works given under Col 2 of all parts of Schedule 'A' is in brief. This shall deem to be amplified and read in conjunction with particular specifications, specifications contained in the relevant trade sections of the MES schedule 2009 (Part-I) including preambles and the contract drawings including notes therein.

8. **Unit Rates.**

8.1 **Schedule 'A' Part – I.**

8.1.1 Unit rate of building works under Schedule 'A' Part I shall include: -

(a) Construction of building with fittings, fixtures, fitments including the work of sundry and miscellaneous items and accessories etc complete all as specified in particular specifications and shown on drawings.

(b) All other details of works shown on drawings such as plinth protection, ramp, steps, water proofing treatment, etc except in-applicable details in typical details drawings and details which have been specifically excluded from the scope of the contract; irrespective whether it is covered in Particular specification or not.

(c) Seismic measures to buildings as specified in particular specifications, drawings and relevant IS.

(d) (i) Provision of niches of specifications as directed by GE for housing the main distribution boxes and distribution boards.

(ii) All other details of works shown on drawings (except in-applicable details in typical drawings) whether described in particular specifications or not.

(iii) Foundation, plinth Protection, excavation and earthwork as specified and as shown in drawings.

(e) Any other civil work to accommodate various fittings/fitments all as shown on drawings or as directed by Engineer-in-Charge for smooth utility and soundness of the work.

(f) Blank

(g) (i) EWC, WHB including flushing cisterns and all sanitary fittings, mirrors, steel soap tray, towel rail and other connected items required for completion of work all as shown on drawings.

(ii) Mirrors over WHBs, oval shaped wash basin, fan hook with fan boxes, MS rungs, PVC/ GI pipe spout etc all as shown on drawings.

(iii) Flush valve, brick steps, RCC steps, dwarf walls, toe walls, RCC parapet wall, crumple joint, expansion joint & cover etc in all locations all as shown on drawings.

(h) Any other civil work to accommodate various fittings/fitments all as shown on drawings or as directed by Engineer-in-Charge for smooth utility and soundness of the work.

SCHEDULE ‘A’ NOTES (CONTD....)

- 8.1.2 Unit rates of building works under Schedule ‘A’ Part I do not include the cost of the following works: -
- (a) Services covered under schedule ‘A’ Part II to Part XI in BOQ.
 - (b) Supplying and fixing of bulbs unless specifically stated otherwise in description of any particular item.
- 8.2 Schedule ‘A’ Part II to Part XI
- (i) All items of Schedule ‘A’ Part II to Part XI are for material and labour/supplying and fixing, testing and commissioning as applicable complete unless specifically described otherwise as “Labour only/or supplying/or fixing only or laying only/hanging only” in the description of any particular item under Column 2.
 - (ii) Items included in Schedule A Part II to Part XI are meant for service schedules only. In no circumstances items required for Sch A Part I will be measured and paid under Sch A Part II to Part XI.
9. Contractor’s lump sum in BOQ shall deem to include for all minor constructional details, processes and operations which may not have been specifically mentioned or shown on drawings or given in particular specifications but which are essential for the execution of building/works and services in a sound and workman like manner so as to be structurally and functionally sound. In case of any difference of opinion between GE and the contractor as to whether or not certain items of works constitute(s) minor detail(s) which is included in the contractor’s lump sum, the decision of the Accepting officer shall be final, conclusive and binding.
10. Lumpsum of building work in Sch ‘A’ Part-I shall include the cost of cutting/leaving holes/forming chases etc in walls, floor and ceiling as required and making good with cement mortar 1:3. No adjustment shall, however, be made on this account for pricing of any deviation in respect of Sch ‘A’ Part-I and also for which the quantities indicated as “**PROVISIONAL**” in the tender documents.
11. (a) Under column “3” of Schedule ‘A’, reference to list of drawings only has been mentioned. In the list of drawings, only main drawings have been indicated against respective buildings/works. In case details in respect of items shown on main drawings are not given in the drawings referred to in the main drawings, then the same shall be followed from any other drawings included in the list of drawings. If any drawing mentioned in the contract but inadvertently the same is not included in the list of drawings, in such cases the provisions shown in those drawing (s) shall also be deemed to form part of the contract.
- (b) Under column 6 of “list of drawings” description in brief has been given. This shall be read in conjunction with the description given in respective drawings.
12. The following abbreviations wherever occurs in tender documents shall have the meaning as indicated against each :-
- | | | | |
|-----|-------------------|---|---|
| (a) | RM, M, m | - | Running Metre |
| (b) | CM, cm | - | Centimetre |
| (c) | MM, mm | - | Milimetre |
| (d) | CUM, Cum, cuM | - | Cubic Metre |
| (e) | SQM, Sqm | - | Square Metre |
| (f) | M/L, M & L | - | Material &Labour |
| (g) | S/F, S&F | - | Supplying and fixing |
| (h) | C/O, CO | - | Carried over |
| (j) | B/F, BF | - | Brought forward |
| (k) | Kg/Pbw | - | Kilogram/ Part by Weight |
| (l) | xSqm/ X Sqm | - | 10 Sqm |
| (m) | x RM/ X RM | - | Ten Running Metre |
| (n) | N.B. | - | Nominal Bore |
| (o) | Drg/Drgs/drg/drgs | - | Drawing/Drawings/drawing/ drawings |
| (p) | Cucm/CUCM | - | Cubic Centimetre |
| (q) | PQC/DLC | - | Pavement quality concrete/Dry lean concrete |
| (r) | GSB/WMM | - | Granular sub base/Wet mix macadam |

SCHEDULE ‘A’ NOTES (CONTD....)

(s)	DBM/DAC	-	Dense Bitumen macadam/Dense asphaltic concrete
(t)	≥	-	not more than
(u)	AF	-	Air Force
(v)	rw, RW	-	Runway
(w)	MDD	-	Max Dry Density
(x)	LT	-	Low Tension
(y)	HT	-	High Tension
(z)	MoD	-	Ministry of Defence
(aa)	T &P	-	Tools and Plants
(ab)	NLB	-	Non Load Bearing

(i) The Contractor is also permitted to obtain the aggregates from the existing quarries producing the aggregates subject to approval of aggregates by the GE. The testing charges for the aggregates will be borne by the contractor. The contractor shall ensure that sufficient quantity of aggregates is available from the single/ same source to complete the whole work. However, if the material is to be brought from other quarries also, the testing and mix design will be carried out separately, and material will also be stacked separately.

13. Entry to Work Site: -

13.1 The Contractor shall keep his labour outside AF area. Contractor shall be responsible to obtain security passes for all such labour from AF Security Wing for which Police verification, ID proof photocopies etc. shall be arranged by the Contractor as per prevailing security rules. T&P area shall be fenced and gates shall be provided from security considerations by the Contractor to the satisfaction of GE without any extra cost to the Govt. The contractor shall deploy trained/experienced security guards at gates of fenced/barricaded T&P area and these security guards will regulate movement of labour and ensure discipline in the labour camp and T&P area. Security personnel will maintain liaison with AF Authorities and will assist them in movement of labour, materials, T&P, vehicle etc. at the security gates for details refer Special Condition here in after.

14. **Security/ Restricted Area:** The contractor, his agents, work people etc. shall adhere to the security instructions as laid down in the Contract Conditions as well as by Stn authority from time to time strictly. No claim whatsoever for observance of restrictions imposed at site shall be admissible at any stage.

15A. BLANK

15B. BLANK

SCHEDULE 'A' NOTES (CONTD....)**16. HANDING OVER OF SITES:**

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

17. The contractor has to follow the peripheral road to approach the proposed site of work from the peripheral road, the contractor has to made temporary approach road where ever required up to the site of work. Crossing of loop, taxi track and runway will not be permitted.

18. MAKE OF ITEMS:-

(a) In case makes are mentioned in Sch 'A'/BOQ, the same shall be followed.

(b) If Sch 'A' items do not indicates makes, the makes to be incorporated in the work shall be from those listed in GP-I "Appendix F" to particular Specifications except where makes of items are given in groups it shall be followed Category group-I make for this work. Selection shall be at the option of contractor from the given list. In case manufacture of the item makes ISI and non ISI marked items, then ISI marked item shall only be used. Contractor shall note that even if any makes are given in particular specification, they shall stand superseded and only the makes given in GP-I of Appendix-'F' shall be applicable for all purpose.

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

(d) For material/item not covered in Para (a) to (c) above, the same shall be of best quality available in market and as approved by GE.

(e) Contractor will intimate in writing to GE the name of make of material, brand, model No/Cat Part No etc, which he intends to procure. GE will approve the same within 07 days of receipt of such request after due verification of documents supplied by contractor with his request letter.

(f) Production of purchase voucher and test certificate of main producers mentioned in particular specification are mandatory for all consignment of bitumen, cement and reinforcement steel supplied by the contractor before making any payment and incorporation in work. In case of structural steel, production of purchases vouchers as mentioned in particular specifications are mandatory before any payment and incorporation in work.

19. STEEL FOR REINFORCEMENT

(a) Steel for reinforcement shall be deemed to include for provision of reinforcement comprising of T.M.T (Thermo Mechanically Treated) bars of characteristic strength corresponding to Gde-500/500d/550/550d of I.S.-1786 all as specified in particular specifications in all RCC works.

(b) T.M.T bars shall be provided for all RCC works in lieu of high strength cold twisted deformed bars / cold twisted bars / tor bars / deformed bars (indicated as "# " or " ^ " in the drawings) wherever shown/ indicated / specified in the drawings. T.M.T bars shall be provided without any change in size and spacing.

(c) Weight given in MES schedule for Mild steel round bars shall be considered for use of T.M.T bars in lieu of above mentioned type of bars/steel.

20 All connections to MCCB's/ MCB's /bus bars shall be through thimbles of suitable capacity/size and use of same shall be deemed to be included in the respective items of Sch 'A'. Location of electric fittings shown on the drgs is tentative, the same shall be got approved from the Engineer-in-Charge/ GE.

SCHEDULE 'A' NOTES (CONTD....)

21. In case Machinery/equipments/instruments, wherever required is to be installed the same shall be installed by providing suitable foundation/platform as per Manufacturer's instructions and/or as directed by Engineer-in-charge. The cost of foundation/platform shall be deemed to be included in the respective items of machinery/equipments/instruments. However necessary minus (-) Deviation order shall be made for omission of flooring work for the space left for the foundation of above machinery/equipments/instruments.

22. **Taxes/levies on work and contracts**

The rate quoted by the tenderer in BOQ shall be deemed to be inclusive of all type of taxes/cesses/levies including GST (Goods and Services Tax), toll tax as applicable in the state of J&K as per GST legislation, labour welfare cess/tax etc. as per prevailing taxes and payable under respective statutes in J&K on the date of submission of tender (i.e. bid submission end date). The tenderer is advised to ascertain the rate of all these taxes as applicable in the state of J&K and quote their rates accordingly considering the financial implication involved due to above. No claim on account of any misunderstanding on this issue shall be entertained at a later date.

23. Special condition **31 for REIMBURSEMENT/REFUND ON VARIATION IN "TAXES DIRECTLY RELATED TO CONTRACT VALUE"** indicated various type of taxes directly related to contract value. Consequent upon new goods and service tax legislation has come into effect in J&K state on 08 Jul 2017, certain taxes as indicated in said special condition 30 are subsumed and replaced with new GST legislation in J&K. Thus the different type of taxes as mentioned in special condition 30 shall be deemed to be amended accordingly by replacing the same with new GST legislation in J&K issued vide circular by Govt of J&K Finance Department, Civil Secretariat, Srinagar letter No ET/ESTT/119/GST-SRO/2017 dated 21 Jul 2017. Therefore, the Tenderer is advised to go through the said provision and quote their rates in BOQ accordingly. No claim on account of any misunderstanding shall be entertained at the later date. It may also be noted that any tenderer imposing any condition in this regard or any other account shall be treated as conditional tender and same shall be liable to be rejected.

24. **Pricing of new item through deviation order**. In case of deviation involved in Schedule 'A' Part-I, the same shall be priced at **10% (Minus) on SSR Part-II 2020**. The rates which are not available in SSR Part-II (2020), the same shall be regularized through deviation order and same shall be priced as per condition **62 (G) of IAFW-2249** (General Conditions of Contracts).

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

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

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

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

SCHEDULE 'A' NOTES (CONTD....)

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

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

25 Bank Guarantee Bond against performance Security

25.1 Condition 19.1 of IAFW-2249 provides for submission of performance security by the successful contractor in the form of Bank Guarantee Bonds or Govt Securities, FDR or any other form of deposit stipulated by the Accepting Officer.

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

25.3 If the performance security is provided by the successful contractor in the form of a Bank Guarantee, It shall be issued by Nationalized/Scheduled Indian Bank but its confirmation shall be done only from the Head office of the Bank.

25.4 Form for Bank Guarantee Bond against Performance Security Deposit shall be same as Appendix 2.1 of MES manual on Contracts 2020.

25.5 "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 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."

25.6 The original Bank Guarantee Bond against Performance security along with necessary certified copies shall be sent to the PCDA/CDA by the Accepting Officer for verification and then returning the original to the Accepting Officer and the certified true copies to the CWE/GE(I)/ GE/AGE(I) & AAO. The original BGB shall be kept in the custody of the Accepting Officer.

25.7 The Accepting Officer shall evolve a procedure to ensure that timely action is intimated to have the validity date of the Bond extended by the Contractor, or to have it encashed before the same expires. For this purpose, a suitable register shall be maintained by the Accepting Officer. "The register shall also be maintained by the Contract Section with details of performance securities and dates of validity of these instructions and the same shall be an auditable document. Performance security shall be in possession of official who is head of the contract section of the office of concerned Accepting Officer."

SCHEDULE 'A' NOTES (CONTD....)

25.8 In case at a later stage, on account of delay in completion of work or due to any other reason, it is considered that the validity date stipulated in the Bank Guarantee against performance security should be extended, then the contractor shall be directed by the Accepting Officer of the contract to have the validity extended before the date of validity expires. If the contractor fails to do so, the Bank Guarantee shall be encashed before expiry. The encashment notice shall be similar to the format given in Appendix 18.5 of MES Manual on contract 2020 with "in lieu retention money" in Para 1, line 2 replaced by "against performance security". "Accepting Officer shall ensure to issue notice to the concerned contractor to get the validity of Performance security instrument extended suitably two months before the expiry of the validity. In case extension is not received four weeks before the expiry of validity of financial instrument, necessary encashment notice shall be served by Accepting Officer."

25.9 In case the BGB is not encashed by the concerned Bank, the matter shall be referred to the Central office of RBI in Delhi and Mumbai at the following address: -

(a) Jt Chief Officer

**Department of Banking and operations
Reserve Bank of India
Parliament Street
New Delhi-110011**

(b) Reserve Bank of India

**Central Office
Department of Banking and operations & Development Centre -1
World Trade Centre
Cuffe Parade Colaba
Mumbai**

25.10 "Bank Guarantee Bond in lieu of Performance security is due for discharge on expiry of Defect Liability period provided always that the Contractor has been paid the final bill and contractor has rendered the No Demand Certificate (IAFA-451). Immediately after expiry of Defects liability period, GE concerned shall check and ascertain the position of final bill.

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

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

25.10.3 If any recovery is outstanding against the contractor, release of Bank Guarantee will be subject to compliance of the procedure for affecting the recovery/withholding the due amount as stipulated in condition 67 (as amended) of GCC (IAFW-2249)

26. (a) Rates quoted by the contractor for controlled (quality) concrete of minimum flexural strength 40 Kg sq cm shall be deemed to include 400 kg of OPC cement per cubic metre. However cement content shall be provided as per actual mix design, No price adjustment shall be applicable if excess quantity of cement content is used/approved in the execution of work under this item. If cement content of mix design is lower than as stated, the higher one of the two shall be provided.

SCHEDULE 'A' NOTES (CONTD....)

(b) The contractor shall quote rates keeping in view above aspects and no extra claim whatsoever on this account shall be admissible.

27. **PROCUREMENT OF E/M EQUIPMENTS / MATERIAL:** - Procurement of E/M material shall be planned as the work proceeds with prior approval of GE.

28. **INTERIM PAYMENT (RAR) /ADVANCES OF ACCOUNT:**

Interim payment (RAR)/advances on account in respect of buildings listed in Schedule 'A' Part-I shall be made as per yard stick which will be approved by **CWE (AF) SRINAGAR** after the acceptance of tender.

29. **DEMOLITION/DISMANTLING** (If applicable)

(i) Work pertaining to 'Demolition/Dismantling' shall be as specified in relevant items of Schedule 'A' as specified here-in-after for the relevant trades of works and as directed.

30. **SAFETY MEASURES OF WORKMEN**

In addition to the safety precautions to be taken by the contractor as described in special conditions herein and IAFW-2249 General Conditions of Contract, the contractor shall take following additional safety precautions of his workmen without any extra cost of the Government.

30.1 Safety adjustable waist belt with proper arrangement.

30.2 Safety helmets with strap. The above shall be provided to his workmen as and when required and directed by Engineer-in-Charge.

31. **Applicability of Drawings:** - However the other detailed drawings including notes thereon referred to under the "Reference to drawings", amendments to drawings (if any) and the drawings included in the "List of drawings" shall be applicable. In case any drawings referred to in the contract drawings is inadvertently not included in the list of drawings, the same shall also form part of the contract. Also details not given in the drawings referred in the main drawings shall be followed from any other drawing in the list of drawings. In case details of any member are not available in the CA/drawings, details given for a similar member in similar locations shall be followed and deemed to be included in lump sum amount quoted. In case of any difference of opinion between the contractor and the GE, the decision of the Accepting Officer shall be final, binding and conclusive in this regard. No claim, whatsoever, shall be admissible to the contractor on this account.

32. Probable distribution of various items of internal and external services is indicated on drawings. These are tentative and may be varied where necessary at the discretion of the GE. The contractor shall not be entitled for any claim on account of such varied alignment/quantities.

33. Layout of various buildings indicated in the site plan is tentative. No adjustment in price shall be done on account of final approved layout within/in proximity of the site plan area. In the event of delay in finalization of layout/handling over of site for any building and structure/other items of work included in this tender due to any reason, suitable extension of time under condition 11 of IAFW-2249 as decided by Accepting Officer shall only be granted in such case and contractor will not have any claim whatsoever in this regard.

34. The lump sum quoted by the tenderer against each part of Schedule 'A' in BOQ will be deemed to allow for all minor extras and constructional details, which are not specifically shown on drawings and specified in particular specifications but are essential for execution of work/services in workman-like manner and sound construction. In case of difference of opinion as to whether or not a certain item of work constitutes minor extras and constructional details, the decision of the Accepting Officer in this regard shall be final, conclusive and binding.

SCHEDULE 'A' NOTES (CONTD....)

35. The details of works given in the tender documents shall be applicable only to the extent as required for design calculations etc of the scheme. However, if details of any other items not given in the tender documents but which are considered essential for any purpose, whatsoever, by the tenderer for the purpose of designing and installation of scheme to be installed by the tenderer, shall be ascertained from the site after having prior appointment with GE. Further it is presumed by Dept. that tenderers before submission of their tenders shall visit the site after having prior appointment with GE to understand the detailed requirements and other site conditions affecting the designing of the scheme including equipments and only after ascertaining all these factors, shall quote their rates. No claims, whatsoever, due to not visiting the site or misunderstanding on any account, shall be acceptable at a later date and decision of Accepting Officer in this regard shall be final and binding.

36. The weight of steel section shall be as per weights given in SSR Part-II and if for any steel section the weight is not available in SSR then relevant IS standard weights will be considered for calculation of weight of steel. No extra payment shall be made for steel having more weight than specified in SSR or relevant IS codes. In case of steel section having variations less than limits specified in IS, the steel section shall be rejected and removed by the Contractor without any extra cost to department.

37. The tenderer shall work out his own unit rates from the specification and other information furnished to him in the tender documents and arrive at a lump sum price for each item of Schedule 'A'. It is an express condition of the contract that the tendered amount shall be deemed to include for the full and entire completion of all items of work.

38. Excavation in trenches for pipes shall be paid for authorised width as described in MES Schedule Part-II or actually excavated, whichever is less.

39. Tenderers are requested to visit the site of work to make themselves conversant with the nature and type of work involved before quoting his tender.

40. In the list of drawings, only main drawings have been indicated against respective buildings/works. In case details in respect of items shown on main drawings are not given in the drawings referred to in the main drawings, then the same shall be followed from any other drawings included in the list of drawings. If any drawing mentioned in the contract but inadvertently the same is not included in the list of drawings, in such cases the provisions shown in these drawing (s) shall also be deemed to form part of the contract.

41. A cement mortar plate of size 0.45mx0.6m shall be made on external wall where all details mentioning CA No., Contractor's name, date of completion of work and period of guarantee period are mentioned.

42. Graduate in Civil Engineering will be well conversant and qualified to the satisfaction of Garrison Engineer on utilization of project management tools and techniques using Primavera/ MS Project software. Engineer so employed shall be approved by GE and shall not be changed during the currency of the project without prior permission of GE. The contractor's site office will have necessary software, hardware and qualified operator to monitor the project on a day to day basis using above Primavera/ MS Project tools. The total project duration considered from start to completion will also include likely time delays specific to the area of execution of the work and shall be within the accepted time of completion mentioned in the contract.

42.1. The details in the Project Schedule Network will include:-

- (a) All activities in detail with assigned T&P labour and duration with facility to follow progress.

SCHEDULE ‘A’ NOTES (CONTD....)

- (b) Material Procurement planning and utilization (qty and time of availability) details to ensure actual availability prior to the commencement of the activity/ task. The contractor shall procure and store at site all materials required for at least 30 days construction activities in advance.
- (c) Plant deployment details (activity wise).
- (d) Activity vis-à-vis Labour employment details.

42.2. A Project Schedule will be jointly prepared by contractor and Garrison Engineer using MS Project/ Primavera within two weeks of acceptance of the contract and shall be kept on record of Garrison Engineer for further reference.

42.3. The Project Schedule will be updated daily with all necessary details and the “work done report” will be signed by the contractor and included as part of the “work diary” by the JE and checked by the Engineer-in-Charge. A weekly review of the work progress will be done between the Engineer-in-Charge and the contractor to monitor the progress made during the week vis-à-vis total progress. The weekly report will also include forecast of resources to include plant, stores, labour, etc for the next week. A detailed monthly report will be prepared and submitted to the GE by the contractor and review done jointly to examine increasing resources to ensure completion within the laid down time period.

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

44 **Project Monitoring Group:** Contractor shall extend all facilities to Project Monitoring Group constituted by Air Force Authorities against the subject mentioned work to inspect, monitor and verify any item of work or material at no extra coat to Government.

45. Following remarks shall be deemed to have been inserted in the respective columns of Schedule ‘A’ against each item: -

(a)	Under column of “Drawing No.”	Refer “List of drawings” attached for all items as applicable
(b)	Under column of “Period of completion”	Refer Note No 06 of schedule ‘A’ for all items
(c)	Under column of “Remarks”	Refer notes to schedule ‘A’ for all items
(d)	For item rate schedules (and or to be quoted by tenderer) Under Column – “5”	These schedule are not pre-priced by MES and the pre-priced rate indicated as “0.00” under Col 5 signifies this fact only

46. In the event of any discrepancy between inner dimensions and outer dimensions of the building, the inner dimensions shall be maintained and outer dimension of the building shall be deemed corrected accordingly without any extra cost to the Govt

Signature of Contractor
Dated: _____

For Accepting Officer

SCHEDULE 'A' (CONTD) PART- I: LIST OF WORKS AND PRICES FOR BUILDING WORKS

SI No	Brief description of items of building work	Drawing No	Units	No of units required	Amount	Completion Period of	Remarks
1	2.	3	4	5	6	7	8

Refer BOQ

Signature of the Contractor
Dated : _____

For Accepting Officer

SCHEDULE 'A' (CONTD) PART-II (SEC-I): LIST OF WORKS AND PRICES FOR INTERNAL ELECTRIC SUPPLY WORKS

SI No	Brief description of items of building work	Drawing No	Rate Units	No of units required	Amount	Completion Period of	Remarks
1	2.	3	4	5	6	7	8
1.00	Material and labour for Point wiring for one light point/fan point controlled by one switch with 1.5 sqmm PVC insulated and unsheathed fire retardant low smoke and halogen (FR-LSH) copper conductor single core multi stranded copper cable conforming to IS: 694 (2010) using approved colour code for phase and neutral as per IS code drawn through non-metallic PVC rigid concealed conduit heavy mechanical stress (HMS) grade in accordance with IS:9537 (Part 3) having wall thickness not less than 2.0 mm thick and minimum 20 mm external dia but shall be increased as per actual site requirement in accordance with clause No 19.125 of SI Part I (ISI marked) including conduit accessories like bends, tees, junction boxes etc fixed concealed with all accessories suitable for modular / conventional type fitment, providing sunk cast pressed steel terminal boxes off size made out of 1.5mm thick MS sheet duly painted with black bitumen paint over a two coat of red oxide primer and providing 3 mm thick plastic laminated bakelite sheet (HYLUM BRAND) top cover including PVC insulated and unsheathed FRLSH 1.5 sqmm multi stranded copper conductor cable (green color) as continuous earth lead wire connected to common earth and earth dolly complete all as specified and directed.		992.75 Per Point	14.00	13898.50		
2.00	All as per ser item No 1.00 but for 05 amp socket outlets point controlled by one switch on Independent board complete all as specified and directed.		1070.40 Per Point	12.00	12844.80		

SCHEDULE 'A' (CONTD) PART-II (SEC-I): LIST OF WORKS AND PRICES FOR INTERNAL
ELECTRIC SUPPLY WORKS

1	2.	3	4	5	6	7	8
3.00	All as per ser item No 1.00 here-in-before but for 15 amp socket outlets point controlled by one switch on Independent socket outlet using 2.5sqmm PVC insulated and unsheathed FRLSH copper conductor single core multi stranded flexible copper cable of approved colour code as per IS code for phase and neutral along with PVC insulated and unsheathed FRLSH 2.5 sqmm multi stranded copper conductor cable (green color) as continuous earth lead wire connected to common earth and earth dolly complete all as specified and directed.		<u>1131.39</u> Per Point	1.00	1131.39		
4.00	Supply and fixing 3 module cover plate with frame as per site requirement complete all as specified and directed by Engineer-in-Charge.		<u>217.70</u> Each	13.00	2830.10		
5.00	Supply and fixing 4 module cover plate with frame as per site requirement complete all as specified and directed by Engineer-in-Charge.		<u>247.10</u> Each	5.00	1235.50		
6.00	Supply and fixing 6 module cover plate with frame as per site requirement complete all as specified and directed by Engineer-in-Charge.		<u>309.60</u> Each	3.00	928.80		
7.00	Supply and fixing 3 module modular metal Flush box as per site requirement complete all as specified and directed by Engineer-in-Charge.		<u>179.80</u> Each	13.00	2337.40		
8.00	Supply and fixing 4 module modular metal Flush box as per site requirement complete all as specified and directed by Engineer-in-Charge.		<u>213.40</u> Each	5.00	1067.00		
9.00	Supply and fixing 6 module modular metal Flush box as per site requirement complete all as specified and directed by Engineer-in-Charge.		<u>284.10</u> Each	3.00	852.30		

SCHEDULE 'A' (CONTD) PART-II (SEC-I): LIST OF WORKS AND PRICES FOR INTERNAL
ELECTRIC SUPPLY WORKS

1	2.	3	4	5	6	7	8
10.00	Supply and fixing modular switch 1 way 6/10 Amp 1 Module with suitable plate and cover complete all as specified and directed by Engineer-in-Charge.		<u>260.50</u> Each	26.00	6773.00		
11.00	Supply and fixing modular switch 1 way 16/20 Amp 1 Module with suitable plate and cover complete all as specified and directed by Engineer-in-Charge.		<u>343.70</u> Each	1.00	343.70		
12.00	Supply and fixing modular socket outlet 5 pin, 6 amps flush type complete all as specified and as directed by Engineer-in-Charge		<u>340.54</u> Each	12.00	4086.48		
13.00	Supply and fixing Modular Socket outlet 6/16Amps, 2 and 3 Pin combined 2 module complete all as specified and directed by Engineer-in-Charge.		<u>528.40</u> Each	1.00	528.40		
14.00	Supply and fixing Ceiling rose, surface Bakelite 65 x 50 mm, 3 terminals fixed on PVC Round Block, complete all as specified and as directed.		<u>65.70</u> Each	14.00	919.80		
15.00	Supply and fixing energy efficient LED tube light fitting integrated batten type with built in LED Chip & integral LED driver 20 watt, channel housing & diffuser of length 1200 mm (approx.) with all accessories, fixing arrangement internally pre-wired, making all connection using 1.5 sqmm copper conductor multistrand PVC insulated 3 core flexible cable from ceiling rose to fitting drawn through PVC flexible conduit complete fixed in position and connecting complete all as specified and directed by Engineer-in-Charge.		<u>1305.40</u> Each	12.00	15664.80		

SCHEDULE 'A' (CONTD) PART-II (SEC-I): LIST OF WORKS AND PRICES FOR INTERNAL ELECTRIC SUPPLY WORKS

1	2.	3	4	5	6	7	8
16.00	Supply and fixing LED light fitting mirror type with high output diffuser 2 feet, 10 watt 220 V AC decorative type with driver holder and LED lamp including connecting up with three core flexible copper conductor cable of suitable size complete making all connection using 1.5 sqmm copper conductor multistrand PVC insulated 3 core flexible cable from ceiling rose to fitting drawn through PVC flexible conduit complete all as specified & directed.		<u>1354.81</u> Each	1.00	1354.81		
17.00	Supply & fixing Exhaust fan in PVC body 250 m sweep, heavy duty, AC, single phase, 230Volts, including connection with 0.75 sqmm mutistrand copper conductor flexible wire from ceiling rose, including outside louvers with proper hole, & necessary fixing arrangement & making good to disturbed surface complete all as specified & directed		<u>1606.52</u> Each	1.00	1606.52		
18.00	Supply & fixing Distribution Box SPN 12 way with 200 amps rated bus bar 220 V,50 Hz, IP-65 & IK-09-class-II, weatherproof cabinets, Door and Cabinet fully reversible, Removable chassis and faceplates, including weatherproof glands, rails, etc as specified & directed.		<u>2264.90</u> Each	2.00	4529.80		
19.00	Supply & fixing Distribution Box SPN 4 way with 200 amps rated bus bar 220 V,50 Hz, IP-65 & IK-09-class-II, weatherproof cabinets, Door and Cabinet fully reversible, Removable chassis and faceplates, including weatherproof glands, rails, etc as specified & directed.		<u>1329.44</u> Each	2.00	2658.88		
20.00	Supply & fixing Distribution Box TPN 4 way 415 V,50 Hz, IP-65 & IK-09-class-II, weatherproof cabinets, Door and Cabinet fully reversible, Removable chassis and faceplates, including weatherproof glands, rails, etc as specified & directed.		<u>2642.70</u> Each	1.00	2642.70		

SCHEDULE 'A' (CONTD) PART-II (SEC-I): LIST OF WORKS AND PRICES FOR INTERNAL ELECTRIC SUPPLY WORKS

1	2.	3	4	5	6	7	8
21.00	Supply and fixing Sub main wiring using PVC insulated and unsheathed fire retardant low smoke and halogen (FR-LSH) copper conductor single core multi stranded unsheathed copper cable 1.50 Sqmm (for Phase and neutral) and earth continuity conductor of size 1.50 Sqmm multistranded copper conductor FRLSH 1100 Volts conforming to IS:694 (2010) using approved colour code for phase and neutral as per IS code drawn through non-metallic PVC rigid concealed conduit, 20mm outer dia (ISI marked) heavy mechanical stress (HMS) grade in accordance with IS:9537 (Part 3) having wall thickness not less than 2.0 mm thick. The external dia shall be increased as per actual site requirement in accordance with clause No 19.125 of SSR Part I (ISI marked) including conduit accessories like bends, tees, junction boxes etc fixed concealed with all accessories complete all as specified and as directed by Engineer-in-charge. Note 01: 2 runs of 1.50 Sqmm copper cable & 1 run of 1.50 Sqmm copper cable in and including 20mm PVC conduit shall be measured as one unit. Note 02: The rate of cutting chases required for concealed conduit/flush boxes etc. is deemed to be included in overall rate quoted and nothing extra shall be paid for this.		<u>163.32</u> Running Metre	400.00	65328.00		
22.00	Supply and fixing 415V 10KA 'C' curve miniature circuit breaker (MCB) TPN of 40 Amp and current carrying capacity in the DB complete with connection testing and commissioning complete all as specified and as directed.		<u>2360.74</u> Each	1.00	2360.74		
23.00	Supply and fixing amp rating 240V, 10KA 'C' curve miniature circuit breaker (MCB) SPN of 6-32 Amp in the MCB DB complete with connection testing and commissioning complete all as specified and as directed.		<u>851.20</u> Each	4.00	3404.80		

SCHEDULE 'A' (CONTD) PART-II (SEC-I): LIST OF WORKS AND PRICES FOR INTERNAL ELECTRIC SUPPLY WORKS

1	2.	3	4	5	6	7	8
24.00	Supply and fixing amp rating 240V, 10KA 'C' curve miniature circuit breaker (MCB) SP of 5-32 Amp in the MCB DB complete with connection testing and commissioning complete all as specified and as directed.		<u>294.00</u> Each	16.00	4704.00		
25.00	M&L Sub main wiring using PVC insulated and unsheathed fire retardant low smoke and halogen (FR-LSH) copper conductor single core multi stranded unsheathed copper cable 4.00 Sqmm (for Phase and neutral) and earth continuity conductor of size 4.00 Sqmm multistranded copper conductor FRLSH 1100 Volts conforming to IS:694 (2010) using approved colour code for phase and neutral as per IS code drawn through non-metallic PVC rigid concealed conduit, 20mm outer dia (ISI marked) heavy mechanical stress (HMS) grade in accordance with IS:9537 (Part 3) having wall thickness not less than 2.0 mm thick. The external dia shall be increased as per actual site requirement in accordance with clause No 19.125 of SSR Part I (ISI marked) including conduit accessories like bends, tees, junction boxes etc fixed concealed with all accessories complete all as specified and as directed by Engineer-in-charge. Note 01: 2 runs of 4.00 Sqmm copper cable & 1 run of 4.00 Sqmm copper cable in and including 20mm PVC conduit shall be measured as one unit. Note 02: The rate of cutting chases required for concealed conduit/flush boxes etc. is deemed to be included in overall rate quoted and nothing extra shall be paid for this.		<u>215.00</u> Running Metre	50.00	10750.00		
Total amount of Sch 'A' Part- II (Sec-I) carried over to BOQ				Rs.	1,64,782.22		

Signature of the Contractor
Dated : _____

For Accepting Officer

**SCHEDULE 'A' (CONTD) PART-II (SEC-II): LIST OF WORKS AND PRICES FOR INTERNAL
ELECTRIC SUPPLY WORKS**

SI No	Brief description of items of building work	Drawing No	<u>Rate</u> Units	No of units required	Amount	Completion Period of	Remarks
1	2.	3	4	5	6	7	8

Refer BOQ

Signature of the Contractor
Dated : _____

For Accepting Officer

SCHEDULE 'A' (CONTD) PART-III : LIST OF WORKS AND PRICES FOR FLAME PROOF
WIRING WORKS

SI No	Brief description of items of building work	Drawing No	Rate Units	No of units required	Amount	Completion Period of	Remarks
1	2.	3	4	5	6	7	8
1.00	M&L for explosion flame proof point wiring with single core PVC insulated and (FRLS-H) electric cable with multi stranded copper conductor, Flame proof, of size 2.5 sqmm (nominal area), 1100 Volts grade, single phase and neutral drawn in and including ERW rigid steel stove enameled black conduit heavy duty ISI marked of size 25 mm dia surface type including all flame proof conduit fittings and accessories such as tees, junction boxes, bends duly tested by CMRI Dhanbad suitable for one light/ fan point controlled by one flame proof rotary switch SP one way and including drawing continuous earth wire with stranded copper conductor of size 2.5 Sqmm and connected to earth duly all fixed to wall/ceiling surface with suitable size of clamps and screws, complete all as specified and directed.		<u>1408.49</u> Point	1.00	1408.49		
2.00	M&L for explosion flame proof point wiring with single core PVC insulated and (FRLS) electric cable with multi stranded copper conductor, Flame proof, of size 1.5 sqmm (nominal area), 1100 Volts grade, single phase and neutral drawn in and including ERW rigid steel stove enameled black conduit heavy duty ISI marked of size 20 mm dia surface type including all flame proof conduit fittings and accessories such as tees, junction boxes, bends duly tested by CMRI Dhanbad suitable for one light/ fan point controlled by one flame proof rotary switch SP one way and including drawing continuous earth wire with stranded copper conductor of size 1.5 Sqmm and connected to earth duly all fixed to wall/ceiling surface with suitable size of clamps and screws, complete all as specified and directed.		<u>1267.50</u> Point	2.00	2535.00		

**SCHEDULE 'A' (CONTD) PART-III (CONTD...) : LIST OF WORKS AND PRICES FOR
FLAME PROOF WIRING WORKS**

1	2.	3	4	5	6	7	8
3.00	Supply and fixing LED light fitting 1x40 Watt flame proof, CMRI certified recommended for gas/ vapor group of IIA & IIIB, Zone 1 & 2 and IP 65 protection with die cast aluminum housing with heat resistant toughened glass, with LED tube light fixtures driver, holders, connector etc. Complete with all accessories prewired and including connecting up with three core flexible copper conductor cable with suitable size complete all as specified and as directed.		<u>5936.18</u> Each	2.00	11872.36		
4.00	Supply and fixing Switch flame proof rotary type with termination box in LM6, 16A, Single pole 250V complete all as specified and as directed.		<u>1609.00</u> Each	2.00	3218.00		
5.00	Supply and fixing flame proof switch socket & plug combined in LM6 cable termination box in LM6, 16A, 250V, 2P+earth complete all as specified and as directed.		<u>4512.60</u> Each	1.00	4512.60		

Total amount of Sch 'A' Part-III carried over to BOQ Rs. 23,546.45

Signature of the Contractor
Dated : _____

For Accepting Officer

SCHEDULE 'A' (CONTD) PART-IV: LIST OF WORKS AND PRICES FOR INTERNAL WATER SUPPLY WORKS

SI No	Brief description of items of building work	Drawing No	Rate Units	No of units required	Amount	Completion Period	Remarks
1	2.	3	4	5	6	7	8
1.00	Supply and fixing Steel tubes 15 mm bore galvanised mild steel tube Medium grade galvanized with all fittings fixed to walls and ceilings or laid in floors complete all as specified.		<u>143.00</u>	10.00	1430.00		
			Running Metre				
2.00	Supply and fixing Steel tubes 20 mm bore, 'medium grade', galvanized with all fittings and fixed to walls and ceilings or laid in floors, complete all as specified.		<u>169.00</u>	12.00	2028.00		
			Running Metre				
3.00	Supply and fixing 15mm dia Bib taps chromium plated fancy type with crutch or butterfly handles screwed down screwed for iron pipe complete all as specified and as directed.		<u>607.57</u>	2.00	1215.14		
			Each				
4.00	Supply and fixing PVC flexible connections hot & cold PTMT 450 mm long 15mm dia with flange nuts & washers complete all as specified & directed.		<u>150.00</u>	4.00	600.00		
			Each				
5.00	Supply and fixing concealed Stop valve/Angle valve/ 15mm dia of chromium plated, fancy type with capstan head handle pressure screwed for iron pipe complete all as specified and as directed.		<u>682.03</u>	4.00	2728.12		
			Each				
6.00	Supply and fixing concealed Stop valve/Angle valve/ 20mm dia of chromium plated, fancy type with capstan head handle pressure screwed for iron pipe complete all as specified and as directed.		<u>716.70</u>	2.00	1433.40		
			Each				

SCHEDULE 'A' (CONTD) PART-IV (CONTD...) : LIST OF WORKS AND PRICES FOR
INTERNAL WATER SUPPLY WORKS

1	2.	3	4	5	6	7	8
7.00	Supply and fixing center hole basin mixture, cost copper alloy with capstan heads, chromium plated, fancy type, screwed down high pressure with or without lettered for mixing hot & cold water with long screwed shanks and fly nuts screwed for iron pipe of 15mm bore (weight not less than 800 gms) complete all as specified and as directed.		<u>1743.41</u> Each	2.00	3486.82		

Total amount of Sch 'A' Part-IV carried over to
BOQ

Rs.12,921.48

Signature of the Contractor
Dated : _____

For Accepting Officer

SCHEDULE 'A' (CONTD) PART-V: LIST OF WORKS AND PRICES FOR PLUMBING WORKS

Sl No	Brief description of items of building work	Drawing No	Rate Units	No of units required	Amount	Completion Period of	Remarks
1	2.	3	4	5	6	7	8
1.00	Supply and fixing/laying for 100mm bore cast iron, soil waste and vent pipes (sand cast pipes) in any length with or without ears with cement joints, laid in trenches or in floors complete all as specified and as directed.		<u>817.43</u>	6.00	4904.58		
			Running Metre				
2.00	Supply and fixing/laying for 100mm bore cast iron, soil waste and vent pipes (sand cast pipes) in any length with or without ears with cement joints, fixed to wall complete all as specified and as directed.		<u>904.39</u>	10.00	9043.90		
			Running Metre				
3.00	Supply and fixing/laying for 75mm bore cast iron, soil waste and vent pipes (sand cast pipes) in any length with or without ears with cement joints, laid in trenches or in floors complete all as specified and as directed.		<u>758.50</u>	8.00	6068.00		
			Running Metre				
4.00	Supply and fixing/laying for 75mm bore cast iron, soil waste and vent pipes (sand cast pipes) in any length with or without ears with cement joints, fixed to wall complete all as specified and as directed.		<u>840.42</u>	6.00	5042.52		
			Each				
5.00	Supply and fixing cast iron bends (any radius), diminishing pieces or tapers (larger bore measured) for pipes of 100mm bore with oval access door complete all as specified and as directed.		<u>366.13</u>	2.00	732.26		
			Each				
6.00	Supply and fixing cast iron cowl for 100mm bore of pipe complete all as specified and as directed.		<u>250.00</u>	2.00	500.00		
			Each				
7.00	Supply and fixing cast iron cowl for 75mm bore of pipe complete all as specified and as directed.		<u>190.00</u>	2.00	380.00		
			Each				

SCHEDULE 'A' (CONTD) PART-V: LIST OF WORKS AND PRICES FOR PLUMBING WORKS

1	2.	3	4	5	6	7	8
8.00	Supply and fixing cast iron bends any radius with duck foot or heel rest for 100mm bore complete all as specified and as directed.		<u>533.50</u> Each	2.00	1067.00		
9.00	Supply and fixing salt glazed stone ware traps square or round mouthed type 'P' of size 150mm x 100mm including excavation and earth work in any type of soil, removal of surplus spoil to a distance not exceeding 50m, PCC 1:2:4 type B-1 in bends, surrounds, kerbs etc and cast iron equal hole grating not less than 10mm thick and CI covers of size 450mm x 450mm PGI sheet including jointing with cement complete all as specified and as directed.		<u>753.35</u> Each	2.00	1506.70		
10.00	Supply and fixing cast iron floor trap 75mm bore with CI grating including jointing to waste pipe fixed in cement concrete type B1 1:2:4, dia of outlet 75mm complete all as specified and as directed.		<u>310.00</u> Each	4.00	1240.00		
11.00	Supply and fixing cast iron bends (any radius), diminishing pieces or tapers (larger boar measured) for pipes of 75mm bore complete all as specified and as directed.		<u>295.00</u> Each	4.00	1180.00		
	Total amount of Sch 'A' Part-V carried over to BOQ			Rs.	31,664.96		

Signature of the Contractor
Dated : _____

For Accepting Officer

SCHEDULE 'A' (CONTD) PART-VI: LIST OF WORKS AND PRICES FOR ROAD AND PATH WORKS

Sl No	Brief description of items of building work	Drawing No	Rate Units	No of units required	Amount	Completion Period	Remarks
1	2.	3	4	5	6	7	8
1.00	Rolling and consolidation formation surfaces including filling in soft spots, depression etc., which occur during rolling (for portion coming in cutting/original ground only) to required level, gradient or camber including watering before and during rolling, complete all as specified and directed.		<u>26.00</u> 10 Square Metre	165.00	4290.00		
2.00	Material and labour for 150mm thick (spread thickness) soling (or sub base) with broken boulders or quarried stone of size 100mm to 50mm deposited, spread and levelled in one layer, interstices filled, surface formed and rolled and consolidated to required gradient and camber with 8 to 10 tonne power roller complete all as specified and as directed.		<u>2633.70</u> 10 Square Metre	165.00	434560.50		
3.00	Supply, laying and compacting 150 mm thick (compacted thickness) Wet Mix Macadam (WMM), laid in two layers of 75 mm each , grading as per table 400-13 of MoRTH specifications for Road and Bridge works 2013 manufactured in WMM plant, material comprising of clean, crushed, graded aggregate and granular material premixed with water to a dense mass, spreading with sensor paver and rolling with vibratory roller of capacity 80-100 KN static weight and consolidating to required gradient and camber complete all as specified and directed. The finished surface tolerances to be as per Table 900-1 of MoRTH specifications for Road and Bridge works 2013 complete all as specified and as directed. NOTE: Two layers of WMM having 75 mm thick each shall be measured and paid as one unit of 10 Square Metre.		<u>4424.52</u> 10 Square Metre	165.00	730045.80		

SCHEDULE 'A' (CONTD) PART-VI (CONTD...) : LIST OF WORKS AND PRICES FOR ROAD AND PATH WORKS

1	2.	3	4	5	6	7	8
4.00	Material and labour for preparing un-surfaced water bound macadam surfaces by brushing with wire brushes for removing caked mud etc sweeping with brooms and finally fanning the cleaned surface with gunny bags to remove all loose dust etc for un-surfaced water bound macadam complete all as specified and as directed.		<u>360.60</u>	165.00	59499.00		
			10 Square Metre				
5.00	Material and labour for Applying evenly a priming/tack coat of Bitumen VG-10 grade conforming to IS: 73 at a rate of application of 10 kg/sqm on bituminous surface as specified in Table 500-5 of MoRTH specification for road and bridge works 2013, using mechanical sprayer complete all as complete all as specified and as directed.		<u>512.50</u>	165.00	84562.50		
			10 Square Metre				
6.00	Material and labour for Premix bituminous, macadam using paving bitumen VG 30 as binder content @ 4.00% (Minimum), laid/rolled and compacted to required gradient and camber (consolidated thickness 75mm or less) with 8 to 12 tonne power roller complete all as specified and as directed.		<u>8915.00</u>	82.50	735487.50		
			Cubic Metre				
7.00	Material and labour for bituminous premix Asphaltic Concrete (design mix) 40 mm consolidated thickness with 5.5% binder content by weight of total mix using paving bitumen VG 30 laid with self-propelling mechanical paver complete to required camber and gradient using 8 to 12 tonne power roller, complete all as specified		<u>3828.50</u>	165.00	631702.50		
			10 Square Metre				
8.00	Material and labour for precast cement concrete 1:2:4 type B-1 (using 20mm graded crushed stone aggregates) with solid blocks as in kerb stones exceeding 10cm in width and the like, set in cement mortar 1:4 complete all as specified and as directed.		<u>11036.80</u>	30.60	337726.08		
			Cubic Metre				

SCHEDULE 'A' (CONTD) PART-VI (CONTD...) : LIST OF WORKS AND PRICES FOR ROAD AND PATH WORKS

1	2.	3	4	5	6	7	8
9.00	Material and labour for 100mm thick hardcore of broken stone or boulders of gauge n.exc. 63mm, deposited, spread and levelled in layers n exc. 15 cm thick, watered and well rammed to a true surface complete all as specified and as directed by Engineer-in-charge.		<u>2070.80</u> Cubic Metre	4.00	8283.20		
10.00	Material and labour for 75mm thick PCC 1:4:8 type D-2 (using 40 mm graded crushed stone aggregate) as in floor including finishing the surfaces even & smooth without using extra cement including necessary form water etc. complete all as specified and as directed by Engineer-in-charge.		<u>412.10</u> Square metre	40.00	16484.00		
11.00	Material and labour including laying 60mm thick factory made chamfered edge cement concrete paver block of M-35 grade with approved colour, design and pattern as in foot path of required strength, thickness and size/shape, made by table vibratory method using PU mould, laid in required colour and pattern over and including 50mm thick compacted bed of fine sand, compacting and proper embedding/laying of interlocking paver blocks over and including 25mm thick sand bedding layer through vibratory compaction by using plate vibrator, filling the joint with sand and cutting of paver blocks as per required size and pattern, finishing and sweeping extra sand complete all as specified and as directed.		<u>873.10</u> Sqaure Metre	40.00	34924.00		

Total amount of Sch 'A' Part- VI carried over to BOQ

Rs. 30,77,565.08

Signature of the Contractor
Dated : _____

For Accepting Officer

SCHEDULE 'A' (CONTD) PART-VII: LIST OF WORKS AND PRICES FOR AREA DRAINAGE
WORKS

Sl No	Brief description of items of building work	Drawing No	Rate Units	No of units required	Amount	Completion Period of	Remarks
1	2.	3	4	5	6	7	8
1.00	Material and labour for Plain Cement Concrete Type C-2 1:3:6 (using 40 mm graded crushed stone aggregate) in foundations, filling, mass concrete and drains complete all as specified and directed by Engineer-in-charge.		<u>5862.00</u>	20.55	120464.10		
			Cubic Metre				
2.00	Material and labour for walling of random rubble, uncoursed well bounded bedded and solidly hearted built in cement mortar 1:4 complete all as specified and as directed.		<u>4828.72</u>	68.40	330284.45		
			Cubic Metre				
3.00	Extra over stone walling for hammer dressing to face stones and dressing of face beds and joints, as specified, hammer dressing with maximum depression 20mm on face of line on sand stones and the like complete all as specified and as directed.		<u>271.26</u>	180.00	48826.80		
			Square Metre				
4.00	Material and labour for keyed pointing in cement mortar 1:4 to random or polygonal rubble uncoursed or brought upto course on stone masonry work complete all as specified and as directed.		<u>1415.09</u>	18.00	25471.62		
			10 Square Metre				
5.00	Providing cement concrete 1:2:4 type B-0 using 12.5 mm graded crushed stone aggregate as in lintels upto 1.5m clear span, cills, steps, and other similar bands, plinth courses, string courses, lacing courses, parapets and railing upto 60cm height, copings, kneelers, apex stone, bed plates and the like including weathering slightly rounded or chamfered angles and throating, necessary form work complete all as specified and directed by Engineer-in-Charge.		<u>9259.40</u>	4.56	42222.86		
			Cubic Metre				

SCHEDULE 'A' (CONTD) PART-VII (CONTD...) : LIST OF WORKS AND PRICES FOR AREA
DRAINAGE WORKS

1	2.	3	4	5	6	7	8
6.00	Extra for forming fair finished drain or channel 30 cm inner girth in cement concrete, using extra cement, including forms, moulds, mitred/ stopped ends etc. complete all as specified & directed by Engineer-in-charge. (Inner girth only measured)		<u>43.35</u>	150.00	6502.50		
			Running Metre				

Total amount of Sch 'A' Part- VII carried over to
BOQ

Rs. 5,73,772.33

Signature of the Contractor
Dated : _____

For Accepting Officer

SCHEDULE 'A' (CONTD) PART-VIII (SEC-I): LIST OF WORKS AND PRICES FOR SEWAGE DISPOSAL WORK

Sl No	Brief description of items of building work	Drawing No	Rate Units	No of units required	Amount	Completion Period	Remarks
1	2.	3	4	5	6	7	8
1.00	Plain Cement Concrete Type D-2 1:4:8 (using 40 mm graded crushed stone aggregate) in foundations, filling and mass concrete complete all as specified & directed by Engineer-in- charge.		5483.10	0.95	5208.95		
			Cubic Metre				
2.00	Material and labour for Brickwork with subclass 'B' bricks, straight or curved on plan exc 6m mean radius built in 1:4, complete all as specified and directed		5370.50	1.53	8216.87		
			Cubic Metre				
3.00	Material and Labour plain cement concrete 1:3:6 Type C-2 (using 40 mm Graded crushed stone aggregate) as in surface channels and drains complete all as specified and as directed.		5924.20	0.07	414.69		
			Cubic Metre				
4.00	Material and labour for precast cement concrete 1:2:4 type B-1 using 20mm graded crushed stone aggregates, as in landings, cover slabs (for man holes etc.) chullah hoods, chajjas, water troughs, mangers, shelves and similar articles with plain faces, set in cement mortar 1:4 complete all as specified and as directed.		11053.80	0.21	2321.30		
			Cubic Metre				
5.00	Material and labour for 15mm thick rendering fair faces of brick work or concrete surface in CM 1:4 finished even and smooth (without using extra cement) mixed with water proofing compound @ 3% by weight of cement complete all as specified and as directed. NOTE: Water proofing compound shall be measured and paid separately as "Supply only" under relevant item of this schedule		304.24	8.62	2622.55		
			Square metre				

SCHEDULE 'A' (CONTD) PART-VIII (SEC-I) (CONTD...) : LIST OF WORKS AND PRICES
FOR SEWAGE DISPOSAL WORK

1	2.	3	4	5	6	7	8
6.00	Material and labour for PCC (1:3:6) type C-2 (using 40mm graded crushed stone aggregate) as in concrete bed to drain pipe including packing under and haunching against the sides of pipes after they are laid and tested in for 150mm bore of pipe complete all as specified and directed.		<u>466.89</u> Running Metre	30.00	14006.70		
7.00	Material and labour for 150mm dia reinforced concrete pipe Class NP2 laid in trenches and jointed completely with collars complete all as specified and as directed.		<u>400.00</u> Running Metre	30.00	12000.00		
8.00	Material and labour for TMT bars 10mm dia and above as in reinforcement cut to length bent to shape required including cranking, bending spirally for hooping for columns, hooking ends and binding with mild steel wire (annealed) not less than 0.90 mm dia or securing with clips complete all as specified and as directed.		<u>82.60</u> Kilogram	20.61	1702.39		
9.00	Supply only integral water proofing compound complete all as specified and as directed.		<u>46.10</u> Kilogram	1.59	73.30		

Total amount of Sch 'A' Part- VIII (Sec-I) carried over to BOQ

Rs.46,566.75

Signature of the Contractor
Dated : _____

For Accepting Officer

SCHEDULE 'A' (CONTD) PART-VIII (SEC-II): LIST OF WORKS AND PRICES FOR SEWAGE DISPOSAL

SI No	Brief description of items of building work	Drawing No	Rate Units	No of units required	Amount	Completion Period of	Remarks
1	2.	3	4	5	6	7	8

Refer BOQ

Signature of the Contractor
Dated : _____

For Accepting Officer

SCHEDULE 'A' (CONTD) PART-IX: LIST OF WORK OF PRICES FOR EXTERNAL WATER
SUPPLY WORKS

SI No	Brief description of items of building work	Drawing No	Rate Units	No of units required	Amount	Completion Period of	Remarks
1	2.	3	4	5	6	7	8
1.00	Supply and laying GI tubing medium grade, ISI Marked conforming to IS 1239 Part-I 2004, 20mm bore with and including all fittings such as bends, elbows, tees, short length, socket, union, check nuts, nipples etc. fixed and laid in trenches / floor / under culvert / road crossing etc including testing complete all as specified and as directed.		<u>158.60</u>	260.00	41236.00		
			Running Metre				
2.00	Cutting the CI/MS/GI pipes upto 80 mm dia bore and reducing to required length / for insertion of Tee for new CI/MS/GI pipe including Tee of suitable size (ISI Marked) connections all as directed.		<u>191.06</u>	1.00	191.06		
			Each Job				
3.00	Gun-metal, globe or gate valves, with iron wheel head, screwed both ends for iron pipe of 20mm bore and fixed complete all as specified and as directed.		<u>540.11</u>	1.00	540.11		
			EACH				
4.00	Lagging to pipes used in internal water supply or plumbing all round with, 25min thick bonded mineral wool preformed 'SNAP ON' pipe sections of density 144 Kg/cum conforming to IS 9842 complete all as specified and as directed.		<u>90.10</u>	5.00	450.50		
			EACH				

Total amount of Sch 'A' Part-IX carried over to
BOQ

Rs.42,417.67

Signature of the Contractor
Dated : _____

For Accepting Officer

SCHEDULE 'A' (CONTD) PART-X (SEC-I): LIST OF WORKS AND PRICES FOR
EXTERNAL ELECTRIFICATION WORKS

Sl No	Brief description of items of building work	Drawing No	Rate Units	No of units required	Amount	Completion Period	Remarks
1	2.	3	4	5	6	7	8
1.00	Material and labour for sand cushioning to underground cable with dry sand locally available 8cm thick before laying of the cable and 15cm thick after laying and stretching the cable below the bricks/PCC cover, punning of sand using suitable T&P as per site condition, complete all as specified and as directed by Engineer-in-Charge. Note: Punned thickness of sand to be consider for measurement purpose.		<u>1974.30</u> Cubic Metre	44.00	86869.20		
2.00	Supplying and laying reinforced precast concrete cable cover, LV, Type-I, flat size 250mm x 150mm x 40mm complete all as specified and directed by Engineer-in-Charge.		<u>44.20</u> Each	3666.00	162037.20		
3.00	Supply, laying, jointing and testing, fixing to wall using clamps/pole/floor or in air or passing through pipes /ducts / road/path/drain, laid in trenches, 1100 volts grade heavy duty electric cable XLPE insulated, screened, PVC bedded, galvanised steel wire or wire armoured with electric power cable 1100 volts grade with stranded aluminium conductor of size 35 sqmm 3.5 core conforming to IS - 7098 Part-1 and its latest amendments complete all as specified and as directed by Engineer-in-Charge.		<u>269.75</u> Running Metre	230.00	62042.50		
4.00	Supply, laying, jointing and testing, fixing to wall using clamps/pole/floor or passing through pipes / ducts /road/path/drain, laid in trenches, 1100 volts grade heavy duty electric cable XLPE insulated, screened, PVC bedded, galvanised steel wire or wire armoured with electric power cable 1100 volts grade with stranded aluminium conductor of size 10.00 sqmm 4 core conforming to IS - 7098 Part-1 and its latest amendments complete all as specified and as directed by Engineer-in-Charge.		<u>174.68</u> Running Metre	340.00	59391.20		

SCHEDULE 'A' (CONTD) PART-X (SEC-I) (CONTD.) : LIST OF WORKS AND PRICES FOR EXTERNAL ELECTRIFICATION WORKS

1	2.	3	4	5	6	7	8
5.00	Supply, installation and erection in true vertical position or to be planted as strut steel tubular swaged welded poles complete with MS base plate of 3mm thick of size 250mmx250mm x 12mm at bottom duly welded and MS pole cap at top, poles shall made out of ERW MS tubing confirming to IS-1161 part-II, type 410 SP -31 (09.0 m long) including drilling of holes of required size and nos for fixing of cross arms/clamps, poles shall be painted internally throughout using anti corrosive black bituminous paint conforming to IS: 158-1968 and externally painted with two coat of red oxide primer and two coats of aluminum paint for expose surface and two coats of black bituminous paint for portion embedded in concrete, painting three black/white bands at lower portion of pole each of 300mm height at 300mm spacing, writing pole no. with black paint in yellow paint circle 10cm dia at suitable height complete all as specified and directed by Engineer-in-charge.		<u>12009.70</u> Each	11.00	132106.70		
6.00	Providing cement concrete 1:3:6 type C-1 using 20 mm graded crushed stone aggregate as in lintels upto 1.5m clear span, cills, steps, and other similar bands, plinth courses, string courses, lacing courses, parapets and railing upto 60cm height, copings, kneelers, apex stone, bed plates and the like including weathering slightly rounded or chamfered angles and throating, necessary form work complete all as specified and directed by Engineer-in-Charge.		<u>8629.40</u> Cubic Metre	3.02	26060.79		

SCHEDULE 'A' (CONTD) PART-X (SEC-I) (CONTD...) : LIST OF WORKS AND PRICES
FOR EXTERNAL ELECTRIFICATION WORKS

1	2.	3	4	5	6	7	8
7.00	Plain Cement Concrete Type D-2 1:4:8 (using 40 mm graded crushed stone aggregate) in foundations, filling and mass concrete complete all as specified & directed by Engineer-in- Charge.		5483.10	3.02	16558.96		
			Cubic Metre				

Total amount of Sch 'A' Part- X (Sec-I) carried over to BOQ

Rs. 5,45,066.55

(SIGNATURE OF CONTRACTOR)
DATED: _____

For Accepting Officer

**SCHEDULE 'A' (CONTD) PART-X (SEC-II): LIST OF WORKS AND PRICES FOR
EXTERNAL ELECTRIFICATION WORKS**

SI No	Brief description of items of building work	Drawing No	<u>Rate</u> Units	No of units required	Amount	Completion Period of	Remarks
1	2.	3	4	5	6	7	8

Refer BOQ

Signature of the Contractor
Dated : _____

For Accepting Officer

SCHEDULE 'A' (CONTD) PART-XI: LIST OF WORK OF PRICES FOR SITE CLEARANCE, EXCAVATION AND EARTH WORK

SI No	Brief description of items of building work	Drawing No	Rate Units	No of units required	Amount	Completion Period of	Remarks
1	2.	3	4	5	6	7	8
1.00	Surface dressing not exceeding 15 cm deep and getting out in any type of soil complete all as specified and as directed.		<u>30.20</u>	30000.00	906000.00		
			Square Metre				
2.00	Removing excavated material (soils) exc. 1.50 km but n exc. 5.00 km and depositing where directed all as specified and as directed.		<u>684.60</u>	2597.65	1778351.19		
			Cubic Metre				
3.00	Surface excavation not exceeding 30 cm deep and averaging 15 cm deep and getting out in any type of soil , all as specified and as directed.		<u>73.15</u>	1650.00	120697.50		
			Square Metre				
4.00	Surface excavation not exceeding 30 cm deep and averaging 15 cm deep and getting out in soft/loose soil , all as specified and as directed.		<u>53.10</u>	40.00	2124.00		
			Square Metre				
5.00	Removing excavated material (soil) not exceeding 50m and depositing where directed at a level not exceeding 1.5m above the starting point complete all as specified and as directed.		<u>320.40</u>	58.24	18660.10		
			Cubic Metre				
6.00	Excavation over area not exceeding 1.50m deep and getting out in any type of soil complete all as specified.		<u>354.25</u>	200.91	71172.37		
			Cubic Metre				
7.00	Returning, filling, including spreading, levelling watering and well ramming in layers not exceeding 25 cm thick in any type of soil complete all as specified and as directed.		<u>139.10</u>	238.36	33155.88		
			Cubic Metre				

**SCHEDULE 'A' (CONTD) PART-XI (CONTD...) : LIST OF WORK OF PRICES FOR SITE
CLEARANCE, EXCAVATION AND EARTH WORK**

1	2.	3	4	5	6	7	8
8.00	Excavation in trenches in exceeding 1.5 m wide and not exc 1.5 m in depth for foundation, etc or for shaft, wells, cesspits, manholes, pier holes, etc, n.exc 10 sqm on plan and n exc 1.50 in depth and getting out in any type of soil complete all as specified and as directed.		<u>529.35</u> Cubic Metre	13.88	7347.38		
9.00	Removing excavated material (soil) to a distance exceeding 50m but not exceeding 250m and depositing where directed at a level not exceeding 1.5m above the starting point complete all as specified and as directed.		<u>364.10</u> Cubic Metre	12.97	4722.38		
10.00	Excavation in trenches in exceeding 1.5 m wide and not exc 1.5 m in depth for foundation, etc or for shaft, wells, cesspits, manholes, pier holes, etc, n.exc 10 sqm on plan and n exc 1.50 in depth and getting out in soft/loose soil complete all as specified and as directed.		<u>383.70</u> Cubic Metre	189.54	72726.50		

Total amount of Schedule ‘A’ Part-XI carried over to BOQ.

Rs. 30,14,957.30

Signature of the Contractor
Dated : _____

For Accepting Officer

SCHEDULE 'B'

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

Srl No	Description of items	Rates at which material etc., will be issued to the contractor		Place of issue by name	Remarks
		Unit	Rate (Rs)		
1	2	3	4	5	6
1.	Stone/boulders obtained during excavation (Other than demolition)	CUBIC METRE	1192.13	At site by stack measurement	Refer Sch 'B' Notes given below for all items.

NOTES: -

1.
- This Schedule comprises of 01(One) item only.
2.
- Material listed in Sch “B” will be issued to the contractor solely for the purpose of incorporation in the work.
3.
- It will be the responsibility of the contractor to submit in writing his demand for stores (other than the items obtained at site during execution of work) at least seven days in advance of his due requirement.
4.
- The contractor shall test the items while the stores (other than the items obtained at site during execution of work) are issued to him and ensure that those are in serviceable condition, and free from any defects. No claim whatsoever shall be entertained after the stores are issue to the contractor.
5.
- Boulders and stones obtained from excavation shall be sorted out and neatly stacked at site by the contractor as directed by the Engineer-in-Charge without any extra cost to the Govt. The aforesaid boulders and stones in stack to the extent obtained shall be the property of Govt. Those boulders and stones in stack(s) shall be issued under Schedule ‘B’ on payment for incorporation, if approved in works, after breaking by the contractor in specified sizes as directed by the Engineer-in-Charge. No claim on this account shall be entertained.

(SIGNATURE OF CONTRACTOR)

DATED: _____

For Accepting Officer

SCHEDULE ‘C’

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

(See Condition 15, 34 and 35 of IAFW-2249)

_____NIL_____

SCHEDULE ‘D’

TRANSPORT TO BE HIRED TO THE CONTRACTOR

(See Condition 16 and 36 of IAFW-2249)

_____NIL_____

(SIGNATURE OF CONTRACTOR)

For Accepting Officer

DATED:_____

TENDER

To,
The President of India

Having examined and perused the following documents: -

1. Specifications signed by AAD (C) / AD (C) /Jt Dir (C) / Dir (C).
2. Schedule 'A', 'B', 'C' And 'D' attached hereto.
3. MES Standard Schedule of Rates 2009 Part-I for specifications with Errata/Amendments No. **1 to 3** and MES Standard Schedule of Rates 2020 Part-II with Errata/Amendments No. **1 to 122 and including Section 30** for rates here-in-after referred to as the MES Schedule.
4. General conditions of contracts, IAFW-2249 (1989 print) together with errata 1 to 20 and amendments No **1 to 49**.
5. **Water**: Condition 31 of IAFW-2249, (General Conditions of Contracts) **Water shall not be supplied by MES**

Should this tender be accepted: -

* I/We agree

(a) That the sum of **Rs.6,27,000.00 (Rupees six lakhs twenty seven thousand only)** forwarded as earnest money shall either be retained as a part of security deposit or refunded by the Government on receipt of the appropriate amount of Security Deposit all as per Condition 22 of IAFW-2249.

(b) To execute all the works referred to in the said documents upon the terms and conditions contained or referred to therein and as detailed in the General Summary and to carry out such deviations as may be ordered vide Condition-7 of IAFW-2249 up to a maximum of **10% (Ten percent)** and further agree to refer all disputes as required by condition-70 & 71 of IAFW 2249 to authority i.e Sole Conciliator/ Dispute Resolution Board (DRB)/Sole Arbitrator (as applicable) of a serving officers(s) having degree in Engineering or equivalent or having passed final/Direct Final Examination of Sub Div-II from Institution of Surveyors (India), recognized by the Govt. of India to be appointed by **Engineer-in-Chief, AHQ**, or in his absence, the officer Officiating as Engineer-in-chief or Director General of Works, if specifically delegated in writing by the Engineer-in-Chief, whose decision shall be final, conclusive and binding.

* To be deleted wherever not applicable.

Contd../-

BOQ (GENERALSUMMARY)

Total Contract sum / Lump sum of Rs. _____ (Rupees _____

_____))

Signature _____ in the capacity _____

duly authorised to sign the tender for and on behalf of _____

_____ **(IN BLOCK LETTERS)** dated: _____

Witness _____ POSTAL ADDRESS: _____

Address _____ Telegraphic Address _____

_____ Telephone Number _____

ACCEPTANCE

_____ Alterations have been made in these documents and as evidence that these alterations were made before the execution of the Contract Agreement and they have been initialed by the Contractor and AAD (C) / AD (C) /Jt Dir (C) / Dir (C).

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

The above tender was accepted by me on behalf of the President of India for the item rates, contained therein for the contract sum of Rs. _____
(Rupees _____

_____))

on the _____ day of _____ 2023.

SIGNATURE: _____
APPOINTMENT: CE
Chief Engineer Air Force
Air Force Station
Udhampur
(For and on behalf of the President of India)
Accepting Officer

SPECIAL CONDITIONS**GENERAL:**

1. (a) General specifications mentioned anywhere in the contract including those in General Conditions of Contracts, viz., IAFW-2249, shall mean the specifications given in the MES Standard Schedule of Rates 2009 (Part-I) for specifications and MES Standard Schedule of Rates 2020 (Part-II) for rates/IS Codes/IRC Codes/MORTH Specification for Roads & Bridges. Particular specifications given here in after are in brief and only to particularise, amend and emphasis the specification given in this codes.

(b) Any work shown on drawing(s) but not described in particular specifications shall, unless specifically described to be excluded from the contract, be deemed to be included in the rate quoted by contractor for schedule 'A' in BOQ. In case of doubt with regard to the manner of details for executing the work, the decision of the Accepting Officer shall be final, binding and conclusive.

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

(d) The tenderer is advised to point out in writing discrepancy (s) if any in the tender documents, at least 15 days before the due date of receipt of tender. In case of discrepancy(s) in contract documents is/are noticed by the Contractor during execution of the works, it shall be brought out to the notice of the Accepting Officer of contract and others concerned in writing before commencement of the particular work where discrepancy(s) is/are noticed failing which the contractor shall forfeit his right to claim on account of such discrepancy(s), if any.

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

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

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

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

(j) Dwarf wall in situations like verandah, passage etc., even if not shown on drawings shall deem to be included in the scope of work and shall be provided at no extra cost to the department.

2. **CONDITIONS OF CONTRACTS AND EXECUTION OFWORKS:** The various parts / sections/sub divisions of the tender documents shall deem to be supplementary / complementary to each other.

3. **INSPECTION OF SITE BY THE TENDERER:**

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

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

SPECIAL CONDITIONS (CONTD...)**4. RESTRICTION FOR ENTRY TO WORKS SITE:**

All works lies in **RESTRICTED AREA**.

(A) Condition for Working in restricted Area: - The restrictions for entry to work site and conditions of working in restricted area shall be as under.

(a) ENTRY AND EXIT:

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

(ii) BLANK

(b) IDENTITY OF WORKMEN:

(i) Every workman shall be in possession of an identity card. The identity card shall be issued after a thorough investigation of antecedents of the labourers by the contractor and attested by Officer-in-Charge of the unit concerned in accordance with the standing rules and regulations of the unit. Contractor shall be responsible for conduct of his workmen, agents or representatives

(c) **SEARCH:** Thorough search of all persons and transport shall be carried out at each gate and for as many times gate is used for entry or exit and may also be carried out any number of times at the site within the restricted area.

(d) WORKING HOURS:-

The units controlling restricted area, usually work during six days in a week and remain closed on the 7th day. The working hours available to the contractor's labour and staff are however appreciably reduced because of the time of entry and exit during working hours. The exact working hours, working days and number of working days observed for these restricted area (s) where works are to be carried out shall be deemed to have been ascertained by contractor before submitting his tender. The tenderers' attention is invited to the fact that number of working hours for a unit are prescribed in regulations and that they cannot be increased by the Garrison Engineer or authorities controlling the restricted area. The definition of "working days" as given under condition 1(t) of IAFW-2249 does not apply in case where the works are carried out in restricted area.

(e) WORKING ON HOLIDAYS :

The contractor shall not carry out any work on national holidays, except when he is specially authorised in writing to do so by the Garrison Engineer. The GE may at his sole discretion declare any day as holidays or non working day without assigning any reasons for such declaration.

(f) FIRE PRECAUTIONS:

(i) The contractor, his agents, representatives, workmen etc. shall strictly observe the order pertaining to fire precautions prevailing within the restricted area.

(ii) Motor transport vehicle, if allowed by the authorities to enter the restricted area must be fitted with the serviceable fire extinguisher.

SPECIAL CONDITIONS (CONTD...)

(g) **FEMALE SEARCHER**: If the contractor desires to employ female labour on works to be carried out inside the area of AF Stn and a female searcher is not borne on the authorised strength of the AF Stn .at the time of submission of tender, he shall be deemed to have allowed in his tender for pay and allowances etc. for a female searcher (Class IV servant) calculated for the period female labourers employed by him inside that area. If more than one contractor employs female labourers during any month and female's searcher (s) has/have to be employed in addition to the authorised strength of the factory, depot, park etc. the salary and allowances paid to the additional female searchers shall be distributed on equitable basis between the contractors employing female labour taking into consideration the value and period of completion of their contracts. The GE's decision in regard to the amount payable on this account by any contractor shall be final and binding.

(B) Condition for Working in Unrestricted Area: - The restrictions for entry to work site and conditions of working in unrestricted area shall be as under:-

(a) The work lies in an Unrestricted Area. However, the contractor, his agents, servants, workmen and vehicles may pass through the unit lines, in which case, the Engineer-in-Charge at his discretion has the right to issue the passes, control their admission to the site of work or any part thereof. The contractor shall, on demand by the Engineer-in-Charge, shall submit a list of personnel etc concerned and any other information called for by the Engineer-in-Charge and shall satisfy the Engineer-in-Charge as regards the bonafide of such people. Passes shall be returned at any time on demand by the Engineer-in-Charge and in any case on completion of work.

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

5. **SECURITY OF CLASSIFIED DOCUMENTS:**

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

6. **OFFICIAL SECRET ACT:**

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

7. **EMPLOYMENT OF PERSONNEL:**

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

SPECIAL CONDITIONS (CONTD...)

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

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

8. AVAILABILITY OF LAND FOR STORAGE OF MATERIALS, TEMPORARY WORKSHOP, LABOUR CAMP AND OFFICES ETC.

(i) It is apprised that the limited area as shown in the site plan is available for establishing HMP/RMC Plant & keeping T&P, material dumping etc. is available within the AF Stn Srinagar area. The tenderer should visit the site before quoting the rates.

(ii) Allotment of land for storage of materials including temporary sheds for workshop, refer condition 24 of IAFW-2249. The contractor shall be permitted to store his materials including creating temporary sheds and to install his plant & machinery there on at the area of MD land as decided by the GE and he shall pay a license fee of Rs. 1/- per year or part thereof in respect of each and every separate area of land allotted to him.

(iii) Being restricted area no permission to accommodate labourers inside the Air Force Station will be granted. Also no labour camp will be erected inside the Air Force premises. Contractor will have to make his own arrangement to accommodate labourers outside the premises of Air Force Station. Labourers & workers shall be allowed to enter from designated entry after security check during permitted working hours only.

(iv) The contractor will educate his workers for not disposing off left out food in open area to avoid bird menace.

9. DAMAGE TO EXISTING STRUCTURES: -

Any damage to the existing structures, any existing road etc., during the execution of work shall be made good by the contractor at his own expense within period of 10 (Ten) days. Rectification, replacement, making good and touching up etc, shall be carried out, conforming to the materials and workmanship originally provided and to the satisfaction of the Engineer-in-Charge. In case of any dispute on this account, the decision of the GE shall be final, binding and conclusive. Nothing extra shall be payable on this account & rates quoted by contractor shall deem to include the same. Further if the contractor failed to rectify the same within 10 days, it will be got done by MES at the risk and cost of the contractor without any further notice.

10. QUARRIES AND ROYALTIES: -

Quarries are not available on MOD land, which is in the charge of MES authorities, hence, Condition 14 of IAFW-2249 shall be treated as not applicable. Contractor shall make his own arrangement for acquiring quarry if required for procurement of rock /stone aggregate from private/govt approved quarry in liaisoning with state Govt authority, obtaining permission/license from all relevant authority. The quarry so finalised shall be checked for suitability & availability of adequate material of required standards. The same shall be got approved from GE before finalisation.

11. APPROACHES: -

The contractors shall make arrangements for and provide at his own cost all temporary approaches as required other than catered in the contract of required standard specifications adequate for transportation of construction material, plant & equipment from production site to construction site of work after obtaining approval in writing from the GE.

SPECIAL CONDITIONS (CONTD...)

12. **LOCATION OF WORKS:**-There may be some changes in location/siting of in site (layout) plan(s) to suit local conditions and/or departmental requirements. The contractor shall have no claim what-so-ever consequent to such change in the location/siting of works.
13. **ACTION WHERE NO SPECIFICATIONS EXIST:** -
(a) In case of any item of work for which there is no specifications in the tender documents including SSR, such work shall be carried out in accordance with Indian Standard Specifications and where Indian Standard Specifications do not cover the same, the work should be carried out as per standard engineering practice subject to the approval of the GE.
(b) No claim what so ever will be tenable for any misunderstanding or for not having ascertained requisite information/knowledge to muster the resources in satisfactory completion of the entire work to requirements as per contract agreement.
14. **METHOD OF MEASUREMENT:** - Measurement of all measurable work executed under this contract shall be taken in accordance with the rules of measurements as laid down in SSR 2009 (Part-I) for specification and MES Standard Schedule of Rates 2020 (Part-II) for rates pertaining to various items of work as applicable, Unless otherwise indicated in the respective sections of Schedule 'A'. In case the method of measurement for a particular item of work is not given in SSR, a reference will be made to the relevant provision contained in the latest edition of IS -1200.
15. **STANDARD OF WORKMANSHIP:**
(a) The contractor shall progress the work so that the same is completed with the period as specified. GE shall lay down target dates for completion of different stages of works well within the period allowed therefor. The work shall be approved by GE. Finally, the work shall be inspected by Chief Engineer before it is formally approved by GE. The GE then shall issue the completion certificate for the work. The work shall be executed under close supervision of Engineer-in-Charge. Workmanship of various trades shall be got passed by GE. The fittings and fixtures (including joinery and finishes including floor finishes) in the buildings shall be got approved in writing by GE.

(b) For special and particular finishes and any other items, the sample will be approved in situation where actually required as decided by the GE as per his sole discretion.
16. **CRITICAL PATH METHOD/NET WORK ANALYSIS AND THE TIME SCHEDULE:** -
(a) The time and progress chart to be prepared as per condition 11 of IAFW-2249 (General conditions of Contract(s)) shall consist of detailed net work analysis and a time Schedule. The critical path net work will be drawn jointly by the GE and the contractor soon after acceptance of the tender, using Primavera/MS project.
(b) (i) The time scheduling of the activities will be done by the contractor so as to finish the work within the stipulated time. The contractor is advised to use the facility of computerisation available with any organisation, which affords such facility in doing the same. On completion of time schedule, a firm calendar date schedule will be prepared and submitted by the contractor to GE, who will approve it after the scrutiny. No financial liability shall occur to the Govt in connection with computerisation.

(ii) The schedule will be submitted in four copies within two weeks from the date of handing over the site. In case the contractor fails to submit the CPM net work diagram, the net work prepared by the GE will be binding on him and he will be bound to employ resources of labour and materials in the manner directed by the GE.

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(c) During currency of the work, the contractor is expected to adhere to the time schedule and this adherence will be part of the contractor's performance under the contract. During the execution of the work, the contractor is expected to participate in the reviews and updating of the network undertaken by GE. These reviews may be undertaken at the discretion of the GE either as a periodic appraisal measure or when the quantum of work ordered on the contractor is substantially changed through deviation order(s)/or amendment. Any revision of the schedule as a result of the review will be submitted by the contractor to the GE within a week, who will approve it after due scrutiny. The contractor will adhere to the revised schedule thereafter.

(d) In case of contractor not agreeing to the revised schedule, the same will be referred to the Accepting Officer whose decision will be final, conclusive and binding. GE's approval to the revised schedule resulting in completion date beyond the stipulated date of completion shall not automatically amount to grant of extension of time. Extension of time shall be considered and decided by the appropriate authority in terms of conditions of IAFW-2249 and separately regulated.

(e) Contractor is expected to mobilise and employ sufficient resources to achieve the time schedule within the broad framework of the accepted methods of working and safety.

(f) No additional payment will be made to the Contractor for any multiple shift work or other incentive methods contemplated by him in his work schedule even though the time schedule is approved by the Department.

17. **COORDINATION WITH OTHER AGENCIES:** The Contractor shall permit free access and afford normal facilities and usual convenience to other agencies or departmental workmen to carryout connected works or services under separate arrangements. The contractor will not be allowed any extra payment on this account.

18. **SECURITY AGAINST LOSS OR DAMAGE:** -

(a) Contractor's plants/equipments at site: -The contractor shall furnish to the Engineer-in-Charge every morning a distribution return of his plants/equipments on the site of the works, stating the following particulars:

(i) Particulars of plants/equipments, it's make, manufacture No, Model No if any, Registration No if any, capacity, year of manufacture, year of purchase etc.

(ii) Total number (quantity) on site of work.

(iii) Location and indication of number (quantity) at each location of the site of work.

(iv) Purchase value on the date of purchase. For the purpose of this condition, plant/equipment shall include vehicles i.e. trucks and lorries but neither the workmen's tools nor any manually operated tools/equipment. The Engineer-in-Charge shall record the particulars supplied by the contractor in the works diary and send the return to the GE for record in his office.

SPECIAL CONDITIONS (CONTD...)

(b) Loss on account of Enemy Action: If as a result of enemy action, the contractor suffers any loss or damage, the Govt. shall reimburse to the contractor such loss or damage to the extent and in the manner here in after, provided: -

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

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

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

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

19. **THE HEIGHT OF MATERIAL DUMPED**:-The height of construction material dumped at/near construction site must not exceed 3.0 m in height .The sand heaps thus formed must be covered with tarpaulins after water is sprinkled on top layer of sand.PCC hard standing of suitable strength shall be constructed for stacking of coarse and fine aggregate near plant area.

SPECIAL CONDITIONS (CONTD...)**20. WATER.**

Refer to condition 31 of IAFW-2249.

(i) Water will not be supplied by the MES. The tenderers are advised to visit the site of works to ascertain availability of water from civil sources or from nearby natural sources outside ministry of defence land. The contractor shall be allowed, if he so desires, to install hand pumps, tube wells at site of work at places as approved by Engineer-in-Charge and nothing shall be charged from the contractor. The contractor shall remove the hand pumps, tube wells as and when asked to do so by Engineer-in-Charge/ GE and in any case on completion of the work and before issue of completion certificate, unless GE desires that these hand pumps, tube wells be left in position and the contractor will have to do so without claiming cost thereof from department. No compensation whatsoever shall be admissible to the contractor, if he is required to remove the pump's) tube wells before completion of work. Use of water from such sources shall only be permitted if, found after testing, potable and fit for use in the work. The depth of tubewell/borewell shall be as per Local Govt rules.

(ii) The water from such sources shall be got tested by the contractor from laboratory approved by the GE, who shall after satisfying himself permit the contractor to use the water from such sources. Testing charges shall be borne by the contractor.

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21. **ELECTRIC SUPPLY :**

Electricity will not be supplied by MES. The contractor shall make his own arrangement for electricity by deploying DG sets of adequate capacity & numbers. Nothing extra shall be admissible to the contractor on this account.

22. **VALIDITY OF TENDER: -**

Tender shall remain open for acceptance for a period of **60** days from the next date subsequent to bid submission end date.

23. **MATERIALS AND SAMPLES**

(a) Refer Condition 10 of IAFW-2249

(b) The materials and articles which have been specified from certain makes/manufacturers, shall be of makes/manufacturers as specified. If the manufacturers specified in tender documents make both ISI marked and conforming to ISI, the materials/articles shall be ISI marked.

(c) The materials and articles which have not been specified in tender documents by makes/manufacturers shall be as under: -

(i) If ISI marked materials are being manufactured the same shall be ISI marked. For list of ISI marked manufacturers refer website of BIS i.e. www.bis.org.in.

(ii) If ISI marked materials are not being manufactured the same shall be conforming to IS specifications.

(d) Materials of local origin shall be as specified and conforming to samples kept in GE's office. The tenderer is advised to inspect sample of materials which are displayed in the office of GE, before submitting his tender. The tenderer shall be deemed to have inspected the samples and satisfied himself as to the nature and quality of materials, he is required to incorporate in the work irrespective of whether he has actually inspected them or not.

(e) The contractor shall not procure materials and articles unless the samples are first got approved by the GE.

24. **Records of Materials and Purchase Vouchers : -**

(a) The quantity and materials for the following as directed by the Engineer- in – Charge (The quantity of which cannot be checked after incorporation in the works), shall be recorded in the measurement book and signed by the contractor and the Engineer – in – charge as a checked to ensure that the required quantity has been brought to site for incorporation in the work :-

- (i) Water proofing compound.
- (ii) Paint.
- (iii) GI tubing, CI Pipes and fittings.
- (iv) Sanitary fittings and appliances.
- (v) Electric Switches/sockets.
- (vi) Cables and joints.
- (vii) Standard steel windows/Ventilators.
- (viii) Factory made shutters.

SPECIAL CONDITIONS (CONTD...)

- (ix) Steel sheeting
 - (x) MCB/MCCB
 - (xi) LED LIGHT.
 - (xii) Cement.
 - (xiii) Steel for reinforcement and other works/structural steel
 - (xiv) 0.80 mm Pre –coated coloured galvanised sheet
 - (xv) Panel board
- (b) The proprietary materials shall be stored as directed. Those already recorded in the Measurement Book shall be marked suitably for identification.
- (c) The contractor shall produce to the GE, original receipt vouchers/ invoices in respect of all proprietary branded materials to ensure that the contractor has actually brought the articles of required quality and quantity from the authorised agent/ manufacturer/ supplier r/o items listed in para (a) above and also to find out the rates thereof as pre- requisite before submitting claim for payment for advance on account of the work done and / or material collected in accordance with condition 64 of General Conditions of Contracts- IAFW- 2249.
- The contractor shall, on demand , produce to the GE , original receipted vouchers / invoice in respect of the materials other than as stated in sub - para (c) .Vouchers / invoices so produce and verified shall be stamped by Engineer-in - Charge indicating contract number .The contractor shall ensure that the materials are brought to site , in Original sealed containers / packing , bearing manufacturer's marking except in the case of the requirement of material(s) being less than smallest packing .
- (e) The vouchers / invoices will clearly indicate the contract Number and the IS No., specific alternative to which the material conforms in case of various alternate in IS.
- (f) Under no circumstances payment on account (RAR) shall be made to the contractor as material lying at site for incorporation in the works, unless the contractor produces original purchase vouchers/invoices. Irrespective of whether contractor is claiming RAR for material lying at site or not, purchase vouchers/invoices shall be submitted by contractor to GE for the following items of materials: -
- (i) Water proofing compound.
 - (ii) Paint.
 - (iii) GI tubing, CI Pipes and fittings.
 - (iv) Sanitary fittings and appliances.
 - (v) Electric Switches/sockets.
 - (vi) Cables and joints.
 - (vii) Standard steel windows/Ventilators.
 - (viii) Factory made shutters.
 - (ix) Steel sheeting
 - (x) LED LIGHT.
 - (xi) Cement.
 - (xii) Steel for reinforcement and other works/structural steel
 - (xiii) 0.80 mm Pre –coated coloured galvanised sheet
 - (xiv) Panel board
 - (xv) MCB/MCCB

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- (G) The vouchers/invoices will clearly indicate the contract number and the IS No., specific alternative to which the material conforms in case of various alternatives given in IS.
- (H) Contractor will produce original purchase vouchers for the materials as described here-in-above after getting defaced by Engineer in charge. The contractor will produce two photocopies of the same vouchers for record.
- 24A. **RECORD OF CONSUMPTION OF CEMENT: -**
For the purpose of keeping record of cement issued and consumed in works one properly bound register serially numbered and all pages initialed against the numbering by the Engineer-in –Charge and in the form approved by the Engineer-in-Charge showing daily receipt, quantity used in the work, balance in hand, shall be maintained.
The register shall be kept at site in the safe custody of the contractor's representative during the progress of the work and shall be produced on demand for verification of the inspecting officer.
The entries in the aforesaid register will be signed daily by the contractor or his authorised representative and the JE -in-Charge for supervision and once in a week by the Engineer-in-Charge.
(d) On completion of the work, the contractor shall deposit the cement register with the Engineer-in-charge for record.
25. **WATCH/LIGHTING: -**
The contractor shall at his own cost take all possible precautions to ensure safety of life and property by providing necessary fencing, barrier, light, watchmen etc., during the progress of work and as directed by the Engineer-in-Charge.
26. **MAKING GOOD: -**
The contractor shall leave or form holes in concrete (Plain or RCC), Brick work, stone masonry and in any other situation as required for the work or as directed by the Engineer-in-Charge and make good all the holes in the same mortar and mix as specified for that portion of work. Contractor shall do patch repair for all damaged road on daily basis and as when directed by Engineer –in- Charge.
27. **CLEANING DOWN: -**
Refer condition 49 of IAFW-2249. The contractor shall clean all area, and carry out all necessary items of work in connection therewith and have the whole premises clean and tidy to the entire satisfaction of Engineer-in-Charge before handing over the items/works. No extra payment shall be admissible to the contractor for this operation.
28. **MINIMUM WAGES PAYABLE: -**
(a) Refer condition 58 of IAFW-2249. The contractor shall not pay wages lower than minimum wages for labour fixed by the Govt of India /State Govt whichever is higher
(b) Contractor's attention is also drawn, amongst other things to the 'explanations' to the schedule of minimum wages referred to above.
(c) The fair wages referred to in condition 58 of IAFW-2249 will be deemed to be the minimum wages fixed by Central Govt/State Govt as referred to above as upto date from time to time whichever is higher.
(d) Schedule of minimum wages has not been enclosed alongwith tender documents. However contractor shall be deemed to have verified the minimum fair wages payable as on the last due date of receipt of tender.
(e) The contractor shall have no claim whatsoever if an account of local factors and by regulations, he is required to pay the wages in excess of minimum wages as described above during the execution of work.
29. **TAXES/LEVIES: -**
Tendered rates are inclusive of all taxes and levies payable under the respective statutes.

SPECIAL CONDITIONS (CONTD...)**30. ADJUSTMENT OF TAX ON SERVICE: -**

(a) Govt of India has levied new GST (Goods and Services Tax) 2017. wef 08 July 2017 on services rendered by the contractor on work contracts, So it has been made obligatory for disbursing officer to deduct tax at the rate given in new GST rule as per GOVT of India on services rendered by the contractor under the contract as applicable to contractor at source. The tenderer shall get them self acquainted with the relevant provision of new GST act 2017 and quote their rate accordingly.

(b) The rate of GST tax prevailing on last date of submission of tender (i.e bid submission end date) shall be applicable. Tenderer's are advised to independently ascertain the rates of GST taxes etc. and quote their rates accordingly. No claim on account of any kind of misunderstanding on the issue shall be entertained at a later date.

(c) As per Govt of order The contractor is liable to pay element for construction labour welfare cess/ tax. The rates quoted by the contractor shall deem to be inclusive of this cess/tax. The construction labour welfare cess/tax at rate 1 % at source on gross payment to contractor as per provision of the Act shall be deducted by the GE while releasing payments to the contractor under the contract. Contractor shall deem to consider this labour welfare cess/tax before quoting his rates.

(d) For the purpose of applicability of this condition and condition 33 here-in-after for any reimbursement/ refund, the rate of tax prevailing as on the date of submission of tender (i.e. bid submission end date) shall be applicable. Tenderer's are advised to independently ascertain the rates of all taxes etc. and quote there rates accordingly. No claim on account of any kind of misunderstanding on the issue shall be entertained at the later date.

31. REIMBURSEMENT/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 tax, duties, Royalties, Octroi & other levies and/ or imposition/ abolition of new/ existing taxes/ cesses, duties, Royalties, octroi & other levies shall be made except as provided in 34(b) to 34(e) here-in-below.

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

SPECIAL CONDITIONS (CONTD...)

- (ii) The contractor shall within a reasonable time of his becoming aware of variation in percentage rates and/or imposition of any further “taxes directly related to contract value” give written notice thereof to the GE stating that the same is given pursuant to this Special Condition, together with all information relating there to which he may be in a position to supply. The contractor shall submit the other documentary proof/information as the GE may require.
- (iii) The contractor shall for the purpose of this condition keep such books of account and other documents as are necessary and shall allow inspection of the same by a duly authorised representative of Govt and shall further, at the request of the GE furnish, verified in such a manner as the case may require, any documents so kept and such other information as the GE may require.
- (iv) Reimbursement for increase in percentage rates/imposition of “taxes directly related to contract value” shall be made only if the contractor necessarily and properly pays additional “taxes directly related to contract value” to the Govt, without getting the same adjusted against any other tax liability or without getting the same refunded from the concerned Govt Authority and submits documentary proof for the same as the GE may require.

32. SITE LABORATORY AND TESTING OF MATERIALS

The contractor shall establish a fully furnished/ equipped site laboratory for testing of all material. A list of equipment required for establishment of site lab as given in Appx- 'B' to special condition. List of test & periodicity required to be carried out for runway work in site laboratory and frequency of independent test to be carried out by independent institute are given in Appx 'B'. GE shall ensure that all test as per periodicity given above are carried out for material & workmanship. The size of site lab shall be minimum 100 sqm and sufficient for all testing equipments. as listed in Appx 'B'. The site lab shall be PUF insulated prefab structure all as approved by GE. All the Lab equipments shall be calibrated by Govt Approved NABL accredited Laboratory as per periodicity as directed by GE.

- (a) **A-LEVEL TESTS FOR WORKS COSTING Rs 100 LACKS AND ABOVE:-** The contractor shall set up site laboratory for testing of materials (except Schedule 'B' materials) for A-level tests as listed in Appendix 'A' here to. The contractor shall arrange all equipments/ machines for the tests specified in Appendix 'A' as A-level tests at his own cost with prior approval of GE. The cost shall be included in the lump sum costs quoted by the contractor. The contractor shall employ a competent technical representative as approved by the GE for the purpose of testing and all such tests shall be carried out in the presence of Engineer-in-Charge. The successful test results thereof shall be recorded and signed jointly by the contractor and Engineer-in-Charge. The charges of these tests i.e. A-level tests carried out in site laboratory of the contractor shall not be recovered. However in case a test which was specified to be carried out in site laboratory and which could not be carried out in site laboratory due to some reason, such test shall be carried out in Zonal lab/ any other approved lab and the recovery will be made at the rates given in Appendix 'A' for tests carried out in Zonal lab or other wise at the actual rates in case the tests are carried out in other labs. Testing charges will be deducted from the RAR's irrespective of the tests results for such tests.

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- (b) **A-LEVEL TESTS FOR WORKS COSTING UP TO Rs 100 LACKS:-** The contractor may set up site laboratory at his option for works costing upto 100 lacks. The other stipulations will be same as specified in preceding para (a). However in case the contractor has not set up the site laboratory and tests are carried out in Zonal or any other laboratory approved/ set up by GE, the recovery shall be made at the rates given in Appendix 'A' for tests carried out in Zonal lab or otherwise as per actual rates in case the tests are carried out in other labs. Testing charges will be deducted from the RAR's irrespective of the test results for such tests.
- (c) **B & C -LEVEL TESTS:** For tests of 'B' and 'C' level as indicated in Appendix 'A', the contractor shall provide all facilities for testing of materials at Zonal Laboratory/Govt approved laboratories or test houses/Engg Colleges at his own cost. The lump sum/rates quoted by the contractor shall deem to be inclusive of these tests. For 'C' level tests, actual cost of testing shall be borne by the Contractor and for 'B' level tests recovery shall be made at the rates of various tests conducted in Zonal Laboratory of MES as indicated in Appendix 'A'. Wherever, it is convenient to get 'B' level test done at approved test house/Engg College, the same can be done at the cost of the contractor and no separate recoveries will be made by the Department for the same.
- (d) The recoveries on account of testing charges wherever applicable shall be effected from the running account payments due to the contractor payable after completion of the respective test or whenever the test is due whichever is earlier.
- (e) This clause supersedes all other stipulations, if any, with regard to testing of materials specified elsewhere in the tender documents.
33. **QUALIFIED TRADESMEN (APPLICABLE FOR WORKS COSTING RUPEES ONE CRORE OR MORE).** In compliance with condition 26 of IAFW-2249 (General Conditions of Contracts), the contractor shall employ skilled/semiskilled tradesmen who are qualified and possessing certificate in particular trade from Industrial Training Institute (ITI)/National Institute of Construction Management and Research (NICMAR)/Similar reputed and recognized Institutes by State/Central Government, to execute the works of their respective trade. The number of such qualified tradesmen shall not be less than 25% of total skilled/semi skilled tradesmen required in each trade. The contractor shall submit the list of such tradesmen alongwith requisite certificate to Garrison Engineer for verification and approval. Notwithstanding the approval of such tradesmen by GE, if the tradesmen are found to have inadequate skill to execute the work of their trades, leading to unsatisfactory workmanship, the contractor shall remove such tradesmen within a week after written notice to this effect by the GE and shall engage other qualified tradesmen after prior approval of GE. GE's decision whether a particular tradesman possesses requisite qualification, skill and expertise commensurate with nature of work, shall be final and binding. No compensation whatsoever on this account shall be admissible.

34. **BLANK**

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35 SCOPE OF CONCILIATION

35.1 The scope of Conciliation shall be restricted to the following types of disputes with financial limits as indicated therein :-

- (a) Disputes relating to levy of compensation for delay in completion actual amount of compensation.

- (b) Disputes relating to technical examination of works
- (c) Disputes relating to interpretation of the provisions of the contract with reference to their application to parties.

- (d) Disputes relating to non return of Schedule ‘B’ stores over issued to the contractor.

- (e) Any other disputes having fair chances of being resolved by conciliation and considered fit to be referred to conciliation by the parties.

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

35.2 COMMENCEMENT OF CONCILIATION PROCEEDINGS

- 35.2.1 The party initiating conciliation shall sent to the other party a written invitation to conciliate briefly identifying their subject of the dispute.
- 35.2.2 Conciliation proceedings shall commence when the other party accepts in writing the invitation of conciliate.
- 35.2.3 If the other party rejects the invitation, there will be no conciliation proceedings. If the party initiating conciliation does not receive a reply within 30 days from the date on which he sends or within such other periods of time as specified in the invitation he may elect to treat this as a rejection of the invitation to conciliate and if he so elects, he shall inform in writing the other party accordingly.

35.3 **NUMBER OF CONCILIATORS.** There shall be a Sole conciliator.

35.4 **APPOINTMENT OF CONCILIATOR.** All disputes brought out in para 39.1 (a) to (e) above shall be referred to the Sole conciliator viz serving officer not below the rank of Superintending Engineer/Superintending Engineer (QS&C) having degree in Engineering or equivalent or having passed final/direct final examination of Sub Division II of Institution of Surveyors (India) to be appointed by the Engineer-in-Chief, Army HQ, New Delhi or in his absence the officer officiating as Engineer-in-Chief or Director General of Works specifically delegated by the Engineer-in-Chief in writing.

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

36. DEFECT& MAINTENANCE LIABILITY PERIOD

36.1.1 Defect liability period shall be 24 (Twenty four) calendar months under this contract and will start after completion of work under this contract

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36.1.2 The work shall be treated as completed within the provisions of Condition 49 of IAFW-2249 only after the whole work is completed under the contract and taken over by the MES. The defects liability period mentioned here in above shall commence from the date of completion as mentioned in completion certificate issued by the GE which shall be issued Phase-wise only after the completion of the particular Phase under the contract.

36.2.1 After completion of work contractor shall submit complete set of completion drawings consisting of B/R & E/M site plan marked with services as executed and Completion drawings showing all the slab layout, and joints pattern for rigid portions shall be submitted to GE in a cloth bound tracing sheet, together with soft copy of the same. The cost of submission of such drawings both in hard and soft copy shall be deemed to be included in the quoted rates.

37. **BLANK**

38. **DISPUTE RESOLUTION BOARD (DRB) (CONDITION 71 OF IAFW-2249 GENERAL CONDITIONS OF CONTRACTS REFERS) APPLICABLE FOR ALL CONTRACTS OF VALUE MORE THAN RS. 10 CRORES**

38.1 During execution of the works or after completion or after determination/cancellation/termination of the contract all disputes between the parties to contract arising out of the contract (except those for which decision of Accepting Officer or any other officer (CWE and/or GE) is expressed to be final and binding), including any disagreement by either party with any action, inaction, opinion, instruction, certificate or valuation by the Accepting Officer or his nominee, the matter in dispute shall, in the first place be referred to the Dispute Resolution Board (DRB). In case of disagreement with the decision of such DRB, any party may invoke arbitration clause.

38.2 DRB shall consist of Chairman and two members.

38.3 The names of chairman and members shall be notified by the Accepting Officer.

38.4 Once the DRB is constituted the members and Chairman shall disclose in writing their neutrality and impartiality about any personal interest in the work.

38.5 The dispute shall be referred to the chairman of the DRB by the concerned party after giving notice to the other party for invoking of this clause.

38.6 The DRB shall decide the dispute in accordance with the terms of the contract, principle of natural justice, equity and fair play.

38.7 The DRB may fix oral hearing at a place, date and time as decided by the Chairman.

38.8 The date, venue and time shall be fixed by Chairman of Dispute Resolution Board.

38.9 All the contract documents pertaining to the case shall be provided by the Accepting Officer for reference by the DRB.

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- 38.10 DRB shall give its decision on the disputes within three months of notice from any party invoking the DRB clause. This period can be extended by one month with the consent of the parties.
- 38.11 All the decisions given by the DRB shall be by majority and such decisions shall be communicated in writing by Chairman to the parties.
- 38.12 If the decision of the DRB is not to the satisfaction of either party or if the DRB fails to give decision within the laid down time either party shall indicate his reservations on the decision to Accepting Officer within 30 days of such decision and to refer that dispute for arbitration within the provisions of conditions 70 of IAFW 2249 (General Conditions of contracts).
- 38.13 It shall be mandatory for the party invoking arbitration on any particular dispute(s) to have first exhausted the remedy provided under the DRB clause for that particular dispute(s).
- 38.14 The mandate of the DRB shall terminate on completion of one year from the date of completion/determination/cancellation/termination of the contract.
- 38.15 If any member or chairman of the DRB is unable to function due to any reason whatsoever, or he resigns his appointment as the case may be the competent authority shall fill the vacancy so caused within 15 days of happening of such vacancy
- 38.16 Any dispute referred to the DRB and having been decided by the DRB and not objected to by either party within 30 days shall attain finality and shall not be referable to arbitration.
- 38.17 Accepting officer shall ensure implementation of the decisions of the DRB which attain finality, i.e except those which are objected by him or by contractor within 30 days as per para 43.12 above.
- 38.18 Findings and decision of DRB shall be admissible as evidence, to the extent permissible as per law, in the subsequent Arbitration and / or litigation.
- 38.19 DRB Chairman/ members shall not, in any case, be liable to be called as witness or to produce any evidence in any Arbitration or departmental proceedings of any kind.
- 38.20 During execution of work the disputes may be referred to the DRB as per the requirement of each party after having exhausted the decision making process provided in the contract. In case of completion of work or after determination/cancellation/termination of the contract all the disputes including payment/nonpayment/ delay in final bill shall be simultaneously referred to the DRB within six months of completion/determination/ cancellation/termination of the contract.

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38.21 The Department case shall be represented by Accepting Officer and assisted by other officers or his nominated team.

39. **Output of Road Roller: -**

Refer condition 15 of IAFW-2249.

(a) Where road roller (s) are hired by the Department to the contractor a logbook for each Road Roller shall be maintained by the Department recording hours of working of the road roller. In case however when the contractor procures road roller(s) from sources other than the Department a log book for each road roller shall be maintained by him for recording hours of working of the Road Roller. Entries in the log book shall be signed by the contractor or his authorised representative and by the Engineer-in-charge.

(b) To ensure proper consolidation, Road Roller 8 to 10 Tonne must work for atleast the number of days assessed on the basis of output here under.

OUTPUT OF ROAD ROLLER PER DAY OF 08 HOURS: -

Output per day of 08 hours work: -

(i) Consolidation of formation surfaces/sub grade	- 1850 Sqm
(ii) Consolidation of stone soling 20 cm spread thickness	- 518 Sqm
(iii) Consolidation of stone soling 15 cm spread thickness	- 800 Sqm
(iv) Consolidation of WBM (Stone metal) 7.5 cm compacted thickness including consolidation with binding materials	- 248 Sqm
(v) Consolidation of WBM (Stone metal) 10 cm compacted thickness including consolidation with binding materials	- 186 Sqm
(vi) Consolidation of 2.5 Cm thick bituminous carpet including seal coat.	- 600 Sqm
(vii) Consolidation of 2 Cm thick bituminous carpet including seal coat.	- 744 Sqm

(A) If the roller has not worked for the number of days so assessed, recovery shall be affected from the contractor for the number of days failing short of the days assessed on the basis of output stipulated above. The recovery shall be effected as under:-

(a) Where road roller is hired only by the Department to the contractor at rates given in schedule 'C' of this contract

(b) Where road roller is hired by the contractor only from sources other than the Department at Rs. 5000/- Working day of 08 hours.

(c) Where road roller is hired by the contractor from the Department and also from sources other than the department at higher of the two rates, i.e. rate given in Schedule 'C' of this contract or the rate mentioned in the preceding para.

(d) The above provision shall not absolve the contractor of his responsibility for properly consolidating surfaces as required under the provisions of the contract.

40.0 **ELECTRIC LICENSE FOR CARRYING OUT ELECTRICAL WORKS :**

(a) For execution of electrical works /electrical components of works requiring Electrical License in accordance with Rule 29 under Part-III of central Electricity Authority (Measures related to safety and electric supply) Regulations 2010, the contractor shall have valid Electrical License issued by the concerned state/union territory in the name of the firm or get the work executed through an agency having valid Electrical License.

SPECIAL CONDITIONS (CONTD...)

- (b) Prior to commencement of electrical work / electrical component of works, copy of valid license in the name of contractor or copy of agreement with other agency having valid electrical license along with agency's electrical license shall be submitted by the contractor to the Accepting office through GE with copy to CWE. In case contractor does not possess valid electrical license and he intends to get such work executed through agency having valid electrical license and with whom he has agreement, prior approval of such agency shall be got done from CWE. Copy of license shall be kept on record by GE/CWE as well as CE Zone for future reference.
- (c) GE and concerned AGE shall ensure that electrical work/electrical components of works required to be executed in accordance with rule 29 mentioned above are executed by contactor/agency having valid electrical license, as applicable. In addition, supervisor for execution of electrical works/electrical components of works employed by the contractor shall possess Supervisor certificate of competency issued by concerned state Government/Union territory and the worker/tradesmen for execution of electrical works /electrical components of works shall hold necessary permit issued by concerned state Government/Union territory.
- (d) Reference of electrical license and details of supervisors certificate of competency and permit of tradesmen employed for execution of electrical work/electrical components of works shall be duly incorporated in the works diary and relevant site documents respectively for the whole period during which such work is executed.

(Signature of the contractor)

for Accepting officer

Dated:_____

APPENDIX ‘B’ TO SPECIAL CONDITIONS NO. 32
LIST/SET OF LABORATORY EQUIPMENT AT SITE LAB

Ser No	Material	Tests	Method of testing	Frequency of tests		Level of tests	Rate Rs.	Remarks
1.	2	3	4	5		6	7	8
1.	Coarse Aggregate	(i) Sieve Analysis	IS :2386 (Part-I)	One test for every 15M³ of aggregates or part there of brought at site		A	660/-	LEGEND 'A' – Site Lab 'B' – GE Command test lab. 'C' - National Test House/SEMT Wing Pune/Engg. College
		(ii) Flakiness Index	-do-	-do-		A	250/-	
		(iii) Examination of deleterious materials	IS-2386 (part-I)	One test for every 100 M³ of aggregate or part there of		A	600/-	
		(iv) Organic Impurities	-do-	One test per source of supply		C	275/-	
		(v) Moisture content	-do- (Part II)	Regularly as required		A	330/-	
		(vi) Specific Gravity	-do-	One test for each source of supply		B	330/-	
2.	Fine Aggregate	(i) Sieve Analysis	IS: 2386 (Part-I)	One test for every 15M³ of Fine Aggregate or part when brought at site.		A	660/-	
		(ii) Test for clay, silt and impurities	-do- (Part-I)	-do-		A	500/-	
		(iii)Specific Gravity	-do- (Part-II)	One test for each source of supply		B	330/-	
		(iv) Moisture Content	-do- (Part-II)	Regularly as required subject to 2 tests/day when being used		A	330/-	
		(v) Test for organic impurities	-do- (Part-II)	One test for each source of supply		B	275/-	
3.	Structural Concrete (M-15 grade and above)	i) Slump test (or) compacting factor test (or) Vee-Bee Time	IS: 1199	The minimum frequency of sampling of concrete of each grade shall be given as under:-		A	300/-	i) Random sampling shall be carried out to coverall mixing units. ii) Refer IS : 456- clause 14 for frequency of sampling.
		ii) compressive strength	IS:516	<u>Qty of concrete in the work (M³)</u>	No of samples	A	900/-	
				1-5	1			
				6-15	2			
				16-30	3			
				31-50	4			
				51-above	4+1			
					(for each addl 50 M³ or part there of)			

APPENDIX ‘B’ TO SPECIAL CONDITIONS NO. 32
LIST/SET OF LABORATORY EQUIPMENT AT SITE LAB

1.	2	3	4	5		6	7	8
4.	Structural Concrete (M-15 grade and above)	ii) Slump test (or) compacting factor test (or) Vee-Bee Time	IS: 1199	The minimum frequency of sampling of concrete of each grade shall be given as under:-		A	300/-	i) Random sampling shall be carried out to coverall mixing units. ii) Refer IS : 456- clause 14 for frequency of sampling.
		ii) compressive strength	IS:516	<u>Qty of concrete in the work (M³)</u>	No of samples	A	900/-	
				1-5	1			
				6-15	2			
				16-30	3			
				31-50	4			
				51-above	4+1			
					(for each addl 50 M³ or part there of)			
5.	a) PCC Block For walling (Hollow Block)	i) Compressive Strength	IS: 2185-2005	8 Block out of 14		A	900/-	Samples :- 14 Block from Consignments of Every 5000 blocks or part thereof
			(Annx-D)					
		ii) Water Absorption	-do- (Annx E)	3 Block out of 14		B	330/-	
		iii)Density	-do- (Annx-C)	3 Block out of 14		B	330/-	
	b) PCC solid Blocks for walling	i) Compressive strength	IS: 2185	12 Blocks out of 18		A	900/-	Samples: - 18 blocks from consignment of every 1000 Blocks or part thereof.
		ii) Water Absorption	-do-	03 Blocks out of 18		B	330/-	These blocks to be checked for dimensions and weight
		iii) Density	-do-	03 Blocks out of 18		B	330/-	

APPENDIX ‘B’ TO SPECIAL CONDITIONS NO. 32
LIST/SET OF LABORATORY EQUIPMENT AT SITE LAB

1.	2	3	4	5	6	7	8																
6.	Timber	i) Specific Gravity ii) Moisture Content	IS :1708-1986 -do-	Minimum 3 samples of a lot of 4 Cum or 250 pieces of seasoned timber -do-	B A	120/- 120/-																	
7.	Water for construction purpose	i) Test for Acidity ii) Test for Alkalinity. iii) Test for total Dissolved solid (TDS) content	IS: 456 & 3025 -do- -do-	Once at the stage for approval of source of water -do- -do-	B B B	500/- 500/- 500/-	Also refer clause 4.3 of IS-456 and its subsequent sub clauses regarding suitability of water																
8.	Welding of steel work.	i)Visual Inspection test.	IS:822-1970 Clause 7.1	100% by Visual Inspection	A	360/-	Specialised tests, their method and frequency to be decided on consideration of their importance by the Accepting Officer.																
9.	Timber Panelled and Glazed door/window shutters (including factory made shutters)	a)Dimensions, sizes, workmanship and finish	IS:1003-2003 (Part-1) IS:1003-1994 (Part-2)	Frequency of sampling from each lot shall be as under :- <table><tr><th>Lot Size</th><th>Sample/size</th></tr><tr><td>26 to 50</td><td>5</td></tr><tr><td>51 to 100</td><td>8</td></tr><tr><td>101 to 150</td><td>13</td></tr><tr><td>151 to 300</td><td>20</td></tr><tr><td>301 to 500</td><td>32</td></tr><tr><td>501 to 1000</td><td>50</td></tr><tr><td>1001 & above</td><td>80</td></tr></table>	Lot Size	Sample/size	26 to 50	5	51 to 100	8	101 to 150	13	151 to 300	20	301 to 500	32	501 to 1000	50	1001 & above	80	A	180/-	
Lot Size	Sample/size																						
26 to 50	5																						
51 to 100	8																						
101 to 150	13																						
151 to 300	20																						
301 to 500	32																						
501 to 1000	50																						
1001 & above	80																						

APPENDIX ‘B’ TO SPECIAL CONDITIONS NO. 32
LIST/SET OF LABORATORY EQUIPMENT AT SITE LAB

1.	2	3	4	5	6	7	8
		b) <u>Strength Test</u> i) Slamming ii) Impact Indentation iii) Shock Resistance iv) Edge loading	IS:10 03 - 2003(Part 1) IS:10 03 - 1994(Part 2) -do- -do- -do-	From each lot 5% of the factory made shutters shall be manufacturer tested for strength tests.			
10.	Ply wood (IS:303-1989)	a)Moisture Content	IS:17 34- 1983 Part- I)	Six test pieces cut from each of the boards selected as per Table shall be subject to tests.	C	240/-	Sampling shall be as per IS: 7835-1975 Tables.
11.	Veneered Wood Particle Board (Medium Density IS:3097-2006.	a) Density b) Moisture Content c) Water Absorption d) Swelling due to surface absorption	IS:3 097- 2006 (Part -I) -do- -do- -do- (Part -16) -do- (Part 17)	Three Test specimens from each sample (size 150 mm x 75 mm) -do- -do- (Size 300 mm x 300 mm) do- (Size 125 mm x 100 mm)	C A & B A A	60/- 60/- 60/- 60/-	Sampling shall be as per IS : 3087-83 with Moisture meter

APPENDIX ‘B’ TO SPECIAL CONDITIONS NO. 32
LIST/SET OF LABORATORY EQUIPMENT AT SITE LAB

1.	2	3	4	5	6	7	8
		e) Swelling in Water	-do-	(Size 200 mm x 100 mm)	A	60/-	
		f) Modulus of Rupture	-do- (Part -4)	Three test specimens as per IS: 2380-77	B	90/-	
		g) Screw Withdrawal strength	-do- (Part - 4)	-do- (As per IS: 2380)	C	120/-	
11	Bricks	i) Compressive strength	IS-3495 (Part -1)	As per (IS-5454) as given under :-	A	330/-	Checks for visual and dimensional characteristics shall also be carried out as per IS-5454
		ii) Water absorption	IS-3495 (Part -2)	Lot size Sample size Permissible No of defective bricks	A	330/-	
		iii) Efflorescence	IS-3495 (Part -3)	1001 to 10000 05 0	A	330/-	
				10001 to 35000 10 0			
				35001 to 50000 15 0			
12	Cement flooring tiles and Terrazo tiles	(i) Water absorption	IS-1237 (App x 'D')	06 tiles out of 18	B	330/-	Sample 18 tiles from each source of supply selected at random.
		(ii) Wet transverse strength	-do-	-do-	B	660/-	
		(iii) Resistance to wear	-do-	-do-	C	1000/-	
			-do-				
13	Cement	(i) Setting time	IS-4031	Once for each consignment or as and when required	B	500/-	

APPENDIX ‘B’ TO SPECIAL CONDITIONS NO. 32
LIST/SET OF LABORATORY EQUIPMENT AT SITE LAB

1.	2	3	4	5	6	7	8
		(ii) Soundness	IS-4031	Once for each consignment or as and when required	B	550/-	
		iii) Compressive strength	IS-4031	Once for each consignment or as and when required	B	550/-	
		iv) Fineness	IS-4031	Once for each consignment or as and when required	B	275/-	
13	Reinforce ment Steel	(i) Physica l test up to 16mm dia (Normal mass , tensile elongation, bend and rebend)			B	2500/-	
		(ii) More than dia16mm dia			B	2750/-	

(Signature of the Contractor)

For Accepting Officer

Dated: _____

PARTICULAR SPECIFICATION

1. GENERAL

- 1.1 Work under this contract shall be carried out in accordance with schedule 'A', Particular specifications, drawings and General specifications and other provisions in MORTH Specification of Road and Bridges, MES Schedule 2009 Part – I (for specifications), MES Schedule 2020 Part-II (for rates) read in conjunction with each other.
- 1.2 Term 'General Specifications referred to here-in-before as well as referred in IAFW-2249 (General conditions of Contracts) shall mean the specifications contained in the MES Schedule 2009 Part-I (for specification) and MES Schedule 2020 Part-II (for rates), MORTH, IRC specification as specified.
- 1.3 General Rules, specifications, special conditions and all preambles in the MES Schedule shall be deemed to be applicable to the work under this contract, unless specifically stated otherwise in these documents in which case the provisions in these documents shall take precedence over the aforesaid provisions. The term "as specified" wherever appears in the tender documents and drawings, relates to relevant particular specifications and in absence general specifications. All reference to MES schedule/ SSR in these specifications relates to Part-I of MES Schedule 2009 unless otherwise mentioned. References to only some paragraphs of MES schedule have been made in these particular specifications but other paragraphs and provisions as applicable are also to be followed for all parts of Schedule 'A', if any even though not particularly mentioned here in after.
- 1.4 Where specifications for any items of work are not given Specification MES Schedule or in these particular specifications, specifications as given in relevant Indian Standard Code of practice shall be followed.
- 1.4a **LIST OF DRAWINGS:** - List of drawings applicable for specification & scope of work under this contract shall be separately after forming part of this contract and is given after particular specification.
- 1.5 Lumpsum quoted by the contractor shall be deemed to include for any minor details/items of work and/or constructions which are obviously and fairly intended and which may not have been included in these documents but which are essential for the execution and entire completion of work. Decision of the Accepting Officer as to whether any minor details of work and /or construction is obviously and fairly intended to be included in the contract or not shall be final, conclusive and binding.
- 1.6 However some of the minor details/items which shall be deemed to be essential for execution and entire completion of work are detailed as under for guidance: -
- (i) Reinforcement for any RCC member not indicated in the drawings.
- (ii) Dwarf wall in situations like verandah, passage etc, not indicated in drawings.
- (iii) Lintels over doors, windows and openings not shown in drawings.
- 1.6.1 In all the above and in all similar cases, the details indicated elsewhere in the drawings which are similar or near to the missed out items of work shall be followed. In the absence of any other similar or near details minimum essential requirements for completion of the work from structural and utility point of view shall be deemed to be included in the lumpsum quoted. In the event of any dispute, decision of the Accepting Officer shall be final, binding and conclusive.
- 1.6.2 Irrespective of whether RCC bands, beams, columns and seismic provisions etc. are indicated on main architectural drawings or not, these shall be provided at locations and as per details indicated in the structural drawings and notes therein. No claim on this account shall be admissible. In case of any discrepancy in this regard between architectural and structural drawings, provisions contained in structural drawings shall take precedence over architectural drawings.

PARTICULAR SPECIFICATION (CONTD...)

1.7 MATERIALS

- 1.7.1 Unless specific makes/manufacturers are specified in the tender documents all the materials to be procured by the contractor for incorporation in the work under this contract (with the exception of local materials like bricks, stone aggregate, stones, sand etc) shall be with ISI certifications mark. For materials of specific make/maker. Approved names of manufacturer is given in **Appx 'F'** to this particular specification.
- 1.7.2 If any specific makes/manufacturers names are specified in Sch 'A' or Particular specifications or in **Appendix 'F'** to Particular specifications, materials shall be of these specific makes/manufacturers only. ISI marking will not be mandatory for such items where makes/manufacturers have been specified unless the items of makes/manufacturers specified are available both with IS marking and without ISI marking. If any material is not manufactured with IS certifications mark in the country, it shall be confirming to relevant IS and other specifications specified elsewhere and shall also conform to samples displayed in GE's office as applicable.
- 1.7.3 Indian Standard (IS) of the year of publication/edition listed or specified in the SSR (part-I) shall be applicable for the work under this contract unless specifically indicated otherwise elsewhere in these tender documents.
- 1.7.4 **LOCAL MATERIALS:**
Irrespective of actual distance involved, local materials such as stones, aggregates, sand, road metals etc. shall conform to or superior to the specifications given here in after and to the samples kept in the office of GE. The tenderers are advised to inspect these samples. The tenderers shall be deemed to have inspected the samples and have full knowledge thereof whether they inspect them or not before quoting their tender.
- 1.7.5 **SAMPLES OF MATERIALS: -**
(a) Refer condition 10 of IAFW-2249.
(b) Specific requirements regarding dimensions, strength, weight and finishes, as per MORTH, IS, MES SSR and the particular specifications given hereinafter vis-à-vis actual properties check, tests carried out, reference to test certificates and markings, etc. based on which samples of each materials are approved as Conforming to relevant specification shall be recorded in the sample approval register.
(c) The contractor shall not procure materials unless the samples are first got approved from the Garrison Engineer.
- 1.7.6 **RECORD OF MATERIALS (Refer Special condition 24)**
(a) The quantity of all the proprietary of materials (including the materials the quantity of which cannot be checked after incorporation in the works) shall be recorded in measurement books and signed by the contractor and the Engineer-in-Charge as a check to ensure that the required quantity has been brought at site for incorporation in the work.
(b) Materials brought to site shall be stored as directed by the Engineer-in-Charge and shall be suitably marked for identification.
(c) The contractor shall procure all the materials (where specific makes/maker's specified) directly from their manufacturers or from their authorised dealers only. The contractor shall ensure that the materials are brought to site, in original sealed containers/packing, bearing manufacturers marking except in the case of the requirement of material(s) being less than smallest packing.

PARTICULAR SPECIFICATION (CONTD...)

(d) The contractor shall produce to the GE original printed and machine numbered purchase vouchers/invoices including manufacturer's test certificate (where applicable) for all the materials mentioned here-in-before in Special Conditions. Copies of orders placed on the manufacturer/authorised dealers shall also be provided by the contractor to GE along with above documents. Whenever procured and brought to site of work for incorporation in the work, a Xerox copy of such vouchers/invoices shall be stamped (office stamp) and defaced in ink by the Engineer-in-Charge stating "verified for materials purchased and brought to the site of work for incorporation in the work under this contract and signed with date before allowing payment for these materials is made through RAR.

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

1.8 STANDARD OF WORKMANSHIP

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

1.9 SCOPE OF WORK The scope of work under this contract comprises of full, final and entire completion of building works and services described in different parts of schedule 'A' and in BOQ all as shown on drawings specified in these particular specifications & general specifications and as directed.

2.0 EXCAVATION AND EARTH WORK All excavation and earth work as required shall be carried out as described in items of Sch 'A' specified here- in- after in MES schedule Part-I 2009, shown on drawing and as directed.

2.1 Preparatory work & surface excavation:

(a) Before setting out the layout of building and commencing the construction, contractor shall carry out surface dressing of the area as per clause 3.6, 3.8 and 3.10 of MES Schedule Part-I to the entire satisfaction of GE. The 'area' referred to implies the entire building plot extending upto three metres all around from the outer edge of plinth protection of the building. All rubbish obtained from the site clearance and all spoil obtained from surface dressing shall be removed to a distance exceeding 1.5 Km and not exceeding 5 Km, outside MOD land spread and levelled. The ground level indicated is after site clearance/surface dressing. The cost of such work as may be necessary shall be deemed to be included in the contractor's quoted lump sum. However, in case buildings to be constructed under this contract are located on the area of site clearance (vide relevant part of Sch 'A'), necessary change for not carrying out surface dressing shall be regularized through a deviation order. The surface dressing required for levelling purpose of site shall be deemed to be included in lump sum quoted by the contractor.

PARTICULAR SPECIFICATION (CONTD...)**2.2 Excavation**

- (a) Soft/loose soil, hard/dense soil and mud shall be classified as any type of soils.
- (b) Unit rates for buildings in Schedule 'A' Part-I shall include for excavation and earth work in any type of soil as aforesaid.
- (c) However, in the event of deviation involving excavation and earthwork, the rates followed shall be the average of soft/loose and hard/dense soil.
- (d) The measurement of excavation shall be as explained in MES Schedule 2020 (Part-II) with the exception that separate quantities of soft/loose soil, hard/dense soil and mud shall not be worked out but these materials shall be grouped together as any type of soil as aforesaid.
- (e) Boulders and stones obtained from all works including building works shall be sorted out and neatly stacked at site by the contractor as directed by the Engineer-in-Charge, without any extra cost to the Govt. The aforesaid boulders and stones in stacks shall be the property of Govt.
- (f) If rock (soft/disintegrated/hard) is met at site, contractor shall immediately notify the fact to the GE in writing, who will after due verification, regularise the change through a proper deviation order.
- (g) Blasting shall not be allowed at site however manual/mechanical compressor cutter shall be allowed after prior approval of GE.

2.3 Filling in trenches/ under floors and removal of surplus spoil:

- 2.3.1 The approved earth obtained from excavation in foundations shall be used for filling in trenches, under floor and any other situation as specified after removing big stones, grass roots and vegetable moulds and other organic matter
- 2.3.2 Earth mixed with small stones/pebbles (if approved by GE) is permitted for use in filling under floors and foundations. The filling around pipes, after the pipes are laid and tested shall however be with earth free from pebbles/stones. Any additional earth, required for the purpose of filling, shall be arranged by the contractor at no extra cost to the department.
- 2.3.3 Filling under floor/sides of trenches shall be in layers not exceeding 25 cm thick layer and each layer shall be watered and well rammed.
- 2.3.4 Surplus spoil shall be removed and spread at places as directed by the Engineer-in-Charge, to a distance exceeding 1.50 Kilometer, but not exceeding 5.00 Kilometre inside and outside MD Land and levelled as directed by the Engineer-in-Charge.
- 2.3.5 If additional earth (soil) is required for filling in trenches and under floors/Traverse, approved earth shall be obtained by the contractor under his own arrangements outside MD land without any extra cost.

2.4 Trenches for foundations and pipes

- 2.4.1 The excavation shall be restricted to dimensions shown on the drawings. Excavation made, if any, in excess of required depth/width shall be made good by the contractor, with cement concrete mix (1:5:10) type E-2 (using 40 mm graded stone aggregate) without extra cost to the Govt.
- 2.4.2 The beds of the trenches, if in soft or made up earth, shall be watered and well rammed and any depressions thus formed shall be filled with approved earth as required to the level and slope directed by Engineer-in-Charge.

PARTICULAR SPECIFICATION (CONTD...)

- 2.5 Dressing around buildings: After construction and before handing over any building, the area around, as defined in clause 2.1 above shall be dressed without extra cost to the Govt. Spoil obtained from surface dressing shall be removed to a distance exceeding 100 metres, spread and levelled as directed by the Engineer-in-Charge.
- 2.6 **Foundation/ plinth :**
- 2.6.1 Any change in foundation/plinth necessitated due to undulating ground, which may have to be carried out as per decision of the GE, shall be adjusted through a deviation order.
- 2.6.2 For the purpose of reckoning the depth of the foundation, the average level of the ground after surface excavation shall be considered.
- 2.7 **BLANK**
- 2.8 **BAILING/PUMPING OF WATER**
- All water that may accumulate in trenches of foundation, column footings, rafts etc, during the progress of work from rains/snow, sub soil water, spring etc shall be bailed/pumped out or otherwise removed all as per clause 3.17 of MES SSR Part-I and nothing extra except as provided for vide special condition 3.11 on page 19 of MES SSR Part-II shall be payable on this account. Contractors are therefore advised to ascertain level of sub soil water at site of work before tendering.
- 2.9 **HARD CORE**
- 2.9.1 Hard core shall be of broken stones or boulders broken to gauge not exceeding 63 mm. The material of hard core shall be well graded for providing dense and compact sub grade. Hard core shall be deposited, spread and levelled in layers not exceeding 15 cm thick and watered and well rammed to a true surface and compacted with sufficient fine material. The thickness of hard core specified or indicated in the drawing is the thickness after consolidation, Where thickness has not been mentioned, it shall be 150 mm consolidated.

PARTICULAR SPECIFICATION (CONTD...)

3. **CONCRETE WORK**

3.1 **GENERAL**

- 3.1.1 Where there is a discrepancy between the number of reinforcement bars as marked on the drawings and the number of bars as worked out from the C/C spacing shown on drawings, the later shall prevail. The number of reinforcement bars in the RCC slab etc. shall be worked out considering the span between C/C of supports.
- 3.1.2 Wherever nomenclatures of structural slabs (e.g. S-1, S-2 etc.) is given in the RCC plans the details of reinforcement for such slabs shall be as given for slabs of the same nomenclature elsewhere, if not given in the same drawings.
- 3.1.3 RCC chajjas where shown on a architectural plan/ cross section shall be provided even if not marked on the structural plan/ section.

3.2 **CEMENT**

- 3.2.1 Contractor shall make his own arrangements to procure cement as specified here in after. The cost of cement, it's transportation, storage, testing charges, it's accounting and preservation etc till consumed in work shall be borne by the contractor.

3.2.2 **TYPE OF CEMENT**

- 3.2.2(A) Type of cement to be used in this contract for all **RCC works and DLC (M-15)** shall be Ordinary Portland Cement (OPC), 43 grade only, conforming to IS-8112-1989. However, Portland Pozzolana cement (PPC as per IS-1489) can be used in lieu of ordinary portland cement in **non RCC Work** subject to fulfilling certain criteria as specified in succeeding paras without any extra cost to the Govt.
- 3.2.2(B) While using PPC, the following requirements shall be met with: -
- (a) PPC shall meet the strength criteria as per IS-8112-1989.
 - (b) Stripping time shall be 14 days.
 - (c) Mixing of OPC & PPC shall not be allowed in a work except for plaster and mortar.
 - (d) While procuring PPC, the following requirements are to be ensured and certificate to that effect from the manufacturer shall be submitted by the contractor for each batch :-
 - (i) The quality of fly ash used is strictly as per IS-1489 (Part-I).
 - (ii) The fly ash has been inter ground with clinker and not mixed with clinker.
 - (iii) The dry fly ash has been transported in closed containers and stored in silos. Only pneumatic pumping has been used.
 - (iv) The fly ash has been received from thermal power plants using high temperature combustion above 1000°C.
 - (v) While using PPC, it shall be ensured that atmospheric temperature is more than 15°C.

3.2.3 **PROCUREMENT**

Cement procured by the contractor shall be from any of the main producers listed below. He shall procure it directly from the main producer as specified in here-in-after. The particulars of the manufacturer's of cement along with the date of manufacture shall be obtained from the contractor for each lot of cement separately, The documents in support of the purchase of cement shall be recorded and verified by GE and site staff.

(A) **FOR OPC AND PPC :-**

<u>COMPANY NAME</u>	<u>ADDRESS</u>	<u>Cement Grades</u>
1. M/s J K Cement Brand "J K"	Kamla Tower Kanpur-208001	All
2. M/s Ultra Tech Cement Ltd. Brand: "ULTRATECH"	'B' Wing, 2nd Floor, Mahakali Caves Road, Andheri (East), Mumbai-400093 Ph: 022-66917800	All

PARTICULAR SPECIFICATION (CONTD...)

	3.	M/s Sanghi Industries Ltd. Brand “Sanghi”	10 th Floor , Kataria Arcade , Off Highway , PO-Makarba , Dist- Ahmedabad , Pin -380051 MO-09825803690, Tel-079 26838000 Fax-079-26838111 Website: www.sanghicement.com	OPC 53 & PPC
	4.	M/s Dalmia Cement (Bharat) Ltd. Brand: DALMIA INFRA PRO	Dalmiapuram Distt-Truchirappalli, Tamil Nadu-621651	All
	5.	M/s Chettinad Cement Corporation Ltd Brand “CHETTINAD Cement”	4 th Floor, Rani Seethai Hall Building, 603, Anna Salai Hall, Chennai-600006 Ph: 044-42951800 Fax: 044-28291558 Email: info@chettinadcement.com Website: www.chettinadcement.com	OPC 43 & PPC
	6.	M/s Wonder Cement Ltd. Brand “WONDER Cement”	17 , Old Fatehpura , Seva Mandir Road , Udaipur-313004 Rajasthan (India) Ph: +91-294-33991133 Fax:+91-294-30096333 Email- Corp.office@wondercement.com	OPC 43 OPC 53 & PPC
	7.	M/s My Home Industries Ltd. Brand “MAHA CEMENT”	9 th Floor, Block-3, My Home Hub, Madhapur, Hyderabad-500081 Ph: 044-66929696 Fax: 044-66929797/98	OPC 43, PPC & PSC
	8.	M/s Parasakti Cements Ltd. Brand “PARASAKTI Cement”	123/3RT, Plot # 8-3-214/21, Srinivasa Nagar Colony (West), Hyderabad-500038 Ph: 044-44119100/200 Fax: 044-23747562	OPC 43 & PPC
	9.	M/s Sagar Cements Ltd. Brand “SAGAR”	Sagar Cements Ltd Plot No 111 , Road No 10, Jubilee Hills , Hyderabad-500033 Tele +91-40-23351571, 2335672 Fax+91-40-2335673 Email:-info@ sagarcements.in Website: www.sagarcements.in	OPC 43 OPC 53 PPC & PSC
	10.	M/s JSW Cement Ltd , A.P. Brand “JSW PSC (Portland Slag Cement”	JSW Centre Opp MIMRDA Ground Bandra Kurla Complex , Bandra (East) Mumbai-400051 Tele:+91-22-4286-5047 Fax: +91-22-2650-2001 Website: www.jswcement.in	PSC
	11.	M/s Shree Guru Kripa Cement (Pvt) Ltd. Brand “SARTAJ”	4/4 Trikuta nagar Jammu Ph: 0191-2472043	OPC 43 & PPC
	12.	M/S The Ramco Cements Ltd. (Formerly Madras Cement) Brand “RAMCO”	Auras Corporate Centre, 98-A, Dr, Radhakrishnan salai, Mylapore, Chennai-600004 Ph: 044-28478666	All

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	13.	Saurashtra Cement Brand “SAURASHTRA”	Gala No A-1, Ground Floor, Udhyog Sadan No 3 MIDC, Central Road, Andheri (East), Mumbai-400093 Ph: 022-32955557/67 Mo: 9320290081	All
	14.	The Associated Cement Co. Ltd. Brand: “ACC”	414-421, Splendor Forum (4 th Floor), 3, District Centre, Jasola, New Delhi-110044 Ph: 011-46583600	All
	15.	The India Cements Ltd.	Dhun Building, 827, Anna Salai, Chennai-600002	All
	16.	Century Cements. Brand: Century	Industry House, 159 Church gate Reclamation, Mumbai-400020 Ph: 022-22023936	All
	17.	Nuvoco Vistas Corporation Ltd. (Formerly Lafarge Cement) Brand “NUVOCO”	Equinox Business Park Tower -3, East Wing , 4 th Floor LBS , Kurla(West), Kurla Mumbai, Maharashtra-400070	All
	18.	Mangalam Cement Ltd. Brand “MANGALAM”	PO Adityanagar, Morak, Distt-kota, Rajasthan-326520 Ph: 9351468076	All
	19.	Birla Corporation Ltd. Brand “BIRLA”	Birla Building (3 rd & 4 th Floor) 9/1, R.N Mukherjee Road, Kolkata-700001 Ph: 033-30573700	All
	20.	Orient Cement. Brand “ORIENT”	5-9-22/57/D, 2 nd and 3 rd Floor, GP Birla Centre, Adarsh Nagar, Hyderabad-5000636 Ph: 044-23688600	All
	21.	Shree Cement Brand “SHREE”	Bangur Nagar, Beawar, Distt-Ajmer, Rajasthan-305901 Ph: 01462-228101/06	All
	22.	Jaypee Rewa Cements. Brand “JAYPEE”	Jaypee Nagar. P O –Jaypee Nagar , Rewa-486450 M.P.	All
	23.	JK Lakshmi Cement. Brand “J K LAKSHMI”	Jaykaypuram, Distt-Sirohi, Rajasthan Ph: 02971-244409/10	All
	24.	Ambuja Cement Ltd. Brand “AMBUJA”	Kodinar, PO-Ambujanagar, Taluka-Kodinar, Distt - Junagadh, Gujarat-362715 Ph: 02795-237000	All
		Note:- The department can delete any name in the above list due to technical reasons and the contractor will not have claim on this account of it .Also the Department can add any name as per approval of E-in –C’s Branch .		

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- 3.2.4 Cement brought by the Contractor at site(s) of work shall be in jute/ polythene/ paper bags containing 50 Kg cement in each bag originally sealed by manufacturer. Before allowing any on account payment for materials at site, test check shall be carried out to ascertain average weight of cement per bag.
- 3.2.5 **TESTING OF CEMENT**
- 3.2.5.1 Cement brought to site of work shall remain the property of Govt. Contractor shall in no case, remove any bag of cement unless permitted in writing by GE. The manufacturer will carry out inspections and testing of cement in accordance with the relevant BIS provisions. The contractor shall submit Manufacturer's Test Certificate in Original alongwith the Test Sheet giving the result of each physical test as applicable and chemical composition of the cement or authenticated copy there of, duly signed by the manufacturer with each consignment. The Engr-in-Charge shall record these details in the cement Acceptance Register, as given in Appx 'A' after due verification.
- 3.2.5.2 In addition to manufacturer's test certificate, GE shall also take random samples of cement drawn from various lots of each consignment as specified in IS Codes and as per MES Quality Assurance Mannual and get them tested from any one of the Govt. approved laboratories or from SEMT wing CME, Regional Research Laboratories, IIT, or MES Zonal Laboratory, all as per IS-3535-1986, IS-4031 and IS-4032-1985. Irrespective of results, cost of materials for such samples, cost of requisite handling & conveyance and cost of testing etc shall be borne by the contractor. Cement from each consignment shall be allowed to be incorporated in the work only after the GE is satisfied with the quality of cement brought by contractor.
- 3.2.5.3 Cost of all tests including testing undertaken as per provision in clause 4.3.1 of SSR Part-I shall also be borne by the contractor. It shall be ensured that tested and un-tested cement is segregated and stored separately with distinct Identification. Cement of different brands shall be stacked separately.
- 3.2.5.4 If the test result on samples of a particular consignment is not within acceptable limits, the matter shall be referred to the Accepting Officer, whose decision regarding acceptability of such cement with price adjustment or removal from the site shall be final and binding. Cement so rejected or any bag of cement in go-down showing indication of any setting shall be segregated and removed by contractor from the site within a week's time, with due permission of GE for their removal.
- 3.2.6 **Storage/consumption of Cement**
- 3.2.6.1 Cement in bags shall be stored in proper leak proof/ damp proof storage go-down, over at-least a 20 cm high dry platform minimum 60 cms, away from walls in such manner as to prevent deterioration due to moisture or intrusion of foreign matter, all as specified in clause 4.3.1 to 4.3.3. of SSR Part-I. Stacking of cement shall not be more than 10 bags high.
- 3.2.6.2 For the purpose of keeping s record of cement procured and consumed in works, the contractor shall maintain a properly bound register in the form approved by the Engineer-in-Charge showing all procurements, quantity used in the work and balance in hand, at the end of each day and such other information as may be required to control the consumption of cement. Pages of the register shall be numbered and initialed by Engineer-in-Charge. This register shall be signed daily by the contractor or his representative in token of correctness of the entries made. In token to check, it shall be signed by MES rep also as follows :-
- a) Daily by JE (Civil) incharge of work.
- b) Twice in a week by the Engineer-in-Charge.
- 3.2.6.3 The said register shall remain at site of work, in the safe custody of the contractor and on demand shall be produced for verification of Inspecting Officer. On completion of the work, the register shall be returned to MES. The cement godown shall be provided with two locks on each door the key of one lock on each door shall remain with the Engineer-in-Charge or his authorised Representative and that of the other lock with the contractor's authorised agent at site of work so that cement is removed from the godown according to daily requirements and with the knowledge of both the parties.

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- 3.2.6.4 Foregoing provisions shall not, however absolve the contractor of his responsibility of incorporating required quantity of cement in various items of works as per contract provision.
- 3.2.6.5 Cement shall be used in order of which it is received. It shall be ensured that only one type / make of cement is used in any structural member.
- 3.2.7 **Documentation**
- 3.2.7.1 The contractor shall submit original purchase vouchers from the manufacturer for the total quantity of cement supplied under each consignment to be incorporated in the work. All consignment received at the work site shall be inspected by the GE and the relevant documents before acceptance. The original vouchers and the test certificates shall be defaced, verified by the Engineer-in-Charge and kept on record in the office of the GE duly authenticated and with cross reference to the control number recorded in the Cement Acceptance Register. The Cement Acceptance Register will be signed by the JE (Civil), Engineer-in-Charge, GE and the Contractor. The Accepting Officer may order a Board of officers for random check of cement and verification of connected documents. The entire quantity of cement shall be suitably recorded in the Measurement Book also signed by Contractor for record purposes before incorporation in the work, as “Not to be abstracted” indicating the Voucher number with dates, quantity, date of manufacture/expiry date etc. it shall form the basis to allow advance on account through RARs.
- 3.2.8 **Schedule of supply**
- 3.2.8.1 The contractor shall ensure that procurement action is taken immediately after acceptance of the contract so as to adhere to schedule of activities as per CPM Net Work.
- 3.2.9 The periodicity of striking the form work and curing for works with ordinary Portland cement, Portland slag cement shall be as stipulated in clause 10.3 and 12.5 of IS-456 of 2000.
- 3.3 **Aggregate**: Aggregate for concrete work shall conform to specifications all as specified in clauses 4.4.1 to 4.4.7.1 of MES Schedule Part-I.
- 3.3.1 **Fine aggregate (Sand)**. Grading for fine aggregate shall be within the limits of grading zones I to III as given in clause 4.4.7.2 of MES Schedule Part – I.
- 3.3.2 **Coarse Aggregate**: Unless otherwise specified in these particular specifications, coarse aggregate for all concrete work in all situations shall be graded crushed stone aggregate of approved quality.
- 3.3.2.1 **Grading of Coarse Aggregate**: Graded aggregate of nominal size given here in under shall be used unless specified otherwise in the specifications here in after.
- a) **Reinforced cement concrete**
- i) For members of depth/thickness more than and including 100 mm - 20 mm
- ii) For members of depth/thickness less than 100mm -12.5 mm
- Note: However in no case the nominal size of aggregate shall be greater than one-fourth the minimum size of the member.*
- (b) **Plain cement concrete**
- (i) Under 30 mm thickness - 12.5 mm
- (ii) 30 to 80 mm thickness - 20 mm
- (iii) Exceeding 80 mm thickness - 40 mm
- 3.4 **WATER**. Water shall conform to the requirements stipulated in IS-456-2000.

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3.5 **Mix of Concrete.** Mix of concrete shall be all as shown on drawing, in absence of the same mix of cement concrete in various situations shall be as under:-

	<u>Situation</u>	<u>Type of concrete</u>
(a)	(i) Lean concrete under foundation of walls/ Plinth/ Toe beam and in gaps between plinth beam/ column footing.	: PCC (1:5:10) (By Volume)
	(ii) Foundation concrete under column footing and lean concrete under raft foundation.	: PCC (1:4:8) (By Volume)
(b)	PCC in plinth protection and channel/ drain, PCC sills, PCC blocks for holder bats and hold fasts or lugs for doors windows and ventilators and plugging for scaffolding holes.	: PCC (1:3:6) (By Volume)
(c)	PCC in bed blocks/plates, kerbs, benching, coping, ramp, steps and PCC in any other situation not covered above.	: PCC (1:2:4) (By Volume)
(d)	All RCC Work.	: RCC work shall be M-25/30 as shown in drawings. In case no mix design has been indicated in drawings, it shall be M-25 (Design Mix) as per IS-456-2000.

3.5.1 Concrete in RCC work of buildings shall be M-25 (Design Mix) as per IS-456-2000 and as shown on drawings.

3.5.2 Plinth beam below ground level shall be laid over PCC 1:4:8 using 40mm graded crushed stone aggregate. Thickness of PCC, if not shown on drawings shall be 75mm and width equal to width of beam.

3.6 **Important requirements of Design Mix and Plain Mix.**

3.6.1 Characteristic compressive strength of cubes after 28 days shall be 25 N/mm2 for M-25 design mix and 30 N/mm2 for M-30 design mix.

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

3.6.3 Actual proportion of cement aggregate and water to obtain the required strength shall be determined by actual design as specified here in after and the contractor shall provide the same during execution of work. No adjustment in prices shall be made for variation in cement/aggregates ratios.

3.6.4 **Minimum cement content shall be as under :-**
Minimum cement content for M-25 design mix-360 Kg/Cum and M-30 design mix-380 Kg/Cum. However, if cement content works out higher than as stated above during actual design mix, the contractor shall provide higher cement without any extra cost to Govt. If cement content works out lower than as stated above, during actual design mix, the contractor shall provide minimum cement content as stated above without any extra cost to Govt.

3.6.5 Engineer-in-Charge shall maintain a record of actual consumption of cement in a proper register (other than cement register maintained as per clause 3.2.6.2 to 3.2.6.3 and condition 25 of Special Conditions) and initial the entry for every change in quantity of material.

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3.6.6 Design of Mix Concrete

(i) As soon as possible after receiving the order to commence work, the design of concrete mix shall be got done from any Govt approved laboratory (as approved by the GE) and same shall be verified at site by trial mix method. Cost of designing of mix concrete shall be borne by the contractor.

(ii) From each trial mix, nine number preliminary test cubes of size 15 x 15 x 15 cms shall be made and tested in accordance with IS-516. Three of these cubes shall be tested at seven days (i.e., on 8th day from the date of casting) and another three at 28th day (i.e., 29th day from the date of casting) and the remaining three cubes of the finally approved mix shall be preserved by the GE for one year after completion of work for test in case of subsequent check.

(iii) The test after seven days is intended only to give early indication of possible relations from the required strength. However, acceptance of design mix shall be based on 28 days strength. If the difference between highest and lowest values of 28 days from any one trial mix is more than 15 percent of the average strength of three cubes, testing is to be discarded and a further trial mix shall be made. Any cube of mix not found satisfactory will be destroyed.

(iv) On the results of the above tests, the mixes actually to be used are to be agreed to and approved by the GE.

(v) The approval of the GE will not absolve the contractor of his responsibility for obtaining the required minimum strength.

(vi) All tests in support of mix design shall be maintained as a record for the contract.

3.6.7 Mixing of Concrete.

The contractor shall use Automatic & fully computerized RMC Plant with weigh batching and fully automatic control panel and computer & printer facilities. It shall have PLC (Programmable Logic Control) based control system. Computer shall have SCADA system with process visualization.

Mixer type – output minimum 10-15 cum/hour.

The plant shall have MIS reports facilities for product and current status and digital weight display with automatic batching facilities and interface of PLC.

NOTE: If the quantity is less (as per standard engineering practice/as per policy in vogue), the semi-automatic plant with printable option can be used with written permission of GE

3.6.8 Placing and Compaction of Concrete.

(i) Concrete delivered on bunker shall be transported and incorporated in works at the position of laying within 20 minutes from the time of discharge from the mixer.

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

3.6.9 Water Cement Ratio. The water cement ratio for the concrete shall be as per IS: 456. To achieve this water cement ratio, the moisture contents in respect of coarse aggregate and fine aggregate shall be tested and kept on record. The frequency of testing of moisture contents in respect of coarse aggregate and fine aggregate shall be decided by Engineer-in-Charge depending upon site conditions. The amount of water required shall be adjusted depending upon the result of tests for moisture contents. For determination of moisture content in aggregate IS: 2386 (Part III) may be referred to.

3.6.10 Acceptance Criteria for Concrete:- The criteria for acceptance of the concrete shall be as given in IS: 456 (Code of practice for plain and reinforced concrete). The maximum frequency for the work tests shall be as specified therein or samples taken from concrete poured in operations as specified in clause here in after which ever more.

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3.6.11 **Tests:** - The following tests shall be carried out during the execution of work. Tests shall be carried out in accordance with IS: 1199. The contractor shall provide all facilities and equipment for casting and curing of test cubes and conveyance of test cubes and other material for testing purpose to MES Laboratory, the cost for the same shall be borne by the contractor. However, testing charges to be levied from contractor for tests carried out in MES laboratory shall be as per clause given in the special conditions.

(i) **Slump Test:** - The frequency of the test shall be decided by the GE. The slump for the vibrated concrete may be 1 inch to 3 inches maximum. The GE, however, reserves the right to vary the limit, which will be ascertained at the time of deciding the mix design for each grade. Any batch from which a slump test is being made shall not be transferred to the places of laying until the slump in excess of that required shall not be consumed and removed from the site.

(ii) **Compression Test :** A group of nine test cubes (15 cm x 15 cm x 15 cm) shall be taken out at the following stages of work: -

(a) **Buildings**

- i) Columns, raft & strip foundation
- ii) All slabs and beams casted monolithically.

Note: The frequency may be increased as considered necessary by the GE.

(iii) Three cubes shall be tested at 7 days and three at 28 days for compressive strength and the remaining three cubes shall be kept as reserved exclusively for subsequent testing if so desired by GE and preserved for one year from completion of work under the contract. The contractor shall not object testing of other cubes for a purpose as a matter of right.

(iv) For the purpose of subsequent identification, test cubes shall be cross-referred and record of this maintained and signed by the Engineer-in-Charge and contractor or his authorised representative.

(v) Test report will be signed jointly by the Engineer-in-Charge and the contractor.

(vi) **Acceptance/Rejection of concrete: -**

Any concrete not acceptable after taking into consideration the criteria stated in IS: 456, shall be rejected. The contractor shall replace such concrete at his own expenses.

(vii) When defective or rejected work cannot be replaced due to any reasons whatsoever, (decision of Accepting officer in this respect shall be final and binding) the cost of removal and replacement of the rejected concrete including the joints shall be recovered from the contractor whether it is subsequently replaced by the Govt or not.

Bulking of sand
Impurities of sand
Sieve analysis of aggregate

Test shall be carried out as per
IS: 383.

3.6.12 **Curing:** - The concrete shall be protected from premature drying for at least 8 days after pouring and shall be cured as directed by the Engineer-in-Charge for a period of not less than 14 days.

3.6.13 **Plain Cement Concrete :-**

(i) Unless otherwise indicated, all plain cement concrete shall be mixed in a mechanical mixer with hopper of approved type. The coarse and fine aggregates for mixing of cement concrete shall be put in the hopper through measuring boxes. Under no circumstances, measuring with other than proper measuring boxes shall be allowed. However, in case of small quantity i.e., the quantity of concrete required being less than one batch of mix the contractor may after obtaining written permission of the Engineer-in-Charge be allowed hand mixing. Where hand mixing is permitted, it shall be carried out on watertight platform and care should be taken to ensure that mixing is continued until the concrete is uniform in colour and consistency.

(ii) All plain cement concrete shall be consolidated/ compacted by tamping and roding.

PARTICULAR SPECIFICATION (CONTD...)**3.7 Form Work:-**

3.7.1 Formwork shall comply with requirements of para 4.11.6.1 to 4.11.6.5 and 7.15.1 to 7.15.10 of MES Schedule (Part-I).

3.7.2 Form work shall be of steel of adequate strength. In case of deviation in work, pricing shall be done with the rates of timber form work for fair finished surface as given in SSR.

3.8 Exposed surface of concrete:-

3.8.1 Exposed (RCC/PCC) cement concrete surfaces, which ultimately is required to be finished by application of white / colour wash, distemper, cement base paint or oil paint etc. shall be plastered with cement and sand mortar 1:3, 5 mm thick and finished even and smooth after removal of form work except where otherwise shown on drawings

3.8.2 Exposed surface of lintels, beams, columns etc which are continuous with plastered surfaces of walls shall be plastered in the same manner as specified for the walls.

3.8.3 **Precast Concrete Articles:-** Cement concrete lintels with or without integrally cast chajjas upto 1.5 metre clear span, shelves, bed blocks/plates, cover slabs, fins and the like may either be precast or cast in situ at the contractor's option unless otherwise specified elsewhere, if precast, these shall be set in cement mortar (1:3). In case of deviation involving in these items, pricing shall be done on the basis of cast-in-situ work.

3.9 RCC Chajjas:

3.9.1 RCC Chajjas (Whether cast integral with the lintel or precast and embedded in the wall) shall be provided with a coved fillet of radius 50 mm in PCC 1:2:4 preferably casted while the concrete is still green.

3.9.2 The top surface of chajjas and the coved fillet shall be finished with 10mm thick cement plaster in cement mortar 1:3 with a mixture of approved water proofing compound as per manufacturer's instructions just after the initial setting of cement in Chajja has taken place.

3.10 **Throating/Weathering:** Throating to projections of RCC/PCC beyond external faces of the walls where shown on drawings and where RCC Chajjas are not provided with downward fascia shall be formed in the concrete while casting by placing fillet/bar of 12 mm diameter in the form work and finished smooth.

3.11 **Cills:** RCC cills to each window and vents shall be provided as per details shown on drawings and as directed. Cills of windows and vent shall be extended 100mm on either side of opening to the full bearing of wall if not otherwise specifically shown on drawings.

3.12 **RCC Jalli:-**RCC Jalli shall be provided as per details shown on drawing. Where the thickness is not indicated, it shall be 50mm finished thickness complete all as per directed by Engr in charge.

3.13 RCC Shelves :

3.13.1 RCC shelves shall be provided as per details shown on drawings. Where the thickness of shelf is not indicated, it shall be 75 mm finished thickness.

3.13.2 The edges of RCC shelves shall be rounded off to minimum radius of 6 mm.

3.14 Bearing of RCC Structural Members.

3.14.1 Bearing to all roof/Floor slabs resting on masonry walls shall comprise of 20 mm thick bearing plaster in cement mortar (1:4) finished even and smooth treated with one coat of white wash and 2 layers of bitumen laminated water proofing building paper type-I weighing not less than 60 gms/Sqm each layer laid over it.

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- 3.14.2 All beams/bressumers/lintels resting on masonry shall be provided with PCC bed blocks of cement concrete mix 1:2:4 type B-1. The size of bed block shall be as indicated on drawings. In case size is not indicated it shall be 200 mm deep, length equal to the width of beam plus twice the depth of block and width equal to the thickness of wall
- 3.15 **Junction of RCC Roof slabs and parapet walls, Moulds/Facia/Pipe etc., (as applicable):**
PCC padding in the form of a coved fillet of radius 75 mm shall be provided in PCC 1:2:4, type B-1 all along the junction of RCC roof slab and vertical projections as specified above.
- 3.16 **Plinth Protection**
3.16.1 Plinth protection in all situations as shown on drawings shall be provided with 75 mm thick PCC 1:3:6 type C-I (using 20 mm graded stone aggregate) over 75 mm thick consolidated bed of hard core of broken stone as specified in clause 2.9 here-in-before blinded with coarse sand over well consolidated earthen surface. Width of plinth protection shall be as indicated on drawings, if not indicated on the drawings, the width of the plinth protection shall be 750 mm. PCC shall be laid in alternate bays (not exceeding 2 Sqm) and finished fair on top without using extra cement, 6 mm wide joints shall be provided throughout the thickness of plinth protection in concrete bays and in between walling and plinth protection. All joints in bays of concrete shall be filled with mastic filling comprising of one part of heated bitumen 85/25 or 90/100 grade and 3 parts of sand (all by weight).
- 3.17 **PCC Benching:** PCC benching/coving shall be provided as shown on drawings and the radius of the round portion shall be 75 mm.
- 3.18 **Concrete Padding:** Where the required height of walls, openings is not obtained with adequate size of PCC blocks/stone/bricks the same shall be obtained by providing concrete padding of PCC 1:3:6 type C-1.
- 3.19 **Seismic Provision:** Strengthening measures for all buildings for seismic measures shall be provided all as shown on main drawings and drawing No CEAUF/TD-42/2001 Sheet 1/2 and 2/2 in the manner as given for brick walling and as per provisions of IS 1893 & IS-4326 for seismic zone in which the building lies. In case any item which may not have been specifically mentioned or shown, is required to be provided for seismic strengthening, these shall be provided without any extra cost to the Govt. Provision of IS amended upto date at receipt of tender shall be applicable to this purpose. Plinth band (PB), lintel band (LB), floor band (FB) & roof band (RB) shall be provided at plinth level, lintel level, floor level & roof level respectively. However, these shall not be duplicated in locations where plinth beams, lintels, floor beams & roof beams are to be provided.
- 3.20 **SPLASH STONES:** Where shown on drawings, the splash stones shall be provided of size 450 mm x 450 mm of PCC 1:2:4 type B-1 (using 20 mm graded crushed stone aggregate).
- 3.21 **RCC wall:** RCC wall shall be provided as per the details shown on drawings. Type of RCC walls shall be as shown on drawings. RCC wall shall be given two coats of cement base paint in camouflage pattern exposed to view.
- 3.22 **PCC Drain:** PCC drain shall be provided as shown on drawings. PCC Drain shall be of Type-2 as shown in drawing No.CEAUF/TD-10/2000 sh1/1 complete all as directed by Engr in charge.

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- 3.23 **Crumple joint:** Where shown on drawings, crumple joint shall be suitably at location shown on drawings as per IS 3414 to obtain effective seal against penetration of water. The width of crumple joint unless otherwise indicated shall be taken as 25mm.
- 3.24 **LOFT SLAB:** Loft slab where indicated shall be provide as shown on drawings.
4. **PCC BLOCK MASONRY**
- 4.1 **PCC BLOCKS:** Solid PCC concrete block shall casted as per IS-2185. These shall be manufactured for minimum average compressive strength of 5N/Sqmm at 28 days unless otherwise specified here in before or shown on drawings
- 4.1.1 Precast concrete blocks shall be casted mechanically having vibration arrangement in approved machine in PCC 1:3:6 using 16mm graded crushed stone aggregates as per IS-2185. The PCC block shall conform to the requirements of relevant IS. The PCC block for masonry shall be of size (Nominal dimensions) as specified in MES Schedule 2009 Part I. The PCC block shall be pointed and set in cement mortar (1:4).
- 4.1.2 The work for precast block masonry shall be carried out as specified in clause 4.23.1 to 4.23.15 of SSR Part-I.
- 4.1.3 Precast concrete block shall be manufactured casted at site of work. The size for casting of PCC block shall be as directed by Engineer-in-Charge.
- 4.1.4 Contractor shall keep watch and ward of PCC block to avoid any breakage/loss. Wherever 10 cm thick wall are shown on drawings these shall be reinforced with 2 Nos 8 mm dia TMT bars with 6 mm dia MS round bars @ 150 mm center to center shall be provided and placed horizontally at every fifth course starting from bottom.
- 4.2 **TESTING**
- 4.2.1 Following three tests shall be carried out in accordance with IS-2185 as stipulated in Appendix 'A' to Special Conditions
(a) Compressive strength (b) Block Density (c) Water absorption
- 4.2.2 All the above tests shall be carried out as prescribed in appendices of IS-2185 and IS-2156 as stipulated in Appendix 'A' to Special Conditions
- 4.2.3 A record of "concrete pour" for blocks and number of blocks casted/incorporated in testing shall be jointly maintained to assess the quantity of cement utilized. The contractor shall bear the cost of blocks, preparation of blocks and their curing, transportation and handling complete.
- 4.3 **FI TIES :**
- 4.3.1 Masonry coming in contact with RCC columns shall be anchored to columns with MS flat iron ties starting from 15 cms above plinth beam. The ties shall be of 25mmx 3mm flat iron 25 cm long provided at every fourth course.
- 4.4 **LAYING AND BONDING :**
- 4.4.1 PCC blocks shall be laid and bonded in odd and even layers all as shown in drawings.
5. **BRICK WORK.**
- 5.1 **MATERIALS.**
- 5.1.1 **BRICKS.** Bricks shall be kiln burnt sub class 'B' locally available best quality conforming to the samples kept in GE's office. Unless specified otherwise in Schedule 'A'/ Notes on drawings, brick shall have minimum crushing strength of 75 Kg/Sqcm. Water absorption of bricks shall not exceed 20% when tested in accordance with IS: 3495. Sampling and testing of bricks shall be carried out as per IS 3495 and IS 3454. The size of bricks shall be 230 mm x 115 mm x 75 mm. The tolerance in the dimensions shall be ± 8 percent.

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- 5.1a **CEMENT**: Refer clause 3.2 here in before.
- 5.1a.3 **Sand** : Sand and mortar shall be as specified in clause 5.4 of MES Schedule Part I.
- 5.2 **WORKMANSHIP**:
- 5.2.1 Brick work in all situations shall be built in cement mortar 1:6 except in half brick thick wall where it shall be in cement mortar 1:4.
- 5.2.2 Half brick thick wall of height more than 90 cms shall be reinforced with two Nos. 8 mm dia Mild Steel round bars placed horizontally, at every fourth (4th) course starting from the floor level and anchored in wall/columns at junctions. The anchorage length provided shall be not less than 100mm. Overlaps, if any, required in the reinforcement shall not be less than 30 cms.
- 5.2.3 In the event of deviations, brick work as specified above shall be priced at the applicable rates in MES Schedule 2020 (Part – II) for material and labour with sub class 'B' bricks, subject to contractor's percentage for Schedule 'A' Part I.
- 5.3 **F I TIES**: Brick masonry coming in contact with RCC columns shall be anchored to columns with MS Flat iron ties, starting from 15 cm above DPC. The ties shall be of 25 mm x 3 mm flat iron, 25 cm long provided at a vertical spacing of 60 cms.
- 5.4 **DAMP PROOF COURSE**: unless otherwise specifically indicated in drawings no DPC (damp proof course) shall be provided on RCC plinth beams / bands. However, on brick walls where no plinth beam / bands have been provided, DPC shall be provided as under :-
- a) The damp proof course shall consist of layer of 40 mm thick plain cement concrete (1:2:4) type B-O (using 12.5 mm nominal size aggregate) mixed with water proofing compound and laid as specified in para 5.42.1 and 5.42.2 of MES Schedule Part-I.
- b) Water proofing compound for damp proof course shall conform to IS-2645. It shall be mixed with cement mortar in the proportion and manner as given in manufacturer's instructions. Deviations if any, shall be priced at the rate of 3% by weight of cement.
- c) Damp proof course shall also be provided under door/openings (below floor by giving vertical drop) irrespective of what is shown on the drawings. PCC floor where provided shall be extended in door openings.
- d) Damp proof course shall be provided on all walls (except 2100 mm high half bricks wall resting directly on sub base floor) at plinth level, irrespective of whether shown on drawings or not.
- 5.5 **LAYING & BONDING**.
- 5.5.1 Bricks shall be laid and bonded, all as specified in clause 5.23 and 5.24 of MES Schedule Part I as applicable to old size bricks (FPS conventional bricks).
- 5.6 Half bricks wall upto 2100-mm height shall rest directly from the sub base floor. Half brick walls above 2100 mm height and dwarf walls shall be provided with foundations as shown on the drawings.

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6.00 TIMBER

6.1 WOOD WORK AND JOINERY

Timber for all joinery and wood work and shall conform to specification given in the clause 7.3 of the MES Schedule Part-I and shall be with the permissible limits of defects defined in clause 7.4 and 7.5 of MES Schedule Part-I.

6.1.2 Timber shall be well air or kiln seasoned at the discretion of the contractor (except factory made door shutters which shall be kiln seasoned only) but without any price adjustment. The moisture content of timber shall not exceed the limits laid down vide clause 7.7 of MES Schedule Part-I for Zone-II.

6.2 PRESERVATION OF TIMBER

6.2.1 Preservative anti termite treatment shall be given to all wood work and joinery fabricated by the contractor at site. factory made wood based boards are not to be treated with any chemical.

6.2.2 Chemical used for anti termite treatment to wood work shall be copper NAPTHANATE or any other chemical specified in IS-410 applied in any of the manners specified in the ibid IS.

6.3 Species of Timber :- The species of timber and wood products (i.e. plywood, wood particles board etc) shall be as specified below :-

- (a) Panelled/glazed/wire gauged shutters for doors (stiles rails glazing bar except beading/moulding fillets). : Factory made shutter using second class hard wood.
- (b) Edging of cup boards, pelmet box, ward robe, cabinet, shutters etc : First class hardwood (Teakwood)
- (c) Panel inserts of door shutters pelmets where shown of wood or particle board/ ply wood. : Particle board commercial veneered both sides.
- (d) All other location where wood work not indicated in drawings or specified else where : First class soft wood (Deodar)

6.3.1 In the event of deviation for panelled joinery with veneered particle board inserts, the pricing shall be done at the rates given in SSR-2004 Part-II for factory made panelled shutters.

6.3.2 Panelled shutter shall be provided with beading all round the panel inserts on the front side of door. The size of beading shall be 20mm in width and tapered thickness from 10mm to 5mm.

6.4 (i) Veneered Particle Board :-

Veneered particle boards shall be three layered flat pressed veneered wood particle board bonded with phenol formaldehyde synthetic resin adhesive, exterior grade general purpose type or decorative type as indicated and shall conform to IS-3097 specifications for veneered particle board. Edges of particle board shutters/shelves shall be provided teakwood edging as shown on drawings. Make : BHUTAN BOARD, ANCHOR and KITLAME of M/S KITPLY. Refer clause 12.14 of MES Schedule Part-I.

(ii) Particle Board :-

It shall be as specified in clause 12.13 of MES Schedule Part I

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- 6.5 **Plywood** :- All plywood where indicated on drawings shall be BWR grade conforming to IS:373-1975, Decorative plywood where indicated on drawings shall conform to IS:1328. Refer clause 12.9.6 to 12.11 of MES Schedule Part-I. Make: BHUTAN BOARD/ANCHOR/KITPLY.
- 6.6 BLANK
- 6.7 **Workmanship:-**
- 6.7.1 Joinery shall be wrought all over. Timber exposed to view shall be wrought and timber not exposed to view shall be clean sawn. The workmanship and fixing of joinery shall be as per clause 8.15 to 8.26 of MES Schedule Part-I.
- 6.7.2 The dimensions of the various components of joinery (other than block board shutters shown on drawings, wherever at variance shall supersede the standard dimensions mentioned in clause 8.24 of the MES Schedule Part-I. However, for pricing deviations involving and joinery works the rates in the MES Schedule Part-I for the corresponding joinery items shall be applicable.
- 6.7.3 Unless otherwise specified all work both carpenter's and joiner's shall hold full dimensions shown on drawings except that an allowance of 1.00 mm shall be allowed for each wrought face. Wooden beads and fillets shall however, hold the full dimension as shown in drawings. The contractor shall also maintain the overall sizes of the doors and windows etc as shown on drawings.
- 6.7.4 Timber member upto 3.00 metre length shall be done in one piece.
- 6.7.5 Plugging to wall shall be done with wooden plug as per clause 7.29 of MES Schedule A Part-I
- 6.8 **Factory Made Shutters**
- 6.8.1 All paneled glazed/wired/gauze shutters of doors as shown on drawings shall be factory made, manufactured in accordance with IS-1003 made of well selected kiln seasoned chemically pressure treated second class hard wood stiles, rails and glazing bars, shall be as specified in clause 6.3 here-in-before. Thickness of styles and rails shall be 35mm thick. Panel inserts shall be 12mm thick particle board commercial veneered on both faces, conforming to specifications mentioned in clause 6.4 above. Factory made shutters shall be obtained from one of the factories mentioned in Appx 'F'.
- 6.8.2 A tolerance of ± 3 mm on width and height shall be allowed provided to shutter snugly fits into the frame.
- 6.8.3 **PVC doors**: - PVC Doors where indicated on drawing shall be provided as per specification mentioned in section 8B of SSR 2020 (Part-II).
- 6.8.4 **Aluminium doors & Windows**:- Aluminium doors & windows shall be provided all as mentioned in relevant item of Sch 'A' and specified in clause 10.37 of SSR Part-I. Make of Aluminium Section shall be Jindal/Hindalco as approved by GE.
- 6.8.5 **Aluminium Door**:- Aluminium door shall be powder coated aluminium door. The frames, rails and styles shall be of 1.5mm thick (16 gauge) aluminium sheet anodized and thickness of plain glass shall not be less than 5mm thick all as shown in drawing No CEAUF/TD-92/2010, sheet 1/1. Builder's hardware shall be of anodized aluminium as shown on drawing. Each operable shutter shall be provided with floor spring as specified in item No. 09170 of SSR 2020 Part-II).

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- 6.8.6 **Aluminium Windows/Vents:-** Aluminium windows/vents wherever shown on drawing as aluminium windows/vents shall be of following specifications:-
- (aa) Aluminium window/vents shall be powder coated.
 - (bb) Thickness of glass glazing shall be 5mm thick plain glass of 1st quality.
 - (cc) Builders hardware shall be of anodized aluminium.
 - (dd) Aluminium sections & other details shall be followed from Drg No. TD-97/001 sheet 1/1.
 - (ee) Provisioning of aluminium grills shall be made for all aluminium windows
- 6.8.7 **Flush door shutter with pressed steel frame:-** Flush Door shutter with pressed steel frame where marked on drawing shall be provided as per specification and details given in Drgno.CEAF/AR-579/2018/FDsh 1/1 and as directed by Engr in charge
- 7 **Builders hardware:-**
- 7.1 **General**
- 7.1.1 **Items and Quantities:-** Hardware fittings shall be provided according to the scales indicated in the Schedule of Hardware/ fittings on the relevant drawings and in conformity with any notes that may be appearing on particular drawings.
- 7.1.2 In case of size of particular fittings is not given in the drawings, it shall be size as decided by the GE.
- 7.1.3 All articles of building hardware shall bear ISI marking. In case ISI marked article are not manufactured those shall conform to the relevant IS specifications and the specifications given in the MES Schedule for the relevant items.
- 7.1.4 Finish of articles shall be as specified in clause 9.2.4 of the MES schedule Part-I.
- 7.1.5 Screws used for fixing the articles of builder's hardware shall be as specified in clause 9.2.6 of the MES Schedule (Part-I).
- 7.1.6 Door handles, towel bolts, hasps and staples, sliding door bolts and other hardware fittings unless otherwise indicated in drawings shall be AluminiumAnodised.
- 7.1.7 All shutters of built-in Cupboards etc shall be provided with Aluminium handle all as specified in clause 9.11 of MES Schedule Part-I. Where rim/ mortice locks or knobs are shown on drgs, handles shall not be provided.
- 7.2 **ARTICLES:-**
- 7.2.1 **BUTT HINGES:-** Butt Hinges shall be of cold rolled mild steel of medium weight all as specified in clause 9.7.2 of MES Schedule Part-I.
- 7.2.2 **CONTINUOUS (PIANO HINGES):-** Continuous (Piano) Hinges shall be mild steel chromium plated all as specified in clause 9.7.6 of MES Schedule Part-I.
- 7.2.3 **LOCKING BOLTS:-** Locking bolts shall be of bright polished mild steel all as specified in clause 9.6 of MES Schedule Part-I. The length of bolt shall be 100mm and shoot dia shall not be less than 10 mm.
- 7.2.4 **HELICAL DOOR SPRING:-** Helical door spring where indicated in drawing shall be of mild steel, 150 mm long (Make: RITZ or equivalent).
- 7.2.5 **TOWEL RAILS:-** Towel Rail where indicated shall be tubular of Stainless Steel of 'D' shape with flanged ends for fixing, it shall be of minimum dia 20 mm and 600 mm long in case length is not mentioned in drawings.
- 7.2.6 **WIRE CLOTH:-** Wire cloth to be used for wire gauged shutter shall be of Stainless Steel average width of aperture 1.18 mm and nominal dia of wire 0.457 mm all as specified in clause 9.25 and 9.32 of MES Schedule Part-I.

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- 7.2.7 **TOWER BOLTS:-** Tower bolts shall be conforming to specifications given in clause 9.3.1 to 9.3.3 of MES Schedule Part-I of shoot not less than 10 mm dia.
- 7.2.8 **HASPS AND STAPLES:-** Shutters of all built in cupboard unless provided with cup-board locks, shall be provided with hasps and staples safety type, as indicated and as specified in clause 9.10 of MES Schedule Part I.
- 7.2.9 **SLIDING DOOR BOLTS:-**Sliding door bolts where shown on drgs shall be all as specified in clause 9.5 of MES Schedule Part I.
- 7.2.10 **FLUSH BOLTS:-** Where double shutters have been provided for wardrobes/ almirahas/ cupboards and built in furniture, one of the shutters shall be provided with flush bolt of mild steel as shown on drgs and as specified in clause 9.4 of MES Schedule Part-I.
- 7.2.11 **KNOBS:-** Shutters and drawers of small size built in cabinets and switch boxes and built in furniture shall be provided of aluminium anodised knobs of 40 mm dia.
- 7.2.12 **PEGS SET OF 6 & 3:-** where indicated shall be provided as per drawing No FD- 80 Sh 1/1. Pegs shall be provided of aluminium anodised and fixed with screws on teak wood base plate.”
- 7.2.13 **BOARD NOTICE :-** where indicated shall be provided as per drawing No FD- 1042 Sh 1/1 and as directed by Engineer-in-Charge and approved by GE.
- 7.2.14 **BLANK.**
- 7.2.15 **BLANK.**

8.0. **STEEL AND IRON WORK.**

NOTE: No item of steel and iron work for incorporation/ required in this contract shall be issued under Schedule 'B'. Contractor shall make his own arrangements to procure steel and iron all as specified here-in-after. The following checks shall be carried out before the steel supplied by contractor is accepted and is approved for incorporation in the work.

8.1 **GENERAL**

- 8.1.1 Items of steel and iron brought to site by the contractor for incorporation in the work shall be free from defects all as specified in clause 10.4.3 and 10.17.6 of SSR Part-I and shall be conforming to IS specifications as given below: -
 - (a) **Reinforcement Steel** - High strength deformed steel bars produced by Thermo Mechanical Treatment Process (TMT steel bars of grade **Fe-500/Fe 500D/ Fe 550/Fe 550D**) meeting all other requirements of IS-1786.
 - (b) **Structural Steel**
 - (i) Standard Quality Conforming to IS-2062, Fe 410-W (Gde-E-250) quality.
 - (c) **Galvanized Steel Sheets** - Conforming to IS-277.
 - (Plain & Corrugated)
 - (d) **Fabric Reinforcement for Concrete** Conforming to IS-1566
 - (e) **Ordinary steel (for door window frame ,grills, steel gates, hand rails)** - Conforming to IS-2062,Fe 290(Gde-E-165)

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8.1.2	<u>Procurement of materials:</u>	
	Main / Primary Producer Of Reinforcement & Structural Steel	
Sl No.	<u>FIRM NAME , ADDRESS OF STRUCURAL STEEL</u> (Angle , Beam , Column, Channel , Plate) & Type of Steel	
(a)	Steel Authority of India Limited (SAIL) BRAND : "SAIL" Type of Steel : Structural Steel (Angle , Beam , Column, Channel, Plate) Central Marketing Organisation, Northern Region, 17th Floor, Scope Minar, Laxmi Nagar Distt Centre Delhi-110092	
(b)	Tata Iron & Steel Company (TISCO or Tata Steel) Brand : "TATA" Type of Steel : Structural Steel (Angle , Beam , Column, Channel, Plate) Bombay House, 2, 4 Homi Modi Street Mumbai- 400001, India Tel: (91 22) 2049131 Fax: (91 22) 2049522, 2870840 Email:corpcomm@isr.tatasteel.com (Br office for North: Jeevan Tara Bldg ,Patel Chowk, New Delhi)	
(c)	Rashtriya Ispat Nigam Limited (RINL) Brand : "RINL" Type of Steel : Structural Steel (Angle , Beam , Column, Channel, Plate) Visakhapatnam Steel Plant Visakhapatnam-530031, India Tel: (91 891) 518226, 518376 Fax: (91 891) 518316 Email:cmdvsp@itpvis.ap.nic.in	
(d)	M/S Jindal Steels and Power Ltd Brand : "JINDAL " Type of Steel : Structural Steel (Angle , Beam , Column, Channel, Plate) Jindal Centre, Plot No 2, Sector-32 Gurgaon -122001, Haryana Tele-0124 6612000 Fax-0124 6612125 Website: www.jindalsteelpower.com	
8.1.2.1	Primary Producer of Reinforcement Steel (TMT)	
(a)	M/S SRMB Srijan Private Ltd TMT Brand: "SRMB" SRMB House, 7 Khetra das lane Kolkata – 700012 Tel – 033-6600 6600 Fax: 033 -2211 0483	TMT bars of Gde Fe 500 & Fe 500 D, Fe 550 /Fe 550 D (Size 8mm to 32mm)
(b)	M/s JSW Steel Ltd, TMT Brand: JSW NEO STEEL " Jindal Mansion, 5A Dr G Deshmukh Marg, Mumbai- 400026 Tel : 022-2351-3000 022-2352-6400	TMT Bars of Gde Fe 500 Fe 500 D CRS (Size 8 mm to 40 mm)

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| (c) | <p>M/S Steel Exchange India Ltd
 TMT Brand : "SIMHADRI TMT"
 My home Laxminivas Apartments Ameerpet,
 Hyderabad-500016 A.P.
 Tel -040-23403725
 Fax-040-23413267
 <u>E-mail-info@seil.co.in</u></p> | <p>TMT Bars of Gde Fe 500 Fe
 500D
 HSCRM</p> |
| (d) | <p>M/S Jai Balaji Industries Ltd
 TMT Brand : "Balaji Shakti"
 5 Bentek street,Kolkata-700001
 Delhi office
 510,Block-b,Navraung House,21
 Kasturba Gandhi Marg, New Delhi-110001
 Tel: 011-43620219,4362022
 Mob: 7838272772/9958936103
 Email: info@jaibalajigroup.com</p> | <p>TMT Bars of Gde Fe 500 Fe
 500 D</p> |
| (e) | <p>M/S Steel Authority of India Limited (SAIL)
 BRAND : "SAIL"
 Central Marketing Organisation, Northern Region,
 17th Floor, Scope Minar, Laxmi Nagar Distt Centre
 Delhi-110092</p> | <p>All</p> |
| (f) | <p>M/S Shyam Steel Industries Ltd
 TMT Brand : "SHYAM TMT "
 Shyam Towers EN-32, Sector-V Salt Lake,
 Kolkata-700091
 Tel-033-40074007
 Fax -033-40074010
 E-mail-marketing@shyamsteel.com</p> | <p>TMT Bars of Gde Fe 500
 Fe 500 D
 CRS</p> |
| (g) | <p>M/s Super Smelters Ltd ,
 TMT Brand : "SUPER SHAKTI "
 Premlata 39, Shakespeare Sarani
 3rd Floor , Kolkata -700017
 Tel/Fax : +91-33-2289-2734/36
 Email : <u>info@supershakti.in</u>
 Website:- www.supershakti.in</p> | <p>TMT Bars of Gde Fe 500
 Fe500D & Fe 550 (Size 8
 mm to 32 mm)</p> |
| (h) | <p>M/s Adhunik Industries Ltd,
 TMT Brand : "ADHUNIK Fe 500 SD"
 Lansdowne Towers, 2/1A Sarat Bose Road,
 6th Floor Kolkata-700 020
 Tel : 033 3051 7100
 Fax: 91 33 2289 0285
 Email : <u>info@adhunikindustries.com</u></p> | <p>TMT Bars of Gde Fe 500
 D (Size 8 mm to 32 mm)</p> |
| (j) | <p>M/S Shri Bajrang Power & Ispat Ltd
 TMT Brand : "GOEL TMT"
 Vill – Borjhara, Urla Industrial Area,
 Raipur- 493 221, Chhatishgarh
 Tel: 0771-4288019/ 29/ 39</p> | <p>TMT Bars of Gde Fe 500
 Fe 500 D (Size 8 mm to 32
 mm)</p> |

PARTICULAR SPECIFICATION (CONTD...)

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|-----|--|---|
| (k) | <p>Rashtriya Ispat Nigam Limited (RINL)
 Brand : "RINL"
 Visakhapatnam Steel Plant
 Visakhapatnam-530031, India
 Tel: (91 891) 518226, 518376
 Fax: (91 891) 518316
 Email:cmdvsp@itpvis.ap.nic.in</p> | All |
| (l) | <p>Tata Iron & Steel Company (TISCO or Tata Steel)
 Brand : "TATA"
 Bombay House, 2, 4 Homi Modi Street
 Mumbai- 400001, India
 Tel: (91 22) 2049131
 Fax: (91 22) 2049522, 2870840
 Email:corpcomm@isr.tatasteel.com
 (Br office for North: Jeevan Tara Bldg ,Patel Chowk,
 New Delhi)</p> | All |
| (m) | <p>M/S Jindal Steels and Power Ltd
 TMT Brand : "JINDAL PANTHER "
 OP Jindal road, Hissar, Haryana, PIN-125005
 Tel: +911662222471-84
 Fax: +911662220476
 Website: www.jindalsteelpower.com</p> | <p>TMT Bars of Gde Fe
 500/Fe 500D Fe 550/Fe
 550D *CRS with sizes (8-
 40)</p> |
| (n) | <p>M/s Shyam Metalics & Energy Ltd.
 TMT Brand : "SEL"
 Viswakarma,1st Floor, 86 C, Topsia Road, Kolkata-
 700046
 Ph : +91 33 2285 2212
 Website :www.shyamgroup.com</p> | <p>TMT Bars of Gde Fe 500
 & Fe 500D
 (Size 8 to 32mm)</p> |
| (o) | <p>M/s Kamachi Industries Ltd
 TMT Brand : "KAMACHI"
 ABC Trade Centre ,3rd Floor (Inside Devi Theater
 Complex) Old No. 50, New No. 39,Anna Salai,
 Chennai-600002
 Ph : +91 044-42961100
 Ph : +91 044-42961122
 E-mail:sales @kamachitmt .com
 website :www. kamachitmt .com.</p> | <p>TMT Bars of Gde Fe 500,
 Fe 500D Fe 550, Fe
 550D HCRM
 (Size 8 to 40mm)</p> |
| (p) | <p>M/S Gallant Metal Ltd
 TMT Brand : "GALLANTT TMX"
 Ward 10BC , Plat no 123, Ground floor,
 Kutch , Gujrat -370201
 Tel:+91-2836 -228164
 Fax +91-2836-235787
 E-mail. gml@gallantt.com
 Website www.gallantt.com</p> | <p>TMT Bars of Gde Fe 500,
 Fe 500D CRS
 (Size 8 to 32mm)</p> |

PARTICULAR SPECIFICATION (CONTD...)

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| (q) | <p>M/S Electrotherm (India) Ltd
 TMT Brand : "ET TMT"
 Survey No 72 , Palodia , Via –Thhaltej , Ahmedabad
 Gujarat -382115
 Tel-+91-2717-660649/660550
 Fax -+91-2717-234866
 Website www. electrotherm.com</p> | <p>TMT Bars of Gde Fe 500,
 Fe 500D CRS
 (Size 8 to 32mm)</p> |
| (r) | <p>M/S Real Ispat & Power Ltd
 TMT Brand : "G K TMT "
 Vrindavan , Near IDBI Bank ,Civil Lines
 Raipur -492001 , C.G
 Tel- +91 -771-4224000
 Fax- +91 -771-4224010
 Email- real@realispat.com
 Website: www.realispat.com</p> | <p>TMT Bars of Gde Fe 500,
 Fe 500D, Fe 550D (Size
 8 to 36mm)</p> |
| (s) | <p>M/S Rasmi Metaliks Ltd
 TMT Brand : "RASHMI TMT"
 Premlata Building 39,
 shakespear Sarani,
 6 th floor , Kolkata -700017
 Tel- 033-22894255/56
 Fax 033-22894254
 E-mail. domesticdip@rashmigroup.com
 Website wwwrashmigroup.in</p> | <p>TMT Bars of Gde Fe 500
 (Size 8-32mm), Fe 500D,
 Fe 550, Fe 550D CRS
 (Size 8 to 25mm)</p> |
| (t) | <p>M/s Shyam Sel and Power Ltd.
 TMT Brand: "SEL"
 SS Chambers, 5 C R , Avenue,
 Kolkata -700072
 Tel- +9133 40111000
 Fax- + 9133-40111031
 Website-www.shyamgroup.com</p> | <p>TMT Bars of Gde Fe
 500D
 Size-8-32mm)</p> |
| (u) | <p>M/s SPS Steels Rolling Mills Ltd.
 TMT Brand: " ELEGANT"
 "Diamond Prestige" 41 A, A.J.C
 Bose Road , 8th Floor , Room No 801 , Kolkata -700017
 Mob-9831055568/8910797649
 Telefax: 033-66255252
 Email: info@spsgroup.co.in</p> | <p>TMT Bars of Gde Fe 500,
 Fe 550 & Fe 500 D</p> |
| (v) | <p>M/s Shree Nakoda Ispat Ltd.
 TMT Brand:-"NAKODA TMT"
 Near Railway Crossing
 Mowa , P.O Shankar Nagar
 Raipur-492007(C.G)
 Tele:-+91-771-2282130
 Mob No-78989741
 Website-www.nakodagroup.com</p> | <p>TMT Bars of Gde Fe
 500, Fe 500D (Size 8mm
 to 32mm</p> |

PARTICULAR SPECIFICATION (CONTD...)

- 8.1.2.2 **Structural Steel.** Structural steel shall also be procured from primary producers mentioned above.
- 8.1.2.3 **Galvanised Steel Sheets and Fabric Reinforcement for Concrete.** These shall be procured directly from primary producers mentioned above and shall be ISI marked.
- 8.1.2.4 Steel section for railings, gates, fencing, guard bars, grills, steel chowkhat, hold fasts etc, which do not constitute structural members, can be procured from primary producers/secondary producers/BIS marked manufacturers or their authorized dealers at the option of Contractor without any minus price adjustment. Tests will not be insisted upon for such steel sections.
- 8.1.2.5 The GE for every lot of steel shall obtain the particulars of the manufacturer/supplier of steel from the contractor separately. The form given at **Appendix `B`** will be used for this purpose.
- 8.1.2.6 It shall be the responsibility of contractor to produce original purchase vouchers, test certificates and other valid documentary evidence to entire satisfaction of GE for entire qty of each consignment to prove that material have been purchased from sources as stated in particular specification.
- 8.1.2.7 The GE shall verify the original documents in support of the purchase of steel and will retain certified true copy of the results in GE's office.
- 8.1.2.8 The GE will ensure that contractor place their demand/requisition of steel with adequate lead time. The steel will be procured from the storage depots of the primary producers/approved secondary producers (as applicable) and not from their authorized agents/dealers.
- 8.1.2.9 Secondary producers for structural steel are as given in **Appendix `E`**.

8.1.3 **Testing of Steel.**

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

If the test fails and steel has been incorporated in the work, the further execution of work with that steel will be stopped and matter shall be referred to Accepting Officer.

The decision of Accepting Officer regarding acceptance of work with the steel, which has failed in test with price adjustment as decided by him, or redoing the work with steel of proper specifications or any other decision shall be final and binding on the contractor. In case Accepting Officer decides to remove the sub standard steel, the work executed using sub standard steel shall also be demolished and site cleared by the contractor without any extra cost to the Govt.

PARTICULAR SPECIFICATION (CONTD...)

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

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

Note:- For various tests, acceptance criteria tolerance etc, refer to **Appendix `B`** and relevant BIS Code.

8.1.4 Documentation.

The Contractor shall submit original purchase vouchers from the manufacturer for the total quantity of steel supplied under each consignment to be incorporated in the work. The GE shall inspect all consignments received at the work site alongwith relevant documents before acceptance. The original vouchers and the Test Certificate shall be defaced by the Engineer-in-Charge and kept on record in the office of the GE duly authenticated and with cross reference to the control number recorded in the Steel Acceptance Register. The Steel Acceptance Register will be signed by JE, Engineer-in-Charge, GE and Contractor. The entire quantity of all steel items shall be suitable recorded in the Measurement Book as not to be abstracted. Before incorporation in the work and shall be signed by the Engineer-in-Charge and the Contractor.

8.1.5 Tolerances :

Structural steel products shall be as specified in IS-1852. Tolerance on size and weight of reinforcement bars shall be as specified in clause 10.17.4 and 10.17.5 of SSR Part-I. Steel with less weight than permissible shall not be used and the steel below permissible limit shall be removed from the site of work without any extra cost to Govt. If weight of steel bars per metre is more than specified in SSR, the payment shall be allowed based on conversion factor specified in SSR. The contractor shall have no claim whatsoever in this regard.

8.1.6 SCHEDULE OF SUPPLY

The contractor shall ensure that procurement action is taken immediately after acceptance of contract so as to adhere to schedule of activity as per CPM net work.

8.1.7 STORAGE, ACCOUNTING, PRESERVATION AND MAINTENANCE

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

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- 8.1.7.2 All steel shall be stored on dunnage at least 15 Cms above ground level. Steel reinforcement shall be stored properly to prevent distortion and corrosion. In case of long time storage, suitable protective measures like cement coating, provision of temporary shelter etc. to save it from rusting/distortion etc shall be taken. Any item of steel that has deteriorated or corroded or considered defective by Engineer-in-Charge shall not be used in the work and shall be removed from the site of work.
- 8.1.8 **Procedure for Making Payments for Steel including measurements, conversion weight etc.**
- 8.1.8.1 **METHOD OF MEASUREMENT**
All items of steel brought at site shall be entered in MB as “Not to be abstracted” indicating the diameter and length of bars, quantities, voucher number with dates. It shall form the basis to allow advances on account through RAR’s. While allowing advance on such materials, quantities so entered in MB shall be reduced by 2% to account for waste and off cuts and every care shall be taken to ensure that all such quantities will be utilised in the work.
- 8.1.8.2 **RECORD OF MEASUREMENTS**
Before casting of concrete, reinforcement incorporated shall be measured by rep. Of GE and contractor jointly. These measurements shall be entered in a register for the purpose of records and shall be signed by contractor’s rep and Engineer-in-Charge. Proper reference of Drg No. Location, date etc. shall also be given therein.
- 8.1.8.3 **WEIGHT CONVERSION**
Conversion factor for various sections/ sizes of steel shall be as per conversion tables given in SSR. Where conversion table is not available in SSR, IS conversion table shall be followed.
- 8.1.8.4 Testing of steel as referred above is an essential requirement before the payment is released to contractor, as material lying at site or before the steel is incorporated in the work.
Note:-
(a) Mixing of different types and grades of bars shall not be done in the same structural members as main reinforcement to satisfy clause 26.1 of IS-456 of 2000 shall be avoided.
TMT bars shall not be treated as corrosion resistant steel bars.
- 8.1.9 **Steel reinforcement**
- 8.1.9.1 Reinforcement of TMT (Thermo mechanically treated) bars etc. shall be provided as shown on drawings and in the absence thereof in accordance with the provision of IS-456.
- 8.1.9.2 Reinforcement shall be fabricated and placed in position all as shown on drawings and specified in clause 10.17 to 10.22 of MES Schedule (Part-I) without application of heat.
- 8.1.9.3 Deviation orders in respect of TMT bars shall be priced at applicable rate in SSR subject to contractor’s percentage applicable against respective part(s) of Schedule ‘A’.
- 8.1.10 BLANK

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- 8.1.11 **Welding:**
- 8.1.11.1 Welding wherever shown on drawings shall be by metal arc process in accordance with IS-816 and IS-823.
- 8.1.11.2 **Guard Bars/Grills:** MS grill / Guard bars shall be provided to all steel windows and ventilators as per details shown on drawings and as directed. .
- 8.1.11.3 **Hold fasts/lugs:** Flat iron hold fasts/lugs shall be provided by welding as and where shown on drawings except those to be provided to wooden chowkhats which shall be fixed with bolts/nuts as per details shown on drawings. Holes in wooden chowkhats shall be plugged with hard wood plugs.
- 8.1.11.4 BLANK.
- 8.1.11.5 **Pressed steel frames for Doors:** - Pressed steel frames shall be pressed out of commercial mild steel sheets 1.25mm thickness and shall comply with requirements of IS 4351. The size, type (profile) and dimensions of the frame shall be as indicated on drawings. The tolerance over the profile size shall be ± 2 mm. Pressed steel frames shall be filled with PCC (1:3:6) type C-O. Steel surfaces in contact with PCC/masonry shall be tarred.
- 8.1.11.6 **Aluminium sheet lining to Door shutters:**-Where aluminium sheet lining to door shutters is indicated on drawings, it shall be provided alround bottom rail of door shutter. The thickness of aluminium sheet shall be 0.5 mm and shall be fixed with steel screws at the spacing of 150 mm C/C.
- 8.1.11.7 **Railing for Stair case, Verandah / Terrace, Balcony etc:** - MS Railing where indicated shall be provided all as specified and as per details shown on drawings and as directed. All iron and steel work shall be given two coats of synthetic enamel paint over a coat of red oxide primer. Where GI pipe hand rail is shown, it shall be provided of medium grade and where steel railing is shown, the same shall be provided all as shown on drawings or as directed by Engineer-in-Charge and approved by GE.
- 8.1.11.8 **STEEL BOX WINDOWS, VENTILATORS AND FIXED GLAZING (DOUBLE GLASS):** - Windows/Ventilators where marked on drawing shall be provided as per specification and details given in Drgno.CEAF/AR-579/2018/SW sh 1/1 and as directed by Engineer in charge
- 8.1.11.8.1 Standard steel windows of over all sizes shown on drawing shall be provided alongwith all standard fittings in the situation shown therein. Minor variation in overall sizes to suit the standard practice of the manufacturers will however be accepted without any price adjustment".
- 8.1.11.8.2 Standard steel windows of overlap sizes shown on drawing shall be provided in the situation shown therein minor variation in overall sizes to suit the standard practice of the manufacturers will however be accepted without any price adjustment.
- 8.1.11.8.3 Steel windows box type for frame and shutter shall be provided/ manufactured all as per relevant drawings. These shall be got manufactured from any of the manufacturers given in Appendix 'F'.

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- 8.1.11.8.4 Fixed and openable shutter frames shall be fabricated of sections specified hereinbefore, corners welded to form a solid fused welded joint. The process of welding adopted shall be flash butt welding which gives a continuous and solid joint all along the place of meeting of the members. Welds shall be properly ground and left with no protrusion of welding material at the joint. Steel shutter in contact with masonry/concrete shall be tarred and other exposed surfaces shall be painted as specified here-in-after.
- 8.1.11.9 **ROLLING SHUTTER**: - Steel rolling shutter shall be of push type manual type and shall conform to IS 6248-1979 and shall be made out of 1.25mm thick PBI sheet and all as specified in clause 10.23 to 10.23.12 of SSR 2009 Part-I.
- 8.1.11.10 **SLIDING STEEL GATE**:- Sliding Steel Gate where marked on drawing shall be provided as per specification and details given in Drg no. CEAUF/ST-579/2018/SG sh 1/1 and as directed by Engr in charge.
- 8.1.11.11 **UPVC WINDOWS**: - UPVC windows where marked on drawing shall be provided as per specification and details given in Drg No CEAUF/TD-125/2017 Sh 1/2 to 2/2 and will be factory made UPVC white colour with wall thickness 2.3 mm thick all as specified and as directed by Engineer-in-Charge.
9. **ROOFING**
- 9.1.1 The roofing shall be as shown on drawings and as specified here-in-under :-
- 9.1.2 **RCC ROOF**.
RCC roof slab shall be casted/laid to thickness and slope as shown on drawings.
- 9.1.3 After RCC slab is laid, cured and fully set, ponding shall be done over RCC slab by filling water which, shall be kept there for 48 hours. In case a slightest indication of seepage/leakage is noticed, the same shall be rectified by grouting and/or plastering with CM (1:3) after roughening the effected portion at no extra cost to the Govt.
- 9.1.4 Water proofing treatment to RCC roof slab including roof projections where indicated in Schedule of Finishes drg shall be provided as under: -
- Water proofing treatment with EPDM membrane having thickness not less than 1.52 mm on the roof surface with min roll size 6mx30m after properly preparing the surface by cleaning and removing sharp material and loose foreign material ensuring a smooth surface.
 - Membrane shall be fully adhered with high strength solvent based having quick bonding between membranes with the help of bonding adhesive as per manufacturer's instructions. Overlap joint shall be made using factory applied secure tap technology with minimum overlap 75mm.
 - Membrane shall be having 75mm side and end lap which shall be sealed with highly formulated double sided secure tape. All the end of the vertical side of the membrane shall be mechanically terminated with extruded aluminum termination bar with nail and sealed with ware cut off mastic and lap sealant.
 - All the detailing like inside corers, outside corers, pipe penetrations etc shall be with Elasto form flashing and splicing cement as per manufacturer's instructions.
- NOTE:- Execution of above item of work should be ensured through authorized applicator only as approved by GE and necessary certificate W.r.t "defect liability" of subject item with clear terms and condition is required to be obtained from applicator and same to be kept on record for future references.
- (e) Contractor shall stand guaranteed to the Government for a period of Ten years from the date of taking over the completed buildings for the efficiency of the treatment carried out. Contractor shall furnish written guarantee on a non-judicial stamp paper of Rs. 100 for the above in favour of Garrison Engineer immediately on completion of work.

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- (f) An appropriate sum, equal to the amount of security deposit calculated as per scales laid down for individual security deposit on the amount of water proofing treatment at the contract rates under the contract, should be retained out of contractor's final bill as security deposit for the guarantee period of ten years from the date of completion of entire work which shall be refunded to him after expiry of this period. Alternatively contractor may give separate interest bearing deposit to GE valid for ten years for the sum mentioned above.
- (g) Should the GE at any time, during construction or prior to expiry of said guarantee period of ten years, find that buildings have been leaking, the contractor, on demand in writing by GE, will forthwith undertake to carry out such repairs/ rectification which may be necessary to render the buildings free from leakage at his own expense till expiry of guarantee period of ten years.
- (h) In the event of contractor's failure to comply with GE's directions with the stipulated period, the work shall be carried out at risk and cost of the contractor. The liability of the contractor under this condition shall not, however, be extended beyond the period of ten years from the certified date of completion, unless the notice was served on the contractor previously to rectify such defects.
- (j) Contractor shall provide a plaster plate of requisite size in location as decided by Engr-in-Charge on the wall of each of the building. The plate shall be 10 mm thick in cement mortar (1:4) to indicate the details such as water proofing treatment done vide CA NO, date of expiry of defect liability period and name of contractor by engraving and painting (Black). The costs of plaster plates are included in the lump sum quoted for the buildings.

9.2 **SPOUTS**: Spouts where shown on drawing shall be of galvanized water tubes of light grade 50 mm bore & 200 mm projecting outside from outer face of wall.

9.3 **RAIN WATER PIPE :-** Rain water pipe where indicated shall be of PVC having diameter 110mm irrespective of whatever shown on drawings and as specified in respective clauses of SSR-2009(Part-I). The grating shall be of cast iron round type weighing not less than 0.50 Kg each, provided and fixed at the inlet of rain water pipe. Splash stone as specified shall be provided below the rain water pipe.

9.4 **FALSE CEILING: -** Irrespective of whatever specifications shown in drawings of Schedule of finishes, all the ceiling where indicated in drawing (schedule of finishes) shall be provided all as specified here-in-after in subsequent clauses and as directed.

(a) CEILING BOARD /TILES:-

The ceiling board shall be of eco-friendly Aerolight with calcium silicate densified regular edged board/tile of size 600mm x 600mm and 10 mm thick, having 15mm thick & 24mm wide collar all around with overall density 350 kg/cum in the body & 450 kg/cum at the edges in true horizontal level as approved by GE.

- Noise Reduction Coefficient (NCR) : 0.10 to 0.75
- Light reflection > 85%
- Non-combustible : as per B.S. 476 Part IV,
- Humidity resistant : 100%
- Thermal conductivity > 0.043 w/mo KC

(b)GRID SUSPENSE SYSTEM :

Grid suspense system shall consist inter locking metal gridof size 600mm x 600mm made from hot dipped galvanized steel sections (galvanizing @120 grams/ sqm) consisting of (1) Main T runner 24mm x 38mm x 0.33mm (3 mtr long), (2)Cross T 24mm x 32mm x 0.33mm (1.2 mtr long), (3) Cross T 24mm x 32mm x 0.33mm (0.6mtr long) & (4) Perimeter wall angle T 24mm x 24mm x 0.40mm (3 mtr long).

Make of grid ceiling system: India Gypsum/ Boral Gypsum India Pvt. Ltd. / Everest./Anchon/Armstrong

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- 9.5

WALL PANELING :- Wall lining insulation shall be provided as per details shown in Drg and Sch of finishes as specified here in below :-

Insulation of RCC/Brick/Block/ stone masonry wall with bonded fibre glass wool of density 48 Kg/Cum 50mm thick suitably factory laminated with aluminium foil having flange on one side backed up by scrim and kraft and paper comprising of following (insulation material shall conform to BS-476 Part 4,5,6 & 7)

(i)

50x50mm slotted angle 50mm wide fixed to wall by means of rawl plug 600 mm C/C.

(ii)

Supply and draw GI tie wire 22 Gauge from vertical slots for holding the insulating material in position with and including GI washer.

(iii)

Aluminium foil adhesive tape 50mm for sealing of aluminium foil flange.

(iv)

Additional support to the insulation with the including chicken wire mesh of size 12.5 x 0.5 mm (24 SWG) hexagonal construction stretched firmly over the insulation and fixed complete.

(v)

4 mm thick non asbestos fibre cement building board medium density fibre boards in wall fixed on angle iron frame with self-driven screw complete.
- 9A

PRE PAINTED GALVALUME ALUMINIUM ZINC COATING GI BASED SHEET ROOFING:-
- 9A.1

GENERAL: Various component of the steel structure such as steel trusses in roof where shown on drawings shall be fabricated, assembled and erected carefully by the contractor. The centerline dimensions shall be strictly achieved.
- 9A.2

TRUSS:
- 9A.2.1

MS angle iron/channel/pipes etc. and other steel members in rafters, purlins and false rafter shall be all as shown on drawings. If thickness of gusset plate not indicated on drawings, it shall be 10 mm thick. Base plate/sole plate and anchor plates etc shall be provided as indicated. Holding down bolts shall be made to shape and size as shown. Purlins & wind ties shall be provided as per drawings.
- 9A.2.2

Electrodes for welding shall be as per Clause-10.8 of SSR Part-I.
- 9A.2.3

Workmanship of structural steel work shall be as per Clause-10.9 of SSR Part-I.
- 9A.2.4

Assembly of structural members shall be done as per Clause-10.12 of SSR Part-I.
- 9A.2.5

Welding work including testing shall be carried out as per Clause-10.15 of SSR Part-I.
- 9A.2.6

Erection of structural members shall be done as per Clause-10.16 of SSR Part-I.
- 9A.2.7

PAINTING: All Exposed surfaces of truss members, purlins, rafters, MS plates and other steel members shall be painted with two coats of synthetic enamel paint over a coat of primer. Rear/hidden surfaces of steel members shall be treated with one coat of red oxide primer.
- 9A.3

GALVALUME SHEETS
- 9A.3.1

Irrespective of whatever is shown on drgs, pitched roof shall be galvalume sheet.
- 9A.3.2

Galvalume sheet shall be 0.50mm thick (total coated thickness) of profile and colour as approved by GE, 550Mpa minimum yield strength. It shall be coated with hot dip alloy of 55% Aluminium 43.5% Zinc1.5% Silicon and finished with resin coat on both surfaces @ 150 gm/Sqm of coating (total both surfaces) and shall be fixed using hot dip galvanized, self-drilling and self-tapping screws neoprene and EPDM washers. Penetrations and laps in sheet shall be sealed by using proper sealant profile. HDPE fillers shall be provided wherever required to close voids between sheets, sheet & fasteners etc. The sheet shall be conform to IS: 14246:1995. The top finished surface of PPGI sheet shall also have guard film / protection sheet (polyethylene) for protection against scratches during handling and transportation. The durability of paint coat shall be as per Table-1 of IS: 14246:1995.

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- 9A.3.3

The sheeting shall be fixed with side lap and end lap as recommended by manufacturer.
- 9A.3.4

The roof sheets length shown on drawings is tentative but the number of purlins as shown on drawings are firm. Any variation in number of purlins shown on drawings shall be regularized through deviation order.
- 9A.3.5

Roof slope and roof projection shall be as shown on drawings.
- 9A.3.6

Ridges and hips shall be covered with Galvalume sheets of 0.5mm thickness. These shall be fixed to roof as per manufacturer instructions and standard Engineering practice.
- 9A.3.7

The entire fixing process of Galvalume sheets shall be executed through a specialist agency identified by the supplier and as approved by GE.
- 9A.3.8

MAKES FOR GALVALUME SHEET: As per Group 1 of Appendix ‘F’ attached.
- 9A.3.8.1

The contractor shall submit the original manufacturer’s test certificate in connection with chemical composition of the steel, tensile/yield strength of steel sheet, corrosion resistance (salt spray) test, dimensional (thickness of both base metal and coating), coating adhesion (180 degree bend test) etc and also submit manufacturer’s guarantee certificate of product confirmation of standard. GE shall also carry out independent test as per the test mentioned above from random samples through Govt approved laboratories/command/zonal laboratories. The cost of testing, transportation of materials etc shall be borne by the contractor irrespective of the results of testing and no extra claim whatsoever shall be admissible.
- 9A.3.9

EAVES BOARD: Eaves board where shown on drawing shall be provided of PPGI Sheet 1.40mm thick and 300mm wide fixed with angle iron frame 30x30x4mm in lieu of wooden eaves board if shown on drawings. Exposed surfaces of angle iron shall be painted with two coats of synthetic enamel paint over a coat of primer. Rear/hidden surfaces of steel members shall be treated with one coat of red oxide primer.
- 9A.3.10

Spouts: Spouts shall be provided at locations where indicated in drawings. The type and dia of spouts if not indicated in drawings, the same shall be galvanised steel pipe light grade 50mm bore respectively. Where length of spouts are not indicated, it shall be taken as passing through one brick wall and projecting 15cm beyond face of the wall. In case less length is provided as per site requirement, adjustment shall be made through deviation order. 11
- 9A.4

Wind Tie: - Flat iron 40 x 6 mm wind tie shall be provided at either side of eaves and ridges with an overlap of 75 mm at joints and jointed with two numbers nuts and bolts of suitable size. Irrespective of whatever is shown on drawings, wind tie shall be provided with two coats of synthetic enamel paint over a coat of red oxide primer.
- 9A.5

FALSE CEILING False Ceiling where shown on drawing (Schedule of finishes) shall be as shown on TD drawing Number **CEAF/TD-143/2018 Sheet 1/1 Dated 20 Sep 2018.**
- 9A.5.1

APPROVED MAKE FOR PUF PANELS:
1. Acme Telepower Ltd,
2. Isolloyd Engineering Technologies Ltd
3. Metecno India Pvt Ltd, Chennai
4. Sintex

PARTICULAR SPECIFICATION (CONTD...)

10. **FLOORING**
- 10.1 **GENERAL**
- 10.1.1 Provision Contained In Clause 13.14 , 13.15, 13.16 , 13.25, 13.27, 13.32, 13.39, 13.40, 13.41, 13.47 & 13.48 of MES Schedule (Part-I) are to be adopted for laying floors and pavement.
- 10.1.2 Floor shall be laid to levels or to falls as shown on drawings and as directed by the Engineer- in- Charge.
- 10.1.3 Floor finish shall be extended over dwarf wall, doors and other openings.
- 10.1.4 Floor topping of cast – in- situ cement concrete except where indicated in schedule of finishes over and smooth without using extra cement as specified in clause 13.32.5.2 of MES Schedule (Part-I)
- 10.1.5 Steps with verandah/platform etc (externally in ground floor) All as shown in drawings.
- 10.1.6 The dividing line between the floors of different types, wherever meet between rooms, shall be determined on the basic of the finishes visible when the doors are closed and the applicable finish shall accordingly be provided.
- 10.2 **TYPE AND COMPOSITION OF FLOORS:-**
- 10.2.1 **(a) SAND FILLING:-** 300 mm sand filling over 100 mm the hard core complete all as specified and as directed.
- 10.2.2 **(b) KOTA STONE FLOORING:-** Kota stone flooring where indicated shall be laid with kota stone slab of thickness 18 mm to 20 mm thick mirror polished and size not less than 550mm x 550mm homogenous colored as approved by GE, laid over 15mm thick screed bedding layer in cement mortar (1:4) over 75mm thick PCC (1:4:8) type D-2 (using 40mm graded crushed stone aggregates) over approved rammed earth filling. The kota stone flooring shall be grinded and mirror polished to the full satisfaction of Engineer-in-Charge. Kota stone shall be set, jointed and pointed in grey cement.
- 10.2.3 **(c) NON SKID CERAMIC TILE FLOORING:-** Non-skid ceramic coloured tiles with rectified edge, first quality, superior finishes (size 400mm x 400mm) 8 mm thick (minimum) shall be provided of approved colour set in grey cement laid over 10mm thick screed bedding layer in cement mortar (1:4) over 25mm thick PCC (1:2:4) type B-0 (using 12.5mm graded crushed stone aggregate) over 75mm thick PCC (1:4:8) type D-2 (using 40mm graded crushed stone aggregate) over rammed earth. Filling, Jointing and pointing of tiles shall be done in white/coloured cement with pigments, rest all as specified and as directed.
- 10.2.4 **(d) PCC FLOORING:-** (i) 100mm thick PCC flooring where indicated shall be provided with PCC 1:2:4 type B-1 (using 20mm graded crushed stone aggregate) laid in alternate panels over 150 mm thick PCC (1:4:8) type D-2 (using 40mm graded crushed stone aggregate) over approved rammed earth filling complete all as specified and as directed.
(ii) 40mm thick PCC flooring for ground floors where indicated shall be provided with PCC 1:2:4 type B-1 (using 20mm graded crushed stone aggregate) laid in alternate panels over 75 mm thick PCC (1:4:8) type D-2 (using 40mm graded crushed stone aggregate) over approved rammed earth filling complete all as specified and as directed.
(iii) 40mm thick PCC flooring for above ground floors/concrete slab surfaces where indicated shall be provided with PCC 1:2:4 type B-1 (using 20mm graded crushed stone aggregate) laid in alternate panels over neat cement slurry @ 3.00 kg/Sqm over RCC slabs complete all as specified and as directed.
- 10.2.5 **(e) KOTA STONE FLOORING FOR STEPS:-** Where Kota stone indicated shall be laid with kota stone slab of thickness 18mm to 20 mm thick mirror polished (irrespective of any thickness shown on schedule of finishes) of size suitable for treads/riser/landing in one piece width homogeneous colour including bull nosed of treads and making three grooves on edge of tread/landing over 15 mm thick screed bed in CM 1:4 over a coat of cement slurry @ 3 Kg per Sqm.. The kota stone shall be grinded and mirror polished to the full satisfaction of Engineer-in-Charge. Kota stone shall be set, jointed and pointed in grey cement.

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(f) VITRIFIED TILE FLOORING: - Vitrified tiles (size not less than 0.36Sqm in area) 9-10 mm thick shall be provided of approved colour set in grey cement with spacer (4mm) and epoxy grout in spacer gap laid over 15mm thick screed bedding layer in cement mortar (1:4) over 25mm thick PCC (1:2:4) type B-0 (using 12.5mm graded crushed stone aggregate) over 75mm thick PCC (1:5:10) type E-2 (using 40mm graded crushed stone aggregate) over rammed earth. Filling, Jointing and pointing of tiles shall be done in white/coloured cement with pigments, rest all as specified and as directed.

(g) 50mm th granolithic concrete 1:1:2 (using 12.5 mm graded aggregate) floor topping in two layers bottom 30 mm and top 20 mm thick layer shall be mixed with metallic hardener (ironite no. 1 or equivalent make)@ 4 kg /sqm of floor area with PVC strip for crack control laid over RCC slab(cement slurry @ 3 kg/sqm over RCC slab to be provided and 20 mm topping shall be done when bottom 30 mm layer is green) the top surface shall be treated with sodium silicate solution 1:4 concentration in the first treatment followed by two more treatment of concentration 1:3/1:2 complete all as specified.

(h) 20 mm thick terrazzo tile in mixture of grey bond white cement with no pigment over 15 mm thick screed bed in layer CM 1:4 over CC layer of PCC 1:2:4 over sub base of PCC 1:5:10 complete all as specified and as directed.

11.
11.1.
11.1.1
- PLASTERING**

General

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

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

All plastered surfaces shall be trowel led to even and smooth surfaces without using extra cement.

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

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

All corners, angles, junctions shall be truly vertical or horizontal as the case may be and shall be carefully finished, corners around jambs of openings and junctions of wall shall be rounded to minimum radius of 5 mm, 12 mm wide groove at the junction of wall and RCC slabs/beams as applicable to the entire thickness of wall plaster shall be provided. Also 12 mm groove shall be provided at junction of wall and RCC columns, beams as applicable to the entire thickness of wall plaster shall be provided.
- 11.2
11.2.1
11.2.2
- MATERIALS:**

Cement: Refer clause 3.2 here in before.

Sand for plastering shall conform to specification all as specified in clause 14.5 of MES Schedule Part -I. Grading for sand shall be within the limits of grading Zone IV as given in clause 4.4.7. 2.
- 11.3
11.3.1
11.3.2
- CEMENT PLASTERING:-**

Internal surfaces of walls as indicated in Schedule of finishes of buildings under Schedule 'A' Part –I shall be plastered 15 mm thick in cement mortar (1:6) finished even and smooth all as specified in Sch of finishes over dubbing coat where required all as specified in clause 14.17 of MES Schedule Part- I.

External surface where Grit finish plaster is shown to be provided shall be 15mm thick. Base under Grit finish plaster shall also be provided with 12mm rendering in cement mortar 1:4 finished even and fair. On concrete surfaces such as RCC columns etc Base course to Grit finish plaster need not to be provided. Surface where cement plaster is shown to be provided, the same shall be 15mm thick cement plaster on cement mortar 1:4.

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- 11.3.2.1
- All external surfaces where cement plaster is indicated shall be provided in **two layers** as 5mm thick in cement mortar 1:4 in one coat mixed with liquid water proofing compound as per manufacturer's instructions over 10mm thick plaster in cement mortar 1:6 all as specified in Sch of finishes and as specified in clause 14.13 and 14.25 of MES schedule Part-I over dubbing coat where required.
- 11.3.3
- Where water proof plaster is indicated, the mortar for the plaster shall be mixed with approved liquid water proofing compound (as per manufacturer instructions)all as per clause 14.25 of MES Schedule Part-I.
- 11.3.4
- Walls (Internal surfaces) above ceiling which are hidden from view shall be treated as directed by Engineer-in-Charge.
- (i)
- Green Udaipur Stone Skirting:** - When green udaipur stone flooring is specified, skirting of 15mm thick green udaipur stone shall be provided where indicated on Schedule of finishes over 10mm thick rendering in CM 1:4. The height of the skirting shall be as mentioned in Schedule of finishes and green udaipur stone skirting shall also be grinded and miror polished to smooth flush.
- (ii)
- Cement Skirting/Dado:** - Cement skirting/dado shall be provided in locations indicated in the drawings. If specifications not shown on drawings, it shall be 5mm thick setting coat in cement sand mortar 1:3 finished even and smooth over 10mm thick rendering in cement mortar 1:4. Skirting/dado shall be finished even and smooth with steel trowel using extra cement. Height of cement dado and skirting where not shown on drawing shall be 1.2 metre for dado and 150 mm for skirting. Skirting shall be flush to wall as required.
- (iii)
- Non skid ceramic Skirting:** - When Non skid ceramic flooring is specified, skirting of Non skid ceramic shall be provided where indicated on Schedule of finishes over 10mm thick rendering in CM 1:4. The height of the skirting shall be as mentioned in Schedule of finishes and Non skid ceramic skirting shall also be grinded and miror polished to smooth flush.
- (iv)
- Glazed Tiles Dado with Flooring** :- Where indicated on drawings, it shall be glazed ceramic tiles of approved shade matching with floor of size 300 mm x 600 mm and 7-8mm thick all as specified in clause 13.15 of MES Schedule Part I and shall be provided as specified in clause 13.40 of MES Schedule Part – I. The glazed tiles shall be laid over 10 mm thick screed in cement mortar (1:3) irrespective of whatsoever mentioned in schedule of finishes drawing.
- (v)
- Kota Stone Skirting/Dado:** - Where indicated on drawings/schedule of finishes, it shall be 12 to 15 mm thick machine cut Kota stone over 10mm thick backing coat/rendering in CM 1:3 shall be provided. The height of skirting shall be as shown on drawings/schedule of finishes. If height of the same is not shown in drawings, it shall be 100mm for skirting, 1200mm in dado for toilets and 2100mm in dado for bathrooms.
- (vi)
- Acid resistant tiles:** - Where indicated on drawings/schedule of finishes, it shall be not less than 12 mm thick over backing coat/rendering all as per manufacturer's instructions shall be provided. The height of skirting/dado shall be as shown on drawings/schedule of finishes. If height of the same is not shown in drawings, it shall be 2100mm.
12.
- Glazing :-**
- 12.1
- Glazing shall be with glass of ordinary quality and shall conform to IS: 2835. Glass shall be free from all defects viz bubbles, weavyness etc and shall be of uniform thickness. Approved makes of glass are Atul/Swastic/Day light.
- 12.1.1
- Unless otherwise indicated in drawings, Glazing to windows/doors etc as shown on the relevant drawings shall be with 3mm thick Sheet glass upto 0.5 square metre and 4 mm thick beyond 0.5 Sqm in each pane. Glass used shall be plain sheet glass except in baths/WC/Toilets/Lav where it shall be figured glass (pin headed).
- 12.1.2
- The glazing of steel frames where shown on drawings, shall be fixed with special glazing clips with putty and glazing to wooden joinery shall be fixed with wooden beading with putty all as specified in clause 16.5 to 16.10.2 of MES Schedule Part-I.

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13.
- 13.1

ACRYLIC OIL BOUND / DRY DISTEMPERING

Acrylic Oil Bound Distemper: Two coats of Acrylic oil bound distemper over a coat of primer over a 2mm thick birla white putty, on plastered surface preparatory to distempering as indicated on drawings and specified in clause 15.5, 15.6,15.9 to 15.11, 15.13 and 15.14 of MES Schedule Part–I.
- 13.2

White Wash/Colour Wash: -White/colour (lime) wash shall be provided as indicated in drawings, all as specified in clause 15.2, 15.3 and 15.9 to 15.12 of MES Schedule Part – I. For white washing on ceiling adequate quantity of Zinc Oxide shall be added to lime wash for achieving egg white shade. Skirting and dado shall not to be white washed/colour washed.
- 13.3

Cement Base Paint :-

Two coats Cement base paint in camouflage pattern over a coat of white cement primer shall be provided as indicated in drawings and specified in clause 15.7 to 15.15 of MES schedule Part-I. Shade shall be provided by GE.
- 13.4

The wall treatment (Acrylic emulsion/Distemper/white wash etc) as specified will not be done above the level of false ceiling in the top floor. However the 10mm thickness of plaster will be applied upto full height of gable end/eaves as applicable for the top floor.

SURFACE FINISHES

Acrylic Oil Bound Distemper: Two coats of Acrylic oil bound distemper over a coat of primer over 2mm thick birla white putty, on plastered surface preparatory to distempering as indicated on drawings and specified in clause 15.5, 15.6,15.9 to 15.11, 15.13 and 15.14 of MES Schedule Part–I.

White Wash/Colour Wash: -White/colour (lime) wash shall be provided as indicated in drawings, all as specified in clause 15.2, 15.3 and 15.9 to 15.12 of MES Schedule Part – I. For white washing on ceiling adequate quantity of Zinc Oxide shall be added to lime wash for achieving egg white shade. Skirting and dado shall not to be white washed/colour washed.

Weather Proof Paint :-

Two coats of exterior weather proof coating paint over a coat of primer in camouflaging pattern as on roof and external walls of all the buildings and traverse wall irrespective of whatever is mentioned in drawing of Schedule of finishes.

Acrylic Washable Distemper: Two coats of Acrylic washable distemper over a coat of primer as per manufacturer instruction on non asbestos fibre cement sheet complete as approved by GE.

CEMENT BASE PAINT

Cement base paint shall be provided in two coats after preparation of newly platered surfaces at location as indicated in drawings, all specified in clause 15.7 and 15.15 of MES Schedule Part-1. Shade shall be approved by Garrison Engineer. Cement base paint shall conform to IS-5410-1992 as approved by GE. Makes/brand of cement base paint shall be as specified in Appendix ‘F’.

- 15.0
- 15.1

Painting.

All synthetic enamel and fire resistant paints and plastic emulsion paints shall be of 1st quality manufactured by standard firms listed in Appx “F” here in after.
- 15.1.1

The contractor shall inform the GE, within three weeks of the acceptance of the tender the brand and names of the manufacturer of the paint he proposes to use in the work and submit samples thereof to GE before use in the work and obtain prior approval of GE.
- 15.1.2

The contractor shall when required by the GE, produce certificate from the manufacturer or their authorised agents to establish that the brands of paint purchased by the contractor from them satisfy the requirement of the relevant Indian Standards.
- 15.1.2A

Synthetic enamel paint where ever mentioned in drawings shall be provided with two coats of synthetic enamel paint over a coat of red oxide primer (for steel surfaces)/pink primer (for wooden surfaces)

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- 15.1.3 Paints for priming coat, under coat and finishing coat shall be of the same brand.
- 15.1.4 Tint of paint, if not mentioned in drawings/schedule of finishes shall be as approved by the GE.
- 15.2 **Workmanship.**
- 15.2.1 The surface of wood/steel or iron where indicated in the schedule of finishes to be painted shall be given two coats (under coat and finishing coat) of synthetic enamel paint over a coat of pink primer/red oxide primer respectively.
- 15.3 **Tarring:** - the backs of wooden/steel chowkats in contact with concrete/stone/brick work/plaster etc. shall be given 2 coats of tar. Hold fasts shall be given 2 coats of tar and sanded.
- 15.4 All hidden steel surfaces other than those described in clause 14.3 above shall be given two coats of red oxide primer.
16. **SUNDRY & MISCELLANEOUS ITEMS:** - Cost of the following items are included in lump sum cost of building work.
- 16.1 **SOAP NITCH:** - Glazed ceramic tiles white/coloured for soap niches shall be provided as per details shown on drawings and specified here in before in clause 11.6. Tiles shall be set and jointed in neat cement slurry and pointed with white cement slurry.
- 16.2 **MAGIC EYE:** - Magic eye where indicated shall be provided to door of aluminium as approved by GE.
- 16.3 **NOTICE BOARD:** Where indicated, Notice board shall be provided as per details shown on relevant drawings.
- 16.4 **NUMBERING OF BUILDINGS/BLOCKS.**
Numbering of all buildings/blocks (at both ends of walls) shall be done by the contractor by the engraving and painting (black). The requisite letter/figures on a cement plaster (1:3) plate (format) of size and shape shall be provided as shown on drawings and as directed.
- 16.5 **NITCH FOR MAIN DISTRIBUTION BOXES AND DISTRIBUTION BOXES :**
Niche for housing main distribution boxes and distribution boxes shall be provided at the locations as shown in drawings or as directed by the Engineer-in-Charge. The specifications of the niches shall be as directed by the GE.
- 16.6 **RCC SHELVE :**
Rcc Shelve where indicated in drawings shall be provided 18 to 20mm thick black granite slab duly mirror polished of approved quality over 15mm thick screed in CM 1 : 3 over RCC slab. Rest all as specified shown on drawings and as directed.
- 16.7 **SINK**
Sink where indicated in kitchen shall be provided of standard size stainless steel sink of best quality and make as approved by GE and fixed with PVC waste pipe and other accessories /fittings all as specified and directed.
- 16.8 **MIRROR (FULL SIZE)**
Mirror shall be provided as per details shown on drawing No. CE AF/TD-99/2012 Sheet 1/1 shall be of polished sheet glass 5.0mm thick fixed on 6mm thick plywood, BWR grade conforming to IS-303 (duly ISI marked). Ist class hard wood Shesham wood frame of size 20mm wide and 20mm thick shall be provided alround the mirror as shown on drawing. Mirror shall be hung be key slots on screws fixed to rawl plug embedded in walls unless otherwise shown on drawings. All exposed wooden surfaces shall be French polished.
- 16.9 **3 TIER RCC SHELVES :**
3 tier RCC shelves with platform type A where indicated in drawings shall be provided and as specified in drawings and as directed.
- 16.10 **WATER TANK :**
Water tank wherever shown on drawings shall be rotational moulded polythene HDPE cylindrical vertical type, three layered shall be provided at location shown on drawings and fixed. The capacity of PVC tank shall be of capacity as shown on drawing. If not mentioned in drawings the capacity of water tank shall be 500 litres.

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- 16.11
- RCC JALLI:-**
RCC jalli type A where indicated in drawings shall be provided and as specified in drawings and as directed.
- 17
- SANITARY AND TOILET FITTINGS:**
- 17.1
- GENERAL**
- 17.1.1
- All sanitary appliances shall be vitreous China (White) first quality and shall conform to IS-2556 for general requirements and the specific requirements shall be as mentioned in clause 18.32 to 18.40 of MES Schedule Part– I. These shall be of an approved make given in **Appx ‘F’**.
- 17.1.2
- All waste pipe and fittings upto floor/Nahani trap shall be PVC flexible pipe of suitable dia.
- 17.1.3
- Flush pipe and socket of flushing rim of WC shall be jointed with white cement and red lead (white cement and red lead in equal proportion by weight) and linseed oil to form paste.
- 17.1.4
- ‘P’ or ‘S’ trap shall be jointed to WC pan with cement joints as specified in clause 18.48.5 of MES Schedule Part-I. Irrespective of whatsoever shown on drawings, cast iron ‘P’ or ‘S’ trap shall be provided.
- 17.1.5
- Cast iron brackets for the relevant sanitary and toilet fittings shall be given two coats of aluminium paint over a coat of primer.
- 17.1.6
- Cast iron brackets shall conform to IS-775.
- 17.1.7
- The sizes given here in after are approximate sizes. The sizes of sanitary fittings to be provided shall be nearest size as per manufacturer’s catalogue.
- 17.2
- WATER CLOSET PADESTAL PATTERN (EWC)** :- Where water closet are shown on drawing, these shall be water closet (EWC) as per Cat No 20001 EWC standard with ‘P’ trap or ‘S’ trap of Hindustan Sanitary ware or any other equivalent approved make as specified. EWC shall consist of :-

(i)

Water closet wash down pattern of height 40cm vitreous china ware (with ‘S’ trap or ‘P’ trap) all as per IS-2556 Part-II.

(ii)

Plastic seat and cover with flat under side, solid moulding closed front pattern with cover, Seat and cover shall be of approved colour with chromium plated hinges and nuts, make ‘Commander’ or equivalent make (ISI marked).

(iii)

10 litre discharge capacity polythene low level flushing cistern, solid moulded (of approved colour) with valve less symphonic fitting manually operated with one PVC ball valve horizontally plugged type and polythene float valve shall be provided. The cistern shall be of make : Commander Water bird/Champion Water bird

(iv)

A pair of standard brackets/clamps as supplied by manufacturers.

(v)

15mm dia polythene overflow pipe with polythene ant mosquito rose.

(vi)

32mm dia PVC flush pipe bent to required shape including coupling.

(viii)

Jet including connection, accessories and CP stop valve complete.
- 17.3
- WASH HAND BASIN**
Where wash hand basins (WHB) are shown on drawings, these shall consist of following :-

(i)

Oval shaped wash hand basin shall be of size 60cmx45cm of approved colour vitreous china glazed ware of Hindware or equivalent in other approved makes as given in Appx ‘F’. Wash hand basins shall be fixed with 25mm thick black colour mirror polished granite top and in vertical support as shown on drawings and as approved by GE.

(ii)

A pair of cast iron brackets where required.

(iii)

32mm dia, GI medium grade, waste pipe or required length shall be provided with brass chromium plated waste coupling with perforated grating 32mm dia

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- 17.4 COUNTER TYPE WASH HAND BASIN WITH MIRROR
- (i) Counter type wash hand basin shall be provided with single mirror in full length all as shown on drawings of Hindware or equivalent in other approved makes as given in Appx 'F'. Wash hand basins shall be fixed with 25mm thick black colour mirror polished granite top and in vertical support as shown on drawings and as approved by GE and as approved by GE.
- 17.5 MIRROR: -Wherever shown on drawings, mirror shall be polished sheet glass 5mm manufactured by M/S Atul Glass Industries (P) Ltd, SWASTIC or BAWA GLASS and fixed thick on 5.5mm thick AC board and provided with wooden/polythene (PVC) moulding frame. Mirror shall be hung by key slots on screws fixed to plug embedded in walls. Unless otherwise shown on drawings size of mirror shall be 60 cm X 45 cm Colour of PVC moulding frame shall be same as that of wash hand basin approved by GE.
- 17.6 TOWEL RAIL :- Towel rail shall be tubular CP brass 19/20mm dia 22 gauge 'D' shaped with flanged ends for fixing as approved by GE. In case length of towel rail is not mentioned on drawing, it shall be 60cm long.
- 17.7 URINAL :-
- (i) Vitreous China Urinal large of size 635 X 395 X 420 mm for Cat part part No 5001 of Cera or equivalent in Hindware , Parryware Jonson including bedding urinal against wall in cement mortar 1 : 2 pointing around urinal back in white cement.
- (ii) Urinal push valve with built in control cock type flushing system of cat part No 077 of Jaquar
- (iii) Suitable spreader and waste coupling CP
- (iv) Bottle trap cat part No 769 of Jaquar
- (vi) GI waste pipe 32 mm concealed in wall upto floor trap
18. **PLUMBING WORK**
- 18.1 **General.** Plumbing work shall be carried out as specified in clauses 18.13 to 18.23 , 18.40 and 18.62 to 18.67 of MES Schedule (Part – I).
- 18.2 Soil/Waste/Vent pipes/Fittings/Accessories. These shall be of cast iron (sand cast) conforming to IS: 1729 with or without ears and with spigot and socket ends. All the pipes and fittings shall have ISI certification mark. All exposed surfaces of CI pipes and fittings shall be painted with two coats of black bituminous paint after erection in position.
- 18.2.1 Size of pipes shall be all as shown on drawings, if no sizes are shown these shall be as under :-
- (a) Waste pipe from floor trap/nahani trap to gully trap - 75mm bore
- (b) Waste pipe from floor/nahani trap to floor/nahani trap - 75mm bore
- (c) Soil pipe from WC to Ist manhole - 100 mm bore
- (d) Vent pipe - 50 mm bore
- 18.3 **JOINTING.**
- CI pipes and fittings (except joints of vent pipe with soil pipe and between vent pipe and cowl) shall be jointed with run lead joints as specified in clause 18.40 and 18.67 of MES Schedule Part- and all other joints shall be in cement mortar as specified in MES Schedule Part -I.
- 18.4 **FIXING OF PIPES TO WALLS :**
- CI pipes and fittings shall be fixed to wall with mild steel clamps as specified in clause 18.67 to 18.67.6 of MES Schedule Part – I.
- 18.5 **NAHANI/FLOOR TRAP:**
- Nahani/Floor traps shall be provided in situations as shown on drawings. These shall conform to IS –1729. Size of floor/nahani traps shall be suitable to the size of waste pipe. Nahani/Floor traps shall be provided with CP grating.

NOTE: Where Nahani/floor traps of 22.5cm depth cannot be accommodated in sunken floor 300x300mm portion of the shall be sunk to the extent it accommodates the Nahani trap without any additional cost.

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- 18.6 **SHORTER LENGTH:**
Except for WC connections, the contractor may use pipe pieces without sockets in shorter lengths (less than one pipe length), where approved by the GE and connect these to pipe fittings with double sockets/collars including additional joints as specified above without extra cost to the Government.
- 18.7 **GULLY TRAPS:**
(a) Gully traps shall be of size indicated in Schedule 'A' of salt glazed stone ware complying with the requirements of IS-651. These shall be set in PCC 1:4:8 type D-2 block measuring 450 x 450 mm and 100mm thick. Jointing to drain pipe shall be done in cement mortar 1:1.
(b) Cast iron perforated grating shall be 150 mm x 150 mm bituminous coated and fixed as directed by Engineer-in-Charge. PCC 1:2:4 type B-1 in kerb and RCC cover slab shall be provided all as directed by the Engineer-Charge.
- 18.8 **TRENCHES FOR PIPE LINES :**
Excavation for trenches shall be done as per the width given in clause 3.2.3 of MES Schedule Part II and depth as required at site. The trenches shall be back filled after testing of pipes with excavated earth in layers not exceeding 250 mm and surplus spoil disposed off to a distance not exceeding 50 metres.
- 18.9 **TESTING:**
All soil waste and vent pipes shall be tested as specified in clause 18.79.1 to 18.79.5 of MES Schedule Part – I.
19. **BLANK**
20. **MAKING CONNECTION OF GI/CI DISTRIBUTION WITH GI/CI MAIN :** It shall be as per clause 18.59 of MES Schedule Part-I.
21. **DEMOLITION/ DISMANTLING:-** Demolition/ Dismantling where required shall be carried out as described in items of Sch 'A'(BoQ), all as specified in MES SSR, shown on drawing and as directed by the Engineer-in-Charge.
22. **SEWAGE DISPOSAL**
- 22.1 **EXCAVATION AND EARTH WORK:**
Irrespective of the width of the trenches for the pipes excavated, width for the purpose of payment shall be the authorised width as defined in clause 3.2.3 of SSR 2020 (Part-II). Other requirements specified here in before and in the MES Schedule as applicable shall be complied with.
- 22.2 **RCC NP3 PIPES AND FITTINGS**
(a) RCC NP 3 pipes including fittings and accessories shall conform to the specifications laid down in clause 18.28 of MES Schedule (Part –I) and shall be of grade-I conforming to IS: 651.
(b) Laying and jointing of RCC NP 3 pipes shall be done all as specified in clause 18.69 and 18.70 of MES Schedule Part - I.
(c) PCC in bedding and haunching shall be of the type and mix given in relevant part of Schedule 'A'. The thickness of bed below barrel pipe shall be as specified in preamble (a)(i) on srl page No 391 of SSR 2020 Part-II.
(d) In Schedule 'A' items for RCC NP 3 pipes bedding and haunching have been catered for. However, reference shall be made to IS: 4127 (Clause 4.1, 4.2 and 4.3) and if the site conditions regarding sub soil water level and other related factors so require, adjustment for providing bedding or completely encasing the pipe shall be made through a deviation order.
(e) Filling of spoil in trenches and ramming of earth shall be carried out in layers not exceeding 25 cm thick and surfaces left slightly proud of the adjacent ground.

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- 22.3 **TESTING:**
 Drains and sewers shall be tested as per clause 18.79 of MES Schedule Part – I.
- 22.4 **MANHOLES:**
 Manholes shall be built as per the description given in the respective part of Schedule ‘A’ and as shown on drawings or as directed by Engineer-in-Charge.
- 22.5 **RCC MANHOLE COVER AND FRAMES:**
 RCC manhole covers and frames shall be all as per description given in respective items of Sch ‘A’ and as shown in drawings.
- 22.6 **SEPTIC TANK.** Septic Tank shall be provided as described in BOQ.
- 22.7 **SOAKAGE WELL :-**

22.7.1 Soakage well shall be constructed as per details shown on drawings and as specified here-in-below: -
 (a) Excavation and earth : Excavation in any type of soil, returning, filling in and ramming and removal of surplus spoil to a distance not exceeding 50 metre as directed by Engineer-in-Charge.
 (b) PCC in foundation. : PCC (1:3:6) type C-2 using 40 mm graded crushed stone aggregates.
 (c) Masonry work. : PCC Block in cement mortar (1:4).
 (d) RCC work. : M-30 (Nominal Mix) irrespective of whatever is given in the drawings.
 (e) Loose filling inside : Brick bats as shown in the drawing.
 soakage well.
 (f) Reinforcement. : All as shown on drawings using TMT bars.
- 23.00 **EXTERNAL WATER SUPPLY**
- 23.01 **SCOPE OF WORK :**
 The extent of work as described in Sch ‘A’. All reference to clauses in succeeding paragraphs pertaining to MES Schedule Part-I.
- 23.2 **MATERIALS**
- 23.2.1 **MILD STEEL GALVANISED TUBES (PIPES) AND FITTINGS :** These shall conform to the clause 18.4.1 to 18.4.5 and shall bear ISI certification mark.
- 23.2.2 **RUBBER GASKET FOR JOINTING :**
 It shall be as specified in clause 18.11 of MES Schedule Part-I
- 23.2.3 **WORKMANSHIP:**
- 23.2.4 **BACK FILLING OF TRENCHES:**
 It shall be all as specified in clause 18.56 of MES Schedule Part-I.
- 23.2.5 **MAKING CONNECTION OF GI/CI DISTRIBUTION WITH GI/CI MAIN :**
 It shall be as per clause 18.59 of MES Schedule Part-I.
- 23.2.6 **CUTTING OF GI PIPE LINE, FIXING METER AND STOP VALVE ;**
 It shall be as specified in clause 18.63 to 18.63.2 of MES Schedule Part-I.
- 23.2.7 **TESTING OF PIPE LINE :**
 Testing of pipe line shall be carried out as specified in clause 18.54 and 18.55 of MES Schedule Part-I.

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- 23.2.8 **MASONRY VALVE PITS :**
Masonry valve pit shall be of size as given in relevant item of Schedule 'A' and drawings. Pit shall be underground with foundation in PCC (1:4:8). Burnt brick work built in CM (1:6) internally finished with 15mm thick cement plaster in CM (1:4) and externally flush pointed in same mortar as work proceeds. Flooring shall be 40mm thick PCC (1:2:4) B-1 laid over 75mm thick hardcore. Cover shall be 3.15 mm MS sheet fixed with nuts/bolts having proper locking arrangements and shall be provided with two coats of synthetic enamel paint over a coat of primer. Excavation and earth work shall be in hard/dense soil, returning filling in and disposal of surplus spoil to a distance not exceeding 50 metre.
- 24 **AREA DRAINAGE:**
Works pertaining to area drainage shall be carried out as specified in relevant items of Schedule 'A' and as specified here-in-before for the relevant trades of works in relevant clauses of SSR Part-I 2009 and as directed.
- 25 **Air Conditioning and Refrigeration Works :**
Works pertaining to air conditioning and refrigeration works shall be carried out as specified in relevant items of Schedule 'A' and contractor shall render free services of equipments to department as minimum one year.
- 26 **DEMOLITION/ DISMANTLING**
Works pertaining to 'Demolition/ Dismantling' shall be carried out as per specified in relevant items of Schedule 'A', as specified here-in-before for the relevant trades of works and as directed.
- 27 **SITE CLEARANCE WORK:** Work pertaining to site clearance work shall be carried out as specified in relevant items of Schedule 'A' as specified here-in-before for the relevant trades of works in MES SSR Part I 2009 and as directed.
28. **Security Fencing and Gate Works**
Works pertaining to Security fencing and gate shall be carried out as described in items of Sch 'A' details shown on drawings and as specified here-in-before for the relevant trades of works in relevant clauses of SSR Part-I 2009 and as directed.
29. **Fire Point Shed Works**
Works pertaining to **Fire Point Shed** Works work shall be carried out as described in items of Sch 'A' details shown on drawings and as specified here-in-before for the relevant trades of works in relevant clauses of SSR Part-I 2009 and as directed.
30. **Lightening Protection Works**
Works pertaining to **Lightening Protection** work shall be carried out as described in items of Sch 'A' details shown on drawings and as specified here-in-before for the relevant trades of works in relevant clauses of SSR Part-I 2009 and as directed.
31. **Fire Fighting System Works**
Works pertaining to **Fire Fighting System** work shall be carried out as described in items of Sch 'A' details shown on drawings and as specified here-in-before for the relevant trades of works in relevant clauses of SSR Part-I 2009 and as directed.
32. **Road, Path and culverts works:**
Works pertaining Road, Path and culvers shall be carried out as described in items of sch 'A' here in before and here in below, shown on drawings and as directed.

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- 32.1 **STACKING AND MEASUREMENTS OF MATERIALS:**
The contractor shall collect and stack, approved materials like aggregates, sand etc on levelled ground at places indicated by GE near the site of work in closely packed, stacks, stacks measurements of these materials shall be taken and recorded in measurement book and signed by the contractor and Engineer-in-Charge as per special condition 20.A.1.2 on serial page No 433 of MES Schedule 2004 part-II rates before commencement of hard standing/road work. It shall be ensured that the required quantity of materials have been incorporated in the work. However, these provisions do not absolve the contractor from his responsibility of providing more materials as necessary to complete the work. Any additional materials required for making good hollows and the depressions during rolling shall be supplied and provided by the contractor at his own expense in addition to the stacked materials mentioned here-in-before.
- 32.2 **ROLLING FORMATION SURFACES:**
(a) The formation surfaces shall be rolled to the required gradient and camber with power roller including sprinkling the surface with water as required.

(b) Where rolling is not feasible, prior permission of the GE shall be obtained in writing for hand ramming. The laying of the base course will commence only after the earth formation is approved by the GE.
- 32.3 **EARTHEN BERMS:**
Earthen Berms as described in respective items of Schedule 'A' shall be watered and well consolidated with 0.80 to 1.50 Tonne animal roller and finished to profile in line with finished surface of the road/path.
- 32.4 **DRAINAGE OF EARTH FORMATION:**
At all times, the formation surfaces shall be kept drained by the contractor. The contractor shall provide such temporary open drain as may be necessary to prevent accumulation of water from any cause whatsoever.
- 32.5 **Road , Path and Culvert**
- 32.5.1 **SOLING:** Soling shall consist of broken stone laid and levelled in one layer, watered and rolled to required surface and camber all as per clause 20A.2 and 20A.2.1 of MES Schedule Part – I.
- 32.6 **WATER BOUND MACADAM**
(a) Stone aggregate, screenings and binding materials for water bound macadam shall be as specified in clause 20A.3 of MES Schedule Part-I and conform to the samples kept in GE's office and approved by the GE before incorporation in the work. Screenings shall be of grading 'A' as specified in clause 20A.3.2 of MES Schedule Part-I. The coarse aggregate shall be of grading No. 2 with size ranging from 63 mm to 40 mm as specified in sub clause 6 of clause 20A.3.1 of the MES Schedule Part-I.

(b) Water bound macadam shall consist of 75 mm thick (compacted thickness) broken stone aggregate consolidated in one layer. Spreading, rolling, applying screening and watering shall be as specified in clause 20.A.21 to 20.A.21.13 of MES Schedule Part-I. The rolling shall be done with power roller after the application of screenings and wet rolling as described in MES Schedule Part-I.

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- 32.7 **Premix Carpet**
 Binder shall be as specified in Schedule 'A' Quantity of stone chippings shall be as per para 20.A.25.8.
 Preparation of surface and binder application shall be as specified for premix carpet with hot bitumen
 Preparation, spreading, consolidating mix, surface finishing shall be same as that of premix carpet using hot bitumen shall not be heated but it shall be poured to wet the aggregate at atmospheric temperature at correct rate before spreading on the road surface. The rolling shall commence after spreading the mixture. The surface shall be protected by a suitable device such as barricading & posting of watchman for closing the traffic.
- 32.8 **Sand Seal Coat**
 The binder shall be heated to the temperature appropriate to the grade of bitumen being used. Also dry sand shall be suitably heated to the required temperature before it is placed in a mechanical mixer. Mixing of binder with sand to the specified proportions shall be continued till the sand is thoroughly coated with the binder. As soon as sufficient length has been covered with premixed material, the surface shall be rolled with 8 to 10 tonne power roller. Rolling shall be continued till the premixed material completely seals the voids in the bituminous course and a smooth uniform surface is obtained.
- 32.9 **ROLLING FORMATION SURFACES IN CUTTING:** Rolling shall be carried out as per Sch 'A' specified in clause 20.A.22 of SSR Part I.
- 32.10 **Wet Mix Macadam (WMM):-** WMM shall be provided as described and as per Schedule 'A' and specified in clause 20.B.2.5 & 20.B.5 and its sub clauses of MES SSR 2009 Part-I and as directed by Engr-in-Charge.
- 32.11 **Dry Lean Concrete (DLC):-** DLC shall be provided as described in Schedule 'A' and specified in relevant clauses of SSR Part-I 2009 and as directed. The maximum size of coarse aggregate shall not exceed 26.5mm.
- Dummy Joints.**
- 32.12 The size of joints shall be as specified in Schedule-'A' special in clause 20.B.7.11.2 of SSR Part-I and as shown on drawings /as directed.
- 32.12.1 The joint shall be formed using mechanical equipment (diamond cutter) within 6 Hours of placing of concrete under moderate climatic conditions and when the concrete has sufficiently hardened. Cutting or sawing by a saw mounted at movable frame and driven mechanically will also be permitted as a method for making the joint. Care shall be taken that the edge of the joints are not damaged. The edge will not stand proud of the concrete slabs.
33. **INTERNAL WATER SUPPLY.**
- 33.1.1 **WATER TUBING, BIB TAPS, STOP VALVES AND SHOWER ROSE:**
 Mild steel galvanised tubes (pipes) and fittings shall be all as specified in clause 18.4 of MES Schedule Part –I. Bib taps and stop valves shall be all as specified in clause 18.14 and 18.15 of MES Schedule Part – I. Shower roses shall be of approved make as per samples kept in GE's office.
- 33.2 **LAYING AND FIXING PIPES**
 (a) The pipes for supply of water to all fittings in the buildings shall run on the internal walls (from OHT) except otherwise as specified in these tender documents or shown on drawings, connected to various fittings and shall be brought in the room at point/position approved by the Engineer-in-Charge at site.

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- (b) Where pipes are laid underground, the trenches shall be excavated as directed by the Engineer-in-Charge. The pipes running along face of the walls shall be clamped in the walls as specified in the SSR. Where pipe is passing through a wall, a mild steel tube sleeve shall be fixed all as specified in clause 18.51.1 of SSR Part-I.

33.3 PVC PIPE CONNECTION :

Ready made PVC connection pipes of standard make (ISI marked) shall be 450mm long suitable for 15mm bore GI pipe complete with brass chromium plated coupling nuts and rubber washer. The weight of brass coupling nuts shall not be less than 40 grams. The weight of PVC pipe 450mm long shall not be less than 40 grams.

33.4 WORKMANSHIP

- (a) Laying of GI pipes (internal works) shall be in accordance with clause 18.51 of MES Schedule (Part – I).
(b) The contractor shall use proper bends, elbows etc at turning corner. Bending of pipes shall not be allowed in any case.
(c) Pipe shall not run diagonally.
(c) Contractor shall provide screwed plugs to all open ends of pipes on completion of day's work.

33.5 TESTING:

Testing of pipes shall be carried out all as per clause 18.50.4 of MES Schedule (Part – I).

- 33.6 RECORD OF DRAWINGS:** Three copies of line plan of complete work indicating the line of pipes, position of fitting etc., shall be submitted by the contractor to the Engineer-in-Charge on completion of work.

34. SITING OF ELECTRIC EQUIPMENT:

The siting of cable conduit run controls, distribution boards, fittings and accessories etc., shall be as laid down in IS: 4648 "Guide for Electrical layout in residential buildings" or as directed by the Engineer-in-Charge. The location of fittings etc., shall be marked in advance on walls, etc., and approved by the Engineer-in-Charge.

35. INTERNAL ELECTRIFICATION:**35.1 SCOPE OF WORK**

The work consists of items as described in Schedule 'A'.

35.2 GENERAL REQUIREMENTS :

Refer Clauses 19.2.1 to 19.2.8 of MES Schedule Part – I.

35.3 TYPE OF WIRING:

The type of wiring shall be concealed type PVC conduit as described in Sch 'A'. Point wiring for light/power/fan/bell or buzzer point(s) including all works mentioned in permeables to the rates in MES Schedule Part –II for point wiring unless otherwise indicated in these tender documents.

35.4 INTERNAL ELECTRICAL WORK :

- (a) Cable for internal wiring for light power and sub main cables shall be with copper conductor and shall be of type as described in relevant items of Schedule 'A'.
(b) **FLEXIBLE CORDS, TWISTED COPPER CONDUCTOR:**
Flexible cords, twin core, each with tinned annealed stranded copper conductor elastomer insulated and testile braided twisted together, size nominal cross sectional area 0.5 Sqmm shall be as per IS: 9968 Part-I.
(c) **WOODEN BLOCKS, BOARDS AND ROUND BLOCKS:**
These shall be in accordance with clause 19.28 of MES Schedule Part – I.

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(d) PLUG/GUTTIES, SCREWS AND FASTENINGS:

These shall be in accordance with clause 19.30 and 19.31 of MES Schedule Part– I.

(e) CEILING ROSE, SHADES AND BULK HEAD FITTINGS:

These shall be in accordance with clause 19.32, 19.33 and 19.34 of MES Schedule Part–I and as specified and as shown on drawings.

(f) SUNK TYPE BOXES:

These shall be in accordance with clause 19.38 of MES Schedule Part – I.

(g) SWITCH SOCKET OUTLETS:

These shall be in accordance with clause 19.40 of MES Schedule Part – I.

(h) LAMP HOLDERS:

These shall be in accordance with clause 19.41 of MES Schedule Part – I.

(i) MINIATURE CIRCUIT BREAKERS:

These shall conform to IS-8828 (Specification for MCBs for AC Circuit for voltage not exceeding 1000 Volts). All MCBs shall be housed in suitable size standard sheet metal enclosure of 16 gauge MS Sheet supplied by the manufacturer of MCBs.

(j) CONDUITS:

Conduits for electric installations shall conform to IS 9537/IS 14765.

(k) LIGHT FITTINGS:

All light fittings shall be provided in accordance with the description of the items given in Sch ‘A’ and as shown on the drawings and shall be fixed on first class hard wood boxes of suitable size except for ceiling fittings as directed by Engineer-in-Charge.

(l) Particular attention is drawn on the neatness as in appearance which is to be achieved by judicious planning of run of the cable, the locations of the light fittings, fans, switches, socket outlets, main switches etc.

(m) Due regard shall be given to doors, windows opening etc. in fixing of runs for cables, position of fittings control switches and outlet points. The workmanship shall comply strictly with the rules contained in latest Indian Electricity Rules.

(n) Samples of all electric fittings shall first be got approved from GE in writing before incorporation in work and shall conform to relevant IS. Utility light fittings shall be of the best quality available and conform to samples kept in GE’s office.

35.5 EARTHING AND TESTING:

Earthing shall be carried out as described in IS 3043:1987, clause 19.137 to 19.146 and as shown in electric plate No 3 of MES Schedule Part-I.

35.5.1. BACK FILLING OF TRENCHES:

It shall be all as specified in clause 18.56 of MES Schedule Part-I

35.6 SITING OF ELECTRIC EQUIPMENT:

The siting of cable conduit run controls, distribution boards, fittings and accessories etc., shall be as laid down in IS: 4648 “Guide for Electrical layout in residential buildings” or as directed by the Engineer-in-Charge. The location of fittings etc., shall be marked in advance on walls, etc., and approved by the Engineer-in-Charge.

35.7 SYSTEM OF WIRING:

Wiring shall be carried out with PVC insulated cable. All conductors as far as possible shall run over walls and ceiling except otherwise as specified in these tender documents so as to be easily accessible and capable of being thoroughly inspected. Power wiring shall be kept separate and distinct from light wiring. In all type of wiring due consideration shall be given for the neatness and a good appearance and safety diagonal runs will not be permitted.

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- 35.8 **CONTROL AT POINT OF ENTRY OF SUPPLY:**
These shall be linked with main switch gear (isolator) with MCB on each live conductor of the supply main at the point of entry. The wiring throughout the installation shall be such that there is no break in the neutral wire except in the form of a linked switch gear. No fuses shall be inserted in the earth neutral.
- 35.9 **TYPE OF SWITCH BOARD:**
Hinged type metal boards for mounting the MCB and electrical meters shall be as per clause 19.105.1 of MES Schedule Part – I. Meter Boxes shall be made of 16 gauge MS Sheet with provision of locking arrangement and glass window.
- 35.10 **JOINTS AND LOOPING BOX:**
These shall be as per clause No 19.109 of MES Schedule Part – I.
- 35.11 **PASSING THROUGH WALLS AND FLOORS:**
Refer clause 10.111 of MES Schedule Part-I for passing the conductors through walls and floors. The rate for surface wiring against internal electrification shall be deemed to include the provisions mentioned in clause 19.111 of MES Schedule Part-I.
- 35.12 **CONDUIT WIRING:**
The system of conduit wiring shall be as per clause No 19.132 of MES Schedule Part-I.
- 35.12.1 The work of Internal Electrification under this contract shall be carried out all as per description of Sch 'A' items and as specified. Quoted rates of various items of internal electrification shall also include the provisions contained in following paragraphs: -
- 35.12.2 Loop back system of wiring shall be done without any connector in junction or boxes on line and junction/joint boxes shall also be approved type.
- 35.12.3 Supply, fixing/drawing of cables for carrying out wiring circuits of any length from F.P, DB or switches upto light points connector fan and switch including additional length from connector to F.P bulk head fitting.
- 35.12.4 ERW galvanised conduit, FP conduit fittings, FP accessories, FP joint boxes, terminal boxes for mounting of housing connector for light fittings and continuous earthing, earth connections all as specified.
- 35.12.5 All accessories such as screws, plugs, clamps etc as specified for securing conduits etc to walls/steel joint. Spacers and clamps shall be galvanised.
- 35.12.6 Drawing separate neutral wire for each individual circuit from F.P, DB (or Iron Clad switch in lieu).
- 35.12.7 Cutting holes in or through walls notching or drilling holes through joints and making good all disturbed work to match with the existing surface
- 35.12.8 Any difference of cost of cables of different insulation colour for colour coding in case of conduit wiring if otherwise observed shall not be payable extra.
- 35.12.9 All F.P terminal boxes, fittings and accessories shall be packed/filled with asbestos thin Rope or powder as applicable including packing in conduit terminated ends upto 50mm inside after physical completion of wiring and testing.
- 35.12.10 All live conductor terminal when tightly screwed shall be packed/filled with suitable bituminous compound.
- 35.12.11 Testing as specified in IE rule.

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- 35.12.12
- JUNCTION BOXES, UNIONS, GLANDS, INSPECTION ELBOWS/TEES, CONDUITS AND ACCESSORIES :**

These shall be conforming to relevant latest IS with CMRS Dhanbad certificate.
36.
- SYSTEM OF WIRING:**

Wiring shall be carried out with PVC insulated cable. All conductors as far as possible shall run over walls and ceiling except otherwise as specified in these tender documents so as to be easily accessible and capable of being thoroughly inspected. Power wiring shall be kept separate and distinct from light wiring. In all type of wiring due consideration shall be given for the neatness and a good appearance and safety diagonal runs will not be permitted.
- 36.1
- CONDUIT WIRING :**

The system of conduit wiring shall be as per clause No 19.132 of MES Schedule Part-I.
37.
- EARTHING AND TESTING:**

Earthing shall be carried out as described in IS 3043:1987, clause 19.137 to 19.146 and as shown in electric plate No 3 of MES Schedule Part-I.
- 37.1
- Laying of GI PIPE**

Laying and jointing of GI pipe shall be in accordance with clause 18.50 to 18.51 of MES Schedule Part-I.
- 38
- GUARANTEE :**
- 38.1
- All equipment supplied by the contractor under this contract shall stand guaranteed for a period of 24 months from the certified date of completion of work issued by the GE. Any defect occurring during this period due to bad workmanship, material or manufacturing defect shall be rectified or replaced by the contractor free of cost.
- 38.2
- Insulator and insulator fittings shall be as specified in clause 19.6.1 to 19.6.4.
- 38.3
- Electric Metre :- Electric metre shall be as described in schedule 'A' however, it shall be equipped with CMRI and software for auto generation electricity bills. Rate quoted by the contractor for schedule 'A' in electric metre in schedule 'A' shall deem to include the same and nothing extra shall be admissible on this account.
- 39
- PRODUCTION OF PURCHASE VOUCHERS**
- 39.1
- The contractor shall produce to the GE, original purchase vouchers, the manufacturer's test certificate and literature/ manual of following equipments (as applicable):-

(a)

MCCB /MCB

(b)

LED LIGHT

(c)

Cables.

(d)

DB'S

(e)

DG set

(f)

CABLE

(g)

PANNEL
- 40
- INSTALLATION/TESTING/COMMISSIONING OF ELECTRICAL EQUIPMENT:-**
- 40.1
- After physical completion of electrical work/unit, the contractor shall inform to GE in writing at least 30 days in advance from probable date of testing for carryout the testing of EI/SEI and installation shall be energized after satisfactory test report from the EI/SEI and completion shall be issued thereafter.

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- 40.2 The unit should be first inspected visually including visual inspection inside the unit to verify that all items specified are provided. Special emphasis needs to be given to ensure adequate dissipation of heat by convection/radiation. Hence good air-circulation around capacitor unit is a must. Also the ambient temperature specified on capacitor rating plate should be compared with actual ambient temperature of the station. The symbols A, B, C or D on the rating plate are indicative of temperature in increasing order with permissible ambient temp as 40, 45, 50 & 55° respectively for these symbols. The minus temp-rating, indicates minimum ambient temp below which the unit will not give specified performance.
41. **EXTERNAL ELECTRIFICATION:-**
- 41.1 General Requirement:-
- 41.1.1 The extent of work of external electrification shall be carried out as per items given in Schedule 'A', specified here in before or after and in MES Schedule 2009 Part-I.
- 41.1.2 Materials execution, testing and record of installation shall conform to relevant IS specifications and as given in clause 19.2.1 to 19.2.6 and as also in accordance with Indian Electricity Rules, 1956.
- 41.1.3 Making Good:- The contractor is deemed to have included in his unit rate, cost of cutting holes/ making chases when required through roads/ bricks or concrete work for taking in cable conduits and conductors etc. and making good the same to match with the existing work.
- 41.1.4 All excavation and earth work, cement concrete, brick work, steel work and painting etc., shall be carried to the extent given in item of Sch 'A', specified here in before and in MES Schedule Part-I.
- 41.2 **Materials and workmanship:-**
- 41.2.1 (a) LT & HT Power Cable other than issued under Schedule 'B' shall conform to latest IS Edition and complying with the requirements given in Clause 19.19 of MES Schedule Part-I. The cable shall be of an approved make as mentioned in 'Appendix F'.
(b) **Underground cables:** Underground cable shall be laid, jointed and tested all as specified under clause 19.73 to 19.86 and 19.88 to 19.95 of MES Schedule Part-I. Where the cable laid in trenches, a layer of cleaned dry screened sand cushioning to the full width of trenches shall be provided before laying the cables and cable shall be laid thereon. After laying of cable as approved by the Engineer-in-Charge, a second layer of clean dry sand shall be filled 15 cm thick from the top edge of the cable and to width of the trenches. Cable covers shall be as specified in MES Schedule Part-I.
- 41.3 **CABLE TERMINATION AND JOINTING KITS.**
- 41.3.1 These shall be all as specified in Schedule 'A' and as described in clause 19.22 with it's sub clauses of MES SSR 2009 (Part-I). Workman ship shall be carried out all as specified in clauses 19.85 and 19.86 of MES SSR 2009 (Part-I). Approved makes are mentioned in 'Appendix F'.
- 41.4 **MCCB's**
- 41.4.1 These shall be all as specified in Schedule 'A' and as described in clause 19.100.14 with it's sub clauses of MES SSR 2009 (Part-I). These shall conform to IS:13947 and IEC-60947 (Part-2). Approved makes are mentioned in 'Appendix F'.
- 41.5 **VOLTAGE STABILIZER**
- 41.5.1 These shall be all as specified in Schedule 'A' and as described in clause 19.100.A with it's sub clauses of MES SSR 2009 (Part-I). Approved are mentioned in 'Appendix F'.
- 41.6 **SWITCH GEAR**
- 41.7.1 These shall be all as specified in Schedule 'A' and as described in clause 19.98 and it's sub clauses of MES SSR 2009 (Part-I). Approved makes are mentioned in 'Appendix F'.
- 41.8 **CHANGE OVER SWITCH**
- 41.8.1 These shall be all as specified in Schedule 'A' and as described in clause 19.48 and it's sub clauses of MES SSR 2009 (Part-I). Approved makes are mentioned in 'Appendix F'.
- 41.9 **TRANSFORMER**
- 41.9.1 These shall be all as specified in in relevant items of Schedule 'A'/BOQ and as described in clause 19.14 to 19.14.6.8 and 19.97 to 19.97.9 of MES SSR 2009 (Part-I).

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- 41.9.2

The transformers shall be all as described in relevant item of BOQ. The temperature rise shall not exceed 50° C by resistance of winding method and 40° C measured by thermometer in oil after continuous run on full load. The contractor shall also provide first oil filling of transformer and the oil shall conform to IS-335. The make of transformer shall be as specified in Schedule 'A'/Appendix 'F'. The transformers should be fitted with mounting as follows: -
(a) Oil conservator with filling hole and cap including drain plug. (b) HT Off load tap changing gear with tapping switches indicator, handle and locking device. (c) In addition to (b) above cover of the transformer be provided with air released plug to enable the trapped air inside to be released if any. (d) Rating and terminal marking plates. (e) Lifting lugs. (f) Two earthing terminals for body earthing and one additional for neutral. (g) Drain valve with plug. (h) Thermometer pocket including thermometer. (j) Four flat rollers. (k) Explosion vent. (l) Silica gel dehydrating breather with silica gel. (m) Top and bottom filter valve for oil and plug. (n) Any other fittings required and recommended by the manufacturer. (o) Oil level gauge indicating maximum and minimum oil level. (p) Cooling radiator.
- 41.9.3

TESTING :
- 41.9.3.1

The contractor shall produce manufacturer's test certificate to GE in respect of routing test enumerated in relevant IS. The transformer shall be tested at factory premises before the dispatch of the same. After installation, the transformer shall be tested before commissioning as per Clause 19.97.8 of MES Schedule Part I by a representative by the Accepting Officer in presence of Engineer-in-Charge and contractor. The contractor shall at his own expense provide all facilities for testing including equipment.
- 41.11

EXPULSION FUSES
- 41.11.1

These shall be all as specified in Schedule 'A' and as described in clause 19.16 of MES SSR 2009 (Part-I) and shall conform to IS:9385 (Part-2)-1980. Approved makes are mentioned in 'Appendix F'.
- 41.12

CUBICAL PANELS
- 41.12.1

These shall be factory made and all as specified in Schedule 'A'.
- 41.13

SWITCH AIR BREAK GANG OPERATED
- 41.13.1

These shall be all as specified in Schedule 'A' and as described in clause 19.100.13 and it's sub clauses of MES SSR 2009 (Part-I) and shall conform to IS:13947 (Part-3)-1993 and IEC:60947 (Part 1 &2). Approved makes are mentioned in 'Appendix F'.
- 41.14

GUARANTEE :
- 41.14.1

All equipment supplied by the contractor under this contract shall stand guaranteed for a period of 24 months from the certified date of completion of work issued by the GE. Any defect occurring during this period due to bad workmanship, material or manufacturing defect shall be rectified or replaced by the contractor free of cost.
- 41.14.2

Insulator and insulator fittings shall be as specified in clause 19.6.1 to 19.6.4.
- 41.17.3

The three phase units should be connected in star/delta as specified and manufacturers instructions should be followed for installations. Generally delta connection for capacitor units is followed. All metallic enclosures shall be earthed through suitable earthing connections. Lightning protection through lightning arrestors shall be provided to outdoor units.
- 41.17.4

The certificates in respect of routine and type test as per IS-13340 or IS-13925 carried out at manufacturers works should be insisted upon. These tests pertain to sealing of the unit, insulation-resistance, capacity in farads and output in KVAR and high-voltage endurance for 2 seconds. The measurement of tangent of loss-angle, and efficacy of discharge device is also included in routine test as per IS-13340. In addition, the type tests on limited samples are also carried out which include all routine tests and following additional tests :
(a) Self-Heating Test
(b) Short-Circuit Discharge Test
(c) Thermal Stability Test
(d) Ageing Test
(e) Destruction Test.

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- 41.17.5

Even if the certificates for routine and type tests indicate satisfactory results, certain essential tests should be carried out in-situ after installation and before commissioning as specified. The insulation-resistance test is one such essential test. Measurement of capacitors capacity in farad and output in KVAR is another essential requirement which can be easily done at site. The KVAR output and capacitance can be either measured directly with suitable instruments or worked out from measurement of voltage, current and frequency.
- 41.17.6

Proper connections and functionality of all protection devices including fuses should be checked. The internal-wiring should be of flexible copper cables and duly bunched and clamped. The earthing of the installation should be ensured before commissioning into service.
- 41.17.7

The microprocessor based P.F. Relays are vital elements in APEC panels. The functioning of these relay should be got tested during commissioning by varying loading conditions which vary PF also. Generally push buttons for testing of relay-functioning on variation in PF are provided for checking satisfactory functioning of the relay. The claims of manufacturers for superiority of their products should not be accepted unless proved by testing. Manufacturers test certificates can not be considered adequate for this purpose.
- 41.17.8

The quality of contactors is another important aspect to be looked into. The contactors of reputed brands only should be accepted to avoid failures after a short period of use. These contractors operate very frequently to cut in & out off the individual units and hence these should be robust and rugged. In case of short-circuit faults, these contactors have to carry the fault currents also. Hence their rupturing capacity should be commensurate with the estimated fault level.
- 41.17.9

Any dust, grease or other contaminants left during the installation process should be removed before commissioning as these may cause flash over between two live parts at a later date. In fact this aspect should be checked during periodical inspections also.
- 41.17.10

In three phase systems, blowing off of fuses may result in unbalance amount three phases resulting in high voltage across some units. Hence APFC panels should have unbalance protection and also alarm on occurrence of unbalance beyond 10%.
- 41.17.11

GENERATING SET:
- 41.17.12

This shall be purchased from standard manufacturers as one unit completely aligned on common base plate and coupled through flexible coupling with all standard fittings, fitments and accessories. Contractors are advised to consult the manufacturer before quoting of tender. Any discrepancy noticed in Schedule ‘A’ by manufacturers shall be brought to the notice of department before receipt in of tender so that necessary amendments to tender can be made in this regard.
- 41.17.13

Tenderers shall submit the make, type and model of Diesel Engine alternator, panel along with list of makes and literature offered along with tender.
- 41.18

ALTERNATOR
- 41.18.1

The alternator shall be of capacity as specified in Schedule ‘A’ at 0.8 Power Factor AC 3 phase, 4 wire, 415 volts, 50 cycles of suitable RPM, slipring type, self excited, self ventilated, screen protected, drip proof type enclosure with two end shields and ball/ roller bearing Damper winding in pole faces statistically and dynamically balanced and as per IS-4722 or IS-2613. Alternator shall be designed and built to with standard tropical conditions and shall have suitable class insulation for alternator and exciter. Reliable sample static excitation system comprising of compounding transformer and rectifier shall be mounted on the alternator and shall be cooled by alternator circulating air only.

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- 41.18.2

It shall have voltage regulation within permissible limits.
- 41.19

DIESEL ENGINE
- 41.19.1

Diesel Engine shall be as specified in Schedule ‘A’ with all standard fittings and fitments. The engine shall be coupled to alternator through flexible coupling on a common base plate. The generating set shall be fitted on foundation with anti-vibrating pads, bolts, nuts, washers etc. The engine shall be connected to fuel storage tank with MS/ GI piping with flexible coupling to joints, including stopcock clamps etc. The piping shall be provided for inlet from tank to fuel filter. FIP and overflow from engine to tank and vice versa.
- 41.19.2

The control panel shall be cubical suitable for 3 phase as specified in Schedule ‘A’, 415 volts alternator fitted with flush type volts meter, ammeter frequency meter, power factor meter. The panel shall be front/back hinged operated and shall also have the engine mounting such as Lube oil indicator, high temperature indicator panel, contactor or MCCB of suitable capacity. The control panel shall be provided by suitable over load, under voltage, earth fault leakage relays and items mentioned in Schedule ‘A’ for protection of alternator and automatic shut off engine. The cost of these items shall deem to be included in the Schedule ‘A’.
- 41.20

INSTALLATION OF GENERATING SET
- 41.20.1

The engine and alternator shall be mounted on specially designed combination base plate having suitable arrangements to fix with requisite number of grouting bolts with nuts. Grouting of foundation bolts shall be as per manufacturer’s drawings including excavation and all civil works placing of diesel engine and alternator on base plate on concrete foundation. Leveling coupling through a flexible coupling while erecting and coupling the generating set equipment utmost care shall be taken regarding alignments so that there is no undue torque and pressure between the shaft of engine and alternator.
- 41.20.2

Provision of clamps, frames and brackets for installation of fuel supply tank including grouting etc. complete as required at site with all civil works.
- 41.20.3

Provision of a clamp to hold the exhaust pipe including grouting and connection, fixing of exhaust silencer with all civil works. Silencer pipe to be protected with asbestos rope.
- 41.20.4

Installation in position electric starting devices complete with cable connection, batteries and angle iron racks for placing batteries.
- 41.20.5

Installation/ erection of LT control panel including cable connection with proper thimbles/ lugs/ cable glands from alternator to panel.
- 41.20.6

All welding/ soldering/ brazing work required in connection with installation.
- 41.20.7

Installation/ erection of complete cooling system with all pipe lines as per the offer.
- 41.20.8

Unit rates quoted by the tenderer in Schedule ‘A’ for respective items shall be deemed to include the cost of provisions specified here in before in clause 2.13.1 to 2.13.7.
- 41.21

Testing: The generating set shall be tested for 12 hours continuous running load on the strip heater/ water load in the presence of GE, Engineer-in-Charge, rep of accepting officer and contractor. The test report shall be entered on the test Performa duly signed by all the above. The strip heater/ water load testing equipment shall be arranged by the contractor without any extra cost to Govt. The test shall be carried out as under: -

(a)

1/4 load test

- 1/2 hour.

(b)

1/2 load test

- 1/2 hour.

(c)

3/4 load test

- 2 hours.

(d)

Full load test

- 8 hours.

(e)

10% overload test

- 1 hour.

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- 41.22Cost of Fuel (DHPP) required for testing of DG Set shall be supplied by the contractor at his own arrangements.
- 41.23The initial filling of lube oil in the engine and anti-freezing mixture in system shall be provided by the contractor and shall deem to be included in quoted rates.
- 41.24Foundation shall be as per manufacturer’s design and to suit the site condition. Contractor’s rate shall deem to include the cost of design and construction of foundation to suit the site conditions and requirement as per design of foundation.
- 41.25**LIST OF MAKES:- REFER APPX “F”**
- 41.2Engine, Alternator and Control panel shall bear manufacturer plate. The contractor shall also supply purchase vouchers/ invoices, manufacturers test certificate in original along with warranty card and provide guarantee for one year for efficient working of Gen Set after testing from the date of completion.
- 41.26**TESTING ON COMPLETION:**
- 41.26.1The following tests shall be carried out to the entire satisfaction of Engineer-in-Charge :-

(a)Polarity Test.

(b)Insulation test – The test result shall not be lower than minimum specified in IS limit.

(c)Earth resistance test – This shall not exceed 1 Ohm.
- 41.27**Electric Metre:** - Electric metre shall be as described in schedule ‘A’ however, it shall be equipped with CMRI and software for auto generation electricity bills. Rate quoted by the contractor for schedule ‘A’ in electric metre in schedule ‘A’ shall deem to include the same and nothing extra shall be admissible on this account.
- 41.28**PRODUCTION OF PURCHASE VOUCHERS**
- 41.28.1The contractor shall produce to the GE, original purchase vouchers, the manufacturer’s test certificate and literature/ manual of following equipments (as applicable):-

(a)DG set

(d)CHS

(g)Transformer

(j)GI/MS EWR Pipes

(b)LT Panel

(e)Jointing Kit

(h)Submersible Pump

(i)MS EWR Pipes

(c)Cables

(f)AHU Plant

42. LOW VOLTAGE SWITCHED GEAR ASSEMBLIES DESIGN VERIFIED AS PER IS/IEC 61439-1 & 2, FOR 415 V, 50HZ, RATED FAULT LEVEL: 65KA/IS 3 PH+N+E WITH INTERNAL ARC CONTAINMENT

42.1. Scope

The scope of supply covers design, manufacture, testing and supply of L V PCC panel up to 1000V Panel must be design verified as per IS/IEC 61439 -1 & 2. Type Test certificates for conformance to IS/ IEC 61439-1 & 2, 65 kA, 1 Sec along with ACB mounted in the switchboards with aluminum Bus-bars as mandatory for qualification for switched boards must also conform to IEC 61641- Internal arc containment for fault level of 65 kA / 0.3 s & shall be suitable for seismic Zone III / IV including the type test conducted at ERDA / CPRI for seismic test.

42.2. Standards

The equipments covered under this specification shall conform to the latest revisions of relevant Indian and International Standards some of which are listed below.

IS 60947- 1 & 2

: General requirements of switchgear and control Gear for voltage not exceeding 1000/ 1200 V AC

IS 11353-1985

: Guide for uniform system of marking identification of Busbar and Terminals

IS 13703-1993

: Low voltage fuses

IS 2705-1992

: Current transformers

IS 694-1990

: PVC insulated cables for voltages including 1100 V with Copper and Aluminum conductor

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- IS 1248-1983 : Direct acting electrical indicating analog
- IS 8623-1993 : Low voltage switch gear & control gear assemblies
- IS 5082 : Electrolytic Aluminum Bus-bar, Trunking system, Rod tubes & sections for electrical purposes
- IS 13779-1999 : AC electric Meters / static Meters

42.3. Site Conditions

- 42.3.1 Altitude above main sea level - <1000M above sea level.
- 42.3.2 Maximum Ambient Temperature - 45 Deg.C
- 42.3.3 Design Ambient Temperature - 45 Deg.C
- 42.3.4 Temperature rise - As per IEC 61 439
- 42.3.5 Atmosphere - Controlled - relatively low dust (non conducting / non polluting
- 42.3.6 Relative Humidity Max - 95%
- 42.3.7 Relative Humidity Min - 10%
- 42.3.8 System requirements - 2000A, 415V, 3Ph+N+E, 50Hz, 65kA

42.4 **General Requirement and selection of Components:**

Shall supply with the technical Data Sheet, SLD, Feeder List. All SCPDs must be rated for a minimum fault clearing / withstand rating of 65 kA as per relevant standard. LT panels can be of double front (Except ACB feeders) and compartmentalized bolted construction. All ACB panels shall **be single tier** only for easy cable termination. ACB mounted in double tier is not acceptable due to deration. Cable termination space must be adequate to safely gland and terminate AL/Cu cables suitable for the given current rating with form 4B separation for ACB feeders and for MCCB feeders. All switchboards must comply with internal arc containment as per IEC 61641 for 65 kA/ 0.3s and certification must be with aluminum bus bars + SCPD for all the tests specified in the IEC 61439-1&2. Certificate copper bus bar shall not be acceptable for aluminum bus bar as the properties of both metals are different.

42.5. **Constructional features**

The switch board shall be metal clad sheet steel enclosed cubicle, fully compartmentalized, floor mounting type suitable for indoor installations. All the doors and covers shall be fully gasket to prevent any ingress of dust. The enclosure shall be for indoor type and completely dust, damp and vermin proof. Gasket used for all doors shall be of double lip type. The switch board cubicles shall have structural steel frame work enclosed on all sides and top by CRCA sheet steel of minimum thickness. The switchboard shall have integral base frame or provide 100mm ISMC base channel. Removable undrilled gland plates shall be fitted for bottom cable entry. All fixing bolts, screws etc. appearing on the panel shall be so arranged as to present a neat appearance. Door hinges shall be concealed type.

Front access shall be available to all components in each cubicle which require adjustment, maintenance or replacement

42.6. **Bus-bars and insulating materials**

The bus-bars connections and bus taps to individual feeders shall be by means of electrolyte aluminum bus bar. Bus bars shall be colour coded for ready identification of phases. The Bus bar sizes shall be determined taking into consideration the continuous rating without exceeding the final temperature as permitted by IS/IEC 61439 when carrying rated current; and must be suitable for a fault level of 65 kA (1 sec).

Auxiliary bus-bars each of minimum 25 sqmm thick electrolytic tough pitch copper shall be provided for following applications. Exact number of bus-bars shall depend on various controls, metering and auxiliary power distribution requirements.

Panel / Motor space heater supply - 230 V AC (2 wires).

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AC/ DC control supply for breaker tripping closing and indication circuits
Control supply for breaker spring charging motors, closing coil & indication
Control supply for motor starter control circuits
Neutral bus bar shall be provided in a separate compartment other than main bus-bar compartment

The bus-bars shall be supported at regular intervals using FRP, SMC or DMC insulators. It should have very high comparative tracking index (CTI>600 as per IS 2824- Type test certificate to be submitted). Only blue passivated high tensile strength steel bolts, nuts & washers, etc. shall be used for all bus-bar joints & supports. The bus-bars shall be colour coded using identifying colour rings at regular interval. Red, Yellow & blue colour shall be used for phases & black for neutral. The earth bus-bar shall be identified with Green colour rings at regular intervals. Minimum clearance between phases / live parts shall be 20mm and phases / live /neutral to ground shall be 19mm except on the equipment terminals as per standard.

Spare contacts shall be wired up to terminal block. Auxiliary contacts in the 'trip' circuit shall close before the breaker main contacts close and shall open after the main contacts have opened. All other contacts shall operate simultaneously with the main contacts.

42.7. Earthing :

Earthing - Two earth terminals shall be provided on each side of switchboard. An earth bar size must be at least 50 x 10 mm aluminum suitable for 30 KA for 1 Sec shall be provided. The earth bar shall be electrically continuous and shall run the full extent of each board. This earth bar shall be on the side as the cable entry. Each unit shall be constructed to ensure satisfactory electrical continuity between all metal parts not intended to be alive and earth terminals of the unit. Suitable holes with bolts and nuts shall be provided at each end of earth bar of switchgear for connection to a main earthing grid. The earth bar shall be accessible in each cable entering compartment either directly or through a branch extension to ground the cable armour and shields. Suitable holes shall be drilled and hardware for connection provided through the earth bus.

42.8 Internal Wiring

Minimum size of conductor for power circuits shall be 2.5 sq mm copper or 6 sq mm aluminum. All control wiring except CT secondary wiring shall be carried out with minimum 1.0 sq mm copper conductor. CT secondary wiring shall be carried out with 1.5 / 2.0 sq mm copper conductor. All wiring shall be securely fixed and neatly arranged to enable easy tracing of wires. All terminal blocks and wires shall be tagged for identification in accordance with IS 11353. All wiring for external connections shall be brought out to the individual terminals on a readily accessible. Terminal block; all terminal block shall be shrouded or provided with transparent covers. Clamp type control terminal blocks shall be provided for outgoing control cables. Minimum 10% spare terminals shall be provided for future use. Control terminal block shall be separated from power terminal blocks by means of an insulating barrier.

42.9. Cable Termination and Marshalling Box:

Cable entry to switchgear shall be from bottom of the switchgear or as specified in the technical particulars. Ample space shall be provided in cable compartment to accommodate XLPE insulated aluminum conductor cable as specified in the technical particulars. Removable undrilled gland plate shall be provided for termination of cables.

42.10. Air Circuit Breaker:

ACB shall be air break, draw out type, modular in construction and conforming to IEC 947 / IS: 13947 (Part-2), VDE 0660 Part 101, IEC 68 Part 2-30 (climate – proof). The ACB shall be rated at operational voltage of 440V, 50 Hz supply system and 50⁰ C ambient temperature (without deration). The ACB shall have $I_{cu} = I_{cs} = I_{cw} = 100\%$ at 1 second. The circuit breaker shall be suitable for isolation according to IEC 60947-2. All ACB shall be suitable for reverse fed without compromising on the performance. The control panel of ACB alongwith its operating device shall project through cutout in the door. The door cutout shall be provided with suitable gasket for IP40 protection. The ACB (draw out) shall provide as a standard feature the following mechanical or electrical indication on the front panel: -

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Contact position indicator (ON / OFF)

Stored energy status indicator.

Connected / Test / Disconnected position. (DO version)

Trip indication on fault.

OK indicator (Mechanical) on the front panel of the circuit breaker when the trip or OFF conditions are cleared and

The circuit breaker can be closed on "ON" command (Manual or Electrical). The ACB shall be provided with spare minimum 2 numbers NO and 2 numbers NC auxiliary contacts, which shall be wired and available exclusively for external use. It shall be possible to add 2 nos auxiliary contacts if required.

The manual charging handle and mechanical close / open push button shall be in the front and shall be integral part of ACB. Mechanical contact wear indicator shall be mounted directly on the moving contacts to indicate the degree of erosion of the contacts. Also the contacts if eroded shall be reparable without changing the breaker (either at site or at factory).

Access to the accessory of the circuit breaker (like motor, shunt etc) shall be prevented with the ACB in ON condition. The circuit breaker shall have 3 distinct and separate positions on the draw out frame. These namely connected position, test position and disconnected position. It shall be possible to padlock the draw out ACB in the connected, test and disconnected position of the guide frame for operator safety. Also withdrawal portion of the circuit breaker shall be removable from the guide frame only when it is ensured that breaker is in OFF condition. For safety purpose it shall be possible to pad lock the shutters in closed positions using padlocks, for draw out ACB.

The ACB shall be either **manually or electrically operated** (motorized) as specified. Stored energy mechanism shall be provided in all cases to ensure independent closing of the breaker. Electrical operating mechanisms shall be suitable for remote operation. ACB shall be provided with mechanical anti pumping feature. The ACB shall have trip free mechanism which prevents the operating mechanism from interfering with the tripping or opening action. Castell key lock if asked for shall be provided on the ACB itself. It should be possible to remove castell key only when breaker is in OFF condition. All the vital accessories like shunt, Motor and under voltage coils shall be accessible from the front and should not need removing of the breaker from its panel for the replacement.

The ACB shall be equipped with an integral self-powered microprocessor based current release, which works on true R.M.S values for ensuring accurate protection. The microprocessor based release should have integral LCD display of phase and neutral currents and also the maximum loaded phase. The display should be visible with a display of phase and neutral currents and also the maximum loaded phase. The display should be visible with a minimum 20% loading phase currents. Henceforth in this documents the release shall be referred to as the overcurrent release. The protection should meet the EMI/ EMC requirement as per latest standard.

Also the breaker shall have integral test facility to test healthiness of release and the trip circuitry shall be provided the overcurrent release. Trip indicators shall be provided display the exact nature of fault (i.e. O/L, S/C, and caused tripping of circuit breakers. The breaker will have to be necessarily with mechanical re-closing. The trip indication shall need no external power supply for display.

The setting range of protection release shall be as follows:-

Overload protection shall have adjustable setting from 40% to 100 % of the circuit breaker nominal current variation of setting shall be in steps of 5 % of the nominal current.

Short time delayed short circuit protection will have adjustable current setting from 125 % to 1200 % of the Nominal current rating of the circuit breaker and adjustable time delay setting for fault discrimination from short circuit protection shall have standard phase failure protections for motor application with the delay time. Instantaneous short circuit protection shall be either fixed type with fault current pick up $> 20^*$ or settable type range of setting of 150 % - 1200 % of the Nominal current of the circuit breaker.

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ACB shall be tested as per IEC 60947-2. All incoming ACBs shall be M/ EDO type as indicated. ACBs shall be rate degrees ambient temperature. No derating of breaker is allowed. ACBs shall have integral LSING protection through. Processor based release with display showing current parameters. The release shall be self-powered and if required power supply shall be provided.

ACB must be provided with Rogowski type CTs throughout the range of ACBs. These CTs should not saturate currents. Breaker release must have thermal memory as a feature.

For 4 pole ACBs, neutral, CT shall be integral. For 3 pole ACBs, neutral protection shall be provided with external of OEM. 4th pole of the ACB shall be 100%. Half size of phase for neutral will not be acceptable.

Breaker release must have 12 t characteristics in addition to standard characteristics to achieve discrimination with relay of medium voltage switchgear. ACB shall have ready to close interlock for safe operation of breaker. ACB minimum 2 NO + 2NC auxiliary contact. Earth fault protection provided by release should be in absolute value in achieve minimum setting of earth fault. ACB terminations must not be rotatable. They must be fixed either horizontal or vertical factory fitted. The ACB must have mechanical contact wear indication integrated with the contact system extrapolated data for contact wear on the release is not acceptable.

Breaker shall have integral MODBUS RTU communication port. The breaker shall communicate 5 trip history & on MODBUS RTU with date & time stamping. The release shall have LCD alphanumeric display.

42.11. MCCB

Moulded case circuit Breakers (MCCB) shall comply with IEC 60947-1 and 60947-2 standards. They shall be of cat with a rated service breaking capacity (Ics) min of 50 % to the ultimate breaking capacity (Icu) on all the operation range for the ratings. MCCB shall have a rated operational voltage of 415 V AC (50/60 Hz), with rated insulation of 690 V AC (50 /60 Hz), & be suitable for isolation, as defined by IEC 60947-1.

The MCCB shall be rated at operational voltage of 415 V, 50 /60 Hz supply system, and 40°C ambient temperature with deration. In case of deration due to operating temperature the same should be indicated and should be done in line with required ratings of MCCB. MCCBs shall be available in fixed or plug in / versions as well as in 3 pole and 4 pole per schedule. For plug in / withdrawable versions, a safety trip shall provide advanced opening to prevent connections / disconnection of a closed circuit breaker. MCCBs shall be designed for both vertical and horizontal mounting, without adverse effect on electrical performance. It shall be possible to supply power either from the upstream or downstream. MCCBs shall be thermomagnetic upto 160A and above 200A electronic trip units to be used. Production site organized shall be certified to comply with ISO 9002 and ISO 14001 standards.

All poles shall operate simultaneously for circuit breaker opening, closing the tripping.

MCCBs shall be actuated by a toggle or handle that clearly indicates the three positions: ON, OFF and TRIPPED.

In order to ensure suitability for isolation complying with IEC 60947-2 ,7-27: the operating mechanism shall be designed such that the toggle or handle can only in OFF position (O) if the power contacts are all actually separated, in OFF position, the toggle or handle shall indicate the isolation position. Isolation shall be provided by a double break on the circuit.

MCCBs shall be able to receive a device for locking in the “isolated” position, with padlock.

MCCBs shall be equipped with a “push to trip” button in front to test operation and the opening of the poles.

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MCCB rating, “push to trip” button, performances and contact positions indication must be clearly visible and accessible from the front, through the front panel or the door of the switchboard. Current limitation, discrimination, durability MCCBs shall be equipped with a thermo-magnet or electronic trip unit for protection. MCCBs, the current ratings of which are identical with the ratings of their trip units shall ensure discrimination for any fault current up to at least 25 kA rms. The electrical durability of MCCBs, as defined by IEC 60947-2 standard.

The operating mechanism shall be of the stored energy type. It shall be possible to equip MCCBs with as motor mechanism for electrically controlled operation. An “auto / manual” switch in front shall, when set to the “manual” positions, lock out electrical control; when set to “auto”, lock out the manual control. It shall also be possible to seal the access to the “auto” control. Closing shall take place in less than 80 ms and tripping in less than 60 ms.

The mechanism can be locked in OFF position using as many as three padlocks with shank diameter max 4.3 mm. The ON push button should be available with sealing cover. The mechanism shall be furnished with an electromechanical operation counter that may be installed in the drive cover or fixed beyond the circuit breaker space on panel door.

In addition of a motor mechanism or a rotary handle shall in no way affect circuit breaker characteristics:

Only three stable tripping mechanism positions (ON, OFF and TRIPPED) shall be possible with the motor mechanism, suitability for isolation shall be provided by positive contact indication (ON and OFF) in front of the motor mechanism module.

MCCBs shall be designed to enable safe on site installation of auxiliaries such as voltage releases (shunt and under voltage releases) and indication switches as follows.

- They shall be separated from power circuits,
- All electrical auxiliaries shall be of the snap in type and fitted with terminal blocks,
- Auxiliary function and terminals shall be permanently engraved on the case of the circuit breaker and the auxiliary itself,
- In addition of auxiliaries shall not increase the volume of the circuit breaker.
- The accessories should include Auxiliary switch, signalling switch and relative switch.
- The addition of a motor mechanism module or a rotary handle, etc., shall not mask or block device settings.

MCCBs with ratings upto 160 A shall be equipped with thermo magnetic trip units in order to ensure the protection against overload and short circuit. The ratings above 160 A shall be equipped with electronic trip unit which should be interchangeable in line with the requirement of the application. In order to make MCCB communicable same can be achieved through PLC logic or in built communication port or through MFM as per OEM. MCCB shall also be SCADA compatible (on RS – 485/ Modbus RTU).

Electronic and thermal magnetic trip units be adjustable it shall be possible to fit lead seals to prevent unauthorized access to the settings. Electronic trip units shall comply with appendix F of IEC 60947-2 standard (measurement of rms current values, electromagnetic compatibility, etc.). Protection settings shall apply to all circuit breaker poles & the trip units shall not augment overall circuit breaker volume.

42.11.1 Thermal magnetic trip units (up to 160 A)

- Adjustable thermal protection from 0.8 to 1.0 times the current ratings.
- Adjustable magnetic protection for current setting values from 10 to 15 times of rated current.
- It shall be possible to ensure neutral protection. The tripping threshold shall be equal to that of the phases, or to a reduced value (generally half of that of the phases).

PARTICULAR SPECIFICATION (CONTD...)**42.11.2 Electronic trip Units (above 160 A)**

The ETU shall be modular offering the flexibility of replacement at site as per requirement of the load characteristics:

Long time protection (LT), selectable I_r threshold setting from 40 % to 100% of the trip unit rating, Short time protection (ST) (I_t threshold shall be adjustable from 4 to 8 times the thermal setting I_r).

Load monitoring function

The following monitoring functions shall be integral parts of electronic trips units L
LED for load indication, indicating (Green indication) 70 % , 80 % , 110%, of I_r , and trip condition with (Red indication) & a test connector shall be installed for checks on electronic and tripping mechanism operation using an external device.

Thermal memory

In the event of repeated overloads, the electronic trip unit shall optimise protection of cables and downstream devices by memorizing temperature variations

42.11.3 Accessories**42.11.3.1 Internal Accessories**

Different types of auxiliaries shall be available

Auxiliary Switch

Signaling Switch

Lading Contact.

Shunt Trip- continuous rated, with wide band site selectable voltage (24-48V AC/DC or 110V DC or 230-500V AC or 230 V DC)

Under voltage Release- continuous rated, with wide band site selectable voltage (24-48V AC/DC or 110V DC or 230-500V AC or 230V DC)

Mounting electrical auxiliaries should not affect the performance of the breaker.

Each auxiliary shall be provided with a proper packaging and instruction notice.

42.11.3.2 Mounting and IP

The electrical auxiliaries shall be field installable.

Electrical auxiliaries shall be easily and rapidly snapped inside the breaker without any tool, behind the auxiliary cover

Lead-wires shall not affect the mounting of the breakers side by side.

When auxiliary cover is opened.

Auxiliaries are held in place by themselves,

When auxiliaries are mounted, protection against electric shock must be IP20 or IP30.

42.11.4 External accessories

Mounting accessory on the breaker shall not affect its performances, Accessories shall be field installable.

Each accessory shall be provided with a proper packaging and instruction notice.

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42.11.4.1 Phase-Barriers.

Phase barriers shall be mounted without any tool and hold in place firmly. They mounted between phases of a breaker and between breakers mounted side by side. The phase barriers shall be made of an isolating material and should be flexible.

42.11.4.2 Terminal Shield (Optional if Required).

Terminal shields shall be mounted without any tool and hold in place of firmly. They shall be made of an isolating material. There shall no requirement of special tool to replace the terminal covers.

42.11.5.3 Extended rotary handle.

The rotary handle mounted on the breaker shall meet the IEC 60947-2 requirement and will not affect the performance of the breaker, the rotary handle shall meet IEC 60447. When the breaker is mounted with a rotary handle. The isolation function remains and fulfils IEC 60947-2.

Installation The mounting of the rotary handle should be done without removing the breaker if mounted on its back plate. The rotary handle shall be mounted easily on 3 and 4 pole breakers. The rotary handle shall have pad locking facility in OFF position to take care of the lock outs. The rotary handle shall also provide door defeat facility to open the door for emergency requirement in ON position.

Operation, the rotary handle shall indicate the position of the breaker: OFF, TRIPPED or ON.

42.11.5.4 Plug-in Mounting (Operational if Required)

When the breaker is mounted on a plug-in, the system remains and fulfils IEC 60947-2, Installation. The device shall include the complete accessories for assembling the circuit breaker in plug-in design.

Interlocking connecting rod shall be provided ensuring automatic switching off the circuit breaker for handling - inserting and removal. The plug in device and circuit breaker shall be provided with a keying set, which prevents inserting any other circuit breaker into the plug-in device. The plug in device shall be provided with position signaling switch.

Mechanical Interlocking

The mechanical interlocking facility shall have following options: -
Front mounting mechanical interlocking and parallel switching
Bowden wire interlock (optional).

Motorized drive (If required/if MCCB Motorized operation required)

The motorized drive with stored energy arrangement shall be available for remote operation requirements

The motorized drive shall have following feature:

Auto/ Manual selection switch with locking facility ON/OFF indication contacts, spring charging indication.

42.12 Energy monitoring solution and Multi-function meters (MFM)-

MFM shall have invertible types LCD display only.

Metering accuracy of the meter shall be class 1.0.

MFM shall have RS 485 Port with Modbus RTU communication, the meter shall communicate status of the ACB/MCCB wherever specified over RS 485 Port with Modbus RTU communication.

MFM minimum 2DI/2DO shall be provided as default with meter.

The meter shall provide current, voltage, active power, apparent power, power factor, active energy, apparent energy.

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42.13 Painting and finishing.

All metal works and metal parts of this switchboards shall undergo a process of degreasing, pickling in acid, cold rinsing, phosphatising, passivating and then sprayed with a high corrosion resistant primer. The finishing treatment shall be by application of synthetic light grey shade.

42.14. Name Plates & Label.

(a) One name plate giving designation of the switchboard shall be affixed prominently on top. Details of designation shall be specified.

(b) Labels giving following shall be affixed on each feeder panel.

- (i) Feeder No as per feeder list.
- (ii) Equipment tag Number and description.
- (iii) Rating (KW/KVA/AMP)

(c) All components whether mounted inside the switchboard or on the door shall be permanently and clearly labeled with reference number and / or letter of their functions.

(d) Labels for feeder panel designation shall be fixed on the front side of respective panels with Special rivet made of nylon. The labels shall be identical size to permit interchange

42.15. Testing and inspection.

The following tests shall be carried out at manufacturer's works and witnessed by Buyer:

All routine tests specified in IS/IEC 61439 and witnessed by Buyer.

Vendor shall demonstrate their capability and conformance to the IS/ IEC61439 with all the type test reports comprising of the SCPD and aluminum bus bars for all the ratings specified in the SLD/ enquiry.

Operation all meters.

Secondary wiring continuity test with a low voltage (6 volts) tester.

Insulation test with 1000 volts megger, before and after H.V test.

H.V test at 2.5 kV for 1 mte.

Earth continuity test with a low Voltage (6 Volts) tester.

Simulating control circuits for various operations of feeders.

C.T Polarity Test.

42.16 Approved makes for LV switchboards subject to types test certification:

The total design, Engineering and manufacturing of the LT Panel shall be controlled by OEM to ensure its quality and reliability. OEM shall submit the type test documents during the drawing approval of the Panel. Also a bar code shall be provided by the OEM on all the panels which will fetch all the GA drawings, components and certificates of the components fitted in the panel

Make of panel: ABB, Siemens, Schneider, L&T, Legrand.

Make of ACB: ABB (E-Max), Siemens (3WT), L&T (U-Power), Legrand (DMX3), Schneider (MVS),

Make of MCCB: ABB (T-Make), Siemens (3VT), L&T (D-Sine), Legrand (DPX), Schneider (CVS)

PARTICULAR SPECIFICATION (CONTD...)**43 FIRING RANGE****43.1 BAFFLE WALLS**

43.1.1 Baffle wall shall be constructed as per the detail given in the drawing and as per following brief specifications

43.1.2 All RCC work shall be in M-35 grade design mix cement concrete as specified if not mentioned in drawings.

43.1.3 Reinforcement steel shall be as specified in relevant clauses of these Particular specifications and quality of steel in relevant clause here-in before and shall be provided all as shown on drawings.

43.1.4 Form work shall be of steel plate, except for the portion lined with FICS Panel, which will be of marine ply wood. Centering and propping will be with steel spans and props for heavy beams and slabs built up steel cribs designed to take all loads including the erection loads will be used for cantering.

43.1.5 FICS panels (Fibre Impregnated in concrete slurry) lining will be provided on firing face of the walls as indicated on drawings. All wooden components (if shown on drawings) of lining will be of second class hard wood (Sal/Halda/Hollong/Hollock) planned, finished and jointed as indicated in drawings seasoning moisture content and permissible defects will be as specified in para 7.5 to 7.7 of MES SSR Part-1. All portion of timber used in lining members shall be given two coats of hot tar. Screwing wherever indicated in drawings shall be as specified in para 7.11 and 7.13 of MES SSR Part-1. Bolts and nuts black (B) conforming to IS-1363,1984. All steel surfaces will be treated with two coats of bituminous paint over a coat of red oxide primer.

43.1.6 For fixing of the lining, required number of holes with sleeve pipes (32 mm MS medium grade pipe) will be provided and left in the RCC wall exactly at designed places to insert the bolts. The FICS panels will have the holes at fixed places for bolting. It will be ensured that sleeve pipes (which will be of 32 mm bore MS medium Gde pipe) are placed at exact locations and these are not disturbed during concreting operations. After removal of form work, sleeve pipes shall be cut and flushed smooth with the faces of the wall.

43.1.7 30 mm thick plaster, 20 mm thick and 5 mm thick plaster or any other thickness wherever indicated on drg shall be as specified.

43.1.8 The surface of baffle walls to be lined with FICS panels will have shutter finished exposed RCC surface and no plastering is required to be done on these portion. All other exposed RCC surfaces above ground level (except the portion where 20mm /30mm thick plastering is specifically indicated) shall be plastered 5 mm thick in composition 1:3 after close hacking of the surface to ensure keying and bond and finished fair.

43.1.9 All exposed concrete/plastered surfaces shall be finished with two coats of cements base paint in camouflage pattern over a priming coat. Pattern and the shade will be approved by Garrison Engineer in consultation with user formation.

43.2 SIDE WALLS

43.2.1 Side walls (SW) shall be constructed as per the detail given in the drawing and as per following brief specifications:-

43.2.2 All RCC work shall be in M-35 grade design mix cement concrete as specified if not mentioned in drawings.

43.3.3 Reinforcement steel shall be as specified in relevant clauses of these Particular specifications and quality of steel in relevant clause here-in before and shall be provided all as shown on drawings.

43.3.4 Form work shall be of steel plate and centering work shall be of steel props.

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43.3.5 All exposed surfaces of side walls shall be plastered 5 mm thick in CM (1:3) after close hacking of the surface to ensure keying and bond and finished fair.

43.3.6 All exposed plastered surfaces shall be finished with two coats of cement base paint in camouflage pattern over a coat of primer. Pattern and shade shall be decided by Garrison Engineer after consultation with the user formation.

43.4 GROUND BARRIERS

43.4.1 Ground Barriers (GB) shall be constructed as per the detail given in the drawing and as per following brief specifications:-

43.4.2 PCC in foundation shall be PCC (1:2:4) Type B -1

43.4.3 Earth filling shall be done to the profile indicated on the drawings and as specified in relevant clause here-in before.

43.4.4 Aggregate for filling in the boxes shall be 20 mm graded crushed stone aggregate free from silt, clay and other deleterious materials. It shall be closely packed in the box. Box shall be embedded in wet concrete to the depth indicated in the drawing. Soil around PCC block and around box will be compacted hard to ensure proper securing.

43.4.5 All hidden and exposed surfaces of wood members will be treated with two coats of hot tar.

43.4.6 All exposed steel surfaces shall be finished with two coats of synthetic enamel paint over a coat of red oxide primer. Pattern and shade shall be decided by Garrison Engineer after consultation with the user formation.

43.5 TARGET GALLERY

43.5.1 Target gallery shall be constructed as per the detail given in the drawing and as per following brief specifications:-

43.5.2 All RCC work shall be in M-35 grade design mix cement concrete as specified if not shown on drawings.

43.5.3 Reinforcement steel shall be as specified in relevant clauses and quality of steel in relevant clauses here-in-before and shall be provided all as shown on drawings.

43.5.4 Form work shall be of steel plate and centering work shall be of steel props.

43.5.5 Treads of the step will be finished with 20-22 mm thick chequered finish cement concrete tills laid over 15 mm thick bed of cement mortar 1:3 over RCC surface. Risers will be finished with 10 mm thick cement plaster in cement mortar 1:4 joints of the tiles with cement slurry and final surface will be cleaned and finished.

43.5.6 All internal surfaces of sump will be finished with 10 mm thick plaster in cement mortar 1:3 using water proofing compound and even and smooth using extra cement.

43.5.7 Earth retaining side of all RCC walls be plastered with 10 mm thick cement plaster in cement mortar 1:3 using water proofing compound and finished even and smooth.

43.5.8 All other exposed surfaces of RCC members shall be rendered with 5 mm thick cement plaster in CM 1:4 and finished smooth without using extra cement. Two coats of cement base paint over a coat of primer will be provided on all exposed plastered surfaces.

43.5.9 Earth filling will be as specified in particular specification clauses here-in-before.

PARTICULAR SPECIFICATION (CONTD...)**43.6 FIRING POINT AND FIRING TRENCH**

43.6.1 Firing points and firing trenches shall be constructed as per the details indicated on the drawings and as per following brief specifications:-

43.6.2 All RCC work shall be in M-35 grade design mix cement concrete as specified if not shown on drawings.

43.6.3 Reinforcement steel shall be as specified in relevant clauses of these Particular specifications and quality of steel in relevant clause here-in-before and shall be provided all as shown on drawings.

43.6.4 Form work shall be of steel plate and centering work shall be of steel props.

43.6.5 Treads of the step will be finished with 20-22 mm thick chequered finish cement concrete tiles laid over 15 mm thick bed of cement mortar 1:3 over RCC surface. Risers will be finished with 10 mm thick cement plaster in cement mortar 1:4 joints of the tiles with cement slurry and final surface will be cleaned and finished.

43.6.6 Earth filling will be as specified in relevant clause here-in-before.

43.6.7 Finished wood work shall be given two coats of bituminous paint over a coat of primer.

43.6.8 Finished plastered surface will be given two coats of cement base paint over a coat of primer.

43.6.9 Hume pipe where shown on drawings shall be 300mm dia class NP2 work including all connected items upto area drainage

43.7 CANOPY

43.7.1 Canopy shall be constructed as per the details indicated on the drawings and as per following brief specifications:-

43.7.2 All RCC work shall be in M-35 grade design mix cement concrete as specified if not shown on drawings.

43.7.3 Reinforcement steel shall be as specified in relevant clauses of these Particular specifications and quality of steel in relevant clause here-in-before and shall be provided all as shown on drawings.

43.7.4 Structural steel shall be as specified in relevant clauses of these Particular specifications and quality of steel in relevant clause here-in- before and shall be provided all as shown on drawings.

43.7.5 Form work shall be of steel plate and centering work shall be of steel props.

43.7.7 EPE FOAM: - Foam shall be of thickness as indicated in drawing and shall be as per following specifications: -

43.7.7.1 Density not less than 40kg/cum

43.7.7.2 Compressive Strength at 10% shall be 0.15kg/Sqm

43.7.7.3 Water absorption after 96 hrs shall be 0.25

43.7.7.4 Capable in temperature range shall be (—) 50 degree to (+) 70 degree.

PARTICULAR SPECIFICATION (CONTD...)

43.7.8 PLYWOOD: - Plywood shall be of thickness as indicated in drawings and shall be BWR.

43.7.9 MS plate and ballistic rubber shall be of thickness as indicated in drawings

43.7.10 All steel surfaces shall be finished with two coats of synthetic enamel paint over a coat of red oxide primer. Pattern and shade shall be decided by Garrison Engineer after consultation with the user formation.

43.8 NON-CIRCULAR VIRGIN SYNTHETIC FIBRE PLASTERING WORK IN STOP BUTT AND BAFFLE WALLS

43.8.1 Cement plaster mix with non-circular virgin synthetic fibre shall be of thickness as indicated on the drawings. The locations where non-circular virgin synthetic fibre mixed cement plaster is to be provided is also indicated on front elevations of the stop butt and the baffle walls.

43.8.2 Before application of plaster the surface of RCC shall will be prepared properly. Projecting burrs of mortar formed due to gaps of joints in shuttering shall be remove oil, grease etc. The concrete surface shall be pock marked at a spacing of 50 mm C/C with pointed tool. Pocks being made of 3mm to 5 mm depth. The pocked surface shall be cleaning and washed down. The cleaned surface shall be well wetted before application of plaster.

43.8.3 Non-circular virgin synthetic fibre shall be mixed in mortar as per manufacturer's instructions.

43.9 FICS PANEL (FIBRE IMPREGNATED IN CONCRETE SLURRY)

43.9.1 The bullet resistant FICS panels of required thickness and of required size (with tolerance in thickness as per TBRL Baffle Ranges Manual 2020, if any) will be procured only from manufacturers approved by Govt of India/E-in-C's branch based on the TBRL Ballistics Evaluation/test report from TBRL, Sector 30, Chandigarh-160030, meeting the specifications contained in Baffle Ranges Manual, 2020 and the same will be approved by Accepting Officer.

43.8.2 The bullet resistant FICS panels (% of steel fibre not less than 8% uniformly mixed) shall be fixed as shown on drawings and will be tested as per TBRL Baffle Ranges Manual, 2020. If not shown in drawings, the FICS panels shall uniformly be fixed with chemical anchor bolts M 24 or above with TCM 400 PE or equivalent chemical mortar cartridges as per drawing(s) attached.

43.8.3 The panel dimensions shall be within ± 5 mm tolerance. Any gaps between panels shall be filled with using epoxy in stop butt. The samples of ballistic testing shall be randomly selected by a local board of officers of user unit for testing at TBRL Chandigarh. Two pieces of FICS panels will be tested as per NIJ standards against 7.62 ball and 5.56 ammunition i.e. 5 shots on each test panels {Total 30 shots = 15 (7.62 ball) + 15 (5.56 INSAS)}. The cost of packing, transportation charges & testing including cost of 02 No. of FICS panels etc shall be deemed included in the rate of lumpsum quoted under BOQ and shall be borne by the contractor.

43.8.9 The test report obtained from the testing lab shall finally be got vetted/approved from the Design section of the office of Accepting Officer, before incorporation of the material in the work.

43.9. MISC ITEMS OF WORKS: - If not covered under relevant clauses here-in-before and shown on drawings, these shall be provided all as per relevant drawings including notes thereof, shown on relevant drawings, specifications and as per SSR. Any item for which specification is not given in these tender documents, the same shall be followed from specifications all as per standard engineering practice or if not there then from SSR or relevant IS.

Signature of Contractor

Dated : _____

For Accepting Officer

PARTICULAR SPECIFICATION (CONTD...)

APPENDIX ‘A’

CEMENT SUPPLY & ACCEPTANCE REGISTER

1. CA No and Name of Work
2. Control No*
3. Name of manufacturer/Brand Name/Gde of Cement
(a) Manufacture ____ (b) Brand ____ (c) Grade
4. Qty of cement & Lot No/Week No (in Bags) :Qty ____ (b) Lot No/Week No ____
5. Manufacturer’s test certificate No _____
6. Random Test Details (a) Physical test report from ____ vide their letter No ____
(Name of approved Lab by GE/Engg College)
(a) Chemical test report from ____ vide their letter No ____ (Name of approved Lab by GE /Engg College)
7. Details of physical & chemical properties

	Physical Requirements (As per IS 4031)								Chemical requirements (As per IS 4032)									
Chlorides	Specific Surface Area (M²/Kg)	Soundness by Le Chatelier	Soundness by Auto Clave	Initial Setting Time (Minutes)	Final Setting Time (Minutes)	Compressive Strength (MPa)			Temperature during testing °C	Standard consistency (%)	Lime Saturation Factor (Ratio)	Aclumina Iron Ratio (Ratio)	Insoluble Residue (%)	Magnesium (%)	Sulphuric Anhydride (%)	Loss on Ignition (%)	Alkalies (%)	Chlorides (%)
						03 days	07 days	28 days										
As per relevant IS																		
As per manufacturer's test certificates																		
As per independent test																		

Remarks with SignatureAccepted/Rejected

ContractorJunior EngineerEngineer-in-ChargeGarrison Engineer

Remarks of BOO/Inspecting Officer/CWE

*To be allotted serially by GE consignment wise

PARTICULAR SPECIFICATION (CONTD...)

Appendix `B`

STEEL SUPPLY AND ACCEPTANCE REGISTER

1.

CA No and Name of Work

:
2.

Contract No

:
3.

Name of Manufacturer's TC No

:
4.

Manufacturer

:
5.

Random Test details
- (a)

Physical test report from

vide letter No

(Name of NABL approved Lab/Govt, Engg College)
- (b)

Chemical test report from

vide letter No

(Name of NABL approved Lab/Govt, Engg College)
6.

Type of steel, dia and qty

:
- (a)

Type

:

TMT/CRS
- (b)

Dia

:

mm
- (c)

Acual wt

:

MT
- (d)

Conversion wt

:

MT

	Chemical Test							Mechanical Test						
	Carbon %	Sulphur %	Phosphorous%	Sulphur+ Phosphorous%	Manganese%	Silicon%	Corrosion Resistant element	Wt per meter	Yield Stress (N/mm2)	Tensile Strength (N/mm2)	Percent elongation (Min 18%)	Bend test	Rebend test	Remarks
As per IS 1786-2008														
As per manufacturer's test certificates														
As per independent test														

Remarks with Signature

Accepted/Rejected

Contractor

Junior Engineer

Engineer-in-Charge

Garrison Engineer

Remarks of BOO/Inspecting Officer/CWE

Appendix ‘C’

FREQUENCY FOR NORMAL MASS, MECHANICAL TEST AND CHEMICAL TEST OF STEEL

SRL NO	NOMINAL SIZE	QUANTITY
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STEEL FOR CONCRETE

1	Bars size less than 10 mm	1 Sample (3 specimens) for each test for every 25 tonnes or part thereof.
2	Bar size 10 mm to16 mm	1 Sample (3 specimens) for each test for every 35 tonnes or part thereof.
3	Bar size over 16 mm	1 Sample (3 specimens) for each test for every 45 tonnes or part thereof.

STRUCTURAL STEEL

4	Tensile Test	1 test for every 25 tonnes of steel or part thereof.
5	Bend Test	1 test for every 25 tonnes of steel or part thereof.

NOTES:-

1.

For various tests, acceptance criteria, tolerance etc. refer to relevant clauses here in before and relevant BIS codes.
2.

Testing by the GE as per above frequency is mandatory for steel procured from all producers before payment is released to the Contractor or steel is incorporated in the work.
3.

The GE may also increase frequency and number of samples/tests for his satisfaction. The cost of these additional tests shall be governed as per condition 10(A) of IAFW- 2249. However, cost of samples, transportation and other overheads shall be borne by the contractor irrespective of test results.

PARTICULAR SPECIFICATION (CONTD...)

Appendix D'

FORMATFORQUALITYCONTROLPLAN

(This format shall form part of contract agreement)
(To be submitted by contractor within 30 days of commencement of contractor)

PART-I

- 1. Contract agreement Reference No. :
- 2. CPM network prepared and appointed by GE :
- 3. Resource scheduling done based on CPM :
- 4. Site Laboratory (with equipment) based as Per contract Agreement (CA) :
- 5. Concrete Mix Design submitted Approved :
- 6. Preliminary works completed in standard engineering practices :
- 7. Arrangement for water made including testing of water :
- 8. Arrangement for electric supply :
- 9. Materials

SI No	Items	Sources as per CA	Contractors plan of Scheduling	Refer to testing clause	Agency for testing	Responsibility for testing

- 10. List of all T&P, make and numbers that the contractor would deploy at site of work.
- 11. Name of person nominated by contractor for exercising quality control :
- 12. Qualifications /Experience of personal serial no 11 above :
- 13. Names of supervisors with their qualifications / Experience deployed by contractor :
- 14. Confirmation that contract requirements relating to quality of all materials and quality standards of workmanship and finishes and acceptance criteria are explained and understood by all. :
- 15. Confirmation that requirements of tests to be conducted on materials before approval of sample and during execution , tests on workmanship test before acceptance incl testing procedure , sampling techniques, frequency and agencies responsible for testing and understood and shall be complied with :

Contd..

PARTICULAR SPECIFICATION (CONTD...)

Appendix D' (CONTD...)

FORMATFORQUALITYCONTROLPLAN

16. Method to be adopted for maintaining :
records of test result
17. Certificate that contractor shall maintain :
a log of all materials received at site as per the
following that.

SI No	Date	Materials	Quantity received	Source	Weather as per approved sample or not	Tests carried out by contractor	Tests to be carried out before incorporation

18. General Remarks by contractor of his :
Plan of action to ensure that quality standards.

Date

(Signature of Contractor)

PARTICULAR SPECIFICATION (CONTD...)

APPENDIX ‘D1’

SOURCES OF MATERIALS

SI No	Name of Materials	Suggestive Quarry/Source* Subject to testing and Approval
1	2	3
1.	Coarse Aggregates (other than DAC-II & PQC 450 mm thick)	Any Govt Approved quarry/sources. The aggregate should be obtained through the multi-cone stone crushers.
2.	Coarse Aggregate for DAC-II layer and PQC 450 mm thick	Any Govt Approved quarry/sources. The aggregate obtained from multi-cone stone crusher with VSI facility (tertiary crushing) shall only be used.
3	Fine Aggregates/stone dust	River Sand/Quarry sand/ Manufactured sand from Government approved locations

NOTES: -

1. 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.
2. However, if due to any ban imposed by the state Govt authority on obtaining the materials from the suggestive 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 shall be obtained from any other place/source in the Srinagar region after getting the same approved from GE in writing and without any extra cost to Govt.
3. The crushing plants at the suggested source of quarries mentioned above will not be able to supply the huge quantities of materials required. Hence, the Contractor shall establish crushing plant for coarse/fine aggregate of various sizes and grades after obtaining necessary clearance from appropriate state authorities.
4. Rates quoted for various schedules shall deem to include for the above requirements and nothing extra shall be admissible for the same including extension of time.
5. Washing of fine aggregate mandatory in case fines exceed the specified limits.

Signature of Contractor
Dated : _____

For Accepting Officer

PARTICULAR SPECIFICATION (CONTD...)**APPENDIX 'E'****SECONDARY PRODUCERS FOR STRUCTURAL STEEL SECTIONS**

M/S K.L. Steel Pvt Ltd

Post Box No 61, Lal Kuan

Bulandshahar Road, Ghaziabad (U.P)

SRMB Udyog Ltd

46, BB Ganguli Street

Kolkata – 700 012

Tele : 22369999 (Hunting), Fax-033-2236666

M/S Shyam Steel Industries Ltd

White Towers, 115, College Street

Ist Floor, Kolkata-12

M/S Amba Shakti Ispat Ltd

Plot No 6, Phase-II, Industrial Area, Kala Amb, Distt. Sirmour-173030 (H.P)

Tele : 01734-309983, 309986 Fax : 01702-238927

M/S Pushpak Steel Industries PvtLtd

Gate No 119

Alandi Market Road

Dhanore, Tahkhed, Pune

Tele : 02135-232427/28/232244

Fax : 02135-233171”

Shree Parashnath Re-Rollin Mills Ltd

3511, Part Dr BC Roy Avenue

Durgapur-713201, Phone : 0343-2550537/0538, Fax : 0343-2554457

SRMB Srijan Pvt Ltd

7 No. Khetra Das Lane, Kolkata-700012

Tele : 033-22369999 (Hunting), Fax-033-22113636

M/S Amba Steels

21/6, West Patel Nagar, New Delhi-110008

Tele : 011-25885225, 25885226, Fax : 011-25886914

M/S Shree Om Rolling Mills (P) Ltd.

D-51/2, Additional MIDC, Jalna.

Tele-02482-220925, 220474, Fax-02482-221306

M/S Anant Steel Pvt Ltd

368, Civil line, Jhansi (U.P), Phone : 0517-2330115, 619, Fax: 0517-2330618

M/S Karam Steel Corporation

Narsali Road, Po Box 56, Mandi Gobind Garh-147301 (PB)

Tele:- 01765-257536

Note:- The department can delete any name in the above list due to technical reason and the contractor will not have any claim on account of it . Also the deparment can add any name as per approval of E-in-C's Branch.

for Accepting officer

(Signature of Contractor)

Dated: _____

PARTICULAR SPECIFICATION (CONTD...)**APPENDIX 'E'****SECONDARY PRODUCERS FOR STRUCTURAL STEEL SECTIONS**

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Tele:- 01765-257536

Note:- The department can delete any name in the above list due to technical reason and the contractor will not have any claim on account of it . Also the deparment can add any name as per approval of E-in-C's Branch.

(Signature of Contractor)
Dated: _____

for Accepting officer

PARTICULAR SPECIFICATION (CONTD...)

APPENDIX ‘F’

APPROVED NAMES OF MANUFACTURES
FOR RUNWAY, ROAD AND OTHER WORKS

ITEM PREFERABLY BEARING BIS CERTIFICATION MARK AND TO BE PROCURED
FROM ONE OF THE LISTED MANUFACTURER AS PER CHOICE OF CONTRACTOR

SE R. NO	NAME OF ITEM	GP-1	GP-2	GP-3
1	CHEMICAL FOR ATT	CHLORO-PYRIPHOS-20 EC GRAMAX-20	CHLORO-PYRIPHOS-20EC GRAMAX-20	
2	ATT AUTH CO	PEST CONTROL SERVICE OF INDIA PVT LTD PEST CONTROL SERVICE DELHI INDIA PESTICIDES LUCKNOW TATA CHEMICAL PEST CONTROL	PEST CONTROL SERVICE DELHI PEST CONTROL CORPOORA- TION DELHI DE-NOSIL BOMBAY	DR SWAROP'S PEST CONTROL MONATARI INDUSTRIES NEW DELHI
3	STEEL DOOR/ WINDOW FRAMES/ CHOWKHAT STEEL DOORS/ VENTILATORS /CUPBOARD AND WINDOWS	M/S AGEW STEEL MANUFACTURE PVT LTD AHMEDABAD M/S SHIV MULARA NARODA AHMEDABAD GODREJ AND BOYCE MFG MUMBAI SEN HARVIC MUMBAI ASHWANI & SONS (GZB)	SHRI KRISHNA ASSOCIATION PANCHKULA M/S STEELMAN INDUSTR-IES JALANDHAR M/S RAYMUS STRUCTURAL & ENGG WORK PVT LTD NEW DELHI ISHWAR INDUSTRIES MERRUT CANTT SHIVAM STEEL JAMMU ASHWANI & SONS (GZB)	M/S SANJAY STEEL WORKS JAMMU SK STEEL FABR-- CATOR LUDHIANA SEHGAL DOORS NEW DELHI BHAWANI STEELS GAZIABAD M/S CHANDI INDUSTRIES GAZIABAD
4	ROLLING SHUTTERS/ COLLAPSIBLE GATE /GRILLS	SHRI KRISHNA ASSOCIATION PANC- HKULA ISHWAR INDUSTRIES MERRUT CANTT M/S STEELMAN INDUSTRIES JALANDHAR	PARKASH & CO NEW DELHI SK STEELS INDUSTRIES, NEW DELHI M/S PARKASH ROLLING SHUTTERS DELHI	M/S AKASH ROLLING SHUTTERS DELHI M/S AUTO ROLLING SHUTTERS ENTERPRISES NEW DELHI
5	FACTORY MADE WOODEN PANELED /GLAZED WIRE GAUGE DOORS SHUTTERS	M/S WOOD PRODUCT INDORE M/S GOYAL INDUTRIES CORPORATION 8743 DESH BANDHU GUPTA ROAD NEW DELHI M/S JAIN WOOD INDUSTRIES MURTHAL SONIPAT M/S PIONEER TIMBER PRODUCT CHANDIGARH	CHANDIGARH TIMBER PRODUCT CHANDIGARH M/S SORAB ENTERPRISES KATHUA (J&K) SHRI KRISHNA INDUSTRIES PANCHKULA M/S SHIV JOINERY& FURNITURE INDUSTRIES JAMMU M/S JOINERY WORK PARIMPORA SRINAGAR M/S WOOD CRAFT ASSAM NEW DELHI	JAGAN SAW MILL AKHNOOR ROAD JAMMU EVEREST TRADING PATHANKOT M/S KC JOINERY MILL JAMMU
6	HDF PRE LAMINATED MATT FINISH DOORS SHUTTERS	M/S HR ENTERPRISES OLD DALHOUSIE ROAD, NEAR DAV SCHOOL PATHANKOT (PB) M/S TECHNOFAB INDIA LTD AMBALA (HR)	M/S BALAJI ACTION BUILD WELL NEW DELHI KITPLY INDUSTRIES NATIONAL PRIMA	
7	FACTORY MADE FLUSH DOORS SHUTERS	M/S GREEN PLY INDUSTRIES. M/S CENTURY PLY SWASTIK PLY WOOD DURA PLY	M/S NATIONAL PLYWOOD INDUSTRIES MP WOOD PRODUCT INDORE PIONEER TIMBER CHANDIGARH M/S KITPLY INDUSTRIES	M/S MYSORE WOOD PRODUCT ARCHID PLY M/S JAIN WOOD INDUSTRIES

PARTICULAR SPECIFICATION (CONTD...)

APPENDIX ‘F’

SE R. NO	NAME OF ITEM	GP-1	GP-2	GP-3
8	PVC DOOR/ WINDOW/ FRAME/ SHUTTERS	SINTEX INDUSTRIES. RAJSHRI PLASTIWOOD LTD M/S DURA PLAST EXTRACTION PVT LTD FENESTA POLYTUFF	FIXOPAN INDO PLAST PVT LTD NEW DELHI DURIAN DOORS M/S POLYLINE EXTRACTION PVT LTD KOLKATA	
9	UPVC WINDOW/ DOORS/ FRAME SHUTTERS	FENESTA INDIA PVT LTD VEKA INDUSTRIES PVT LTD MUMBAI H2O SOLUTION (WINDOWS& DOORS)	ACCURA POLYTECH PVT LTD AHMEDABAD KUMAR ARCH TECH LG HAUSYS	
10	DOOR/ WINDOW/ STEEL FITTINGS	MAWJEE M/S KITCH ARCHITECTURAL PRODUCT PVT LTD RS INDUSTRIES	EVEREST CLASSIC	
11	MORTICE LOCK	GODREJ HARRISON LINK EVEREST	JOHNSON UNIVERSAL	
12	HYDRAULIC DOOR CLOSER/ SPRING	GODREJ DROMA INDIA DYANA EVEREST	AMAR SANDHU EVERLITE HARDWYN PRIYA UNIVERSAL	PRABHAT DOOR KING
13	ANODIZED ALUMINUM DOORS/ WINDOW FRAMES/ PARTITONS	JINDAL INDAL HINDALCO ASHWANI & SONS (GZB)	ARGENT FENESTA CROWN ALUMINUM ASHWANI & SONS (GZB)	
14	ALUMINUM FITTINGS FOR WOODEN/ ALUMINUM PVC DOORS AND WINDOWS	ALUTRAC CROWN JINDAL CLASSIC DROMA INDIA	M/S ALUMINUM UDYOG ARGENT ELITE MEPRO	
15	ALUMINUM COMPOSITE PANELS	ALCO BOND ALSTRONG ARMSTRONG	ALSTONE ALUMINUM CLAD OROPANEL ALUDECORE	
16	FEBRICATORS FOR ALUMINUM WORKS	DADA INDUSTRIES JALLANDHAR M/S GUPTA ALUMINUM JAMMU ALUPLEX INDUSTRIE DIGIANA JAMMU	ALUMINUM UDYOG MODERN ALUMINUM JAMMU ZOOM FABRICATOR JAMMU HINDUSTAN ALUMINUM NEW DELHI SIDDHI ENTERPRICES	HINDUSTAN ADVIZERS PATHANKOT RANA CONSTRUCTION
17	DROPERY RODS	VISTA LEVALOR AEROLUX MAC DÉCOR	MASEUT LEXAFLAX	

PARTICULAR SPECIFICATION (CONTD...)

APPENDIX ‘F’

SE R. NO	NAME OF ITEM	GP-1	GP-2	GP-3
18	VENETIAN BLINDS	VISTA NEHA TOUCH DECORE	LEAVILOR	
19	PRE LAMINATED PARTICLE BOARD	NOVA PAN GREEN PLY BHUTAN BOARD MYSORE WOOD BOARD CENTURY PLYWOOD	ANCHOR KIT PLY SWASTIK NATIONAL ECO BOARD	ARCHID PLY DURA BOARD
20	PLY WOOD FOR GENERAL PURPOSE	DURA PLY GREEN PLY DURO BHUTAN BOARD CENTURY DURIAN	SWASTIK PLY JAIPUR NATIONAL MERINO KITPLY ARCHID PLY MYSORE CHIP BOARD LTD	SITAPUR PLYWOOD JAYANA
21	LAMINATIED SHEETS	CENTURIY DURA MARINO SUNMICA GREENLAM SUNGLOSS MERINO	FORMICA BAKELITE HYLAM SWASTIK ARCHIDLAM MYSORE CHIP BOARD	
22	FIBRE BOARD (MEDIUM DENSITY/HDF)	NOVA PAN BHUTAN BOARD KITPLY MYSORE CHIP BOARD LTD	DURA TUFF GREEN PANEL MAX	
23	CALCIUM SILICATE BOARD/WALL LINING \CEILING TILES	AEROLITE CEILING SYSTEM M/S BHARAT STEEL ROLL BAHADUR GARH (CALSI BRAND)	ECO BOARD	
24	FIBRE CEMENT CEILING BOARD	EVEREST VISAKA	
25	METAL SHEET TILES CEILING	ARMSTRONG DURLUM HUNTER DOUGLAS SAINT GOBAIN		
26	GYPSUM BOARD FALSE CEILING	NATIONAL GYPSUM ARMSTRONG SAINT GOBAIN	LAFARGE SON	
27	THERMAL INSULATION CEILING BOARDS	EVEREST JINDAL ARMSTRONG	ACE PREFAB MODERN PREFAB	
28	GALVANIZED STEEL SHEETS	SAIL TATA JSW STEEL	EVEREST APOLO METALEX JINDAL	

PARTICULAR SPECIFICATION (CONTD...)

APPENDIX ‘F’

SE R. NO	NAME OF ITEM	GP-1	GP-2	GP-3
29	POLYCARBONAT SHEET	DURATUFF LEXAN VMT PLASTEC LTD M/S COXWELL DOMES ENGG PVT LTD		
30	COLOUR COATED GALVALUME SHEETS	TATA BLUE SCOPE (JINCALUME) JSW STEEL(GALVALUME) CRIL	KIRBY METAL SCOPE KAMDHNU EVEREST	
31	PVC TILES/SHEET	PRIMER VINYL POLYFILM LTD WONDER FLOOR ARMSTRONG	KRISHNA TILES POLYFIN NEELKAMAL MARBLEX BOHR INDUSTRIES	
32	WOODEN LAMINATED FLOORING	GREEN PLY ACTION TESA CENTURY		
33	TERRAZZO TILES/PCC TILES/PCC CHEQUERRED TILES	NTC NITCO EUROCON DURACRETE EVEREST {M/S EVEREST CEMENT PRODUCTS, UDHAMPUR (Only for Chequered/Designer tiles)}	ULTRA TILES PVT LTD BHARAT TILES REGENT TILES GICO EVEREST {M/S EVEREST CEMENT PRODUCTS, UDHAMPUR (Only for Chequered/Designer tiles)} MOHINDRA (Only for Chequered/Designer tiles)	MODERN HOLLOW BLOCK UDHAMPUR
34	INTERLOCKING TILES/EXTERIOR TILES/PAVER BLOCKS	NTC NITCO ULTRA JOHNSON EVEREST (M/S EVEREST CEMENT PRODUCTS, UDHAMPUR)	TERRA FIMA A-ONE TILES CORAL PAVIT SS TILES HINDUSTAN TILES EVEREST (M/S EVEREST CEMENT PRODUCTS, UDHAMPUR) MOHINDRA	MODERN HOLLOW BLOCK UDHAMPUR
35	ACID RESISTANT TILES	SOMANY NITCO KAJARIA NITCO ORIENT BELL		
36	GLAZED CERAMIC/NON SKID WALL/ FLOOR TILES	KAJARIA H&R JOHNSON CERA NITCO SOMANY	ORIENT BELL ASIAN GRANITO VERMORA	
37	VETRIFIED TILES	KAJARIA JOHNSON ORIENT BELL NITCO SOMANY	VERMORA ASIAN GRANITO	

PARTICULAR SPECIFICATION (CONTD...)

APPENDIX ‘F’

SE R. NO	NAME OF ITEM	GP-1	GP-2	GP-3
38	VITREOUS CHINA SANITORY APPLICANCES/FITTINGS (SANITARWARE)	JAQUAR ROCA KOHLER HR JOHNSON	NEYCER CERA MARC HINDWARE PARRYWARE	
39	WATER CLOSET SEAT AND COVER TOILET SEAT COVER	JAQUAR SOMANY PRAYAG CERA NEYCER JOHNSON JANIKO (only for WC SEAT COVER PVC)	SUPREME PARRYWARE POLYTUFF COMMANDER HINDWARE JANIKO (only for WC SEAT COVER PVC)	AJANTA DURALIGHT MILLENNIUM
40	PVC FLUSHING CISTERN	HINDWARE JOHNSON PRAYAG KAJARIA JAINKO	SUPREME PARRYWARE CERA COMMANDER JAINKO	
41	SHOWER ROSES CHROMIUM PLATED	JAQUAR MARC PARCO ESS ESS	JAINKO BLUE STAR PRIMA GEM	
42	BATHROOM FANCY FITTINGS	JAQUAR MARC ESS ESS KOHLER JOHNSON	ANCHOR SOMA JAINKO GEM CERA	
43	BIB TAPS /STOP COCK(CP)& FANCY FITTINGS	JAQUAR PARKO MARC ESS ESS ROCA CERA KOHLER	ELITE ZIM PRIMA ESSCO JANIKO PRAYAG GEM	
44	SENSOR OPERATED FLUSH VALVES	TOSHI UTEC IDROLL JAQUAR KOHLER		
45	HAND DRIER	OPAL ATMAS UTEC TOSHI HAIER		

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APPENDIX ‘F’

SE R. NO	NAME OF ITEM	GP-1	GP-2	GP-3
46	TOILET/ BATHROOM CABINETS	JAQUAR CERA PRAYUG	COMMENDER NILKAMAL PARRYWARE	
47	LOOKING MIRROR	SAINT GOBAIN MODI GUARD TRIVENI FLOAT GLASS	ATUL SWASTIC PRAYAG GOLDFISH	
48	STAINLESS STEEL SINK WITH OR WITHOUT DRAINING BOARD/ PLATE RACK	NIRALI NEELKANTH JAYNA SILVERSHINE JINDAL	DIAMOND AMCO KABRA PRAYAG JAINCO	
49	PVC RAIN WATER PIPE/ SEWAGE PIPES/ CPVC PIPE	SUPREME ASHIRWAD FINOLEX SFMC ASTRAL	KISAN PRINCE B-SURE (JAIN PIPE)	
50	WATER STORAGE HDPE TANK	SINTEX POLYWELL ROTEX POLYCON	PRAYAG LOTUS POLYPLAST POLYTUFF JOHNSON	
51	PUFF INSULATED WATER STORAGE TANKS	SINTEX ROTEX HATICH JS POLYPLAST	ACE BUILDER	
52	FLOAT VALVES	PRAYAG SHAKTI SUPREME WILSON	POLYTUFF PEARL PRIMA	
53	PVC BATH FITTINGS/ PVC GRATING/PVC CONNECTION	PRAYAG SHAKTI POLYTUFF JAINKO	SUPREME JAINKO	
54	MANHOLE COVER & FRAME	NECO SKF RAJ KK	MOHINDRA (PCC/RCC)	
55	SAND CAST IRON SPIGOT & SOCKET SOIL WASTE VENT PIPE & FITTINGS	SRIF (GOLD CASTINGS) NECO (JAYASWAL) HIF MATHURA SKF	RAJ IRON FOUNDRY BIC KOLKATTA	

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APPENDIX ‘F’

SE R. NO	NAME OF ITEM	GP-1	GP-2	GP-3
56	GLASS (PLAIN/ PIN HEAD/ FROSTED)	SAINT GOBAIN MODI GUARD ATUL ASAHI	SWASTIC TRIVENI FLOAT	
57	CEMENT BASED PAINTS	SNOWCEM ASIAN JEHNSON &NICHOLSON BERGER DURACEM	ACQUOLAC PAINTS ACRO PAINTS ECOCEM BIRLA WHITE	KAMDHENU
58	WALL PUTTY	ASIAN PAINTS BIRLA PAINTS NEROLAC JK CEMENT BERGER PAINTS	SHALIMAR KAMDHENU ICI INDIA JEHNSON&NICHOLSON TATA PIGMENT	
59	ACYLIC DISTEMPER	NEROLAC PAINTS JOHNSON & NICHOLSON BERGER PAINTS ICI DULUXE ASIAN PAINTS	SHALIMAR PAINTS ACRO PAINTS GARWARE	
60	PLASTIC EMULSION PAINTS	BERGER (SILK,RANGOLI,EASY CLEAN) ASIAN(ROYALE) NEROLAC (IMPRESSION) ECOCLAN DULUX ICI	BERGER (RANGOLI EMULSION) ASIAN(PREMIUM EMULSION) NEROLAC (LOTUS TOUCH) JEHNSON&NICHOLSON (EQVT MAKE)	
61	EXTERIOR EMULSION PAINTS	BERGER (WEATHER COAT ALL GUARD) ASIAN(APEX ULTIMA) NEROLAC (EXCEL TOTAL) JEHNSON & NICHOLSON DULUX ICI	BERGER (WEATHER COAT SMOOTH) ASIAN (APEX WEATHER PROOF) NEROLAC(SURKASHA ADVANCED)	KAMDHENU SHALIMAR ICI INDIA
62	SYNTHETIC ENAMEL PAINTS	GOODLASS NEROLAC PAINTS JEHNSON&NICHOLSON BERGER PAINTS ICI INDIA DULUX ASIAN PAINTS	ACQUOLAC PAINTS ACRO PAINTS SHALIMAR PAINTS	
63	BITUMEN/BITUMEN PRIMER	IOC BPCL HPCL		
64	CI SPUN PIPE	ISI MARKED		

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APPENDIX ‘F’

SE R. NO	NAME OF ITEM	GP-1	GP-2	GP-3
65	WATER PROOFING COMPOUND POWDER/LIQUID	M/S JK CEMENT M/S ACC LTD M/S PIDILITE INDIA LTD RAIGARH M/S FOSROC CHEMICAL INDIA LTD M/S CHOKSEY CHEMICAL M/S SIKA INDIA PVT LTD M/S ROFFE CHEMICAL LTD		
66	CONCRETE ADMIXTURES /PLASTICISERS	M/S BAUCHIMIC (I) PVT LTD CICO TECH LTD FAIRMATE CHEMICALS PVT LTD FOSROC CHEMICALS (I) LTD STP SPECIALITIES CHEMICALS LTD		
67	JOINT SEALANT	CHOWKSEY FOSROC PIDILITE SIKA		
68	FILLER BOARD	SUPREME INDUSTRIES		
69	BRASS AND GUNMETAL FITTING	ISI MARKED		
70	AC SHEETS/BOARDS	M/S HYDERABAD INDUSTRIES LTD RAMCO EVEREST SWASTIK INDUSTRIES		
71	PRE-MOULDED JOINT FILLER BITUMINIOUS	M/S TIKITAR INDUSTRIES LTD STP LTD CAPITAL STEEL AND CHEMICAL		
72	TOUGHENED GLASS/ ROUGH CAST WIRED GLASS	M/S HINDUSTAN PILKINGTON GLASS WORKS SAINT GOBAIN MODI FLOAT MODIGUARD ATUL GLASS INDUSTRIES GOLD FISH ASAHI		
73	Epoxy Polyurethane Flooring	M/S Cipy Polyurethanes Pvt. Ltd. M/s Sika India Pvt. Ltd. M/s Fosroc Chemicals M/s STP Limited M/s Chokesy Chemicals Pvt. Ltd. M/s Apurva India Limited, Mumbai M/s BOSTIK India Pvt. Ltd.		

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APPENDIX ‘F’

SE R. NO	NAME OF ITEM	GP-1	GP-2	GP-3
74	ELEVATORS	M/S Kone India M/S Schindler India Pvt Ltd M/S Kinetic Hyundai Elevators movement Tech Ltd M/S Hitachi Liifts India Pvt Ltd. M/S Mistubishi Elevator Company India Ltd. M/S Oits Elevator Company India Ltd. M/S Fujitech India Pvt Ltd. M/S Johnson Lifts Pvt Ltd M/S Thyssenkrupp Elevator Company India Ltd. M/S Omega Elevators M/S Escon Pvt Ltd. M/S L T Elevators Pvt Ltd. M/S IES Elevators		
75	WATER PROOFING MEMBRANE	Multiplas Water proofing Membrane Manufactured by M/s STP Texsa Ltd, 570 Phase-V, Udyog Vihar, Gurgaon-122016 STP Superior Water proofing Membrane manufactured by M/S STP LTD Dr Fixit Manufactured by M/s Pidilite Industries Ltd, Construction Chemicals Division, Andheri, Mumbai – 400059 SIKA IWL M/s Torchtar Membrane and Bitumen Products Pvt Ltd (Delhi)		

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APPENDIX ‘F’

SER NO	NAME OF ITEM	GP-1	GP-2	GP-3
	EXT ELECTRIC SUPPLY			
1	POWER TRANSFORMER 66/33/11KV 500 KVA AND ABOVE	BHEL SCHNEIDER ABB BHARAT BIJLEE ALSTOM ANDREW YULE ITE-GURGAON M/S ELECTRICFIELD COMPANY M/S JAIMA ELECTRICALS (Only for up to 630 KVA)	CROMPTON GREAVES VOLTAMP M/S ELECTRICFIELD COMPANY SIEMENS.	MEGAWIN SWITCH GEAR
2	DISTRIBUTION TRANSFORMERS 11KV/415V ABOVE 100 KVA CAPACITY COPPER WINDING	BHEL SCHNEIDER ABB SIEMENS. BHARAT BIJLEE ALSTOM ANDREW YULE JaybeeBTI VOLTAMP ITE-GURGAON CROMPTON GREAVES M/S ELECTRICFIELD COMPANY M/S JAIMA ELECTRICALS (Only for up to 630 KVA)	CROMPTON GREAVES VOLTAMP GEE INDUSTRIES JK TRANSFORMERS JaybeeBTI IECO M/S ELECTRICFIELD COMPANY M/S JAIMA ELECTRICALS (Only for up to 630 KVA)	
3	DISTRIBUTION TRANSFORMERS UP TO 100 KVA CAPACITY COPPER WINDING	RAJASTHAN TRANSFORMER JK TRANSFORMER CONTINENTAL JaybeeBTI ITE-GURGAON M/S ELECTRICFIELD COMPANY M/S JAIMA ELECTRICALS	POWERWARE NORTHSON RK INDUSTRIES JaybeeBTI M/S ELECTRICFIELD COMPANY ALBA POWER M/S JAIMA ELECTRICALS	
4	CURRENT AND POTENTIAL TRANSFORMER. 11 &33KV	SCHNEIDER ABB SIEMENS CROMPTON GREAVES ENGLISH ELECTRIC M/S ELECTRICFIELD COMPANY	KAPPA AUTOMATIC ELECTRIC NATIONAL M/S ELECTRICFIELD COMPANY	LAXMI JYOTI PRAGATI
4(a)	ISOLATION TRANSFORMER	ANDREW YULE BENITEK IECO ITE-GURGAON VOLINA (Vintek electronics) SINETRAC VINITEC		
5	TRANSFORMERS OIL	M&I MATERIAL (MIDEL) POWER LINK POWER OIL SAVITA		
6	HT SWITCH GEAR 66/33/11 KV.GAS(INDOOR/OUTDOOR) SF6	SCHNEIDER ABB SIEMENS BHEL ENGLISH M/S ELECTRICFIELD COMPANY ITE-GURGAON M/S JAIMA ELECTRICALS	ANDREW YULE CROMPTON GREAVES ALSTOM C&S ELECTRIC L&T AREVA L&T M/S ELECTRICFIELD COMPANY M/S JAIMA ELECTRICALS	MEGAWIN SWITCH GEAR
7	HT SWITCH GEAR PROTECTION RELAYS (ELECTRIC) MECHANICAL/NUMERICAL)	L&T SCHNEIDER ABB SIEMENS BHEL	CROMPTON GREAVES ANDEW YULE ALSTOM AREWA	

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APPENDIX ‘F’

SER NO	NAME OF ITEM	GP-1	GP-2	GP-3
8	COMPACT SUB-STATION	SCHNEIDER ABB SIEMENS BHEL VOLTAMP ALSTOM ITE-Gurgaon M/S ELECTRICFIELD COMPANY	L&T CROMPTON AREVA VOLTAMP M/S ELECTRICFIELD COMPANY	RAYCHEM RPG
9	HT 11KV AUTOMATIC SWITCH FUSE UNIT	SCHNEIDER CROMPTON GREAVES ANDREW YULE SOUTHERN SWITCH GEAR SHALABH	SHALABH	
10	AIR BREAK GANG OPERATED SWITCH DEVICE	BHEL PACTIL ANDREW YULE MYSORE ELECTRIC ABB JAIPUR BROS UNIVERSAL	JAISHRI ATLAS SOUTHERN SWITCH GEAR BIRLA	
11	LIGHTENING ARRESTERS	PACTIL CROMPTON GREAVES M E I ELECTRICAL ALSTON SCHENEDIER	JAIPURIA BROS RASHTRIYA JAISHRE ATULAS GEC ELPRO OBLUM	JMV NOIDA
12	DISC /PIN/LOOP INSULATORS	BHEL PACTIL MYSORE PORCEILIN JAIPURIA	JAYSHREE WS INSULATOR HITKARI RASHTRIYA	
13	HT XLPE CABLES 66/33KV &11KV	UNIVEWRSAL CABLES ASIAN CABLES KE I INDUSTEIES LTD FINOLEX POYCAB GLOSTER CABLES LTD CCI NICCO HAVELLS	NICCO ICL RAVIN ELECKTRON RPG	RALLISON PLAZA
14	LT CABLES 1100 VOLTS XLPE	FINOLEX UNIVERSAL RPG CABLES KE I INDUSTEIES PVT LTD POLYCAB GLOSTER SHALABH HAVELLS	NICCO INDO ASIAN CABLES KALINGA GOLD PLAZA PARAGAON SHALABH	RR CABLES CRYSTAL RAVIN RICHA EON RALLISON

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APPENDIX ‘F’

SER NO	NAME OF ITEM	GP-1	GP-2	GP-3
15	LT/HT CABLE JOINTS HEAT SHRINKABLE/ COLD SHRINKABLE/ PUSH ON TYPE	DENSON M-SEAL BIRLA 3M RAYCHEM CABSEAL	RPG YAMUNA GASES MAHENDRA & MAHENDRA CCI JAIPUR BROS	
16	ACSR CONDUCTORS	JAIPURIA ALUMINUM IND ICC NICCO ALIND	NORTHSON PALICON ASIAN POWER	UJALA KONARK BHART CONDUCTOR
17	HT/LT PCC POLES	HINDUSTAN PRE STRESSED CONCRETE KASHMIR CEMENT PRE CAST CEMENT PRODUCT CONCRETE UDYOG LTD	MA PRESTRESS WORK INDIAN PCC POLE CEMENT FABRIC INDIA PRECTO INDUSTRIES KB INDUSTRIES	
18	HT/LT STEEL TUBLAR SWAGED POLES	NATIONAL TUBING CO KANPUR BHARAT CONDUIT & STEEL WORKS KANPUR JINDAL STEEL PRODUCT M/S SOHAN LAL & SONS M/S ADVANCE TUBE JAMMU	QUALITY STEEL SURJIT STEEL INDUSTRIES SOHAN LAL & SONS ANIL ENGG CORPORATION ZAIN INDUSTRIES SRINAGER ADVANCED TUBE JAMMU	SIDHARTH STEEL NASIR ELECTRICAL
19	HIGH MAST LIGHTS	BAJAJ PHILIPS CROMPTION GE	SURYA HPL	METAL COATS UTKARH TUBES
20	LT PANELS/AC CONTROL PANELS/PUMP HOUSE PANELS FOR SS	SIEMENS L&T ABB SCHNEIDER LEGRAND HAGER HENSAL CROMPTION GREAVES SHALABH (FOR LT PANEL ONLY) DVEPL IECO (For LT Panel only) ITE-GURGAON (For Distribution & Synchronization Panel only) M/S ELECTRICFIELD COMPANY (Only for LT Panel) M/S JAIMA ELECTRICALS (For LT Panel) HAVELLS (For LT Panel only)	UNIVERSAL SWITCH GREAR CONTROL AVON AE HP ADHUNIK SWITCHGEAR NATIONAL ENGG WORKS DVEPL SHALABH (FOR LT PANEL ONLY) M/S ELECTRICFIELD COMPANY (Only for LT Panel) M/S JAIMA ELECTRICALS (For LT Panel) HARK POWER CONTROLS	ANY CPRI APPROVED CO/FIRM
21	PVC FEEDER PILLAR BOX AC BOX/JUNCTION BOX	L&T HPL SINTEX HAVELLS HENSAL SHALABH (for FEEDER PILLAR BOX only) DVEPL (For Feeder Pillar, Junction box) ITE-GURGAON (For feeder Pillar only)	ADVANCE ADHUNIK NOVATEUR ELECTRIC MILSTONE SHALABH (for FEEDER PILLAR BOX only) DVEPL (For Feeder Pillar, Junction box) HARK POWER CONTROLS	

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APPENDIX ‘F’

SER NO	NAME OF ITEM	GP-1	GP-2	GP-3
22	HIGH VOLTAGE INSULATING RUBBER MAT	JYOTI DUNLOP ELECTROMATE	SINTEX INSULATION SAFEVOLT SINTEX	JAIPURA BROS
23	HT RING MAIN UNIT VCB 11KV	SIEMENS ME I ABB SCHNEIDER	CROMPTON GREAVES C&S GE	MEGAWIN SWITCHGEAR
24	LT AIR CIRCUIT BREAKERS	SIEMENS L&T ABB SCHNEIDER LEGRAND HAGER GEC CROMPTON GREAVES HAVELLS	C&S ELECTRIC INDOASIAN STANDER HPL	
25	MCCB/MPCB	SIEMENS L&T ABB SCHNEIDER LEGRAND HAGER C&S ELECTRIC HAVELLS (For MCCB only)	GE POWER INDOASIAN CROMPTON STANDARD ELECTRICAL HPL	
26	POWER CONTACTORS/ MOTOR STARTERS	SIEMENS L&T ABB SCHNEIDER LEGRAND GE POWER AE HAVELLS (For Power contactors only)	C&S ELECTRIC INDOASIAN ENGLISH ELECTRIC STANDER HPL	
27	VOLTMETER /AMMETER/FREQUENCY METER/PF METER(ANALOG TYPE)	L&T AE ABB SECURE	HPL MECO INDOSIAN C&S ELECTRIC BENTEX	
28	DIGITAL TYPE VOLTMETER AMMETER/POWER FACTOR METER	SECURE L&T (RISHAB) C&S ELECTRIC MECO	HPL KEY ENERCON AUTOMETIC ELECTRIC	PREMIER

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APPENDIX ‘F’

SER NO	NAME OF ITEM	GP-1	GP-2	GP-3
29	ELECTRONIC ENERGY METER	L&T HPL HAVELLS SECURE JAIPUR METER AE LEGRAND	ARIVA GE INDO ASIAN	MECO GENUS
30	VACUUM CIRCUIT BREAKER (VCB) 11KV/33 KV	ABB SIEMENS SCHNEIDER ENGLISH ELECTRIC BHEL DVEPL ITE-GURGAON M/S ELECTRICFIELD COMPANY M/S JAIMA ELECTRICALS	ALSTOM CROMPTON & GREAVES L&T DVEPL M/S ELECTRICFIELD COMPANY M/S JAIMA ELECTRICALS	MEGAWIN SWITCHGEAR
31	CHANGE OVER SWITCHES	ABB SIEMENS SCHNEIDER L&T LEGRAND HAGER GE SHALABH HAVELLS	HPL STANDARD INDO ASIAN ANCHOR C&G SHALABH	MEGAWIN GEO KAY
32	VOLTAGE STABILIZER UP TO 05 KVA	AE ANDREW YULE GODREJ M/S ELECTRICFIELD COMPANY IECO ITE- GURGAON VINITEC	POWERWARE SINETRAC MICROTEK V-GUARD VINTEC M/S ELECTRICFIELD COMPANY	
33	VOLTAGE STABILIZER ABOVE TO 05 KVA(SERVO CONTROLLED)	AE ANDREW YULE BENTFORD BENTEK V- GUARD M/S ELECTRICFIELD COMPANY VOLINA (Vintek Electronics) IECO ITE- GURGAON SINETRAC M/S JAIMA ELECTRICALS VINITEC	POWERWARE SINTERAC VOLINA VOLTAMP BLUE LINE M/S JAIMA ELECTRICALS	
34	UPS	TATA LIBERT APLAB CROMPTON	SINTERAC BLUE LINE SUKAM MICROTECH LUMNOUS	
35	DG SETS	ENGINE: GREAVES COTTON MAHIANDRA &MAHINDRA TATA RUSTON CUMMINS KIRLOSKAR OIL ENGINES ASHOK LAYLAND	PERKIN VOLVO ESCOURT STERLING M POWER	

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APPENDIX ‘F’

SER NO	NAME OF ITEM	GP-1	GP-2	GP-3
	DG SETS	ALTERNATOR: BHARAT BIJLI CROMPTON GREAVES SEIMENS CUMMIN ELECTRIC STAMFORD VOLVO	ALSTOM GEC KIRLOSKAR ELECTRIC CATLER PILLAR JYOT	
36	DG SET SOUND PROOF CANOPY	C&S PARKINS CATLER PILLER STERLING	JACKSON SUDHIR VOLVO BHASKER POWER KIRLOSKER POWERICE GREEN FIELD COTTON GREAVES	
37	LT CAPACITOR APFC PANEL	L&T ABB SCHNIDER SIEMENS GE DVEPL (For APFC Panel) IECO (For APFC Panel) ITE-Gurgaon (For APFC Panel) M/S JAIMA ELECTRICALS (For APFC Panel)	EPCOS CROMPTON GREAVES ASIAN DVEPL (For APFC Panel) M/S JAIMA ELECTRICALS (For APFC Panel) HARK POWER CONTROLS (For APFC Panel)	
38	PF IMPROVMENT CAPACITOR BANKS	ABB L&T SCHNIDER SIEMENS LEGRAND HAVELLS	CROMPTON GREAVES EPCOS GE	
	INTERNAL ELECTRIC SUPPLY			
39	RIGID PVC CONDUIT	PLAZA FINOLEX SUPREME PRESTO PLAST	BAJAJ KALINGA AKG KINJAL ASIAN	AVON RICHA CABLE NIC
40	MS CONDUIT PIPE	BHARAT STEEL JINDAL TATA	AKG BEC KALINGA PRAKASH TUBES TIRUPATI	VIMCO PRECISION NATIONAL
41	PVC FLEXIBLE COPPER WIRES	L&T FINOLEX GRANDLAY ANCHOR POLYCAB SHALABH HAVELLS	KINJAL HPL PLAZA PARAGON (ELEKTRON) GLOSTER KE I SHALABH	

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APPENDIX ‘F’

SER NO	NAME OF ITEM	GP-1	GP-2	GP-3
42	SWITCH/SOCKETS/CEILING ROSES/FAN REGULATORS	ANCHOR LEGRAND CRABTREE HAVELLS	C&S ELECTRIC STANDARD SSK POLYCAB PLAZA CONA INDOASIAN	KINJAL EON LEADER RR CABLE
43	MCB/ELCB/RCCB/RCBO/ISOLATORS/MCB DISTRIBUTION BOARD	ABB L&T SCHNEIDER SIEMENS LEGRAND CROMPTON HAGER SHALABH (for MCB/RCCB/DISTRI BUTION BOARD only) HAVELLS	C&S ELECTRIC INDOASIAN BCH ANCHOR GE POWER HPL STANDARD ELECTRICALS SHALABH (for MCB/RCCB/DISTRIBUTION BOARD only)	
44	LAMINATED SHEET COVER	HYLUM SUNMICA FORMICA GREENLAM		
45	MODULAR SWITCH/SOCKETS/FAN /REGULATORS	LEGRAND SIEMENS CRABTREE HAVELLS ROMA (ANCHOR)	INDOASIAN STANDERD HPL POLYCAB ANCHOR	
46	STREET LIGHT FITTINGS & ACCESSORIES/LUMPS-HPSV (70/150/250/400)HPMV (80/125/250/400)/METAL HALIDE	PHILIPS CROMPTON GREAVES WIPRO MYSORE GE LIGHTING HAVELLS	HPL SURYA C&S BAJAJ	ADHUNIK EON NOVATEUR KAKATIYA MEGA EMERGY
47	LED TUBE LIGHT/ STREET LIGHT FITTING/ROD	PHILIPS CROMPTON WIPRO GE LIGHTING HALONIK HAVELLS	SURYA ROSHNI HALONIK BAJAJ	ADHUNIK HPL
48	PVC CASING CAPING	CG BAJAJ FINOLEX POLYCAB	PLAZA KALINGA SUPRIME ASIAN	MODI NATIONAL LAXMI PRINCE

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APPENDIX ‘F’

SER NO	NAME OF ITEM	GP-1	GP-2	GP-3
49	LED FITTINGS/LAMPS	PHILIPS CROMPTON BAJAJ WIPRO GE SURYA SYSKA HALONIK	HPL OSRAM HAVELLES POLYCAB HALONIK	OREVA GOLDWYN EVERADY
50	CEILING FANS (EXHUAUST / WALL MOUNTED FANS/AIR CIRCULATORS	BAJAJ CROMPTON GREAVES GEC KHAITAN ORIENT HALONIK HAVELLS	USHA POLAR ALMONARD ANCHOR HALONIK	ORTEM EON
51	WATER HEATER GEYSER	BAJAJ USHA LEXUS CROMPTON GREAVES JAQUAR RECOLD	VENUS V-GUARD	SUPREME PEARL EON
52	BUS BAR TRUNKING SYSTEM	SIEMENS SHENEIDER L&T CROMPTON GE SHALABH M/S ELECTRICFIELD COMPANY M/S JAIMA ELECTRICALS	HPL STANDARD HAVELLES SHALABH M/S ELECTRICFIELD COMPANY M/S JAIMA ELECTRICALS	
53	BATTERY CHARGER	SU-KAM AMCO SINETRAC EXIDE BCH SINETRAC M/S ELECTRICFIELD COMPANY		
54	LEAD ACID BATTERIES	AMARON STANDARD EXIDE TATA GREEN MICROTEK	SU-KUM OKAYA APC AMCO	
55	FLAME PROOF LIGHT FITTINGS & FANS	BAJAJ CROMPTON GREAVES SUDHIR	FLASHPRO C&S ELECTRIC	PLUTO ATLAS FLEXPRO SHYAM
56	SOLAR STREET LIGHT FITTING	BAJAJ PHILIPS CG TATA PHOTAN	SURYA HPL	

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APPENDIX ‘F’

SER NO	NAME OF ITEM	GP-1	GP-2	GP-3
57	STREET LIGHT TIMBERS	BAJAJ L&T LEGRAND SIEMENS ABB AE GE	INDOASIAN HAVELLS SINETRAC BCH C&S ELECTRIC	
58	AVIATION OBSTRUCTON LIGHT	BAJAJ CROMPTON GREAVES PHILIPS WIPRO	SURYA HAVELLS HPL SYSKA	
59	SHADO WLESS LIGHTS	PHILIPS CG WIPRO CROMPTON GREAVES GEC HALONIX	HAVELLS BAJAJ	
60	UNDER WATER LIGHTS	BAJAJ CROMPTON GREAVES PHILIPS WIPRO SURYA	HAVELLS HPL	
61	GI PIPES	JINDAL PIPES TATA BST PRAKAASH SURYA	NIDHI PIPES OSWAL ZENITH	SWASTIK ADVANCE STEEL
62	HDPE/UPVC PIPES	FINOLEX SFCM PIPE JAIN PIPE RELIANCE (RPPPL) SWASTIC KISAN	ALONPOLY EXTRUSION LTD KIRITI PRINCE SUPREME TIRUPATI DUTRON	
63	CI PIPES	ELECTRO STEEL KESORAM (BIRLAGP) KAPILANSH TATA	JAI BALA JEE KEJRIWAL SKF	NEW JANTA
64	DI PIPES	ELECTRO STEEL JINDAL KESORAM TATA	JAI BALA JI KEJRIWAL AARKO RASHMI METALLICS	

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APPENDIX ‘F’

SER NO	NAME OF ITEM	GP-1	GP-2	GP-3
65	MS PIPES	TATA GST BST JINDAL PRAKASH SURYA	SWASTIK ZENITH	
66	PPR PIPES	SFMC SAFE SUPREME FINOLEX ASTRAL RELIANCE	DIPLAST PLASTIC VEEKAY TECHNOCRAT PVT LTD AMITEX POLYMERS KITEC INDUSTRIES LTD PRINCE	HINDUSTAN PLASTIC & MACHINE CORPN
67	AIR RELEASE VALVES	KIRLOSKAR LEADER ZOLOTO L&T (AUDCO) TATA	BIR KARTAR SANT JINDAL UPADHAYAY KALPNA	VARUN KSB NBR VENUS KEJRIWAL
68	SLUICE VALVES/NON RETURN VALVES/BUTTERFLY/CHEK/GLOB E VALVE S	KIRLOSKAR LEADER ZOLOTO L&T(AUDCO) TATA	BIR KARTAR SANT JINDAL UPADHAYAY KALPNA	VARUN KSB NBR VENUS KEJRIWAL
69	CI PIPE FITTINGS	SKF SRIF JINDAL SAW NECO (JAYASWAL) KAPILANSH TATA	ASHUTOSH CASTING LTD VEETUS INDUSTRIES LTD ANAND FOUNDERS & ENGINEERS HIF HEPCO (BINAY UDYOG)	HINDUSTAN ENGG
70	GI PIPE FITTINGS	JINDAL TATA UNCO INDUS BHARAT STEEL TUBE DELHI	NINDI PIPE LTD OSWAL SWASTIK PRAKASH SURYA	
71	PUMP SETS-MONO BLOCK	KIRLOSKER CROMPTON BEACON MATHER &PLATT GRANDFOS KSB JYOTI	KALSI BS PUMPS	
72	CENTRAIFUGAL PUMP	KIRLOSKER BEACON MATHER &PLATT GRANDFOS JYOTI	SIEMENS KSB	

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APPENDIX ‘F’

SER NO	NAME OF ITEM	GP-1	GP-2	GP-3
73	SUBMERSIBLE PUMP	CALAMA KIRLOSKER BEACON GRANDFOS KSB JYOTI HAVELLS	CRI CROMPTON GREAVES	
74	NON CLOG SEWAGE PUMPS	KIRLOSKER BEACON CROMPTON KSB JYOTI	GRANDFOS WASP	
75	VERTICAL TURBINE PUMP	KIRLOSKER KSB WASP JOHNSON MATHER &PLATT GRANDFOS	CROMPTON GREAVES ATLANTA	
76	MOTOR STARTERS	L&T BCH SIEMENS C&S ELECTRIC ABB GE HAVELLS	MDS LEGRAND BENTEX	
77	ELECTRIC MOTOR	BHARAT BIJLEE KIRLOSKER CROMPTON GREAVES SIEMENS ENGLISH ELECTRIC ABB GE HAVELLS	JYOTI NGEF AREVA	
78	SUBMERSIMBLE CABLE	FINLEX PLAZA HAVELLS ASIAN POLYCAB	RALLISON RR CABLES BECO BHC STANDARD	
79	SINGLE PHASE PREVENTER	L&T INDO ASIAN HPL LEGRAND		
	AIR CONDITIONING			
80	CHILLER/CHILLING UNITS	DAKIN CARRIER VOLTAS	BLUESTAR ACCEL KIRLOSKER	

PARTICULAR SPECIFICATION (CONTD...)

APPENDIX ‘F’

SER NO	NAME OF ITEM	GP-1	GP-2	GP-3
81	ALUMINUM EXTRUDED GRILL/ DIFFUSER/FIRE DAMPER	DYNA CRAFT RAVISTAR MAPRO CARRYAIRE SERVEX GREEN HECK BRIGHT FLOW RUSKIN		
82	AIR HANDLING UNIT,COOLING COIL FOR AHU	VOLTAS CARRIER DAIKIN KIRLOSKAR	UNIVERSAL AIRFLOW THERMAFLOW NATIONAL BLUESTAR ADVANCE	
83	COOLING TOWER	MIHAR PAHARPUR VOLTAS DELTA		
84	FRACTIONAL HP MOTORS	AUE SIEMENS JYOTI ABB		
85	VARIABLE FREQUENCY DRIVES (VFD)	DANFOSS SIEMENS ABB	SCHNEIDER JYOTI	
86	INSULATION (PUF) FOR PIPES	OMKAR TWIGA LLOYD MALANPUR		
87	PRESSURE GAUGE/DIAL TYPE THERMOMETER	FIEBIG H –GURU EMERALD ANERGY	DROPCO DIGITAL MARKWRING SYSTEM TAYLOR DS ENGG DWYER AUTO MAT LUB SYSTEM	
88	INSULATION (EXPANDED POLYTHYLENE)	MATTUR BEARDSELL TOSHIBA STYRENE PSCKSGING LLOYED	CAPRICORN ECOTHEN INSULATION	
89	INSULATION (CROSS POLYTHYLENE FOAM)	SUPREME THERMOFLEX THROCELLONE BASE LLOYED ARMAFLEX	FLAMTOP AROFLEX PARAMOUNT FGP LTD	

PARTICULAR SPECIFICATION (CONTD...)

APPENDIX ‘F’

SER NO	NAME OF ITEM	GP-1	GP-2	GP-3
90	INSULATION (INITRILE RUBER)	ARMAFLEX AROFLES LLOYED		
91	CONTROLS(3WAY VALVES) THERMOSTAT	ANERGY SIEMENS HONYWELL		
92	GI SHEETS FOR DUCTING(COMMERCIAL)	SAIL TATA JINDAL	LLOYD INDIAN STEEL NIPPON RASHTRIYA ISPAT	
93	ACTUATOR	JEVENTA BELIMO SIEMENS ADVANCE	CASTLE ROTORK NIBCO AIP	
94	CENTRIFUGAL FANS (AHUS)	NICOTRA KRUGER AIRFLOW GREEN HECK	COMIFREE LLOYD YILIDA	
95	STRIP HEATERS	RAYCOLD DASSPASS AUE HONEYBEE		
96	HUMIDSTAT/THERMOSTATE	PENIN DANFOSS HONEYWELL SIEMENS JOHNSON RAPIDCOOL ANERGY		
97	AIR FILTER/HEPA FILTER	TENACITY PURPOLATOR LLYOD MIHAR DANFOSS INDFOSS KLENZOID JOHN FOWLERS	DELTA HANNY AIRTECH TERNODYNE	
98	DUCT FLANGE	ZECO ROLSTAR ECODUCT		
99	EXPANSION VALVE	DANFOSS HONEYWELL RAPID CONTROL SIEMENS		

PARTICULAR SPECIFICATION (CONTD...)

APPENDIX ‘F’

SER NO	NAME OF ITEM	GP-1	GP-2	GP-3
100	FLOW SWITCH	RAPID COOL SIEMENS BCH L&T		
101	AUTOMATIC AIR VENT	RAPID CONTROL ANERGY		
102	3-WAY MODULATING VALVE	HONEY WELL SIEMENS ANERGY SUZLON INDFOOS DANFOSS	JOHNSON ASKA RAPID CONTROL CASTLE	
103	ROOM THERMOSTATE/ AHU THERMOSTATE	HONEY WELL SIEMENS INDFOOS DASPASS ESCORTS		
104	HP/LP CUTOUTS/CONTROLS	HONEY WELL PENIN DANFOSS INDFOSS		
105	AIR WASHER	BREEZE AIR.NICOTRA PECMA AIREF AIR LOW		
106	BUTTRYFLY VALVE	AUDECO ADVANCE DEEPAK ZOLOTO		
107	FIRE HYDRENT	MINIMAX FIREX SAFEX FLAME GUARD	SAFE ZONE UFECON ELECTRO EQUIP	
108	RRL HOSE PIPE	NEWAGE DUNLOP CO-SMOS FLAME GUARD MINIMAX	SAFE ZONE UFECON ELECTRO EQUIP	

PARTICULAR SPECIFICATION (CONTD...)

APPENDIX ‘F’

SER NO	NAME OF ITEM	GP-1	GP-2	GP-3
109	FIRE PANEL/ REPEATER PANEL	MOTHER & PLATT MINIMAX SAFEX AGNI HONEYWELL SYSTEM SENSOR FIREX NOTEFIRE		
110	HOTTER/SIREN	MINIMAX MELTRON AHUJA PHILIPS AGNI		
111	MANUAL CALL BELL POINT	AGNI SURKASHA MINIMAX FIREX		
112	SMOKE/HEAT/IONSATION DETECTOR	APPOLO EDWARDS HONEYWELL SYSTEM SENSOR	RAVEL	
113	WATER SPRINKLER HEAD	TYCO CEASEFIRE SAFEX MINIMAX		
114	FIRE EXTINGUISHER	MINIMAX FIREX NEWAGE GODREJ & BOYC CEASEFIRE	SAFE ZONE UFECON ELECTRO EQUIP	
115	FIRE DAMPER	DYAN CRAFT RAVISTAR MAPRO CARRY AIR AIR FLOW RUSKIN		
116	WINDOW TYPE / SPLIT TYPE AIR CONDITIONERS	VOLTAS HITACHI DAIKIN CARRIER FEEDERS LLYOD WHIRLRPOO	LG BLUE STAR SAMSUNG GODREJ USHA SHRIRAM	

PARTICULAR SPECIFICATION (CONTD...)

APPENDIX ‘F’

SER NO	NAME OF ITEM	GP-1	GP-2	GP-3
117	REFRIGERATOR	WHIRLRPOOL LG VOLTAS SAMSUNG HAVELLS	GODREJ ELECTROLUX HAIER	
118	DESERET COOLERS	SYMPHONY KHAITAN KENSTAR	CROMPTON GREAVES BAJAJ OSRAM VEDEOCON	
119	DEEP FREEZER	BLUE STAR SHRI RAM (USHA) VOLTAS	SIDHWAL CARRIER FEDDERS LLYOD	
120	AIR CURTAIN	CROMPTON GREAVES VOLTAS CARRIER ALMONARD		
121	WATER COOLERS	BLUE STAR SHRIRAM (USHA) VOLTAS	SIDHWAL	
122	HOT WATER GENERATOR ELECTRIC FIRED	RAPID COOL BRASCH INDEECO DYNA FLOW SUNTEC		
123	HOT WATER GENERATOR (OIL FIRED)	THERMAX MAKTEK RAPID THERM ECOFLAME REILLO ZENITH WESTERN		
124	(a) AIR COOLED VARIABLE REFRIGERANT VOLUME / FLOW (VRV / VRF) (b) VRV/VRF BASED 4-WAY CASSETTE TYPE CEILING MOUNTED INDOOR MACHINE	LG MITSUBISHI CARRIER VOLTAS BLUESTAR		
125	COPPER REFRIGERANT PIPES FOR VRF INDOOR AND OUTDOOR UNITS	MAXFLOW UNIFLOW TOTALINE		
126	STATIC FREQUENCY CONVERTOR	APLAB ENERTECH TATALIBERT APC CONSUL INDIA		

NOTE:- 1. GP-I products will be applicable for this contract.
LIST OF MAKES GIVEN ABOVE ARE APPLICABLE WHEN THE SAME HAVE NOT BEEN INDICATED IN SCHEDULE ‘A’/BOQ.

(SIGNATURE OF CONTRACTOR)

DATED: _____

FOR ACCEPTING OFFICER

LIST OF DRAWINGS

S No	DRAWING NO	SH	DATES		PARTICULARS
			ORIGINAL	REVISED	
1	2	3	4	5	6
PROVISION OF FIRING RANGE AT AF STN SRINAGAR					
LIST OF DRAWINGS :-					
1.	CEAF/LD- /2024	1/1	31 Dec 24		LIST OF DRAWINGS
Site Plan :-					
2.	CEAF/SP- /BR/2024	1/1	31 Dec 24		Site plan external B/R services
3.	CEAF/SP- /EM/2024	1/1	31 Dec 24		Site plan external E/M services
NOTE: Drawings as mentioned at Ser No 2 & 3 above are not being uploaded with the tender documents due to administrative reasons and the same are available with concerned GE office/executive authorities as well as this HQ. Bidder(s) if requires to see the above drawings are requested to visit the office of concerned GE or this HQ for want of the same.					
TARGET STORE, AMMUNITION ISSUE ROOM & TOILET					
4.	CEAF/AR- /2024	1/2	31 Dec 24		Floor plan, Elevations, Roof Plan and toilet Details
5.	CEAF/AR- /2024	2/2	31 Dec 24		Section at A-A and B-B
6.	CEAF/EM- /2024	1/1	31 Dec 24		Internal electrification plan
7.	CEAF/SOF- /2024	1/1	31 Dec 24		Schedule of finishes
8.	CEAF/ST- /2024	1/1	31 Dec 24		Plan at plinth level roof beam/gable beam plan, schedule of columns, schedule of RCC beams and other structural details
9.	CEAF/ST- /2024/ Misc	1/2	31 Dec 24		TD details of foundation/beam columns junction/slab reinforcement/wall foundation/dwarf wall, slab projection/ chajja and other structural details
10.	CEAF/ST- /2024/ Misc	2/2	31 Dec 24		Typical section of isolated footing /crumple footing /combined footing and other structural details
SENTRY POST:-					
11.	CEAF/STD/94/2006	1/2	24/04/2006	12/04/2008	Plan, front elevation, roof plan, section A-A, EM Plan etc.
12.	CEAF/STD/94/2006	2/2	24/04/2006		Structural foundation plan section and other details
PROVISION OF FIRING RANGE AT AF STN SRINAGAR					
13.	ADG/2024/SK/06	1/1	09.12.2024	-	LAYOUT PLAN
14.	ADG/2024/AR/06	1/7	09.12.2024	-	PLAN LAYOUT, ROOF PLAN, SECTION 1-1 AND LIST OF DRAWINGS
15.	ADG/2024/AR/06	2/7	09.12.2024	-	KEY PLAN, PART PLAN (A), PART SECTION 1-1, NOTES AND ABBREVIATIONS
16.	ADG/2024/AR/06	3/7	09.12.2024	-	PART PLAN (B),PART SECTION 1-1
17.	ADG/2024/AR/06	4/7	09.12.2024	-	DETAILS OF TARGET GALLERY, FIRING POINT AND TRENCH AND STOP BUTT
18.	ADG/2024/AR/06	5/7	09.12.2024	-	DETAILS OF PROTECTIVE WALL (PW), SAFETY HORIZONTAL CANOPY (50M) AND FICS PANEL
19.	ADG/2024/AR/06	6/7	09.12.2024	-	DETAILS OF SAFETY HORIZONTAL CANOPY (100M)
20.	ADG/2024/AR/06	7/7	09.12.2024	-	DETAILS OF GATE G1 AND G2
21.	ADG/2024/ST/06	1/23	09.12.2024	-	NOTES AND LIST OF DRAWING
22.	ADG/2024/ST/06	2/23	09.12.2024	-	MISC. STRUCTURAL DETAILS
23.	ADG/2024/ST/06	3/23	09.12.2024	-	KEY PLAN AND LONGITUDINAL SECTION A-A BAFFLE RANGE

LIST OF DRAWINGS (CONTD...)

1	2	3	4	5	6
24.	ADG/2024/ST/06	4/23	09.12.2024	-	KEY ELEVATION OF TRUSS, TIE/RAFTER LEVEL BRACINGS, CEILING FRAME LVL & MISC DETAILS
25.	ADG/2024/ST/06	5/23	09.12.2024	-	MISC DETAILS OF TRUSS
26.	ADG/2024/ST/06	6/23	09.12.2024	-	DETAILS OF SAG ROD TO ISMC PURLIN & MISC DETAILS
27.	ADG/2024/ST/06	7/23	09.12.2024	-	PLAN AT TIE/RAFTER LEVEL BRACINGS, CEILING FRAME AND MISC DETAILS
28.	ADG/2024/ST/06	8/23	09.12.2024	-	ELEVATION OF TRUSS T1 (HALF RHS) AND MISC DETAILS
29.	ADG/2024/ST/06	9/23	09.12.2024	-	DETAILS OF TRUSS JOINTS
30.	ADG/2024/ST/06	10/23	09.12.2024	-	SECTION AT C1-C1 AND C2 C2
31.	ADG/2024/ST/06	11/23	09.12.2024	-	DETAILS OF GATE 1 (PLAN ELEVATION SECTION AND MISC DETAILS)
32.	ADG/2024/ST/06	12/23	09.12.2024	-	PLAN ELEVATION SECTION AND MISC DETAILS
33.	ADG/2024/ST/06	13/23	09.12.2024	-	DETAILS AT 'M' AND 'N' & MISC DETAILS
34.	ADG/2024/ST/06	14/23	09.12.2024	-	SCHEDULE OF COLUMNS, FOOTINGS, BEAMS, SLABS & MISC DETAILS
35.	ADG/2024/ST/06	15/23	09.12.2024	-	<u>PART- 'A'</u> FOUNDATION PLAN, PLINTH LEVEL FRAMING PLAN AT LEVEL 'A', 'B', 'C', SECTIONS & MISC. DETAILS
36.	ADG/2024/ST/06	16/23	09.12.2024	-	<u>PART- 'B'</u> FOUNDATION PLAN, PLINTH LEVEL PLAN FRAMING PLAN AT LEVEL 'A', SECTIONS
37.	ADG/2024/ST/06	17/23	09.12.2024	-	<u>PART- 'B'</u> FRAMING PLAN AT LEVEL 'B' 'C', SECTIONS AND FIXING DETAILS OF MS PLATE ON WALLS
38.	ADG/2024/ST/06	18/23	09.12.2024	-	<u>PART- 'B'</u> BOTTOM & TOP REINFORCEMENT PLAN OF MAT-I AND SECTION J-J
39.	ADG/2024/ST/06	19/23	09.12.2024	-	<u>FIRING TRENCH AND MISC DETAILS</u> FOUNDATION PLAN, SECTIONS & TYP DETAIL OF RCC WALL & DWARF WALL AND SECTIONS)
40.	ADG/2024/ST/06	20/23	09.12.2024	-	<u>TARGET GALLERY</u> FOUNDATION PLAN, SECTIONS AND MISC. DETAILS)
41.	ADG/2024/ST/06	21/23	09.12.2024	-	<u>TYPICAL DETAIL OF PROTECTIVE WALL</u> FOUNDATION PLAN, SECTIONS & MISC DETAILS
42.	ADG/2024/ST/06	22/23	09.12.2024	-	<u>TYPICAL DETAIL OF PROTECTIVE WALL 1</u> FOUNDATION PLAN, SECTIONS & MISC DETAILS
43.	ADG/2024/ST/06	23/23	09.12.2024	-	DETAILS OF MAT I, II & MAT III AND COL C4 (A,B,C)
44.	ADG/2019/TD/011	1/2	25.11.2019	-	NOTES FOR RCC STRUCTURE
45.	ADG/2019/TD/011	2/2	25.11.2019	-	NOTES FOR RCC STRUCTURE
46.	ADG/2019/TD/012	1/1	25.11.2019	-	TYPICAL DETAILS OF LINTEL AND CHAJJAS
47.	ADG/2024/EM/06	1/1	09.12.2024	-	INTERNAL ELECTRIFICATION PLAN, POSITION OF FLOOD LIGHTS DETAILS AND LIST OF DRAWING

LIST OF DRAWINGS (CONTD...)

S No	DRAWING NO	SH	DATES		PARTICULARS
			ORIGINAL	REVISED	
1	2	3	4	5	6
TD/STD DRAWINGS					
48.	CEAF/TD-01/2000	1/1	24.02.2000	15.03.2012	TYPICAL DETAIL OF PEG SET OF 3, SKIRTING, DADO, WHB, FORMAT, SOAP NICHES, CP WASTE, RWP OF ROOF PROJECTION AND PARPET PLINTH PROTECTION AND SPLASH STONE ETC.
49.	CEAF/TD-03/2000	1/9	14.03.2000	04.08.2021	STRUCTURAL NOTES.
50.	CEAF/TD-03/2000	2/9	14.03.2000	12.09.2013 04.08.2021	STRUCTURAL NOTES.
51.	CEAF/TD-03/2000	3/9	14.03.2000	09.02.2004 04.08.2021	STRUCTURAL NOTES.
52.	CEAF/TD-03/2000	4/9	14.03.2000	12.07.2004 04.08.2021	STRUCTURAL NOTES.
53.	CEAF/TD-03/2000	5/9	14.03.2000	12.09.2003 04.08.2021	STRUCTURAL NOTES.
54.	CEAF/TD-03/2000	6/9	14.03.2000	12.09.2003 04.08.2021	STRUCTURAL NOTES.
55.	CEAF/TD-03/2000	7/9	14.03.2000	12.09.2003 04.08.2021	GENERAL STRUCTURAL NOTES.
56.	CEAF/TD-03/2000	8/9	14.03.2000	04.08.2021	GENERAL STRUCTURAL NOTES.
57.	CEAF/TD-03/2000	9/9	14.03.2000	30.09.2004 04.08.2021	GENERAL STRUCTURAL NOTES.
58.	CEAF/TD-05/2000	1/1	14.03.2000	23.11.2004 04.08.2021	TYPICAL SCHEDULE OF RCC LINTELS & CROSS SECTION OF RCC LINTELS/CHAJJA
59.	CEAF/TD-06/2000	1/1	14.03.2000	04.08.2021	TYPICAL FDN DETAILS OF STEPS RAMP DWARF WALL AND PARTITION WALL ETC.
60.	CEAF/TD-07/2000	1/2	19.01.2004	-	TYPICAL DETAILS OF FOOTING, PLAN, L- SEC OF BEAMS, LINTELS, SLABS AND COLUMN DETAILS.
61.	CEAF/TD-07/2000	2/2	14.03.2000	19.01.2004	TYPICAL SEC OF BEAM, COL JOINT AT EXTERNAL COL & TYP DETAIL SPACING OF SHEAR REINFT IN COL
62.	CEAF/TD-10/2000	1/1	14.03.2000	31.07.2003 04.08.2021	TYPICAL DRAINS (CROSS SECTION OF PCC DRAINS, RR MASONARY DRAINS AND BRICK MASONARY DRAINS)
63.	CEAF/TD-13/2000	1/1	14.03.2000	12.09.2003 04.08.2021	TYPICAL DETAILS OF RCC SPUN PIPE (HUME PIPEY) CULVERTS
64.	CEAF/TD-14/2000	1/1	14.03.2000	12.09.2003 04.08.2021	TYPICAL DETAIL OF ROADS, PATH, HARD STANDING, ETC
65.	CEAF/STD-15/2000	1/2	05.01.2000	20.01.2017	TYPICAL DETAILS OF SEPTIC TANK (UPTO 500 USERS) AND SOAKAGE WELL/PIT
66.	CEAF/STD-15/2000	2/2	05-01-2000	19.09.2003 17.04.2009	SCHEDULE/STRUCTURE DETAIL OF SEPTIC TANKS
67.	CEAF/TD-19/2000	1/3	03.06.2000	25.05.2018	PANELLED DOORS WITH PRESSED STEEL FRAMES PLANS ELEVATIONS & SECTIONS

LIST OF DRAWINGS (CONTD...)

1	2	3	4	5	6
68.	CEAF/TD-19/2000	2/3	03.06.2000	25.05.2018	PANELLED DOORS WITH PRESSED STEEL FRAMES PLANS ELEVATIONS & SECTIONS
69.	CEAF/TD-19/2000	3/3	03.06.2000	25.05.2018	PANELLED DOORS WITH PRESSED STEEL FRAMES DETAILS
70.	CEAF/TD-21/2000	1/1	03.06.2000	17.08.2018	SCHEDULE OF FITTINGS
71.	CEAF/TD-30/2000	1/1	11.09.2000	15.03.2004	WHB WITH MIRROR TROUGH TYPE & URINAL PARTATION
72.	CEAF/TD-37/2000	1/1	11.09.2000	-	SWITCH BOX AND METER BOX
73.	CEAF/TD-42/2001	1/2	20.07.2001	11.04.2002 04.08.2021	TYPICAL DETAIL FOR SEISMIC REINFORCEMENT ZONE IV & V BK/STONE/PCC BLOCK MASONARY.
74.	CEAF/TD-42/2001	2/2	20.07.2001	04.08.2021	TYP DETAIL FOR SEISMIC REINFORCEMENT ZONE 4 & 5 BK/STONE/PCC BLOCK MASONARY.
75.	CEAF/TD-44/2001	1/2	20.12.2001	-	DETAILS OF RACK RIFLIE/STEN GUNS (PLAN & SECTIONS)
76.	CEAF/TD-44/2001	2/2	20.12.2001	-	DETAILS OF RACKS RIFLIE/STEN GUNS (PLAN & SECTIONS)
77.	CEAF/TD-45/2002	1/1	04.03.2002	06.05.2004	TYP DETAILS OF SLAB SHOWING ARRANGMENT OF TORSION REINF & TYP SEC AT RIDGE OF RCC SLAB SLOPE MORE TNAN 1:20 ETC
78.	CEAF/TD-49/2002	1/1	14.04.2002	-	TYPICAL DETAIL SHOWING SOIL/WASTE PIPE CONNECTIONS
79.	CEAF/TD-50/2002	1/1	11.09.2002	-	TYPICAL DETAIL OF STEEL DOOR TO WATER TANK SLAB
80.	CEAF/TD-51/2002	1/1	14.09.2002	-	ARCHITECTURAL NORMS FUNCTIONAL HEIGHTS OF SANITARY AND ELECTRICAL FITTINGS
81.	CEAF/TD-52/2002	1/1	07.12.2002	01.12.2010	VALVE PITS (BK/STONE) PLAN, SECTION & DETAILS.
82.	CEAF/TD-53/2002	1/1	09.12.2002	22.05.2004 04.08.2021	CAGE FOR PVC WATER TANK & DETAIL OF LOCAL SUNK
83.	CEAF/TD-54/2003	1/1	03.01.2003	-	TYPICAL FIXING DETAILS OF EAVES BOARD
84.	CEAF/TD-56/2003	1/3	27.03.2003		TYPICAL DETAIL OF STEEL GATE & WICKET GATE PLAN ELEVATION (MAIN GATE)
85.	CEAF/TD-56/2003	2/3	27.03.2003	12.09.2003	TYPICAL DETAIL OF STEEL GATE & WICKET GATE
86.	CEAF/TD-56/2003	3/3	27.03.2003	-	TYPICAL DETAIL OF STEEL GATE & WICKET GATE DETAILS OF WICKET GATE
87.	CEAF/TD-68/2004	1/1	22.03.2004	11.05.2004	TYPICAL DETAIL OF FOUNDATION
88.	CEAF/TD-80/2006	1/1	04.05.2006	-	PVC DOORS/WINDOWS WITH PRESSED STEEL FRAME
89.	CEAF/TD-94/2010	1/1	07.12.2010	-	DETAILS OF CURTAIN ROD AND PELMET BOX WITH FLAT IRON BRACKETS (PLANS, ELEVATIONS, SECTIONS AND DETAILS)
90.	CEAF/TD-99/2012	1/1	10.11.2012	-	DETAILS OF BOOK SHELF, WRITING SHELF, FULL LENGTH MIRROR, LOOKING GLASS PLANS, SECTIONS

LIST OF DRAWINGS (CONTD...)

1	2	3	4	5	6
91.	CEAF/TD-108/2013	1/1	13.12.2013	-	DETAILS OF STAIRCASE RAILING (TYPE-A, TYPE-B AND TYPE-C)
92.	CEAF/TD-110/2014	1/1	23.01.2014	-	DETAIL OF SHELVING (PLAN, ELEVATIONS, SECTION AND OTHER DETAILS)
93.	CEAF/TD-110/2014	1/1	23.01.2014	-	DETAIL OF SHELVING (PLAN, ELEVATIONS, SECTION AND OTHER DETAILS)
94.	CEAF/TD-110/2014	1/1	23.01.2014	-	DETAIL OF SHELVING (PLAN, ELEVATIONS, SECTION AND OTHER DETAILS)
95.	CEAF/TD-110/2014	1/1	23.01.2014	-	DETAIL OF SHELVING (PLAN, ELEVATIONS, SECTION AND OTHER DETAILS)
96.	CEAF/TD-115/2015	1/2	30.12.2015	-	LOCKER STEEL (BUILT-IN) FOR ORs (PLAN, ELEVATION, SECTION & ISOMETRIC VIEW)
97.	CEAF/TD-115/2015	2/2	30.12.2015	-	LOCKER, WRITING SHELF & BOOK SHELF (BUILT-IN) DETAILS
98.	CEAF/TD-130/2018	1/1	01.02.2018	-	GENERAL NOTES ON ARCHITECTURAL DRAWINGS.
99.	CEAF/TD-156/2022	1/3	01.06.2022	-	SCHEDULE OF FINISHES
100.	CEAF/TD-156/2022	2/3	01.06.2022	-	SCHEDULE OF FINISHES
101.	CEAF/TD-156/2022	3/3	01.06.2022	-	SCHEDULE OF FINISHES
102.	CE/TD-1129/1996	1/2	11-04-1996	10-09-1997	TYPICAL DETAILS OF ELECTRICAL FITTINGS (EXTERNAL)
103.	CE/TD-1129/1996	2/2	11-04-1996	10-09-1997	TYPICAL DETAILS OF ELECTRICAL FITTINGS (EXTERNAL)

(Signature of Contractor)
Dated: _____

For Accepting Officer

GENERAL CONDITIONS OF CONTRACTS

(IAFW -2249, 1989 PRINT)

FOR LUMP SUM CONTRACTS (IAFW-2159)

1. A copy of the GENERAL CONDITIONS OF CONTRACTS (IAFW-2249, Print 1989) with Errata 1 to 20 and Amendments Nos. 1 to 49 has been supplied to me/us and or is in my/our possession. I/We have read and understood the provisions contained in the aforesaid GENERAL CONDITIONS OF CONTRACTS before submission of this tender and I/We agree that I/We shall abide by the terms and conditions thereof, as modified in Annexure attached.
2. It is hereby further agreed and declared by me/us, that the GENERAL CONDITIONS OF CONTRACTS (IAFW-2249 Print- 1989) including condition 71 and 70 thereof pertaining to settlement of disputes first through Dispute Resolution Board and thereafter by arbitration, containing 34 pages (including this page) (202 to 235) with Errata 1 to 20 and Amendment No 1 to 49 shall form part of these tender documents.
3. It is also agreed by me/us that in case of any discrepancy in the interpretation of the Contents between ENGLISH and HINDI VERSION, ENGLISH VERSION shall take precedence over HINDI VERSION.

For Accepting Officer

Signature of Contractor
Dated

SCHEDULE OF MINIMUM FAIR WAGES

- 1. It is hereby agreed by me/us* that the “Schedule of Minimum Fair Wages” (SMFW) as published vide Government of India which specifies the minimum rates of wages for various categories of workmen as applicable on the last due date of receipt of this tender shall form part of the tender documents and is in my/our* possession. I / We* have read and understood the provision contained in the aforesaid Schedule of Minimum Fair Wages before submission of tender.
- 2. The minimum rates of wages shall consist of all-inclusive rates and include also the wages for weekly day of rest.
- 3. My/Our* signature(s) here amounts to my/our* having signed the aforesaid Schedule of Minimum Fair Wages forming part of this tender.

(* Delete whichever is not applicable)

For Accepting Officer
Dated.

Signature of Contractor
Dated