

Additional Information:

CANO CEAFU22202425 SERIAL PAGE NO 1.

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

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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 For Accepting Officer.

DATED \_\_\_\_\_.

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Tele 01992234056234037 HQ Chief Engineer AF Zone.

FAX 01992234040 Military Engineer Services.

Email id jtmdircontceza2mesgov.in Co 39 Wing AF.

PIN936839.

CO 56 APO.

85024CEAFU22202425 05 E8 14 Jan 2025.

MS..

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..

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

Dear Sirs.

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 etendering 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 tenderbid will be received in physical form and any tenderbid received in such manner will be treated as non bonafide tenderbid.

3. Bid will be opened on due date and time fixed for opening in the presence of tenderersbidders 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 tenderdrawings 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 eprocurement portal and submit the physical documents in the office of Chief Engineer Air Force Zone Military Engineer Services Co 39 Wing AF PIN 936839 Co.

56 APO within time limit specified in NIT. Inadequacydeficiency 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 Co 39 Wing AF PIN 936839 Co 56 APO before date time fixed for this purpose.

7. The contractor must ensure that the tenderbid on the proper form is uploaded in time as the Accepting Officer will take no cognizance of any quotationoffer received in any other electronic or physical form like emailfaxby handthrough post from tenderer bidder even if they are received in time.

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

9. General conditions of contracts IAFW2249 1989 Print and errata and amendments thereto Schedule of minimum fair wages and MES SSR PartI and partII 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 tenderbid failing which action as stipulated in Condition 19 of GCC IAFW2249 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 \_\_\_\_\_.

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## 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 TwentyEight days of the receipt by the contractor of. notification of acceptance of his tenderbid. 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 IAFW2249 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 At market price.

Subsidiaries or other Nationalised banks .

Scheduled banks.

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 IAFW1780 and.

IAFW1780A 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 EinC. 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](http://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](http://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/initialed 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 initialed. 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.

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### 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 or on behalf of a firm or company using his DSC shall upload with the tender bid a scanned copy in pdf form of power of attorney duly executed in his favour by such other or all of the Partners 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 tendersbids and are desirous of being present at the time of opening of the tendersbids may do so at the appointed time.

2.12 The tendererbids 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 tendererbids 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 REVOCATIONREVISION 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 tendererbids 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 tendererbids 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 tendererbids may make use of.

4.3 The tenderersbidders 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 tendererbids 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.

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### INSTRUCTIONS ON FILLING AND SUBMISSION OF TENDER Contd.

4.4 Department may issue amendmentserrata 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 errataamendmentscorrigendum 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 modifiedRevised BOQ uploaded by the Department through Corrigendum and it is bidders responsibility to ensure uploading of correct BOQ. The bidder whose bid is not on correct BOQ shall be treated as NONBONAFIDE.

6 These instructions shall form part of the contract documents.

Signature of Contractor For Accepting Officer.

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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 tendererbidder 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 unenlisted 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 tenderbid but in case of term contracts contractors of class SS to E may tenderbid. 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 tenderbid without depositing Earnest money along with the tenderbid.
5. Not more than one tenderbid shall be submitted/uploaded by one contractor or one firm of contractors. Under no circumstances will a father and his sons or other close relations who have business dealing with one another be allowed to tenderbid 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 Co 39 Wing AF, PIN 936839 Co 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 tendererbidder 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 tenderbid 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](http://defproc.gov.in) site for downloading and shall form part of contract agreement in case the tenderbid 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 tendererbidder at the office of Accepting Officer and concerned GE during working hours.

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NOTICE INVITING TENDER NIT CONTD.

8. The tenderersbidders 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 tendererbidders are deemed to have full knowledge of all relevant documents samples site etc. whether they have inspected them or not.

9 Any tenderbid 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 Tenderersbidders 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 applicantbidder 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 applicantbidder. 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 contractorbidder will be informed regarding nonvalidation of his T bid assigning reasons thereof through the defproc website. The applicant contractorsbidder if he so desires may appeal to the next higher Engineer authority ADGN on email id adgnjmmsgov.in with copy to the Accepting officer on email ID jtdircontceza2mesgov.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 contractorbidder 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 Tendersbids which may be lower as are admissible under the government Policy. No claim for any compensation or otherwise shall be admissible for such tendererbidder whose tenderbid is rejected.

13 Accepting Officer does not bind himself to accept the lowest or any tenderbid or to give any reason for not doing so.

14 The tendererbidder regarding clarifications on provision in etender documents and other request in connection with bidding process can contact on Tele No 01992234056 Dir Contracts. email to HQ CE AF Udampur Zone Email ID jtdircontceza2mesgov.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 IAFW2249 shall be applicable.

16 This Notice Inviting Tender NIT including Appendix A shall form part of the contract.

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Signature of Contractor For Accepting Officer.

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APPENDIX A TO NOTICE INVITING TENDER NIT.

1 Name of the work PROV N 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 DDBankers 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 WebsitePortal address [www.defproc.gov.in](http://www.defproc.gov.in) and [www.mes.gov.in](http://www.mes.gov.in).

6 Type of contract The tender shall be based on drawings and specifications IAFW. 2159 and GCC IAFW2249 and General Conditions of Contract. IAFW2249 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.

6a Integrity Agreement Refer Appx B TO NOTICE OF TENDER enclosed herewith.

7 Information details.

a Bid submission start. date.

b Bid submission end Refer critical dates. date.

c Date of bid opening of. bid Cover 1.

8 Eligibility Criteria They shall satisfy the following criteria .

a For MES enlisted i They shall have enlistment in Class SS and category. contractors ai.

ii They shall not carry adverse remarks in WLR or any similar. report circulated by the competent engineer authority.

b For other The firm not enlisted with MES shall satisfy the following. contractors criteria.

i Contractor not enlisted with MES should meet the enlistment. criteria of SS Class and ai 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](http://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 suspendeddebarredblacklisted either permanently or. temporarily from participating in any bid or for business dealings. by any CentralState Government Department or any CentralState. Government PSU or any Autonomous Body under CentralState. Government or any Local Body as on the bid submission end date.

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APPENDIX A TO NOTICE INVITING TENDER NIT CONTD.

8 c Technical PQC Not applicable.



criteria for All Contractors.

MES enlisted or un.

enlisted.

9 Tender issuing and Chief Engineer Air Force Zone.

Accepting officer HQ CEAF Udhampur.

Contact details

V K S Baghel Offg Director Contracts.

Phone No 01992234040.

Email Id jtdirceza2mesgov.in.

Phone No 01992234056.

Email Id jtdirceza2mesgov.in.

Chief Engineer AF Udhampur Zone.

10 Executing agency Garrison Engineer P AF Srinagar.

11 Earnest Money Deposit Rs 1100000.00 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 as unenlisted contractors if any fulfilling the other eligibility criteria given in NIT is less than 7 seven applications in ro 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 contractors one class below two classes below in case of remote and difficult areas may also bid for this tender. Such 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 unenlisted 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 directors 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 Forms letterhead.

b Enlistment letter issued by the Registering Authority duly renewed for the cycle period in vogue.

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APPENDIX A TO NOTICE INVITING TENDER NIT CONTD.

c Scanned copy of DDBankers 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 Firms letterhead.

b Scanned copy of DDBankers 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 8b of.

Appendix A hereinbefore 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 DDBanker 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. DDBankers 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 nonsubmission 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. DDBanker 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 unenlisted 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.

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#### APPENDIXA 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 uploaded 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 IAFW2249 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 gi 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 firms 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.

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APPENDIX A TO NOTICE INVITING TENDER NIT CONTD.

10. Invitation for 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 email 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 entitled for any compensation whatsoever for rejection of his bid.

11. In case an unenlisted contractor is already executing works in MES he shall not be considered eligible for the subject tender if the total value of such works is more than twice the tendering limit of the MES Class of contractor for which it is eligible. Any unenlisted 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 reject 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 issued 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 etender documents enclosed. herewith as serial page No to of tender documents.

For Accepting officer.

OBLIGATION.

Dated\_\_\_\_\_.

Signature of Contractor.

File No \_\_\_\_\_.

Email id jtldircontceza2mesgov.in.

HQ Chief Engineer AF Zone.

Military Engineer Services.

Co 39 Wing AF.

PIN 936839 CO 56 APO.

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INTEGRITY PACT.

GENERAL.

1. Whereas the President of India represented by Chief Engineer CE hereinafter. 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 worksservice and Ms \_\_\_\_\_.

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 precontract. 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 precontract 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 attempts or completed breaches 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 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 precontract or postcontract stage in order to secure the contractor in contract in furtherance to secure it and in particular commits himself to the following.

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INTEGRITY PACT.

6.1 Bidder will not offer directly or through intermediaries any bribe gifts consideration reward favour any material or nonmaterial 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 nonmaterial 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 Agents brokers 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 be 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 PrincipalOwner 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 Bidders 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 Bidders 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 PrincipalOwner 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 PrincipalOwner shall be deducted from any amount held with the Department any payment due.

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#### 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 Contracts 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 PrincipalOwner 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 bidders 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 servants 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 Monitors 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.

Sl NO Name of IEM email id.

1 Shri Narayan Murthy Ganapathy IFoS Gana\_narayanyahoo.com.  
Retd.

2 Shri Lalatendu Mohanti IPS Retd L.mohantigmail.com.

10.2 Details of Nodal officer nominated by EinCs Branch are as follows.

Name Shri P K S Sengar Director Contracts.

email id dircont1eincmesnic.in.

Mobile no 9131948501.

Tele Office 01123019154.

Postal Address Room No 158.

Dte of Contract Management E8.

Engineer in Chiefs 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.

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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 Contractors 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.

CANO CEAUFU22202425 SERIAL PAGE NO 18.

INTEGRITY PACT.

To.

\_\_\_\_\_.

\_\_\_\_\_.

\_\_\_\_\_.

SubTender 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 tenderbid documents failing which the tenderbidder 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.

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INTEGRITY PACT.

To.

Chief Engineer AF Udampur Zone.

Udampur.

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 tenderbid document.

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

IWe 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 tenderbid is finally accepted by MES.

IWe acknowledge and accept the validity of the integrity Pact which shall be in the line with. para 15 of the enclosed integrity Pact.

IWe acknowledge that in the event of myour failure to sign and accept the integrity Pact while. submitting the tenderbid MES shall have unqualified absolute and unfettered right to. disqualify the tendererbidding and reject the tenderbid in accordance with terms and conditions. of the tenderbid.

Yours faithfully.

Duly authorized signatory of the Bidder.

CANO CEAUFU22202425 SERIAL PAGE NO 20.

In lieu of IAFW2159 REVISED 1947.

TO BE READ IN CONJUNCTION WITH GENERAL CONDITIONS.

OF CONTRACTS IAFW 2249 1989 Print.

MILITARY ENGINEER SERVICES.

Tele 01992234056 Military Engineer Services.

FAX 01992234040 Headquarters.

Email id jtldircezafu2mesgov.in Chief Engineer AF Zone.

CO 39 Wing AF.

PIN936839.

CO 56 APO.

85024CEAFU22202425 05 E8 14 Jan 2025.

eTENDER for.

PROVN OF FIRING RANGE AT AF STN SRINAGAR.

Dear Sirs.

1. Ms \_\_\_\_\_ of \_\_\_\_\_ isare hereby.  
authorised to tender for the above work.

2. The complete tender documents are uploaded on MES portal [www.defproc.gov.in](http://www.defproc.gov.in) .  
Tender shall be uploaded in two covers viz. Cover1 and Cover2. 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 \_\_\_\_\_.

CANO CEAUFU22202425 SERIAL PAGE NO 21.

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 PartII SectionI Internal electrical supply works.

iii PartII SectionII Internal electrical supply works.

to be quoted by the tenderer in BOQ.

iv PartIII Flame proof wiring.

v PartIV Internal water supply work.

vi PartV Plumbing work.

vii PartVI Road and Path works.

viii PartVII Area drainage works.

ix PartVIII SectionI Sewage disposal works.

x PartVIII SectionII Sewage disposal works.

to be quoted by the tenderer in BOQ.

xi PartIX External water supply works.

xii PartX SectionI External electrification works.

xiii PartX SectionII External electrification works.

to be quoted by the tenderer in BOQ.

xiv PartXI Site clearance excavation and earth work.

2. Items and quantities given in Schedule A PartI 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.

33.. 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 buildingstructure 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 IAFW2249 and.

quote their lumpsum in BOQ.

b Schedule A Part II SecI Part III PartIV PartV PartVI PartVII PartVIII Section.

I PartIX PartX SecI and PartXI have been prepriced 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.

IAFW2249 and quote their lump sum in BOQ and arrive at a percentage for each of these parts.

abovebelow the lump sum price inserted by the MES and insert the same against respective.

parts in the place provided for in the BOQ.

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SCHEDULE A NOTES CONTD..

4. The unit rates for all the schedules listed at schedule A Note No 1 hereinbefore except the.

schedules as listed under Note No 3b hereinbefore are to be quoted by the tenderers. The.

tenderers shall workout their own price for each item of these PartsSec 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 hereinafter for any.

particular items of work.

6. Period of completion

6.1 The entire work under this contract comprising building work described in Schedule A PartI.

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 hereinafter. 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 PartI including.

preambles and the contract drawings including notes therein.

88.. UUnniitt RRaatteess..

88..11 SScchheedduullee AA PPaarrrt II..

88..11..11 UUnniitt rraattee ooff bbuiiilddiinngg wwoorrrkss uunnddeerr SScchheedduullee AA PPaarrrt I

aa 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 inapplicable 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.

dd ii Provision of niches of specifications as directed by GE for housing the main. distribution boxes and distribution boards.

iiii All other details of works shown on drawings except inapplicable details in typical drawings whether described in particular specifications or not.

iiiii 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.

CANO CEAUFU22202425 SERIAL PAGE NO 23.

SCHEDULE A NOTES CONTD..

88..11..22 Unit rates of building works under Schedule A Part I do not include the cost of the following works .

aa Services covered under schedule A Part II to Part XI in BOQ..

bb 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. Contractors 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 constitutes minor details which is included in the. contractors lump sum the decision of the Accepting officer shall be final conclusive and binding.

1100.. Lumpsum of building work in Sch A PartI shall include the cost of cuttingleaving holesforming. chases etc in walls floor and ceiling as required and making good with cement mortar 13. No. adjustment shall however be made on this account for pricing of any deviation in respect of Sch. A PartI 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 buildingsworks. 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 ML M L Material Labour.

g SF SF Supplying and fixing.

h CO CO Carried over.

j BF BF Brought forward.

k KgPbw Kilogram Part by Weight.

l xSqm X Sqm 10 Sqm.

m x RM X RM Ten Running Metre.

n N.B. Nominal Bore.

o DrgDrgsdrgrdrgs DrawingDrawingsdrawing drawings.

p CucmCUCM Cubic Centimetre.

q PQCDLC Pavement quality concreteDry lean concrete.

r GSBWMM Granular sub baseWet mix macadam.

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SCHEDULE A NOTES CONTD..

s DBMDAC Dense Bitumen macadamDense 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. TP 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 trainedexperienced security guards at gates of fencedbarricaded TP area and these. security guards will regulate movement of labour and ensure discipline in the labour camp and. TP area. Security personnel will maintain liaison with AF Authorities and will assist them in. movement of labour materials TP 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.

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SCHEDULE A NOTES CONTD..

16. HANDING OVER OF SITES

Sites 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 uo 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 ABOQ 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 GPI Appendix F to particular Specifications except where makes of. items are given in groups it shall be followed Category groupI 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 GPI of AppendixF shall be applicable for all purpose.

c Materialsitems 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](http://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 Gde500500d550550d 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 or 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 MCCBs MCBs 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.

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#### 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 Manufacturers 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 JK as per GST legislation labour welfare cess tax etc. as per prevailing taxes and payable under respective statutes in JK 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 JK 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 JK state on 08 Jul 2017 certain taxes as indicated in said special condition 30 are subsumed and replaced with new GST legislation in JK. 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 JK issued vide circular by Govt of JK Finance.

Department Civil Secretariat Srinagar letter No ETESTT119GSTSRO2017 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 IAFW2249 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 IAFW2249.

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 IAFW2249.

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.

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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 DCWEC/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 DCWEC/Director C depending upon the financial effect shall be referred as the rate decided by GE under Para 62G of IAFW2249.

25 Bank Guarantee Bond against performance Security.

25.1 Condition 19.1 of IAFW2249 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 PCDACDA by the Accepting Officer for verification and then returning the original to the Accepting Officer and the certified true copies to the CWEGEI GEAGEI 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..

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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 Parede 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 IFA451. 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 IFA451 if not already submitted by him. After submission of No.

Demand Certificate IFA451 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 IFA451 If not already submitted by him. After.

submission of No Demand certificate IFA451 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 IAFW2249.

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.

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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 EM EQUIPMENTS MATERIAL Procurement of EM 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 hereinafter 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 IAFW2249 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 CAD 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 proximity of the site plan area. In the event of delay in finalization of layout handing 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 IAFW2249 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 workmanlike 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.

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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 PartII 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 PartII 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 buildingsworks. 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. Contractors 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 contractors 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 TP labour and duration with facility to follow progress.

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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 visàvis 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 visàvis 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 cost 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 Refer List of drawings attached for all.  
No. items as applicable.

b Under column of Period of Refer Note No 06 of schedule A for all.  
completion items.

c Under column of Remarks Refer notes to schedule A for all items.

d For item rate schedules These schedule are not prepriced by MES.  
and or to be quoted by and the prepriced rate indicated as 0.00.  
tenderer under Col 5 signifies this fact only.

Under Column 5.

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 For Accepting Officer.

Dated \_\_\_\_\_.

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SCHEDULE A CONTD PART I LIST OF WORKS AND PRICES FOR BUILDING.  
WORKS.

Sl No Brief description of items of building Units No of Amount.

R.

work Drawings used Per Comment.

in.

g.

io dple r k.

s.

N.

ot.

io.

o.

fn.

1 2. 3 4 5 6 7 8.

Refer BOQ.

Signature of the Contractor For Accepting Officer.

Dated \_\_\_\_\_.

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SCHEDULE A CONTD PARTII SECI LIST OF WORKS AND PRICES FOR INTERNAL.  
ELECTRIC SUPPLY WORKS.

SI No Brief description of items of building Rate No of Amount.

R.

work D Units units C e.

r a Po m.

w required em a.

in r iop r k.

g dle s.

N ot io.

o fn.

1 2. 3 4 5 6 7 8.

1.00 Material and labour for Point wiring 992.75 14.00 13898.50.

for one light pointfan point Per Point.

controlled by one switch with 1.5.

sqmm PVC insulated and.

unsheathed fire retardant low.

smoke and halogen FRLSH.

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.

IS9537 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.

2.00 All as per ser item No 1.00 but for 1070.40 12.00 12844.80.

05 amp socket outlets point.

Per Point.

controlled by one switch on.

Independent board complete all as.  
specified and directed.

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SCHEDULE A CONTD PARTII SECI 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 herein 1131.39 1.00 1131.39.

before but for 15 amp socket outlets.

Per Point.

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.

4.00 Supply and fixing 3 module cover 217.70 13.00 2830.10.

plate with frame as per site.

Each.

requirement complete all as.

specified and directed by Engineer.

inCharge.

5.00 Supply and fixing 4 module cover 247.10 5.00 1235.50.

plate with frame as per site.

Each.



requirement complete all as.  
specified and directed by Engineer.  
inCharge.

6.00 Supply and fixing 6 module cover 309.60 3.00 928.80.

plate with frame as per site Each.

requirement complete all as.  
specified and directed by Engineer.  
inCharge.

7.00 Supply and fixing 3 module modular 179.80 13.00 2337.40.

metal Flush box as per site.

Each.

requirement complete all as.  
specified and directed by Engineer.  
inCharge.

8.00 Supply and fixing 4 module modular 213.40 5.00 1067.00.

metal Flush box as per site.

Each.

requirement complete all as.  
specified and directed by Engineer.  
inCharge.

9.00 Supply and fixing 6 module modular 284.10 3.00 852.30.

metal Flush box as per site Each.

requirement complete all as.  
specified and directed by Engineer.  
inCharge.

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SCHEDULE A CONTD PARTII SECI 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 1 260.50 26.00 6773.00.

way 610 Amp 1 Module with.

Each.

suitable plate and cover complete.

all as specified and directed by.

EngineerinCharge.

11.00 Supply and fixing modular switch 1 343.70 1.00 343.70.

way 1620 Amp 1 Module with.

Each.

suitable plate and cover complete.

all as specified and directed by.

EngineerinCharge.

12.00 Supply and fixing modular socket 340.54 12.00 4086.48.

outlet 5 pin 6 amps flush type.

Each.

complete all as specified and as.

directed by EngineerinCharge.

13.00 Supply and fixing Modular Socket 528.40 1.00 528.40.

outlet 616Amps 2 and 3 Pin.

Each.

combined 2 module complete all as.

specified and directed by Engineer.

inCharge.

14.00 Supply and fixing Ceiling rose 65.70 14.00 919.80.

surface Bakelite 65 x 50 mm 3.

Each.

terminals fixed on PVC Round.

Block complete all as specified and.

as directed.

15.00 Supply and fixing energy efficient 1305.40 12.00 15664.80.

LED tube light fitting integrated.

Each.

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.

inCharge.

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SCHEDULE A CONTD PARTII SECI 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 1354.81 1.00 1354.81.

mirror type with high output diffuser.

Each.

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.

17.00 Supply fixing Exhaust fan in PVC 1606.52 1.00 1606.52.

body 250 m sweep heavy duty AC Each.

single phase 230Volts including.

connection with 0.75 sqmm.

multistrand 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.

18.00 Supply fixing Distribution Box SPN 2264.90 2.00 4529.80.

12 way with 200 amps rated bus Each.

bar 220 V50 Hz IP65 IK09.

classII weatherproof cabinets.

Door and Cabinet fully reversible.

Removable chassis and faceplates.

including weatherproof glands rails.

etc as specified directed.

19.00 Supply fixing Distribution Box SPN 1329.44 2.00 2658.88.

4 way with 200 amps rated bus bar Each.

220 V50 Hz IP65 IK09classII.

weatherproof cabinets Door and.

Cabinet fully reversible Removable.

chassis and faceplates including.

weatherproof glands rails etc as.

specified directed.

20.00 Supply fixing Distribution Box TPN 2642.70 1.00 2642.70.

4 way 415 V50 Hz IP65 IK09 Each.

classII weatherproof cabinets.

Door and Cabinet fully reversible.

Removable chassis and faceplates.

including weatherproof glands rails.

etc as specified directed.

CANO CEAUFU22202425 SERIAL PAGE NO 37.

SCHEDULE A CONTD PARTII SECI 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 163.32 400.00 65328.00.

using PVC insulated and Running.

unsheathed fire retardant low smoke Metre.

and halogen FRLSH 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 IS694 2010 using.

approved colour code for phase and.  
neutral as per IS code drawn.  
through nonmetallic PVC rigid.  
concealed conduit 20mm outer dia.  
ISI marked heavy mechanical.  
stress HMS grade in accordance.  
with IS9537 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.  
Engineerincharge.

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 conduitflush.  
boxes etc. is deemed to be included.  
in overall rate quoted and nothing.  
extra shall be paid for this.

22.00 Supply and fixing 415V 10KA C 2360.74 1.00 2360.74.  
curve miniature circuit breaker Each.  
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.

23.00 Supply and fixing amp rating 240V 851.20 4.00 3404.80.  
10KA C curve miniature circuit Each.  
breaker MCB SPN of 632 Amp in.  
the MCB DB complete with.  
connection testing and.  
commissioning complete all as.  
specified and as directed.

CANO CEAUFU22202425 SERIAL PAGE NO 38.

SCHEDULE A CONTD PARTII SECI 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 294.00 16.00 4704.00.

10KA C curve miniature circuit Each.  
 breaker MCB SP of 532 Amp in.  
 the MCB DB complete with.  
 connection testing and.  
 commissioning complete all as.  
 specified and as directed.  
 25.00 ML Sub main wiring using PVC 215.00 50.00 10750.00.  
 insulated and unsheathed fire Running.  
 retardant low smoke and halogen Metre.  
 FRLSH 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 IS694 2010 using.  
 approved colour code for phase and.  
 neutral as per IS code drawn.  
 through nonmetallic PVC rigid.  
 concealed conduit 20mm outer dia.  
 ISI marked heavy mechanical.  
 stress HMS grade in accordance.  
 with IS9537 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.  
 Total amount of Sch A Part II Secl carried over Rs. 164782.22.  
 to BOQ.

Signature of the Contractor For Accepting Officer.

Dated \_\_\_\_\_.

CANO CEAUFU22202425 SERIAL PAGE NO 39.

SCHEDULE A CONTD PARTII SECII LIST OF WORKS AND PRICES FOR INTERNAL.  
ELECTRIC SUPPLY WORKS.

SI No Brief description of items of building Rate No of Amount.

R.

work D r a w Units reu qn ui it rs e d P e r C o m e m a.

in.

g.

io dp le r k.

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N.

ot.

io.

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1 2. 3 4 5 6 7 8.

Refer BOQ.

Signature of the Contractor For Accepting Officer.

Dated \_\_\_\_\_.

CANO CEAUFU22202425 SERIAL PAGE NO 40.

SCHEDULE A CONTD PARTIII LIST OF WORKS AND PRICES FOR FLAME PROOF.  
WIRING WORKS.

SI No Brief description of items of building Rate No of Amount.

D C R.

work r a w in.

g.

Units reu qn ui it rs e d P e r io do m p.

le.

e m a.

r k.

N.

ot.

io.

s.

o.

fn.

1 2. 3 4 5 6 7 8.

1.00 ML for explosion flame proof 1408.49 1.00 1408.49.

point wiring with single core PVC Point.

insulated and FRLSH 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 wallceiling surface.  
with suitable size of clamps and.  
screws complete all as specified.  
and directed.

2.00 ML for explosion flame proof 1267.50 2.00 2535.00.

point wiring with single core PVC Point.

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 wallceiling surface.

with suitable size of clamps and.

screws complete all as specified.

and directed.

CANO CEAUFU22202425 SERIAL PAGE NO 41.

SCHEDULE A CONTD PARTIII 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 5936.18 2.00 11872.36.

1x40 Watt flame proof CMRI Each.  
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.

4.00 Supply and fixing Switch flame 1609.00 2.00 3218.00.  
proof rotary type with termination Each.  
box in LM6 16A Single pole 250V.  
complete all as specified and as.  
directed.

5.00 Supply and fixing flame proof 4512.60 1.00 4512.60.  
switch socket plug combined in Each.  
LM6 cable termination box in LM6.  
16A 250V 2Pearth complete all.  
as specified and as directed.

Total amount of Sch A PartIII carried over to BOQ Rs. 23546.45.

Signature of the Contractor For Accepting Officer.

Dated \_\_\_\_\_.

CANO CEAUFU22202425 SERIAL PAGE NO 42.

SCHEDULE A CONTD PARTIV LIST OF WORKS AND PRICES FOR INTERNAL.  
WATER SUPPLY WORKS.

SI Brief description of items of building D Rate No of Amount C R.

No work r a.

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1 2. 3 4 5 6 7 8.

1.00 Supply and fixing Steel tubes 15 143.00 10.00 1430.00.  
mm bore galvanised mild steel tube Running.  
Medium grade galvanized with all Metre.  
fittings fixed to walls and ceilings or.  
laid in floors complete all as.  
specified.

2.00 Supply and fixing Steel tubes 20 169.00 12.00 2028.00.  
mm bore medium grade Running.  
galvanized with all fittings and fixed Metre.  
to walls and ceilings or laid in floors.  
complete all as specified.

3.00 Supply and fixing 15mm dia Bib taps 607.57 2.00 1215.14.  
chromium plated fancy type with Each.  
crutch or butterfly handles screwed.  
down screwed for iron pipe.  
complete all as specified and as.  
directed.

4.00 Supply and fixing PVC flexible 150.00 4.00 600.00.  
connections hot cold PTMT 450 Each.  
mm long 15mm dia with flange nuts.  
washers complete all as specified.  
directed.

5.00 Supply and fixing concealed Stop 682.03 4.00 2728.12.  
valveAngle valve 15mm dia of Each.  
chromium plated fancy type with.  
capstan head handle pressure.  
screwed for iron pipe complete all.  
as specified and as directed.

6.00 Supply and fixing concealed Stop 716.70 2.00 1433.40.  
valveAngle valve 20mm dia of Each.  
chromium plated fancy type with.  
capstan head handle pressure.  
screwed for iron pipe complete all.  
as specified and as directed.

CANO CEAFU22202425 SERIAL PAGE NO 43.

SCHEDULE A CONTD PARTIV 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 1743.41 2.00 3486.82.  
mixture cost copper alloy with Each.  
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.

Total amount of Sch A PartIV carried over to Rs. 12921.48.

BOQ.

Signature of the Contractor.

Dated \_\_\_\_\_ For Accepting Officer.

CANO CEAUFU22202425 SERIAL PAGE NO 44.

## SCHEDULE A CONTD PARTV LIST OF WORKS AND PRICES FOR PLUMBING. WORKS.

Sl Brief description of items of building D Rate No of Amount nC R.

No work r a Units units Po e.

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1 2. 3 4 5 6 7 8.

1.00 Supply and fixing laying for 100mm 817.43 6.00 4904.58.

bore cast iron soil waste and vent Running.

pipes sand cast pipes in any Metre.

length with or without ears with.

cement joints laid in trenches or in.

floors complete all as specified and.

as directed.

2.00 Supply and fixing laying for 100mm 904.39 10.00 9043.90.

bore cast iron soil waste and vent Running.

pipes sand cast pipes in any Metre.

length with or without ears with.

cement joints fixed to wall complete.

all as specified and as directed.

3.00 Supply and fixing laying for 75mm 758.50 8.00 6068.00.

bore cast iron soil waste and vent Running.

pipes sand cast pipes in any Metre.

length with or without ears with.

cement joints laid in trenches or in.

floors complete all as specified and.

as directed.

4.00 Supply and fixing laying for 75mm 840.42 6.00 5042.52.

bore cast iron soil waste and vent Each.

pipes sand cast pipes in any.

length with or without ears with.

cement joints fixed to wall complete.

all as specified and as directed.

5.00 Supply and fixing cast iron bends 366.13 2.00 732.26.

any radius diminishing pieces or Each.

tapers larger bore measured for.

pipes of 100mm bore with oval.

access door complete all as.  
specified and as directed.

6.00 Supply and fixing cast iron cowl for 250.00 2.00 500.00.  
100mm bore of pipe complete all as Each.  
specified and as directed.

7.00 Supply and fixing cast iron cowl for 190.00 2.00 380.00.  
75mm bore of pipe complete all as Each.  
specified and as directed.

CANO CEAUFU22202425 SERIAL PAGE NO 45.

SCHEDULE A CONTD PARTV LIST OF WORKS AND PRICES FOR PLUMBING.  
WORKS.

1 2. 3 4 5 6 7 8.

8.00 Supply and fixing cast iron bends 533.50 2.00 1067.00.  
any radius with duck foot or heel Each.  
rest for 100mm bore complete all as.  
specified and as directed.

9.00 Supply and fixing salt glazed stone 753.35 2.00 1506.70.  
ware traps square or round Each.  
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.  
124 type B1 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.

10.00 Supply and fixing cast iron floor trap 310.00 4.00 1240.00.  
75mm bore with CI grating including Each.  
jointing to waste pipe fixed in.  
cement concrete type B1 124 dia.  
of outlet 75mm complete all as.  
specified and as directed.

11.00 Supply and fixing cast iron bends 295.00 4.00 1180.00.  
any radius diminishing pieces or Each.  
tapers larger boar measured for.  
pipes of 75mm bore complete all as.  
specified and as directed.

Total amount of Sch A PartV carried over to BOQ Rs. 31664.96.

Signature of the Contractor.

Dated \_\_\_\_\_ For Accepting Officer.

CANO CEAUFU22202425 SERIAL PAGE NO 46.

SCHEDULE A CONTD PARTVI LIST OF WORKS AND PRICES FOR ROAD AND.  
PATH WORKS.

SI Brief description of items of building D Rate No of Amount C R.

No work r a.

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1 2. 3 4 5 6 7 8.

1.00 Rolling and consolidation formation 26.00 165.00 4290.00.

surfaces including filling in soft 10.

spots depression etc. which occur Square.

during rolling for portion coming in Metre.

cutting original ground only to.

required level gradient or camber.

including watering before and.

during rolling complete all as.

specified and directed.

2.00 Material and labour for 150mm 2633.70 165.00 434560.50.

thick spread thickness soling or 10.

sub base with broken boulders or Square.

quarried stone of size 100mm to Metre.

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.

3.00 Supply laying and compacting 150 4424.52 165.00 730045.80.

mm thick compacted thickness 10.

Wet Mix Macadam WMM laid in Square.

two layers of 75 mm each Metre.

grading as per table 40013 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 80100 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 9001 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.

CANO CEAUFU22202425 SERIAL PAGE NO 47.

SCHEDULE A CONTD PARTVI 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 360.60 165.00 59499.00.  
unsurfaced water bound macadam 10 Square.  
surfaces by brushing with wire Metre.  
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 unsurfaced water.  
bound macadam complete all as.  
specified and as directed.

5.00 Material and labour for Applying 512.50 165.00 84562.50.  
evenly a primingtack coat of 10 Square.  
Bitumen VG10 grade conforming to Metre.  
IS 73 at a rate of application of 10.  
kgsqm on bituminous surface as.  
specified in Table 5005 of MoRTH.  
specification for road and bridge.  
works 2013 using mechanical.  
sprayer complete all as complete all.  
as specified and as directed.

6.00 Material and labour for Premix 8915.00 82.50 735487.50.  
bituminous macadam using paving Cubic.  
bitumen VG 30 as binder content Metre.  
4.00 Minimum laidrolled 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.

7.00 Material and labour for bituminous 3828.50 165.00 631702.50.

premix Asphaltic Concrete design 10 Square.

mix 40 mm consolidated thickness Metre.

with 5.5 binder content by weight.

of total mix using paving bitumen.

VG 30 laid with selfpropelling.

mechanical paver complete to.

required camber and gradient.

using 8 to 12 tonne power roller.

complete all as specified.

8.00 Material and labour for precast 11036.80 30.60 337726.08.

cement concrete 124 type B1 Cubic Metre.

using 20mm graded crushed stone.

aggregates with solid blocks as in.

kerb stones exceeding 10cm in width.

and the like set in cement mortar 14.

complete all as specified and as.

directed.

CANO CEAUFU22202425 SERIAL PAGE NO 48.

SCHEDULE A CONTD PARTVI 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 2070.80 4.00 8283.20.

thick hardcore of broken stone or Cubic.

boulders of gauge n.exc. 63mm Metre.

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.

10.00 Material and labour for 75mm 412.10 40.00 16484.00.

thick PCC 148 type D2 using Square.

40 mm graded crushed stone metre.

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.

11.00 Material and labour including 873.10 40.00 34924.00.

laying 60mm thick factory made Square.

chamfered edge cement concrete Metre.  
paver block of M35 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.  
Total amount of Sch A Part VI carried over to.  
Rs. 3077565.08.

BOQ.

Signature of the Contractor.

Dated \_\_\_\_\_ For Accepting Officer.

CANO CEAUFU22202425 SERIAL PAGE NO 49.

SCHEDULE A CONTD PART VII LIST OF WORKS AND PRICES FOR AREA DRAINAGE.  
WORKS.

Sl Brief description of items of Rate No of Amount.

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No building work r a Units units P eo.

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1 2. 3 4 5 6 7 8.

1.00 Material and labour for Plain 5862.00 20.55 120464.10.

Cement Concrete Type C2 136 Cubic.

using 40 mm graded crushed stone Metre.

aggregate in foundations filling.

mass concrete and drains complete.

all as specified and directed by.

Engineer in charge.

2.00 Material and labour for walling of 4828.72 68.40 330284.45.

random rubble uncoursed well Cubic.

bounded bedded and solidly hearted Metre.

built in cement mortar 14 complete.

all as specified and as directed.

3.00 Extra over stone walling for hammer 271.26 180.00 48826.80.

dressing to face stones and.

Square.

dressing of face beds and joints as.

Metre.

specified hammer dressing with.

maximum depression 20mm on face.

of line on sand stones and the like.

complete all as specified and as.

directed.

4.00 Material and labour for keyed 1415.09 18.00 25471.62.

pointing in cement mortar 14 to 10 Square.

random or polygonal rubble Metre.

uncoursed or brought up to course.

on stone masonry work complete all.

as specified and as directed.

5.00 Providing cement concrete 124 9259.40 4.56 42222.86.

type B0 using 12.5 mm graded Cubic.

crushed stone aggregate as in Metre.

lintels up to 1.5m clear span cills.

steps and other similar bands.

plinth courses string courses lacing.

courses parapets and railing up to.

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.

CANO CEAUFU22202425 SERIAL PAGE NO 50.

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 43.35 150.00 6502.50.

or channel 30 cm inner girth in Running.

cement concrete using extra Metre.

cement including forms moulds.

mitred stopped ends etc. complete.

all as specified directed by.

Engineerincharge. Inner girth only.

measured.

Total amount of Sch A Part VII carried over to.

Rs. 573772.33.

BOQ.

Signature of the Contractor.

Dated \_\_\_\_\_ For Accepting Officer.

CANO CEAUFU22202425 SERIAL PAGE NO 51.

SCHEDULE A CONTD PARTVIII SECI LIST OF WORKS AND PRICES FOR SEWAGE.

DISPOSAL WORK.

SI Brief description of items of D Rate No of Amount.

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No building work a Units units o e.

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1 2. 3 4 5 6 7 8.

1.00 Plain Cement Concrete Type D2 5483.10 0.95 5208.95.

148 using 40 mm graded crushed Cubic.

stone aggregate in foundations Metre.

filling and mass concrete complete.

all as specified directed by.

Engineerin charge.

2.00 Material and labour for Brickwork 5370.50 1.53 8216.87.

with subclass B bricks straight or Cubic.

curved on plan exc 6m mean radius Metre.

built in 14 complete all as.

specified and directed.

3.00 Material and Labour plain cement 5924.20 0.07 414.69.

concrete 136 Type C2 using 40 Cubic.

mm Graded crushed stone Metre.  
aggregate as in surface channels.  
and drains complete all as specified.  
and as directed.

4.00 Material and labour for precast 11053.80 0.21 2321.30.

cement concrete 124 type B1 Cubic.  
using 20mm graded crushed stone Metre.  
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 14 complete all as.  
specified and as directed.

5.00 Material and labour for 15mm thick 304.24 8.62 2622.55.

rendering fair faces of brick work or Square.  
concrete surface in CM 14 finished metre.  
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.

CANO CEAUFU22202425 SERIAL PAGE NO 52.

SCHEDULE A CONTD PARTVIII SECI 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 136 466.89 30.00 14006.70.

type C2 using 40mm graded Running.  
crushed stone aggregate as in Metre.  
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.

7.00 Material and labour for 150mm dia 400.00 30.00 12000.00.

reinforced concrete pipe Class NP2 Running.  
laid in trenches and jointed Metre.  
completely with collars complete all.  
as specified and as directed.

8.00 Material and labour for TMT bars 82.60 20.61 1702.39.

10mm dia and above as in Kilogram.

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.

9.00 Supply only integral water proofing 46.10 1.59 73.30.  
compound complete all as specified Kilogram.  
and as directed.

Total amount of Sch A Part VIII Secl carried Rs. 46566.75.  
over to BOQ.

Signature of the Contractor For Accepting Officer.

Dated \_\_\_\_\_.

CANO CEAUFU22202425 SERIAL PAGE NO 53.

SCHEDULE A CONTD PARTVIII SECII LIST OF WORKS AND PRICES FOR.  
SEWAGE DISPOSAL.

SI No Brief description of items of building Rate No of Amount.

R.

work D r a w Units reu qn ui it rs e d P e r C o m e m a.

in.

g.

io dp le r k.

s.

N.

ot.

io.

o.

fn.

1 2. 3 4 5 6 7 8.

Refer BOQ.

Signature of the Contractor For Accepting Officer.

Dated \_\_\_\_\_.

CANO CEAUFU22202425 SERIAL PAGE NO 54.

SCHEDULE A CONTD PARTIX LIST OF WORK OF PRICES FOR EXTERNAL WATER.  
SUPPLY WORKS.

SI No Brief description of items of building Rate No of Amount.

D C R.

work r a w in g Units reu qn ui it rs e d P e r i o d o m p l e e m a r k.

N.

ot.

io.

s.

o.

fn.

1 2. 3 4 5 6 7 8.

1.00 Supply and laying GI tubing medium 158.60 260.00 41236.00.  
grade ISI Marked conforming to IS Running.  
1239 PartI 2004 20mm bore with and Metre.  
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.

2.00 Cutting the CIMSGI pipes upto 80 mm 191.06 1.00 191.06.  
dia bore and reducing to required Each Job.  
length for insertion of Tee for new.  
CIMSGI pipe including Tee of suitable.  
size ISI Marked connections all as.  
directed.

3.00 Gunmetal globe or gate valves with 540.11 1.00 540.11.  
iron wheel head screwed both ends EACH.  
for iron pipe of 20mm bore and fixed.  
complete all as specified and as.  
directed.

4.00 Lagging to pipes used in internal water 90.10 5.00 450.50.  
supply or plumbing all round with EACH.  
25min thick bonded mineral wool.  
preformed SNAP ON pipe sections of.  
density 144 Kgcum conforming to IS.  
9842 complete all as specified and as.  
directed.

Total amount of Sch A PartIX carried over to Rs. 42417.67.  
BOQ.

Signature of the Contractor.

Dated \_\_\_\_\_ For Accepting Officer.

CANO CEAUFU22202425 SERIAL PAGE NO 55.

SCHEDULE A CONTD PARTX SECI LIST OF WORKS AND PRICES FOR.  
EXTERNAL ELECTRIFICATION WORKS.

SI Brief description of items of D Rate No of Amount.

C R.

r n.

No building work a Units units o e.

w Pm m.

in.

g.

required o fe.

r.

iop.

le.

a.

r k.

N.

o.

d t i o s.

1 2. 3 4 5 6 7 8.

1.00 Material and labour for sand 1974.30 44.00 86869.20.

cushioning to underground cable Cubic.

with dry sand locally available 8cm Metre.

thick before laying of the cable and.

15cm thick after laying and.

stretching the cable below the.

bricksPCC cover punning of sand.

using suitable TP as per site.

condition complete all as specified.

and as directed by Engineerin.

Charge.

Note Punned thickness of sand to.

be consider for measurement.

purpose.

2.00 Supplying and laying reinforced 44.20 3666.00 162037.20.

precast concrete cable cover LV Each.

Typel flat size 250mm x 150mm x.

40mm complete all as specified and.

directed by EngineerinCharge.

3.00 Supply laying jointing and testing 269.75 230.00 62042.50.

fixing to wall using clampspolefloor Running.

or in air or passing through pipes Metre.

ducts roadpathdrain 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 Part1 and.

its latest amendments complete all.

as specified and as directed by.

EngineerinCharge.

4.00 Supply laying jointing and testing 174.68 340.00 59391.20.

fixing to wall using clampspolefloor Running.

or passing through pipes ducts Metre.

roadpathdrain 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 Part1 and its latest.  
amendments complete all as.  
specified and as directed by.

EngineerinCharge.

CANO CEAUFU22202425 SERIAL PAGE NO 56.

SCHEDULE A CONTD PARTX SECI 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 12009.70 11.00 132106.70.

true vertical position or to be planted Each.

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 IS1161 partII.

type 410 SP 31 09.0 m long.

including drilling of holes of required.

size and nos for fixing of cross.

armsclamps poles shall be.

painted internally throughout using.

anti corrosive black bituminous.

paint conforming to IS 1581968.

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 blackwhite.

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.

incharge.

6.00 Providing cement concrete 136 8629.40 3.02 26060.79.

type C1 using 20 mm graded Cubic.

crushed stone aggregate as in Metre.

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.

CANO CEAFU22202425 SERIAL PAGE NO 57.

SCHEDULE A CONTD PARTX SECI CONTD LIST OF WORKS AND PRICES.  
FOR EXTERNAL ELECTRIFICATION WORKS.

1 2. 3 4 5 6 7 8.

7.00 Plain Cement Concrete Type D2 5483.10 3.02 16558.96.

148 using 40 mm graded crushed Cubic.

stone aggregate in foundations Metre.

filling and mass concrete complete.

all as specified directed by.

Engineer in Charge.

Total amount of Sch A Part X SecI carried over.

Rs. 545066.55.

to BOQ.

SIGNATURE OF CONTRACTOR For Accepting Officer.

DATED \_\_\_\_\_.

CANO CEAFU22202425 SERIAL PAGE NO 58.

SCHEDULE A CONTD PARTX SECII LIST OF WORKS AND PRICES FOR.  
EXTERNAL ELECTRIFICATION WORKS.

SI No Brief description of items of building Rate No of Amount.

R.

work Draw Units required Per Comma.

in.

g.

io dple r k.

s.

N.

ot.

io.

o.

fn.

1 2. 3 4 5 6 7 8.

Refer BOQ.

Signature of the Contractor For Accepting Officer.

Dated \_\_\_\_\_.

CANO CEAFU22202425 SERIAL PAGE NO 59.

SCHEDULE A CONTD PARTXI LIST OF WORK OF PRICES FOR SITE CLEARANCE.  
EXCAVATION AND EARTH WORK.

SI No Brief description of items of building Rate No of Amount.

D C R.

work r Units units Po e.

a em m.

w in g.

N.

required r io d op le t.

io.

a r k s.

o.

fn.

1 2. 3 4 5 6 7 8.

1.00 Surface dressing not exceeding 15 30.20 30000.00 906000.00.

cm deep and getting out in any Square.

type of soil complete all as Metre.

specified and as directed.

2.00 Removing excavated material 684.60 2597.65 1778351.19.

soils exc. 1.50 km but n exc. 5.00 Cubic.

km and depositing where directed Metre.

all as specified and as directed.

3.00 Surface excavation not exceeding 73.15 1650.00 120697.50.

30 cm deep and averaging 15 cm Square.

deep and getting out in any type of Metre.

soil all as specified and as.

directed.

4.00 Surface excavation not exceeding 53.10 40.00 2124.00.

30 cm deep and averaging 15 cm Square.

deep and getting out in softloose Metre.

soil all as specified and as.

directed.

5.00 Removing excavated material soil 320.40 58.24 18660.10.

not exceeding 50m and depositing Cubic.

where directed at a level not Metre.

exceeding 1.5m above the starting.

point complete all as specified and.

as directed.

6.00 Excavation over area not 354.25 200.91 71172.37.

exceeding 1.50m deep and getting Cubic.

out in any type of soil complete all Metre.

as specified.

7.00 Returning filling including 139.10 238.36 33155.88.

spreading levelling watering and Cubic.

well ramming in layers not Metre.

exceeding 25 cm thick in any type.

of soil complete all as specified and.

as directed.

CANO CEAFU22202425 SERIAL PAGE NO 60.

SCHEDULE A CONTD PARTXI 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 529.35 13.88 7347.38.

exceeding 1.5 m wide and not exc Cubic.

1.5 m in depth for foundation etc or Metre.

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.

9.00 Removing excavated material soil 364.10 12.97 4722.38.

to a distance exceeding 50m but Cubic.

not exceeding 250m and Metre.

depositing where directed at a level.

not exceeding 1.5m above the.

starting point complete all as.

specified and as directed.

10.00 Excavation in trenches in 383.70 189.54 72726.50.

exceeding 1.5 m wide and not exc Cubic.

1.5 m in depth for foundation etc Metre.

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.

softloose soil complete all as.

specified and as directed.

Total amount of Schedule A PartXI carried over Rs. 3014957.30.

to BOQ.

Signature of the Contractor.

Dated \_\_\_\_\_ For Accepting Officer.

CANO CEAFU22202425 SERIAL PAGE NO 61.

SCHEDULE B.

ISSUE OF MATERIALS TO CONTRACTOR.

SEE CONDITION 10 OF IAFW2249.

Srl Rates at which Place of issue.

R.

No Description of items material etc. will be by name e.

m.

issued to the a.

r.

contractor k.

s.

Unit Rate Rs.

1 2 3 4 5 6.

1. Stoneboulders obtained during excavation CUBIC 1192.13 At site by stack Refer Sch.

Other than demolition METRE measurement 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 issued 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 stacks 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.

For Accepting Officer.

DATED \_\_\_\_\_.

CANO CEAUFU22202425 SERIAL PAGE NO 62.

#### SCHEDULE C.

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

See Condition 15 34 and 35 of IAFW2249.

\_\_\_\_\_  
NIL\_\_\_\_\_.

#### SCHEDULE D.

TRANSPORT TO BE HIRED TO THE CONTRACTOR.

See Condition 16 and 36 of IAFW2249.

\_\_\_\_\_  
NIL\_\_\_\_\_.

\_\_\_\_\_  
SIGNATURE OF CONTRACTOR For Accepting Officer.

DATED \_\_\_\_\_.

CANO CEAUFU22202425 SERIAL PAGE NO 63.

#### 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 hereinafter referred to as the MES Schedule.
4. General conditions of contracts IAFW2249 1989 print together with errata 1 to 20 and.

amendments No 1 to 49.

5. Water Condition 31 of IAFW2249 General Conditions of Contracts Water shall not be supplied by MES.

Should this tender be accepted .

IWe agree.

a That the sum of Rs.627000.00 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 IAFW2249.

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 Condition7 of IAFW2249 up to a maximum of 10 Ten.

percent and further agree to refer all disputes as required by condition70 71 of IAFW 2249.

to authority i.e Sole Conciliator Dispute Resolution Board DRBSole Arbitrator as.

applicable of a serving officerss having degree in Engineering or equivalent or having.

passed finalDirect Final Examination of Sub DivII from Institution of Surveyors India.

recognized by the Govt. of India to be appointed by EngineerinChief AHQ or in his.

absence the officer Officiating as Engineerinchief or Director General of Works if specifically.

delegated in writing by the EngineerinChief whose decision shall be final conclusive and.

binding.

To be deleted wherever not applicable.

Contd...

CANO CEAUFU22202425 SERIAL PAGE NO 72.

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.

CANO CEAFU22202425 SERIAL PAGE NO 73.

SPECIAL CONDITIONS.

GENERAL

1. a General specifications mentioned anywhere in the contract including those in General. Conditions of Contracts viz. IAFW2249 shall mean the specifications given in the MES Standard. Schedule of Rates 2009 PartI for specifications and MES Standard Schedule of Rates 2020 PartII. for ratesIS CodesIRC CodesMORTH 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 drawings 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 detailsthickness 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 IS456 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. SI S2 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 . sectionssub 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 sites. 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.

CANO CEAUFU22202425 SERIAL PAGE NO 74.

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. Contractors 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 contractors 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 1t 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.

CANO CEAUFU22202425 SERIAL PAGE NO 75.

#### 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 females searcher s hashave 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 Engineerin 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 Engineerin Charge shall submit a list of personnel etc concerned and any other information called for by the EngineerinCharge and shall satisfy the EngineerinCharge as regards the bonafide of such people. Passes shall be returned at any time on demand by the EngineerinCharge 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

Contractors special attention is drawn to condition 2A 3 of General Conditions of Contracts. IAFW2249. The contractor shall not communicate any classified information regarding the works either to subcontractors or other without prior approval of the EngineerinCharge. 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 EngineerinCharge in respect of his having returned the classified documents as per condition 3 of General Conditions of Contracts IAFW2249.

#### 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 IAFW2249.

#### 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.

CANO CEAFU22202425 SERIAL PAGE NO 76.

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 contractors attention is also drawn to condition 25 of IAFW2249 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. HMPRMC Plant keeping TP 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 IAFW2249. 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 Engineerin. 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 IAFW2249 shall be treated as not applicable. Contractor shall make his own arrangement for acquiring quarry if required for procurement of rock stone aggregate from. privategovt approved quarry in liasioning 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.

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#### SPECIAL CONDITIONS CONTD.

12. LOCATION OF WORKS There may be some changes in location/siting of in site. layout plans to suit local conditions and/or departmental requirements. The contractor shall have no claim whatsoever 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 IAFW2249. General conditions of Contracts 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 PrimaveraMS 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 contractors 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 orders 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. GEs 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 IAFW2249 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 carry out 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 Contractors plantsequipments at site The contractor shall furnish to the EngineerinCharge every morning a distribution return of his plantsequipments. on the site of the works stating the following particulars

i Particulars of plantsequipments its 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. plantequipment shall include vehicles i.e. trucks and lories but neither the. workmens tools nor any manually operated toolsequipment. The Engineerin. 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.

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bLoss 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. plantequipment 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 workmans. legal successor for loss of the workmens 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 IAFW2249.

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 plantsequipment or. materials not lying at site of work at the time of enemy action.

19. THE HEIGHT OF MATERIAL DUMPEDThe height of construction material. dumped atnear 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.

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20. WATER.

Refer to condition 31 of IAFW2249.

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 pumps 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 tube well bore well 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 IAFW2249.

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](http://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.

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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 to 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 .

d 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 manufacturers.  
marking except in the case of the requirement of materials 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 hereinabove 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 contractors 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. WATCHLIGHTING .

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 IAFW2249. 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 itemsworks. No extra payment shall be admissible to the contractor for this operation.

#### 28. MINIMUM WAGES PAYABLE .

a Refer condition 58 of IAFW2249. The contractor shall not pay wages lower than minimum wages for labour fixed by the Govt of India State Govt whichever is higher.

b Contractors 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 IAFW2249 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. TAXESLEVIES .

Tendered rates are inclusive of all taxes and levies payable under the respective statutes.

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#### 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. Tenderers 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 cesstax. The construction labour welfare cesstax 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 cesstax before quoting his rates.

dFor the purpose of applicability of this condition and condition 33 herein 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. Tenderers 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 34b to 34e hereinbelow.

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.

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ii The contractor shall within a reasonable time of his becoming aware of, variation in percentage rates and/or imposition of any further taxes directly related to contract value give written notice thereof to the GE stating that the same is given pursuant to this Special Condition together with all information relating thereto 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 ALEVEL 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 Alevel tests as listed in Appendix A here to. The contractor shall arrange all equipments machines for the tests specified in Appendix A as Alevel 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. Alevel 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 RARs. irrespective of the tests results for such tests.

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b ALEVEL 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 RARs 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 IAFW2249 General.

Conditions of Contracts the contractor shall employ skilledsemiskilled tradesmen.

who are qualified and possessing certificate in particular trade from Industrial.

Training Institute ITINational Institute of Construction Management and Research.

NICMARSimilar reputed and recognized Institutes by StateCentral Government.

to execute the works of their respective trade. The number of such qualified.

tradesmen shall not be less than 25 of total skilledsemi 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 QSC 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 IAFW2249 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 Phasewise 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 BR EM 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. disputes to have first exhausted the remedy provided under the DRB clause for. that particular disputes.

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.

determinationcancellationtermination of the contract all the disputes including. paymentnonpayment delay in final bill shall be simultaneously referred to the. DRB within six months of completiondetermination cancellationtermination 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 IAFW2249.

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 rollers 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 Engineerincharge.

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 surfacessub 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 248 Sqm.  
thickness including consolidation with binding materials.

v Consolidation of WBM Stone metal 10 cm compacted 186 Sqm.  
thickness including consolidation with binding materials.

vi Consolidation of 2.5 Cm thick bituminous carpet including 600 Sqm.  
seal coat.

vii Consolidation of 2 Cm thick bituminous carpet including 744 Sqm.  
seal coat.

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 PartIII 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.

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#### 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 GECWE 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 contractor/agency having valid electrical license as applicable. In addition supervisor for execution of electrical work/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 \_\_\_\_\_.

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#### APPENDIX B TO SPECIAL CONDITIONS NO. 32.

##### LIST SET OF LABORATORY EQUIPMENT AT SITE LAB.

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APPENDIX B TO SPECIAL CONDITIONS NO. 32.

LISTSET OF LABORATORY EQUIPMENT AT SITE LAB.

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APPENDIX B TO SPECIAL CONDITIONS NO. 32.

LISTSET OF LABORATORY EQUIPMENT AT SITE LAB.

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LISTSET OF LABORATORY EQUIPMENT AT SITE LAB.

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APPENDIX B TO SPECIAL CONDITIONS NO. 32.

LISTSET OF LABORATORY EQUIPMENT AT SITE LAB.

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APPENDIX B TO SPECIAL CONDITIONS NO. 32.  
LISTSET OF LABORATORY EQUIPMENT AT SITE LAB.  
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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 hereinbefore 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/manufacture. 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 ISI marking and without ISI marking. If any material is not manufactured with ISI certifications mark in the country it shall be confirming to relevant ISI and other specifications specified elsewhere and shall also conform to samples displayed in GE's office as applicable.

1.7.3 Indian Standard ISI 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 IAFW2249.

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/manufacturers 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 materials being less than smallest packing.

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#### PARTICULAR SPECIFICATION CONTD.

d The contractor shall produce to the GE original printed and machine. numbered purchase vouchers/invoices including manufacturers test certificate. where applicable for all the materials mentioned hereinbefore 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 contractors 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.

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##### 2.2 Excavation.

a Softloose soil harddense 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 earthwork 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 softloose and harddense soil.

d The measurement of excavation shall be as explained in MES Schedule 2020 Part II with the exception that separate quantities of softloose soil harddense 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 floorsides 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 1510 type E2 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.

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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 rain 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.

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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 CC 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 CC of supports.

3.1.2 Wherever nomenclatures of structural slabs e.g. S1 S2 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 its transportation storage testing charges its accounting and preservation etc till consumed in work shall be borne by the contractor.

### 3.2.2 TYPE OF CEMENT.

3.2.2A Type of cement to be used in this contract for all RCC works and DLC M15 shall be Ordinary Portland Cement OPC 43 grade only conforming to IS81121989. However, Portland Pozzolana cement PPC as per IS1489 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.

3.2.2B While using PPC the following requirements shall be met with .

a PPC shall meet the strength criteria as per IS81121989.

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 IS1489 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 hereinafter. The particulars of the manufacturers 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 .

COMPANY NAME ADDRESS Cement.

Grades.

1. Ms J K Cement Kamla Tower All.

Brand J K Kanpur 208001.

2. Ms Ultra Tech Cement Ltd. B Wing 2nd Floor Mahakali All.

Brand ULTRATECH Caves Road Andheri East.

Mumbai 400093.

Ph 02266917800.

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3. Ms Sanghi Industries Ltd. 10th Floor Kataria Arcade Off OPC 53.

Brand Sanghi Highway POMakarba Dist PPC.

Ahmedabad Pin 380051.

MO09825803690 Tel 079.

26838000.

Fax 07926838111.

Website [www.sanghicement.com](http://www.sanghicement.com).

4. Ms Dalmia Cement Bharat Dalmiapuram Dist Truchirappalli All.

Ltd. Tamil Nadu 621651.

Brand DALMIA INFRA PRO.

5. Ms Chettinad Cement 4th Floor Rani Seethai Hall.  
Corporation Ltd Building 603 Anna Salai Hall OPC 43.

Brand CHETTINAD Chennai600006 PPC.

Cement Ph 04442951800.

Fax 04428291558.

Email

infochettinadcement.com.

Website

www.chettinadcement.com.

6. Ms Wonder Cement Ltd. 17 Old Fatehpura Seva Mandir OPC 43.

Brand WONDER Cement Road Udaipur313004 Rajasthan OPC 53.  
India PPC.

Ph 9129433991133.

Fax9129430096333.

Email.

Corp.officewondercement.com.

7. Ms My Home Industries Ltd. 9th Floor Block3 My Home Hub OPC 43.

Brand MAHA CEMENT Madhapur Hyderabad500081 PPC .

Ph 04466929696 PSC.

Fax 0446692979798.

8. Ms Parasakti Cements Ltd. 1233RT Plot 8321421 OPC 43.

Brand PARASAKTI Srinivasa Nagar Colony West PPC.

Cement Hyderabad500038.

Ph 04444119100200.

Fax 04423747562.

9. Ms Sagar Cements Ltd. Sagar Cements Ltd OPC 43.

Brand SAGAR Plot No 111 Road No 10 OPC 53.

Jubilee Hills Hyderabad500033 PPC.

Tele 914023351571 2335672 PSC.

Fax91402335673.

Emailinfo sagarcements.in.

Website www.sagarcements.in.

10. Ms JSW Cement Ltd A.P. JSW Centre PSC.

Brand JSW PSC Opp MIMRDA Ground.

Portland Slag Cement Bandra Kurla Complex Bandra.

East Mumbai400051.

Tele912242865047.

Fax 912226502001.

Website www.jswcement.in.

11. Ms Shree Guru Kripa Cement 44 Trikuta nagar Jammu OPC 43.

Pvt Ltd. Ph 01912472043 PPC.

Brand SARTAJ.

12. MS The Ramco Cements Ltd. Auras Corporate Centre 98A Dr All.

Formerly Madras Cement Radhakrishnan salai Mylapore.

Brand RAMCO Chennai600004.

Ph 04428478666.

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13. Saurashtra Cement Gala No A1 Ground Floor Udhyog All.

Brand SAURASHTRA Sadan No 3 MIDC Central Road.

Andheri East Mumbai400093.

Ph 0223295555767.

Mo 9320290081.

14. The Associated Cement Co. Ltd. 414421 Splendor Forum 4th Floor All.

Brand ACC 3 District Centre Jasola.

New Delhi110044.

Ph 01146583600.

15. The India Cements Ltd. Dhun Building 827 Anna Salai All.

Chennai600002.

16. Century Cements. Industry House 159 Church gate All.

Brand Century Reclamation Mumbai400020.

Ph 02222023936.

17. Nuvoco Vistas Corporation Ltd. Equinox Business Park All.

Formerly Lafarge Cement Tower 3 East Wing 4th Floor LBS .

Brand NUVOCO KurlaWest Kurla Mumbai.

Maharashtra400070.

18. Mangalam Cement Ltd. PO Adityanagar Morak Disttkota All.

Brand MANGALAM Rajasthan326520.

Ph 9351468076.

19. Birla Corporation Ltd. Birla Building 3rd 4th Floor 91 All.

Brand BIRLA R.N Mukherjee Road Kolkata.

700001.

Ph 03330573700.

20. Orient Cement. 592257D 2nd and 3rd Floor GP All.

Brand ORIENT Birla Centre Adarsh Nagar.

Hyderabad5000636.

Ph 04423688600.

21. Shree Cement Bangur Nagar Beawar DisttAjmer All.

Brand SHREE Rajasthan305901.

Ph 0146222810106.

22. Jaypee Rewa Cements. Jaypee Nagar. All.

Brand JAYPEE P O Jaypee Nagar Rewa486450.

M.P.

23. JK Lakshmi Cement. Jaykaypuram DisttSirohi Rajasthan All.

Brand J K LAKSHMI Ph 0297124440910.

Ambuja Cement Ltd. Kodinar POAmbujanagar Taluka.

24. Brand AMBUJA Kodinar Distt Junagadh All.

Gujarat362715.

Ph 02795237000.

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 Ein Cs Branch .

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3.2.4 Cement brought by the Contractor at sites 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 Manufacturers 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 EngrinCharge shall record. these details in the cement Acceptance Register as given in Appx A after due verification.

3.2.5.2 In addition to manufacturers 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 Manual 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. 35351986 IS4031 and IS40321985. 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 PartI shall. also be borne by the contractor. It shall be ensured that tested and untested cement is. segregated and stored separately with distinct Identification. Cement of different brands shall be. stacked separately.

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 godown showing indication of any setting shall be segregated and removed. by contractor from the site within a weeks time with due permission of GE for their removal.

3.2.6 Storageconsumption of Cement.

3.2.6.1 Cement in bags shall be stored in proper leak proof damp proof storage godown over atleast 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 PartI. 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 EngineerinCharge 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 EngineerinCharge. 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 EngineerinCharge.

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 EngineerinCharge or his authorised Representative and that of the other lock with the contractors 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 EngineerinCharge 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 EngineerinCharge 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 manufactureexpiry 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 IS456 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 depththickness more than and including 100 20 mm.  
mm.

ii For members of depththickness less than 100mm 12.5 mm.

Note However in no case the nominal size of aggregate shall be greater than onefourth 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 IS4562000.

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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.

Situation Type of concrete.

a i Lean concrete under foundation of PCC 1510 By Volume.

walls Plinth Toe beam and in gaps.

between plinth beam column footing.

ii Foundation concrete under column PCC 148 By Volume.

footing and lean concrete under raft.

foundation.

b PCC in plinth protection and channel drain PCC 136 By Volume.

PCC sills PCC blocks for holder bats and.

hold fasts or lugs for doors windows and.

ventilators and plugging for scaffolding.

holes.

c PCC in bed blocksplates kerbs benching PCC 124 By Volume.

coping ramp steps and PCC in any other.

situation not covered above.

d All RCC Work. RCC work shall be M2530 as shown in.

drawings. In case no mix design has been.

indicated in drawings it shall be M25 Design.

Mix as per IS4562000.

3.5.1 Concrete in RCC work of buildings shall be M25 Design Mix as per IS4562000 and as shown on drawings.

3.5.2 Plinth beam below ground level shall be laid over PCC 148 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 Nmm<sup>2</sup> for M25 design mix and 30 Nmm<sup>2</sup> for M30 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 M25 design mix 360 KgCum and M30 design mix 380 KgCum.

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 IS516. 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 1015 cumhour.

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 semiautomatic 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 crossreferred and record of this maintained and signed by the EngineerinCharge and contractor or his authorised representative.

v Test report will be signed jointly by the EngineerinCharge and the contractor.

vi AcceptanceRejection 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.

Test shall be carried out as per.

Impurities of sand.

IS 383.

Sieve analysis of aggregate.

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 EngineerinCharge 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.

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### 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 13 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 contractors option unless otherwise. specified elsewhere if precast these shall be set in cement mortar 13. 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 124 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 13 with a mixture of approved water proofing compound as per. manufacturers 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 Engineer 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 14 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 124 type B1. 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 124 type B1 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 136 type C1 using 20 mm graded stone aggregate over 75 mm thick consolidated bed of hard core of broken stone as specified in clause 2.9 hereinbefore. 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 8525 or 90100 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 136 type C1.

3.19 Seismic Provision Strengthening measures for all buildings for seismic measures shall be provided all as shown on main drawings and drawing No CEAFTD422001 Sheet.

12 and 22 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 124 type B1 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. CEAFTD102000 sh11 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 be casted as per IS2185. These shall be manufactured for minimum average compressive strength of 5 N/mm<sup>2</sup> 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 136 using 16mm graded crushed stone aggregates as per IS2185. 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 IS2185 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 IS2185 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 25mm x 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 GEs office. Unless specified otherwise in Schedule A Notes on drawings brick shall have minimum crushing strength of 75 KgSqm. 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 16 except in half brick thick wall where it shall be in cement mortar 14.

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 contractors 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. 124 type BO 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 IS2645. It shall. be mixed with cement mortar in the proportion and manner as given in manufacturers. 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 2100mm 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 Zonell.

##### 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 NAPHTHANATE or any other chemical specified in IS410 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 Factory made shutter using second doors stiles rails glazing bar except class hard wood. beading moulding fillets.

b Edging of cup boards pelmet box ward First class hardwood Teakwood. robe cabinet shutters etc.

c Panel inserts of door shutters pelmets Particle board commercial veneered. where shown of wood or particle board ply both sides. wood.

d All other location where wood work not First class soft wood Deodar. indicated in drawings or specified else. where.

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 SSR2004 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 IS3097 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 MS 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 IS3731975 Decorative plywood where indicated on drawings shall conform to IS1328. Refer clause 12.9.6 to 12.11 of MES Schedule Part I. Make BHUTAN. BOARDANCHORKITPLY.

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 carpenters and joiners 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 IS1003 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 hereinbefore. 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 3mm 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. CEAFTD922010 sheet 11. Builders 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 windowvents 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. TD97001 sheet 11.

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.CEAFAR5792018FDsh 11 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 PartI.

7.1.5 Screws used for fixing the articles of builders hardware shall be as specified in clause 9.2.6 of the MES Schedule PartI.

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 builtin Cupboards etc shall be provided with Aluminium handle all as specified in clause 9.11 of MES Schedule PartI. 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 PartI.

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 PartI.

7.2.3 LOCKING BOLTS Locking bolts shall be of bright polished mild steel all as specified in clause 9.6 of MES Schedule PartI. 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 PartI.

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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 PartI of shoot not less than 10 mm dia.

7.2.8 HASPS AND STAPLES Shutters of all built in cupboard unless provided with cupboard 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 BOLTSSliding 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 PartI.

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 11. 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 11 and as. directed by EngineerinCharge 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 hereinafter. 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 PartI 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 Fe500Fe 500D Fe 550Fe 550D. meeting all other requirements of IS1786.

b Structural Steel Conforming to IS2062 Fe 410W GdeE250.

i Standard Quality quality.

c Galvanized Steel Sheets Conforming to IS277. Plain Corrugated.

d Fabric Reinforcement for Conforming to IS1566. Concrete.

e Ordinary steel for door Conforming to IS2062Fe 290GdeE165. window frame grills. steel gates hand rails.

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#### 8.1.2 Procurement of materials

Main Primary Producer Of Reinforcement Structural Steel.

SI No. FIRM NAME ADDRESS OF STRUCURAL STEEL.

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.

Delhi110092.

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 Emailcorpcommisr.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.

Visakhapatnam530031 India.

Tel 91 891 518226 518376.

Fax 91 891 518316.

Emailcmdvspitpvis.ap.nic.in.

d MS Jindal Steels and Power Ltd.

Brand JINDAL .

Type of Steel Structural Steel Angle Beam Column Channel Plate.

Jindal Centre.

Plot No 2 Sector32.

Gurgaon 122001 Haryana.

Tele0124 6612000.

Fax0124 6612125.

Website www.jindalsteelpower.com.

8.1.2.1 Primary Producer of Reinforcement Steel TMT.

a MS SRMB Srijan Private Ltd TMT bars of Gde Fe 500 .

TMT Brand SRMB Fe 500 D Fe 550 Fe 550.

SRMB House 7 Khetra das lane D Size 8mm to 32mm.

Kolkata 700012.

Tel 0336600 6600.

Fax 033 2211 0483.

b Ms JSW Steel Ltd TMT Bars of Gde Fe 500.

TMT Brand JSW NEO STEEL Fe 500 D CRS Size 8 mm.

Jindal Mansion 5A Dr G Deshmukh Marg to 40 mm.

Mumbai 400026.

Tel 02223513000.

02223526400.

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c MS Steel Exchange India Ltd TMT Bars of Gde Fe 500 Fe.

TMT Brand SIMHADRI TMT 500D.

My home Laxminivas Apartments Ameerpet HSCRM.

Hyderabad500016 A.P.

Tel 04023403725.

Fax04023413267.

Emailinfoseil.co.in.

d MS Jai Balaji Industries Ltd TMT Bars of Gde Fe 500 Fe.

TMT Brand Balaji Shakti 500 D.

5 Bentek streetKolkata700001.

Delhi office.

510BlockbNavraung House21.

Kasturba Gandhi Marg New Delhi110001.

Tel 011436202194362022.

Mob 78382727729958936103.

Email infojaibalajigroup.com.

e MS Steel Authority of India Limited SAIL All.

BRAND SAIL.

Central Marketing Organisation Northern Region.

17th Floor Scope Minar Laxmi Nagar Distt Centre.

Delhi110092.

f MS Shyam Steel Industries Ltd TMT Bars of Gde Fe 500.

TMT Brand SHYAM TMT Fe 500 D.

Shyam Towers EN32 SectorV Salt Lake CRS.

Kolkata700091.

Tel03340074007.

Fax 03340074010.

Emailmarketingshyamsteel.com.

g Ms Super Smelters Ltd TMT Bars of Gde Fe 500.

TMT Brand SUPER SHAKTI Fe500D Fe 550 Size 8.

Premlata 39 Shakespeare Sarani.

mm to 32 mm.

3rd Floor Kolkata 700017.

TelFax 91332289273436.

Email infosupershakti.in.

Website www.supershakti.in.

h Ms Adhunik Industries Ltd TMT Bars of Gde Fe 500.

TMT Brand ADHUNIK Fe 500 SD D Size 8 mm to 32 mm.

Lansdowne Towers 21A Sarat Bose Road.

6th Floor Kolkata700 020.

Tel 033 3051 7100.

Fax 91 33 2289 0285.

Email infoadhunikindustries.com.

j MS Shri Bajrang Power Ispat Ltd TMT Bars of Gde Fe 500.

TMT Brand GOEL TMT Fe 500 D Size 8 mm to 32.

Vill Borjhara Urla Industrial Area mm.

Raipur 493 221 Chhatishgarh.

Tel 07714288019 29 39.

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k Rashtriya Ispat Nigam Limited RINL All.

Brand RINL.

Visakhapatnam Steel Plant.  
 Visakhapatnam 530031 India.  
 Tel 91 891 518226 518376.  
 Fax 91 891 518316.  
 Email cmdvspitpvis.ap.nic.in.  
 I Tata Iron Steel Company TISCO or Tata Steel All.  
 Brand TATA.  
 Bombay House 2 4 Homi Modi Street.  
 Mumbai 400001 India.  
 Tel 91 22 2049131.  
 Fax 91 22 2049522 2870840.  
 Email corpcommisr.tatasteel.com.  
 Br office for North Jeevan Tara Bldg Patel Chowk.  
 New Delhi.  
 m MS Jindal Steels and Power Ltd TMT Bars of Gde Fe.  
 TMT Brand JINDAL PANTHER 500Fe 500D Fe 550Fe.  
 OP Jindal road Hissar Haryana PIN 125005 550D CRS with sizes 8.  
 Tel 91 166222247184 40.  
 Fax 91 16622220476.  
 Website www.jindalsteelpower.com.  
 n Ms Shyam Metalics Energy Ltd. TMT Bars of Gde Fe 500.  
 TMT Brand SEL Fe 500D.  
 Viswakarma 1st Floor 86 C Topsia Road Kolkata Size 8 to 32mm.  
 700046.  
 Ph 91 33 2285 2212.  
 Website www.shyamgroup.com.  
 o Ms Kamachi Industries Ltd TMT Bars of Gde Fe 500.  
 TMT Brand KAMACHI Fe 500D Fe 550 Fe.  
 ABC Trade Centre 3rd Floor Inside Devi Theater 550D HCRM.  
 Complex Old No. 50 New No. 39 Anna Salai S i z e 8 t o 4 0 m m .  
 Chennai 600002.  
 Ph 91 04442961100.  
 Ph 91 04442961122.  
 Email sales.kamachitmt .com.  
 website www.kamachitmt .com.  
 p MS Gallant Metal Ltd TMT Bars of Gde Fe 500.  
 TMT Brand GALLANTT TMX Fe 500D CRS.  
 Ward 10BC Plat no 123 Ground floor S i z e 8 to 32mm.  
 Kutch Gujrat 370201.  
 Tel 91 2836 228164.  
 Fax 91 2836 235787.  
 Email. gmlgallantt.com.  
 Website www.gallantt.com.  
 CANO CEA FU 22202425 SERIAL PAGE NO 122.  
 PARTICULAR SPECIFICATION CONTD.  
 q MS Electrotherm India Ltd TMT Bars of Gde Fe 500.  
 TMT Brand ET TMT Fe 500D CRS.

Survey No 72 Palodia Via Thhaltej Ahmedabad.  
Size 8 to 32mm.  
Gujarat 382115.  
Tel912717660649660550.  
Fax 912717234866.  
Website [www.electrotherm.com](http://www.electrotherm.com).  
r MS Real Ispat Power Ltd TMT Bars of Gde Fe 500.  
TMT Brand G K TMT Fe 500D Fe 550D Size.  
Vrindavan Near IDBI Bank Civil Lines.  
8 to 36mm.  
Raipur 492001 C.G.  
Tel 91 7714224000.  
Fax 91 7714224010.  
Email [realrealispat.com](mailto:realrealispat.com).  
Website [www.realispat.com](http://www.realispat.com).  
s MS Rasmi Metaliks Ltd TMT Bars of Gde Fe 500.  
TMT Brand RASHMI TMT Size 832mm Fe 500D.  
Premlata Building 39.  
Fe 550 Fe 550D CRS.  
shakespear Sarani.  
Size 8 to 25mm.  
6 th floor Kolkata 700017.  
Tel 0332289425556.  
Fax 03322894254.  
Email. [domesticdiprashmigroup.com](mailto:domesticdiprashmigroup.com).  
Website [wwwrashmigroup.in](http://wwwrashmigroup.in).  
t Ms Shyam Sel and Power Ltd. TMT Bars of Gde Fe.  
TMT Brand SEL 500D.  
SS Chambers 5 C R Avenue Size832mm.  
Kolkata 700072.  
Tel 9133 40111000.  
Fax 913340111031.  
Website[www.shyamgroup.com](http://www.shyamgroup.com).  
u Ms SPS Steels Rolling Mills Ltd. TMT Bars of Gde Fe 500.  
TMT Brand ELEGANT Fe 550 Fe 500 D.  
Diamond Prestige 41 A A.J.C.  
Bose Road 8th Floor Room No 801 Kolkata 700017.  
Mob98310555688910797649.  
Telefax 03366255252.  
Email [infospsgroup.co.in](mailto:infospsgroup.co.in).  
v Ms Shree Nakoda Ispat Ltd. TMT Bars of Gde Fe.  
TMT BrandNAKODA TMT 500 Fe 500D Size 8mm.  
Near Railway Crossing to 32mm.  
Mowa P.O Shankar Nagar.  
Raipur492007C.G.  
Tele917712282130.  
Mob No78989741.

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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.

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

Ser Nominal size Quantity.

No.

##### A. STEEL FOR CONCRETE.

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 1 sample 3 specimens for each test for. inclusive 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. STRUCTURAL STEEL

1 Tensile Test 1 Test for every 25 tonnes of steel or part. thereof.

2 Bend Test 1 Test for every 25 tonnes of steel or part. thereof.

Note 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 EngineerinCharge 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. inCharge 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 EngineerinCharge and the Contractor.

##### 8.1.5 Tolerances

Structural steel products shall be as specified in IS1852. 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 RARs. 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 contractors 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 IS456 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 contractors percentage applicable against respective parts 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 IS816 and IS823.

8.1.11.2 Guard BarsGrills 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 fastslugs Flat iron hold fastslugs shall be provided by welding as and where shown on drawings except those to be provided to wooden chowkhats which shall be fixed with boltsnuds 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 2mm. Pressed steel frames shall be filled with PCC 136 type CO. Steel surfaces in contact with PCCmasonry shall be tarred.

8.1.11.6 Aluminium sheet lining to Door shuttersWhere 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 CC.

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 EngineerinCharge and approved by GE.

8.1.11.8 STEEL BOX WINDOWS VENTILATORS AND FIXED GLAZING DOUBLE GLASS WindowsVentilators where marked on drawing shall be provided as per specification and details given in Drgno.CEAFAR5792018SW sh 11 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 hereinafter.

8.1.11.9 ROLLING SHUTTER Steel rolling shutter shall be of push type manual type and shall conform to IS 62481979 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. CEAFAST5792018SG sh. 11 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 CEAFD1252017 Sh 12 to 22 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 hereunder .

### 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 plastering with CM 13 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 .

a 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.

b Membrane shall be fully adhered with high strength solvent based having quick bonding between membranes with the help of bonding adhesive as per manufacturers instructions. Overlap joint shall be made using factory applied secure tap technology with minimum overlap 75mm.

c 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.

d All the detailing like inside corers outside corers pipe penetrations etc shall be with Elasto form flashing and splicing cement as per manufacturers 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 nonjudicial 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 contractors 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 contractors failure to comply with GEs 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 EngrinCharge on the wall of each of the building. The plate shall be 10 mm thick in cement mortar 14 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 SSR2009PartI. 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 hereinafter in subsequent clauses and as directed.  
a CEILING BOARD TILES.

The ceiling board shall be of ecofriendly Aerolight with calcium silicate densified regular edged boardtile of size 600mm x 600mm and 10 mm thick having 15mm thick 24mm wide collar all around with overall density 350 kgcum in the body 450 kgcum at the edges in true horizontal level as approved by GE.

Noise Reduction Coefficient NCR 0.10 to 0.75.

Light reflection 85.

Noncombustible as per B.S. 476 Part IV.

Humidity resistant 100.

Thermal conductivity 0.043 wmo KC.

## bGRID 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. Ancho 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 BS476 Part 456 7.

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

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 Zinc 1.5 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 selfdrilling and selftapping 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 manufacturers 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 manufacturers 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 galvanized 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 CEAFTD1432018 Sheet 11 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.

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### 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 PartI 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 PartI.

10.1.5 Steps with verandahplatform 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.

a SAND FILLING 300 mm sand filling over 100 mm the hard core complete all as specified. and as directed.

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 14 over 75mm thick PCC 148 type D2. 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. EngineerinCharge. Kota stone shall be set jointed and pointed in grey cement.

c NON SKID CERAMIC TILE FLOORING Nonskid 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 14 over 25mm thick PCC 124 type B. 0 using 12.5mm graded crushed stone aggregate over 75mm thick PCC 148 type. D2 using 40mm graded crushed stone aggregate over rammed earth. Filling. Jointing and pointing of tiles shall be done in whitecoloured cement with pigments.

rest all as specified and as directed.

d PCC FLOORING i 100mm thick PCC flooring where indicated shall be provided with PCC 124 type B1 using 20mm graded crushed stone aggregate laid in alternate panels over 150 mm thick PCC 148 type D2 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 124 type B1 using 20mm graded crushed stone aggregate laid in alternate panels over 75 mm thick PCC 148 type D2 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 124 type B1 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.

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 14 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 910 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. 14 over 25mm thick PCC 124 type B0 using 12.5mm graded crushed stone aggregate over 75mm thick PCC 1510 type E2 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 112 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 kgsqm 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 14 concentration in the first treatment followed by two more treatment of concentration 1312 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 14 over CC layer of PCC 124 over sub base of PCC 1510 complete all as specified and as directed.

## 11. PLASTERING.

### 11.1. General.

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

11.1.2 Where plaster on concrete surface is shown to match the adjacent wall surfaces.

the mix of plaster shall be same for the wall surfaces.

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

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

11.1.5 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.

11.1.6 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 slabsbeams 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 MATERIALS

11.2.1 Cement Refer clause 3.2 here in before.

11.2.2 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 CEMENT PLASTERING.

11.3.1 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 16 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.

11.3.2 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 14 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 14.

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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 14 in one coat mixed with liquid water proofing. compound as per manufacturers instructions over 10mm thick plaster in cement. mortar 16 all as specified in Sch of finishes and as specified in clause 14.13 and 14.25. of MES schedule PartI 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 instructionsall as per. clause 14.25 of MES Schedule PartI.

11.3.4 Walls Internal surfaces above ceiling which are hidden from view shall be treated as. directed by EngineerinCharge.

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 14. The height of the skirting. shall be as mentioned in Schedule of finishes and green udaipur stone skirting shall.



also be grinded and mirror 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 13 finished even and smooth over 10mm thick. rendering in cement mortar 14. 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 14. The height of the skirting shall be as mentioned in Schedule of finishes and Non skid ceramic skirting shall also be grinded and mirror 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 78mm 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 13 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 13 shall be provided. The height of skirting shall be as shown on drawing 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 manufacturers instructions shall be provided. The height of skirting dado shall be as shown on drawing 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 waviness 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 WCToilets 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. ACRYLIC OIL BOUND DRY DISTEMPERING.

13.1 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 distemping 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 ends as applicable for the top floor.

#### 14. SURFACE FINISHES.

14.1 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.

14.2 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.

#### 14.3 Weather Proof Paint .

Two coats of exterior weather proof coating paint over a coat of primer in camouflage 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.

14.4 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.

#### 14.5 CEMENT BASE PAINT.

14.5.1 Cement base paint shall be provided in two coats after preparation of newly plastered surfaces at location as indicated in drawings all specified in clause 15.7 and 15.15 of MES Schedule Part I. Shade shall be approved by Garrison Engineer. Cement base paint shall conform to IS 5410:1992 as approved by GE. Make brand of cement. base paint shall be as specified in Appendix F.

#### 15.0 Painting.

15.1 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.

surfacespink 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 drawingschedule of finishes shall be as approved by the GE.

15.2 Workmanship.

15.2.1 The surface of woodsteel 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 primerred oxide primer respectively.

15.3 Tarring the backs of woodensteel chowkats in contact with concretestonebrick workplaster 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 whitecoloured 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 BUILDINGSBLOCKS.

Numbering of all buildingsblocks at both ends of walls shall be done by the contractor by the engraving and painting black. The requisite letterfigures on a cement plaster 13 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 EngineerinCharge. 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 AFTD992012.

Sheet 11 shall be of polished sheet glass 5.0mm thick fixed on 6mm thick plywood.

BWR grade conforming to IS303 duly ISI marked. Ist class hard wood Shesham.

wood frame of size 20mm wide and 20mm thick shall be provided around the mirror as shown on drawing. Mirror shall be hung by 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 IS2556 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 floorNahani 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 PartI. 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 IS775.

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 manufacturers 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 IS2556 PartII.

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 MS 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 1920mm 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 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 SoilWasteVent pipesFittingsAccessories. 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 trapnahani trap to gully trap 75mm bore.

b Waste pipe from floornahani trap to floornahani trap 75mm bore.

c Soil pipe from WC to 1st 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 NAHANIFLOOR TRAP

NahaniFloor traps shall be provided in situations as shown on drawings. These shall. conform to IS 1729. Size of floornahani traps shall be suitable to the size of waste. pipe. NahaniFloor traps shall be provided with CP grating.

NOTE Where Nahanifloor 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 socketscollars 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 IS651. These shall be set in PCC 148. type D2 block measuring 450 x 450 mm and 100mm thick. Jointing to drain. pipe shall be done in cement mortar 11.

b Cast iron perforated grating shall be 150 mm x 150 mm bituminous coated and. fixed as directed by EngineerinCharge. PCC 124 type B1 in kerb and RCC. cover slab shall be provided all as directed by the EngineerCharge.

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 GICI DISTRIBUTION WITH GICI 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 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 at 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 hereinbelow .

a Excavation and earth Excavation in any type of soil returning filling in. work. 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 136 type C2 using 40 mm graded. crushed stone aggregates.

c Masonry work. PCC Block in cement mortar 14.

d RCC work. M30 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 GICI DISTRIBUTION WITH GICI 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 148. Burnt brick work. built in CM 16 internally finished with 15mm thick cement plaster in CM 14 and. externally flush pointed in same mortar as work proceeds. Flooring shall be 40mm. thick PCC 124 B1 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 hereinbefore 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 hereinbefore 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 hereinbefore 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 hereinbefore for the relevant trades of works in relevant clauses of SSR PartI 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 hereinbefore for the relevant trades of works in relevant clauses of SSR PartI 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 hereinbefore for the relevant trades of works in relevant clauses of SSR PartI 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 hereinbefore for the relevant trades of works in relevant clauses of SSR PartI 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 measurements of these materials shall be taken and recorded in measurement book and signed by the contractor and EngineerinCharge as per special condition 20.A.1.2 on serial page No 433 of MES Schedule 2004 partII rates. before commencement of hard standingroad 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 hereinbefore.

##### 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 roadpath.

### 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 Engineer 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 days 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 points 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 PLUGGUTTIES 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 IS8828 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.

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.

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.

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 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 wall 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 ELBOW STEES. 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 30431987 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 manufacturers test certificate and literature manual of following equipments as applicable.

a MCCB MCB.

b LED LIGHT.

c Cables.

d DBS.

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 EISEI and installation shall be energized after satisfactory test report from the EISEI 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 temprating 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 PartI.

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 PartI.

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 PartI. 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 PartI. 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 PartI.

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 its sub. clauses of MES SSR 2009 PartI. Workman ship shall be carried out all as specified in. clauses 19.85 and 19.86 of MES SSR 2009 PartI. Approved makes are mentioned in. Appendix F.

41.4 MCCBs.

41.4.1 These shall be all as specified in Schedule A and as described in clause 19.100.14 with its. sub clauses of MES SSR 2009 PartI. These shall conform to IS13947 and IEC60947. Part2. 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 its. sub clauses of MES SSR 2009 PartI. 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 its sub. clauses of MES SSR 2009 PartI. 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 its sub. clauses of MES SSR 2009 PartI. 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 ABOQ and as described in. clause 19.14 to 19.14.6.8 and 19.97 to 19.97.9 of MES SSR 2009 PartI.

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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 IS335. The make of transformer shall be as specified in Schedule. 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 manufacturers 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 IS9385 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 its. sub clauses of MES SSR 2009 Part I and shall conform to IS13947 Part 3 1993 and. IEC60947 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 IS13340 or IS13925 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 IS13340. In addition the type. tests on limited samples are also carried out which include all routine tests and.

following additional tests

a SelfHeating Test.

b ShortCircuit 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 insitu after installation and before commissioning. as specified. The insulationresistance 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 our from measurement of. voltage current and frequency.

41.17.6 Proper connections and functionality of all protection devices including fuses should be. checked. The internalwiring 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 testing of relayfunctioning 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 shortcircuit 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 IS4722 or IS2613. 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 antivibrating 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 frontback 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 manufacturers 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 Performance.

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 14 load test 1122 hhoouurr..

b 12 load test 1122 hhoouurr..

c 34 load test 22 hhoouurrss..

d Full load test 88 hhoouurrss..

e 10 overload test 11 hhoouurr..

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41.22 Cost of Fuel DHPP required for testing of DG Set shall be supplied by the contractor at his own arrangements.

41.23 The initial filling of lube oil in the engine and antifreezing mixture in system shall be provided by the contractor and shall deem to be included in quoted rates.

41.24 Foundation shall be as per manufacturers design and to suit the site condition. Contractors 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.

41.2 Engine 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

41.26.1 The 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.

41.28.1 The contractor shall produce to the GE original purchase vouchers the manufacturers test certificate and literature manual of following equipments as applicable.

a DG set b LT Panel c Cables.

d CHS e Jointing Kit f AHU Plant.

g Transformer h Submersible Pump.

j GIMS EWR Pipes IMS EWR Pipes.

42. LOW VOLTAGE SWITCHED GEAR ASSEMBLIES DESIGN VERIFIED AS PER ISIEC.

614391 2 FOR 415 V 50HZ RATED FAULT LEVEL 65KAIS 3 PHNE 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 ISIEC 61439 1 2. Type Test certificates for. conformance to IS IEC 614391 2 65 kA 1 Sec along with ACB mounted in the switchboards. with aluminum Busbars 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 113531985 Guide for uniform system of marking identification of Busbar and Terminals.

IS 137031993 Low voltage fuses.

IS 27051992 Current transformers.

IS 6941990 PVC insulated cables for voltages including 1100 V with Copper and Aluminum. conductor.

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IS 12481983 Direct acting electrical indicating analog.

IS 86231993 Low voltage switch gear control gear assemblies.

IS 5082 Electrolytic Aluminum Busbar Trunking system Rod tubes sections for. electrical purposes.

IS 137791999 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 3PhNE 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 ALCu. 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. 6143912. 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. Busbars and insulating materials.

The busbars 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 ISIEC 61439 when carrying rated current and must be suitable for a fault level of 65 kA 1 sec.

Auxiliary busbars each of minimum 25 sqmm thick electrolytic tough pitch copper shall be provided for following applications. Exact number of busbars 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 busbar. compartment.

The busbars shall be supported of regular intervals using FRP SMC or DMC insulators. It should. have very high comparative tracking index CTI600 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 busbar joints supports. The busbars 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 busbar 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 Part2 VDE 0660 Part 101 IEC 68 Part 230 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 Icu Ics Icw 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 selfpowered 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. OL SC and caused tripping of circuit breakers. The breaker will have to be necessarily with mechanical reclosing. 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.

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 selfpowered 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 609471 and 609472 standards. They shall be of cat with a rated service breaking capacity  $I_{cs}$  min of 50 to the ultimate. breaking capacity  $I_{cu}$  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 609471.

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 609472 727 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 thermomagnet 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 609472 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.

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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  $I_i$  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 2448V ACDC or 110V DC or 230500V AC or 230 V DC.

Under voltage Release continuous rated with wide band site selectable voltage 2448V ACDC or 110V DC or 230500V 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.

Leadwires 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 PhaseBarriers.

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 609472 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 609472.

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 Plugin Mounting Operational if Required.

When the breaker is mounted on a plugin the system remains and fulfils IEC 60947.2.

Installation. The device shall include the complete accessories for assembling the circuit breaker. in plugin 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 plugin 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 Multifunction 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/MVA.

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 manufacturers works and witnessed by Buyer

All routine tests specified in ISIEC 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 LT Legrand.

Make of ACB ABB EMax Siemens 3WT LT UPower Legrand DMX3 Schneider.

MVS.

Make of MCCB ABB TMake Siemens 3VT LT DSine Legrand DPX Schneider.

CVS.

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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 M35 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 herein 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 SalHaldaHollongHollock 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 Part1. 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 Part1. Bolts and nuts black B conforming to IS13631984. 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 13 after close. hacking of the surface to ensure keying and bond and finished fair.

43.1.9 All exposed concreteplastered 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 M35 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 herein 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 13 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 124 Type B 1.

43.4.3 Earth filling shall be done to the profile indicated on the drawings and as specified in. relevant clause herein 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 M35 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 hereinbefore 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 2022 mm thick chequered finish cement concrete treads laid over 15 mm thick bed of cement mortar 13 over RCC surface. Risers will be finished with 10 mm thick cement plaster in cement mortar 14 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 13 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 13 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 14 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 hereinbefore.

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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 M35 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 hereinbefore 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 2022 mm thick chequered finish cement concrete tiles laid over 15 mm thick bed of cement mortar 13 over RCC surface. Risers will be finished with 10 mm thick cement plaster in cement mortar 14 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 hereinbefore.

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 M35 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 hereinbefore 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 herein 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 40kgcum.

43.7.7.2 Compressive Strength at 10 shall be 0.15kgSqm.

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.

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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 NONCIRCULAR VIRGIN SYNTHETIC FIBRE PLASTERING WORK IN STOP BUTT AND. BAFFLE WALLS.

43.8.1 Cement plaster mix with noncircular virgin synthetic fibre shall be of thickness as indicated on the drawings. The locations where noncircular 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 CC 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 Noncircular virgin synthetic fibre shall be mixed in mortar as per manufacturers 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 IndiaEinCs branch based on the TBRL Ballistics. Evaluationtest report from TBRL Sector 30 Chandigarh160030 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 drawings 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 hereinbefore 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.

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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. Manufacturers 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.

Compressive.

Strength MPa C .

se di ro l h C.

.

g K<sup>2</sup> Ma e r A e c a f r u S c i f i c e p S r e i l e t a h C e L y b s s e n d n u o S e v a l C o t u A y b s s e n i o .

t a i t r a u R t a S r o e t m c a i l F o i t a R o i t a R n o r l a n i m u l c A e u d i s e R e l b u l o s n m u i s e n I I .

As per relevant.

IS.

As per.

manufacturers.

test certificates.

As per.

independent test.

Remarks with Signature Accepted/Rejected.

Contractor Junior Engineer Engineer in Charge Garrison Engineer.

Remarks of BOOInspecting OfficerCWE.

To be allotted serially by GE consignment wise.

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Appendix B.

STEEL SUPPLY AND ACCEPTANCE REGISTER.

1. CA No and Name of Work

2. Contract No

3. Name of Manufacturers TC No

4. Manufacturer

5. Random Test details.

a Physical test report from \_\_\_\_\_ vide letter No \_\_\_\_\_.

Name of NABL approved LabGovt Engg College.

b Chemical test report from \_\_\_\_\_ vide letter No \_\_\_\_\_.

Name of NABL approved LabGovt Engg College.

6. Type of steel dia and qty

a Type TMTCRS.

b Dia \_\_\_\_mm.

c Actual wt \_\_\_\_MT.

d Conversion wt \_\_\_\_MT.

Chemical Test Mechanical Test.

t.

.

.

n.

e 8.

m 2 1.

s u e l e m m n iM.

o r o t n 2 m N n.

n o b r a C r u h p l u S.

.

s u o r o h p s o h P.

h.

p s.

o h P r u h p l u S e s e n a g n a M n o c i l i S e R n o i s.

o a.

r.

r t o s C i s.

r e t e m r e p t W.

m.

N.

s s e r t S d l e i Y.

.

h t g.

n e r t S e l i s n e T.

o.

i t a.

gn o l e t n e c r e P t s e t d n e B t s e t d n e b e R s k r a m e R.

As per IS 17862008.

As per manufacturers.

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.

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Appendix C.

FREQUENCY FOR NORMAL MASS MECHANICAL TEST AND CHEMICAL TEST OF STEEL.

SRL NOMINAL SIZE QUANTITY.

NO.

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 to 16 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 sample tests for his satisfaction. The cost of these additional tests shall be governed as per condition 10A of IAFW 2249. However cost of samples transportation and other overheads shall be borne by the contractor irrespective of test results.

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PARTICULAR SPECIFICATION CONTD.

Appendix D.

FORMAT FOR QUALITY CONTROL PLAN.

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 Contractors Refer to Agency for Responsibility.

per CA plan of testing testing for testing.

Scheduling clause.

10. List of all TP 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..

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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 Date Materials Quantity Source Weather Tests Tests to be.

No received as per carried carried out.

approved out by before.

sample contractor incorporation.

or not.

18. General Remarks by contractor of his

Plan of action to ensure that quality standards.

Date Signature of Contractor.

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APPENDIX D1.

SOURCES OF MATERIALS.

SI Name of Materials Suggestive QuarrySource Subject to.

No testing and Approval.

1 2 3.

1. Coarse Aggregates other than Any Govt Approved quarrysources. The.  
DACII PQC 450 mm thick aggregate should be obtained through.  
the multicone stone crushers.

2. Coarse Aggregate for DACII Any Govt Approved quarrysources. The.  
layer and PQC 450 mm thick aggregate obtained from multicone.  
stone crusher with VSI facility tertiary.  
crushing shall only be used.

3 Fine Aggregatesstone dust River SandQuarry 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 placesource 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 coarsefine 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.

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PARTICULAR SPECIFICATION CONTD.

APPENDIX E.

SECONDARY PRODUCERS FOR STRUCTURAL STEEL SECTIONS.

MS 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 Fax0332236666.  
MS Shyam Steel Industries Ltd.  
White Towers 115 College Street.  
1st Floor Kolkata12.  
MS Amba Shakti Ispat Ltd.  
Plot No 6 Phase II Industrial Area Kala Amb Distt. Sirmour173030 H.P.  
Tele 01734309983 309986 Fax 01702238927.  
MS Pushpak Steel Industries Pvt Ltd.  
Gate No 119.  
Alandi Market Road.  
Dhanore Tahkhed Pune.  
Tele 0213523242728232244.  
Fax 02135233171.  
Shree Parashnath ReRollin Mills Ltd.  
3511 Part Dr BC Roy Avenue.  
Durgapur713201 Phone 034325505370538 Fax 03432554457.  
SRMB Srijan Pvt Ltd.  
7 No. Khetra Das Lane Kolkata700012.  
Tele 03322369999 Hunting Fax03322113636.  
MS Amba Steels.  
216 West Patel Nagar New Delhi110008.  
Tele 01125885225 25885226 Fax 01125886914.  
MS Shree Om Rolling Mills P Ltd.  
D512 Additional MIDC Jalna.  
Tele02482220925 220474 Fax02482221306.  
MS Anant Steel Pvt Ltd.  
368 Civil line Jhansi U.P Phone 05172330115 619 Fax 05172330618.  
MS Karam Steel Corporation.  
Narsali Road Po Box 56 Mandi Gobind Garh147301 PB.  
Tele 01765257536.

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 department can add any name as per approval of EinCs Branch.

\_\_\_\_\_ for Accepting officer.

Signature of Contractor.

Dated \_\_\_\_\_.

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Gate No 119.  
Alandi Market Road.  
Dhanore Tahkhed Pune.  
Tele 0213523242728232244.  
Fax 02135233171.  
Shree Parashnath ReRollin Mills Ltd.  
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Durgapur713201 Phone 034325505370538 Fax 03432554457.  
SRMB Srijan Pvt Ltd.  
7 No. Khetra Das Lane Kolkata700012.  
Tele 03322369999 Hunting Fax03322113636.  
MS Amba Steels.  
216 West Patel Nagar New Delhi110008.  
Tele 01125885225 25885226 Fax 01125886914.  
MS Shree Om Rolling Mills P Ltd.  
D512 Additional MIDC Jalna.  
Tele02482220925 220474 Fax02482221306.  
MS Anant Steel Pvt Ltd.  
368 Civil line Jhansi U.P Phone 05172330115 619 Fax 05172330618.  
MS Karam Steel Corporation.  
Narsali Road Po Box 56 Mandi Gobind Garh147301 PB.  
Tele 01765257536.

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 department can add any name as per approval of EinCs Branch.

\_\_\_\_\_ for Accepting officer.

Signature of Contractor.

Dated \_\_\_\_\_.

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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 NAME OF ITEM GP1 GP2 GP3.

R.

NO.

1 CHEMICAL CHLOROPYRIPHOS20 EC CHLOROPYRIPHOS20EC.

FOR ATT GRAMAX20 GRAMAX20.  
2 ATT AUTH CO PEST CONTROL SERVICE OF PEST CONTROL SERVICE DR SWAROPS PEST.  
INDIA PVT LTD DELHI CONTROL.  
PEST CONTROL SERVICE PEST CONTROL CORPOORA MONATARI.  
DELHI ATION DELHI INDUSTRIES.  
INDIA PESTICIDES LUCKNOW DENOSIL BOMBAY NEW DELHI.  
TATA CHEMICAL PEST CONTROL.  
3 STEEL MS AGEW STEEL SHRI KRISHNA ASSOCIATION MS SANJAY STEEL.  
DOOR MANUFACTURE PANCHKULA WORKS JAMMU.  
WINDOW PVT LTD AHMEDABAD.  
FRAMES MS STEELMAN INDUSTRIES SK STEEL FABR.  
CHOWKHAT MS SHIV MULARA JALANDHAR CATOR LUDHIANA.  
STEEL NARODA AHMEDABAD.  
DOORS MS RAYMUS STRUCTURAL SEHGAL DOORS NEW.  
VENTILATORS GODREJ AND BOYCE ENGG WORK PVT LTD NEW DELHI.  
CUPBOARD MFG MUMBAI DELHI.  
AND.  
WINDOWS SEN HARVIC ISHWAR INDUSTRIES BHAWANI STEELS.  
MUMBAI MERRUT CANTT GAZIABAD.  
ASHWANI SONS GZB SHIVAM STEEL JAMMU MS CHANDI.  
INDUSTRIES.  
ASHWANI SONS GZB GAZIABAD.  
4 ROLLING SHRI KRISHNA ASSOCIATION PARKASH CO NEW DELHI MS AKASH ROLLING.  
SHUTTERS PANC HKULA SHUTTERS DELHI.  
COLLAPSIBLE GATE SK STEELS INDUSTRIES.  
GRILLS ISHWAR INDUSTRIES MERRUT NEW DELHI MS AUTO ROLLING.  
CANTT SHUTTERS.  
MS PARKASH ROLLING ENTERPRISES NEW.  
MS STEELMAN INDUSTRIES SHUTTERS DELHI DELHI.  
JALANDHAR.  
5 FACTORY MADE MS WOOD PRODUCT INDORE CHANDIGARH TIMBER JAGAN SAW MILL.  
WOODEN paneled PRODUCT CHANDIGARH AKHNOOR ROAD.  
GLAZED MS GOYAL INDUSTRIES JAMMU.  
WIRE CORPORATION 8743 DESH MS SORAB ENTERPRISES.  
GAUGE BANDHU GUPTA ROAD NEW KATHUA JK EVEREST TRADING.  
DOORS SHUTTERS DELHI PATHANKOT.  
SHRI KRISHNA INDUSTRIES.  
MS JAIN WOOD INDUSTRIES PANCHKULA MS KC JOINERY MILL.  
MURTHAL SONIPAT JAMMU.  
MS SHIV JOINERY.  
MS PIONEER TIMBER PRODUCT FURNITURE INDUSTRIES.  
CHANDIGARH JAMMU.  
MS JOINERY WORK.  
PARIMPORA SRINAGAR.  
MS WOOD CRAFT ASSAM.  
NEW DELHI.  
6 HDF PRE MS HR ENTERPRISES OLD MS BALAJI ACTION BUILD.



LAMINATED MATT DALHOUSIE ROAD NEAR DAV WELL NEW DELHI.  
FINISH DOORS SCHOOL PATHANKOT PB.  
SHUTTERS KITPLY INDUSTRIES.  
MS TECHNOFAB INDIA LTD.  
AMBALA HR NATIONAL.  
PRIMA.  
7 FACTORY MADE MS GREEN PLY INDUSTRIES. MS NATIONAL PLYWOOD MS MYSORE WOOD.  
FLUSH DOORS INDUSTRIES PRODUCT.  
SHUTTERS.  
MS CENTURY PLY MP WOOD PRODUCT INDORE ARCHID PLY.  
PIONEER TIMBER MS JAIN WOOD.  
SWASTIK PLY WOOD CHANDIGARH INDUSTRIES.  
DURA PLY MS KITPLY INDUSTRIES.  
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PARTICULAR SPECIFICATION CONTD.  
APPENDIX F.  
SE NAME OF ITEM GP1 GP2 GP3.  
R.  
NO.  
8 PVC DOOR SINTEX INDUSTRIES. FIXOPAN.  
WINDOW FRAME.  
SHUTTERS RAJSHRI PLASTIWOOD LTD INDO PLAST PVT LTD NEW.  
DELHI.  
MS DURA PLAST EXTRACTION.  
PVT LTD DURIAN DOORS.  
FENESTA MS POLYLINE.  
EXTRACTION PVT LTD.  
POLYTUFF KOLKATA.  
9 UPVC WINDOW FENESTA INDIA PVT LTD ACCURA POLYTECH PVT LTD.  
DOORS AHMEDABAD.  
FRAME SHUTTERS VEKA INDUSTRIES PVT LTD.  
MUMBAI KUMAR ARCH TECH.  
H2O SOLUTION WINDOWS LG HAUSYS.  
DOORS.  
10 DOOR MAWJEE EVEREST.  
WINDOW.  
STEEL FITTINGS MS KITCH ARCHITECTURAL CLASSIC.  
PRODUCT PVT LTD.  
RS INDUSTRIES.  
11 MORTICE LOCK GODREJ JOHNSON.  
HARRISON UNIVERSAL.  
LINK.  
EVEREST.  
12 HYDRAULIC DOOR GODREJ AMAR PRABHAT.  
CLOSER SPRING.  
DROMA INDIA SANDHU DOOR KING.  
DYANA EVERLITE.

EVEREST HARDWYN.  
PRIYA.  
UNIVERSAL.  
13 ANODIZED JINDAL ARGENT.  
ALUMINUM DOORS.  
WINDOW FRAMES INDAL FENESTA.  
PARTITONS.  
HINDALCO CROWN ALUMINUM.  
ASHWANI SONS GZB ASHWANI SONS GZB.  
14 ALUMINUM ALUTRAC MS ALUMINUM UDYOG.  
FITTINGS FOR CROWN ARGENT.  
WOODEN JINDAL ELITE.  
ALUMINUM PVC CLASSIC MEPRO.  
DOORS AND DROMA INDIA.  
WINDOWS.  
15 ALUMINUM ALCO BOND ALSTONE.  
COMPOSITE.  
PANELS ALSTRONG ALUMINUM CLAD.  
ARMSTRONG OROPANEL.  
ALUDECORE.  
16 FEBRICATORS FOR DADA INDUSTRIES JALLANDHAR ALUMINUM UDYOG HINDUSTAN.  
ALUMINUM WORKS MS GUPTA ALUMINUM JAMMU MODERN ALUMINUM JAMMU ADVIZERS.  
ALUPLEX INDUSTRIE DIGIANA ZOOM FABRICATOR JAMMU PATHANKOT.  
JAMMU HINDUSTAN ALUMINUM NEW.  
DELHI RANA.  
SIDDHI ENTERPRICES CONSTRUCTION.  
17 DROPERY RODS VISTA MASEUT.  
LEVALOR LEXAFLAX.  
AEROLUX.  
MAC DÉCOR.  
CANO CEAFU22202425 SERIAL PAGE NO 174.  
PARTICULAR SPECIFICATION CONTD.  
APPENDIX F.  
SE NAME OF ITEM GP1 GP2 GP3.  
R.  
NO.  
18 VENETIAN BLINDS VISTA LEAVILOR.  
NEHA TOUCH.  
DECORE.  
19 PRE LAMINATED NOVA PAN ANCHOR ARCHID PLY.  
PARTICLE BOARD.  
GREEN PLY KIT PLY DURA BOARD.  
BHUTAN BOARD SWASTIK.  
MYSORE WOOD BOARD NATIONAL.  
CENTURY PLYWOOD ECO BOARD.  
20 PLY WOOD FOR DURA PLY SWASTIK PLY JAIPUR SITAPUR PLYWOOD.  
GENERAL PURPOSE.

GREEN PLY NATIONAL JAYANA.  
DURO MERINO.  
BHUTAN BOARD KITPLY.  
CENTURY ARCHID PLY.  
DURIAN MYSORE CHIP BOARD LTD.  
21 LAMINATED CENTURY FORMICA.  
SHEETS.  
DURA MARINO BAKELITE HYLAM.  
SUNMICA SWASTIK.  
GREENLAM ARCHIDLAM.  
SUNGLOSS MERINO MYSORE CHIP BOARD.  
22 FIBRE BOARD NOVA PAN DURA TUFF.  
MEDIUM BHUTAN BOARD GREEN PANEL MAX.  
DENSITYHDF KITPLY.  
MYSORE CHIP BOARD LTD.  
23 CALCIUM SILICATE AEROLITE CEILING SYSTEM ECO BOARD.  
BOARDWALL MS BHARAT STEEL ROLL.  
LINING CEILING BAHADUR GARH CALSI BRAND.  
TILES.  
24 FIBRE CEMENT EVEREST .  
CEILING BOARD.  
VISAKA.  
25 METAL SHEET TILES ARMSTRONG.  
CEILING DURLUM.  
HUNTER DOUGLAS.  
SAINT GOBAIN.  
26 GYPSUM BOARD NATIONAL GYPSUM LAFARGE SON.  
FALSE CEILING.  
ARMSTRONG.  
SAINT GOBAIN.  
27 THERMAL EVEREST ACE PREFAB.  
INSULATION.  
CEILING BOARDS JINDAL MODERN PREFAB.  
ARMSTRONG.  
28 GALVANIZED STEEL SAIL EVEREST.  
SHEETS.  
TATA APOLO METALEX.  
JSW STEEL JINDAL.  
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PARTICULAR SPECIFICATION CONTD.  
APPENDIX F.  
SE NAME OF ITEM GP1 GP2 GP3.  
R.  
NO.  
29 POLYCARBONAT DURATUFF.  
SHEET LEXAN.  
VMT PLASTEC LTD.

MS COXWELL.  
DOMES ENGG PVT LTD.  
30 COLOUR COATED TATA BLUE KIRBY.  
GALVALUME SCOPE JINCALUME METAL SCOPE.  
SHEETS JSW STEELGALVALUME KAMDHNU.  
CRIL EVEREST.  
31 PVC TILESHEET PRIMER VINYL KRISHNA TILES.  
POLYFILM LTD POLYFIN.  
WONDER FLOOR NEELKAMAL.  
ARMSTRONG MARBLEX.  
BOHR INDUSTRIES.  
32 WOODEN GREEN PLY.  
LAMINATED.  
FLOORING ACTION TESA.  
CENTURY.  
33 TERRAZZO NTC ULTRA TILES PVT LTD MODERN HOLLOW.  
TILESPCC NITCO BHARAT TILES BLOCK.  
TILESPCC EUROCON REGENT TILES UDHAMPUR.  
CHEQUERRED DURACRETE GICO.  
TILES EVEREST EVEREST.  
MS EVEREST CEMENT MS EVEREST CEMENT.  
PRODUCTS UDHAMPUR Only for PRODUCTS UDHAMPUR.  
ChequeredDesigner tiles Only for ChequeredDesigner.  
tiles.  
MOHINDRA Only for.  
ChequeredDesigner tiles.  
34 INTERLOCKING NTC TERRA FIMA MODERN HOLLOW.  
TILESEXTERIOR NITCO AONE TILES BLOCK UDHAMPUR.  
TILESPAVER ULTRA CORAL.  
BLOCKS JOHNSON PAVIT.  
EVEREST SS TILES.  
MS EVEREST CEMENT HINDUSTAN TILES.  
PRODUCTS UDHAMPUR EVEREST.  
MS EVEREST CEMENT.  
PRODUCTS UDHAMPUR.  
MOHINDRA.  
35 ACID RESISTANT SOMANY.  
TILES NITCO.  
KAJARIA.  
NITCO.  
ORIENT BELL.  
36 GLAZED KAJARIA ORIENT BELL.  
CERAMICNON SKID HR JOHNSON ASIAN GRANITO.  
WALL FLOOR TILES CERA VERMORA.  
NITCO.  
SOMANY.  
37 VETRIFIED TILES KAJARIA VERMORA.

JOHNSON.  
ORIENT BELL ASIAN GRANITO.  
NITCO.  
SOMANY.  
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SE NAME OF ITEM GP1 GP2 GP3.  
R.  
NO.  
38 VITREOUS CHINA JAQUAR NEYCER.  
SANITORY.  
APPLICANCESFITTI ROCA CERA.  
NGS MARC.  
SANITARWARE KOHLER.  
HINDWARE.  
HR JOHNSON.  
PARRYWARE.  
39 WATER CLOSET JAQUAR SUPREME AJANTA.  
SEAT AND COVER.  
TOILET SEAT SOMANY PARRYWARE DURALIGHT.  
COVER.  
PRAYAG POLYTUFF MILLENNIUM.  
CERA COMMANDER.  
NEYCER HINDWARE.  
JOHNSON JANIKO only for WC SEAT.  
COVER PVC.  
JANIKO only for WC SEAT COVER.  
PVC.  
40 PVC FLUSHING HINDWARE SUPREME.  
CISTERN.  
JOHNSON PARRYWARE.  
PRAYAG CERA.  
KAJARIA COMMANDER.  
JAINKO JAINKO.  
41 SHOWER ROSES JAQUAR JAINKO.  
CHROMIUM.  
PLATED MARC BLUE STAR.  
PARCO PRIMA.  
ESS ESS GEM.  
42 BATHROOM FANCY JAQUAR ANCHOR.  
FITTINGS.  
MARC SOMA.  
ESS ESS JAINKO.  
KOHLER GEM.  
JOHNSON CERA.  
43 BIB TAPS STOP JAQUAR ELITE.

COCKCP FANCY.  
FITTINGS PARKO ZIM.  
MARC PRIMA.  
ESS ESS ESSCO.  
ROCA JANIKO.  
CERA PRAYAG.  
KOHLER GEM.  
44 SENSOR OPERATED TOSHI.  
FLUSH VALVES UTEC.  
IDROLL.  
JAQUAR.  
KOHLER.  
45 HAND DRIER OPAL.  
ATMAS.  
UTEC.  
TOSHI.  
HAIER.  
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SE NAME OF ITEM GP1 GP2 GP3.  
R.  
NO.  
46 TOILET JAQUAR COMMENDER.  
BATHROOM.  
CABINETS CERA NILKAMAL.  
PRAYUG PARRYWARE.  
47 LOOKING MIRROR SAINT GOBAIN ATUL.  
MODI GUARD SWASTIC.  
TRIVENI FLOAT GLASS PRAYAG.  
GOLDFISH.  
48 STAINLESS STEEL NIRALI DIAMOND.  
SINK WITH OR.  
WITHOUT DRAINING NEELKANTH AMCO.  
BOARD PLATE.  
RACK JAYNA KABRA.  
SILVERSHINE PRAYAG.  
JINDAL JAINCO.  
49 PVC RAIN WATER SUPREME KISAN.  
PIPE SEWAGE.  
PIPES CPVC PIPE ASHIRWAD PRINCE.  
FINOLEX BSURE.  
JAIN PIPE.  
SFMC.  
ASTRAL.  
50 WATER STORAGE SINTEX PRAYAG.  
HDPE TANK.

POLYWELL LOTUS.  
ROTEX POLYPLAST.  
POLYCON POLYTUFF.  
JOHNSON.  
51 PUFF INSULATED SINTEX ACE BUILDER.  
WATER STORAGE.  
TANKS ROTEX.  
HATICH.  
JS POLYPLAST.  
52 FLOAT VALVES PRAYAG POLYTUFF.  
SHAKTI PEARL.  
SUPREME PRIMA.  
WILSON.  
53 PVC BATH PRAYAG SUPREME.  
FITTINGS PVC SHAKTI.  
GRATINGPVC POLYTUFF JAINKO.  
CONNECTION JAINKO.  
54 MANHOLE COVER NECO MOHINDRA PCCRCC.  
FRAME SKF.  
RAJ.  
KK.  
55 SAND CAST IRON SRIF RAJ IRON FOUNDARY.  
SPIGOT SOCKET GOLD CASTINGS.  
SOIL WASTE VENT NECO JAYASWAL BIC KOLKATTA.  
PIPE HIF MATHURA.  
FITTINGS SKF.  
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SE NAME OF ITEM GP1 GP2 GP3.  
R.  
NO.  
56 GLASS PLAIN PIN SAINT GOBAIN SWASTIC.  
HEAD FROSTED.  
MODI GUARD TRIVENI FLOAT.  
ATUL.  
ASAHI.  
57 CEMENT BASED SNOWCEM ACQUOLAC PAINTS KAMDHENU.  
PAINTS.  
ASIAN ACRO PAINTS.  
JEHNSON NICHOLSON ECOCEM.  
BERGER BIRLA WHITE.  
DURACEM.  
58 WALL PUTTY ASIAN PAINTS SHALIMAR.  
BIRLA PAINTS KAMDHENU.  
NEROLAC ICI INDIA.  
JK CEMENT JEHNSONNICHOLSON.

BERGER PAINTS TATA PIGMENT.  
59 ACYCLIC DISTEMPER NEROLAC PAINTS SHALIMAR PAINTS.  
JOHNSON NICHOLSON ACRO PAINTS.  
BERGER PAINTS GARWARE.  
ICI DULUXE.  
ASIAN PAINTS.  
60 PLASTIC EMULSION BERGER BERGER.  
PAINTS SILKRANGOLIEASY CLEAN RANGOLI EMULSION.  
ASIANROYALE ASIANPREMIUM.  
EMULSION.  
NEROLAC.  
IMPRESSION NEROLAC LOTUS TOUCH.  
ECOCLAN.  
JEHNSONNICHOLSON.  
DULUX ICI EQVT MAKE.  
61 EXTERIOR BERGER WEATHER COAT ALL BERGER WEATHER COAT KAMDHENU.  
EMULSION PAINTS GUARD SMOOTH.  
SHALIMAR.  
ASIANAPEX ULTIMA ASIAN APEX WEATHER.  
PROOF ICI INDIA.  
NEROLAC EXCEL TOTAL.  
NEROLAC SURKASHA.  
JEHNSON NICHOLSON ADVANCED.  
DULUX ICI.  
62 SYNTHETIC GOODLASS ACQUOLAC PAINTS.  
ENAMEL PAINTS NEROLAC PAINTS.  
JEHNSONNICHOLSON ACRO PAINTS.  
BERGER PAINTS.  
ICI INDIA DULUX SHALIMAR PAINTS.  
ASIAN PAINTS.  
63 BITUMENBITUMEN IOC.  
PRIMER.  
BPCL.  
HPCL.  
64 CI SPUN PIPE ISI MARKED.  
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SE NAME OF ITEM GP1 GP2 GP3.  
R.  
NO.  
65 WATER PROOFING MS JK CEMENT.  
COMPOUND.  
POWDERLIQUID MS ACC LTD.  
MS PIDILITE INDIA LTD RAIGARH.  
MS FOSROC CHEMICAL INDIA.  
LTD.



MS CHOKSEY CHEMICAL.  
MS SIKI INDIA PVT LTD.  
MS ROFFE CHEMICAL LTD.  
66 CONCRETE MS BAUCHIMIC I PVT LTD.  
ADMIXTURES.  
PLASTICISERS 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 ISI MARKED.  
GUNMETAL FITTING.  
70 AC MS HYDERABAD INDUSTRIES.  
SHEETSBOARDS LTD.  
RAMCO.  
EVEREST.  
SWASTIK INDUSTRIES.  
71 PREMOULDED MS TIKITAR INDUSTRIES LTD.  
JOINT FILLER.  
BITUMINIOUS STP LTD.  
CAPITAL STEEL AND CHEMICAL.  
72 TOUGHENED MS HINDUSTAN PILKINGTON.  
GLASS ROUGH GLASS WORKS.  
CAST WIRED GLASS.  
SAINT GOBAIN.  
MODI FLOAT.  
MODIGUARD.  
ATUL GLASS INDUSTRIES.  
GOLD FISH.  
ASAHI.  
73 Epoxy Polyurethane MS Cipy Polyurethanes Pvt. Ltd.  
Flooring.  
Ms Sika India Pvt. Ltd.  
Ms Fosroc Chemicals.  
Ms STP Limited.  
Ms Chokesy Chemicals Pvt. Ltd.  
Ms Apurva India Limited Mumbai.  
Ms BOSTIK India Pvt. Ltd.  
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SE NAME OF ITEM GP1 GP2 GP3.

R.  
NO.  
74 ELEVATORS MS Kone India.  
MS Schindler India Pvt Ltd.  
MS Kinetic Hyundai.  
Elevators movement Tech.  
Ltd.  
MS Hitachi Liifts India Pvt.  
Ltd.  
MS Mistubishi Elevator.  
Company India Ltd.  
MS Oits Elevator Company.  
India Ltd.  
MS Fujitech India Pvt Ltd.  
MS Johnson Lifts Pvt Ltd.  
MS Thyssenkrupp Elevator.  
Company India Ltd.  
MS Omega Elevators.  
MS Escon Pvt Ltd.  
MS L T Elevators Pvt Ltd.  
MS IES Elevators.  
75 WATER Multiplas Water proofing Membrane Manufactured by Ms STP Texsa Ltd 570.  
PROOFING PhaseV Udyog Vihar Gurgaon122016.  
MEMBRANE.  
STP Superior Water proofing Membrane manufactured by MS STP LTD.  
Dr Fixit Manufactured by Ms Pidilite Industries Ltd Construction Chemicals.  
Division Andheri Mumbai 400059.  
SIKA.  
IWL.  
Ms Torchtar Membrane and Bitumen Products Pvt Ltd Delhi.  
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SER NAME OF ITEM GP1 GP2 GP3.  
NO.  
EXT ELECTRIC SUPPLY.  
1 POWER TRANSFORMER 663311KV 500 BHEL CROMPTON GREAVES MEGAWIN.  
KVA AND ABOVE SCHNEIDER SWITCH.  
ABB VOLTAMP GEAR.  
BHARAT BIJLEE.  
ALSTOM MS ELECTRICFIELD.  
ANDREW YULE COMPANY.  
ITEGURGAON.  
MS ELECTRICFIELD SIEMENS.  
COMPANY.  
MS JAIMA ELECTRICALS.  
Only for up to 630 KVA.

2 DISTRIBUTION TRANSFORMERS BHEL CROMPTON GREAVES.

11KV415V SCHNEIDER VOLTAMP.

ABOVE 100 KVA CAPACITY COPPER ABB GEE INDUSTRIES.

WINDING SIEMENS. JK TRANSFORMERS.

BHARAT BIJLEE JaybeeBTI.

ALSTOM IECO.

ANDREW YULE MS ELECTRICFIELD.

JaybeeBTI COMPANY.

VOLTAMP MS JAIMA ELECTRICALS.

ITEGURGAON Only for up to 630 KVA.

CROMPTON GREAVES.

MS ELECTRICFIELD.

COMPANY.

MS JAIMA ELECTRICALS.

Only for up to 630 KVA.

3 DISTRIBUTION TRANSFORMERS UP TO RAJASTHAN POWERWARE.

100 KVA CAPACITY COPPER WINDING TRANSFORMER NORTHSON.

JK TRANSFORMER RK INDUSTRIES.

CONTINENTAL JaybeeBTI.

JaybeeBTI MS ELECTRICFIELD.

ITEGURGAON COMPANY.

MS ELECTRICFIELD ALBA POWER.

COMPANY MS JAIMA ELECTRICALS.

MS JAIMA ELECTRICALS.

4 CURRENT AND POTENTIAL SCHNEIDER KAPPA LAXMI.

TRANSFORMER. 11 33KV.

ABB.

AUTOMATIC ELECTRIC JYOTI.

SIEMENS.

NATIONAL PRAGATI.

CROMPTON.

GREAVES.

MS ELECTRICFIELD.

ENGLISH ELECTRIC COMPANY.

MS ELECTRICFIELD.

COMPANY.

4a ISOLATION TRANSFORMER ANDREW YULE.

BENITEK.

IECO.

ITEGURGAON.

VOLINA Vintek.

electronics.

SINETRAC.

VINITEC.

5 TRANSFORMERS OIL MI MATERIAL MIDEL.

POWER LINK.

POWER OIL.

SAVITA.  
6 HT SWITCH GEAR 663311 SCHNEIDER ANDREW YULE MEGAWIN.  
KV.GASINDOOROUTDOOR ABB CROMPTON GREAVES SWITCH.  
SF6 SIEMENS ALSTOM GEAR.  
BHEL CS ELECTRIC LT.  
ENGLISH AREVA.  
MS ELECTRICFIELD LT.  
COMPANY MS ELECTRICFIELD.  
ITEGURGAON COMPANY.  
MS JAIMA ELECTRICALS MS JAIMA ELECTRICALS.  
7 HT SWITCH GEAR PROTECTION RELAYS LT CROMPTON GREAVES.  
ELECTRIC MECHANICALNUMERICAL SCHNEIDER ANDEW YULE.  
ABB ALSTOM.  
SIEMENS AREWA.  
BHEL.  
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APPENDIX F.  
SER NAME OF ITEM GP1 GP2 GP3.  
NO.  
8 COMPACT SUBSTATION SCHNEIDER LT RAYCHEM.  
CROMPTON.  
ABB.  
AREVA RPG.  
SIEMENS VOLTAMP.  
BHEL.  
MS ELECTRICFIELD.  
VOLTAMP COMPANY.  
ALSTOM.  
ITEGurgaon.  
MS ELECTRICFIELD.  
COMPANY.  
9 HT 11KV AUTOMATIC SWITCH FUSE UNIT SCHNEIDER SHALABH.  
CROMPTON GREAVES.  
ANDREW YULE.  
SOUTHERN.  
SWITCH GEAR.  
SHALABH.  
10 AIR BREAK GANG OPERATED SWITCH BHEL JAISHRI.  
DEVICE.  
PACTIL.  
ATLAS.  
ANDREW YULE.  
SOUTHERN SWITCH.  
MYSORE ELECTRIC.  
GEAR.  
ABB.

JAIPUR BROS BIRLA.  
UNIVERSAL.  
11 LIGHTENING ARRESTERS PACTIL JAIPURIA BROS JMV NOIDA.  
RASHTRIYA.  
CROMPTON GREAVES JAISHRE.  
ATULAS.  
M E I ELECTRICAL.  
GEC.  
ALSTON.  
ELPRO.  
SCHENEDIER.  
OBLUM.  
12 DISC PINLOOP INSULATORS BHEL JAYSHREE.  
PACTIL WS INSULATOR.  
MYSORE PORCEILIN HITKARI.  
JAIPURIA.  
RASHTRIYA.  
13 HT XLPE CABLES 6633KV 11KV UNIVEWRSAL CABLES RALLISON.  
NICCO.  
ASIAN CABLES PLAZA.  
ICL.  
KE I INDUSTEIES LTD.  
RAVIN.  
FINOLEX.  
ELECTRON.  
POYCAB.  
RPG.  
GLOSTER CABLES LTD.  
CCI.  
NICCO.  
HAVELLS.  
14 LT CABLES 1100 VOLTS XLPE FINOLEX NICCO RR CABLES.  
UNIVERSAL INDO ASIAN CABLES.  
RPG CABLES KALINGA CRYSTAL.  
KE I INDUSTEIES PVT GOLD.  
LTD PLAZA RAVIN.  
POLYCAB PARAGAON.  
GLOSTER SHALABH RICHA.  
SHALABH.  
HAVELLS EON.  
RALLISON.  
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APPENDIX F.  
SER NAME OF ITEM GP1 GP2 GP3.  
NO.  
15 LTHT CABLE JOINTS HEAT SHRINKABLE DENSON RPG.

COLD SHRINKABLE MSEAL YAMUNA GASES.  
PUSH ON TYPE BIRLA 3M MAHENDRA .  
RAYCHEM MAHENDRA.  
CABSEAL CCI.  
JAIPUR BROS.  
16 ACSR CONDUCTORS JAIPURIA NORTHSON UJALA.  
ALUMINUM IND.  
PALICON KONARK.  
ICC.  
NICCO ASIAN POWER BHART.  
ALIND.  
CONDUCTOR.  
17 HTLT PCC POLES HINDUSTAN PRE MA PRESTRESS WORK.  
STRESSED CONCRETE.  
INDIAN PCC POLE.  
KASHMIR CEMENT.  
CEMENT FABRIC INDIA.  
PRE CAST CEMENT.  
PRODUCT PRECTO INDUSTRIES.  
CONCRETE UDYOG LTD KB INDUSTRIES.  
18 HTLT STEEL TUBULAR SWAGED POLES NATIONAL TUBING CO QUALITY STEEL SIDHARTH.  
KANPUR STEEL.  
SURJIT STEEL.  
BHARAT CONDUIT INDUSTRIES NASIR.  
STEEL WORKS KANPUR ELECTRICAL.  
SOHAN LAL SONS.  
JINDAL STEEL PRODUCT.  
ANIL ENGG.  
MS SOHAN LAL SONS CORPORATION.  
MS ADVANCE TUBE ZAIN INDUSTRIES.  
JAMMU SRINAGER.  
ADVANCED TUBE.  
JAMMU.  
19 HIGH MAST LIGHTS BAJAJ SURYA METAL COATS.  
PHILIPS.  
CROMPTION HPL UTKARH.  
GE TUBES.  
20 LT PANELS AC CONTROL PANELS PUMP SIEMENS UNIVERSAL SWITCH ANY CPRI.  
HOUSE PANELS FOR SS LT GREAR CONTROL APPROVED.  
ABB AVON COFIRM.  
SCHNEIDER.  
AE.  
LEGRAND.  
HAGER HP.  
HENSAL.  
ADHUNIK SWITCHGEAR.  
CROMPTION.

GREAVES NATIONAL ENGG.  
SHALABH FOR LT.  
WORKS.  
PANEL ONLY.  
DVEPL DVEPL.  
IECO For LT Panel only.  
SHALABH FOR LT.  
ITEGURGAON For.  
PANEL ONLY.  
Distribution .  
Synchronization Panel.  
MS ELECTRICFIELD.  
only.  
COMPANY Only for LT.  
MS ELECTRICFIELD.  
Panel.  
COMPANY Only for LT.  
Panel.  
MS JAIMA ELECTRICALS.  
MS JAIMA ELECTRICALS.  
For LT Panel.  
For LT Panel.  
HAVELLS For LT Panel HARK POWER.  
only CONTROLS.  
21 PVC FEEDER PILLAR BOX AC LT ADVANCE.  
BOXJUNCTION BOX HPL ADHUNIK.  
SINTEX NOVATEUR.  
HAVELLS ELECTRIC.  
HENSAL MILSTONE.  
SHALABH for FEEDER SHALABH for FEEDER.  
PILLAR BOX only PILLAR BOX only.  
DVEPL For Feeder Pillar DVEPL For Feeder Pillar.  
Junction box Junction box.  
ITEGURGAON For HARK POWER.  
feeder Pillar only CONTROLS.  
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APPENDIX F.  
SER NAME OF ITEM GP1 GP2 GP3.  
NO.  
22 HIGH VOLTAGE INSULATING RUBBER JYOTI SINTEX JAIPURA BROS.  
MAT INSULATION.  
DUNLOP.  
SAFEVOLT.  
ELECTROMATE.  
SINTEX.  
23 HT RING MAIN UNIT VCB 11KV SIEMENS CROMPTON GREAVES MEGAWIN.

SWITCHGEAR.  
ME I CS.  
ABB GE.  
SCHNEIDER.  
24 LT AIR CIRCUIT BREAKERS SIEMENS CS ELECTRIC.  
LT INDOASIAN.  
ABB STANDER.  
SCHNEIDER HPL.  
LEGRAND.  
HAGER.  
GEC.  
CROMPTON.  
GREAVES.  
HAVELLS.  
25 MCCBMPCB SIEMENS GE POWER.  
LT INDOASIAN.  
ABB CROMPTON.  
SCHNEIDER STANDARD ELECTRICAL.  
LEGRAND HPL.  
HAGER.  
CS ELECTRIC.  
HAVELLS For.  
MCCB only.  
26 POWER CONTACTORS SIEMENS CS ELECTRIC.  
MOTOR STARTERS.  
LT INDOASIAN.  
ABB.  
ENGLISH ELECTRIC.  
SCHNEIDER.  
STANDER.  
LEGRAND.  
HPL.  
GE POWER.  
AE.  
HAVELLS For.  
Power contactors.  
only.  
27 VOLTMETER AMMETERFREQUENCY LT HPL.  
METERPF METERANALOG TYPE AE MECO.  
ABB INDOSIAN.  
SECURE CS ELECTRIC.  
BENTEX.  
28 DIGITAL TYPE VOLTMETER SECURE HPL PREMIER.  
AMMETERPOWER FACTOR METER LT RISHAB KEY.  
CS ELECTRIC ENERCON.  
MECO AUTOMETIC ELECTRIC.  
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APPENDIX F.

SER NAME OF ITEM GP1 GP2 GP3.

NO.

29 ELECTRONIC ENERGY METER LT ARIVA MECO.

HPL.

HAVELLS GE GENUS.

SECURE.

JAIPUR METER INDO ASIAN.

AE.

LEGRAND.

30 VACUUM CIRCUIT BREAKER VCB ABB ALSTOM MEGAWIN.

11KV33 KV SIEMENS CROMPTON SWITCHGEAR.

SCHNEIDER GREAVES.

ENGLISH ELECTRIC LT.

BHEL DVEPL.

DVEPL MS ELECTRICFIELD.

ITEGURGAON COMPANY.

MS ELECTRICFIELD MS JAIMA.

COMPANY ELECTRICALS.

MS JAIMA ELECTRICALS.

31 CHANGE OVER SWITCHES ABB HPL MEGAWIN.

SIEMENS STANDARD GEO.

SCHNEIDER INDO ASIAN KAY.

LT ANCHOR.

LEGRAND CG.

HAGER SHALABH.

GE.

SHALABH.

HAVELLS.

32 VOLTAGE STABILIZER UP TO 05 KVA AE POWERWARE.

ANDREW YULE SINETRAC.

GODREJ MICROTEK.

MS ELECTRICFIELD VGUARD.

COMPANY VINTEC.

IECO MS ELECTRICFIELD.

ITE GURGAON COMPANY.

VINITEC.

33 VOLTAGE STABILIZER ABOVE TO 05 AE POWERWARE.

KVASERVO CONTROLLED ANDREW YULE SINTERAC.

BENTFORD VOLINA.

BENITEK VOLTAMP.

V GUARD BLUE LINE.

MS ELECTRICFIELD MS JAIMA.

COMPANY ELECTRICALS.

VOLINA Vintek.

Electronics.

IECO.  
ITE GURGAON.  
SINETRAC.  
MS JAIMA ELECTRICALS.  
VINITEC.  
34 UPS TATA LIBERT SINTERAC.  
APLAB BLUE LINE.  
CROMPTON SUKAM.  
MICROTECH.  
LUMNOUS.  
35 DG SETS ENGINE PERKIN.  
GREAVES COTTON VOLVO.  
MAHIANDRA ESCOURT.  
MAHINDRA STERLING.  
TATA RUSTON M POWER.  
CUMMINS.  
KIRLOSKAR.  
OIL ENGINES.  
ASHOK LAYLAND.  
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SER NAME OF ITEM GP1 GP2 GP3.  
NO.  
DG SETS ALTERNATOR  
BHARAT BIJLI ALSTOM.  
CROMPTON GEC.  
GREAVES.  
KIRLOSKAR.  
SEIMENS ELECTRIC.  
CUMMIN CATLER.  
ELECTRIC PILLAR JYOT.  
STAMFORD.  
VOLVO.  
36 DG SET SOUND PROOF CANOPY CS JACKSON.  
PARKINS SUDHIR.  
CATLER PILLER VOLVO.  
STERLING BHASKER POWER.  
KIRLOSKER.  
POWERICE.  
GREEN FIELD.  
COTTON GREAVES.  
37 LT CAPACITOR APFC PANEL LT EPCOS.  
ABB.  
SCHNIDER CROMPTON GREAVES.  
SIEMENS.  
GE ASIAN.

DVEPL For APFC Panel DVEPL For APFC Panel.  
IECO For APFC Panel MS JAIMA ELECTRICALS.  
For APFC Panel.  
ITEGurgaon For APFC.  
Panel HARK POWER.  
CONTROLS For APFC.  
MS JAIMA ELECTRICALS Panel.  
For APFC Panel.  
38 PF IMPROVMENT CAPACITOR BANKS ABB CROMPTON GREAVES.  
LT.  
SCHNIDER EPCOS.  
SIEMENS.  
LEGRAND GE.  
HAVELLS.  
INTERNAL ELECTRIC SUPPLY.  
39 RIGID PVC CONDUIT PLAZA BAJAJ AVON.  
FINOLEX KALINGA.  
SUPREME AKG RICHA CABLE.  
PRESTO PLAST KINJAL.  
ASIAN NIC.  
40 MS CONDUIT PIPE BHARAT STEEL AKG VIMCO.  
BEC.  
JINDAL KALINGA PRECISION.  
PRAKASH TUBES.  
TATA TIRUPATI NATIONAL.  
41 PVC FLEXIBLE COPPER WIRES LT KINJAL.  
FINOLEX HPL.  
GRANDLAY PLAZA.  
ANCHOR PARAGON.  
POLYCAB ELEKTRON.  
SHALABH GLOSTER.  
HAVELLS KE I.  
SHALABH.  
CANO CEAFU22202425 SERIAL PAGE NO 187.  
PARTICULAR SPECIFICATION CONTD.  
APPENDIX F.  
SER NAME OF ITEM GP1 GP2 GP3.  
NO.  
42 SWITCHSOCKETSCEILING ANCHOR CS ELECTRIC KINJAL.  
ROSEFAN REGULATORS STANDARD.  
LEGRAND SSK EON.  
POLYCAB.  
CRABTREE PLAZA LEADER.  
CONA.  
HAVELLS INDOASIAN RR CABLE.  
43 MCBELCBRCCBRCSOLATORSMCB ABB CS ELECTRIC.  
DISTRIBUTION BOARD LT INDOASIAN.

SCHNEIDER BCH.  
SIEMENS ANCHOR.  
LEGRAND GE POWER.  
CROMPTON HPL.  
HAGER STANDARD ELECTRICALS.  
SHALABH for SHALABH for.  
MCBRCCBDISTRI MCBRCCBDISTRIBUTION.  
BUTION BOARD BOARD only.  
only.  
HAVELLS.  
44 LAMINATED SHEET COVER HYLUM.  
SUNMICA.  
FORMICA.  
GREENLAM.  
45 MODULAR SWITCHSOCKETS FAN LEGRAND INDOASIAN.  
REGULATORS SIEMENS STANDERD.  
CRABTREE HPL.  
HAVELLS POLYCAB.  
ROMA ANCHOR.  
ANCHOR.  
46 STREET LIGHT FITTINGS PHILIPS HPL ADHUNIK.  
ACCESSORIES LUMPSHPSV.  
70150250400HPMV CROMPTON SURYA EON.  
80125250400METAL HALIDE.  
GREAVES CS NOVATEUR.  
WIPRO BAJAJ KAKATIYA.  
MYSORE MEGA EMERGY.  
GE LIGHTING.  
HAVELLS.  
47 LED TUBE LIGHT STREET LIGHT PHILIPS SURYA ROSHNI ADHUNIK.  
FITTING ROD.  
CROMPTON HALONIK HPL.  
WIPRO.  
BAJAJ.  
GE LIGHTING.  
HALONIK.  
HAVELLS.  
48 PVC CASING CAPING CG PLAZA MODI.  
BAJAJ KALINGA NATIONAL.  
FINOLEX SUPRIME LAXMI.  
POLYCAB ASIAN PRINCE.  
CANO CEAFU22202425 SERIAL PAGE NO 188.  
PARTICULAR SPECIFICATION CONTD.  
APPENDIX F.  
SER NAME OF ITEM GP1 GP2 GP3.  
NO.  
49 LED FITTINGS LAMPS PHILIPS HPL OREVA.

CROMPTON.  
BAJAJ OSRAM GOLDWYN.  
WIPRO.  
GE HAVELLES EVERADY.  
SURYA.  
SYSKA POLYCAB.  
HALONIK.  
HALONIK.  
50 CEILING FANS EXHUAUST WALL BAJAJ USHA ORTEM.  
MOUNTED CROMPTON POLAR.  
FANSAIR CIRCULATORS GREAVES ALMONARD EON.  
GEC ANCHOR.  
KHAITAN HALONIK.  
ORIENT.  
HALONIK.  
HAVELLS.  
51 WATER HEATER GEYSER BAJAJ VENUS SUPREME.  
USHA LEXUS VGUARD PEARL.  
CROMPTON EON.  
GREAVES.  
JAQUAR.  
RECOLD.  
52 BUS BAR TRUNKING SYSTEM SIEMENS HPL.  
SHENEIDER STANDARD.  
LT HAVELLES.  
CROMPTON SHALABH.  
GE MS ELECTRICFIELD.  
COMPANY.  
SHALABH.  
MS JAIMA ELECTRICALS.  
MS.  
ELECTRICFIELD.  
COMPANY.  
MS JAIMA.  
ELECTRICALS.  
53 BATTERY CHARGER SUKAM.  
AMCO.  
SINETRAC.  
EXIDE.  
BCH.  
SINETRAC.  
MS.  
ELECTRICFIELD.  
COMPANY.  
54 LEAD ACID BATTERIES AMARON SUKUM.  
STANDARD OKAYA.  
EXIDE APC.

TATA GREEN AMCO.  
MICROTEK.  
55 FLAME PROOF LIGHT FITTINGS FANS BAJAJ FLASHPRO PLUTO.  
CROMPTON CS ELECTRIC ATLAS.  
GREAVES FLEXPOR.  
SUDHIR SHYAM.  
56 SOLAR STREET LIGHT FITTING BAJAJ SURYA.  
PHILIPS.  
CG HPL.  
TATA PHOTAN.  
CANO CEAFU22202425 SERIAL PAGE NO 189.  
PARTICULAR SPECIFICATION CONTD.  
APPENDIX F.  
SER NAME OF ITEM GP1 GP2 GP3.  
NO.  
57 STREET LIGHT TIMBERS BAJAJ INDOASIAN.  
LT HAVELLS.  
LEGRAND SINETRAC.  
SIEMENS BCH.  
ABB CS ELECTRIC.  
AE.  
GE.  
58 AVIATION OBSTRUCTON LIGHT BAJAJ SURYA.  
CROMPTON HAVELLS.  
GREAVES.  
HPL.  
PHILIPS.  
SYSKA.  
WIPRO.  
59 SHADO WLESS LIGHTS PHILIPS HAVELLS.  
CG BAJAJ.  
WIPRO.  
CROMPTON.  
GREAVES.  
GEC.  
HALONIX.  
60 UNDER WATER LIGHTS BAJAJ HAVELLS.  
CROMPTON HPL.  
GREAVES.  
PHILIPS.  
WIPRO.  
SURYA.  
61 GI PIPES JINDAL PIPES NIDHI PIPES SWASTIK.  
ADVANCE.  
TATA OSWAL STEEL.  
BST ZENITH.  
PRAKAASH.

SURYA.  
62 HDPEUPVC PIPES FINOLEX ALONPOLY.  
EXTRUSION LTD.  
SFMC PIPE.  
KIRITI.  
JAIN PIPE.  
PRINCE.  
RELIANCE.  
RPPPL SUPREME.  
SWASTIC TIRUPATI.  
KISAN DUTRON.  
63 CI PIPES ELECTRO STEEL JAI BALAJEE NEW JANTA.  
KESORAM KEJRIWAL.  
BIRLAGP.  
SKF.  
KAPILANSH.  
TATA.  
64 DI PIPES ELECTRO STEEL JAI BALAJI.  
JINDAL KEJRIWAL.  
KESORAM AARKO.  
TATA RASHMI METALLICS.  
CANO CEAFU22202425 SERIAL PAGE NO 190.  
PARTICULAR SPECIFICATION CONTD.  
APPENDIX F.  
SER NAME OF ITEM GP1 GP2 GP3.  
NO.  
65 MS PIPES TATA SWASTIK.  
GST ZENITH.  
BST.  
JINDAL.  
PRAKASH.  
SURYA.  
66 PPR PIPES SFMC DIPLAST PLASTIC HINDUSTAN.  
PLASTIC .  
SAFE VEEKAY MACHINE CORPN.  
TECHNOCRAT PVT LTD.  
SUPREME.  
AMITEX POLYMERS.  
FINOLEX.  
KITEC INDUSTRIES.  
ASTRAL LTD.  
RELIANCE PRINCE.  
67 AIR RELEASE VALVES KIRLOSKAR BIR VARUN.  
LEADER KARTAR KSB.  
ZOLOTO SANT NBR.  
LT AUDCO JINDAL VENUS.  
TATA UPADHAYAY KEJRIWAL.

KALPNA.

68 SLUICE VALVESNON RETURN KIRLOSKAR BIR VARUN.

VALVESBUTTERFLYCHEKGLOB E LEADER KARTAR KSB.

VALVE S ZOLOTO SANT NBR.

LTAUDCO JINDAL VENUS.

TATA UPADHAYAY KEJRIWAL.

KALPNA.

69 CI PIPE FITTINGS SKF ASHUTOSH HINDUSTAN ENGG.

SRIF CASTING LTD.

JINDAL SAW VEETUS.

NECO INDUSTRIES LTD.

JAYASWAL ANAND FOUNDERS .

KAPILANSH ENGINEERS.

TATA HIF.

HEPCO BINAY UDYOG.

70 GI PIPE FITTINGS JINDAL NINDI PIPE LTD.

TATA OSWAL.

UNCO SWASTIK.

INDUS PRAKASH SURYA.

BHARAT STEEL.

TUBE DELHI.

71 PUMP SETSMONO BLOCK KIRLOSKER KALSI.

CROMPTON.

BEACON BS PUMPS.

MATHER PLATT.

GRANDFOS.

KSB.

JYOTI.

72 CENTRAIFUGAL PUMP KIRLOSKER SIEMENS.

BEACON KSB.

MATHER PLATT.

GRANDFOS.

JYOTI.

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PARTICULAR SPECIFICATION CONTD.

APPENDIX F.

SER NAME OF ITEM GP1 GP2 GP3.

NO.

73 SUBMERSIBLE PUMP CALAMA CRI.

KIRLOSKER.

BEACON CROMPTON GREAVES.

GRANDFOS.

KSB.

JYOTI.

HAVELLS.

74 NON CLOG SEWAGE PUMPS KIRLOSKER GRANDFOS.

BEACON WASP.



CROMPTON.  
KSB.  
JYOTI.  
75 VERTICAL TURBINE PUMP KIRLOSKER CROMPTON GREAVES.  
KSB ATLANTA.  
WASP.  
JOHNSON.  
MATHER PLATT.  
GRANDFOS.  
76 MOTOR STARTERS LT.  
MDS.  
BCH.  
LEGRAND.  
SIEMENS.  
BENTEX.  
CS ELECTRIC.  
ABB.  
GE.  
HAVELLS.  
77 ELECTRIC MOTOR BHARAT BIJLEE JYOTI.  
KIRLOSKER NGEF.  
CROMPTON AREVA.  
GREAVES.  
SIEMENS.  
ENGLISH.  
ELECTRIC.  
ABB.  
GE.  
HAVELLS.  
78 SUBMERSIBLE CABLE FINLEX RALLISON.  
PLAZA RR CABLES.  
HAVELLS BECO.  
ASIAN BHC.  
POLYCAB STANDARD.  
79 SINGLE PHASE PREVENTER LT.  
INDO ASIAN.  
HPL.  
LEGRAND.  
AIR CONDITIONING.  
80 CHILLERCHILLING UNITS DAKIN BLUESTAR.  
CARRIER ACCEL.  
VOLTAS KIRLOSKER.  
CANO CEAFU22202425 SERIAL PAGE NO 192.  
PARTICULAR SPECIFICATION CONTD.  
APPENDIX F.  
SER NAME OF ITEM GP1 GP2 GP3.  
NO.

81 ALUMINUM EXTRUDED GRILL DYNA CRAFT.  
DIFFUSERFIRE DAMPER RAVISTAR.  
MAPRO.  
CARRYAIRE.  
SERVEX.  
GREEN HECK.  
BRIGHT FLOW.  
RUSKIN.

82 AIR HANDLING UNITCOOLING VOLTAS UNIVERSAL.  
COIL FOR AHU CARRIER AIRFLOW.  
DAIKIN THERMAFLOW.  
KIRLOSKAR NATIONAL.  
BLUESTAR.

83 COOLING TOWER MIHAR ADVANCE.  
PAHARPUR.  
VOLTAS.  
DELTA.

84 FRACTIONAL HP MOTORS AUE.  
SIEMENS.  
JYOTI.  
ABB.

85 VARIABLE FREQUENCY DRIVES DANFOSS SCHNEIDER.  
VFD.  
SIEMENS JYOTI.  
ABB.

86 INSULATION PUF FOR PIPES OMKAR.  
TWIGA.  
LLOYD.  
MALANPUR.

87 PRESSURE GAUGEDIAL TYPE FIEBIG DROP CO.  
THERMOMETER.  
H GURU DIGITAL MARKWRING.  
SYSTEM.  
EMERALD.  
TAYLOR.  
ANERGY.  
DS ENGG.  
DWYER AUTO.  
MAT LUB SYSTEM.

88 INSULATION EXPANDED POLYTHYLENE MATTUR CAPRICORN.  
BEARDSELL ECOTHEN.  
TOSHIBA INSULATION.  
STYRENE.  
PSCKSGING.  
LLOYD.

89 INSULATION CROSS POLYTHYLENE SUPREME FLAMTOP.  
FOAM.

THERMOFLEX AROFLEX.  
THROCELLONE PARAMOUNT.  
BASE FGP LTD.  
LLOYED.  
ARMAFLEX.  
CANO CEAFU22202425 SERIAL PAGE NO 193.  
PARTICULAR SPECIFICATION CONTD.  
APPENDIX F.  
SER NAME OF ITEM GP1 GP2 GP3.  
NO.  
90 INSULATION INITRILE RUBER ARMAFLEX.  
AROFLES.  
LLOYED.  
91 CONTROLS3WAY VALVES ANERGY.  
THERMOSTAT.  
SIEMENS.  
HONYWELL.  
92 GI SHEETS FOR DUCTINGCOMMERCIAL SAIL LLOYD.  
TATA INDIAN STEEL.  
JINDAL NIPPON.  
RASHTRIYA ISPAT.  
93 ACTUATOR JEVENTA CASTLE.  
BELIMO ROTORK.  
SIEMENS NIBCO.  
ADVANCE AIP.  
94 CENTRIFUGAL FANS AHUS NICOTRA COMIFREE.  
KRUGER LLOYD.  
AIRFLOW YILIDA.  
GREEN HECK.  
95 STRIP HEATERS RAYCOLD.  
DASSPASS.  
AUE.  
HONEYBEE.  
96 HUMIDSTATTHERMOSTATE PENIN.  
DANFOSS.  
HONEYWELL.  
SIEMENS.  
JOHNSON.  
RAPIDCOOL.  
ANERGY.  
97 AIR FILTERHEPA FILTER TENACITY DELTA.  
PURPOLATOR.  
LLYOD HANNY.  
MIHAR.  
DANFOSS AIRTECH.  
INDFOSS.  
KLENZOID TERNODYNE.

JOHN FOWLERS.  
98 DUCT FLANGE ZECO.  
ROLSTAR.  
ECODUCT.  
99 EXPANSION VALVE DANFOSS.  
HONEYWELL.  
RAPID CONTROL.  
SIEMENS.  
CANO CEAUFU22202425 SERIAL PAGE NO 194.  
PARTICULAR SPECIFICATION CONTD.  
APPENDIX F.  
SER NAME OF ITEM GP1 GP2 GP3.  
NO.  
100 FLOW SWITCH RAPID COOL.  
SIEMENS.  
BCH.  
LT.  
101 AUTOMATIC AIR VENT RAPID CONTROL.  
ANERGY.  
102 3WAY MODULATING VALVE HONEY WELL JOHNSON.  
SIEMENS ASKA.  
ANERGY RAPID CONTROL.  
SUZLON CASTLE.  
INDFOOS.  
DANFOSS.  
103 ROOM THERMOSTATE HONEY WELL.  
AHU THERMOSTATE.  
SIEMENS.  
INDFOOS.  
DASPASS.  
ESCORTS.  
104 HPLP 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 SAFE ZONE.  
FIREX UFECON.  
SAFEX ELECTRO EQUIP.

FLAME GUARD.  
108 RRL HOSE PIPE NEWAGE SAFE ZONE.  
DUNLOP UFECON.  
COSMOS ELECTRO EQUIP.  
FLAME GUARD.  
MINIMAX.  
CANO CEAFU22202425 SERIAL PAGE NO 195.  
PARTICULAR SPECIFICATION CONTD.  
APPENDIX F.  
SER NAME OF ITEM GP1 GP2 GP3.  
NO.  
109 FIRE PANEL MOTHER PLATT.  
REPEATER PANEL MINIMAX.  
SAFEX.  
AGNI.  
HONEYWELL.  
SYSTEM.  
SENSOR.  
FIREX.  
NOTEFIRE.  
110 HOTTERSIREN MINIMAX.  
MELTRON.  
AHUJA.  
PHILIPS.  
AGNI.  
111 MANUAL CALL BELL POINT AGNI.  
SURKASHA.  
MINIMAX.  
FIREX.  
112 SMOKEHEATIONSATION DETECTOR APPOLO RAVEL.  
EDWARDS.  
HONEYWELL.  
SYSTEM.  
SENSER.  
113 WATER SPRINKLER HEAD TYCO.  
CEASEFIRE.  
SAFEX.  
MINIMAX.  
114 FIRE EXTINGUISHER MINIMAX SAFE ZONE.  
FIREX UFECON.  
NEWAGE ELECTRO EQUIP.  
GODREJ BOYC.  
CEASEFIRE.  
115 FIRE DAMPER DYAN CRAFT.  
RAVISTAR.  
MAPRO.  
CARRY AIR.

AIR FLOW.  
RUSKIN.  
116 WINDOW TYPE SPLIT TYPE AIR VOLTAS LG.  
CONDITIONERS.  
HITACHI BLUE STAR.  
DAIKIN SAMSUNG.  
CARRIER GODREJ.  
FEEDERS LLYOD USHA SHRIRAM.  
WHIRLRPOO.  
CANO CEAFU22202425 SERIAL PAGE NO 196.  
PARTICULAR SPECIFICATION CONTD.  
APPENDIX F.  
SER NAME OF ITEM GP1 GP2 GP3.  
NO.  
117 REFRIGERATOR WHIRLRPOOL GODREJ.  
LG ELECTROLUX.  
VOLTAS HAIER.  
SAMSUNG.  
HAVELLS.  
118 DESERET COOLERS SYMPHONY CROMPTON GREAVES.  
KHAITAN BAJAJ.  
KENSTAR OSRAM.  
VEDEOCON.  
119 DEEP FREEZER BLUE STAR SIDHWAL.  
SHRI RAM USHA CARRIER.  
VOLTAS FEDDERS LLYOD.  
120 AIR CURTAIN CROMPTON.  
GREAVES.  
VOLTAS.  
CARRIER.  
ALMONARD.  
121 WATER COOLERS BLUE STAR SIDHWAL.  
SHRIRAM USHA.  
VOLTAS.  
122 HOT WATER GENERATOR ELECTRIC RAPID COOL.  
FIRED.  
BRASCH.  
INDEECO.  
DYNA FLOW.  
SUNTEC.  
123 HOT WATER GENERATOR OIL FIRED THERMAX.  
MAKTEK.  
RAPID THERM.  
ECOFLAME.  
REILLO.  
ZENITH.  
WESTERN.

124 a AIR COOLED VARIABLE LG.  
REFRIGERANT VOLUME FLOW VRV MITSUBISHI.  
VRF CARRIER.

b VRVVRV BASED 4WAY CASSETTE VOLTAS.  
TYPE CEILING MOUNTED INDOOR BLUESTAR.  
MACHINE.

125 COPPER REFRIGERANT PIPES FOR VRF MAXFLOW.  
INDOOR AND OUTDOOR UNITS UNIFLOW.  
TOTALINE.

126 STATIC FREQUENCY CONVERTOR APLAB.  
ENERTECH.  
TATALIBERT.

APC.  
CONSUL INDIA.

NOTE 1. GPI products will be applicable for this contract.  
LIST OF MAKES GIVEN ABOVE ARE APPLICABLE WHEN THE SAME HAVE NOT BEEN.  
INDICATED IN SCHEDULE ABOQ.

SIGNATURE OF CONTRACTOR FOR ACCEPTING OFFICER.  
DATED \_\_\_\_\_.

CANO CEAUFU22202425 SERIAL PAGE NO 197.

LIST OF DRAWINGS.

S DRAWING NO SH DATES PARTICULARS.

No ORIGINAL REVISED.

1 2 3 4 5 6.

PROVISION OF FIRING RANGE AT AF STN SRINAGAR.

LIST OF DRAWINGS .

1. CEAFLD 2024 11 31 Dec 24 LIST OF DRAWINGS.

Site Plan .

2. CEAFFSP BR2024 11 31 Dec 24 Site plan external BR services.

3. CEAFFSP EM2024 11 31 Dec 24 Site plan external EM 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 at HQ. Bidders if requires to see the above drawings are requested to visit the office of concerned GE or this for want of the same.

TARGET STORE AMMUNITION ISSUE ROOM TOILET.

4. CEAFFAR 2024 12 31 Dec 24 Floor plan Elevations Roof Plan and toilet.  
Details.

5. CEAFFAR 2024 22 31 Dec 24 Section at AA and BB.

6. CEAFFEM 2024 11 31 Dec 24 Internal electrification plan.

7. CEAFFSOF 2024 11 31 Dec 24 Schedule of finishes.

8. CEAFFST 2024 11 31 Dec 24 Plan at plinth level roof beam gable beam.  
plan schedule of columns schedule of RCC.  
beams and other structural details.

9. CEAFFST 2024 12 31 Dec 24 TD details of foundation beam columns.

Misc junctions lab reinforcement wall.

foundation dwarf wall slab projection chajja.

and other structural details.

10. CEAFAST 2024 22 31 Dec 24 Typical section of isolated footing crumple.  
Misc footing combined footing and other structural.  
details.

SENTRY POST.

11. CEAFASTD942006 12 24042006 1204200 Plan front elevation roof plan section AA.  
8 EM Plan etc.

12. CEAFASTD942006 22 24042006 Structural foundation plan section and other.  
details.

PROVISION OF FIRING RANGE AT AF STN SRINAGAR.

13. ADG2024SK06 11 09.12.2024 LAYOUT PLAN.

14. ADG2024AR06 17 09.12.2024 PLAN LAYOUT ROOF PLAN SECTION 11.  
AND LIST OF DRAWINGS.

15. ADG2024AR06 27 09.12.2024 KEY PLAN PART PLAN A PART.  
SECTION 11 NOTES AND.

ABBREVIATIONS.

16. ADG2024AR06 37 09.12.2024 PART PLAN BPART SECTION 11.

17. ADG2024AR06 47 09.12.2024 DETAILS OF TARGET GALLERY FIRING.  
POINT AND TRENCH AND STOP BUTT.

18. ADG2024AR06 57 09.12.2024 DETAILS OF PROTECTIVE WALL PW.  
SAFETY HORIZONTAL CANOPY 50M.

AND FICS PANEL.

19. ADG2024AR06 67 09.12.2024 DETAILS OF SAFETY HORIZONTAL.  
CANOPY 100M.

20. ADG2024AR06 77 09.12.2024 DETAILS OF GATE G1 AND G2.

21. ADG2024ST06 123 09.12.2024 NOTES AND LIST OF DRAWING.

22. ADG2024ST06 223 09.12.2024 MISC. STRUCTURAL DETAILS.

23. ADG2024ST06 323 09.12.2024 KEY PLAN AND LONGITUDINAL SECTION.  
AA BAFFLE RANGE.

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LIST OF DRAWINGS CONTD.

1 2 3 4 5 6.

24. ADG2024ST06 423 09.12.2024 KEY ELEVATION OF TRUSS TIERAFTER.  
LEVEL BRACINGS CEILING FRAME LVL .

MISC DETAILS.

25. ADG2024ST06 523 09.12.2024 MISC DETAILS OF TRUSS.

26. ADG2024ST06 623 09.12.2024 DETAILS OF SAG ROD TO ISMC PURLIN .  
MISC DETAILS.

27. ADG2024ST06 723 09.12.2024 PLAN AT TIERAFTER LEVEL BRACINGS.  
CEILING FRAME AND MISC DETAILS.

28. ADG2024ST06 823 09.12.2024 ELEVATION OF TRUSS T1 HALF RHS .  
AND MISC DETAILS.

29. ADG2024ST06 923 09.12.2024 DETAILS OF TRUSS JOINTS.

30. ADG2024ST06 1023 09.12.2024 SECTION AT C1C1 AND C2 C2.

31. ADG2024ST06 1123 09.12.2024 DETAILS OF GATE 1 PLAN ELEVATION.  
SECTION AND MISC DETAILS.

32. ADG2024ST06 1223 09.12.2024 PLAN ELEVATION SECTION AND MISC.  
DETAILS.



33. ADG2024ST06 1323 09.12.2024 DETAILS AT M AND N MISC DETAILS.  
34. ADG2024ST06 1423 09.12.2024 SCHEDULE OF COLUMNS FOOTINGS.  
BEAMS SLABS MISC DETAILS.  
35. ADG2024ST06 1523 09.12.2024 PART A.  
FOUNDATION PLAN PLINTH LEVEL.  
FRAMING PLAN AT LEVEL A B C.  
SECTIONS MISC. DETAILS.  
36. ADG2024ST06 1623 09.12.2024 PART B.  
FOUNDATION PLAN PLINTH LEVEL PLAN.  
FRAMING PLAN AT LEVEL A SECTIONS.  
37. ADG2024ST06 1723 09.12.2024 PART B.  
FRAMING PLAN AT LEVEL B C.  
SECTIONS AND FIXING DETAILS OF MS.  
PLATE ON WALLS.  
38. ADG2024ST06 1823 09.12.2024 PART B.  
BOTTOM TOP REINFORCEMENT PLAN.  
OF MATI AND SECTION JJ.  
39. ADG2024ST06 1923 09.12.2024 FIRING TRENCH AND MISC DETAILS.  
FOUNDATION PLAN SECTIONS TYP.  
DETAIL OF RCC WALL DWARF WALL.  
AND SECTIONS.  
40. ADG2024ST06 2023 09.12.2024 TARGET GALLERY.  
FOUNDATION PLAN SECTIONS AND.  
MISC. DETAILS.  
41. ADG2024ST06 2123 09.12.2024 TYPICAL DETAIL OF PROTECTIVE WALL.  
FOUNDATION PLAN SECTIONS MISC.  
DETAILS.  
42. ADG2024ST06 2223 09.12.2024 TYPICAL DETAIL OF PROTECTIVE WALL 1.  
FOUNDATION PLAN SECTIONS MISC.  
DETAILS.  
43. ADG2024ST06 2323 09.12.2024 DETAILS OF MAT I II MAT III AND COL.  
C4 ABC.  
44. ADG2019TD011 12 25.11.2019 NOTES FOR RCC STRUCTURE.  
45. ADG2019TD011 22 25.11.2019 NOTES FOR RCC STRUCTURE.  
46. ADG2019TD012 11 25.11.2019 TYPICAL DETAILS OF LINTEL AND.  
CHAJJAS.  
47. ADG2024EM06 11 09.12.2024 INTERNAL ELECTRIFICATION PLAN.  
POSITION OF FLOOD LIGHTS DETAILS.  
AND LIST OF DRAWING.  
CANO CEAFU22202425 SERIAL PAGE NO 199.  
LIST OF DRAWINGS CONTD.  
S DRAWING NO SH DATES PARTICULARS.  
No ORIGINAL REVISED.  
1 2 3 4 5 6.  
TDSTD DRAWINGS.  
48. CEAFU012000 11 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. CEAFTD032000 19 14.03.2000 04.08.2021 STRUCTURAL NOTES.  
 50. CEAFTD032000 29 14.03.2000 12.09.2013 STRUCTURAL NOTES.  
 04.08.2021.  
 51. CEAFTD032000 39 14.03.2000 09.02.2004 STRUCTURAL NOTES.  
 04.08.2021.  
 52. CEAFTD032000 49 14.03.2000 12.07.2004 STRUCTURAL NOTES.  
 04.08.2021.  
 53. CEAFTD032000 59 14.03.2000 12.09.2003 STRUCTURAL NOTES.  
 04.08.2021.  
 54. CEAFTD032000 69 14.03.2000 12.09.2003 STRUCTURAL NOTES.  
 04.08.2021.  
 55. CEAFTD032000 79 14.03.2000 12.09.2003 GENERAL STRUCTURAL NOTES.  
 04.08.2021.  
 56. CEAFTD032000 89 14.03.2000 04.08.2021 GENERAL STRUCTURAL NOTES.  
 57. CEAFTD032000 99 14.03.2000 30.09.2004 GENERAL STRUCTURAL NOTES.  
 04.08.2021.  
 58. CEAFTD052000 11 14.03.2000 23.11.2004 TYPICAL SCHEDULE OF RCC LINTELS .  
 04.08.2021 CROSS SECTION OF RCC.  
 LINTELSCHAJJA.  
 59. CEAFTD062000 11 14.03.2000 04.08.2021 TYPICAL FDN DETAILS OF STEPS RAMP.  
 DWARF WALL AND PARTITION WALL.  
 ETC.  
 60. CEAFTD072000 12 19.01.2004 TYPICAL DETAILS OF FOOTING PLAN L.  
 SEC OF BEAMS LINTELS SLABS AND.  
 COLUMN DETAILS.  
 61. CEAFTD072000 22 14.03.2000 19.01.2004 TYPICAL SEC OF BEAM COL JOINT AT.  
 EXTERNAL COL TYP DETAIL SPACING.  
 OF SHEAR REINFT IN COL.  
 62. CEAFTD102000 11 14.03.2000 31.07.2003 TYPICAL DRAINS.  
 04.08.2021 CROSS SECTION OF PCC DRAINS RR.  
 MASONARY DRAINS AND BRICK.  
 MASONARY DRAINS.  
 63. CEAFTD132000 11 14.03.2000 12.09.2003 TYPICAL DETAILS OF RCC SPUN PIPE.  
 04.08.2021 HUME PIPEY CULVERTS.  
 64. CEAFTD142000 11 14.03.2000 12.09.2003 TYPICAL DETAIL OF ROADS PATH.  
 04.08.2021 HARD STANDING ETC.  
 65. CEAFTD152000 12 05.01.2000 20.01.2017 TYPICAL DETAILS OF SEPTIC TANK.  
 UPTO 500 USERS AND SOAKAGE.  
 WELLPIT.  
 66. CEAFTD152000 22 05012000 19.09.2003 SCHEDULESTRUCTURE DETAIL OF.  
 17.04.2009 SEPTIC TANKS.  
 67. CEAFTD192000 13 03.06.2000 25.05.2018 PANELLED DOORS WITH PRESSED.  
 STEEL FRAMES PLANS ELEVATIONS .  
 SECTIONS.

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68. CEAFTD192000 23 03.06.2000 25.05.2018 PANELLED DOORS WITH PRESSED. STEEL FRAMES PLANS ELEVATIONS.

SECTIONS.

69. CEAFTD192000 33 03.06.2000 25.05.2018 PANELLED DOORS WITH PRESSED. STEEL FRAMES DETAILS.

70. CEAFTD212000 11 03.06.2000 17.08.2018 SCHEDULE OF FITTINGS.

71. CEAFTD302000 11 11.09.2000 15.03.2004 WHB WITH MIRROR TROUGH TYPE. URINAL PARTATION.

72. CEAFTD372000 11 11.09.2000 SWITCH BOX AND METER BOX.

73. CEAFTD422001 12 20.07.2001 11.04.2002 TYPICAL DETAIL FOR SEISMIC. 04.08.2021 REINFORCEMENT ZONE IV V.

BKSTONEPCC BLOCK MASONARY.

74. CEAFTD422001 22 20.07.2001 04.08.2021 TYP DETAIL FOR SEISMIC. REINFORCEMENT ZONE 4 5.

BKSTONEPCC BLOCK MASONARY.

75. CEAFTD442001 12 20.12.2001 DETAILS OF RACK RIFLIESTEN. GUNS PLAN SECTIONS.

76. CEAFTD442001 22 20.12.2001 DETAILS OF RACKS RIFLIESTEN. GUNS PLAN SECTIONS.

77. CEAFTD452002 11 04.03.2002 06.05.2004 TYP DETAILS OF SLAB SHOWING. ARRANGMENT OF TORSION REINF .

TYP SEC AT RIDGE OF RCC SLAB.

SLOPE MORE THAN 120 ETC.

78. CEAFTD492002 11 14.04.2002 TYPICAL DETAIL SHOWING. SOILWASTE PIPE CONNECTIONS.

79. CEAFTD502002 11 11.09.2002 TYPICAL DETAIL OF STEEL DOOR. TO WATER TANK SLAB.

80. CEAFTD512002 11 14.09.2002 ARCHITECTURAL NORMS.

FUNCTIONAL HEIGHTS OF.

SANITARY AND ELECTRICAL.

FITTINGS.

81. CEAFTD522002 11 07.12.2002 01.12.2010 VALVE PITS BKSTONE. PLAN SECTION DETAILS.

82. CEAFTD532002 11 09.12.2002 22.05.2004 CAGE FOR PVC WATER TANK . 04.08.2021 DETAIL OF LOCAL SUNK.

83. CEAFTD542003 11 03.01.2003 TYPICAL FIXING DETAILS OF EAVES. BOARD.

84. CEAFTD562003 13 27.03.2003 TYPICAL DETAIL OF STEEL GATE . WICKET GATE.

PLAN ELEVATION MAIN GATE.

85. CEAFTD562003 23 27.03.2003 12.09.2003 TYPICAL DETAIL OF STEEL GATE . WICKET GATE.

86. CEAFTD562003 33 27.03.2003 TYPICAL DETAIL OF STEEL GATE . WICKET GATE.

DETAILS OF WICKET GATE.

87. CEAFTD682004 11 22.03.2004 11.05.2004 TYPICAL DETAIL OF FOUNDATION.

88. CEAFTD802006 11 04.05.2006 PVC DOORSWINDOWS WITH.  
PRESSED STEEL FRAME.

89. CEAFTD942010 11 07.12.2010 DETAILS OF CURTAIN ROD AND.  
PELMET BOX WITH FLAT IRON.  
BRACKETS PLANS ELEVATIONS.  
SECTIONS AND DETAILS.

90. CEAFTD992012 11 10.11.2012 DETAILS OF BOOK SHELF WRITING.  
SHELF FULL LENGTH MIRROR.  
LOOKING GLASS.  
PLANS SECTIONS.

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91. CEAFTD1082013 11 13.12.2013 DETAILS OF STAIRCASE RAILING.  
TYPEA TYPEB AND TYPEC.

92. CEAFTD1102014 11 23.01.2014 DETAIL OF SHELVING.  
PLAN ELEVATIONS SECTION AND.  
OTHER DETAILS.

93. CEAFTD1102014 11 23.01.2014 DETAIL OF SHELVING.  
PLAN ELEVATIONS SECTION AND.  
OTHER DETAILS.

94. CEAFTD1102014 11 23.01.2014 DETAIL OF SHELVING.  
PLAN ELEVATIONS SECTION AND.  
OTHER DETAILS.

95. CEAFTD1102014 11 23.01.2014 DETAIL OF SHELVING.  
PLAN ELEVATIONS SECTION AND.  
OTHER DETAILS.

96. CEAFTD1152015 12 30.12.2015 LOCKER STEEL BULTIN FOR ORs.  
PLAN ELEVATION SECTION .  
ISOMETRIC VIEW.

97. CEAFTD1152015 22 30.12.2015 LOCKER WRITING SHELF BOOK.  
SHELF BULTIN DETAILS.

98. CEAFTD1302018 11 01.02.2018 GENERAL NOTES ON.  
ARCHITECTURAL DRAWINGS.

99. CEAFTD1562022 13 01.06.2022 SCHEDULE OF FINISHES.

100. CEAFTD1562022 23 01.06.2022 SCHEDULE OF FINISHES.

101. CEAFTD1562022 33 01.06.2022 SCHEDULE OF FINISHES.

102. CETD11291996 12 11041996 10091997 TYPICAL DETAILS OF ELECTRICAL.  
FITTINGS EXTERNAL.

103. CETD11291996 22 11041996 10091997 TYPICAL DETAILS OF ELECTRICAL.  
FITTINGS EXTERNAL.

Signature of Contractor For Accepting Officer.

Dated \_\_\_\_\_.

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to 235.

## GENERAL CONDITIONS OF CONTRACTS.

IAFW 2249 1989 PRINT.

FOR LUMP SUM CONTRACTS IAFW2159.

1. A copy of the GENERAL CONDITIONS OF CONTRACTS IAFW2249 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 IAFW2249 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.

Signature of Contractor.

For Accepting Officer Dated.

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## 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 signatures here amounts to my/our having signed the aforesaid Schedule of Minimum Fair Wages forming part of this tender.  
Delete whichever is not applicable.

Signature of Contractor.

For Accepting Officer Dated.

Dated.