NOTICE INVITING TENDER
ADVERTISED TENDER ENQUIRY
GOVT OF INDIA, MINISTRY OF HOME AFFAIRS

VIII.11014/9274/7 Sect/31 COBs/Engr/2026 Dated: 04 May 2026

1. Online e-tender with tender fees are hereby invited on behalf of President of India from Assam Rifles approved contractors and enlisted contractors working with other Central Government department/organization meeting eligibility criteria for selection of contractor for the following work: -

Ser	Name of Work	Approximate Cost (in Rs)	Earnest Money (In Rs)	Tender Fee (In Rs)
(a)	"Improvement of existing infrastructure & allied works for COB S/ Chingnyu of 42 AR"	7,60,91,690.00	15,21,900.00	1,500.00

2. Last date for uploading the tender documents by bidders duly completed in all respect is at **as per CPP Portal**.

3. The lump sum / item rate amount to be quoted for the entire work by the tenderers shall **include all taxes including GST, ESIC, and EPF and LWC** etc as **applicable at the time of awarding of contract and during the execution of work till completion.**

4. Tender fee is required to be submitted through SBI in the form of Account payee, Demand Draft, Banker's cheque or e-payment and treasury challan etc in favour of **DGAR, c/o 99 APO as application of SBI** under **Head of Account 0055 Police (A-5) Assam Rifles, Misc Tender Fee.**

5. The Directorate General Assam Rifles as the Competent Financial Authority (CFA) reserves the right to reject or accept any application/tender without assigning any reasons.

Note: The complete tender document can be accessed & downloaded from CPP portal **http://eprocure.gov.in/eprocure/app** please check regularly the website for any change/modification/ amendment in the tender enquiry (TE). This TE is being issued with no. financial commitment and DGAR reserves the right to change or vary any part thereof at any stage. He also reserves the right to withdraw the TE, should it become necessary at any stage.

6. Assam Rifles registered/enlisted contractors are exempted from submitting following documents however they have to upload the recent valid enlistment letter issued by HQ DGAR: -

(a) Affidavit for constitution of firm or power of attorney.
(b) Work executed or Performance statement of the firm in the last 03 years
(c) Affidavit for employment of Engineers.

Sd/xx xx xx
(Uddipto Dhara)
Lt Col
SO1 (Works)
for DGAR

Distribution :-

1. HQ DGAR
Signal Br (EDP Cell)
Shillong-10
- You are requested to pub above tender notice on AR website. Soft copy of this tender notice is forwarded through ARMS.

2. All IGAR/Sector/ARTC & S, - For info and wide publicity please.

3. Notice board

4. Est Branch (Internal) - You are requested to detail a BOO for opening of e-tender **1100 h** as per CPP portal.

5. Office Copy

NOTICE INVITING TENDER
ADVERTISED TENDER ENQUIRY
GOVT OF INDIA, MINISTRY OF HOME AFFAIRS

VIII.11014/9274/7 Sect/31 COBs/Engr/2026 Dated: 04 May 2026

1 For and on behalf of the President of India, the Headquarter DGAR, Engr Branch invites online tenders on the prescribed form, for the execution of the following work as given in this schedule to tender: -

Ser	Description of Works Required	Quantity
(a)	"Improvement of existing infrastructure & allied works for COB S/ Chingnyu of 42 AR"	One Job

2. If you are in a position to quote for the execution of work in accordance with the requirements stated in the attached schedule to tender, all documents attached herewith should be filled in, and submitted through e-Procurement site **http://eprocure.gov.in/eprocure/app**.

3. You are requested to study the tender document completely and ensure all documents pages and annexure to the tender are completely and correctly filled in duly signed and stamped where applicable and then upload on CPP Portal.

4. This online Tender is NOT transferable.

5. This tender enquiry has the following chapters and appx: -

Schedule To Online Tender			Page No.
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Signature of the tenderer & Stamp

Sd/xx xx xx
(Uddipto Dhara)
Lt Col
Staff Officer-I (Works)
for Accepting Officer

Chapter-I
Instructions to Bidders/Tenderers

(THIS TENDER SET IS NOT TRANSFERABLE)

6. All Tender documents attached with this invitation to tender including the specifications are SACROSANCT for considering any offer as complete offer, it is therefore important that Tender Acceptance Letter which is a written undertaking that all the terms and conditions of the tender are understood and accepted should be signed and submitted only through e-procurement site http://eprocure.gov.in/eprocure/app.

7. Tenderers are advised to carefully go through all the conditions and documents attached with this tender enquiry, before uploading the e-tender.

8. All e-tender documents must be duly completed, signed by authorized signatory and stamped on each page and uploaded, else e-tender documents will not be considered valied.

9. Tenderers must ensure this complete set is signed on each page and uploaded with their offer, as it is, without any modification/alteration.

10. In case of any difference between the conditions mentioned in schedule to e-tender and the specifications/QRs, the condition given in the specifications will be binding.

11.	Name of work	:	As given in Schedule
12.	Tender Fee	:	Rs **1500.00**

13. Those who download the tender set from the CPP website must submit the cost of e-tender (non-refundable) through SBI in the form of account payee, demand draft, banker cheque or E- payment and treasury challan etc. a scanned copy of the tender fee of Rs 1000.00 (Rupees one thousand only) upto work value Rs 50.00 Lakhs and above Rs 1500.00 (Rupees one thousand five hundred only) to be deposited in favour of DGAR. Original to be submitted as per para 12 of the page No. 02. Tender Fee to be deposited in favour of DGAR at the time of submission of E-Tender, E-Tender documents submitted without the tender cost will be rejected. (Original payment instruments in respect of tender fee and EMD are to be deposited either by person in the tender box placed in tender room of HQ DGAR or by post to the Engineer Branch (HQ DGAR) at least one hour prior to the time of opening of technical bids. Late/Delayed/Non submission of original would result in rejection of bid during online bid opening.

14.	Earnest Money (2% of value of tender)	:	As per CPP Portal
15.	Date of issue/publishing NIT	:	As per CPP Portal
16.	Document download start date	:	As per CPP Portal
17.	Document download end date	:	As per CPP Portal
18.	Last date & time for uploading of online Tender	:	As per CPP Portal
19.	Opening of Technical bid	:	As per CPP Portal
20.	Opening of Financial bid	:	Subsequently on approval of Technical Bid

Note: **The onus of ensuring that the above-mentioned tender fee and EMD despatched by post reaches the above said office address is that of the bidder/contractor**

21. **A power of attorney in favour of signatory and signatories or the tenderer in case the tender is signed by a person or persons other than the actual tenderer or on behalf of a firm / company and his/ her / their signature attested by Notary / Class-I Gazetted Officer.**

22. Financial Stability Certificate as per prescribed format only to be issued during current financial year for a minimum value of appropriate class from the scheduled bank where the firm is operating its current account as per Appendix '5' (format attached).

23. Tenderer must quote the rate in terms of **Per No/Set/Sqm/Cum/Lump sum** etc only. **All taxes/other charges should be clearly indicated in the Schedule**. **No extra charges / taxes over and above the quoted rate in any form will be borne by the Department. The rate quoted will be firm and final and no amendment / alternation to the rate quoted in the tender will be accepted at a later date. No representation will be entertained for change in tenderer's name quoted or any other alternation in respect of any of the contracted articles / goods during the currency of the contract or if any fresh duty or tax is levied.** Conditional discounts if any will not be considered and have no effect on the evaluation of tenders.

Signature of the tenderer & Stamp

Sd/xx xx xx
(Uddipto Dhara)
Lt Col
Staff Officer-I (Works)
for Accepting Officer

24. Paying Authority.
Pay & Account Office Assam Rifles
(Old DGAR Complex)
Laitumukhrah, Shillong - 793011

25. Director General, Assam Rifles, reserves the right to cancel/reject any or all the tenders without assigning any reasons.

26. **Clarification on Specifications/ Qualitative Requirements**. In case any prospective bidder requires clarification(s) on technical specifications/ Qualitative Requirements (QR), the same is to be submitted online. No change in price or substance of the bid will be sought, offered or permitted. No post-bid clarification on the initiative of the bidder will be entertained.

27. **Testing and Inspection Criteria**. The tenderers will have to abide by the testing and inspection criteria formulated by the user confirming to CPWD guidelines.

28.	The Department (Users)	:	DG Assam Rifles, Ministry of Home Affairs, Govt. of India
29.	Inspection Authority	:	Authorised person detailed by The Director General, Assam Rifles Headquarter DGAR, Shillong -10
30.	Inspection Officer	:	Board of officers at Consignee location during critical stages of work / after completion of work
31.	Works required at (Consignee)	:	As stated in NIT

32. **Execution of Works**. Execution of works at the site given by the SO-1 (Wks) HQ/Sect Engineer-in-Charge.

33. **Guarantee/ Warranty Terms/Defect liability pd.**
(a) If not specified in quantity of rate/specification, **minimum one-year warranty** Defect liability pd is required. Defect liability Warranty period will start from the date of completion of work. In case works/part of works are found defective/damaged during inspection after completion of work, the contractor will re-execute the work under warranty at consignee's location free of cost. Defect liability period is one year. The security deposit amount will be released with confirmation of user.

34. **Rejected Works**. If the appointed contractor fails to rectify the bad/ damaged/ rejected works of sub work whatever the case may be from sites/location where executed, within the reasonable period i.e., seven (07) days from the date of issue of letter to contractor, the Director General Assam Rifles or his representative shall dispose off the rejected works without assigning any further notice.

35. **Work at the Risk and Cost**. In case of rejection of the work by the Site Engineer in case of neglect, failure or delay on the part of the contractor on work order placed by the Engineer-in-Charge, Headquarter DGAR may without prejudice to any other action which the department may take under the terms of the contract will be at liberty to execute such work at the risk and cost of the contractor. Any amount (which may include transportation and other incidental charges) incurred in excess of the contracted rate shall be borne by the contractor or recovered from his security deposit and/or from any amount which may be due to him by the Directorate General Assam Rifles. The right to risk and cost the work under this clause will entitle right to execute post the work after expiry of time of completion of unfit work, without any warning or further information to contractor. The risk and cost work will be carried out post approval of CFA approved by CFA.

36. The department reserves the right to increase/decrease the Quantity by 10% at the rates quoted by the successful tenderer at the time of placement of contract (Item rate contract/lumpsum contract).

37. If the tenderer is in a position to quote for the work in accordance with requirements stated in the attached schedule to tender, all documents attached herewith should be duly filled in, signed and stamped and are required to be **UPLOADED**.

Signature of the tenderer & Stamp

Sd/xx xx xx
(Uddipto Dhara)
Lt Col
Staff Officer-I (Works)
for Accepting Officer

38. If the exigencies of work so demand, the Engineer–in-Charge may allow payment to third party, who is creditor to the contractor, after fulfilling certain conditions

(a) The contractor gives an auth letter addressed to the Engr-in-Charge on non judicial stamp paper of Rs.100/- in format given below:-

I/we authorize the SO-1 (Wks), HQ DGAR to pay directly on my/our behalf to …… (name of third party) an amount of `……(Rupees …….…… In words) for the work done or supplies made by …..…… (name of third party). I/We shall be responsible for the quality and quantity of the same under the provisions of agreement No……

(b) The total payment to third party shall not exceed 10% of agreement amount of work.

(c) Full reasons for proposing such third party payment shall be recorded and prior written approval of the next higher auth shall be obtained before making such payments.

39. The item rate/lump sum contract in the case of successful tenderers should conform to tender work accepted in Performance evaluation in all respect besides specifications mentioned in CPWD guidelines. The successful tenderer will be asked as applicable to give drawing/schedules prior to commencement of work.

40. Any change in Address/Telephone/Fax/e-mail should be immediately informed. The state of non-communication by the firm will make the offer liable for rejection.

41. Any query/representation be addressed to SO-1 (Works), **HQ DGAR**.

42. **Jurisdiction & Arbitration**. This tender and subsequent contract if any are subject to the jurisdiction of Indian Laws and Courts at the place of issue of the schedule. In the event of any question dispute or difference arising under these conditions or any special conditions of contract, or in connection with this contract (except as to any matters the decision of which is specially provided for by these special condition) the same shall be referred to the Sole Arbitration of the Director General Assam Rifles or some other person appointed by him. There will be no objection that the Arbitrator is a Government Servant that he had to deal with the matters in which the contract is related or that in the course of his duties as Government Servant he has expressed views on all or any of the matters in dispute or difference. The award of the Arbitrator shall be final and binding on the parties to this contract. Further that all disputes arising out of the contract, Shillong Court shall have exclusive jurisdictions. The tenderers submitting the tenders shall render a certificate to have agreed to this clause.

43. Implementation of EPF and ESI for Contract labour.

(a) The ESI and EPF contributions on the part of employer in respect of this contract shall be paid by the contractor. These contributions on the part of employer paid by the contractor shall be reimbursed by the DGAR to the contractor on actual basis post submission of proof of payments.

(b) The contractor whose bid is accepted will also be required to furnish either copy of application/licenses/registrations or proof of applying for obtaining labour licenses, registration ESIC and BOCW welfare board and programme chart (Time and Progress) within the period specified with EPFO.

(c) No Running Account Bill shall be paid for the work till the application of labour licenses, registration with EPFO, ESIC and BOCW welfare board, whatever applicable are submitted by the contractor to the Engineer-in-Charge/ HQ Sect SO-1 (Wks).

44. **Submission of the tender in Two Bid System**. All bidders are required to submit their offers in two bid system as under:-

DOCUMENTS TO BE SUBMITTED ONLINE WHICH WILL FORM PART OF PQC

(a) **Technical Bid**. The tech bid should contain the following:-

(i) Tender documents duly completed and signed and stamped on each pages but WITHOUT QUOTING RATE AS PER SCHEDULE-A (PART-I) to be uploaded along with other documents.

(ii) Power of Attorney: A power of attorney in favour of signatory and signatories or the tenderer in case the tender is signed by a person or persons other than the actual tenderer or on behalf of a firm/company duly attested by class I Gazetted Officer.

(iii) Compliance to specifications applicable as per CPWD works manual 2022, AR-2249 and General Conditions of Contract 2022.

Signature of the tenderer & Stamp

Sd/xx xx xx
(Uddipto Dhara)
Lt Col
Staff Officer-I (Works)
for Accepting Officer

(iv) Scanned copy of GST Registration Certificate issued by the concerned authority with supporting PAN / TIN to be uploaded mandatory documents Reqd to be submitted by firms not enlisted with Assam Rifles.

(aa) **Past Experience**. For non-enlisted contractors minimum two years ending 31st March of preceding financial year of advertised tender. Copies of relevant and authenticated documents (work order/LOI) supporting the same issued by Department of Central Govt/State Govt or Public Sector Unit, where the bidder has successfully concluded the ibid contract, should be enclosed with the tender.

(ab) **Past Performance**. The bidder/OEM should have executed project for supply and installation/commissioning of same or similar category products during preceding three Financial years (i.e current year and three previous financial years) as on opening of bid as per following criteria: -

(i) Three similar completed works each costing not less than 40% of the estimated cost put to tender, or

(ii) Two similar completed works each costing not less than 60% of the estimated cost put to tender, or

(iii) One similar completed works each costing not less than 80% of the estimated cost put to tender

(ac) **Proof of Completion**. Completion report certificate duly signed by the concerned department/authority.

(v) Non Blacklisting Certificate as per Appx 4 of Chapter-I to be submitted.

(vi) Certificate of Acceptance of Terms and Conditions of NIT as per Appx 2 of Chapter-I to be submitted.

(vii) **Financial Stability Certificate (FSC) (Balance Sheet)**. Latest audited balance sheet and Annual Turnover certificate of last two years duly signed by licensed Chartered Accountant to be submitted. These documents should contain **Unique Document Identification Number** (**UDIN**). Financial capability of the bidder should be at least 30% of the value of the contract.

(viii) **Bank Solvency**. The contractor is required to submit latest bank solvency certificate (not older than 120 days) issued by scheduled bank, preferably a nationalized bank. The bank solvency should meet the eligibility criteria required for the Class of contractor for which he is registered. If the contractor is found not suitable to undertake the work as per bank solvency, he/she will be rejected in the Technical Bid.

(ix) **Enlistment / Renewal Letter**. Enlistment / Renewal letter of contractor in Assam Rifles / any Govt Department (scan copy to be uploaded) giving category and financial limit for Tendering shall be uploaded.

(x) **Earnest Money Deposit / Tender Fee**. Scanned copy of Tender Fee and **EMD @ 2% (two percentages) of the tender value** to be deposited through Demand Draft/Bank Draft / Fixed Deposit Receipt/TDR duly pledged in favour of HQ DGAR from a schedule bank preferably a nationalized bank. EMD should be valid for a period of 45 days beyond the fixed Bid Validity period of 180 days. **Original EMD and Tender Fee to be submitted as per Para 12 and 14 of page No 02.**

MSME are exempted for goods and services supply orders only, but MSME exemption cannot be extended to construction works as it cannot be treated as service rendered or supply of goods.

(xi) Affidavit from contractor for employment of Engineers with last three years experience and degree / diploma certificate of Engineers. No overlap of Engineers for any other work under execution by the contractor is acceptable.

(xii) Work load of contractor as per enlisted category / class to ascertain capability to execute work based on residual load as per WLR of HQ DGAR. Residual capacity shall be calculated based on number of wks and value being executed with AR/ Govt Dept.

(xiii) **Site Visit**. As sub work involves creating essential and vital operational infrastructure in intensive CI area and Indo-Myanmar border, the bidder or his/her authorized representative to visit the work site, where the work is going to be executed. The contractor will enclose a

certificate duly signed by the respective SO-1 (Wks) of HQ IGAR / HQ Sector Assam Rifles wherein the date of site visit by the contractor / his representative is endorsed.

(b) **DOCUMENTS TO BE SUBMITTED BY BIDDERS BUT WILL NOT FORM PART OF PQC**

(i) Proforma for e-payment as per Appx 3 of Chapter-I.
(ii) Warranty / Guarantee certificate as per Appx 6 of Chapter-I (if required).
(iii) Undertaking for No Use of Undue Influence as per Appx 7 of Chapter-I.

(c) **Commercial Bid (Cost Bid) (Schedule 'A')**. Cost bid of only technically qualified tender will be opened by a board of officer, date of opening of cost bids will be intimated to the valid tenderers and posted on the website after evaluation of Technical Bids. **Cost bid should contain following**: -

(i) Commercial bid forms given in a standard Bill of Quantity (BOQ) format (.xls file) provided with tender document should only be used to fill up the commercial bid.

(ii) **Bidders to note that submission of financial bids be carried out in the format provided and no other format is acceptable**. Bidders are required to download the Bill of Quantity and upload the duly completed (unprotected cells with their respective financial quotes and other details viz. name of bidder). No columns should be modified. Once the details have been completed, the bidder should save it and submit it online without changing the file name**. If the Bill of Quantity file template is found to be modified by the bidder, the bid will be considered invalid and liable to be rejected.**

(iii) The cost is to be indicated for each item(s) and it should be the execution of work/ execution of item, inclusive of carrying charges and all taxes, as applicable.

(iv) **Rates will not be indicated in the technical Bid Schedule 'A' and if indicated, then the tender will be considered invalid.**

(v) Tenders should quote the rate both in words and figures in the online tender form available at www.eprocure.gov.in for each variety. In case of variation in rate quoted in words and in figures, the quoted rate in words will be considered as valid.

45. **Evaluation of the Proposal**. A two-stage procedure will normally be adopted as mentioned below: -

(a) **Stage-I : Evaluation of Technical Bids**

(i) A Technical Evaluation Committee (TEC) constituted by the Directorate General Assam Rifles will examine the technical bids. This would be a paper evaluation comprising of scrutiny of all documents required to be submitted for the Technical Bid.

(ii) The TEC reserves the right to verify authenticity of all documents submitted by the firm through internet / telephone or other similar means.

(b) **Stage-II : Financial Evaluation**

(i) The cost bids of only technically qualified enlisted tenderers will be opened whose documents as per schedule of requirement have been found meeting the laid down specifications/ quantity rate/ item rate/lumpsum rate depend upon schedule and the Price Bid will be evaluated accordingly.

(ii) L1 will be decided based on the lowest overall cost of complete work/job including all taxes or any other charges.

(iii) The commercial bid uploaded by bidder will be evaluated by a Board of Officers constituted by the Directorate General Assam Rifles and further accessed by a Tender Processing Committee (TPC) for realistic prices. Depending upon the acceptance of the comparative statement of tenders (final prices) by the Competent Financial Authority (CFA), a work order may be placed to the successful bidders. The bidders will be required to accept the work order, enter into a contract for execution of work and execution of project as per terms and conditions mentioned in this Tender Enquiry.

(iv) Acceptance/ Rejection of Tenders. Directorate General Assam Rifles reserves the right to accept or reject any or all tenders without assigning any reason.

Signature of the tenderer & Stamp

Sd/xx xx xx
(Uddipto Dhara)
Lt Col
Staff Officer-I (Works)
for Accepting Officer

46. **Insurance**.

(a) Contractor shall produce character certificate, ITI/ experience certificate of the staff employed.
(b) Contractor shall be responsible for any disciplinary cases of staff employed.
(c) Contractor shall be responsible for any accident/insurance claim of staff employed.
(d) **Proper documents to be maintained for Salary disbursement of the staff employed**.

47. Contractor should deposit BGB and the work order within 15 days of acceptance of work, failing which bid will be considered being invalid after issuing notice to the L-1 bidder being non-responsive. Thereafter, with the approval of CFA a PNC through a BOO will be carried out with L-2 bidder to accept said tender at L1 rates.

Signature of the tenderer & Stamp

Sd/xx xx xx
(Uddipto Dhara)
Lt Col
Staff Officer-I (Works)
for Accepting Officer

INSTRUCTIONS FOR TENDERERS

1. The Tenderer is required to quote his rates in figures and words against each items of Schedule 'A' in respect of "to be quoted schedules" and amounts and derived percentages in figures and words against each Schedule in General Summary in respect of "pre priced Schedule". The tenderer shall quote his rates/ amounts on the Schedule 'A' and General Summary pages only.

   (a) Name of work being tendered for as given in NIT.

   (b) Name and address of tenderer along with his seal duly signed by, auth signatory of Firm as in letter head.

2. Wherever the tenderer is required to write both in figures and words, he should ensure that there is no discrepancy between figures and words. The word 'Only' should be added immediately after the last word of rate/ amount/ percentage mentioned in words. In case of discrepancy, amount in words shall be considered.

3. In case of partnership concern/ firm or a limited company, signatory to offer shall ensure that he is competent to bind the contractor/firm (through partnership deed, general power of attorney or memorandum and articles of Association of a Company) in all the matters pertaining to the contracts with Union of India including arbitration clause. An attested copy of the documents confirming of such authority shall be attached with the offer, if not submitted earlier. In case of Sole proprietorship, self-sworn affidavit is required to be produced.

4. Conditional tenders will be treated as invalid tenders and will not be considered.

5. **Bid Validity**. A bid shall be valid for **180 days (one hundred eighty days)** unless otherwise specified from the date of opening of the tender. A bid valid for shorter period can be rejected by the user, as being nonresponsive.

6. **Earnest Money**.

   (a) The tender should be accompanied by Earnest Money to be submitted duly pledged in favour of **Director General Assam Rifles, Shillong-10**. The EMD may be accepted in the form of Account payee Demand draft, Fixed Deposit Receipt, TDR from a bank preferably a nationalised bank. EMD should be valid for a period of 45 days beyond the fixed Bid Validity period of 180 days.

   (b) Firms submitting EMD through Bank Guarantee are required to ensure authenticity of the same through digitally signed secured e-mail from issuing banks to official e-mail ID of SO-1 (Works), Engineer Branch, HQ DGAR.

7. **Performance Bank Guarantee (PBG)**.

   (a) To ensure due Performance of the contract, Performance Bank Guarantee is to be obtained from the successful bidder awarded the contract. Performance Bank Guarantee is to be obtained from every successful bidder irrespective of its registration status etc. The contractor shall submit an irrevocable **Performance Bank Guarantee of 5% (Five Percent)** of the value of contract. Performance Bank Guarantee may be furnished in the form of an Account payee Demand Draft, Fixed Deposit Receipt, Bank Guarantee from a recognised bank in an acceptable form safeguarding the department interest in all respect. Getting confirmation through digitally signed secured e-mail from issuing Bank.

   (b) Performance Bank Guarantee should remain valid for a period of **sixty days** beyond the date of completion of all contractual obligations of the contractor including the defect liability period of 12 months after the completion of subject work.

   (c) Online verification of company portal with user ID and password followed by 2nd stage authentication system generated One Time Password (OTP) on portal for reconfirmation.

   (d) e-mail confirmation followed by 2nd stage authentication by system generated SMS through registered mobile and reconfirmation through SMS to the verifying Office.

8. **Forfeiture of Earnest Money (if applicable):-**

   (i) If any tenderer withdraws his tender or makes any modification in the terms & conditions of the tender which is not acceptable to the Dept within 07 days after last date of submission of bids, then the Govt shall without prejudice to any other right or remedy, be at liberty to forfeit 50% of earnest money absolutely irrespective of letter of acceptance for the work is issued or not.

   (ii) If any tenderer withdraws his tender or makes any modification in the terms & conditions of the tender which is not acceptable to the Dept after expiry of 07 days after last date of submission of bids, then the Govt shall without prejudice to any other right or remedy, be at liberty to forfeit 100% of earnest money absolutely irrespective of letter of acceptance for the work is issued or not.

9. **Release of EMD / Refund of EMD**. The tenderer except the lowest tenderer shall be refunded immediately **within a week from the date of acceptance of successful bidder**. EMD in respect of the L1 (lowest) tenderer shall be refunded on receipt of Performance Bank Guarantee.

Signature of the tenderer & Stamp

Sd/xx xx xx
(Uddipto Dhara)
Lt Col
Staff Officer-I (Works)
for Accepting Officer

10. This INSTRUCTIONS FOR TENDERER along with Particular Specifications shall form part of the tender documents.

11. “Accepting Officer” means the duly authorised officer who signs the contract on behalf of the President of India as duly designated by CFA.

12. Tender value is inclusive of GST, EPF, and ESIC & LWC. In case of any amendment made by Government during the course of contract towards GST, EPF, ESIC & LWC charges same has to be borne by Contractors at no extra cost to Assam Rifles.

Signature of the tenderer & Stamp

Sd/xx xx xx
(Uddipto Dhara)
Lt Col
Staff Officer-I (Works)
for Accepting Officer

NOTICE INVITING TENDER

1. A tender is invited for the work as given in **Appendix 'A'**.

(a) The work is estimated to cost as given in **Appendix 'A'**. This estimate however is not guaranteed and is merely given as a rough guidance and if the work costs more or less, a tenderer will have no claim on that account.

(b) The Tenderer shall calculate his own unit rates from the specifications and other information furnished in the tender documents for each item as given in **Schedule 'A'**.

2. The work is to be completed within the period given in **Appendix `A'** (in accordance with the phasing if any, indicated in the tender) from the date of handing over the site, which will be within 30 days after acceptance of tender and submission of Performance Security Deposit.

3 Contractors registered with Director General Assam Rifles may deposit Bank Challan & purchase tenders. Contractors registered with other Govt organisations may also upload tender however their eligibility for tender participation will be subject to submission of Financial and personal credential of Registration as Govt department Contractor duly authenticated by an officer not below Executive Engineer / Superintending Engineer of the concerned department with whom contractor is registered along with the tender documents. This will include:-

(a) Registration documents with validity copy.

(b) Financial and Solvency limit issued by a Bank.

(c) Personal Details of Firms.

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

4. **Earnest Money Deposit (EMD)**.

(a) The Earnest Money as stated in para 6 of Instruction for tenderers will be accepted in the Form of Account payee Demand Draft, Fixed Deposit Receipt, Bank Guarantee.

(b) It should be ensured that the Earnest Money from any Commercial bank is pledged in favour of **Director General Assam Rifles.**

(c) If the banks are closed on the last date of receipt of tenders, the date shall be postponed suitably.

4.1 **Validity Period of EMD**. Earnest Money shall be valid for a period of 180 days (bid validity) plus 45 days (Tender duration) i.e. total **225 days** (minimum).

4.2 The Director General Assam Rifles as the CFA will release/refund the earnest money, wherever applicable, to all unsuccessful tenderers after expiry of the Final bid validity and latest on or before the 30th day after the award of the contract by endorsing an authority on the deposit receipt for its refund on production by the tenderer of a certificate of the Accepting Officer that a bonafied tender was received and all documents are returned.

4.3 The Director General Assam Rifles as the CFA concerned will either return the Earnest Money to the successful tenderer by endorsing an authority on the 'Deposit Receipt' for its refund, on receipt of an appropriate amount of Security Deposit or will retain the same in part or full on account of Security Deposit, if such a transaction is feasible.

5. Security Deposit.

(i) Security Deposit, in the form of an Account payee Demand Draft, Fixed Deposit Receipt, Bank Guarantee from a recognised bank, preferably nationalised is required to be submitted by the successful bidder for whom work order has been placed and the work has been completed by him/her. This should remain valid for a period of **sixty days** beyond the date of completion of defect liability period / warranty period. The contractor shall submit an irrevocable Security Deposit **of 5% (Five Percent)** of the value of contract.

(ii) Payment for Final bill of the successful bidder after completion of work shall be made subject to receipt of Security Deposit / a renewed PBG covering the entire defect liability period.

(ii) Firms submitting Security Deposit through Bank Guarantee are required to ensure authenticity of the same through digitally signed secured e-mail from issuing banks to official e-mail **ID of Engr Branch, HQ DG Assam Rifles (engrbr3@gmail.com).**

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for Accepting Officer

6. Documents pertaining to the work (Signed for the purpose of identification by the Accepting Officer or his accredited representative) and samples of materials and works to be supplied by the contractor will be opened for inspection by the tenderer at the office of Accepting Officer concerned during working hours.

7. The tenderers are advised to visit site by making prior appointment with the Staff Officer-I (Works) concerned in sufficient time.

8. A Tenderer shall be deemed to have full knowledge of all relevant documents, samples, site etc whether he has inspected them or not.

9. Any tender which proposed any alteration to any of the condition laid down or which proposes any other condition or description, what so ever, is liable to be rejected.

10. **The submission of tender by a tenderer implies that he has read this Notice and Conditions of Contract and has made himself aware of the scope and specifications of the work to be done and of the condition and rates of works, tools and plants etc. that will be issued to him and local conditions and other factors bearing on the execution of the work**.

11. **Compensation for delay (Liquidated Damages).**

(a) If the contractor fails to maintain the required progress as per contract agreement or to complete the work and clear the site on or before contract completion or extended date of completion, he shall, without prejudice to any other right or remedy available under the law be liable to the Government on account of such breach and pay as agreed compensation, the amount calculated at the rates stipulated below, duly approved by CFA (whose decision in writing shall be final and binding) who may decide on the amount of tendered value of the work for every completed day/month (as applicable) that the progress remains below that specified in Contract Agreement.

(b) This will also apply to items or group of items for which a separate period of completion has been specified.

(c) **Compensation for Delay of Work**: With max rate @ 1% (one percent) per month for delay to be computed on per day basis based on quantum of damage suffered due to stated delay on the part of Contractor. Provided always that the total amount of compensation for delay to be paid under this condition shall not exceed 10% (ten percent) of the accepted Tendered Value of work or of the accepted Tendered Value.

(d) The amount of compensation may be adjusted or set-off against any sum payable to the contractor under this or any other contract with the Government. In case, the contractor does not achieve a particular milestone mentioned as per Contract Agreement, or the re-scheduled milestone(s), the amount shown against that PDC shall be withheld, to be adjusted against the compensation levied at the final grant of Extension of Time. With-holding of this amount on failure to achieve a PDC, shall be automatic without any notice to the contractor. However, if the contractor catches up with the progress of work on the subsequent milestone, the withheld amount shall be released. In case the contractor fails to make up for the delay in subsequent milestone(s), amount mentioned against each milestone missed subsequently also shall be withheld. However, no interest, whatsoever, shall be payable on such withheld amount.

12. **Time and Extension for Delay**

(a) The time allowed for execution of the works as specified in the Contract Agreement/ work order or the extended time in accordance with these conditions shall be the essence of the Contract. The execution of the works shall commence from such time period as mentioned in work order or from the date of handing over of the site whichever is later. If the contractor commits default in commencing the execution of the work as aforesaid, Government shall without prejudice to any other right or remedy available in law, be at liberty to forfeit the earnest money & Performance guarantee absolutely alongwith cancellation of work for retendering.

(b) As soon as possible, after the Contract is let or any substantial Work Order is placed and before work order, it is begun, the SO-1 (Works) / Contract operating authority and the Contractor shall agree upon a time and progress chart. The Chart shall be prepared in direct relation to the time stated in the contract documents or the work order for completion of the individual items thereof and/or the Contract or work order as a whole. It shall indicate the forecast of the dates for commencement and completion of the various trade processes or sections of the work and shall be amended as may be required by agreement between the SO-1 (Works) / Contract operating authority and the Contractor within limitation of time imposed in the contract documents or work order. If the works be delayed: -

(i) By force majeure, or
(ii) By reason of any normal calamity.

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(iii) By reason of serious loss or damage by fire, or any other hazard.

(iv) By reason of civil commotion, local commotion of workmen, strike or lockout, affecting any of the trades employed on the work, or

(v) By reasons of delay on part of nominated sub-contractors, or nominated contractor, which the Contractor has, in the opinion of SO-1 (Works)/Contract operating authority, taken all practicable steps to avoid or reduce, or

(vi) By reason of delay on the part of Contractors or tradesmen engaged by Government in executing works not forming part of the contract, or

(vii) By reason of any other cause, which in the absolute discretion of the Accepting Officer is beyond the Contractor's control.

(c) Then, in such case the Accepting Officer may make fair and reasonable extension in the completion dates of individual items or groups of items of work for which separate periods of completion are mentioned in the contract documents or work order as applicable.

(d) **Upon the happening any such event causing delay, the Contractor shall immediately, but not later than 14 days of the happening of the event**, give notice thereof in writing to the SO1(Works)/ Contract operating authority but shall nevertheless use constantly his best endeavor to prevent or make good the delay and shall do all that may reasonably be required to the satisfaction of the SO1(Works)/Contract operating authority to proceed with the works for which SO1(Works) will monitor details on record. Extension of time shall be approved by the CFA.

(e) **In case the Contractor fails to notify the SO-1 (Works) / Contract operating authority of happening of an event(s) causing delay within the period of 30 days stipulated above, he shall forfeit his right to claim extension of time for the delay caused due to such event(s)**.

(f) If the work is delayed by reason of non-availability of Government stores, then, in any such event notwithstanding the herein fore contained, the CFA may in his discretion grant such extension of time as may appear reasonable to him and the same shall be communicated to the Contractor by the SO-1(Works)/Contract operating authority in writing. The decision so communicated shall be final and binding and the Contractor shall be bound to complete the works within such extended time.

(g) **No claim in respect of compensation or otherwise, howsoever arising, as a result of extensions granted under conditions above shall be admitted.**

(h) No RARs shall be processed for payment if the PDC of the said work / job is expired. Extension of Time (EOT) for PDC shall be processed and sanction be obtained prior to processing of RARs.

13. **No/any escalation shall be granted or entertained for cost and time overrun wrt materials, labour, transport, equipment, and machinery under any circumstances whatsoever.**

14. **<u>Cancellation, Foreclosure and Termination of Contract</u>**. If the contractor:-

(a) Makes default in commencing the works within a reasonable time from the date of the handing over the site and continues in that state after a reasonable notice from SO-1 (Works) / Contract operating authority.

or

(b) In the opinion of the SO1 (Works)/Contract operating authority at any time, whether before or after the date or extended date for completion, makes default in proceeding with the works, with due diligence and continues in that state after a reasonable notice from SO-1 (Works) / Contract operating authority.

or

(c) Fails to comply with any of the terms and conditions of the Contract, or after reasonable notice in writing with orders properly issued there under,

or

(d) Fails to complete the works, work order and items of works, with individual dates for completion, and clear the site on or, before the date of completion.

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for Accepting Officer

15. The Director General Assam Rifles as the CFA may, without prejudice to any other right or remedy which shall have accrued or shall occurred thereafter to Govt, cancel the contract as a whole or only such work order (s) or items of work in default from the contract: whenever the Director General Assam Rifles as the CFA exercises his authority to cancel the contact as a whole or in part under this condition he may complete the work by any means at contractor's risk and cost**.**

16. The Director General Assam Rifles as the CFA does not bind himself to accept the lowest or any tender or to give any reasons for not doing so.

17. The Director General Assam Rifles as the CFA reserve his right to accept a tender submitted by a Public Sector Under taking giving a price preference over other tender who may be lower or as admissible under the Govt Policy. No claim for any compensation or otherwise will be admissible from such tenderers whose tenders may be rejected on account of the said policy.

18. **Handing / Taking over of work site will be completed within maximum of four weeks after issue of Work Order in all respect.**

19. The change of site will not be accepted after Administrative Approval. In case of unavoidable circumstances, the concurrence of the Director General Assam Rifles as the CFA is essential before commencement of work.

20. **The completion report will be addressed to the Accepting Officer. The contractor will make sure that work will be completed in all respect as per Schedules, drawings and specification**.

21. The work order duly completed in all aspect will be issued within a week after approval of works by Director General Assam Rifles as the CFA.

22. This **NOTICE OF TENDER INCLUDING APPENDIX 'A'** shall form part of the tender documents.

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for Accepting Officer

AUTHORITY LETTER

(To be used in conjunction with General Condition of Contracts, CPWD)

HQ DGAR
Shillong - 10

Ref No. CA No : VIII.11014/9274/7 Sect/31 COBs/Engr/2026 Dated : Apr 2026

LUMP SUM / ITEM RATE CONTRACTS FOR THE WORKS REQUIRED IN THE WORK:

Improvement of existing infrastructure & allied works for COB S/ Chingnyu of 42 AR

Shri/ M/S _____ of _____ is/are hereby authorized to tender for the above work. The tender is to be submitted through e-Procurement site **http://eprocure.gov.in/eprocure/app** by **_____ hours** on ____ 2026.

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

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

Signature of the tenderer & Stamp

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for Accepting Officer

SCHEDULE 'A' NOTES
LIST OF WORKS AND PRICES

Name of Work: - **"Improvement of existing infrastructure & allied works for COB S/ Chingnyu of 42 AR**

1. This schedule A consists of **05 (Five)** parts as detailed below: -

PART- I	1.01	Construction of PUF shelter (18.30x7.60x2.7M) for 20 Men SM Bk all as per technical specification including plinth/foundation with vitrified tiles flooring, plinth protection, furniture and electrification all as technical specification and Drg No DGAR/COB/01 (Sheet No 01/10 to 10/10) and directed by Engr-In-Charge
	1.02	Construction of Single Offr/JCO PUF shelter (7.90x10.64M) living accn incl plinth/foundation, vitrified tiles flooring, plinth protection, furniture, electrification, toilet, sanitary and water supply fitting all as per technical specifications and drawing No DGAR/COB/03 (Sheet No 01/10 to 10/10) and directed by Engr-In-Charge
	1.03	Construction of PUF shelter (18.30x6.10M) for Kote incl plinth/foundation and flooring all as per technical specification and drawing No DGAR/COB/04 (Sheet No 01/09 to 09/09) and directed by Engr-In-Charge.
	1.04	Construction of PUF shelter (18.30x6.10M) for Store building incl plinth/foundation, flooring, plinth protection, furniture, electrification all as per technical specification and drawing No. DGAR/COB/04 (Sheet No 01/09 to 09/09) and directed by Engr- In-Charge .
	1.05	Construction of PUF shelter (20.88x9.10M) for CH/DH all as per technical specification incl plinth/foundation, vitrified tiles flooring in dining hall, plinth protection, furniture, electrification, overhead staging and water supply fitting and as per drawing No. DGAR/COB/02 (Sheet No 01/11 to 11/11) and directed by Engr-In-Charge.
	1.06	Construction of PUF shelter for Sentry post/Gd room complete all as per specifications and drawing No. DGAR/COB/115 (Sheet No 01/04 to 04/04) and directed by Engr-In-Charge.
	1.07	Construction of PUF shelter (18.30x6.10m) for Signal Centre/MI room/Coy office including plinth/foundation with vitrified tiles flooring, plinth protection, furniture and electrification all as per technical specification and drawing No. DGAR/COB/04 (Sheet No 01/09 to 09/09) and directed by Engr-In-Charge.
	1.08	Construction of PUF shelter (7.20x2.22M) for Six men toilet block incl plinth/foundation, vitrified tiles flooring, plinth protection, minimum one EWS for each block, electrification, toilet, sanitary and water supply fitting, overhead water tank staging complete all as per specifications and drawing No. DGAR/COB/114 (Sheet No 01/03 to 03/03) and directed by Engr-In-Charge.
Part-II	:	Retaining Wall
Part-III	:	Storm Drainage
Part-IV	:	Foot Path with Chequered Tiles
Part-V	:	Site Development / Earth Work)

2. The description of building works and services given in various parts of Schedule 'A' are in brief. These are deemed to be amplified and read in conjunction with special conditions, particular specifications, drawing (including notes thereon), specifications for materials and workmanship given in CPWD specification 2019 Volume I and II and amendments thereafter.

3. Entire work under this contract shall be completed within the period of "**12 Months**" from the date of handing over the site as indicated in the first work order as under.

4. Pre-priced rates inserted under Column "Unit rate' of schedule 'A' are deemed to be at par with the rates contained in the Delhi Schedule Rates or analogous rates there to. Contractor's attention is invited to condition of clauses 13.2.8 & 13.2.9 of CPWD Works Manual 2019, wherein the lump sum price shall be worked out by him independently of the prices or rates inserted by Assam Rifles in the tender and irrespective of any errors or inaccuracies therein. The percentage to be inserted by tenderer against a particular part of schedule 'A' shall be derived by him from the amount tendered by him against the particulars part of schedule 'A' as compared to the amount inserted by Assam Rifles against each part of schedule 'A'.

5. 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 drawing included in the list of drawings. Any

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drawings mentioned in the contract/contract drawings but inadvertently not included in the list of drawings shall also be deemed to form part of the contract.

6. Probable distribution of various items of internal/external services are indicated on drawings. These are tentative and may be varied as per site requirement, where necessary at the discretion of the Engineer-in-Charge. The effect of such changes/variations in quantities due to realignment or re-siting shall deemed to be included in the rates quoted and no price adjustment on this account shall be allowed.

7. Layout of buildings indicated in the site plan is tentative and no price adjustment shall be made on account of any change in final approved layout within the site of work.

8. As sub work is being carried out along in proximity to Indo-Myanmar Border and are essential in nature. **The tenderers to visit the work site post taking prior appointment with SO1 Works at sector HQ/ Engineer-in-Charge before submission of tender**. The tenderer shall have no claim what-so ever on this account at a later stage whether he has actually inspected the work site or not.

9. The lump sum / item rate quoted by the tenderer shall be deemed to include for all minor details of construction which are not specifically shown on drawings or specified in particular specification but which are essential for execution or work /services in workman like manner and sound construction. In case of differences in opinion of the contractor and the Engineer-in-charge as to whether or not a certain item of work constitutes minor details of construction, the decision of Accepting Officer shall be final, conclusive and binding.

10. Cost of testing including transportation of materials or equipment or items, provision of all facilities for testing in accordance with specifications and / or IS shall be borne by the contractor unless otherwise mentioned.

11. The materials used for construction should be of best quality duly approved by user and as per approved list of products by the Assam Rifles, which will be intimated by Engineer-in-Charge. TMT bars used for construction should be from Primary manufactures, irrespective of whatever shown on drawings or specified elsewhere in the tender documents, the product shall be duly approved by Engineer-in-Charge.

12. Unit rates quoted shall be deemed to be inclusive of all taxes and levies of Govt. so applicable such as Sales Tax/VAT/WCT/**GST**, EPF, ESIC & LWC on works contract, excise duty, toll tax, entry tax, income tax, worker's welfare tax/cess, etc and nothing extra shall be paid on this account. Necessary deduction at source shall be made by the Accepting Officer as applicable as per the mandatory statutory requirement of Central and State Government.

13. The lump sum / item rate quoted against all items of schedule 'A' shall be deemed to include for all items of works complete as specified in particular specifications and shown on drawings, notes thereon for completion of work and all minor details though not specifically shown on drawings or specified in particular specification except works covered under schedule 'A' or unless specifically stated elsewhere in the tender documents.

14. Cutting and forming chases in masonry/concrete work etc. including cutting and or leaving holes/ recesses, sinking etc. where required and as directed by the Engineer-in-Charge shall be done as far as possible while the work is in progress. The cost of materials and labour for cutting and/or forming chases, cutting or leaving hole/recesses, sinking and making good in cement mortar (1:3) for filling up to 20 mm and in PCC (1:2:4) type B-1 concrete for filling more than 20 mm shall deemed to be included in the lump sump quoted by the contractor. In addition, cutting or forming chases, cutting or leaving hole/recesses, sinking and making good in cement mortar 1:3/PCC 1:2:4 type B-1 in connection with the work required in plumbing, internal water supply, internal electrification etc shall deemed to be included in the unit rates of respective building works in Schedule 'A'. However, no price adjustment shall be made for any variation in the items/quantities of chases/holes/recesses etc. consequent upon changes in quantities of plumbing, internal water supply, internal electrification works etc.

15. The buildings under this contract have been designed for SBC of soil as indicated in structural drawings. Variation in SBC of soil, if found at site and required redesigning of the foundation, the same shall be regularised through proper deviation order, for which Approval in Principle will be taken before execution commences.

16. **Safety Measures, Precautions, Risks etc**.

(a) The Work shall be carried out with utmost care to ensure that no damage to Existing/Adjoining Work/Fittings is done failing which the damage, if any done shall be rectified by the Contractor to match with the Existing/ Adjoining Work /Fittings to the entire satisfaction of Engineer-in-Charge under Contractor's own arrangement and at his own expenses.

(b) Suitable Tools, Plants, Equipments, Mechanism, etc., as considered necessary shall be adopted during execution of the Work. The Contractor shall take all Precautions, Safety Measures, etc., to avoid any Damage, Miss-happening, Accident, etc., to the Workmen engaged by him to carry out the Work. The UNIT RATES quoted by Contractor shall be deemed to have included the Element of adopting Safety

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for Accepting Officer

Measures, Precautions and also the Risks, etc. involved in Work and nothing EXTRA shall be admissible on this account.

(c) Segregation of site with suitable material (CGI sheet, Hessian cloth, etc.) to prevent any access of any unauthorized / unwanted person(s), to be carried out by the contractor under own arrangement without any cost effect

17. Government shall not Pay anything Extra, if the Contractor has to Pay Royalty to the State Government for the Earth brought to Site by him from Outside burrow. In case any Royalty is required to be Paid by the Contractor for bringing Approved Earth from Outside burrow, the Rate quoted shall be deemed to include for the same and nothing Extra shall be Paid to the Contractor by the Department.

18. The Rate quoted for Rough Excavation is independent of the Actual Method of Excavation permitted by the Private Land Owners and nothing Extra shall be paid by the Department.

19. **All quantities are PROVISIONAL. Any variation in quantities if considered necessary due to site requirement/any other technical reasons as decided by the SO1 Works and Engineer-in-Charge may be executed to the extent as specified in condition of CPWD General Conditions of Contract clauses 12**.

20. Unless otherwise specified the unit rate of each item of work inserted by Assam Rifles or quoted by tenderer shall be deemed to include **for "Materials and labour" / "Supplying and fixing" / "Supplying, laying, joining and testing including commissioning"** etc complete unless otherwise specifically mentioned. Condition in CPWD Specifications 2019 Volume I and II and amendments thereafter and the preambles to the items given in Delhi Schedule Rates 2019 under respective trades shall be applicable. If any provision in the description of items of Schedule 'A' and particular specification is at variance with the provision laid down in the condition of Schedule and preambles to Schedule item, the provision in description of items of Schedule 'A' and provision in particular specification shall take precedence.

21. In Schedule 'A' the rates for various items shall be inserted by the tenderer both in figures and words under columns and the amount shall be extended. The total amount of this Schedule 'A' shall be carried over to general summary.

22. Rates quoted in different schedules for similar items if varies then lowest quoted rate shall be applicable for calculation of L-1.

23. **Inspection of the Works (Defect Liability Period)**. The Defect liability period for the scope of work(s) covered under the contract is **TWELVE CALENDAR MONTHS** from the date of completion of the work or handing over of the work executed to user whichever is later. Any defects in the work noticed during this period shall be rectified by the contractor forthwith, on demand in writing from the Staff Officer-I(Works) specifying the area affected not withstanding that the work executed might have been inadvertently passed, certified and paid. The contractor shall carry out the rectification of the defects notified at his own expense during the defects liability period and in event of his failure to do within a period to be specified by the Staff Officer-I(Works) in his demand, the Staff Officer-I(Works) shall undertake such rectification work as the risk and expense of the contractor.

24. **Adherence to Make In India Order of GOVT OF India**. It is hereby directed to strictly adhere to **Make In India Guidelines** promulgated by Govt of India, Ministry of commerce & Industry vide orders P-45021/2/2017-B.E-II dated 15 Jun 2017 and P-45021/21/2024-BEII (E-197009) issued by Ministry of commerce & industry dated 02 Dec 2024 (Copies of the same are attached at appendix A for reference).

25. As per direction of Ministry of Home Affairs PM Division (Procurement Wing) letter No D/21013/30/3220/11.11.10/PW CF-3101362/1690 dated 01 Apr 2025. Certificate of Confirmation on Rule 176 (1) (II) of General Financial Rules-2014 and Paragraph 5.1.4 (IX) of Manual for Procurement of Goods-2017 and Abiding by Code of Integrity for Public Procurement vide Rule 175 (1) of GFR-2017 is required to uploaded duly signed (copy of the same att as Appendix B for ref).

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for Accepting Officer

SCHEDULE 'A' (PART-I)

Unit/Fmn : 42 AR/HQ 7 Sect AR, C/o 99 APO

Name of work : **Improvement of existing infrastructure & allied works for COB S/ Chingnyu of 42 AR"**

TECHNICAL SPECIFICATIONS FOR LIVING SHELTER (SM BARRACK)

1. PUF Shelter of size 18.3m x 6.1 m excluding verandah & 1.5 m verandah made up of steel structure and PUF panels in wall as per drg (Sheet-1/10 to Sheet-10/10) as per Appx and technical specifications given below. The main and partition walls will be made up of 60 mm thick PUF insulated panels. The false ceiling will be provided with PUF insulated panels as specified below. Roof covering will be provided with 0.63 mm thick green pattern colour coated steel profile sheets.

2. **Design criteria**

(a) Seismic Zone - Zone V
(b) Wind speed - 55 m/s ((As per IS – 875)
(c) Temperature Range (-) 2 to (+) 50 degree C
(d) Roof slope - 1:2 approx as per drg
(e)

3. **Dimensions**. All as indicated in the drawings mentioned at Para 1 above.

Details of Structural Members. The steel structure for the shelters will be designed for the Design Parameters as enumerated at Para 2 and for the dimensions as indicated in the drawings mentioned at Para 1 above. All structural steel will be ISI marked with manufacturer's test certificate for raw material and structural properties

(a) **Columns**. The main columns (24 Nos) will be made out of ISI marked RH steel section of size 122 x 61 x 3.60 mm (9.67 Kg/Rm) conforming to IS 4923: 1997. MS base plate of size 250 x 250 x 8 mm (62.80 Kg/Sqm) and top plate of size 200 x 150 x 8 mm (62.80 Kg/Sqm) will be connected with nuts and bolts to the columns. Verandah columns (08 Nos) will be made out of RH steel section 96 x 48 x 4 mm thick (8.22 Kg/Rm) with MS base plate of size 200 mm x 200 mm x 8 mm (62.80Kg/Sqm) and top plate of size 200 x 150 x 8 mm (62.80 Kg/Sqm). All top and base plates will be pre-drilled with 4 Nos 18 mm dia holes. Base plates will be provided with 4 Nos 16 mm dia 450 mm long holding down bolts each, while top plates will be provided with 4 Nos 16 mm dia normal bolts.

(b) **Verandah Rafter**. Made up of ISI marked RH steel section of size 96 x 48 x 4 mm thick (8.22 Kg/Rm) with MS plate of size 200 x 150 x 6 mm thick (47.10 Kg/Sqm) connected with nuts and bolts to both ends of rafter. MS plates will be provided with 04 Nos holes of 18 mm dia to join with principal rafter plate and verandah column.

(c) **Truss**. The principal ISI marked rafter and the bottom chord will be fabricated out of RH steel sections of size 96 x 48 x 4 mm (8.22 Kg/Rm) with 1:2 slope. All other strut members will be fabricated out of RH steel sections of size 66 x 33 x 2.90 mm (4.07 Kg/Rm).

(d) **Purlins**. The purlins (11 Nos) will be fabricated out of RH steel sections of size 96x48x4mm with (8.22 Kg/Rm) 6 mm thick cleats connected with nuts and bolts at both the ends.

(e) **Gable End**. Gable End will be covered with same panels as of wall upto bottom chord of truss. The triangular truss portion will be covered with 0.60 mm thick green pattern colour coated steel profile sheets.

(f) **Sunshades**. Suitable ISI marked sunshades made out of 0.63 mm thick green colour coated steel sheet fixed with angle iron frame of ISA 40 x 40 x 5mm (3.0 Kg/Rm) will be provided to all external windows and doors. The minimum projection for the sunshades will be 450 mm for window and 600mm for doors and 300 mm wider than the width of the opening.

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5. **Roof**.

(a) The roof will be provided with 0.63 mm thick PPGI sheets. Sheet covering will be fixed with using hot dip zinc coated self drilling hexagonal washerhead fasteners. The sheets shall be laid with minimum end and side lap of 150 mm. idge shall be covered by 0.63 mm thick 450mm wide green colour coated plain steel sheet.

(b) 3 mm thick polycarbonate profile sheet, UV protected ER clear having similar profile as colour coated sheet of roof shall be provided for skylight, the skylight area will be 10% of total roof area. Make: PC Lite/Lexon/Bayer/Garware (Test certificate to be submitted by vendor with supply of material).

(c) **Roof Projection**. The roof will have minimum projection 450 mm all around. Purlins will also be extended in the roof at the eaves and at gable roof extension (outside the structure).

6. **Wall Panels.**

(a) The main and partition walls will be made up of 60 mm thick PUF insulated Wall Panels. The Panels will be made of 0.50mm thick PPGI sheets on both side with 60 mm thick layer of rigid CFC free close cell polyurethane foam (Density 40 Kg $\pm$ 2 Kg / Cum) insulation. The wall panels will be provided with tongue and groove joint and will be with cam lock systems for interlocking. All materials required for the manufacture of shelter will be new and shall comply with relevant Bureau of Indian Standard specification. Bottom & Top channel of size 30 x 65 x1.25 mm thick will be provided for fixing of walls panels.

(b) The PUF Insulation material in the panel will have fire retarding and self extinguishing properties as per any international standard B2 DIN 410 2 Part I/ BS- 4735 Self Ext.

(c) **GI Metal Skin PUF Panels**

(i) **Thickness of Skin**. 0.50mm thick hot dipped galvanized steel sheets on inner and outer side with 50 – micron thick PVC guard film on the finished surface only for protection against scratches during handling and transportation. Base metal of GI Skin CRCA as perIS-513, Galvanized as per GR -120, IS-277

(ii) The panels will be insulated with PUF Foam (Density 40 Kg $\pm$ 2 Kg / cum).

(iii) These panels are to be manufactured using high pressure dispensing machine of required capacity to inject specified amount of PUF chemical into the cavity of full panel in one shot not exceeding 25 sec durations. This is to ensure that the liquid PUF mixture is sprayed intothe cavity before the foaming reaction starts so that the insulation core of the panel is formed in one piece and provides desired structural and physical properties. The bulk density of insulation should be 40kg/cum and the impending machinery should be equipped with a PLC controlled panel for monitoring and controlling the injection rate to assure specified uniform density requirements.

(d) The pre coated GI sheet should have minimum coating of 4–5-micron epoxy primer and 25-micron polyester top coat on the finished surface and 7–8-micron primer alkyd backer on backside, which is bounded to the polyurethane foam. The pre coated GI sheet should conformto IS-14246-1995 with manufacturer test certificates conforming above specification.

(e) The PUF insulated core of these composite panels will have the following properties: -

(i) Density - 40 ($\pm$ 2 Kg per cum)
(ii) Compressive Strength at 10% deformation - 2.10 Kg/cm2
(iii) Tensile Strength - 3.7 Kg / cm2
(i) Bending Strength - 4.0 Kg / cm2
(ii) Adhesion Strength - 2.90 Kg /c m2
(iii) Close cell content - 90 – 95%
(iv) Temperature Range - (-2^0 C to + 50^0 C)
(v) Thermal conductivity at 10 0 C-0.018 k-cal/ m - hr0 C (Design value 0.020 k-cal/m-hr 0C or 0.023 W/m-K)

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(vi) Fire Resistant - (Horizontal Extent of burn BS 4735) < 125 mm.
(xi) Self Extinguishing ASTM D 1692 - Passes (Fire retarded foam chemical)
Not easily ignitable as per BS: 476 Pt 5 Class- I as per BS: 476 pt 7
(xii) Water Absorption - 0.20% volume at 100% RH
(xiii) Water Vapour Permeability - 0.08 – 0.12 gms/hr/m2

(f) The Iso-cyanate and polyol liquid components used for in situ process of polyurethane foam for panels should be accompanied with co-relating manufacture test certificate indicating batch nos, date of manufacture and expiry dates.

(g) All panels will be moulded in place using the above in-situ process after placing them in a hydraulic press with heated aluminum pattern and corner moulding so as to attain the desire finish, bonding and structural properties. All panels will be manufactured in single piece as per approved panel layout drawings using the above materials and manufacturing process.

(h) Puf panels, being used in wall /ceiling / any other location will be tested for its physical / chemical/mechanical properties from any IIT College /Approved Govt Engineering College / Laboratory and all testing charges to this effect will be borne / paid by the supplier. This test certificate will be produced by supplier to consignee while taking approval of pilot sample

(j) The consignee can carry out inspection of any panel from the lot at manufacturer premises to ensure that above chemical and physical properties.

(k) Pre coloured PUF panels will have green pattern on external walls and white/off white finish on internal wall

7. **False Ceiling**

(a) The false ceiling will be made up of 40 mm thick PUF insulated Panels. The Panels will be made of 0.50 mm thick hot dipped galvanized steel sheets on both side with 40 mm thick layer of rigid CFC free close cell polyurethane foam (Density 40 Kg $\pm$ 2 Kg / Cum) insulation. The false ceiling panels will be provided with tongue and groove or lip locking joint for interlocking. False ceiling will be supported with the help of inverted CRCA Tee Section 50 x 50 x 6 mm thick (4.40 Kg/Rm) and L-section of 50 x 50 x 5mm thick (3.80 Kg/Rm) fixed appropriately to the Truss.

(b) Translucent multi wall polycarbonate sheet, UV protected, 5 mm thick, white colour to be provided in false ceiling @ 10% of total false ceiling area directly below the poly carbonate roof sheet Make : PC Lite/ Lexon/ Bayer/Garware.

8. **Openings**

(a) **Windows**. Seven numbers windows of size 1220 x 1220mm aluminium anodized of extrusions powder colour coated aluminum section three track with three sliding shutters (on rollers) with following section including joining cleats, glazing clips, rubber packing, snap beading and other necessary builders hardware as required complete all as specified and shown in drawing.

(b) **Frame**

(i) Top and side members for three track frame of size 92.00 x 31.75 x 1.5mm (Weight 1.060 Kg/m. (Model 20831 of Jindal/Equivalent as per IS 1948-1961.

(ii) Three track bottom rail of frame for sliding of shutter of size 92.00 x 31.75 x1.5mm (weight 1.248 Kg/m model 20832 of Jindal/Equivalent as per IS 1948-1961.

(c) **Shutter (three Nos)**.

(i) Top and Bottom rail of sliding shutter of aluminium of size 40 x18 x 1.55mm (weight 0.547 Kg/m). (Model 20736 of Jindal/Equivalent as per IS 1948-1961.

(ii) Side rail of sliding shutter with handle and self locking arrangement section of size 40x 18 x 1.55 mm(Weight 0.547Kg/m. (Model 20738 of Jindal/Equivalent as per IS 1948- 1961.

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(iii) Interlocking rail of sliding shutter of size 40 x18 x 1.45 mm (Weight 0.607 Kg/m. (Model 20737 of Jindal/Equivalent as per IS 1948-1961.

(iv) Two sliding shutter to be provided with glazing of 6 mm clear grade LTED 6/2RS, 1.3 mm polycarbonate sheet of make GI structure product.

(v) One shutter to be provided with stainless steel wire mesh of 0.36 mm nominal dia of wire and average width of aperture 1.40 mm, duly fixed with U clip on all side to the shutter.

(vi) Centre rail for sliding interlocking shutter section size 39mm x 20mm to be provided.

(d) **Door Frame**. 02 Nos of Aluminum door frame top and side members of frame size 110 x 45 x 2.0 (weight 2.16 Kg/m) to be provided.

(e) **Main Doors**. Two numbers aluminum doors of size 1100x2100mm shall be provided with each shelter as per drawing. Aluminum doors single shutter type as per specification given below with Aluminum beading and rubber gasket of suitable size including fixing of 02 Nos Aluminum handle of size 150mm, 02 Nos tower bolt of size 200mm,100mm four liver vertical brass mortice lock of **Make : Godrej/Harison/Link or equivalent make & quality** with three keys fixed with rawl plug complete incl necessary joining cleats, glazing clips, rubber packaging, snap beading 04 Nos Hinges of 6" size and other builders hardware as required all as specified and shown in drawing. The ain door will have the following:-

(i) Vertical style of door for both sides of size 85 x 44.45 x 2.00mm (weight 1.417 Kg/m) Model 19560 of Jindal/ Equivalent as per IS 1948-1961.

(ii) Top and bottom rail of door of size 95.25 x 44.45 x 2.00mm (weight 1.511Kg/m) Model 19505 of Jindal/ Equivalent as per IS 1948-1961.

(iii) Middle rail of door of size 100.00 x 44.45 x 2.00 mm (Weight 2.145 Kg/m). Model 19564 of Jindal/Equivalent as per IS 1948-1961.

(iv) 12mm thick pre laminated particle board decorative choice one side other side balancing white to be provided in the Top and Bottom half of the door.

(f) **Fly Proofing Door**. Two numbers of aluminium fly proof Doors of dimension 1100 x 2100 mm will be provided with each shelter, alongside main Door. The fly proof door shall be as per specification given below with aluminum beading and rubber gasket of suitable size including fixing of 02 Nos aluminium handle of size 150mm, 02 Nos aluminium tower bolt of size 200mm complete incl necessary joining cleats, glazing clips, rubber packaging, snap beading, 04 Nos Hinges of 6" size and other builders hardware as required all as specified. The fly proof Door will have the following:-

(i) Vertical style of fly proof door for both sides of size 85 x 44.45 x 2.00mm (weight 1.417 Kg/m. In addition to above an additional middle vertical style for fly proof shutter only will be provided of size 50 x 44.45 x 2 mm (weight 0.85 Kg/m) Model 19560 of Jindal/Equivalent as per IS 1948-1961.

(ii) Top and bottom rail of door shutter and fly proof shutter of size 95.25 x 44.45 x 2.00mm (weight 1.511Kg/m) Model 19505 of Jindal/Equivalent as per IS 1948-1961.

(iii) Middle rail of door shutter and fly proof shutter of size 100.00 x 44.45 x 2.00 mm (Weight 2.145 Kg/m) Model 19564 of Jindal/Equivalent as per IS 1948-1961.

(iv) The fly proof shutter shall be provided on the out side of the main door using stainless steel mesh of 0.36mm nominal dia of wire and average width of aperature 1.40mm. Fly proof shutter shall be provided with suitable aluminum extruded section body hydraulic door closer. Make : Godrej/Modi/Kich and similar make.

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(g) **Ventilators**. Two numbers ventilator of size 450 x 300 mm of aluminum anodized of extrusions powder colour coated of suitable profile section shall be provided with each shelter. Ventilator will have full stainless steel fly proof mesh of 1.40 mm aperture and will have top hinged glazed polycarbonate sheet shutter on inside.

9. **Exhaust Fans**. Two Nos opening of suitable 340 mm dia will be provided on each gable wall. Exhaust fans of premium quality to be fixed as apvd by SO-1 (Wks)/ Engr-in-charge.

10. **Curtain Rod Arrangement**. 25 mm diameter ISI marked mild steel wood finish decorative type drapery rod with end caps, wooden bracket, wooden ring @ 12 cm distance centre to centre fixing arrangements will be provided for all openings (doors and windows). The drapery rod should be minimum 150 mm longer than width of the opening on both sides.

11. **Peg Set**. Four numbers of steel peg sets of six to be provided.

12. **Workmanship**.

(a) **Connection**. Welded connection will be provided unless other wise specified in the drawings. The welded connections will be conformed to IS 806-1968.

(b) **Fabrication**. The general provisions in section 11 of IS 800 of 1984 will apply to all types ofsteel being used for fabrication.

(c) All steel members will be treated with two coat of synthetic enamel paint over a coat of red oxide zinc chromate primer by manufacturer before supply

(d) **Various Fasteners and Fittings**. Fasteners and fittings of mild steel shall be supplied unless otherwise specified in and shall be fixed where required. Fastening means will be provided for the items to be fitted at the time of erection. 10% spare nuts, bolts, and washers will be provided per shelter. The fasteners supplied shall conform to relevant BIS specification.

13. **Finishes**. All steel work will be treated with two coat of synthetic enamel paint over a coat of red oxide zinc chrome primer. 12 ltrs of synthetic enamel paint with appropriate color stainer, 4 Ltrs red oxide primer per shelter will be provided in sealed containers for retouching and painting after erection. Paint material will be of Ist quality.

14. **Flashing**. Suitable flashing with 0.63mm thick pre-coated sheet of matching colour with wall panels will be provided at all joints between roof and wall corner. The gaps in window and other opening should be minimized by providing tee flushing.

15. **Silicon Sealant**. Six numbers of 280 ml Dr Fixit 501 Silicon Sealant premium acetoxy cure will be provided with each shelter to seal gaps, if any, in roof and wall panels.

16. **Constr Mtrl**. Constr material and form work shall be used for Shelter as per following specifications:-

(a) **RCC Column, Foundaton and Footing.** An RCC 1:2:4 will be provided in column, foundation and column footing over 100mm thick PCC 1:4:8 type using 20 mm stone aggregate as in sub base.

(b) **Plinth**. Plinth shall be of brick wall 230mm thick built in CM 1:6 up 600mm height above ground level and 300mm below ground level over 75mm thick PCC 1:4:8 type D-2 using 40mm stone aggregate.

(c) **Plastering**. 15mm thick plaster in CM 1:4 will be provided on exposed surface of brick wall above ground level.

(d) **Flooring**. Flooring will be carried as under:-

(i) **Sub Base**. 75mm thick PCC 1:4:8 type D-2 using 40mm stone aggregate over well rammed earth.

(ii) Water proofing vitrified tiles for room of size 600x 600mm with minimum thickness 9 to 10 mm will be laid over 15mm thick screed bed in CM 1:6 over 30mm thick PCC 1:2:4 type using 20 mm graded aggregate B1. Colour and shade of vitrified tiles will be as approved by the consignee. Ceramic/Vitrified vitrified tiles will be of heavy-duty class V and 1st quality of approved make.

(iii) Non-skid Water proofing vitrified tiles for varandah and toilets portion of size 400x 400mm with minimum thickness 7 to 8 mm will be laid over 15mm thick screed bed in CM 1:6 over 30mm thick PCC 1:2:4 type B-1. Colour and shade of vitrified tiles will be as approved by the consignee. Non skid Ceramic vitrified tiles will be of heavy-duty class V and 1st quality of approved make.

(e) **Plinth Protection**. Plinth/Floor level of shelters will be raised up to 45cm higher than the gen ground level. 75mm thick, 75cm wide PCC 1:3:6 type C-2 (using 20mm and 40mm stone aggregate) as in Plinth protection shall be provided over 75mm thick hard core using 40 mm stone aggregate.

17. **Construction Material**. Constr mtrl and form work shall be used for living shelter (SM Barrack) as per store list attached at **Appx A.**

18. **Electrification**. Electrification will be provided as per details att at appendix B.

19. Furniture list att at **Appx C**.

20. Fire extinguisher of capacity 2 Kgs along with its accessories confirming to IS 13849. (Two Nos with each shelter).

21. **Lightening Conductor**. Lightning Conductor will be provided as under and stores are as per Appx E and drg at Appx F (sheet 10/10)

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Tech Specs for Jelly Filled Lightning Conductor

Earthing Electrode. PUF gel earthing electrode of pipe in pipe technology. Two B class IS mild steel pipes, one inside the other, hot dip galvanized with 100-micron coating outside and about 300-micron coating inside, filled with highly conductive and corrosion resistant crystalline mixture and back fill compound around electrode as per IS 3043/ 1987.

(a) Earthing Pits. Excavation shall be carried out in rocky soil for earthing pit of size 0.25m x 0.25m x 2.00m depth incl removal of surplus soil in low laying area

(b) Anchorage. GI wire 12 gauge tied to vertical post and anchored to the grnd using iron spikes. Slope of wire 1:2. There will be three anchors ISI marked.

(c) Down Conductors. Copper strip of size 25 mm x3 mm and length 9m. ISI marked.

(d) Earthing Strip. GI strip 32 mm x 6 mm of length 3m.

(e) Vertical Post. GI pipe dia 40mm of length 6m embedded in foundation concrete block of size 0.45 x 0.45 x 0.75m.

(f) Air Terminal. Lightning air terminal A copper tube 150 cm long x 25 mm dia with five copper prongs of length 15cm each fixed to copper ball of dia 50mm and 4mm thick with complete securing arrangement (ISI Marked), and bottom cover plate 100mm x 100mm x 4mm with 12mm dia hole 4 Nos along with 4 Nos of copper bolts fo size 10mm x 50mm long with nut & washers

Notes.

(a) It should have low resistivity, below 1 Ω-m.
(b) Material should be non toxic, non reactive, non explored and non corrosive.
(c) Material should be thermally stable between temp of -10 0C to 60 0C.
(d) It should not pollute the soil on local water table.
(e) It should be Alkaline with PH value >7 and < 9.
(f) It should have Hygroscopic properties to absorb moisture.
(g) All items will conform to BIS specification as applicable.
(h) Items not in BIS list should conform to manufacturer's specifications. A copy of the manufacturer's literature/specification is to be submitted along with sample.

24. **Gen Notes**: -

(a) All items will conform to BIS specification as applicable.

(b) Items not in BIS list should conform to manufacturer's specifications. A copy of the manufacturer's literature/ specification is to be submitted along with sample.

(c) All Makes and IS code ref are as per **Appx-H.**

(d) **Notwithstanding above, any items of specifications falling short in tech specs or as mentioned above shall be provided by the contractor at the site and complete the said project to ensure functional utilization of the building as per good engineering practices.**

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Appx A

STORE LIST FOR CONST MTRL FOR ONE LIVING SHELTER (SM BARRACK)

Ser	Brief Specification	A/U	Qty
1	Cement OPC 43 Grade in HDPE Bag of 50 Kg each confirming to IS 8112-1989.	Bags	148
2	Aggregate 20mm. Stone Aggregate to be crushed rock or gravel 20mm graded confirming to IS 383-1970 (Second revision) and shall consist or angular fragments and shall be clean, hard, tough, durable and of uniform quality through out the supply qty complete.	Cum	9.52
3	Aggregate 40mm. Stone Aggregate to be crushed rock or gravel 40mm graded confirming to IS 383-1970 (Second revision) and shall consist or angular fragments and shall be clean, hard, tough, durable and of uniform quality throughout the supply qty complete	Cum	16.11
4	Natural sand confirming to IS 383-1970 (Specifications for coarse and fine aggregates. Free from adherent coating, hard, durable, clean and shall not contain clay and impurities such iron pyrites, alkalies, salt, coal, mica, shale or similar laminates or other materials exceeding the specified limits in IS code aggregates for concrete.	Cum	16.95
5	Common building burnt clay bricks sub class 'B' of size 23cm x 11.5cm x 7.5cm with sharp corners, free from organic materials, hard and well burnt with uniform size free from flows and cracks confirming to IS 1077 -1986 (fourth revision). Designation 75 Kgf/Sqcm.	Nos	4837
6	White Cement (Premium quality) (packet 01 Kg).	Kgs	5
7	Water proof floor vitrified tiles of size 600 x 600 mm with minimum thickness of 10 mm of approved Make Somany / Cera / Kajaria. Colour and shade of floor panels will be as approved by the consignee. Vitrified tiles will be of heavy-duty ceramic with slip shield tecnology.	Nos	320
8	Non skid Water proofing vitrified tiles of size 400x400mm x 7- 8 mm thick 1st quality as per approved sample.	Nos	180
9	PUF foundation Reinforcement type F-2 made of 12 mm & 10 mm for steel as main bars and 8 mm dia deformed bars as in stirrups as per drg including cutting bending & binding with mild steel binding wire annealed not less than 0.90mm dia complete all as per drg.	Nos	24
10	Form Work -Type -2: -Timber form work material for columns of size 0.3 X 0.3 X 0.9m and columns footing of size 0.9 X 0.9 X 0.3 m (type F-2) made out of 30mm thick hard wood planks / boardings (wrought in one side) incl making 12mm dia holes all as shown in drawing.	Set	3
11	MS clamp made of MS flat 40 X 4 mm, 200mm long bent in L shape with twoholes of 12mm dia on each end. 04 X Nut & Bolt of size 10 X 50 mm with washer.	Nos	40
12	Rapidite quick setting liquid.	Ltr	148

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Appx B

STORE LIST FOR ELECTRIC ITEMS FOR ONE LIVING SHELTER (SM BARRACK)

Ser	Brief Specification	A/U	Qty
1	PVC ceiling rose 2/3 terminal with PVC square box complete with screws	Nos	26
2	LED Tube light fitting 1 x 18W, 4' long complete with all accessories, including LED tube rod.	Nos	11
3	XLPE insulated PVC seathed (Heavy Duty) armoured multi core cable 16 sqmm 2 core aluminum conductor for working voltage up to & including 1100 volt confirming to IS 1554 (Part - I)/ IS-7098 (Part - I) 1988 with latest amendments.	Rm	50
4	Cable PVC insulated, unsheathed, single core, flexible copper conductor 1100V grade of size 1.5 Sqmm.	Rm	400
5	Cable PVC insulated, unsheathed, single core, flexible copper conductor 1100V grade of size 2.5 Sqmm, conforming to IS 694-1990.	Rm	30
6	Cable PVC insulated and PVC sheathed 1100V grade twin core with stranded aluminium conductor confirming to IS 694 -1990 of size 4 sq mm.	Rm	30
7	Flexible wire PVC insulated twin core twisted of size 22/0.0076 with copper conductor.	Rm	30
8	Modular Switch one way 6 AMPs one module confirming to IS 3854 - 1966.	Nos	66
9	MS Screw 20 mm (Per Pkt-100 Nos) confirming to IS : 723-1972.	Pkt	1
10	MS Screw 35 mm (Per Pkt-100 Nos) confirming to IS : 723-1973.	Pkt	1
11	Insulation tape 2 cm width 10 mtr long ISI marked Make : Steel grip.	Nos	4
12	MCB single pole 230V AC, 50 Hz, 6 Amps, 10KA confirming to IS : 8828-1996 IEC 60898 :2002, suitable for lighting & other domestic loads.	Nos	5
13	MCB single pole 230V AC, 50 Hz, 16 Amps, 10KA confirming to IS : 8828-1996 IEC 60898 :2002, suitable for lighting & other domestic loads.	Nos	1
14	MCB distribution boards in sheet metal enclosure 8 ways double door with blanks confirming to IS 8623.	Nos	1
15	Residual current circuit breaker with over load and short circuit protection DP 32 Amps conforming to IS 12640 - 2 : 2001 & IEC 61009 - 1.	Nos	1
16	Modular switch one way 16 AMP,1 module.	Nos	2
17	Modular socket 6A-2/3 pin combined 2 modules.	Nos	40
18	Modular socket 16A-2/3 pin combined 2 modules.	Nos	2
19	White cover plate with frame 3 module.	Nos	40
20	White cover plate with frame 6 module.	Nos	5
21	Metal flush box 3 Module	Nos	42
22	Metal flush box 6 Module	Nos	5
23	Compact Street Light Luminaire with deep drawn housing complete along with single 36W FR-L.	Nos	3
24	PVC casing caping pipe 25mmx16mm confirming to IS 14927 (Part-ii)	RM	100
25	PVC casing caping L bend 25mm confirming to IS 371 1979.	Nos	35
26	PVC casing caping 'T' 25mm for conduit pipe	Nos	20
27	PVC casing caping elbow 25mm dia confirming to IS 9537 (Part III) -1983	Nos	15
28	PVC casing caping square box 4" x 4"	Nos	17
29	Premium Plastic Body Exhaust fan 250mm sweep with louvers.	Nos	2
30	Premium Plastic Body Wall Mounting Fan 450mm sweep.	Nos	10

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Appx C

LIST OF FURNITURE FOR ONE LIVING SHELTER (SM BARRACK)

Ser	Brief Specification	A/U	Qty
1	**CHARPOY WITH MNF SET:** (a) Single tier sleeping bunks as per drawing attached to be provided to Vendor. The vertical (Head & Leg side in double portion of size 1950x950mm) shall be made of 32 mm (MB) GI med grade pipe. The rectangular sleeping portion of bunkwhere cushion placed, shall be made of MS Angle 40x40x5mm of size 1950 x 950mm as mentioned in attached drawing. The Bunk should have provision to place a removable type matress of size 1830 mm x 910 mm to angle iron frame with adequate holes pre drilled in the frame. All GI pipes shall be medium grade ISI mark and provided with two coats of superior quality Spray paint over a coat of red oxide primer. (b) One No single piece cushion made of 100 mm thick "PUF" foam of density 40 Kg / cum as applicable for sleeping cushions of standard of size 1830 mm x 910 mm. The PUF foam shall be pasted on 12 mm thick Ply-Wood (BWR). The 'PUF' foam pasted on the ply-wood shall be enclosed vinyl coated laminated upholstery cloth (Rexene). Makes: PUF - Sleepwell/ Kurlon Ply-Wood- Kitply / National / Greenply	Nos	16
2	Waste Bin 120 Ltr Dim 480 X 550-Top O.D. Colour: Dark Brown Make: Nilkamalor equivalent	Nos	2
3	Plastic Chair with Hand rest, model Dynasty Dim: 570 W X 593D x 890H. Colour: Dark Brown Make: Nilkamal or equivalent quality	Nos	6
4	Cup board steel 595 w x 354d x 1500 H with provn of hanging of shirt / coat, coloure as per user reqmt make Godrej or equivalents	Nos	16
5	Looking Mirror 1200X750X3.5mm thick with plastic decorative frame. Make: modi guard/Saint Gobin/ Atul Glass or equivalent makes & quality	Nos	2

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Appx E

STORE LIST FOR ONE JELLY FILLED LIGHTNING CONDUCTOR

Ser	Nomenclature	A/U	Qty
1	PUF gel earthing electrode of pipe in pipe technology. Two B class IS mild steel pipes, one inside the other, hot dip galvanised with 100-micron coating outside and about 300-micron coating inside, filled with high conductor and corrosion resistant crystaline mixture and back fillcompound around electrode as per IS 3043/ 1987	Set	1
2	GI pipe 100 mm dia medium grade as per IS specification 1239 (part -I) 1990 ISI marked length 2 mtr	Nos	1
3	Back fill compound	Kgs	25
4	MS earth pit cover of size 30 cm x 30 cm with handle	Nos	1
5	Aluminium strip 25 x3 mm x 9m	Nos	1
6	Iron spikes 16 " long complete as directed and specified by buyer	Nos	3
7	GI Strip 32 x 6mm of length 3m	Nos	1
8	GI Nipple 20 mm dia and 10 cm long IS - 1879	Nos	1
9	GI Reducer socket 40 x20mm ISI marked	Nos	1
10	Lightning air terminal A copper tube 150 cm long x 25 mm dia with five copper prongs of length 15cm each fixed to copper ball of dia 50mm and 4mm thick with complete securing arrangement (ISI Marked), and bottom cover plate 100mm x 100mm x 4mm with 12mm dia hole 4 Nos along with 4 Nos of copper bolts fo size 10mm x 50mm long with nut & washers	Set	1
11	MS clamp 25 x 3mm with nut and bolt complete	Set	10
12	GI wire 12 gauge conforming to IS 2062 /1991	Kgs	3
13	Earth Augur (One per five LC)	Nos	1
14	PVC Pipe 3m long 6" dia	Nos	1
15	User manual	Nos	1
16	Tester set (Meger) for carrying out serviceability check along with manual (one per five LC)	Nos	1
17	GI Pipe medium grade of 40mm dia, 6 mtr long and one equal socket of 40mm dia welded with MS plate of size 100mm x 100mm x 4mm thick with 04 Nos hole of 12mm dia at one end suitable to fitting with copper pipe as per IS specifications 1239 (part-I) 2004 ISI marked.	Set	1
18	Supply of Cement OPC 43 grades (ISI Mark) confirming to IS- 8112 (2013), in bags of 50 Kg each. The cement sample will be sent to command testing laboratory and should meet all the requisite parameters of IS code.	Bags	0.5
19	Natural sand confirming to IS 383-1997 (Specifications for coarse and fine aggregates. Free from adherent coating, hard, durable, clean and shall not contain clay and impurities such iron pyrites, alkalies, salt, coal, mica, shale or similar laminates or other materials exceeding the specified limits in IS code aggregates for concrete.	Cum	0.5
20	Aggregate 20mm. Stone Aggregate to be crushed rock or gravel 20mm graded confirming to IS 383-1997 (Second revision) and shall consist or angular fragments and shall be clean, hard, tough, durable and of uniform quality through out. Stone Aggregate 20 mm conforming to IS 383-1997.	Cum	0.25
21	GI pipe 40 mm bore, 2M long as per IS: 1239	Nos	1
22	50 mm bore GI Pipe sleeve	RM	2
23	Crystaline Conductive Mixture (CCM)	Kgs	3.5

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Staff Officer-I (Works)
for Accepting Officer

SCHEDULE 'A' (PART-II)

Unit/Fmn : 42 AR/HQ 7 Sect AR, C/o 99 APO

Name of work : "**Improvement of existing infrastructure & allied works for COB S/ Chingnyu of 42 AR"**

TECHNICAL SPECIFICATIONS FOR PUF SHELTER FOR OFFICER/JCO LIVING

1. PUF shelter made up of steel structure and PUF panels in wall as per drawings attached and technical specifications given below. The main and partition walls will be made up of 60 mm thick PUF insulated panels. The false ceiling will be provided with 40 mm thick PUF insulated panels as specified below. Roof covering will be provided with 0.63 mm thick PPGI sheets and 01 x MS Stand and 01 x Lighting Conductor will be provided with each shelter.

2. **Design Perimeters**

(a)	Sesimic Zone	-	Zone V
(b)	Wind speed	-	55 m/s ((As per IS – 875)
(c)	Temperature	-	(-) 2^0 to (+) 50^0 C
(d)	Roof slope	-	Approx 1:2 as per drg att

3. **Dimensions**. All as indicated in the drawings mentioned at Para 1 above.

4. **Details of Structural Members**. The steel structure for the shelters will

(a) **Columns**. The main columns (10 Nos) will be made out of ISI marked R H steel section of size 122 x 61 x 3.60 mm (9.67Kg/Rm) conformingto IS 4923: 1997. The height of column is 2700 mm. MS base plate of size 250 x 250 x 8 mm (62.80 Kg/Sqm) and top plate of size 200 x150 x 8 mm (62.80 Kg/Sqm) will be welded to the columns. All top and base plates will be pre-drilled with 4 Nos 18 mm dia holes. Baseplates will be provided with 4 Nos 16 mm dia 450 mm long holding down bolts each, while top plates will be provided with 4 Nos 16 mmdia normal bolts.

(b) Rafter. Made up of ISI marked RH steel section of size 96 x 48 x 4 mm (8.22 Kg/Rm) thick with MS plate of size 90 x 190 x 6 mm (47.10 Kg/Sqm) thick welded to both ends of rafter. MS plates will be provided with 04 Nos holes of 18 mm dia to join with principal rafter plate and column.

(c) **Truss**. The principal rafter and the bottom chord will be fabricated out of ISI marked RH steel sections of size 96 x 48 x 4 mm (8.22 Kg/Rm) with 1:2 slope. All other strut members will be fabricated outof RH steel sections of size 66 x 33 x 2.90 mm thick (4.07 Kg/Rm).

(d) Purlins.The purlins (10 Nos) will be fabricated out of ISI marked RH steel sections of size 96 x 48 x 4 mm (8.22 Kg/Rm) with 6 mm thick cleats welded at both the ends.

(e) Gable End. Gable End will be covered with same panels as of wall upto bottom chord of truss. The triangular truss portion will also be covered with insulated PUF pannel.

(f) Sunshades. Suitable sunshades made out of 0.60 mm thick PPGI sheet fixed with angle iron frame of ISA 40 x 40 x 5mm (3.0 Kg/Rm) will be provided to all external windows and doors. The minimum projection for the sunshades will be 450 mm for window and 600mm for doors and 300mm wider than the width of the opening.

5. **Roof**

(a) The roof will be provided with 0.63 mm thick green pattern colour coated steel profile sheets. Sheet covering will be fixed with using hot dip zinc coated self-drilling hexagonal washer head fasteners. The sheets shall be laid with minimum end and side lap of 150 mm. Ridge shall be covered by 0.63 mm thick green pattern colour coated steel sheet.

(b) 3 mm thick polycarbonate profile sheet, UV protected ER clear having similar profile as colour coated sheet of roof shall be provided for skylight, the skylight area will be 10% of total roof area. Make:Make:PC Lite/Lexon/Bayer/Garware or equivalent marked (Test certificate to be submitted by vendor with supply of material).

(c) **Roof Projection**. The roof will have minimum projection 450 mm all around. Purlins will also be extended in the roof at the eavesand at gable roof extension (outside the structure) (a) Roof members

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and Columns will be designed for 1m standing snow over roof; the steel should be conforming to IS – 1161 of 1979 or IS 2062 - 1984. The roof will be provided with 0.63 mm PPGI colour coated heets. Sheet covering will be fixed using hot dip zinc coated self drilling hexagonal washer head fasteners. Ridge shall be covered by 0.63 mm thick green colour coated steel sheetof size 450mm wide. The sheets shall be laid with minimum end and side lap of 150 mm.

6. **Wall Pannels.**

(a) The main and partition walls will be made up of 60 mm thick PUF insulated Wall Panels. The Panels will be made of 0.50 mm thick colour coated steel sheets on both side with 60 mm thick layer of rigid CFC free close cell polyurethane foam (Density 40 Kg + 2 Kg / Cum) insulation. The wall panels will be provided with tongue and groove joint and will be with cam lock systems for interlocking. All materials required for the manufacture of shelter will be new and shall comply with relevant Bureau of India Standard specification. Base and top channel of size 30 x 65 x 1.25 mm thick will be provided for walls.

(b) **Truss**. The principal rafter and the bottom chord will be fabricated out of RH steel sections of size 96 x The PUF Insulation material in the panel will have fire retarding and self-extinguishing properties as per any international standard B2 DIN 410 2 Part I/ BS- 4735 Self Ext.

(c) **GI Metal Skin PUF Panels**.

(i) **Thickness of Skin**. 0.50mm thick hot dipped galvanized steel sheets on inner and outer side with 50 – micron thick PVC guard film on the finished surface only for protection against scratches during handling and transportation. Base metal of GI Skin CRCA as per IS-513, Galvanized as per GR -120, IS-277

(ii) The panels will be insulated with PUF Foam (Density 40Kg + 2 Kg / cum).

(iii) These panels are to be manufactured using high pressure dispensing machine of required capacity to inject specifiedamount of PUF chemical into the cavity of full panel in one shotnot exceeding 25 sec duration. This is to ensure that the liquid PUF mixture is sprayed into the cavity before the foamingreaction starts so that the insulation core of the panel is formedin one piece and provides desired structural and physical properties. The bulk density of insulation should be 40kg/cum and the impending machinery should be equipped with a PLC controlled panel for monitoring and controlling the injection rate to assure specified uniform density requirements.

(d) The pre coated GI sheet should have minimum coating of 4-5 micron epoxy primer and 25 micron polyester top coat on the finished surface and 7-8 micron primer alkyd backer on backside, which is bounded to the polyurethane foam. The pre coated GI sheet should conform to IS-14246-1995 with manufacturer test certificates conforming above specification.

(e) The PUF insulated core of these composite panels will havethe following properties: -

(i) Density- 40 + 2 Kg per cum.
(ii) Compressive Strength at 10% deformation - 2.10 Kg /cm2
(iii) Tensile Strength - 3.7 Kg / cm2
(iv) Bending Strength - 4.0 Kg / cm2
(v) Adhesion Strength - 2.90 Kg /c m2
(vi) **Dimensional Stability (48 hours)**.
(aa) 25 0 C - 0.10%
(ab) + 38 0 C & 90% RH. - 0.10%
(ac) + 100 0 C- 0.40%

(vii) Close cell content- 90 – 95%

Thermal conductivity at 10 0 C-0.018 k-cal/ m - hr0 C(Design value 0.020 k-cal/m-hr 0 C or 0.023W/m-K)

(ix) Fire Resistant - (Horizontal Extent of burn BS 4735) < 125 mm. (xi) Self Extinguishing ASTM D 1692- Passes (Fire retarded foam chemical) Not easily ignitable as per BS: 476 Pt 5 Class- I as per BS: 476 pt 7

(x) Water Absorption - 0.20% volume at 100% RH

(xi) (Water Vapour Permeability - 0.08 – 0.12 gms/hr/m2

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(f) The Iso-cyanate and polyol liquid components used for in situ process of polyurethane foam for panels should be accompanied with co-relating manufacture test certificate indicating batch nos, date of manufacture and expiry dates.

(g) All panels will be moulded in place using the above in-situ process after placing them in a hydraulic press with heated aluminum pattern and corner moulding so as to attain the desire finish, bonding and structural properties. All panels will be manufactured in single piece as per approved panel layout drawingsusing the above materials and manufacturing process. Puf panels, being used in wall /ceiling / any other location will betested for its physical / chemical/mechanical properties from any IIT College /Approved Govt Engineering College / Laboratory and all testing charges to this effect will be borne / paid by the supplier. This test certificate will be produced by supplier to consignee while taking approval of pilot sample.

(h) The consignee can carry out inspection of any panel from the lot at manufacturer premises to ensure that above chemical and physical properties.

(j) Pre coloured PUF panels will have green pattern on external walls and white/off white finish on internal wall.

7. **False Ceiling**.

(a) The false ceiling will be made up of 40 mm thick PUF insulated Panels. The Panels will be made of 0.50 mm thick hot dipped ISI marked galvanized steel sheets on both side with 40 mm thick layer of rigid CFC free close cell polyurethane foam (Density 40 Kg + 2 Kg / Cum) insulation. The false ceiling panels will be provided with tongue and groove or lip locking joint for interlocking. False ceiling will be supported with the help of inverted CRCA Tee Section 50 x 50 x 6 mm thick (4.40 Kg/Rm) and L- section of 50 x 50 x 5mm thick (3.80 Kg/Rm) fixed appropriately to the Truss.

(b) Translucent multiwall polycarbonate sheet, UV protected, 5 mm thick,white colour to be provided in false ceiling @ 10% of total false ceiling area directly below the poly carbonate roof sheet Make : PC Lite/ Lexon/ Bayer/Garware.

8. **Openings**.

(a) **Windows**. Six numbers windows of size 1175mm x1175mm of aluminium anodized of extrusions powder colour coated aluminum section three track with three sliding shutters (on rollers) with following section including joining cleats, glazing clips, rubber packing, snap beading and other necessary builders hardware as required all as specified and shown in drawing.

9. **Frame**.

(a) Top and side members for three track frame of size 92.00 x 31.75 x 1.5mm (Weight 1.060 Kg/m. (Model 20831 ofJindal/Equivalent as per IS 1948-1961.

(b) Three track bottom rail of frame for sliding of shutter of size 92.00 x 31.75 x1.5mm (weight 1.248 Kg/m model 20832 ofJindal/Equivalent as per IS 1948-1961.

10. **Shutter (Three Nos)**.

(a) Top and Bottom rail of sliding shutter of aluminium of size40mm x18mm x 1.55mm (weight 0.547 Kg/m). (Model 20736 ofJindal/Equivalent as per IS 1948-1961.

(b) Side rail of sliding shutter with handle and self locking arrangement section of size 40mm x 18mm x 1.55 mm (Weight0.547Kg/m (Model 20738 of Jindal/Equivalent as per IS 1948- 1961.

(c) Interlocking rail of sliding shutter of size 40mm x 18mm x 1.45 mm (Weight 0.607 Kg/m .(Model 20737 of Jindal/Equivalent as per IS 1948-1961.

(d) Two sliding shutter to be provided with glazing of 6 mm clear grade LTED 6/2RS, 1.3 mm polycarbonate sheet of make GI structure product.

(e) One shutter to be provided with stainless steel wire meshof 0.36 mm nominal dia of wire and average width of aperture 1.40 mm, duly fixed with U clip on all side to the shutter.

(f) Centre rail for sliding interlocking shutter section size 39mm x 20mm to be provided.

(g) Shutter should have rollers on top and bottom for smooth operation.

11. **Door Frame**. 02 Nos of Aluminium door frame top and side members of frame size 110mm x 45mm x 2.0 mm (weight 2.16 Kg/mto be provided).

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12. **Main Doors D & D1**. Seven numbers Single shutter aluminium doors of which D=1100x2100mm (Two Numbers) and D1=750x2100mm size (Five Numbers) shall be provided with each shelter. The doors D and D1 shall be as per specification given below with aluminium beading and rubber gasket of suitable size including fixing of 02 Nos aluminium handle of size 150mm, 02 Nosaluminium tower bolt of size 200mm,100mm four lever vertical brass mortise lock with three keys Make Godrej/Harison/ Link fixed with rawl plug complete including necessary joining cleats, glazing clips, rubber packaging, snap beading, 04 Nos Hinges of 6" size and other builders hardware as required all as specified and shown in drawing . The main doors D and D1 will have the following:-

(a) Vertical style of door for both sides of size 85mm x 44.45mm x 2.00mm (weight 1.417 Kg/m).Model 19560 of Jindal/Equivalent as per IS 1948-1961. (i) Vertical style of door for both sides of size 85 x 44.45 x 2.00mm (weight 1.417 Kg/m).Model 19560 of Jindal/Equivalent as per IS 1948-1961.

(b) Top and bottom rail of door of size 95.25mm x 44.45mm x 2.00mm (weight 1.511Kg/m).Model 19505 of Jindal/Equivalent as per IS 1948-1961.

(c) Middle rail of door of size 100.00 x 44.45 x 2.00 mm (Weight 2.145 Kg/m). Model 19564 of Jindal/Equivalent as per IS 1948-1961.

(d) Middle rail of door of size 100.00 mm x 44.45 mm x 2.00 mm (Weight 2.145 Kg/m). Model 19564 of Jindal/Equivalent asper IS 1948-1961.

13. **Fly Proofing Door**. 02 Nos Fly proof Doors of dimension 1100 x 2100 mm will be provided with each shelter, alongside main Door D only. The fly proof door shall be as per specification given below with aluminium beading and rubber gasket of suitable size including fixing of 02 Nos aluminium handle of size 150mm,02 Nos aluminum tower bolt of size 200mm,100mm incl necessary joining cleats, glazing clips, rubber packaging, snap beading, 04 Nos Hinges of 6" size and other builders hardware as required all as specified. The fly proof Door D will have the following:-

(a) Vertical style of fly proof door for both sides of aluminium size 85 mm x 44.45 mm x 2.00mm (weight 1.417 Kg/m). In addition to above an additional middle vertical style for fly proofshutter only will be provided of size 50 mm x 44.45 mm x 2 mm (weight 0.85 Kg/m). Model 19560 of Jindal/Equivalent as per IS 1948-1961.

(b) Top and bottom rail of door shutter and fly proof shutter ofsize 95.25 mm x 44.45 mm x 2.00mm (weight 1.511Kg/m).Model 19505 of Jindal/Equivalent as per IS 1948- 1961.

(c) Middle rail of door shutter and fly proof shutter of size 100.00 mm x 44.45 mmx 2.00 mm (Weight 2.145 Kg/m). Model19564 of Jindal/Equivalent as per IS 1948-1961.

(d) The fly proof shutter shall be provided on the out side of the door shutter using stainless steel wire mesh of 0.36 nominaldia of wire and average width of aperture 1.40mm. Fly proof shutter shall be provided with suitable aluminium extruded section body hydraulic door closer Make : Godrej/Modi/Kich.

14. **Ventilators**. Two numbers ventilator of size 450 x 300 mm of aluminium anodized of extrusions powder colour coated of suitable profile section shall be provided with each shelter. Ventilator will have full stainless steel fly proof mesh of 1.40 mm aperture and willhave top hinged glazed polycarbonate sheet shutter on inside

15. **Curtain Rod Arrangement**. 25 mm diameter mild ISI marked steel wood finish decorative type drapery rod with end caps, wooden bracket, wooden ring @ 12 cm distance centre to centre fixing arrangements will be provided for all openings (doors and windows). The drapery rod should be minimum150 mm longer than width of the opening on both sides.

16. **Peg Set**. Four numbers of steel peg sets of six to be provided

17. **Workmanship**.

(a) **Connection**. Welded connection will be provided unless otherwise specified in the drawings. The welded connections will beconformed to IS 806-1968.

(b) **Fabrication**. The general provisions in section 11 of IS 800 of 1984 will apply to all types of steel being used for fabrication.

(c) All steel members will be treated with two coat of synthetic enamel paint over a coat of red oxide zinc chromate primer by manufacturer before supply.

(d) **Various Fasteners and Fittings**. Fasteners and fittings of mild steel shall be supplied unless otherwise specified in and shall be fixed where required. Fastening means will be provided for the items to be fitted at the time of erection. 10% spare nuts, bolts, and washers will be provided per shelter. The fasteners supplied shall conform to relevant BIS specification.

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18. **Finishes**. All steel work will be treated with two coat of synthetic enamel paint over a coat of red oxide zinc chrome primer. 12 litres of synthetic enamel paint with appropriate color stainer, 4 Ltr red oxide primer per shelter will be provided in sealed containers for retouching andpainting after erection. Paint material will be of Ist quality.

19. **Flashing**. Suitable flashing with 0.60mm thick pre-coated sheet of matching colour with wall panels will be provided at all joints between roofand wall corner. The gaps in window and other opening should be minimized by providing tee flushing.

20. **MS Stand.** One MS Stand with each shelter for water tanks 1000 ltr capacity shall be fabricated from MS angle 50 x 50 x 6 mm (4.50 Kg/Rm) size for vertical legs, flat iron 40 x 8 mm (2.51 Kg/Rm) for vertical legs bracings, top frame of angle iron 40 x 40 x [6 mm (3.50 Kg/Rm) with MS sheet of 14 gauge thickness (15.70 Kg/Sqm) fixed on top all as per drg att and all angle iron used in MS Stand shall be conforming to IS – 808 (Part V) of 1976. Four angles at each corners at top of size 50X50X6mm be provided vertically up height of each angle be 300mm. The mild steel stand will be provided with two coats of green paint over a coat of red oxide primer. of red oxide primer. arrangement (ISI Marked), and bottom cover plate 100mm x 100mm x 4mm with 12mm dia hole 4 Nos along with 4 Nos of copper bolts fo size 10mm x 50mm long with nut & washers.

21. **Toilet Block.** 2 Nos of toilet block of 2660 x 1800 mm will be provided as shown in drg. The toilet block will be provided with 4 Nos of door D1 and two nos of 200 mm dia opening for plastic body exhaust fan 200 mm sweep will be provided

22. **Constr Mtrl**. Constr material and form work shall be used for OJ2R shelter as per store list attached at **Appx 'A'** as per following specifications:-

(a) **RCC Column, Foundation and Footing**. An RCC 1:2:4 will be provided in column, foundation and column footing over 100mm thick PCC 1:4:8 type using 20 mm stone aggregate as in sub base.

(b) Plinth : Plinth shall be of brick wall 230mm thick built in CM 1:6 up 450 mm height above ground level and 300mm below ground level over 75mm thick PCC 1:4:8 type D-2 (using 40mm graded aggregate)

(c) **Plastering**. 15mm thick plaster in CM 1:4 will be provided on exposed surface of brick wall above ground level.

(d) **Flooring**. Flooring will be carried as under.

(i) **Sub Base**. 75mm thick PCC 1:4:8 type D-2 using 40mm stone aggregate over well rammed earth.

(ii) Water proofing vitrified tiles for room of size 600x 600mm with minimum thickness 9 to 10 mm will be laid over 15mm thick screed bed in CM 1:6 over 30mm thick PCC 1:2:4 type B-1 using 20 mm graded aggregate Colour and shade of tiles will be as approved by the consigneee of heavy duty class V and 1st quality of the as per approved sample.

(iii) Non-skid ceramic/vetrified vitrified tiles Water proofing vitrified tiles for varandah of size 600x600mm with minimum thickness 7 to 8 mm will be laid over 15mm thick screed bed inCM 1:6 over 30mm thick PCC 1:2:4 type B-1 (using 20 mm graded aggregate). Colour and shade of tiles will be as approved by the consigneee. Non skid Ceramic tiles will be of heavy duty class V and 1st quality as per approved sample.

(e) **Plinth Protection:** Plinth/Floor level of shelters will be raised up to 45cm higher than the gen ground level. 75mm thick, 75cm wide PCC 1:3:6 type C-2 (using 40 mm graded aggregate) as in Plinth protection shall be provided over 75mm thick hard core of 40 mm stone aggregate.

23. **Min Electrification**. Min electrification will be provided as per **Appx B** att.

24. **Water Supply and Sanitary Fittings**. Water supply and Sanitary fittingitems will be provided with each shelter as per stores list att at **Appx C**.

25. Furniture list is att as Appx D.

26. Fire extinguisher of capacity 2 Kgs along with its accessories confirming toIS 13849. (Two Nos with each shelter)

27. **Lightning Conductor**. Lightning Conductor will be provided as under andstores are as per **Appx E** and drg at Appx G

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Tech Specs for Jelly Filled Lightning Conductor

Earthing Electrode. PUF gel earthing electrode of pipe in pipe technology. Two B class IS mild steel pipes, one inside the other, hot dip galvanized with 100-micron coating outside and about 300-micron coatinginside, filled with highly conductive and corrosion resistant crystalline mixture and back fill compound around electrode as per IS 3043/ 1987.

(a) Earthing Pits. Excavation shall be carried out in rocky soil for earthingpit of siz2e 0.25m x 0.25m x 2.00m depth incl removal of surplus soil in lowlaying area.
(b) Anchorage. GI wire 12 gauge tied to vertical post and anchored to thegrnd using iron spikes. Slope of wire 1:2. There will be three anchors ISI marked.
(c) Down Conductors. Copper strip of size 25mmx3mm and length 9m.ISI marked.
(d) Earthing Strip. GI strip 32 mmx6 mm of length 3m.
(e) Vertical Post. GI pipe dia 40mm of length 6m embedded in foundationconcrete block of size 0.45 x 0.45 x 0.75m.

(f) Air Terminal. Lightning air terminal A copper tube 150 cm long x 25 mm dia with five copper prongs of length 15cm each fixed to copper ballof dia 50mm and 4mm thick with complete securing arrangement (ISI Marked), and bottom cover plate 100mm x 100mm x 4mm with 12mm diahole 4 Nos along with 4 Nos of copper bolts fo size 10mm x 50mm long with nut & washers

Notes.
(a) It should have low resistivity, below 1 Ω-m.
(b) Material should be non toxic, non reactive, non explored and noncorrosive.
(c) Material should be thermally stable between temp of -10 0C to 60 0C.
(d) It should not pollute the soil on local water table.
(e) It should be Alkaline with PH value >7 and < 9.
(f) It should have hygroscopic properties to absorb moisture. All items will conform to BIS specification as applicable. Items not in BIS list should confirm to manufacturer's specifications. A copy of the manufacturer's literature/specification is to be submittedalong with sample.

28. **Notes**.
(a) All items will conform to BIS specification as applicable.
(b) Items not in BIS list should confirm to manufacturer's specs. A copy of manufacturer's literature/ specs is to be submitted along withsample.
(c) All Makes and IS codes as per **Appx H.**
(d) Notwithstanding above, any items of specifications falling short in tech specs or as mentioned above shall be provided by the contractor at the site and complete the said project to ensure functional utilization of the building as per good engineering practices.

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Appx A

STORE LIST OF CONSTR MTRL FOR ONE OFFR/JCO LIVING SHELTER

Ser No	Brief Specification	A/U	Total Qty
1	Cement OPC 43 Grade in HDPE Bag of 50 Kg each confirming to relevant stds.	Bag	85
2	**Aggregate 20mm**. Stone Aggregate to be crushed rock or gravel 20mm graded confirming to relevant IS and shall consist or angular fragments and shall be clean, hard, tough, durable and of uniform quality through out	Cum	5.54
3	**Aggregate 40mm**. Stone Aggregate to be crushed rock or gravel 40mm graded confirming to relevant IS and shall consist or angular fragments and shall be clean, hard, tough, durable and of uniform quality through out	Cum	11.05
4	Natural sand confirming to relevant IS (Specifications for coarse and fine aggregates. Free from adherent coating, hard, durable, clean and shall not contain clay and impurities such iron pyrites, alkalies, salt, coal, mica, shale or similar laminates or other materials exceeding the specified limits in IS code aggregates for concrete.	Cum	9.62
5	Bricks, common burnt clay building bricks sub class 'B' modular size designation 75Kgf/cm2, best locally available with sharp corners, free from organic materials, hard and well burnt with uniform size, free from flow & cracks confirming to relevant IS.	Nos	3594
6	White Cement (packet 01 Kg)	Kgs	5.25
7	Water proof floor vitrified tiles of size 600 x 600 mm with minimum thickness of 10 mm of approved Make Somany / Cera / Kajaria. Colour and shade of floor panels will be as approved by the consignee. Vitrified tiles will be of heavy duty ceramic with slip shield tecnology.	Nos	127
8	Non skid Water proofing vitrified tiles of size 400x400mm x 7- 8 mm thick 1st quality of the as per approved sample.	Nos	120
9	PUF foundation Reinforcement type F-2 made of 12 mm & 10 mm for steel as main bars and 8 mm dia deformed bars as in stirrups as per drg including cutting bending & binding with mild steel binding wire annealed not less then 0.90 mm dia complete all as per 61 Engr Regt Drg No PreFab Reinf/Wdn /F-2/ OWC sheet 1/1 dt 20 May 17.	Nos	10
10	**Form Work Type -2**.Timber form work material for columns of size 0.3 X 0.3 X 0.9m and columns footing of size 0.9 X 0.9 X 0.3 m (type F-2) made out of 30mm thick hard wood planks / boardings (wrought in one side) incl making 12mm dia holes all as shown in drawing : 61 Engr Regt Drg No From Work /F-2/OWC, sheet 1/1 & 2/2 dt 20 May 17.	Set	4
11	**MS Clamp**. Made of MS flat 40 X 4 mm, 200mm long bent in L shape with two holes of 12mm dia on each end. 04 X Nut & Bolt of size 10 X 50 mm with washer.	Nos	48

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Appx B

STORE LIST OF ELECTRIC ITEMS FOR ONE OFFR/JCO LIVING SHELTER

Ser No	Brief Specification	A/U	Qty
1	PVC ceiling rose 2/3 terminal	Nos	17
2	LED Tube light fitting 1 x 18W, 4' long complete with all accessories, includingLED tube rod	Nos	11
3	XLPE insulated PVC seathed (Heavy Duty) armoured multi core cable 16 sqmm2 core aluminum conductor for working voltage up to & including 1100 volt confirming to relevant IS.	Rm	50
4	Cable PVC insulated, unsheathed, single core, flexible copper conductor 1100V grade of size 1.5 Sqmm	Rm	210
5	Cable PVC insulated, unsheathed, single core, flexible copper conductor 1100Vgrade of size 2.5 Sqmm, confirming to relevant IS.	Rm	40
6	Cable PVC insulated and PVC sheathed 1100V grade twin core with stranded aluminium conductor confirming to relevant IS of size 4 sq mm	Rm	40
7	Flexible wire PVC insulated twin core twisted of size 22/0.0076 with copper conductor.	Rm	30
8	Modular Switch one way 6 AMPs one module confirming to relevant IS.	Nos	23
9	MS Screw 20 mm (Per Pkt-100 Nos) confirming to relevant IS	Pkt	1
10	MS Screw 35 mm (Per Pkt-100 Nos) confirming to relevant IS	Pkt	1
11	Insulation tape 2 cm width 10 mtr long ISI marked.	Nos	4
12	MCB single pole 230V AC, 50 Hz, 6 Amps, 10KA confirming to relevant IS suitable for lighting & other domestic loads.	Nos	5
13	MCB single pole 230V AC, 50 Hz, 16 Amps, 10KA confirming torelevant ISsuitable for lighting & other domestic loads.	Nos	1
14	MCB distribution boards in sheet metal enclosure 8 ways double door withblanks confirming to relevant IS	Nos	1
15	Residual current circuit breaker with over load and short circuit protection DP 32Amps confirming to relevant IS.	Nos	1
16	Modular switch one way 16 AMP,1 module M	Nos	4
17	Modular socket 6A-2/3 pin combined 2 module	Nos	2
18	Modular socket 6A/16A-2/3 pin combined 2 module	Nos	4
19	White cover plate with frame 3 module	Nos	5
20	White cover plate with frame 4 module	Nos	5
21	White cover plate with frame 1 module	Nos	5
22	Metal flush box 3 Module	Nos	5
23	Metal flush box 4 Module	Nos	5
24	Metal flush box 1 Module	Nos	5
25	Compact Street Light Luminaire with deep drawn housing complete along withsingle 36W FR-L (LED based)	Nos	3
26	PVC casing caping pipe 25mmx16mm confirming to relevant IS	RM	80
27	PVC casing caping L bend 25mm confirming to relevant IS	Nos	20
28	PVC casing caping elbow 25mm dia confirming to relevant IS	Nos	20
29	PVC casing caping 'T' 25mm for conduit pipe	Nos	15
30	PVC casing caping square box 4" x 4"	Nos	39
31	PVC Body Exhaust fan 250mm sweep with lowers.	Nos	2
32	Plastic Body Wall Mounting Fan 400mm sweep	Nos	4
33	Storage electrical water heater (Geyser) capacity 15 Ltr	Nos	2
	(a) PVC connection 15mm : 450 mm long		
	(b) Brass angle Cock 15mm		
	(c) GI TEE 15mm confirming to relevant IS		
	(d) Brass bib cock 15 mm confirming to relevant IS		
	(e) Switch socket combination 3 pin 16 Amp		
	(f) GI pipe medium grade 15mm dia.		
34	Air conditioner 1.5 T capacity incl all fittings make Voltas / Hitachi equivalent make		

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Appx C

STORE LIST OF WATER SUPPLY ITEMS FOR ONE OFFR/JCO LIVING SHELTER

Ser No	Brief Specification	A/U	Qty
1	3 Layer PP-R Polypropylene random copolymer) Pipes SDR 7.4 UVstablised and 20 mm dia, thickness of wall 2.20 confirming to relevant IS	RM	30
2	20mm elbow suitable for 20 mm dia PP-R pipe confirming to relevant IS	Nos	15
3	20mm socket suitable for 20mm dia PP-R pipes confirming to relevant IS	Nos	6
4	20mm equal Tee suitable for 20mm dia PP-R pipe confirming to relevant IS	Nos	8
5	20mm Union suitable for 20mm PP-R pipes confirming to relevant IS	Nos	8
6	GI reducer Socket 15/20mm	Nos	8
7	GI reducer Elbow 15/20 mm	Nos	3
8	PP-R End Plug 20mm confirming to relevant IS.	Nos	2
9	PP-R Pipe clamps suitable for 20mm piping	Nos	20
10	CP stop cock 20mm confirming to relevant IS.	Nos	6
11	CP Bib cock 20mm with flange confirming to relevant IS.	Nos	2
12	PP-R Tank Connector 20mm with check nut and washer	Nos	1
13	Rotational moulded polyethylene water storage tank double layer (cylindrical vertical tank) 1000 ltrs capacity as per relevant IS along with manhole lid of same material of the tank and shall conforms to clause 12 of relevant IS Minimum weight of tank without lid should be 33.0 kgs. (ISI Marked)	Nos	1
14	Snow white colour European WC with 'S' or 'P' Trap concealed of size 650x405x770mm cat no. 3100, alongwith cistern cat no. 3200, seat cover (cania) cat no. 2308 and twin flush fittings cat no 2200 confirming to relevantIS.	Set	2
15	Snow white colour wash hand basin of size 610 x 480mm cat no. 1066 alongwith full pedestal cat no. 1166 confirming to relevant IS.	Set	2
16	600mm x 450mm looking mirror cabinet with PVC moulded frame.	Set	2
17	Over head shower without arm confirming to relevant IS.	Nos	2
18	Soap dish for one soap confirming to relevant IS.	Nos	2
19	Towel rail CP 750mm long with fixing clips complete confirming to relevant IS	Nos	2
20	Towel ring	Nos	2
21	Toilet paper holder	Nos	2
22	Health faucet with 1.5 Mtr tube and hook	Set	2
23	CP Pillar Cock 20mm	Set	2
24	PUF Man hole cover 6' x 4' made of ISA 40x40x6mm frame and MS black Sheet of 1.40mm thick complete including two coats of red oxide primer on inside surfaces and two coats of Black Japan paint over a coat of red oxide primer on top surfaces.	Nos	1
25	White lead (safeda)	Kg	1.00
26	Thread cotton ball 100m long	Bdls	2
27	110 x 110mm Nahani trap with jali	Nos	2
28	110mm dia UPVC pipe 3 Mtr long single socketed with cowl	RM	16
29	110mm dia UPVC single Tee	Nos	2
30	4" dia UPVC bend	Nos	4
31	110mm dia UPVC SWR pipe single socketed pipe(Type A) in any length withrubber joint	RM	2

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Appx D

STORE LIST OF FURNITURE ITEMS FOR ONE OFFR/JCO LIVING SHELTER

Ser No	Brief Specification	A/U	Total Qty
1	**Single-Tier Sleeping Bunks**. (a) PUF single sleeping bunk made of MS hollow section of size 25 mm x 25 mm x 2.65 mm thick and angle iron of size 40 mm x 40 x 5 mm including cushioned platform as per drg attached with this quotation. Cleat of MS rectangular box of size 25 mm x 25 mm x 75 mm long to be welded. Angle Iron frame will be fixed to hollow section vertical frame with nuts and bolts. The bunk should have provisions to place a removable type mattress of size 1830 mm x 910 mm to angle iron frame with adequate holes pre drilled in the frame. The outer size of the bunks will be 1840 mm x 920 mm horizontally and 750 mm x 920 mm vertically. All MS pipes shall be medium grade ISI mark and shall be provided with two coats of superior quality Black spray paint over a coat of red oxide primer of Make: As per approvedmake on all steel surface	Nos	2
	(b) **Puff Mattress & Ply-Wood (BWR)**. Single piece cushion made of 100 mm thick “PUF” foam of density 40 Kg/cum as applicable for sleeping cushions of standard make Sleepwell/ Kurlon of size 1830 mm x 910 mm. The PUF foam shall be pasted on 12 mm thick Ply-Wood (BWR) of make Kitply / National / Greenply. The ‘PUF’ foam pasted on the ply-wood shall be enclosed vinyl coated laminated upholstery cloth (Rexene) of specification as mentioned at Annx I to Appx ‘D’.	Nos	2
2	Waste Bin 120 Ltr Dim 480 X 550-Top O.D. **Colour:** Dark Brown **Make: Nilkamal /Supreme or equivalent make**	Nos	1
3	Plastic Chair with Handrest, model Dynasty Dim: 570 W X 593D x 890H. **Colour:** Dark Brown **Make: Nilkamal / Supreme or equivalent make**	Nos	4
4	Cup Board steel 300 w x 354 d x 1800 H incl provn of hanging of shirt / coat colour as per user reqmt Make Godrej or equivalent	Nos	4
5	480x510mm size looking mirror mounted on PVC with PVC shell assemblyincluding all fittings. **Make: Modiguard/Saint Gobin/Atul glass**	Nos	2

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Appx E

STORE LIST FOR ONE LIGHTNING CONDUCTOR

Ser No	Description of items	A/U	Qty
1	PUF get earthing electrode of pipe in pipe technology. Two B class IS mild steel pipes, one inside the other, hot dip galvanised with 100 micron coating outside and about 300 micron coating inside, filled with high conductor and corrosion resistant crystaline mixture and back fill compound around electrode as per IS 3043/ 1987	Nos	1
2	GI pipe 100 mm dia medium grade as per IS specification 1239 (part -I) 1990 ISI marked.	Nos	1
3	Back fill compound	Kgs	25
4	MS earth pit cover of size 30 cm x 30 cm with handles	Nos	1
5	Copper strip 25 x3 mm of length 9m	Rm	12
6	Iron spikes 16 " long	Nos	3
7	GI Strip 32 x6mm of length 3m	Rm	3
8	GI Nipple 20 mm dia and 10 cm long IS - 1879	Nos	1
9	GI Reducer socket 40 x20mm ISI marked	Nos	1
10	Lightning terminal copper ball with five Nos prong,15 cm long	Nos	1
11	MS clamp 25 x 3mm with nut and bolt complete	Set	10
12	GI wire 12 gauge conforming to IS 2062 /1991	Kgs	3
13	Earth Augur	Nos	1
14	PVC Pipe 3m long 6" dia	Nos	1
15	User manual	Nos	1
16	Tester set (Meger) for carrying out serviceability check along with manual (one per five LC)	Nos	1
17	GI pipe 40 mm dia 6 mtr long medium grade with one socket nipple as per IS specification 1239 (Part -I) 1990.	Set	1
18	Supply of Cement OPC 43 grade (ISI Mark) confirming to IS- 8112 (2013), in bags of 50 Kg each. The cement sample will be sent to command testing laboratory and should meet all the requisite parameters of IS code.	Bags	0.5
19	Natural sand confirming to IS 383-1997 (Specifications for coarse and fine aggregates. Free from adherent coating, hard, durable, clean and shall not contain clay and impurities such iron pyrites, alkalies, salt, coal, mica, shale or similar laminates or other materials exceeding the specified limitsin IS code aggregates for concrete.	Cum	0.5
20	Aggregate 20mm. Stone Aggregate to be crushed rock or gravel 20mm graded confirming to IS 383-1997 (Second revision) and shall consist or angular fragments and shall be clean, hard, tough, durable and of uniform quality through out.Stone Aggregate 20 mm conforming to IS 383-1997.	Cum	0.25
21	MS pipe 40 mm bore, 2M long as per IS : 1239	Nos	1
22	50 mm bore MS Pipe sleeve	RM	2
23	Crystaline Conductive Mixture (CCM)	Kgs	3.5

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Appx 'H'

LIST OF MATERIALS HAVING ISI/ BIS CERTIFICATION MARKING

Ser No	Name of Materials	IS Code
1	MS Window	1361 (1978)
2	Rectangular Hollow Section (RHS)	4923 :1997 (R 2009)
3	Use of Structural Steel (Hot Rolled)	808-1989
4	Steel Gen Purpose	2062-1999
5	Hexagon Bolts, Screens Nuts & Locknuts	1364 Part 1 : 2002 1367 Part 3 : 2002
6	Safety Code for erection of structural steel wk	7205-1974 (R 2006)
7	PUF Panels	12436-1988 (A 2002) 7888:1976 (R 2003) 11239 :1988 (Part 12)(R 2001)
8	Pre Painted GI sheet	14246-2013 277-2018
9	Thermal Conductivity for Thermal Insulation Mtrls	3346-1980 (R 2004)
10	Cement	8112-1989
11	Sand, Aggregate (12.5,20,40,63mm)	383-1970 (383-2116 IIIrd Rev)
12	Integral Cement Water Proofing	2645/ 2003
13	Plywood for Concrete Shuttering	4990/ 2011 (Part 3) - 1987
14	Code of Practice for Design Load	875 (R 2003)
15	Plain Reinforced Concrete	456-2000
16	Joinery : Particle Bd & Hard Bd Panel	2202-2 (1983) (R 2001) Edition 4.1 (2000-09)
17	Bricks	1077-1986 (R 1992)
18	Plywood for Gen Purpose	303 - 1989 (R 2003)
19	Veneered Particle Bd	3097 : 2006
20	Flooring WPC	80421989 (R 2009)
21	Electrical : MCB	60898-1 : 2002
22	SS Pan	13983
23	PPR Pipe & accessories	1239-1989 (15801)
24	Bib cock	8931-1978 (R-1993)
25	Rotational moulded tank	12701 :1996(R 2006)

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SCHEDULE 'A' (PART-I)

Unit/Fmn : 42 AR/HQ 7 Sect AR, C/o 99 APO

Name of work : **"Improvement of existing infrastructure & allied works for COB S/ Chingnyu of 42 AR"**

TECHNICAL SPECIFICATIONS FOR PUF SHELTER FOR KOTE, STORE SIGNAL CENTRE/MI ROOM/COY OFFICE

1. PUF shelter made up of steel structure of size 18.30m x 6.10m x 3.00m clear height up to ceiling level with partition walls as per drg att as Appx 'E' (1/09 to 09/09). The main and partition walls will be made up with R H sections of size 66mm x 33mm x 2.90mm (4.07 Kg/RM) runners and 0.63mm thick Green pattern Colour Coated steel Profile Sheet claddings. Roof covering will be provided with 0.63mm thick Green pattern Colour Coated steel Sheets. The roof truss will be designed for 1 mtr standing snow load and roof slope will be Approx 1:2 as per drg att **(Appx E)**.

2. **Design criteria**

(a)	Sesimic Zone	-	Zone V
(b)	Snow load	-	55m/sec (As per IS: 875)
(c)	Wind pressure	-	(-) 2^0 to (+) 50^0 C
(d)	Temperature	-	Approx 1:2 as per drg att

3. **Design Data**

(a)	Length	-	18.30 m
(b)	Width	-	6.10 m
(c)	Height	-	3.00 m (Clear up to truss bottom)

4. **Openings**.

(a) Fabrication of doors and windows will conform to IS-1038 of 1983.

(b) **Door.** Three Nos double shutter steel doors will be provided in each Store Shelter as shown in the drawing. The door will be of size 1.10 x 2.10 m. Door frame will be made up of 50 X 50 X 5 mm (3.8 Kg/Rm) Door shutter will be made up of 40 x 40 x 5 mm (3.00 Kg/Rm) with 1.25 mm MS sheet (9.80 Kg/Sqm) welded on it. The hinges will be of 6" size and 3 Nos per shutter provided that the door opens. Steel doors will be provided with 200 mm long bow handles and locking devices. Two Nos of tower bolts of 200 mm size will be provided with each shutter on the inside of each door. 01 No sliding door bolts of 16 mm dia and 450 mm long to be welded on outside of each door. Door will be painted in green pattern on the outside & green colour on inside.

(c) **Windows.** Seven Nos of windows in each shelter will be provided. Window size will be 1.20m x 1.20 m with two vertical panels. Outer frame of windows will be made up of pressed steel sheet 2.00 mm thick (15.70 Kg/Sqm) boxed frame. The window shutter frame and window shutter will be manufactured using suitable hollow rectangular/square sections. The window shutter will be of double leaf size and shall be provided with double glazing of 3 mm thick clear acrylic sheet with minimum 4 mm air gap between the two sheets for proper insulation. The glazing will be fixed with PVC beading. Both the shutters will be provided with 2 Nos 100 mm long tower bolts,02 Nos 100mm long D type handles, Eye hooks, 04 Nos 75 mm long butt hinges of MS oxidized. The entire window frame shall be provided with a weld wire mesh size 50 x 50 x 4mm conforming to IS 15- 66-1982.

(d) **Sunshade.** Sunshade made out of 0.63 mm thick green colour coated steel profile sheets. Sheet covering will be fixed using hot dip zinc coated self drilling hexagonal washer head fasteners with angle iron 35 x 35 x 03 mm (1.60 Kg/Rm) will be provided for all external windows. The minimum projection for the sunshade will be 450 mm for windows and 600mm for doors. Suitable brackets will be provided to fix the sunshades. Minimum 150 mm side projection will be provided on both ends of opening.

5. **Roof**.

(a) Roof members and Columns will be designed for 1m standing snow over roof; the steel should be Conforming to IS – 1161 of 1979 or IS 2062 - 1984. The roof will be provided with 0.63 mm thick PPGI sheets. Sheet covering will be fixed using hot dip zinc coated self drilling hexagonal washer head fasteners. Ridge shall be covered by 0.63 mm thick green colour coated steel sheet of size 450mm wide. The sheets shall be laid with minimum end and side lap of 150 mm.

(b) **Roof Projection**. The roof will have minimum projection of 450 mm from the eaves wall. Purlin will also be in the roof at the eaves and at gable roof extension (outside the structure).

(c) **Gable End.** Gable End will be covered with same Sheet as in wall. These panels to be fixed on arrangements made on the end trusses.

(d) 6mm thick polycarbonate profile sheet, UV protect ER clear having similar profile as colour coated sheet of roof shall be provided for skylight, the skylight area will be 10% of total roof area. **(Test certificate to be submitted by vendor with supply of material).**

6. **Column and Roof Truss**

(a) **Columns.** 12 Nos RH steel section of size 122 x 61 x 3.60 mm (9.67 Kg/Rm) conforming to IS 4923: 1997 with 250 x 250 x 8mm (62.80 Kg/Sqm) MS base plate and 200 x 150 x 8mm thick (62.80 Kg/Sqm) top plate conforming to IS – 1730 (Part I) 1974 having 04 Nos holes of 18 mm dia will be provided in each shelter as shown in the drawing. Base plates will be provided with 04 Nos 16 mm dia 450 mm long holding down bolts and top plates will be provided with 04 Nos 16 mm dia normal bolts.

(b) **Truss**. The principal rafter and the bottom chord will be fabricated out of RH steel sections of size 96 x 48 x 4 mm (8.22 Kg/Rm) with 1:2 slope. All other strut members will be fabricated out of RH steel sections of size 66 x 33 x 2.90 mm (4.07 Kg/Rm) Truss will be provided with base plate to rest on column plates and cleats welded to facilitate fixing the purlins and tie runner. Both base plates will be provided with slotted holes for minor adjustment during assembling. MS plate of size 75 x 150 x 6mm thick (47.10 Kg/Sqm) having 05 Nos holes of 18mm dia will be provided with principle rafter.

(c) **Purlins**. Purlins will be made of of RH steel sections of size 96 x 48 x 4 mm with (8.22 Kg/Rm) 6 mm thick cleats welded at both the ends including 150 x 100 x 6 mm thick (47.10 Kg/Sqm) MS cleats having 02 Nos holes of 18 mm dia welded on either side for fixing to on trusses. 08 Nos purlins will be provided in each bay.

7. **External Cladding**. The external wall cladding will comprise of 0.63 mm thick green Colour Coated Steel Profile Sheets, fixed to four number runners of RH steel sections of size 66 x 33 x 2.90 mm (4.07 Kg/Rm), running all along the wall claddings with the self drilling screws as reqd. 22 gauge PGI sheet flushing of suitable size will be provided to close the gaps between two consecutive sheets in cladding and the frames of the doors and windows. All green colour coated sheets shall be made of SAIL/TATA/Jindal. All accessories reqd for external cladding will be provided by the supplier along with the shelter.

8 Wall Pannels.

(a) The main and partition walls will be made up of 60 mm thick PUF insulated Wall Panels. The Panels will be made of0.50 mm thick colour coated steel sheets on both side with 60 mm thick layer of rigid CFC free close cell polyurethane foam (Density 40 Kg + 2 Kg / Cum) insulation. The wall panels will be provided with tongue and groove joint and will be with cam lock systems for interlocking. All materials required for the manufacture of shelter will be new and shall comply with relevant Bureau of India Standard specification. Base and top channel of size 30 x 65 x 1.25 mm thick will be provided for walls.

(b) **Truss**. The principal rafter and the bottom chord will be fabricated out of RH steel sections of size 96 x The PUF Insulation material in the panel will have fire retarding and self extinguishing properties as per any international standard B2 DIN 410 2 Part I/ BS- 4735 Self Ext.

(c) **GI Metal Skin PUF Panels**.

(i) **Thickness of Skin**. 0.50mm thick hot dipped galvanized steel sheets on inner and outer side with 50 – micron thick PVC guard film on the finished surface only for protection against scratches during handling and transportation. Base metal of GI Skin CRCA as per IS-513, Galvanized as per GR -120, IS-277

(iii) The panels will be insulated with PUF Foam (Density 40Kg + 2 Kg / cum).

(iii) These panels are to be manufactured using high pressure dispensing machine of required capacity to inject specified amount of PUF chemical into the cavity of full panel in one shot not exceeding 25 sec duration. This is to ensure that the liquid PUF mixture is sprayed into the cavity before the foaming reaction starts so that the insulation core of the panel is formed in one piece and provides desired structural and physical properties. The bulk density of insulation should be 40kg/cum and the impending machinery should be equipped with a PLC controlled panel for monitoring and controlling the injection rate to assure specified uniform density requirements.

(d) The pre coated GI sheet should have minimum coating of 4-5 micron epoxy primer and 25 micron polyester top coat on the finished surface and 7-8 micron primer alkyd backer on backside, which is bounded to the polyurethane foam. The pre coated GI sheet should conform to IS-14246-1995 with manufacturer test certificates conforming above specification.

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(e) The PUF insulated core of these composite panels will havethe following properties:-

(i) Density- 40 + 2 Kg per cum.
(ii) Compressive Strength at 10% deformation - 2.10 Kg /cm2
(iv) Tensile Strength - 3.7 Kg / cm2
(iv) Bending Strength - 4.0 Kg / cm2
(v) Adhesion Strength - 2.90 Kg /c m2
(vi) Temperature Range - (-02^0 C to + 50^0 C)
Thermal conductivity at 10 0 C-0.018 k-cal/ m - hr0 C(Design value 0.020 k-cal/m-hr 0 C or 0.023W/m-K)
(vii) Fire Resistant - (Horizontal Extent of burn BS 4735) < 125 mm. (xi) Self Extinguishing ASTM D 1692- Passes (Fire retarded foam chemical) Not easily ignitable as per BS: 476 Pt 5 Class- I as per BS: 476 pt 7
(vii) Water Absorption - 0.20% volume at 100% RH

(viii) (Water Vapour Permeability - 0.08 – 0.12 gms/hr/m2

(f) The Iso-cyanate and polyol liquid components used for in situ process of polyurethane foam for panels should be accompanied with co-relating manufacture test certificate indicating batch nos, date of manufacture and expiry dates.

(g) All panels will be moulded in place using the above in-situ process after placing them in a hydraulic press with heated aluminum pattern and corner moulding so as to attain the desire finish, bonding and structural properties. All panels will be manufactured in single piece as per approved panel layout drawingsusing the above materials and manufacturing process. Puf panels, being used in wall /ceiling / any other location will betested for its physical / chemical/mechanical properties from any IIT College /Approved Govt Engineering College / Laboratory and all testing charges to this effect will be borne / paid by the supplier. This test certificate will be produced by supplier to consignee while taking approval of pilot sample.

(h) The consignee can carry out inspection of any panel from the lot at manufacturer premises to ensure that above chemical and physical properties.

(j) Pre coloured PUF panels will have green pattern on external walls and white/off white finish on internal wall.

9. **Workmanship**.

(a) **Connection**: Welded connection will be provided unless otherwise specified in the drawings. The welded connections will be conformed to IS 806-1968.

(b) **Fabrication:** The general provisions in section 11 of IS 800 of 1984 will apply to all types of steel being used for fabrication.

(c) **Painting:** All steel members will be provided with two coats of red oxide zinc chromate primer including preparation of surface before supply.
(d) **Various Fasteners and Fittings:** Fasteners and fittings of mild steel shall be supplied unless otherwise specified in and shall be fixed where reqd. Fastening means will be provided for the items to be fitted at the time of erection. 10 % spare nuts, bolts, 'J' bolts and washers will be provided per shelter. The fasteners supplied will beconforming to relevant BIS specification.

10. **Finishes**.

(a) All steel work will be applied with two coat of synthetic enamel paint of bush green colour over a coat red oxide primer by the manufacturer in the factory. Two Liters of red oxide primer and twenty ltr paint of bush green colour per shelter will be provided in sealed containers for retouching and one coat of painting after erection.

(b) Structural Members. All structural members shall be fabricated with structural grade ISI marked steel with test certificate for raw material and structural properties.

(c) All PPGI sheets shall be made of class IV with coating ZINC 375 gm/sqm.

(d) All surface shall be thoroughly cleaned by adopting solvent cleaning or any other cleaning method as described in IS 1477, of dust, dirt, stains, rust, oil etc before painting should be rounded off.

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(e) Painting brushes flat conforming to IS 384 of following sizes shall also be supplied along with each shelter.

(i) Brush 150mm - 02 Nos.
(ii) Brush 1000mm - 02 Nos.
(iii) Brush 50mm - 02 Nos.

(f) All outside surfaces of the shelter shall be in green pattern. (Approval of green pattern to be prior finalsation of order).

11. **Double Storage Racks.** 20 X Double Storage Racks with each shelter made of MS angle and ply wood. Horizontal Frame work and four corner vertical legs will be made of angle iron 40 mm x 40 mm x 5 mm (3.0 Kg/Rm) of shown in drg as att. Decking will be made up with 12 mm ply wood 6' x 3' (1825 mm x 915 mm) bolted on all four corners. Plywood (BWR) conforming to IS-303 of 1989. Central support to plywood shall be made up with 40 mm x 6 mm flat iron. The mild steel racks will be provided with two coats of green paint over a coat of red oxide.

12. **Constr Material.** Constr mtrl and form work shall be used for Store shelter as per following specifications:-

(a) **RCC Columns foundation**. RCC 1:2:4 will be provided for the columns foundation and column footing as shown in drg.

(b) **Plinth**. Plinth shall be of brick wall of 230mm thick built in CM 1:6. Plinth wall height shall be 450mm above GL and 150mm below GL over 75mm thick PCC 1:4:8 type D- 2(Using 40 mm stone agg) .12mm thick plaster in CM 1:4 shall be provided on exposed surface of brick walls above GL.

(c) **Flooring.**

(ix) **Sub Base** - 75mm thick PCC 1:4:8 type D2 (using 40mm graded stoneagg) over well rammed earth.
(x) **Floor** - 40mm thick PCC 1:2:4 type B1 (using 20mm graded stoneagg).The floor shall be provided smooth finish by using extra cement. Proper curing of floor will be ensured for 21 days.
(xi) **Plinth Protection.** PCC 1:3:6 type C2 (using 40mm graded stone aggregate) 75mm thick 75 cm wide over 75mm thick hard core (Using stone agg 63mm graded) shall be provided even and smooth using extra cement.

13. **Quality Control**. Accepting officer/ SO-1 (Wks) at HQ Sect/HQ IGAR is free to get all parts/any part checked for quality conformation as given in the technical specifications irrespective of DGQA inspection. Cost of testing will be borne by the contractor**.**

14. **User Hand Book.** It will be supplied at the scale of one per shelter. The user hand book will be complete with drawings, all details of all parts of the shelters, fittings and fixtures and instructions for erection with detailed drawings. The users hand book will be supplied well in advance and got verified from this department that the parts mentioned in the hand book, their specifications and quantity are strictly and correctly as per technical specifications and the supplier has not changed the specifications. Based on the checked hand book the store will be supplied and received.

15. **Constr Material.Constr mtrl and form work shall be used for Store shelter as per store list attached as per following appendicies:**

(a) Store list att **Appx 'A'**

16. **Electrification.** Electrification will be provided to the shelter as per store list att at Appx 'B'.

17. **Fire Extinguisher**. Fire extinguisher of capacity 6 Kgs along with its accessories confirming to IS 13849. (Two Nos with each shelter)

18. **Lightening Conductor**. Lightning Conductor will be provided as under and stores are as per Appx C and drg at Appx E (sheet 09/09)

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Tech Specs for Jelly Filled Lightening Conductor

Earthing Electrode. PUF gel earthing electrode of pipe in pipe technology. Two B class IS mild steel pipes, one inside the other, hot dip galvanized with 100-micron coating outside and about 300-micron coating inside, filled with highly conductive and corrosion resistant crystalline mixture and back fill compound around electrode as per IS 3043/ 1987.

(a) **Earthing Pits**. Excavation shall be carried out in rocky soil for earthing pit of size 0.25m x 0.25m x 2.00m depth incl removal of surplus soil in low laying area.

(b) **Anchorage**. GI wire 12 gauge tied to vertical post and anchored to the grnd using iron spikes. Slope of wire 1:2. There will be three anchors ISI marked.

(c) **Down Conductors**. Copper strip of size 25mmx3mm and length 9m. ISI marked.

(d) **Earthing Strip**. GI strip 32 mmx6 mm of length 3m.

(e) **Vertical Post**. GI pipe dia 40mm of length 6m embedded in foundation concrete block of size 0.45 x 0.45 x 0.75m.

(f) **Air Terminal**. Lightning air terminal A copper tube 150 cm long x 25 mm dia with five copper prongs of length 15cm each fixed to copper ball of dia 50mm and 4mm thick with complete securing arrangement (ISI Marked), and bottom cover plate 100mm x 100mm x 4mm with 12mm dia hole 4 Nos along with 4 Nos of copper bolts fo size 10mm x 50mm long with nut & washers.

Notes.

(a) It should have low resistivity, below 1 Ω-m.

(b) Material should be non toxic, non reactive, non explored and non corrosive.

(c) Material should be thermally stable between temp of -10 0C to 60 0C.

(d) It should not pollute the soil on local water table.

(e) It should be Alkaline with PH value >7 and < 9.

(f) It should have Hygroscopic properties to absorb moisture.

(g) All items will conform to BIS specification as applicable.

(h) Items not in BIS list should confirm to manufacturer's specifications. A copy of the manufacturer's

19. **Notes**.

(a) All items will conform to BIS specification as applicable.

(b) Items not in BIS list should confirm to manufacturer's specifications. A copy of the manufacturer's literature/ specification is to be submitted along with sample.

(c) All Makes and IS code ref are as per Appx H

(d) **Notwithstanding above, any items of specifications falling short in tech specs or as mentioned above shall be provided by the contractor at the site and complete the said project to ensure functional utilization of the building as per good engineering practices.**

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Appx 'A'

STORE LIST FOR CONSTR MTRL FOR ONE SHELTER

Ser	Nomenclature	A/U	Qty
1	Cement OPC 43 Grade in HDPE bag of 50 Kgs each Conforming toIS 8112-1989,	Bag	160
2	Natural Sand conforming to IS 383-1970 (Specifications for coarse and fine aggregates. Free from adherent coating, hard, durable, clean and shall not contain clay and impurities such iron pyrites, alkalies, salt, coal, mica, shale or similar laminates or other materials exceeding the specified limits in IS code aggregates for concrete.	Cum	15.47
3	Aggregate 20mm. Stone Aggregate to be crushed rock or gravel 20mm graded conforming to IS 383-1970 (Second revision) and shall consist or angular fragments and shall be clean, hard, tough, durable and of uniform quality throughout the supply qty.	Cum	15.81
4	Aggregate 40mm. Stone Aggregate to be crushed rock or gravel 40mm graded conforming to IS 383-1970 (Second revision) and shall consist or angular fragments and shall be clean, hard, tough, durable and of uniform quality throughout the supply qty.	Cum	13.17
5	Common building burnt clay bricks sub class 'B' of size 23cm x 11.5cm x 7.5cm with sharp corners, free from organic materials, hard and well burnt with uniform size free from flows and cracks conforming to IS 1077 -1986 (fourth revision). Designation 75 Kgf/Sqcm	Nos	3367
6	Glass dividing strips 40x4mm	RM	122
7	PUF foundation Reinforcement type F-2 made of 12 mm &10 mm for steel as main bars and 8 mm dia deformed bars as in stirrups us as per drawings including cutting bending & binding with mild steel binding wire annealed not less then 0.90 mm dia complete.	Set	12
8	Form Work -Type -2 :-Timber form work material for columns of size 0.3 X 0.3 X 0.9m and columns footing of size 0.9 X 0.9 X 0.3 m (type F-2) made out of 30mm thick hard wood planks / boardings (wrought in one side) incl making 12mm dia holes.	Set	2
9	MS clamp made of MS flat 40 X 4 mm, 200mm long bent in L shape with two holes of 12mm dia on each end. 04 X Nut & Bolt of size 10 X 50 mm with washer.	Nos	40

Signature of the tenderer & Stamp

Sd/xx xx xx
(Uddipto Dhara)
Lt Col
Staff Officer-I (Works)
for Accepting Officer

Appx 'B'

STORE LIST FOR ELECTRIC ITEMS FOR ONE SHELTER

Ser	Nomenclature	A/U	Qty
1	PVC Ceiling rose 2/3 Terminal.	Nos	10
2	LED Tube light fitting complete 4' long 18-watt Tube rod and Electronic Ballast	Nos	10
3	XLPE insulated PVC seathed (Heavy Duty) armoured multi core cable 16 sqmm 2 core aluminum conductor for working voltage up to & including 1100 volt conforming to IS 1554 (Part - I)/ IS-7098 (Part - I) 1988.	RM	50
4	Cable PVC insulated and PVC seathed 1.5 sqmm single core with copper conductorsuitable upto 1100 V, conforming to IS 694-1990	RM	120
5	Modular Switch one way 6 AMPs one module conforming to IS 3854 - 1966.	Nos	12
6	MS Screw 20 mm full threaded (Per pkt-100 Nos) conforming to IS 723-1972	Pkt	1
7	MS Screw 25 mm full threaded (Per pkt – 100 Nos) conforming to IS 723-1972	Pkt	1
8	Tape Insulation 2 cm width 10.00mtr long ISI marked	Nos	2
9	MCB single pole 230V AC, 50 Hz, 6 Amps, 10KA conforming to IS : 8828-1996 IEC60898 : 2002, suitable for lighting & other domestic loads.	Nos	2
10	MCB distribution boards in sheet metal enclosure 4 ways single door with blanksconforming to IS 8623,	Nos	1
11	Residual current circuit breaker with overload and short circuit protection doublepole 32 Amps Conforming to IS 12640 -2:2001 & IEC 61009 – 2-1	Nos	1
12	Modular socket 6A-2/3 pin combined 2 module	Nos	2
13	White cover plate with frame 2 module	Nos	1
14	White cover plate with frame 4 module	Nos	2
15	Metal flush box 2 Module	Nos	1
16	Metal flush box 4 Module	Nos	2
17	PVC casing caping pipe 25mm x16mm conforming to IS 14927 (Part-ii)	RM	45
18	PVC casing caping L bend 25mm conforming to IS 371 1979	Nos	10
19	PVC casing caping elbow 25mm dia conforming to IS 9537 (Part III) -1983	Nos	10
20	PVC casing caping ‘T’ 25mm for conduit pipe	Nos	10
21	PVC casing caping square box 4” x 4”	Nos	20

Signature of the tenderer & Stamp

Sd/xx xx xx
(Uddipto Dhara)
Lt Col
Staff Officer-I (Works)
for Accepting Officer

Appx C

STORE LIST FOR ONE JELLY FILLED LIGHTNING CONDUCTOR

Ser	Nomenclature	A/U	Qty
1	PUF gel earthing electrode of pipe in pipe technology. Two B class IS mild steel pipes,one inside the other, hot dip galvanised with 100-micron coating outside and about 300 micron coating inside, filled with high conductor and corrosion resistant crystaline mixture and back fillcompound around electrode as per IS 3043/ 1987	Set	1
2	GI pipe 100 mm dia medium grade as per IS specification 1239 (part -I) 1990 ISI marked length 2 mtr	Nos	1
3	Back fill compound	Kgs	25
4	MS earth pit cover of size 30 cm x 30 cm with handle	Nos	1
5	Copper strip 25 x3 mm x 9m	Nos	1
6	Iron spikes 16 " long complete as directed and specified by buyer	Nos	3
7	GI Strip 32 x 6mm of length 3m	Nos	1
8	GI Nipple 20 mm dia and 10 cm long IS - 1879	Nos	1
9	GI Reducer socket 40 x20mm ISI marked	Nos	1
10	Lightning air terminal A copper tube 150 cm long x 25 mm dia with five copper prongs of length 15cm each fixed to copper ball of dia 50mm and 4mm thick with complete securing arrangement (ISI Marked), and bottom cover plate 100mm x 100mm x 4mm with 12mm dia hole 4 Nos along with 4 Nos of copper bolts fo size 10mm x 50mm long with nut & washers	Set	1
11	MS clamp 25 x 3mm with nut and bolt complete	Set	10
12	GI wire 12 gauge conforming to IS 2062 /1991	Kgs	3
13	Earth Augur (One per five LC)	Nos	1
14	PVC Pipe 3m long 6" dia	Nos	1
15	User manual	Nos	1
16	Tester set (Meger) for carrying out serviceability check along with manual (one per five LC)	Nos	1
17	GI Pipe medium grade of 40mm dia, 6 mtr long and one equal socket of 40mm dia welded with MS plate of size 100mm x 100mm x 4mm thick with 04 Nos hole of 12mm dia at one end suitable to fitting with copper pipe as per IS specifications 1239 (part-I) 2004 ISI marked.	Set	1
18	Supply of Cement OPC 43 grade (ISI Mark) confirming to IS- 8112 (2013), in bags of 50 Kg each. The cement sample will be sent to command testing laboratory and should meet all the requisite parameters of IS code.	Bags	0.5
19	Natural sand confirming to IS 383-1997 (Specifications for coarse and fine aggregates. Free from adherent coating, hard, durable, clean and shall not contain clay and impurities such iron pyrites, alkalies, salt, coal, mica, shale or similar laminates or other materials exceeding the specified limits in IS code aggregates for concrete.	Cum	0.5
20	Aggregate 20mm. Stone Aggregate to be crushed rock or gravel 20mm graded confirming to IS383-1997 (Second revision) and shall consist or angular fragments and shall be clean, hard, tough, durable and of uniform quality through out.Stone Aggregate 20 mm conforming to IS 383-1997.	Cum	0.25
21	GI pipe 40 mm bore, 2M long as per IS : 1239	Nos	1
22	50 mm bore GI Pipe sleeve	RM	2
23	Crystaline Conductive Mixture (CCM)	Kgs	3.5

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Sd/xx xx xx
(Uddipto Dhara)
Lt Col
Staff Officer-I (Works)
for Accepting Officer

SCHEDULE 'A' (PART-V)

Unit/Fmn : 42 AR/HQ 7 Sect AR, C/o 99 APO

Name of work : **"Improvement of existing infrastructure & allied works for COB S/ Chingnyu of 42 AR"**

TECH SPECS FOR SECURITY TOWER/SENTRY POST/GD ROOM

Tech Specs for A/A NE Tower

1. Provisoin of PUF Watch tower 5.50 Mtr heights made of MS structural steel angle section. Tech detail sof the same are as under (list of store as per **Appx `A' and drawing att at Appx'B')**

(a) **MainPosts**. Main post will be of angle iron of size 75x75x6mm and 5.60 mtr long above GL

(b) **Bracings**. Bracings will be of angle iron of size 40x40x6mm as shown in the drg att.

(c) **Roof**. Roof will be of PPGI Sheet of 0.63mm fixed over angle iron section of size iron 65 x 65 x 6mm.

(d) **Ladder with Railings and Platform**. Ladder alongwith railings will be made as per drg no DGAR/ ENGR/COB/115.

(e) **Floor and Side Cladding**. Floor cladding will be made of 6 mm thick MS plate, Gable and sidewall cladding above 5 feet will be made of 3mm thick MS plate and side wall cladding upto height of 5 feet will be made of 12mm thick MS plate.

(f) **RCC Column and Footing (04 Nos)**. RCC 1:2:4will be provided in column and column footing over 100mm thick PCC 1:4:8 type D2 using 40 mm stone aggregate as in sub base. Size of Sub base PCC(1:4:8), RCC footing and RCC column are 1.50mx1.50m,1.20mx1.20m and 0.50mx0.50m respectively.

2. Fabrication shall be as per details in the drg att. The complete structure will be painted with two coats of synthetic enamel paint over a coat of red oxide primer.

3. Construction material for A/A NE Tower **Appx C.**

4. **Notes**.

(a) All items will conform to BIS specification as applicable

(b) Items notin BIS list should confirm to manufacturer's specs. A copy of manufacturer's literature/ specs is to be submitted along with sample.

(c) All Makes and IS codes as per **Appx H.**

(d) **Notwithstanding above, any items of specifications falling short in tech specs or as mentioned sabove shall be provided by the contractor at the site and complete the said project to ensure functional utilization of the building as per good engineering practices**

Signature of the tenderer & Stamp

Sd/xx xx xx
(Uddipto Dhara)
Lt Col
Staff Officer-I (Works)
for Accepting Officer

SCHEDULE 'A' (PART-I)

Unit/Fmn : 42 AR/HQ 7 Sect AR, C/o 99 APO

Name of work : **"Improvement of existing infrastructure & allied works for COB S/ Chingnyu of 42 AR"**

TECH SPECIFICATIONS AND STORE LIST FOR ONE SIX SEATED TOILET BLOCK (PUF 7.20 M X 2.20 M)

Ser	Description	A/U	Qty
1.	Earth work in surface excavation not exceeding 30cm in depth but exceeding 1.5 m in width as well as 10 sqm on plan including disposal of excavated earth upto 50 m and lift upto 1.5 m disposal soil to be levelled and neatly dressed . All kind of soil.	Sqm	32.19
2	Earth work in excavation by mechanical means (Hydraulic excavator) / manual means in foundation trenches or drains (not exceeding 1.5 m in width or 10 sqm on plan), including dressing of sides and ramming of bottoms, lift upto 1.5 m, including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m. all kind of soil.	Cum	6.47
3	Providing and laying in position cement concrete of specified grade excluding the cost of centering and shuttering - All work up to plinth level 1:4:8 (1 Cement : 4 coarse sand : 8 graded stone aggregate 40 mm nominal size)	Cum	2.29
4	Brick work with common burnt clay modular bricks of class designation 75 in foundation and plinth in: Cement Mortar 1:6 (1 cement : 6 coarse sand).	Cum	4.93
5	Providing and laying damp-proof course 40 mm thick with cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 12.5 mm nominal size).	Sqm	4.58
6	Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20 cm in depth, consolidating each deposited layer by ramming and watering, lead upto 50 m and lift upto 1.5.m.	Sqm	3.72
7	Supplying and stacking at site and Laying, spreading and compacting stone aggregate of specified sizes to WBM specifications in uniform thickness, 63 mm to 45 mm size stone aggregate hand picking and consolidating, screening / binding material to fill up interstices of coarse aggregate, watering and compacting to the required density .	Cum	1.58
8	Providing and laying in position cement concrete of specified grade excluding the cost of centering and shuttering - All work up to plinth level 1:3:6 (1 Cement : 3 coarse sand : 6 graded stone aggregate 40mm nominal size)	Cum	1.19
9	Cement concrete flooring 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate) finished with a floating coat of neat cement, including cement slurry, but excluding the cost of nosing of steps etc. complete. 40 mm thick with 20 mm nominal size stone aggregate	Sqm	15.84
10	Providing and fixing glass strips in joints of terrazzo/ cement concrete floors 40 mm wide and 4 mm thick.	Rm	35.00
11	Making plinth protection 50 mm thick of cement concrete 1:3:6 (1 cement: 3 coarse sand : 6 graded stone aggregate 20 mm nominal size) over 75mm thick bed of dry brick ballast 40 mm nominal size, well rammed and consolidated and grouted with fine sand, including finishing the top smooth.	Sqm	11.45
12	Providing and laying in position cement concrete of specified grade excluding the cost of centering and shuttering 1:3:6 (1 Cement : 3 coarse sand : 6 graded stone aggregate 20 mm nominal size) - All work up to plinth level	Sqm	1.25
13	15 mm cement plaster finished with a floating coat of neat cement of mix 1:4 (1 cement: 4 fine sand). On external Wall.	Sqm	8.46
14	12 mm cement plaster 1:3 (1 cement : 3 fine sand) finished with a floating coat of neat cement and thick coat of Lime wash on top of walls when dry for bearing of R.C.C. slabs and beams.	Sqm	8.46
15	Providing and laying in position specified grade of reinforced cement concrete, excluding the cost of centering, shuttering, finishing and reinforcement 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size)- All work up to plinth level	Cum	0.71
16	Steel reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete upto plinth level. Thermo-Mechanically Treated bars	Kg	61.76
17	Centering and shuttering including strutting, propping etc. and removal of form for Walls (any thickness) including attached pilasters, buttresses, plinth and string courses etc.	Sqm	5.70

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Lt Col
Staff Officer-I (Works)
for Accepting Officer

Ser	Description	A/U	Qty
18	Providing wood work in frames of doors, windows, clerestory windows and other frames, wrought framed and fixed in position with hold fast lugs or with dash fasteners of required dia & length (hold fast lugs or dash fastener shall be paid for separately). Kiln seasoned and chemically treated hollock wood.	Cum	1.91
19	Steel work in built up tubular (round, square or rectangular hollow tubes etc.) trusses etc., including cutting, hoisting, fixing in position and applying a priming coat of approved steel primer, including welding and bolted with special shaped washers etc. complete. 10.16.1 Hot finished welded type tubes	Kg	497.15
20	Providing and fixing precoated galvanised iron profile sheets (size, shape and pitch of corrugation as approved by Engineer-in-charge) 0.50 mm (+ 0.05 %) total coated thickness with zinc coating 120 grams per sqm as per IS: 277, in 240 mpa steel grade, 5-7 microns epoxy primer on both side of the sheet and polyester top coat 15-18 microns. Sheet should have protective guard film of 25 microns minimum to avoid scratches during transportation and should be supplied in single length upto 12 metre or as desired by Engineer-in-charge. The sheet shall be fixed using self drilling /self tapping screws of size (5.5x 55 mm) with EPDM seal, complete upto any pitch in horizontal/ vertical or curved surfaces, excluding the cost of purlins, rafters and trusses and including cutting to size and shape wherever required.	Sqm	80.64
21	Providing and fixing precoated galvanised steel sheet roofing accessories 0.50 mm (+ 0.05 %) total coated thickness, Zinc coating 120 grams per sqm as per IS: 277, in 240 mpa steel grade, 5-7 microns epoxy primer on both side of the sheet and polyester top coat 15-18 microns using self drilling/ self tapping screws complete: Ridges plain (500 - 600mm)	Mtr	8.1
22	Providing and fixing panelled or panelled and glazed shutters for doors, windows and clerestory windows, including ISI marked M.S. pressed butt hinges bright finished of required size with necessary screws, excluding panelling which will be paid for separately, all complete as per direction of Engineer-in-charge.35 mm thick shutters	Sqm	1.62
23	Providing and fixing factory made 30 mm thick door shutter made of solid PVC foam profile. The styles & rails shall be of size 75 mm x 30 mm having wall thickness 5 mm. The styles, top & bottom rails shall have one side wall thickness of 15 mm integrally extruded on the hinge side of the profile for better screw holding power. The styles and rails shall be reinforced with M.S. tubes of size 33 mm x 17 mmx 1 mm, painted with primer, all four corners of reinforcement to be welded or sealed. Solid PVC extruded bidding (push fit type) will be set inside the styles and the rails with a cavity, to receive single piece extruded 5 mm PVC sheet as panel. The styles and rails will be mitred cut and joint with the help of PVC solvent cement & self driven self tapping screws. Single piece extruded solid PVC lock rail of size 100 mm x 30 mm with wall thickness 5 mm & 15 mm integrally extruded in the middle of the lock rail & fixed with styles with the help of PVC solvent cement & self driven self tapping screws of size 100 mm x 8 mm complete as per manufacturer's specifications and direction of Engineer-in-charge. Non decorative finish.	Sqm	9.45
24	Providing and fixing water closet squatting pan (Indian type W.C. pan) with 100 mm sand cast Iron P or S trap, 10 litre low level white P.V.C. flushing cistern, including flush pipe, with manually controlled device (handle lever) conforming to IS : 7231, with all fittings and fixtures complete, including cutting and making good the walls and floors wherever required :White Vitreous china Orissa pattern W.C. pan of size 580x440 mm with integral type foot rests	Each	4
25	Providing and fixing G.I. pipes complete with G.I. fittings and clamps, i/c cutting and making good the walls etc.15 mm dia nominal bore.	Rm	30
26	Providing and fixing G.I. pipes complete with G.I. fittings including trenching and refilling etc.25 mm dia nominal bore	Rm	50
27	Providing and fixing brass bib cock of approved quality 15 mm dia nominal bore.	Nos	6
28	Providing and fixing gun metal gate valve with C.I. wheel of approved quality (screwed end) :25 mm nominal bore	Nos	1
29	Providing and fixing G.I. Union in G.I. pipe including cutting and threading the pipe and making long screws etc. complete (New work) : 25 mm nominal bore	Nos	6

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Sd/xx xx xx
(Uddipto Dhara)
Lt Col
Staff Officer-I (Works)
for Accepting Officer

Ser	Description	A/U	Qty
30	Providing and fixing mirror of superior glass (of approved quality) and of required shape and size with plastic moulded frame of approved make and shade with 6 mm thick hard board backing : Rectangular shape 1500x450 mm	each	2
31	Providing and fixing 600x120x5 mm glass shelf with edges round off, supported on anodised aluminium angle frame with C.P. brass brackets and guard rail complete fixed with 40 mm long screws, rawl plugs etc., complete.	each	2
32	Providing and fixing PTMT towel rail complete with brackets fixed to wooden cleats with CP brass screws with concealed fittings arrangement of approved quality and colour. 450 mm long towel rail with total length of 495 mm, 78 mm wide and effective height of 88 mm, weighing not less than 170 gms.	each	2
33	**MS Stand**. One MS Stand with each shelter for water tanks 1000 ltr capacity shall be fabricated from MS angle 50 x 50 x 6 mm (4.50 Kg/Rm) size for vertical legs, flat iron 40 x 8 mm (2.51 Kg/Rm) for vertical legs bracings, top frame of angle iron 40 x 40 x 6 mm(3.50 Kg/Rm) with MS sheet of 14 gauge thickness (15.70 Kg/Sqm) fixed on top all as per drg att (Appendix G) and all angle iron used in MS Stand shall be conforming to IS – 808 (Part V) of 1976. Four angles at each corners at top of size 50X50X6mm be provided vertically up height of each angle be 300mm. The mild steel stand will be provided with two coats of green paint over a coat of red oxide primer.of red oxide primer.	Nos	01

Note :- **Notwithstanding above, any items of specifications falling short in tech specs or as mentioned above shall be provided by the contractor at the site and complete the said project to ensure functional utilization of the building as per good engineering practices.**

Signature of the tenderer & Stamp

Sd/xx xx xx
(Uddipto Dhara)
Lt Col
Staff Officer-I (Works)
for Accepting Officer

SCHEDULE 'A' PART - I

Unit/Fmn : HQ 7 Sect AR C/o 99 APO

Name of work : **"Improvement of existing infrastructure & allied works for COB S/ Chingnyu of 42 AR"**

SCHEDULE 'A'/ BOQ UPLOADED SEPERATELY

Signature of the tenderer & Stamp

Sd/xx xx xx
(Uddipto Dhara)
Lt Col
Staff Officer-I (Works)
for Accepting Officer

Name of work:- **"Improvement of existing infrastructure & allied works for COB S/ Chingnyu of 42 AR"**

GENERAL SUMMARY

Serial	**Description of Schedule "A"**	**Amount**
1.	**"Improvement of existing infrastructure & allied works for COB S/ Chingnyu of 42 AR"**	Rs_____ _____ (Rupees_____ _____ _____ _____only)

Rupees_____

Signature of the tenderer & Stamp

Sd/xx xx xx
(Uddipto Dhara)
Lt Col
Staff Officer-I (Works)
for Accepting Officer

SCHEDULE 'B'

ISSUE OF WORKS, ETC. TO THE CONTRACTOR (SEE CONDITION 26.1 OF CPWD)

Serial No	Particulars	Rate at which materials will be issued to the contractor		Place of issue (by name)	Remarks
		Unit	Rate		

NIL

NOTES: (To be filled as applicable or scored out)

1. This Schedule consists of **NIL** items only.

2. It will be the responsibility of the contractor to submit in writing his demand for materials SEVEN DAYS in advance of his requirement.

3. Material listed above shall be issued solely for the purpose of incorporation in the work.

4. Recovery will be made for the gross quantity issued and not for the measured quantity of finished work.

5. If the contractor requires store listed above issued to him for making good any loss or damage to work arising from any cause what-so-ever other than the accepted risk and the Govt. issues the same to him, the rates of issue for such items of works shall be the Assam Rifles all stock book rate or market rate on the date of issue of works or Schedule 'B' rate whichever is higher.

6 Store listed in Schedule 'B' when issued to contractor for rectification of defects notified to him under conditions of clauses 26.1 of CPWD during the defect liability period shall be charged at the rates shown in Schedule 'B'.

7. The items issued FREE FOR FIXING shall be tested at the time of issue in the presence of contractor or contractor's accredited representative and if they are not working after fixing, the contractor shall replace the same at no extra cost to the Government.

8. If the works issued "FREE FOR FIXING" are lost or damaged while in the custody of the contractor, the Govt shall recover the cost thereof at double the market rate as prevailing on the detection of such loss or damage. The decision of Engineer-in-charge with regards to damage to the works issued and relevant market rate shall be final and binding on the contractor.

9. If on completion of work, the contractor fails to return surplus materials out of those supplied by Govt. then in addition to any other liability which the contractor would have incurred, the Engineer-in-Charge may by a written notice to the contractor, require him to pay within a fortnight of receipt of the notice for such un-returned and surplus materials at double the prevailing market rate as decided by the Engineer-in-charge. If however, the contractor is not satisfied with the decision of the same with regard to market rate he shall be entitled to represent the matter to CFA within Seven Days of receipt of SO-1 (Wks) decision and the decision of the CFA, thereon shall be final and binding.

Signature of the tenderer & Stamp

Sd/xx xx xx
(Uddipto Dhara)
Lt Col
Staff Officer-I (Works)
for Accepting Officer

SCHEDULE `C'

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

(See Condition 28.1 of CPWD)

Serial No	Quantity	Particulars	Details of Assam Rifles crew supplied	Hire charges per unit per working day	Stand by charges per unit per off day	Place of issue (by name)	Remarks
1	2	3	4	5	6	7	8

-NIL-

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Sd/xx xx xx
(Uddipto Dhara)
Lt Col
Staff Officer-I (Works)
for Accepting Officer

SCHEDULE `D'

(TRANSPORT TO BE HIRED TO THE CONTRACTOR)

(See Conditions GCC of CPWD)

Serial No	Quantity	Particulars	Rate per unit per working day	Place of issue (by name)	Remarks
1	2	3	4	5	6

NIL

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Sd/xx xx xx
(Uddipto Dhara)
Lt Col
Staff Officer-I (Works)
for Accepting Officer

Name of Work: - **"Improvement of existing infrastructure & allied works for COB S/ Chingnyu of 42 AR"**

STAGES OF PAYMENT

(a) **Measurable Contract**. The payment for measurable works under Schedule "A" will be made after measuring the work done as per the standard method of measurement only endorsed in MB.

(b) **Building Work (only for PUF Shelters)**

(i) On completion of works upto plinth level incl Earth Work & Surface Excavation	- 20%
(ii) On completion of work upto fixing of steel structure complete	- 45%
(iii) On completion of work upto fixing of Wall panel & PPGI Sheet roofing.	- 70%
(iv) On completion of work upto celling, electrification & flooring complete in all respect	- 90%
(v) On completion of shelter in all respect and Handing taking of work after BOO	- 100%

Note-1 : Final Bill Payment @ 100% will be made on completion of subject work in all respect including Handing Taking over of assets.

Note 2 : Security Deposit @ 5% will be released after defect liability period.

Signature of the tenderer & Stamp

Sd/xx xx xx
(Uddipto Dhara)
Lt Col
Staff Officer-I (Works)
for Accepting Officer

LIST OF DRAWINGS

1. The following drawings are included in the tender documents:-

Serial No	Description of drawings	Drawing No	Sheet No	Date of	
				Drawing	Last revision
(a)	(b)	(c)	(d)	(e)	(f)
1.	SM Bk living Shelter	DGAR/COB/01	01/10 to 10/10		
2.	Single Officer/JCO accn	DGAR/COB/03	01/10 to 10/10		
3.	KOTE / Signal Centre/MI Room/Coy Office/Store Shelter	DGAR/COB/04	01/09 to 09/09		
4.	Cook House/Dining Hall	DGAR/COB/02	01/11 to 11/11		
5.	Sentry Post/ Watch Tower	DGAR/Engr/COB/115	1/4 to 4/4		
6.	06 seated PUF Toilet Block (7.2m x 2.2m)	DGAR/Engr/COB/114	1/3 to 03/03		
7.	Water Tank Staging	DGAR/COB/03	10/10		
8.	Retaining Wall	DGAR/ENGR/COB/12	1/1		
9.	Security Fencing	DGAR/ENGR/COB/116	1/2 to 2/2		
	Storm Drain	DGAR/ENGR/COB/10	1/1		
10.	Furniture	DGAR/COB/FUR/08	1/5 to 5/5		
11.	Septic Tank	DGAR/ENGR/355	1/1		
12.	Soak Pit & Manhole	DGAR/ENGR/356	1/1		
13.	Lightening Arrester	DGAR/COB/03	09/10		

Signature of the tenderer & Stamp

Sd/xx xx xx
(Uddipto Dhara)
Lt Col
Staff Officer-I (Works)
for Accepting Officer

T E N D E R

TO

THE PRESIDENT OF INDIA

Having examined and perused the following documents: -

1. Special Conditions of Contract

2. Particular Specifications signed by SO-1(Works)

3. Drawings detailed in the list of Drawings.

4. Schedule 'A', `B', `C' and `D' attached hereto.

5. CPWD Specifications 2019 Volume I and II and amendments thereafter and Delhi Schedule Rates 2019 (here-in-after referred to as the Schedule) together with amendments if any. General Conditions of Contracts of CPWD together with errata and amendments if any.

6. Water and Electricity: **No Water and Electricity will be supplied by the Assam Rifles**.

Should this tender be accepted, I/We agree?

(a) That the sum of Rs. _____ (Rupees _____) forwarded as Earnest Money shall either be retained as part of Security Deposit or refunded by the Government on receipt of the appropriate amount of Security Deposit, all as per Conditions of CPWD.

(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 below or at such other rates as may be fixed under the provision of conditions of CPWD and further agree to refer all disputes, as required by conditions of CPWD to the Sole Arbitration of a Serving Officer having degree in Engineering or equivalent or having passed final / direct final examination of Sub-division II of the Institution of Surveyors (India) recognized by the Govt of India to be appointed by the CHIEF ENGINEER ASSAM RIFLES, whose decision shall be final, conclusive and binding.

TOTAL B.F. FROM SERIAL PAGE NO____ Rs._____

or the lumpsum of Rs._____ (Rupees _____
_____) Signature_____ Dated _____
2022 in the capacity of _____ duly authorised to sign the tender for and on behalf of
_____

_____
SIGNATURE OF WITNESS

NAME _____ POSTAL ADDRESS _____
_____ _____
_____ _____
TELEGRAPHIC
ADDRESS TELEPHONE NO. _____

Signature of the tenderer & Stamp

Sd/xx xx xx
(Uddipto Dhara)
Lt Col
Staff Officer-I (Works)
for Accepting Officer

APPENDIX 'A' TO NOTICE INVITING TENDER

1. **Condition No – 1**

(a)	Name of Work	:	**"Improvement of existing infrastructure & allied works for COB S/ Chingnyu of 42 AR"**
(b)	Estimated Cost	:	Rs 7,60,91,690.00

2. **Condition No – 2**

Period of Completion	:	**12 Months**

3. **Condition No – 3**

(a) Document download start date	:	**As per CPP portal**
(b) Earnest Money	:	Rs 15,21,900.00
(c) Earnest money to be deposited in favour of	:	Mahanideshalaya Assam Rifles Directorate General Assam Rifles Shillong - 793010
(d) Office where drawing & other documents will be available for inspection	:	SO-1 (Works) Headquarter 7 Sect AR c/o 99 APO

4. **Condition No – 4**

(a) Last date & time for uploading of online tender.	:	**As per CPP portal**

5. **Condition No – 5** : **Eligibility Criteria**

(a) **For DGAR Enlisted Contractors**.

(i) Enlistment in Class 'S' and above.

(ii) Shall not carry adverse remarks in **Work Load Return (WLR)** or any other report circulated by Competent Engineer Authority.

(b) **For Non-Enlisted Contractors of DGAR**.

(i) Contractor shall meet the enlistment criteria **for atleast Class 'S'**, with regard to satisfactorily completed similar nature and requisite value of work with any Central/State Government department.

(ii) Bank Solvency, Annual turnover, Working Capital along with UDIN.

(iii) Not suspended / debarred / Black listed (permanently / Temporarily) for bidding / any business dealings with Central/State Government department or any Autonomous body/Local body.

Signature of the tenderer & Stamp

Sd/xx xx xx
(Uddipto Dhara)
Lt Col
Staff Officer-I (Works)
for Accepting Officer

ACCEPTANCE

_____Alterations have been made in these documents and as evidence that these alterations were made before the execution of the Contract Agreement and these have been initialled by the Contractor and _____ SO-1 (Works).

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

The above tender was accepted by me on the _____ day of _____on behalf of the President of India for the lump sum of Rs. _____ (Rupees _____ _____)

Signature _____ dated this_____ day of _____

Appointment: CFA, Assam Rifles
ACCEPTING OFFICER
(For and on behalf of the President of India)

Signature of the tenderer & Stamp

Sd/xx xx xx
(Uddipto Dhara)
Lt Col
Staff Officer-I (Works)
for Accepting Officer

CERTIFICATE

GENERAL CONDITIONS OF CONTRACTS (CPWD)
FOR LUMP SUM / ITEM RATE CONTRACTS

I am in possession of copy of the CPWD General Conditions of Contract. 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, if any, elsewhere in these tender documents.

It is hereby further agreed and declared by me/us that the General Conditions of Contracts CPWD form part of these tender documents.

Signature of the tenderer & Stamp

Sd/xx xx xx
(Uddipto Dhara)
Lt Col
Staff Officer-I (Works)
for Accepting Officer

CERTIFICATE

ASSAM RIFLES CONDITIONS AND PARTICULAR SPECIFICATIONS FOR LUMP SUM CONTRACTS, TERM CONTRACTS, ITEM RATE MEASUREMENT CONTRACTS

A copy of the Assam Rifles Special Conditions and Particular Specifications for lump sum contracts, Term Contracts and measurement contracts has been supplied to me/us and is in my/our possession. I/we have read and understood the provisions contained in the aforesaid Assam Rifles Special Conditions and Particular Specifications of Contracts before submission of this tender and I/we agree that I/we shall abide by the terms and conditions thereof, as modified, if any, elsewhere in these tender documents.

It is hereby further agreed and declared by me/us that the Assam Rifles Special Conditions and Particular Specifications form part of these tender documents.

Signature of the tenderer & Stamp

Sd/xx xx xx
(Uddipto Dhara)
Lt Col
Staff Officer-I (Works)
for Accepting Officer

Appendix-'1'

Chapter-I

PROFORMANCE STATEMENT FOR LAST THREE YEARS

Name of Firm _____

Serial No	CA No	Name of Work	Amount of contract	Formation	Date of commen-cement	ODC	ADC	Remarks

Signature of the tenderer & Stamp

Sd/xx xx xx
(Uddipto Dhara)
Lt Col
Staff Officer-I (Works)
for Accepting Officer

Appendix-'2'

Chapter-I

CERTIFICATE TO BE SIGNED BY THE TENDERER

(TO BE FILLED BY THE TENDERER)

1. It is certified that I have read and understood and will comply all instructions contained in tender enquiry and its schedule. All pages of schedule to tender from page 01 to 96 have been filled properly and signed.

2. The construction/building materials supply/ works once /completed/delivered will be subjected to an inspection by the acceptance board at the given consignee location. The specifications of the items will be in conformity with the details provided by the user and as per given specifications. The date of completion of acceptance board would be deemed date on which the warranty will commence.

3. **We shall provide onsite comprehensive warranty of one year for the items being executed work / supplied**.

4. **We guarantee to provide 100% replacement for the defective item during guarantee/warranty & ten years guarantee for the effectiveness of water proofing treatment of accessible roof and structural members**.

5. **We affirm that we abide by the work schedule as given in tender and elsewhere in the tender enquiry**.

6. **We agree to deposit a Security Deposit equal to FIVE percentage (5%) of the total cost of work as per work order/supply order**. After defect liability period of 12 months, the Security Deposit will affirm be released on receipt of confirmation from concern unit/user along with fresh photographs.

7. We certify that any cost incurred on additional items/systems/components /accessories required would be borne by us.

Signature of tenderer:_____

Name in block letters: _____

Name of firm: _____

Full address: _____

_____

_____

(i) Telephone No _____

(ii) Mobile No _____

(iii) Fax No _____

(iv) Email id _____

(v) Website _____

Company Seal (Authorised Signatory of Company)

Place :_____

Date : _____

Signature of the tenderer & Stamp

Sd/xx xx xx
(Uddipto Dhara)
Lt Col
Staff Officer-I (Works)
for Accepting Officer

Appendix-'3'
Chapter-I

ELECTRONIC CLEARING SERVICE (CREDIT CLEARING/REAL TIME GROSS SETTLEMENT (RTGS) FACILITY FOR RECEIVING PAYMENTS

A. DETAILS FOR ACCOUNT HOLDER:-

NAME OF ACCOUNT HOLDER	
COMPLETE CONTACT ADDRESS	
TELEPHONE NUMBER/FAX/EMAIL	

B. BANK ACCOUNT DETAILS;-

BANK NAME	
BRANCH NAME WITH COMPLETE ADDRESS,TELEPHONE NUMBER AND EMAIL	
WHETHER THE BRANCH IS COMPUTERISED	
WHETHER THE BRANCH IS RTGS ENABLED? IF YES, THEN WHAT IS THE BRANCH'S IFSC CODE	
IS THE BRANCH ALSO NEFT ENABLED	
TYPE OF BANK ACCOUNT(SB/CURRENT/CASH CREDIT WITH 10/11/13)	
COMPLETE BANK ACCOUNT NUMBER	
MICR CODE OF BANK	
NAME AND ADDRESS OF THE BENEFICIRY/PAYEE	
IFCS(INDIAN FINANCIAL SYSTEM) CODE	

C. DATE OF EFFECT:-

I hereby declare that the particulars given are correct and complete. If the transaction is delayed or not effected at all for reasons of incomplete or Incorrect Information, I would not hold the user Institution responsible. I have read the option Invitation letter and agree to discharge responsibility expected of me as a participant under the Scheme.

Date: (.....)
Signature of Customer

Certified that the particulars furnished above are correct as per our records.
(Bank's stamp)

Date: (.....)
Signature of the Authorized Official from the Bank

1. Please attach a photocopy of cheque along with the verification obtained from the Bank

2. In case your Bank Branch is presently not "RTGS enabled" then open its upgradation to "RTGS Enabled" branch. Please submit the information again in the above Proforma to the Department at the earliest.

Signature of the tenderer & Stamp

Sd/xx xx xx
(Uddipto Dhara)
Lt Col
Staff Officer-I (Works)
for Accepting Officer

Appendix-'4'
Chapter-I

NON-BLACK LISTING CERTIFICATE

1. I_____ Son of Shri_____ age about _____ by profession proprietor/ partner of M/s _____ having registered office at _____ do hereby solemnly affirms and declare as under :-

(a) Undertakes to the effect that any Government Organisation(s) have not blacklisted our firm.

(b) I am not Proprietor/ Partners/ Director of any other firm or business with whom Government has banned / suspended business dealing.

(c) I do not have any concern/ subsidiaries, blacklisted by Government Organization.

(d) **All works have been completed within PDC and no work / works is / are laying pending / sick / delayed**.

Company Seal (Authorised Signatory of Company)

Place: _____

Date: _____

Signature of the tenderer & Stamp

Sd/xx xx xx
(Uddipto Dhara)
Lt Col
Staff Officer-I (Works)
for Accepting Officer

Appendix-'5'
Chapter-I

FORM OF SOLVENCY FROM A SCHEDULED BANK

This is to certify that the M/s _____ is maintaining current Account No _____ with us. Proprietor of M/s _____ having address _____, is a respectable customer of this branch. To our information, M/s _____ is considered financially sound for any procurement/engagement up to Rs. _____ (Rupees _____ _____ only).

IFSC Code :

MICR Code :

Bank Seal

(Authorised Signatory of Bank)

Place :_____

Contact No. of Bank:_____

Date : _____

Name :_____

Designation :_____

Employee No :_____

Contact No. :_____

Signature of the tenderer & Stamp

Sd/xx xx xx
(Uddipto Dhara)
Lt Col
Staff Officer-I (Works)
for Accepting Officer

Appendix-'6'
Chapter-I

GUARANTEE/ WARRANTY

Except otherwise provided in the invitation to tender, the contractor hereby declares that the goods/ works/ articles/ equipment sold/ supplied to the purchaser/ consignee under this contract shall be of **best quality and workmanship and new** in all respects and shall be strictly in accordance with the specification and particulars mentioned/contained in the contract. The contractor hereby guarantees that the said goods/ works/ articles would continue to confirm to the description and quality aforesaid for a period of **TWELVE MONTHS** from the date of receipt of goods/works/articles/equipment in good condition at site by the consignee in case of supply contract and **TWELVE MONTHS** from the date of installation and satisfactory taking over of the goods/works/articles/equipment at site by consignee where installation and commissioning in involved and notwithstanding the fact and the purchase/inspection authority has inspected and/or approved the said goods/works/articles/equipment or such if during the **TWELVE MONTHS** the said goods / stores / articles / equipment be discovered not to confirm to the description and quality aforesaid or not giving satisfactory Proformance or have deteriorated and the decision of the purchase/consignee in that behalf shall be final and binding on the contractor/seller and the purchaser shall be entitled to call upon the contractor / seller to rectify the goods / stores / articles / equipment or such portion thereof as is found to be defective by the purchasers within the reasonable period or such specified period as may be allowed by the purchaser in his discretion on application made thereof by the contractor/seller, and in such an event, the above period shall apply to the goods/stores/articles/equipment rectified from the date of rectification mentioned in the warranty thereof, otherwise the contractor /seller shall pay the purchaser such compensation as may arise by reason of the breach of warranty therein contained.

Signature of the tenderer & Stamp

Sd/xx xx xx
(Uddipto Dhara)
Lt Col
Staff Officer-I (Works)
for Accepting Officer

Appendix-'7'
Chapter-I

PENALTY FOR USE OF UNDUE INFLUENCE

The seller should undertake that he has not given, offered or promised to give directly or indirectly any gift, consideration, reward, commission, fees brokerage of inducement to any person in service of the Purchaser or otherwise in procuring, the Contact or Forbearing top do or for having done or forborne to do any act in relation or execution of the Contract or any other Contact with the Government for showing or forbearing to show favor or disfavor to any person in relation to the Contact or any other Contact with the Government. Any breach of the aforesaid undertaking by the seller or any one employed by him or acting on is behalf (whether with or without the knowledge of the seller) or the commission of any offers by the seller or any one employed or acting on his behalf, as defined in Chapter IX of the Indian Penal Code, 1860 or the Prevention of Corruption Act, 1947 or any other Act enacted for the prevention of corruption shall entitle the Purchase to cancel the contact and all or any other Contact with the seller and recover from the Seller the amount of any loss arising from such cancellation. A decision of the Purchaser or his nominee to the effect that a breach of the undertaking had been committed shall be final and binding on the seller.

Giving or offering of any gift, bribe or inducement or any attempt at any such act on behalf of the seller towards any officer/employee of the Purchaser or to any other person in a position to influence any officer/employee of the Purchaser for showing any favor in relation to this or any other contact, shall result in rejection of the bid.

Signature of the tenderer & Stamp

Sd/xx xx xx
(Uddipto Dhara)
Lt Col
Staff Officer-I (Works)
for Accepting Officer

Appendix-'8'
Chapter-I

EARNEST MONEY DEPOSIT (EMD) IN FORM OF FDR/ BANK GUARANTEE/ TDR

(SCAN COPY WITH ONLINE BID/
ORIGINAL COPY TO BE DEPOSITED AS PER PARAGRAPH 12 OF PAGE 2 OF TENDER DOCU)

Signature of the tenderer & Stamp

Sd/xx xx xx
(Uddipto Dhara)
Lt Col
Staff Officer-I (Works)
for Accepting Officer

Appendix-'9'
Chapter-I

Enlistment/Renewal letter of Assam Rifles approved contractor and enlisted contractors working with other Central Government department/organization meeting eligibility criteria of contractor in any Govt Department (to be uploaded)

Signature of the tenderer & Stamp

Sd/xx xx xx
(Uddipto Dhara)
Lt Col
Staff Officer-I (Works)
for Accepting Officer

Appendix-'10'
Chapter-I

AMENDMENTS IN TENDER DOCUMENTS AND ENLISTED CLASS OF CONTRACTORS

1. Following changes incorporated as suggested vide Ministry of Finance OM No. F.9/4/2020-PPD dt 12 Nov 2020.

   (a) **Proformance certificate.** Proformance Security should be 5% of the value of the contract.

2. Please incorporate the upper tendering limit and bank solvency in the NIT as per para 3 of the SOP of enlistment of the contractors of Assam Rifles reproduced blow:-

Ser	Class	Upper Tendering limit	Bank Solvency
(a)	S	Rs. 800 Lakhs	Rs. 240 Lakhs
(b)	A	Rs. 200 Lakhs	Rs 60 Lakhs
(c)	B	Rs. 100 Lakhs	Rs. 30 Lakhs
(d)	C	Rs. 50 Lakhs	Rs. 15 Lakhs
(e)	D	Rs. 25 Lakhs	Rs. 7.50 Lakhs

3. Past Proformance to be restricted to 3 years instead of 5 years.

4. Validity of enlistment to be clearly specified in the NIT.

5. Details as per SOP for enlistment of contractor reproduced below:-

Class	Past experience of completed works in last 7 years	Financial Soundness	Engineering Establishment
'S'	Three works costing not less than Rs.320 lakhs each or Two works costing not less than Rs.400 lakhs each or One work costing not less than Rs.640 lakhs each or Average annual turnover for three consecutive years shall not be less than Rs. 240 lakhs	(a) Solvent upto Rs. 240 lakhs or Financially sound for engagement up to Rs.800 lakhs (b) Working capital not less than Rs.40 lakhs	(a) One graduate Engineer from a Government recognized institution with minimum experience of 5 years And (b) Two diploma Engineer from Government recognized institution with minimum experience of 05 years.
'A'	Three works costing not less than Rs.80 lakhs each or Two works costing not less than Rs.100 lakhs each or One work costing not less than Rs.160 lakhs each or Average annual turnover for three consecutive years shall not be less than Rs.60 lakhs	(a) Solvent upto Rs. 60 lakhs or Financially sound for engagement up to Rs.200 lakhs (b) Working capital not less than Rs.10 lakhs	(a) One graduate Engineer from a Government recognized institution with minimum experience of 5 years And (b) One diploma Engineer from Government recognized institution with minimum experience of 05 years.

Signature of the tenderer & Stamp

Sd/xx xx xx
(Uddipto Dhara)
Lt Col
Staff Officer-I (Works)
for Accepting Officer

Class	**Past experience of completed works in last 7 years**	**Financial Soundness**	**Engineering Establishment**
'B'	Three works costing not less than Rs.40 lakhs each or Two works costing not less than Rs.50 lakhs each or One work costing not less than Rs.80 lakhs each or Average annual turnover for three consecutive years shall not be less than Rs.30 lakhs	(a) Solvent up to Rs.30 lakhs or Financially sound for engagement up to Rs.100 lakhs (b) Working capital not less than Rs.5 lakhs	One graduate Engineer from a government recognized institution with minimum experience of 5 years And One diploma Engineer from Government recognized institution with minimum experience of 05 years.
'C'	Three works costing not less than Rs. 20 lakhs each or Two works costing not less than Rs. 25 lakhs each or One work costing not less than Rs.40 lakhs or Average annual turnover for three consecutive years shall not be less than Rs.15 lakhs	(a) Solvent upto Rs.15 lakhs Or Financially sound for engagement up to Rs.50 lakhs (b) Working capital not less than Rs.2.5 lakhs	One graduate Engineer from a government recognized institution with minimum experience of 3 years Or One diploma Engineer from Government recognized institution with minimum experience of 5 years.
'D'	Three works costing not less than Rs. 10 lakhs each or Two works costing not less than Rs. 12.50 lakhs each or one work costing not less than Rs. 20 lakhs each or Average annual turnover for three consecutive years shall not be less than Rs.7.5 lakhs	(a) Solvent upto Rs.7.5 lakhs Or Financially sound for engagement up to Rs.25 lakhs (b) Working capital not less than Rs.1.25 lakhs	One graduate Engineer from a government recognized institution with minimum experience of 2 years Or One diploma Engineer from Government recognized institution with minimum experience of 3 years.

Signature of the tenderer & Stamp

Sd/xx xx xx
(Uddipto Dhara)
Lt Col
Staff Officer-I (Works)
for Accepting Officer

Appendix-‘11’
Chapter-I

GSTIN REGISTRATION CERTIFICATE (TO BE UPLOADED)

Signature of the tenderer & Stamp

Sd/xx xx xx
(Uddipto Dhara)
Lt Col
Staff Officer-I (Works)
for Accepting Officer

Appendix-‘12’

SITE VISIT CERTIFICATE

It is certified that Sh. / Smt. _____ of M/s _____ (Name of firm) has visited work site for “_____” (Name of work) on _____ (date). He / She has been explained nature of work to be executed on ground.

(Signature of Contractor / representative)
Signature with Company seal
Date :

(Signature of respective SO-1 (Works) of respective HQ IGAR / Sector Assam Rifles)
Signature with office stamp
Date :

Signature of the tenderer & Stamp

Sd/xx xx xx
(Uddipto Dhara)
Lt Col
Staff Officer-I (Works)
for Accepting Officer

SPECIAL CONDITIONS OF THE CONTRACT

1. **General**.

(a) The following Special Conditions shall be read in conjunction with the General Conditions of contracts including upto date Errata/Amendments thereto. If any provision(s) in these Special Conditions is at variance with that of the aforesaid documents, the former shall be deemed to take precedence there over.

(b) The Work under this contract shall be carried out in accordance with Schedule 'A', particular specifications, drawings and other provisions given in General summary and general specifications/provisions given in CPWD Specifications 2019 Volume - 1& Volume - 2.

2. **Admission to Site by Contractor to Ascertain His Own Information**.

(a) The tenderers shall contact the Staff Officer-I(Works) for the purpose of inspection of site(s) and relevant documents other than those sent herewith, who will give reasonable facilities for this purpose. The tenderers shall also make themselves familiar with working conditions, accessibility of site(s), availability of materials and other cognate conditions which may affect the entire completion of work under this contract.

(b) The tenderers shall be deemed to have visited the site(s) and made themselves familiar with the working conditions, whether they actually inspect the site(s) or not. No extra payment consequent on any mistake or misunderstanding or otherwise on this account shall be allowed.

3. **Security and passes**.

(a) Contractor shall employ only Indian Nationals after verifying their antecedents and loyalty. The contractor shall on demand by the Engineer-in-Charge, submit list of his agents, employees and work people concerned and shall satisfy the Engineer-in-Charge as to the bonafides of such people.

(b) The Engineer-in-Charge at his discretion has the right to forward the list of personnel‘s to Commandant (Adm) / Commanding Officer of formation/unit or any appropriate authority for issuing the passes as per rules and regulations of the area in force to control the admission of the contractor, his agents, employees and work people to the site of the work or any part thereof. Passes should be returned at any time on demand by the Engineer-in-Charge and or the authorities concerned and in any case on completion of work.

(c) Verification of antecedents of Contractor’s representatives/labour deployed at site in connection with execution of work under the contract, as per security requirement shall be the responsibility of the contractor and all expenses in connection with verification of antecedents by Police Authorities/Security Agency shall be borne by the Contractor. No claim whatsoever on this account shall be entertained by the department.

(d) The contractor and his agents, employees and work people shall observe all the rules promulgated by the authority controlling the area in which the work is to be carried out, e.g., prohibition of smoking and lighting, fire precautions, search of persons on entry and exit, keeping to specific routes, observing specified timing etc. Nothing extra shall be admissible for any man-hours etc lost on this account.

(e) **Identity Cards or Passes**. The contractors, his agents and representatives are required individually to be in possession of an identity card or pass duly verified by the police department. The identity card or pass will be examined by the security staff at the time of entry into or exit from site and also at any time or number of times at site.

(f) Contractor shall be responsible for the conduct and action of his workmen, agents or representative. Thorough search of all persons and transport shall be carried out at each gate and for as many times as a gate is used for entry or exit and may also be carried out at any time or any number of times at the work site.

4. **Fire Precautions**.

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

(b) Motor transport vehicles, if any, allowed by authorities to enter the area must be fitted with serviceable fire extinguishers.

5. **Minimum Wages Payable**.

(a) The contractor shall not pay wages lower than minimum wages for labour as fixed by the Govt of India/State Govt whichever is higher.

Signature of the tenderer & Stamp

Sd/xx xx xx
(Uddipto Dhara)
Lt Col
Staff Officer-I (Works)
for Accepting Officer

(b) The contractor shall have no claim whatsoever, if any on account of local factor and/or Regulations, he is required to pay the wages in excess of minimum wages as described above during the execution of work.

6. **Royalties**. The contractor shall deposit royalty and obtain necessary permit for supply of bajri, stone, kankar, sand and other materials etc. from the local authorities and quoted rates shall be inclusive of royalty.

7. The rates and prices to be tendered in the BoQ (Bill of Quantities) are for completed and finished items of works and complete in all respects. It will be deemed to include all constructional plant, labour, supervision, materials, transport, all temporary works, erection, maintenance, contractor's profit and establishment/overheads, together with preparation of designs & drawings pertaining to casting yard, shop drawing, fabrication drawing (if required), staging form work, stacking yard, etc. all general risk, all taxes, royalty, duties, cess, octroi and other levies, insurance liabilities and obligations set out or implied in the tender documents and contract.

8. **Water**. Water will not be supplied by Assam Rifles. Good quality portable water suitable for construction purposes as per IS specification shall be used for construction at no extra cost.

9. **Cooperation with Other Agencies**. The contractor shall permit free access and generally afford reasonable facilities to other agencies or departmental workmen engaged by the Govt to carry out their part of the work, if any, under separate arrangements.

10. **Electric Supply**.

(a) Assam Rifles is not bound to supply Electricity to the Contractor for execution of work. However, where feasible, Assam Rifle may provide electricity supply.

(b) The contractor will be charged for the electric energy consumed at commercial rates laid down by the concerned State Electricity department.

(c) No additional payment shall be made to the contractor for any electricity charges paid by him/her for execution of work or otherwise to Assam Rifles or any other agency/department.

(d) The SO-1 (Works) or Engineer-in-Charge or persons authorised by them have free access to inspect all electric installations, connections, devices, appliances etc., and if these are not found satisfactory or not following safety norms, the electricity supply can be disconnected without any advance notice.

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

11. **Time and Progress Chart (CPM Chart)**.

(a) The time and progress chart to be prepared as per **Clause 5.1 (b) of General Conditions of Contract 2020 Construction Works of CPWD,** shall consist of detailed network analysis and a time Schedule. The critical path network will be drawn jointly by the Staff Officer-I (Works) and the contractor soon after acceptance of tender. The time scheduling of the activities will be done by the contractor so as to finish the work within the stipulated time. On completion of the time schedule a firm calendar date Schedule will be prepared and submitted by the contractor to the Staff Officer-I (Works) who will approve it after due scrutiny. The schedule will be submitted in four copies within two weeks from the date of handing over of site.

(b) During the currency of work, the contractor will adhere to the time schedule and this adherence will be a part of the contractor's Proformance under the contract. During the execution of the work the contractor is expected to participate in the reviews and updating of the network under taken by the Staff Officer-I (Works). These reviews may be undertaken at the discretion of the Staff Officer-I (Works) either as a periodical appraisal measure or when the quantum of work ordered on the contractor is substantially changed through deviation orders or amendments. Any revision of the time schedule as a result of the review will be submitted by the contractor to Staff Officer-I (Works) within a week for the approval after due scrutiny by the authority concerned.

(c) The contractor shall adhere to the revised time schedule thereafter. In case of contractor disagreeing with revised schedule the same will be referred to the Accepting Officer whose decision shall be final, conclusive and binding. Staff Officer-I (Works's approval to the revised schedule resulting in a completion date beyond the stipulated date of completion shall not automatically amount to a grant of extension of time. Extension of time shall be considered and decided by the appropriate authority and separately regulated.

(d) Contractor shall mobilize and employ sufficient resources to achieve the detailed schedule within broad framework of the accepted method of working and safety. No additional payment will be made to

Signature of the tenderer & Stamp

Sd/xx xx xx
(Uddipto Dhara)
Lt Col
Staff Officer-I (Works)
for Accepting Officer

contractor for any multiple shift work or other intensive methods contemplated by him in his schedule, even though the time schedule is approved by the Staff Officer-I (Works).

12. **Record of Consumption of Cement**.

(a) The contractor shall maintain a hard bound register with serially numbered pages with all pages initialled by Engineer-in-charge against numbering showing quantities of cement received, incorporated in the work and balance at the end of each day. The form of record shall be as approved by Engineer-in-Charge. The register shall be signed daily by representatives of Assam Rifles and the contractor in token of verification of its correctness and will be checked by Engineer-in-Charge, at least once a week.

(b) The register shall be kept at site in safe custody of the contractor‘s representative during the progress of the work and shall be produced on demand for verification to the inspecting officer(s).

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

13. **Security of Classified Documents**. The contractor shall not communicate any classified information regarding the work to unauthorised persons without the prior written approval of the Engineer-in-Charge. The contractor shall also not make copies of the design/drawing and other documents furnished to him in respect of work, and shall return all documents on completion of the work or earlier on determination of the contract.

14. **Record of Materials**

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

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

(c) The contractor shall, on demand, produce to the Staff Officer-I (Works) original receipted vouchers in respect of the supplies. Vouchers so produced and verified shall be stamped by Engineer-in-Charge indicating contract number. The contractor shall ensure that the materials are brought to site in original sealed containers/packing; bearing manufacturer‘s marking except in the case of the requirement of material(s) being less than smallest packing.

15. **Materials and Samples**

(a) List of approved products / items for inclusion in work is attached as **Appx ‘B’**.

(b) Refer Clause 10A of General Conditions of Contract, Construction Works of CPWD- 2020.

(c) The Tender is advised to ascertain the sample of the materials from SO-1 (Works) of formation Headquarters (IGAR HQ / Sector HQ). 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 or not. The materials to be incorporated in the work by the contractor shall conform to, or shall be superior in quality to the sample approved and shall comply with the specifications given here-in-after.

(d) The contractor shall not procure materials in bulk unless the samples are first approved by the SO-1 (Wks).

(e) The materials to be used shall comply with the requirement of the latest Indian Standard Code.

(f) The cost of testing of material shall be borne by the contractor and while quoting their rates this aspect shall be kept in mind and nothing extra shall be admissible on the account.

16. **Refund of Performance Security Deposit**. The Proformance security deposit may be refunded to contractor after the expiration of the defect liability period by the Staff Officer-1(Works) provided always that the contractor shall first have been paid the final bill and have rendered a no demand certificate (IAFA-451).

17. **Official Secret Act**. Refer Condition 24 of IAFW-2249. The contractor’s attention is invited to India Official Secret Act 1923 (xxx of 1923) particularly Sec 5 thereof. The contractor shall be bound by the provision of this Act.

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Staff Officer-I (Works)
for Accepting Officer

18. **Cleaning Down**. The contractor shall clean all floors, walls remove cement, lime, paint marks, drops etc. clean the joinery glass panes etc touch up all painters work and carryout all other necessary items of work in connection there with and leave the whole premises clean and tidy before handing over the building(s) and other works covered under this contract.

19. **Details of Construction**. The quoted rates shall be deemed to include for minor details of construction which are obviously and fairly intended and are essential for completion of the work but may not have specially been referred to in these documents. In the event of disputes the decision of the Accepting Officer shall be final, binding and conclusive.

20. **Damage to Existing Works**. Any damage done to existing structure during the execution of works shall be made good by the contractor at his own cost and site of works left clean and tidy on completion. Rectification or reinstatement making good etc. shall conform to the standard of materials originally used in the finished work shall match with existing work in all respect to the entire satisfaction of the Engineer-in-Charge and SO-1(Works). In case of any dispute on this account, the matter shall be referred to the Chief Engineer whose decision in writing shall be final and binding.

21. **Octroi/Sales Tax/GST and other Duties**. Contractor‘s rates shall be deemed to be inclusive of all duties such as Octroi, Sales Tax, excise, VAT/GST etc. as given in General Conditions of Contract and state Govt sales tax/GST on works contracts payable under respective statutes pursuant to the Constitution (Forty sixth amendment) Act 1982. Any condition stipulated by the tenderer regarding sales tax/GST on works contracts will not be considered and such tender shall be liable for rejection.

22. **Construction Labour Welfare Tax**. The quoted rates by the tenderers shall be deemed to be inclusive of construction labour welfare tax and no extra payment shall be admissible to the contractor on this account.

23. **Recovery Charge for Testing of Materials**. Where testing of contractor’s material is carried out in Zonal/NABL accredited Lab/National Test House/nearest NIT / nearest IIT / Engineering Colleges by the Department, the contractor shall be liable to pay the testing charges, which shall be recovered from the Contractor’s Running payment/Final Bill as the case may be.

24. **Force Majeure**.

(a) Should any force majeure circumstances arise, each of the contracting party shall be excused for the non-fulfilment or for the delayed fulfilment of any of its contractual if the affected part within 15 days of its occurrence informs the other party in writing.

(b) Force Majeure shall mean fires, floods, natural calamities or other acts such as war, turmoil, strikes (as not limited to be establishment of the seller), sabotage, explosions, quarantine restrictions beyond the control of either party.

(c) It is understood and agreed between the parties hereto that the right and obligations of the parties shall be deemed to be in suspension during the continuance of the force majeure event as aforesaid and the said rights and obligations shall automatically revive upon the cessation of the intervening forces majeure vent the period within the rights and obligation of the parties shall be in suspension due to force majeure event shall not be considered as a delay with respect to the period of deliver and/or acceptance of delivery under the contract or other to the detriment of either party.

(d) Notwithstanding the provisions of the immediately for clauses it is further understood and agreed between the party hereto that in the event of any force majeure persisting for uninterrupted period exceeding (06) Six months, on their part reserves the right to terminate this contract upon giving prior written notice of 30 (Thirty) days to the other party of the intention terminate without any liability other than reimbursement on the terms provided in their agreement for the goods received.

25. **Lab Test Report**. Lab test reports of items mentioned at para 1 of schedule ‘A’ notes are required to be submitted by the L1 bidder. The lab test reports shall fulfill fwg conditions: -

(a) Duly approved by Govt/NABL Labs.

(b) Should not be more than 1 year old from the date of bid uploading.

(c) Should have Name of seller/OEM and date of test.

(d) Test report should be relevant to the items mentioned in the bid.

(e) The lab report may be sent for verification to lab to establish authenticity at discretion of buyer.

Signature of the tenderer & Stamp

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Lt Col
Staff Officer-I (Works)
for Accepting Officer

Signature of the tenderer & Stamp

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PARTICULAR SPECIFICATIONS

1. **General Requirements**.

1.1. The Work under this CONTRACT shall be carried out in accordance with SCHEDULE 'A' (BOQ), PARTICULAR SPECIFICATIONS, DRAWINGS and General Specifications and other provisions in CPWD Specifications 2019 Volume - 1& Volume - 2 read in conjunction with each other.

1.1.2. General Specifications referred to/mentioned in GENERAL CONDITIONS OF CONTRACTS mean Specifications including Amendments and Errata as applicable.

1.1.3. Materials & Workmanship required for these Works/Services shall be as described against 'Specifications & Workmanships' in the various Trade/Sections of the CPWD Specifications 2019 duly modified by these Particular Specifications here-in-after.

1.1.4. Reference to some Paragraphs of CPWD Specifications 2019 has been made in these Particular Specifications, but other Paragraphs and Provisions as applicable are also to be followed e.g. reference to Clause No. pertaining to General Workmanship for Brick Masonry, Joinery, Iron and Steel Work, etc. have not been made but provisions therein as required for the work are applicable.

1.1.5. Provisions contained in the CPWD Specifications 2019 Volume – 1 & Volume - 2 in the Preambles to the relevant Items of SCHEDULE 'A' (BOQ) shall also be read in conjunction with the Provisions contained in these documents.

1.1.6. Where Specifications/Provisions for any Item of Work given in these Particular Specifications are at variance with the Provisions/Specifications given in CPWD Schedule, Specifications/Provisions given in these Particular Specifications shall be followed. However, for pricing of Deviation Orders, Rates given in DSR shall be adopted.

1.1.7. Where Specifications for any Item of Work are not given in CPWD Specifications 2019 or in these Particular Specifications, Specifications given in relevant Indian Standard Specifications or Code of Practice shall be followed.

1.1.8. Particular Specifications given here-in-after shall be read in conjunction with the Provisions in the CPWD Specifications 2019 and relevant Bureau of Indian Standards referred to thereto and in these Particular Specifications. In case of any discrepancy, the Provisions in these Particular Specifications shall take precedence.

1.1.9. Materials/Accessories/Equipments for which MAKE have not been specified in these Particular Specifications, shall be of BIS Makes and shall strictly comply with Current Appropriate BIS Specifications, for which BIS Specification has not been issued/available, they shall comply with the Currents BS Specifications or as approved by Engineer-in-Charge.

1.1.10. These Particular Specifications shall deem to be included the APPENDICES attached here-in- after.

2. **Making Good**. The contractor shall cut, leave or form holes, recesses, chases etc, in concrete, brick work, walls, ceiling, floors and in any other situations as required or as directed by the Engineer-in-Charge and finish to match the adjoining surfaces.

3. **Scope of Work**.

3.1. This Contract includes for the full, final and entire completion of Works described in SCHEDULE 'A' (BOQ) including Schedule 'A' Notes thereon and specified in these Particular Specifications forming part of the Tender documents.

3.2. Tenderers are advised to visit the SITE (S) and ascertain for themselves the exact scope of Work and its Working Conditions, viz Working Hours, Availability of Site(s), etc. and quote their Tenders accordingly. Any Claim whatsoever, on such/these accounts will not be entertained by the Government at a later Date/Stage.

4. **Site of Work**

4.1. The Works shall be carried out at different Locations/Site(s). The Contractor shall finalize the programme with the Engineer-in-Charge well in advance in such a way that neither the USERS feel inconvenience nor Work is delayed.

4.2. The proposed Location as shown on site plan of Various Works shall be as directed by the Engineer-in-Charge at Site(s) of Works.

5. **Visit to Site**

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Sd/xx xx xx
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Lt Col
Staff Officer-I (Works)
for Accepting Officer

5.1. The Tenderers are advised to contact Staff Officer-1 (Works) on any Working Day during Working Hours, who will arrange for their visit to work site.

5.2. The Tenderer shall be deemed to have visited the Site of Work before Quoting their UNIT RATES and no Claim for any EXTRA PAYMENT on account of any misunderstanding, etc. will be entertained by the Department, irrespective of the fact whether they have actually visited the Site or not.

6. **Materials**

6.1 **General**

6.1 All Materials to be supplied by the Contractor for incorporation in the Work shall conform to relevant IS Specifications. In case Specification of any Materials needed for incorporation in work is not contained in any of the Contract Documents, the Specification of such Materials/Articles to be incorporated in work shall be got approved in writing from the Staff Officer-1(Works) before their incorporation in work by the Contractor without any Price Adjustment.

6.2. The relevant Bureau of Indian Standards shall be of Latest Revision including Amendments if any. The Contractor shall incorporate in the work Materials complying with the requirements of relevant Bureau of Indian Standards of the Latest Publication (Edition) including all amendments/revision issued by Bureau of Indian Standards on and before bid submission end date, thereof without any Price Adjustment in the Quoted Rate.

6.3. As far as practicable all manufactured Materials/Articles other than those manufactured in Contractor's Workshop at Site shall bear IS Certification Marks. In case, any Article not bearing IS Certification Marks but conforming to relevant Specification is proposed to be incorporated in the Work, Samples of the same shall be got approved in writing from Engineer-In-Charge before their incorporation in work. The Contractor shall submit sufficient evidence to the Staff Officer-1(Works) to show that such Articles conform to the relevant Specifications and no Price Adjustment shall be made on this account.

6.4. Manufactured Materials/Articles shall be brought at Site in Original Sealed Containers/Packing bearing Manufacturer's marking unless the quantity required is a fraction of smallest packing.

6.5. The Contractor shall carry out such Instructions that are given to him in Writing by the Engineer- in-Charge to ensure that Full Quantity of such Materials goes in to Work.

6.6 **Anti-Termite Treatment**.

6.6.1 Materials of Proprietary nature such as Paints, Water Proofing Compound, Chemicals for Anti- Termite Treatment and the like, quantity of which cannot be checked after incorporation in the work shall be measured and recorded in the MEASUREMENT BOOK as soon as those are brought at Site. These Measurements shall be signed both by the Engineer-in-Charge and the Authorised Representative of the Contractor. ORIGINAL STAMP RECEIPTED BILLS along with the relevant INVOICES from the Manufacturers or their Authorised Dealers (if any) in support of having brought the full quantity required for incorporation in the Work, shall be produced to Engineer-in-Charge.

6.6.2 Anti-termite (post treatment only) with minimum 5 years warranty shall be catered in existing / new construction buildings, and for those items which are likely to be infested by termite. Engineer-in-Charge shall witness the process of anti-termite treatment. Proper GST bill along with empty anti-termite containers cans to be deposited with the Engineer-in-Charge for destruction.

7. **Approved Makes/Brand of Materials**.

7.1. Materials/Accessories/Equipment for which MAKE have not been specified in these Particular Specifications, shall be of Standard Makes and shall strictly comply with Current Appropriate BIS Specifications, for which IS Specification has not been issued/available, they shall comply with the Currents BIS Specifications or as approved by SO-1(Wks) of respective HQ IGAR/ HQ Sector Assam Rifles.

7.2. A list of certain items for which specific manufacturers/ make only are to be provided in this contract are given in **Appendix `J'**.

8. **Approved Sources of Local Origin Materials Meeting Provisions of Relevant IS Code**.

8.1. The Sources and Sample for materials such as Bricks, Aggregates, etc., shall generally conform to relevant Specifications given in the Tender documents. all such Materials shall be got approved from SO-1(Wks) of respective HQ IGAR/ HQ Sector Assam Rifles in writing before these Materials are brought at Site in bulk.

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for Accepting Officer

8.2. Contractor at his own may procure materials from any other sources without any extra cost to the Department provided that the same conform to respective IS as stated here-in-before.

9. **Approval of Samples/Materials**.

9.1. Approval of Samples/Materials by Engineer–In-Charge shall be recorded in a Register labelled as 'SAMPLE APPROVAL REGISTER' to be maintained by the Engineer-in-Charge which interalia shall mention Sources of Supply, Name of Manufacturer, Trade Name/Brand (if applicable) and reference to Clause of Tender Documents containing Specifications of Particular Materials.

9.2. Letters conveying Approval of Samples/Materials by Engineer–In-Charge shall interalia mention sources of Supply, Name of Manufacturer, Trade Name/Brand (if applicable) and reference to Clause of Tender documents containing Specifications of Particular Materials.

10. **Testing of Material**. SO-1 (Works) at regular intervals shall carry out random testing of samples of material supplied / construction material being used by the contractor. Material testing will be carried out by the SO-1 (Works) at the site labs established. If site lab established is not capable of testing a particular type of material, SO-1 (Works) will send sample of material to nearest NABL accredited laboratories, National Test House, Regional Research labs, IITs, National Institutes of Technology, Govt Engineering College or any Govt laboratories Government laboratories.

11. **Standard of Quality & Workmanship**.

11.1. **General**

11.2. The Work shall strictly comply with the provisions contained in the Latest Edition of INDIA STANDARD CODE OF PRACTICE and/or IS SPECIFICATION as applicable, Works except where such Regulations and Rules are modified by these Particular Specifications.

11.3. All Works shall be carried out properly by Skilled Tradesmen. The Contractor on demand shall produce such evidence of Qualifications of his Workmen/Skilled Tradesmen/Supervisors / Engineers, either at the commencement of Work or at any time thereafter/during currency of the Contract. The entire Work shall be High Class with the best Workmanship and to the entire satisfaction of Engineer-in-Charge.

12. **Excavation & Earth Work**

12.1. **Excavation in Trenches and Over Areas**

12.1.1. Excavation in Trenches and Over Areas shall be carried out as described in Clause No. 2.13 to 2.18 of CPWD Specifications 2019- Part 1.

12.1.2. Excavation shall be restricted to Dimension as shown on Drawings and as specified in Schedule. Excavation made if any, in excess of required Depth/ Authorised Width shall be made good by the Contractor with Cement Concrete 1:5:10 (40 mm graded crushed stone aggregate) without any Extra Cost to the Govt.

12.1.3. In case of Excavation in Hard Rock, Extra Depth of Excavation in excess to the required Depth shall be made with Cement Concrete 1:4:8 (40 mm graded crushed stone aggregate) without any Extra Cost to the Govt.

12.1.4. Beds of the Trenches/Column shall be watered and well rammed and any depression thus formed shall be filled with approved earth as required and level and slope as directed by the Engineer-in-Charge.

12.1.5. If hard strata are met with, which can neither be treated as the Soft rock nor Hard rock within the definition of CPWD Specifications, the same shall be treated as Hard soil.

12.1.6. If Rock (Soft/Disintegrated and Hard) is met at Site, Contractor shall immediately notify the facts to Engineer–In-Charge in writing.

12.1.7. **Hard Rock**. Blasting is **NOT PERMITED** at site unless until specified in the Contract Document and approved by the SO-1 (Works).

12.2. **Bailing and Pumping**

12.2.1. A Tenderer shall ascertain himself the Level of Sub-Soil Water at Site of Work to allow in his Tender for any Bailing and Pumping out of Water, etc. as per Site Condition. Bailing and pumping out of Water, if required, will be done as described in Clause No. 2.21.1 of CPWD Specifications 2019 Vol 1. No Extra Payment shall be admissible for the above-mentioned operations. In the event of Deviation, no Adjustment shall be made for Cost of Bailing, Pumping and De-watering as specified here-in-before.

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12.2.2 Bailing or pumping out water, accumulated in excavation, due to rains is included under respective items of earthwork and is not to be paid separately.

12.3. **Filling in Trenches**.

12.3.1. Refer Para 2.23 and sub paras of 2.23 of CPWD Specifications 2019 Part

12.4. **Removal of Surplus Soil**.

12.4.1. Surplus Soil and/or Rubbish obtained from Excavation shall be disposed unless otherwise specified in Particular Specifications here-in-after, upto a distance as specified in Sch 'A' BOQ items at the Location(s) as directed by Engineer-in-Charge, deposited, spread and levelled.

12.4.2. Soil/earth obtained from excavation shall be used for returning filling in places where any other type of filling like moorum/sand is not specified or shown in drawings after separating it from grass, vegetations and other foreign materials.

13. **Hard Core**.

13.1. Hard core shall consist of broken stone aggregate of gauge not exceeding 63 mm and shall be well graded so that after consolidation it provides a dense and compact sub grade. Hard core shall be spread, watered well rammed and consolidated. The thickness of Hard core shown in Drawings/ Schedule 'A' shall be thickness after consolidation.

14. **Cement Concrete Work**.

14.1. **Materials**

14.2. **Cement**. Refer paras 3.1.2 and sub paras 3.1.2.1 to 3.1.2.6 of CPWD Specifications 2019 Part 1.

14.2.1. **Type of Cement**. Cement shall be Ordinary Portland cement Grade 43 conforming to IS: 8112 of 2013 or Portland Pozzolona cement conforming to IS 1489.

13.2.2. The following checks and procedures shall be followed before the cement supplied by the contractor is accepted and is approved for incorporation in the works.

14.3. **Procurement**.

14.3.1. Cement incorporated by the contractor shall be procured from main producers (OEM) of cement and the date of manufacturing shall be within six weeks from date of delivery at site.

14.3.2. The approved main cement manufacturers companies of OPC and PPC are given as Appendix 'B'.

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

(a) PPC should meet the strength criteria of 43 Grade OPC as laid down in IS-8112- 2013.

(b) The minimum period before striking off form work while using PPC shall be as given in relevant PS clause here-in-after.

(c) In cold climate regions where temperature is lower than 15^0 C only OPC shall be used.

(d) **Mixing of OPC and PPC shall not be allowed in a work.**

(e) While procuring PPC, the following requirements are to be ensured and certificate to the effect is to be obtained by the contractor for each batch from the manufacturer and the same shall be submitted to the Staff Officer-1(Works) for approval to procure PPC :-

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

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Staff Officer-I (Works)
for Accepting Officer

14.3.4 The particulars of the manufacturer /main producer of cement along with the date of manufacture shall be submitted by the contractor for every lot of cement separately. The documents in support of purchases of cement shall be verified by the Engineer-in-Charge and Staff Officer-1 (Works).

14.4. **Storage**.

14.4.1. There will be two separate godowns with proper dunnage provided by contractor at site of works exclusively for storage of cement :-

14.4.2. "First Godown" will have the cement lot(s) for which independent testing is to be got done and/or under process.

14.4.3 "Second Godown" will have the cement lot(s) whose independent testing has been got done and which after successful testing stands approved by Staff Officer-1 (Works) for incorporation in the work.

14.4.4 Cement shall be stored over dry platform with gap of 20 cm from walls around and at least 20 Cm high from floor level. Godowns shall have easy access for proper inspection and cement shall be protected from dampness/moisture to minimise storage deterioration or intrusion of foreign matter.

14.4.5 Both the godowns shall be provided with two locks on each door. The key of one lock at each door shall remain with the Engineer-in-Charge or his representative and that of the other lock with the contractors' authorised agent at the site of works so that cement is removed form the godown only according to the requirements for independent testing purposes or for daily consumption purposes with the knowledge of both the parties.

14.5. **Testing of Cement**

14.5.1. Contractor shall submit particulars of manufacturer of cement along with the date of manufacture for every lot of cement separately. The manufacturer is to carry out inspections and testing of cement in accordance with the relevant BIS provisions. Contractor shall also submit manufacturer's test certificates in original alongwith the test sheet or an authenticated copy thereof giving results of each physical test as applicable and the chemical composition of cement. The documents giving above particulars shall be verified by Engineer-in-Charge and Staff Officer-1(Works) in support of the purchases of cement and these details shall be recorded in the Cement Acceptance Register as per proforma given in Appendix `D' to the tender documents here-in-after.

14.5.2. The Staff Officer-1 (Works) of respective HQ IGAR / HQ Sector Assam Rifles shall organise independent testing of random samples of cement drawn from the various lots which shall be got tested by the contractor under his own arrangements and the cost of both materials and labour required for sampling, testing, packing, transportation of samples to the testing places and testing charges thereof, and for subsequent identification of cement sampled, shall be borne by the contractor. The independent testing shall be got done from any of the following where facilities exist for all the tests required, viz, National Test House, Regional Research labs, IITs, National Institutes of Technology, NABL laboratories, Govt Engineering College or Any Govt laboratories.

14.5.3. The independent testing shall be got done as per :-

(a)	IS--3535	:	Method of sampling hydraulic cement.
(b)	IS-4031	:	Methods of Physical test for hydraulic cement.
(c)	IS-4032	:	Method of chemical analysis of hydraulic cement.

The other relevant IS shall also be followed. However the tests shall be restricted to those indicated in Appendix `E' to the tender documents here-in-after.

14.5.4. The above tests shall be independent tests. The samples shall be taken immediately within one week of delivery at the site of works and all the tests got carried out by contractor within one week of sampling. In case it is not possible to test the samples within one week, the samples shall be packed and stored in air tight containers as decided by Staff Officer-1 (Works) of respective HQ IGAR / HQ Sector Assam Rifles till such time that they are tested.

14.5.5. The entire lot(s) of Cement shall stand rejected; if it does not comply with any of the requirement of IS specifications and the test results on samples are not within the acceptable limits. The rejected lot(s) shall be removed from the site of works by the contractor under their own arrangement and cost. The cost of tests shall be borne by the contractor irrespective of the results.

14.5.6. The contractor shall use only **one type brand** of cement for entire structural/reinforced concrete work. In the event of contractor desiring use of any different brand of cement, fresh design mix shall be carried out and submitted for approval without any extra cost to the Govt.

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for Accepting Officer

14.6. **Documentation**

14.6.1 The contractor shall submit original paid vouchers from the main manufacturers for the total quantity of cement supplied under each consignment brought to the site of work.

14.6.2. All consignments so received at the work site shall be inspected by Engineer-in-Charge alongwith the relevant documents for permitting storage in the "first godown" defined here-in-before.
14.6.3. The original vouchers and the test certificates shall be kept in record in the office of Engineer-In-Charge duly authenticated and with cross reference to the Control Number recorded in the Cement Register as per format given in Appendix `D' in the tender, maintained for "first godown" duly signed by the Engineer-in-Charge, and the contractor.

14.6.4. After the independent testing has been got done by Staff Officer-1 (Works) and satisfactory results obtained and kept on record, the consignment so got tested shall be removed from the "first godown" and transferred to "second godown" as defined here-in-before. Original vouchers and the test certificates submitted by the contractor alongwith the consignment and test certificates of independent testing shall be defaced by Engineer-in-charge and kept on record of Staff Officer-1 (Works) duly authenticated and with cross reference to the control Number rendered in the cement register maintained for the "Second Godown". This second register shall be termed as "Cement Acceptance Register" which shall be signed by JE (Civ) / Engineer-in-Charge and the contractor. Format of Cement supply and Acceptance register to be maintained is given at **Appendix 'C'** to this tender. Besides this the quantity of cement shall be also suitably recorded in the Measurement Book for record purposes before incorporation in the work and shall be signed by Engineer-in-charge and the contractor.

14.6.5. The Accepting Officer may order a Board of officers in which contractor shall also be a member for random check of cement and verification of connected documents.

14.6.6. Daily inspection shall be carried out by Engineer-in- charge or his representative and contractor's authorised agent and separate register shall be maintained in both the godowns duly indicating on daily basis the inspection carried out and indicating holding in godown at beginning of the day, inward supplies in the day, removal in the day and balance at the close of the day duly signed by above persons. In the removal column particulars of lot removed and purpose for which removed shall be indicated.

14.6.7. The purchase voucher and test certificate of manufacturer shall be linked and are to be defaced by the Engineer-in-Charge.

14.7 **Weighing and Payment for Cement**.

14.7.1. Random sample of 5 bags per 100 bags shall be got weighed by Engineer-in-charge in presence of representative of contractor from each consignment o arrive at average weight per bag for calculating total quantity of cement brought at site for incorporation in the work. All arrangement for weighing of cement bags including labour etc shall be provided by the contractor at their own cost.

14.7.2. The quantity of cement arrived at as aforesaid shall be considered for payment as applicable in accordance with General Conditions of Contracts.

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

14.7.4. Payments shall be restricted as per provisions in clause "Advance on Account" of General Conditions of Contracts.

14.7.5 **Curing and Minimum Period for striking off form work when PPC** is used for RCC works in various locations, the minimum period for curing and striking off form work shall be as under:-

(a)	Curing : -		
	(i)	Structural RCC work	: 21 days
	(ii)	PCC work, plastering etc	: 14 days
(b)	Striking off form work		
	(i) Walls, columns and vertical sides of beams		: 7 days
	(ii) Slabs (Props left under)		: 14 days.
	(iii) Beams soffits (Props left under)		: 14 days.
(c)	Removal of props to slab/beam		
	(i) Spanning upto 6 M Span		: 21 days
	(ii) Spanning beyond 6 M Span		: 28 days

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for Accepting Officer

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

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

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

14.8 **Coarse and Fine Aggregate for Plain & Reinforced Cement Concrete**

14.8.1. Coarse aggregate for all concrete shall be graded crushed hard granite, trap or basalt stone as approved by the Staff Officer-1 (Works) and shall conform to the requirements laid down in clause 4.1.1.1(a) and 4.1.1.2 of CPWD Specification Part1. Hand broken stone aggregate shall not be permitted for use in the work. Size and grading of aggregate shall be as per clause 4.1.1.3 of CPWD Specification Part1.

14.8.2 **Grading of Aggregates**

14.8.3 **Grading of Coarse Aggregate**. Grading of Coarse Aggregate for Plain and Reinforced Concrete i.e. Stone Aggregate shall be as per clause 4.1.1.3 of CPWD Specification Part1.

14.8.4 Grading of Coarse Aggregate unless otherwise specified shall be as follows :-

(a) For Reinforced/Structural Element of depth /thickness 50mm - 12.5mm or under graded (Max size)

(b) For Reinforced/Structural Element of depth Over 50 mm - 20mm graded (Max size)

(c) For Plain Cement Concrete thickness exc. 25mm but not exc. 75mm - 20mm graded (Max size)

(d) For Plain Cement Concrete thickness 75mm and over - 40mm graded (Max size)

(e) Lime Concrete - 40mm graded (Max size)

14.9 **Fine Aggregate / Sand**. Fine aggregate for all concrete work shall be naturally occurring river sand conforming to the specification in Para 3.1.3 of CPWD Specifications 2019. The maximum quantity of silt shall not exceed 8% by total volume. Fine aggregate / sand Use of sand conforming to grading Zone IV of IS 383 (1970 second revision or as amended) shall not be allowed for RCC works.

14.10 **Water Proofing Compound**

14.10.1 Integral water proofing compound shall conform to IS: 2645. The brand thereto shall be got approved in writing from the Staff Officer-1 (Works) before they are brought to site. Proportion of mix and method of mixing shall be as per manufacturer's printed instructions.

14.11. **Water**

14.11.1 Water shall conform to the requirement stipulated in IS-456. Water shall not contain any harmful chemicals which can adversely affect the strength and durability of RCC.

14.12. **Plasticiser**

14.12.1. Plasticiser shall be used in Design Mix Concrete as per the Manufacturer's instruction without any Extra Cost to achieve the desired Results Strength and Workability. Plasticiser manufactured by M/s SIKA INDIA Pvt. Ltd./ M/s BASF INDIA Ltd. / M/s CICO TECHNOLOGIES Ltd. / FOSROC CHEMICALS Pvt. Ltd. / MC BAUCHEMIE INDIA Pvt. Ltd. shall be used. However Plasticiser should confirm to IS-9103.

14.13. **Mix of Concrete**

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Staff Officer-I (Works)
for Accepting Officer

14.13.1 **Design Mix Concrete**

14.13.1.1. M-30 Mix Design shall be carried out as per provisions of IS-456:2000/IS 3370/IS 2911 where as applicable and guidelines given in IS- 10262 and SP 23 with the following conditions unless otherwise specified :-

(i) Exposure Condition for Mix Design (M-30) : Severe
(ii) Degree of Quality Control for Mix Design (M-30) : Good.

14.13.1.2. For Design Mix Concrete of M-30 Grade, the Minimum Cement Content and water cement ratio shall be as per IS 456/IS 3370/IS 2911. The Contractor is required to Design each Grades of Concrete as per IS 456/IS 3370/IS 2911and IS-10262 to work out the Cement Content of the above Grade of Design Mix.

14.13.1.3. Design Mix shall be got designed from National Test House, Regional Research labs, IITs, National Institutes of Technology, Govt Engineering College. The Design Mix Concrete shall be approved by the Engineer-in-Charge prior to incorporation in the work.

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

(a) Grading of individual coarse and fine aggregate used in Design Mix.
(b) Proportion by weight of each component of aggregate of Design Mix.
(c) Water cement ratio for recommended proportions of aggregates.
(d) Slump and compaction factor values for the recommended Design Mix.
(e) Use of plasticiser/ super plasticiser is permitted as per clause no 10.3.3 of IS 456-200.
(f) Initial standard deviation to be adopted for acceptance criterion as per IS-456 of 2000.
(g) 28 days Compressive strength of cement supplied for Design Mix.
(h) Actual cement content in the Design Mix.
(j) The maximum free water cement ratio shall be as per table 5 of IS 456-2000.Sampling and acceptance of concrete shall be as per clause 15 & 16 of IS-456 of 2000. The maximum size of aggregate for reinforced cement concrete shall be 20mm.
(k) Recommendation of mixed proportions at site.

14.13.1.5. Cost of designing the mix shall be borne by the Contractor. All material required for carrying out the design shall be provided by the contractor at the laboratory.

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

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

14.13.1.8. No Plus DO (Deviation Order) shall be admissible even if the required/approved quantity of Cement is more than specified in IS 456/IS 3370/IS 2911. Contractor shall be responsible / guarantor to that provides M-25 and M-30 Design Mix Concrete. This shall not be considered as misrepresentation of fact and no claim what so ever on this provision shall be admissible.

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

14.13.1.10. A re-verification of Mix proportions for Design mix concrete shall be essential for any different brand of cement. With any change in aggregate source, mix design or grade of cement, fresh design mix shall be done by the contractor. Nothing extra shall be paid on this account. The decision of Staff Officer-1 (Works) regarding the necessity for re verification or redesign of mix will be final and binding.

14.14. **Batching**

14.14.1. Refer Clause No. 4.2.4.1 of CPWD Specifications. In case of batch mixing plant at site the grading of aggregate shall be controlled by obtaining the coarse aggregate in different sizes and blending them in right proportions, the different sizes being stocked in separate stock piles. The material should be stock-piled for several hours preferably a day before use. The grading of coarse and fine aggregate should be
checked as frequently as possible, the frequency for a given job being determined by the Engineer-in-Charge to ensure that the specified grading is maintained.

14.14.2. Concrete for all PCC and RCC (design mix and nominal mix) shall be mixed in semi-automatic movable weigh batching machine of capacity as decided by Staff Officer-1 (Works) based on requirement at site. The batching machine shall have digital display weighing gauge with weighing accuracy of + 1% (One Percent). The machine shall be located in the vicinity of the site. The machine shall produce the concrete required as per mix design and complete quality assurance and control shall be maintained by the contractor in accordance to IS-456:2000 and best modern Engineering practice. The record of quality assurance tests shall be submitted to the Engineer-in-Charge for approval and record.

14.14.3. RMC plant shall be put to use in all those geographical areas where ISO certified automated RMC plants are available for RCC work of quantity **3 CUM** or above per day. Where requirement of concrete is less than 3 CUM in a day, the same can be mixed using normal weigh batcher and hopper type mixer.

14.15. **Form Work & Scaffolding**

14.15.1 **General**

14.15.2Form work shall comply with the requirements of clause No. 5.2 and subsequent clauses of CPWD Specifications Vol-1 I. The shuttering shall be of steel only except at places where it is not feasible to use steel shuttering on technical grounds plywood shuttering can be used with written approval of Staff Officer-1 (Works).

14.16.1. **Removal of Form Work**

14.16.1.1. Refer Clause No. 5.2.3.7 of CPWD Specifications 2019 Vol-1.

14.16.2.2. In case of Bad Weather, Periods mentioned here-in-above may be revised at the discretion of the Engineer-in-Charge. The Contractor shall be deemed to have considered the above provision before tendering and Quote Rate accordingly. No Claim will be entertained if Longer Periods required for Striking Off Formwork and Curing and all such effected matters is looked into upon the use of Pozzolana Cement as a Result being issued to the Contractor in Full or Part of for Bad Weather.

14.17. **Assembly of Reinforcement**.Refer Clause 5.3.1.1. of CPWD Specifications 2019 Vol-1 (as applicable) and as directed by the Engineer-in-Charge.

14.18. **Cover to Reinforcement**. Refer Clause No. 5.3.3.5 of CPWD Specifications 2019 Vol-1 (as applicable) and as directed by the Engineer-in-Charge as per severe exposure condition.

14.19. **Placing**. Refer Clause No. 5.4.2 and subsequent clauses of CPWD Specifications 2019 Vol-1 (as applicable) and as directed by the Engineer-in-Charge.

14.20. **Compaction**. Refer Clause No. 5.4.3.1 to 5.4.3.3 of CPWD Specifications 2019 Vol-1. Compaction of Concrete in RCC Slab, Beam Walls and Columns shall be done with Approved Mechanical Vibrator. In other Locations Hand Compaction may be permitted by Tamping or Roding as approved by the Engineer-in-Charge.

14.21. **Curing**. Refer Clause No. 5.4.6 of CPWD Specifications 2019 Vol-1 (as applicable) and as directed by the Engineer-in-Charge.

15. **Brick Work**.

15.1. **Materials**.

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

15.1.2. **Sand** .Sand shall be as specified in Cement Concrete Work here-in-before.

15.1.3. **Bricks**.

15.1.3.1.The Common Burnt Clay Bricks shall conform to IS:1077 and shall be hand moulded or machine moulded. They shall be free from nodules of free lime, visible cracks, flaws warpage and organic matter, have a frog 100 mm in length 40 mm in width and 10 mm to 20 mm deep on one of its flat sides. Bricks made by extrusion process and brick tiles may not be provided with frogs. Each brick shall be marked (in the frog where provided) with the manufacturer's identification mark or initials. The bricks should have minimum compressive strength of 75 Kg/Cm2 when tested in accordance with clause 26 of IS-1077. The dimension of bricks when tested in accordance with clause no 6.2.1 of IS-1077 shall be within the following tolerance limits per 20 bricks:

For 250x 125x 75 mm	**For 230x 115x 75 mm**
(a) Length 4920 mm to 5080mm (5000±80 mm)	(a) Length 4520 mm to 4680mm (4600±80 mm)
(b) Width 2460 mm to 2540mm (2500±40 mm)	(b)Width2260 mm to 2340mm (2300±40 mm)
Height 1460 mm to 1540mm (1500±40 mm)	(c) Height1460 mm to 1540mm (1500±40 mm)

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for Accepting Officer

15.1.3.2. **Compressive Strength**: The bricks when tested in accordance with the procedure laid down in IS- 3495 shall have a minimum average compressive strength as 75 Kg/cm^2 .

15.1.3.3. **Sampling and Tests**. Samples of bricks shall be subjected to the following tests :

(a) Dimensional tolerance.
(b) Water absorption.
(c) Efflorescence.
(d) Compressive strength.

15.1.3.4 **Sampling**: For carrying out compressive strength, water absorption, efflorescence and dimensional tests, the samples of bricks shall be taken at random according to the size of lot as given in Table above. The sample thus taken shall be stored in a dry place until tests are made. For the purpose of sampling, the following definition shall apply.

(a) **Lot**: A collection of bricks of same class and size, manufactured under relatively similar conditions of production. For the purpose of sampling a lot shall contain a maximum, of 50,000 bricks. In case a consignment has bricks more than 50,000 of the same classification and size and manufactured under relatively similar conditions of production, it shall be divided into lots of 50,000 bricks or part thereof.

(b) **Sample**: A collection of bricks selected for inspection and/or testing from a lot to reach the decision regarding the acceptance or rejection of the lot.

(c) **Defective**: A brick failing to meet one or more of the specified requirements.

15.1.3.5. The samples shall be taken as below:

(a) Sampling from a Stack: When it is necessary to take a sample from a stack, the stack shall be divided into a number of real or imaginary sections and the required number of bricks drawn from each section. For this purpose, bricks in the upper layers of the stack shall be removed to enable units to be sampled from places within the stack.

Note: For other methods of sampling i.e. sampling in motion and sampling from lorries or trucks, IS :5454 may be referred. Scale of sampling and criteria for conformity for visual and dimensional characteristics: —

15.1.3.6. **Water Absorption**: The average water absorption of bricks when tested in accordance with the procedure laid down shall be not more than 20% by weight

15.1.4 **Laying**:

15.1.4.1 Bricks shall be laid in English Bond unless otherwise specified. For brick work in half brick wall, bricks shall be laid in stretcher bond. Half or cut bricks shall not be used except as closer where necessary to complete the bond. Closers in such cases, shall be cut to the required size and used near the ends of the wall. Header bond shall be used preferably in all courses in curved plan for ensuring better alignment.

Note: Header bond shall also be used in foundation footings unless thickness of walls (width of footing) makes the use of headers impracticable. Where thickness of footing is uniform for a number of courses, the top course of footing shall be headers.

15.1.4.2 All loose materials, dirt and set lumps of mortar which may be lying over the surface on which brick work is to be freshly started, shall be removed with a wire brush and surface wetted. Bricks shall be laid on a full bed of mortar, when laying, each brick shall, be properly bedded and set in position by gently pressing with the handle of a trowel. Its inside face shall be buttered with mortar before the next brick is laid and pressed against it. Joints shall be fully filled and packed with mortar such that no hollow space are left inside the joints.

15.1.4.3 The walls shall be taken up truly in plumb or true to the required batter where specified. All courses shall be laid truly horizontal and all vertical joints shall be truly vertical. Vertical joints in the alternate course shall come directly one over the other. Quoin, Jambs and other angles shall be pro-perly plumbed as the work proceeds. Care shall be taken to keep the perpends properly aligned within following maximum permissible tolerances:-

(a) Deviation from vertical within a storey shall not exceed 6 mm per 3 m height.

(b) Deviation in verticality in total height of any wall of building more than one storey in height shall not exceed 12.5 mm.

(c) Deviation from position shown on plan of any brick work shall not exceed 12.5 mm.

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(d) Relative displacement between load bearing wall in adjacent storeys intended to be vertical alignments shall not exceed 6 mm.

(e) A set of tools comprising of wooden straight edge, masonic spirit levels, square, 1 metre rule line and plumb shall be kept on the site of work for every 3 masons for proper check during the progress of work.

15.1.4.4. All quoins shall be accurately constructed and the height of brick courses shall be kept uniform. This will be checked using graduated wooden straight edge or storey rod indicating height of each course including thickness of joints. The position of damp-proof course, window sills, bottom of lintels, top of the wall etc. along the height of the wall shall be marked on the graduated straight edge or storey rod. Acute and obtuse quoins shall be bonded, where practicable in the same way as square quoins. Obtuse quoins shall be formed with squint showing three quarters brick on one face and quarter brick on the other.

15.1.4.5. The brick work shall be built in uniform layers. No part of the wall during its construction shall rise more than one metre above the general construction level. Parts of wall left at different levels shall be raked back at an angle of 45 degrees or less with the horizontal. Toothing shall not be permitted as an alternative to raking back. For half brick partition to be keyed into main walls, indents shall be left in the main walls.

15.1.4.6. All pipe fittings and specials, spouts, hold fasts and other fixtures which are required to be built into the walls shall be embedded, as specified, in their correct position as the work proceeds unless otherwise directed by the Engineer-in-Charge.

15.1.4.7 Top courses of all plinths, parapets, steps and top of walls below floor and roof slabs shall be laid with brick on edge, unless specified otherwise. Brick on edge laid in the top courses at corner of walls shall be properly radiated and keyed into position to form cut (maru) corners as shown in Fig 6.4. Where bricks cannot be cut to the required shape to form cut corners, cement concrete 1:2:4 (1 cement: 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) equal to thickness of course shall be provided in lieu of cut bricks.

15.1.4.8 Bricks shall be laid with frog (where provided) up. However, when top course is exposed, bricks shall be laid with frog down. For the bricks to be laid with frog down, the frog shall be filled with mortar before placing the brick in position.

15.1.4.9. In case of walls one brick thick and under, one face shall be kept even and in proper plane, while the other face may be slightly rough. In case of walls more than one brick thick, both the faces shall be kept even and in proper plane.

15.1.4.10 To facilitate taking service lines later without excessive cutting of completed work, sleeves (to be paid separately) shall be provided, where specified, while raising the brick work. Such sleeves in external walls shall be sloped down outward so as to avoid passage of water inside.

15.1.4.11. Top of the brickwork in coping and sills in external walls shall be slightly tilted. Where brick coping and sills are projecting beyond the face of the wall, drip course/throating (to be paid separately) shall be provided where indicated.

15.1.4.12. Care shall be taken during construction that edges of jambs, sills and projections are not damaged in case of rain. New built work shall be covered with gunny bags or tarpoulin so as to prevent the mortar from being washed away. Damage, if any, shall be made good to the satisfaction of the Engineer-in-Charge.

15.1.4.13. Vertical reinforcement in the form of bars (MS or high strength deformed bars or thermo-mechanically treated bars as per direction of Engineer-in- Charge)), considered necessary at the corners and junction of walls and jamb opening doors, windows etc. shall be encased with cement mortar not leaner than 1:4 (1 cement : 4 coarse sand), or cement concrete mix as specified. The reinforcement shall be suitably tied, properly embedded in the foundation and at roof level. The dia. of bars shall not be less than 8 mm and concrete grade shall be minimum 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 20 mm nominal size).

15.1.4.14. In retaining walls and the like, where water is likely to accumulate, weep holes, 50 to 75 mm square shall be provided at 2 m vertically and horizontally unless otherwise specified. The lowest weep hole shall be at about 30 cm above the ground level. All weep holes shall be surrounded by loose stones and shall have sufficient fall to drain out the water quickly.

15.1.4.15. Work of cutting chases, wherever required to be made in the walls for housing G.I. pipe, CI pipe or any other fixtures shall be carried out in various locations as per guidelines given below :-

(a) Cutting of chases in one brick thick and above load bearing walls.

(i) As far as possible services should be planned with the help of vertical chases. Horizontal chases should be avoided.

(ii) The depths of vertical chases and horizontal chases shall not exceed one-third and one-sixth of the thickness of the masonry respectively.

(iii) When narrow stretches of masonry (or short length of walls) such as between doors and windows, cannot be avoided they should not be pierced with openings for soil pipes or waste pipes or timber joints, etc. Where there is a possibility of load concentration such narrow lengths of walls shall be checked for stresses and high strength bricks in mortar or concrete walls provided, if required.

(iv) Horizontal chases when unavoidable should be located in the upper or lower one-third of height of storey and not more than three chases should be permitted in any stretch of a wall. No continuous horizontal chase shall exceed one metre in length. Where unavoidable, stresses in the affected area should be checked and kept within the permissible limits.

(v) Vertical chases should not be closer than 2 m in any stretch of a wall. These shall be kept away from bearings of beams and lintels. If unavoidable, stresses in the affected area should be checked and kept within permissible limits.

(vi) Masonry directly above a recess, if wider than 30 cm horizontal dimension) should be supported on lintel. Holes in masonry may be provided upto 30 cm width and 30 cm height without any lintel. In the case of circular holes in the masonry, no lintel need be provided for holes upto 40 cm in diameter.

(b) Cutting of chases in half brick load bearing walls. No chase shall be permitted in half brick load bearing walls and as such no reccessed conduits and concealed pipes shall be provided with half brick thick load bearing walls.

(c) Cutting of chases in half brick non-load bearing wall: Services should be planned with the help of vertical chases. Horizontal chase should be provided only when unavoidable.

15.1.5 **Joints**

15.1.5.1.The thickness of all types of joints including brick wall joints and cross joints shall be such that four course and three joints taken consecutively shall measure as follows:
(i) In case of modular bricks conforming to IS 1077 specification for common burnt clay buildings bricks, equal to 39 cm.

(ii) In case of non-modular bricks, it shall be equal to 31 cm.

Note : Specified thickness of joints shall be of 1 cm. Deviation from the specified thickness of all joints shall not exceed one-fifth of specified thickness.

15.1.5.2. **Finishing of Joints**: The face of brick work may be finished flush or by pointing. In flush finishing either the face joints of the mortar shall be worked out while still green to give a finished surface flush with the face of the brick work or the joints shall be squarely raked out to a depth of 1 cm while the mortar is still green for subsequently plastering. The faces of brick work shall be cleaned with wire brush so as to remove any splashes of mortar during the course of raising the brick work. In pointing, the joints shall be squarely raked out to a depth of 1.5 cm while the mortar is still green and raked joints shall be brushed to remove dust and loose particles and well wetted, and shall be later refilled with mortar to give ruled finish. Some such finishes are ‘flush’, ‘weathered’, ruled, etc.

15.1.5.3. **Curing**. The brick work shall be constantly kept moist on all faces for a minimum period of seven days. Brick work done during the day shall be suitably marked indicating the date on which the work is done so as to keep a watch on the curing period.All brick work shall be built in English bond except in half brick walls which shall be in Stretcher bond.

16. **Wood Work (Carpenter’s & Joinery Work)**

16.1. **Materials**

16.1.1. **Timber**. Refer Clause No. 9.1 and clauses 9.1.1 to 9.1.8 of CPWD Specifications 2019 Vol-I.

16.2. **Wooden Chowkats or frame (wherever Specified / Shown In Drawings)**

16.2.1. Refer Clause No. 9.3 of CPWD Specifications 2019 Vol-I for Door Window and Ventilator frames and shall be of Second Class Hard Wood of the species mentioned here-in-before and as approved by Staff Officer-1 (Works).

NOTE: The Surfaces of Wooden Chowkats or Frame. coming in contract with Concrete or Brick Works, etc. shall be treated with Two Coats of Bituminous Paint after thoroughly cleaned from Dirt, Oil, etc. The cost of the same shall deem to be included in the quoted rate by the Tenderer.

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16.3. **Flush Door Shutter**

16.3.1. Flush door shutter shall be provided complete all as specified in Schedule 'A' (BOQ).

16.3.2. Flush door shutter shall be solid core types with block core, and shall conform to IS 2202 (Part I)- 1999, Specification for wooden flush door shutters (solid core type) Part I.

16.3.3. All timber used shall be well seasoned and chemically treated. Adhesive shall be phenol formaldehyde synthetic resin BWP type specified in IS:848-2006. All dimensions shall be finished dimension and Manufacture's Test Certificate for test specified in IS: 2202 (Part I) shall be rendered.

16.4. **Factory Made Shutters**

16.4.1. Refer Clause No. 9.7 of CPWD Specifications 2019 Vol-I..

16.4.2. All Panelled and Wire Gauge Shutter for doors shall be factory made conforming to IS-1003 manufactured from well selected kiln seasoned, Second class Hardwood chemically treated as per IS-401 for anti-termite. Samples of shutter shall be got approved by the GE before placing the bulk order.

16.4.3. Factory Made Shutters shall be from any of the Approved Manufacturers listed in relevant Appendix to this Tender document here-in-after.

16.4.4. The door shutter shall be tested in the reputed Testing House/Lab as approved by Staff Officer-1 (Works) as per IS-1003. The number of door samples shall be as required by relevant IS-1003. In case, the results are not satisfactory, the entire lot shall be rejected. The cost of the testing and the cost of the door shutter sample is deemed to be included in the rates quoted by the tenderer.

16.5. **Plywood**

16.5.1. Plywood shall conform to IS-303 and shall be ISI marked. Plywood wherever shown on drawing shall be of BWR grade, type 'BB' of thickness as mentioned in drawings.

16.5.2. Refer Clause No. 9.2.2 and subsequent Clause No 9.2.2.1 to 9.2.2.6. thereof of CPWD Specifications Vol I for Plywood as applicable.

16.6. **Veneered Particle Board**

16.6.1. Refer Clause No. 9.2.4 and subsequent clauses 9.2.4.1 to 9.2.4.4 of thereof of CPWD Specifications Vol I.

16.7. **Chemical/Preservative Treatment**

16.7.1. Before painting or French polishing all joinery and timber incorporated in the work to be manufactured at site shall be treated as mentioned in IS-401 by modified hot and cold treatment, the minimum quantity of chemical impregnated in each cubic meter of timber shall be at the rate as specified in table 2 group 5 of said IS and all joinery manufactured at site, which has been exposed by chiseling/planning/cutting after treatment by hot and cold process, except those in factory made paneled shutters, which shall be chemically treated in factory, shall be treated with two coats of any of the approved chemicals such as ASCU etc. as directed by Engineer-in-Charge for protection against termite.

16.7.2. Cost of Anti-termite treatment to wood work shall be deemed to have been included in the quoted rate. The quantity and application of chemicals shall be as per manufacturer's instructions.

16.7.3. Wood work shall be painted or polished as specified in Schedule 'A' (BoQ) after second coat of anti-termite treatment has completely dried.

17. **Steel & Iron Work**

17.1. **General**

17.1.1. All Steels require to incorporate in the Work shall be Contractor's Supply from Primary producers of steel.

17.2. **Types of Steel**

17.2.1. **Reinforcement Steel For All Locations**. Steel bars for concrete reinforcement wherever shown on drawings or as specified in Schedule 'A' (BOQ) shall be TMT bars produced by Thermo Mechanical Treatment Process and grade of steel shall be mention on drawing or specified in Schedule 'A' (BOQ), unless other wise the grade of steel is not specified on drawing or specified, the grade of steel shall be (Grade Fe 500D) and meeting all requirement of IS-1786-2008. Where ever mild steel reinforcement bars are shown on drawings these shall be amended to read as TMT bars of same dia or nearest higher dia and accordingly to be provided.

17.2.2. **Structural Steel**

17.2.2.1.**Standard Quality** :- Structural steel except hollow steel sections shall be conform to IS-2062- 2006, E-250(FE 410W). This steel shall be provided in the location mentioned in the drawings or as specified in Schedule 'A' (BOQ). In case the quality of structural steel i.e. A, B or C is not mentioned in drawings then quality A shall be used.

17.2.2.2.**Ordinary Quality** :- Unless otherwise specified, Mild Steel Members in Grills/Guard Bars, Holdfasts, Door and Window, Frames, Railing, Steel Windows, Steel Doors and the like shall be ordinary quality of Steel conforming to IS-2062-2006, E-165 (Fe 290).

17.2.2.3.**Hollow Steel Sections For Structural Use** :- Hollow steel sections for structural steel section shall be conform to IS-4923-1997 and grade of steel shall be YSt 310. This steel shall be provided in the location mentioned in the drawings or as specified in Schedule 'A' (BOQ).

17.2.3.**Structural Steel (Hollow Steel Sections)** :- Structural hollow steel sections shall be directly procured from TATA (STRUCTURA) /JINDAL STAR/ Steel Authority of India (SAIL) ISI Marked .

17.2.4. **Testing of Steel**

17.2.4.1. The manufacturer is to carry out inspections and testing of steel in accordance with the relevant BIS provisions. The contractor shall submit the manufacturer's test Certificate in original along with the test sheet giving the results of each mechanical test as applicable and the chemical composition of the steel or authenticated copy thereof, fully signed by the manufacturer with each consignment. The Engineer-in-Charge shall record these details in Steel Acceptance Register, as given at Appendix 'F' after due verification and send a certified true copy of test sheet to SO-1 (Wks) DG AR for his records. The SO-1(Wks)/CE shall also organize independent testing of random samples of steel drawn from various lots from National Test House, Regional Research labs, IITs, National Institutes of Technology, NABL Approved laboratories, Govt. Engineering College or Any Govt laboratories as per the recommended minimum frequency shown in para here-in-after. Samples from each lot should be tested for quality and elongation. The elongation shall not be less than 18%. Cost of samples, transportation and testing shall be borne by the Contractor. The records of such checks would be maintained in the steel test register.

17.2.4.2.Nominal mass of any size of finishes bar/section of steel shall be checked as specified in relevant IS code. The nominal mass so determined shall be recorded in steel testing register giving cross reference to consignment number. Nominal mass of any size of finished bar/section of steel if found to be beyond the tolerance limits on minus side as specified in relevant IS code, the same shall be rejected and the contractor shall remove the same at his own cost without any extra cost to the Government. However, if the weight of steel section is beyond the tolerance limit on higher side the same can be provided with approval of the SO-1 (Wks) but without any extra cost to the Government.

17.2.4.3.If any Test Result of any particular size of Bar/Section of steel of any consignment is not found satisfactory as specified in relevant IS, the contractor shall remove the same at his own cost and no claim of contractor shall be entertained on this account.

17.2.4.4. **Type of Testing**

17.2.4.4.1. **Reinforcement Steel**

(a)	High Strength Deformed Steel Bars	-	Nominal Mass Test, Tensile Test, Bend Test and Re-bend Test shall be carried out as per Clause No. 8 of IS-1786-1985 and Test Specimens shall be as per Clause No. 10 of IS-1786-1985
(b)	Mild Steel Bars	-	Nominal Mass Test, Tensile Test and Bend Test shall be carried out as per Clause No. 9 of IS-432 (Part-I)-1982. Re-bend Test is not required to be carried out for Mild Steel Bars.

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7.2.4.4.2. **Structural Steel**

(a)	Structural Steel (Standard Quality)	- Tensile Test and Bend Test shall be carried out as per Clause No. 6, 7 and 8 of IS-226-1975 for Standard Quality of Steel Sections.
(b)	Structural Steel (Ordinary Quality)	- Tensile Test and Bend Test shall be carried out as per Clause No. 6, 7 and 8 of IS-1977-1975 for Ordinary Quality of Steel Sections.
	Structural Steel (hollow steel sections)	- Tensile Test shall be carried out as per IS-4923-1997 for Standard Quality (Hollow Steel Section) of Steel Sections.

17.2.4.5. **Testing Charges** :- The Unit Rate/Amount quoted by the Contractor in the Tender shall be inclusive of Cost of all sorts of Testing to the extent as specified here in before and in relevant Indian Standards.

17.2.5. **Documentation** :- The contractor shall submit Original Purchase Vouchers and Test Certificate from the Main Producer/ Secondary Producer/BIS marked manufacturer/authorized dealer as applicable for the total quantity of steel supplied under each consignment to be incorporated in the work. All consignments received at the work site shall be inspected by the Engineer-in-Charge alongwith the relevant documents before acceptance. The Original Purchase Vouchers and Test Certificates shall be defaced by the Engineer in Charge and kept on record in the office of the Engineer-in-Charge duly authenticated and with cross reference to the consignment number recorded in the Steel Acceptance Register. The steel Acceptance Register will be signed by the JE (Civil), Engineer-in- Charge, and the, Contractor. The Accepting Officer may order a Board of Officers for random check of steel and verification of connected documents. The entire quantity of steel items shall also be suitably recorded in the measurement book for record purposes as “Not to be abstracted” before incorporation in the work and shall be signed by the Engineer in Charge and the contractor.

17.2.6. **Storage, Accounting, Preservation & Maintenance Of Steel**. The storage, accounting, preservation and maintenance of steel supplied by the contractor shall be done as per standard engineering practice till the same is consumed in the work and the cost of the same shall be deemed to be included in the unit amount quoted by the tenderer. The Staff Officer-1 (Works) shall inspect at regular interval to verify that steel lying at site are stored, accounted, preserved and maintained as per the norms. The steel shall be stored so as to differentiate each consignment separately. If the Staff Officer-1 (Works) is not satisfied with the storage/preservation of any size of bar/section of steel, he may order for any test (s) of steel as applicable for that size of bar/section of steel and as specified in tender documents and relevant Indian Standard to recheck the acceptability criteria for the same. The contractor shall bear the cost of necessary testing(s) in this regard and no claim whatsoever shall be entertained by the Govt.

17.2.7. **Measurements and Payment of Steel**.

17.2.7.1.The entire quantity of all steel items shall also be suitably recorded in the Measurement Book for record purposes as “Not to be Abstracted” before incorporation in the work and shall be signed by the Engineer in Charge and the contractor.

17.2.7.2.The nominal mass conversion factor for various steel sections/size of finished bars as given in relevant IS codes shall be considered standard for measurement.

17.2.7.3.The payment of steel shall only be allowed after production of Original Purchase Vouchers, Test Certificates by the contractor for each consignment of steel and results of testing carried out by the Department are found satisfactory after testing.

17.2.7.4. Format of Steel Supply and Acceptance register to be maintained is given at **Appendix ‘D'** to this tender

17.3. **Steel Windows/Ventilator & Steel Door**. Hot rolled steel sections for fabrication of steel doors, windows, ventilators and fixed lights shall conform to IS 7452. Shapes weights and designations of hot rolled sections shall be as per IS 7452. Tolerance in thickness of the sections shall be + 0.2 mm. The fabricated steel doors, windows, ventilators and composite units shallconfirm to IS 1038 with up-to-date amendments and shall be IS marked (IS 1038).

17.3.1 The steel doors and windows shall be according to the specified sizes and design. The size of doors and windows shall be calculated, so as to allow 1.25 cm clearance on all the four sides of opening to allow for easy fitting of doors windows and ventilators into opening. The actual sizes of doors, windows and ventilators shall not vary by more than + 1.5 mm from those given in the drawing.

17.3.2 **Fabrication**

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17.3.2.1 **Frames** : Both the fixed and openable frames shall be made of sections which have been cut to length and mitred. The corner of fixed and openable frames shall be welded to form a solid fused welded joint conforming the requirements given below. All frames shall be square and flat. The process of welding adopted shall be flush but welding or can be any other process as agreed to between the supplier and the purchaser which shall fulfil the requirements given in clause 6.1.1 of IS 1038, metal arc welding or any other
suitable method. The section for glazing shall be tennoned and riveted into the frames and where they intersect the vertical tie shall be broached and horizontal teethreads through it, and the intersection closed by hydraulic pressure.

17.3.2.2. **Requirements of Welded Joints**.

(a) Visual Inspection Test : When two opposite corners of the frame are cut, paint removed and inspected, the joint shall conform to the following:-

(i) Welds should have been made all along the place of meeting the members and tack welding shall not be permitted.

(ii) Welds should have been properly grounded and

(iii) Complete cross section of the corner shall be checked up to see that the joint is completely solid and there are no cavities visible.

(b) Micro and Macro Examinations: From the two opposite corners obtained for visual test, the flanges of the sections shall be cut with the help of a saw. The cut surface of the remaining portions shall be polished, etched and examined. The polished and etched faces of the weld and the base metal shall be free from cracks and cavity and reasonably free from under cutting overlaps, gross porosity and entrapped slag.

(c) **Fillet Weld Test**: The fillet weld in the remaining portion of the joint shall be fractured by hammering. The fractured surfaces shall be free from slag inclusion porosity, crack penetration defects and fusion defects.

17.4 **Doors** : The hinges shall be of 50 mm projecting type, Non projecting type hinges may also be used, if approved by Engineer-in -Charge. The hinge pin shall be of electro -galvanized steel or aluminum alloy of suitable thickness and size. Door handles shall be approved by the Engineer-inCharge. A suitable latch lock for door openable both from inside and outside shall be provided. In the case of double doors, the first closing leaf shall be the left hand leaf locking at the door from the push side. The first closing shutter shall have a concealed steel bolt at top and bottom. The bolts shall be so constructed as not to work loose or drop by its own weight. Single and double leaf shutter door may be provided with a three way bolting device. Where the device is provided in the case of double leaf shutters, concealed brass or steel bolts shall not be provided.

17.5. **Windows**

(a) Side hung windows. For fixing steel hinges, slots shall be cut in the fixed frame and hinges inserted inside and welded to the frame at the back. The hinges shall be of projecting type with thickness not less than 3.15 mm and length not less than 65 mm and width not more than 25 mm. Non projecting type hinges may also be allowed if approved by the Engineer- in-Charge. The diameter of hinge pins shall not be less than 6mm. The hinge pin and washer shall be of galvanized steel or aluminum alloy of suitable thickness. For fixing hinges to inside frame, the method described above may be adopted but the weld shall be cleaned, or the holes made in the inside frame and hinge riveted.The handle of side hung shutters shall be pressed brass, cast brass, aluminium or steel protected against rusting and shall be mounted on a steel plate. Thickness of handle shall not be less than 3 mm in case of steel or brass and 3.5 mm in case of aluminium. The handle plate shall be welded, screwed and/ or revitted to the opening frame in such a manner that it should be fixed before the shutter is glazed and should not be easily removable after glazing. The handle shall have a two point nose which shall engage with a brass or aluminium alloy striking plate on the fixed frame in a slightly opened position as well as closed position. The boss of handle shall incorporate a friction device to prevent the handle from dropping under its own weight and the assembly shall be so designed that the rotation of the handle may not cause it to unscrew from the pin. The height of the handle plate in each type of standards windows will be as specified, otherwise it hall be at a height of 3/8 of the height of shutter, from its bottom. The strike plate shall be so designed and fixed in such a position in relation to the handle that with the later bearing against its stop, there shall be adequately tight fit between the casement and outer frames. In case where no friction type hinges are provided, the windows shall be fitted with peg stays which shall be either of black oxidised steel, pressed or cast brass or as specified, 300 mm long or as specified with steel peg and locking brackets. The pegs stay shall have three holes to open the side hung casement in three different angles. The peg stay shall be of minimum thickness 2 mm in case of brass or aluminium and 1.25 mm in case of steel. Where specified friction hinges shall be provided. Side hung shutters fitted with friction hinges shall not be provided with a peg stay.If specified, side hung shutters may be fitted with an internal removable fly proof screen in a 1.25 mm thick sheet steel frame to the outer frame of the shutter by brass turn buckles at the jambs, and brass studs at the sill to allow the screen being readily removed. The windows with removable fly proof screen shall be fitted with a through – the screen level operator at the sill level to permit the operation of the shutter through an angle of 90° without having to remove the fly proof screen. The lever shall permit keeping the shutter open in minimum three different positions.

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17.6 **Ventilators**

(a) **Top Hung Ventilators**. The steel butt hinges for top hung ventilators shall be riveted to the fixed frame or welded to it at the back after cutting a slot in it. Hinges to the opening frame shall be riveted or welded.
Top hung ventilators shall be provided with a peg stay with three holes which when closed shall be held tightly by the locking bracket. The locking bracket shall either be fitted to the fixed frames or to the window.

(b) **Centre Hung Ventilators**. Central hung ventilators shall be hung on two pairs of brass or aluminium cup pivots as specified, riveted to the inner and outer frames of ventilators to permit the ventilator shutter to swing to angle of approx 85°. The opening portion of the ventilators shall be so balanced that it remains open at any desired angle under normal weather conditions.

17.6.1. A black oxidised steel spring catch approved by the Engineer-in-Charge shall be fitted in the centre of the top of the centre hung ventilator, for the operation of ventilators. The spring catch shall be secured to the frame with M.S. screws and shall close into a mild steel or malleable iron catch plate riveted, screwed or welded to the outside of the outer window frame bar.

17.6.2 A black oxidised cord pulley wheel in galvanized mild steel brackets shall be fitted at sill of the centre hung window with mild steel screws or alternatively welded together with mild steel or malleable iron cord-eye riveted or welded to the bottom inner frame bar of the window in a position corresponding to that of pulley. Removable fly-proof screen may be provided as specified in

17.6.3 This shall be fitted with a through – the screen operator to enable operating and keeping the shutter open in minimum three different positions.

17.6.4 Composite Units : Composite Units consist of a combination of two or more units of doors, windows and ventilators etc. as the case may be. The different units shall be coupled by using coupling sections K-11B or K-12B (Ref. Appendix D) as the case may be. Wherever the ventilators, windows and doors shall be coupled with a coupling sections, mastic cement shall be applied between the junction to make the joint water tight8.5.1.

17.7 **Aluminium Sections & Beads, Etc**.

17.7.1 Aluminium Door/window shall be provided as per main drawings and TD drawings. Specification for aluminium door and window shall be 15 micron anodized (coloured) aluminium section having embossment of the name of the manufacturer on each section at every metre and thickness of colour anodizing shall be not less than 15 micron. The section particulars shall be provided as per drawing and clause 10.37 of SSR Part-I, 2009. In case of non-availability of any particular section mentioned the next available section (having higher per Kg/Rm weight) shall be provided without any price adjustment. The test certificate from Govt authorized testing laboratory shall be produced by the contractor to conform thickness of anodizing.

17.7.2 **Aluminium Fittings, Etc**. Aluminium Doors and Windows shall be provided with the Standard Aluminium Fittings as specified bearing ISI Mark and as approved by Staff Officer-1(Works).

17.8 **Steel Truss/Holow Truss/Tubular Truss & Purlins**

17.8.1. **Generally**

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

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

17.8.1.3. Hollow steel sections shall be designated by their nominal bore. These shall be light, medium or heavy as specified depending upon the wall thickness.

17.8.1.4 Tubes shall be clean finished and reasonably free from scale. They shall be free from cracks, surface flaws, laminations and other defects. The ends shall be cut clean and square with axis of tube

17.8.1.5. **Drilling Holes**:-Work shall be carried out all as specified in IS. Holes shall not be formed by gas cutting process.

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17.8.2. **Cutting**

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

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

17.8.3. **Connections** :- All connections of steel work shall be welded except bolting where specifically shown on drawings.

17.8.4. **Joints**:- The joints surface shall be prepared as specified in IS. Every member of the various types of steel trusses, roof girders, stanchions etc shall be in one piece without joint. However, additional splice joints, if required due to site conditions shall be carried out on written approval of Staff Officer-1(Works) without extra cost to Government. Splicing of members shall be done all as shown on drawings.

17.8.5. **Fabrication**

17.8.5.1. Fabrication of all components including notching, cutting, punching/drilling and welding shall be carried out exactly in accordance with the detailed drawings and with the best workmanship. Sufficient steel work shall be trial fitted by the contractor in his workshop at site to ensure accuracy of various components, as work failing to fit accurately at site will be liable for rejection by the Staff Officer-1(Works).

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

17.8.5.3. Contractor's particular attention is drawn to IS-7205 (Safety Code for erection on structural steel work). Anchor bolts for fastening of steel structure shall be set in designed position and grouted alongwith foundation.

17.8.5.4. Damaged structural members shall be examined and rectified or replaced as directed by Staff Officer-1(Works).

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

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

NOTE : The contractor shall at his option may get the truss components fabricated at the manufacturer's shop and transport the same to the work site without any extra cost. However the fabricated truss will be erected only after the same is approved by Staff Officer-1(Works).

17.9. **Erection of Trusses**:- The trusses shall be lifted only at nodes. The trusses shall not be aligned at the Apex. It shall be lifted by slinging at two mid points of rafter, which shall be temporarily braced by suitable section. After trusses are placed in position, purlins and wind bracing shall be fixed as soon as possible.

17.10. **Precaution During Erection** :-

17.10.1. Contractor shall maintain accuracy in dimensions of fabricated members all as shown on drawings.

17.10.2. Suitable equipment for erection/hoisting of members shall be used. Under no circumstances, members already erected shall be used/taken support to erect new members.

17.10.3. Contractor shall take all precaution to avoid damage to members or injury to workers.

17.10.4. **Welding**

17.10.4.1. **Generally**

(a) Welding shall be done by metal arc process in accordance with the standard specified in IS-816 and IS-9595. All welding shall be turned point upto a length not less than twice the thickness of the weld.

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(b) The work shall be positioned for down hand welding wherever possible/practicable.

(c) Joint surfaces shall be smooth, uniform and free from fins, tears, laminations and such other defects which adversely effect quality of weld and workmanship.

(d) All welds shall be cleaned of slab and other deposit after completion. The specified size of welds shall be provided for the full length of each weld as shown on drawings.

(e) Skilled welders shall only be employed for the work and the workmanship shall be of high standard.

17.10.4.2. **Electrodes For Welding** :-Electrodes used for welding shall conform to IS-814 and shall be ISI marked. The contractor shall supply at his own cost necessary electrodes, for getting them tested if Garrison Engineer so desired.

17.10.4.3. **Inspection/Testing Welds**:- The Staff Officer-1(Works) or his representative shall inspect and examine the electrodes for welding. Garrison Engineer shall have the welds tested for soundness using any of the non-destructive tests and the testing charges shall be borne by the contractor.

17.10.4.4. **Precaution/Safety and Health**:- The contractor shall ensure that the safety requirements and health requirements in electric and gas welding and cutting operation are complied with during operations. The contractor shall also provide equipment for eye and face protection during welding as laid in IS. Fire precautions shall be taken in accordance with IS-3016, Code of practice for Fire Precaution in welding and cutting operations.

17.11. **Roof Covering**

17.11.1. **Pre-Painted Galvalume Steel Sheet**. The galvalume steel roofing sheet shall be minimum 0.63 mm thick (Total Coated Thickness) and shall have 550 Mpa minimum yield strength. The base metal steel plate shall be coated with minimum 150 gram/sqm (total on both sides) coating of hot dip alloy consisting of 55% Aluminium, 43.5% Zinc and 1.5% Silicon confirming to IS 15965-2012. The profile of the sheet shall be trapezoidal as or similar profile as commercially available and approved by Staff Officer-1(Works). The end laps shall be provided as per manufacturer's guidelines to eliminate any possibility of leakage of roof. Penetrations and laps in sheet shall be sealed as per manufacturer's instructions and literature. HDPE fillers shall be provided wherever required to close voids between sheets, sheet & fasteners etc. The color of the sheets shall be as approved by Staff Officer-1(Works).

17.11.2. Side laps shall be one corrugation.

17.11.3. Manufacturer's name, length, width, thickness of BMT /TCT and number of corrugation and material identification (yield strength, coating) shall legibly be marked on top of each sheet.

17.11.4. 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, fully signed by the manufacturer with each consignment.

17.11.5. Single length sheet shall be provided in each side of the roof and all as directed by Staff Officer-1(Works).

18. **Flooring & Floor Finishes**

18.1 **Cement Concrete Flooring**

18.1.1. **Cement Concrete.** Cement concrete of specified mix grade shall be used.

18.1.2 **Base Concrete**

18.1.2.1 Flooring shall be laid on base concrete where so provided. The base concrete shall be provided with the slopes required for the flooring. Flooring in verandah, Courtyard, kitchens & baths shall have slope ranging from 1 : 48 to 1 : 60 depending upon location and as decided by the Engineerin-in-Charge. Floors in water closet portion shall have slope of 1:30 or as decided by the Engineer -inCharge to drain off washing water. Further, necessary drop in flooring in bath, WC, kitchen near floor traps ranging from 6 mm to 10 mm will also be provided to avoid spread of water. Necessary margin to accommodate this drop shall be made in base concrete. Plinth masonry off set shall be depressed so as to allow the base concrete to rest on it.

18.1.2.2 The flooring shall be commenced preferably within 48 hours of the laying of base concrete. The surface of the base shall be roughened with steel wire brushes without disturbing the concrete. Immediately before

laying the flooring, the base shall be wetted and a coat of cement slurry @ 2 kg of cement spread over an area of one sqm so as to get a good bond between the base and concrete floor.

18.1.2.3 If the cement concrete flooring is to be laid directly on the RCC slab, the top surface of RCC slab shall be cleaned and the laitance shall be removed and a coat of cement slurry @ 2 kg of cement spread over an area of one sqm so as to get a good bond between the base and concrete floor.

18.1.2.4. **Thickness.** The thickness of floor shall be as specified in the description of the item.

18.1.2.5. **Laying**

18.1.2.6. **Panels** : Flooring of specified thickness shall be laid in the pattern including the border as given in the drawings or as directed by the Engineer-in-Charge. The border panels shall not exceed 450 mm in width and the joints in the border shall be in line with panel joints. The panels shall be of uniform size and no dimension of a panel shall exceed 2 m and the area of a panel shall not be more than 2 sqm. The joints of borders at corners shall be mitred for provision of strips.

18.1.2.7. **Laying of Flooring with Strips** : Normally cement concrete flooring shall be laid in one operation using glass/aluminium/PVC/brass strips/stainless steel strips or any other strips as required as per drawing or instructions of the Engineer-in-Charge, at the junction of two panels. This method ensures uniformity in colour of all the panels and straightness at the junction of the panels. 4 mm thick glass strips or 2 mm PVC strips or 2 mm aluminium or brass strips shall be fixed with their tops at proper level, giving required slopes. Use of glass and metallic strips shall be avoided in areas exposed to sun. Cost of providing and fixing strips shall be paid for separately.

Concreting : Cement concrete shall be placed in the panels and be levelled with the help of straightedge and trowel and beaten with thapy or mason's trowel. The blows shall be fairly heavy in the beginning but as consolidation takes place, light rapid strokes shall be given. Beating shall cease assoon as the surface is found covered with a thin layer of cream of mortar. The evenness of the surfaceshall be tested with straight edge. Surface of flooring be true to required slopes. While laying concrete, care shall be taken to see that the strips are not damaged/disturbed by the labourers. The tops of strips shall be visible clearly after finishing with cement slurry.

18.1.2.8. **Laying of Flooring without Strips** : Laying of cement concrete flooring in alternate panels may be allowed by the Staff Officer-1 (Works) in case strips are not to be provided.

Shuttering : The panels shall be bounded by angle iron or flats. The angle iron/flat shall have the same depth as the concrete flooring. These shall be fixed in position, with their top at proper level giving required slopes. The surface of the angle iron or flats, to come in contact with concrete shall be
smeared with soap solution or non-sticking oil (Form oil or raw linseed oil) before concreting. The flooring shall butt against the unplastered masonry wall.

Concreting : The concreting shall be done in the manner described under 17.1.2.7. The angle iron/ flats used for shuttering, shall be removed on the next day of the laying of cement concrete. The ends thus exposed shall be repaired, if damaged with cement mortar 1 : 2 (1 cement : 2 coarse sand) and allowed to set for minimum period of 24 hours. The alternate panels shall then be cleaned of dust, mortar, droppings etc. and concrete laid. While laying concrete, care shall be taken to see that the edges of the previously laid panels are not damaged and fresh mortar is not splashed over them. The joints between the panels should come out as fine straight lines.

18.1.3. **Finishing**

18.1.3.1 The finishing of the surface shall follow immediately after the cessation of beating. The surface shall be left for some time, till moisture disappears from it or surplus water can be mopped up. Use of dry cement or cement and sand mixture stiffening the concrete to absorb excessive moisture shall not be permitted. Excessive trowelling shall be avoided.

18.1.3.2 Fresh cement shall be mixed with water to form a thick slurry and spreaded @ 2 kg of cement over an area of one sqm of flooring while the flooring concrete is still green. The cement slurry shall then be properly processed and finished smooth.

18.1.3.3 The edges of sunk floors shall be finished and rounded with cement mortar 1:2 (1 cement : 2 coarse sand) and finished with a floating coat of neat cement.

18.1.3.4 The junctions of floor with wall plaster, dado or skirting shall be rounded off where so specified.

18.1.3.5 The men engaged on finishing operations shall be provided with raised wooden platform to sit on so as to prevent damage to new work.

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18.1.4. **Curing**. The curing shall be done for a minimum period of ten days. Curing shall not be commenced until the top layer has hardened. Covering with empty gunnies bag shall be avoided as the colour of the flooring is likely to be bleached due to the remnants of cement dust from the bags.

18.1.5. **Precautions** Flooring in lavatories and bath room shall be laid only after fixing of water closet and squatting pans and floor traps. Traps shall be plugged while laying the floors and opened after the floors are cured and cleaned. Any damage done to W.C.'s squatting pans and floor traps during the execution of work shall be made good. During cold weather, concreting shall not be done when the temperature falls below 4°C. The concrete placed shall be protected against frost by suitable covering. Concrete damaged by frost shall be removed and work redone. During hot weather, precautions shall be taken to see that the temperature of wet concrete does not exceed 38° C. No concreting shall be laid within half an hour of the closing time of the day, unless permitted by the Engineer-in-Charge. To facilitate rounding of junction of skirting, dado and floor, the skirting/dado shall be laid along with the border or adjacent panels of floor.

18.2. **Ceramic / Vitrified Tiles**:

18.2.1 The tiles shall be of approved make and shall generally conform to IS 15622. They shall be flat, and true to shape and free from blisters crazing, chips, welts, crawling or other imperfections detracting from their appearance. The tiles shall be tested as per IS 13630.Classification and Characteristics of pressed ceramic tiles shall be as per IS 13712.The tiles shall be square or rectangular of nominal size. As given in Table 1,3,5, and 7 of IS 15622 gives the modular preferred sizes and table 2,4,6 and 8 give the most common non modular sizes. Thickness shall be specified by the manufacturer. It includes the profiles on the visible face and on the rear side. Manufacturer/supplier and party shall choose the work size of tiles in order to allow a nominal joint width upto 2mm for unrectified floor tiles and upto 1mm for rectified floor tiles. The joint in case of spacer lug tile shall be as per spacer. The tiles shall conform to table10 of IS 15622 with water absorption 3 to 6% (Group BII).The top surface of the tiles shall be glazed. Glaze shall be either glossy or matt as specified. The underside of the tiles shall not have glaze on more than 5% of the area in order that the tile may adhere properly to the base. The edges of the tiles shall be preferably free from glaze. However, any glaze if unavoidable, shall be permissible on only upto 50 per cent of the surface area of the edges.

18.2.2 **Coloured Tiles** Only the glaze shall be coloured as specified. The sizes and specifications shall be the same as for the white glazed tiles.

18.2.3 **Decorative Tiles** The type and size of the decorative tiles shall be as follows :-

(a) Decorated white back ground tiles -The size of these tiles shall be as per IS 15622.

(b) Decorated and having coloured back-ground - The sizes of the tiles shall be as per IS 15622.

18.2.4 **Preparation of Surface and Laying**

18.2.4.1 Base concrete or the RCC slab on which the tiles are to be laid shall be cleaned, wetted and mopped. The bedding for the tile shall be with cement mortar 1:4 (1 cement : 4 coarse sand) or as specified. The average thickness of the bedding shall be 20 mm or as specified while the thickness
under any portion of the tiles shall not be less than 10 mm.

18.2.4.2 Mortar shall be spread, tamped and corrected to proper levels and allowed to harden sufficiently to offer a fairly rigid cushion for the tiles to be set and to enable the mason to place wooden plank across and squat on it.

18.2.4.3 Over this mortar bedding neat grey cement slurry of honey like consistency shall be spread at the rate of 3.3 kg of cement per square metre over an area upto one square metre. Tiles shall be soaked in water washed clean and shall be fixed in this grout one after another, each tile gently being tapped with a wooden mallet till it is properly bedded and in level with the adjoining tiles. The joints shall be kept as thin as possible and in straight lines or to suit the required pattern.

18.2.4.4 The surface of the flooring during laying shall be frequently checked with a straight edge about 2 m long, so as to obtain a true surface with the required slope. In bath, toilet W.C. kitchen and balcony/verandah flooring, suitable tile drop or as shown in drawing will be given in addition to required slope to avoid spread of water. Further tile drop will also be provided near floor trap.

18.2.4.5 Where full size tiles cannot be fixed these shall be cut (sawn) to the required size, and their edge rubbed smooth to ensure straight and true joints. Tiles which are fixed in the floor adjoining the wall shall enter not less than 10 mm under the plaster, skirting or dado.

18.2.4.6 After tiles have been laid surplus cement slurry shall be cleaned off.

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18.2.5 **Pointing and Finishing** The joints shall be cleaned off the grey cement slurry with wire/coir brush or trowel to a depth of 2 mm to 3 mm and all dust and loose mortar removed. Joints shall then be flush pointed with white cement added with pigment if required to match the colour of tiles. Where spacer lug tiles are provided, the half the depth of joint shall be filled with polysulphide or as specified on top with under filling with cement grout without the lugs remaining exposed. The floor shall then be kept wet for 7 days. After curing, the surface shall be washed and finished clean. The finished floor shall not sound hollow when tapped with a wooden mallet.

19. **White & Colour Washing, Cement Base Paint, Distempering, Plastic Emulsion Paint, Weather Proof Paint**

19.1. LIME WASH:-Refer Clause No. 13.14.3.1of CPWD Specifications 2019 Vol-2. The lime wash shall be prepared from fresh stone white lime. The lime shall be thoroughly slaked on the spot, mixed and stirred with sufficient water to make a thin cream. This shall be allowed to stand for a period of 24 hours and then shall be screened through a clean coarse cloth. 40 gm of gum dissolved in hot water, shall be added to each 10 cubic dicimetre of the cream. The approximate quantity of water to be added in making the cream will be 5 litres of water to one kg of lime.

19.1.1. Indigo (Neel) upto 3 gm per kg of lime dissolved in water, shall then be added and stirred well. Water shall then be added at the rate of about 5 litres per kg. of lime to produce a milky solution.

19.1.2. **Application**

19.1.3. The white wash shall be applied with moonj brushes to the specified number of coats. The operation for each coat shall consist of a stroke of the brush given from the top downwards, another from the bottom upwards over the first stroke, and similarly one stroke horizontally from the right and another from the left before it dries.

19.1.4. Each coat shall be allowed to dry before the next one is applied. Further each coat shall be inspected and approved by the Engineer-in-Charge before the subsequent coat is applied. No portion of the surface shall be left out initially to be patched up later on.

19.1.5. For new work, three or more coats shall be applied till the surface presents a smooth and uniform finish through which the plaster does not show. The finished dry surface shall not show any signs of cracking and peeling nor shall it come off readily on the hand when rubbed.

19.1.6. For old work, after the surface has been prepared as described in para 13.14.2 a coat of white wash shall be applied over the patches and repairs. Then a single coat or two or more coats of white wash as stipulated in the description of the item shall be applied over the entire surface. The white washed surface should present a uniform finish through which the plaster patches do not appear. The washing on ceiling should be done prior to that on walls.

Note : In case of Hessian ceiling, on no account, lime shall be used as it rots cloth and hessian.

19.1.7. **Protective Measures** Doors, windows, floors, articles of furniture etc. and such other parts of the building not to be white washed, shall be protected from being splashed upon. Splashings and droppings, if any shall be removed by the contractor at his own cost and the surfaces cleaned. Damages if any to furniture or fittings and fixtures shall be recoverable from the contractor.

19.2. **Colour Wash**:- Refer Clause No. 13.17 of CPWD Specifications 2019 Vol-2.

19.2.1 The mineral colours, not affected by lime, shall be added to white wash. Indigo (Neel) shall however, not be added. No colour wash shall be done until a sample of the colour wash of the required tint or shade has been got approved from the Engineer-in-Charge. The colour shall be of even tint or shade over the whole surface. If it is blotchy or otherwise badly applied, it shall be redone by the contractor.

19.2.2. For new work, the priming coat shall be of white wash with lime or with whiting as specified in the description of the item. Two or more coats, shall then be applied on the entire surface till it represents a smooth and uniform finish.

19.2.3. For old work, after the surface has been prepared as described in 18.1.6. a coat of colour wash shall be applied over the patches and repairs. Then a single coat, or two or more coats of colour wash, as stipulated in the description of the item shall be applied over the entire surface. The colour washed surface shall present a uniform finish.

The finished dry surface shall not be powdery and shall not readily come off on the hand when rubbed.

19.3. **Cement Base Paint**

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19.3.1. Refer Clause No. 13.21 of CPWD Specifications 2019 Vol-1.

19.3.2. **Material** The cement Paint shall be (conforming to IS 5410) of approved brand and manufacture.

19.3.3. The cement Paint shall be brought to the site of work by the contractor in its original containers is sealed condition. The material shall be brought in at a time in adequate quantities to suffice for the whole work or at least a fortnight's work. The materials shall be kept in the joint custody of the Contractor and the Engineer-in- Charge. The empty containers shall not be removed from the site of work till the relevant item of the work has been completed and permission obtained from the Engineer- in-Charge.

19.3.4. **Preparation of Surface For New Work**. The surface shall be thoroughly cleaned of all mortar dropping, dirt dust, algae, grease and other foreign matter by brushing and washing. Pitting in plaster shall be made good and a coat of water proof cement Paint shall be applied over patches after wetting them thoroughly.

19.3.5. **Preparation of Mix.** Cement Paint shall be mixed in such quantities as can be used up within an hour of its mixing as otherwise the mixture will set and thicken, affecting flow and finish. Cement Paint shall be mixed with water in two stages. The first stage shall comprise of 2 parts of cement Paint and one part of water stirred thoroughly and allowed to stand for 5 minutes. Care shall be taken to add the cement Paint gradually to the water and not vice versa. The second stage shall comprise of adding further one part of water to the mix and stirring thoroughly to obtain a liquid of workable and uniform consistency. In all cases the manufacturer's instructions shall be followed meticulously.

19.3.6. The lids of cement Paint drums shall be kept tightly closed when not in use, as by exposure to atmosphere the cement Paint rapidly becomes air set due to its hygroscopic qualities.

19.3.7. In case of cement Paint brought in gunny bags, once the bag is opened, the contents should be consumed in full on the day of its opening. If the same is not likely to be consumed in full, the balance quantity should be transferred and preserved in an airtight container to avoid its exposure to atmosphere.

19.3.8. **Application**

19.3.8.1 The solution shall be applied on the clean and wetted surface with brushes or spraying machine. The solution shall be kept well stirred during the period of application. It shall be applied on the surface which is on the shady side of the building so that the direct heat of the sun on the surface is avoided.

The method of application of cement Paint shall be as per manufacturer's specification. The completed surface shall be watered after the day's work.

19.3.8.2 The second coat shall be applied after the first coat has been set for at least 24 hours. Before application of the second or subsequent coats, the surface of the previous coat shall not be wetted.

19.3.8.3 For new work, the surface shall be treated with three or more coats of water proof cement Paint as found necessary to get a uniform shade.

19.3.8.4 For old work, the treatment shall be with one or more coats as found necessary to get a uniform shade.

19.3.9. **Precaution**

19.3.9.1. Water proof cement Paint shall not be applied on surfaces already treated with white wash, colour wash, distemper dry or oil bound, varnishes, Paints etc. It shall not be applied on gypsums, wood and metal surfaces.

19.3.9.2. If water proofing cement is required to be applied on existing surface, previously treated with white wash, colour wash etc., the surface shall be thoroughly cleaned by scrapping off all the white wash, colour wash etc. completely. Thereafter, a coat of cement primer shall be applied followed by two or more coat of water proof cement.

19.4 **Oil Bound Distemper**

19.4.1 **Materials.** Oil emulsion (Oil Bound) washable distemper (IS 428) of approved brand and manufacture shall be used. The primer was used as on new work shall be cement primer or distemper primer as described in the item. These shall be of the same manufacture as distemper. The distemper shall be diluted with water or any other

prescribed thinner in a manner recommended by the manufacturer. Only sufficient quantity of distemper required for day's work shall be prepared.

19.4.2. The distemper and primer shall be brought by the contractor in sealed tins in sufficient quantities at a time to suffice for a fortnight's work, and the same shall be kept in the joint custody of the contractor and the Engineer-in-Charge. The empty tins shall not be removed from the site of work, till this item of work has been completed and passed by the Staff Officer-1 (Works).

19.4.3. **Preparation of the Surface**

19.4.3.1 For new work the surface shall be thoroughly cleaned of dust, old white or colour wash by washing and scrubbing. The surface shall then be allowed to dry for at least 48 hours. It shall then be sand papered to give a smooth and even surface. Any unevenness shall be made good by applying putty, made of plaster of paris mixed with water on the entire surface including filling up the undulations and then sand papering the same after it is dry.

19.4.3.2. In the case of old work, all loose pieces and scales shall be removed by sand papering. The surface shall be cleaned of all grease, dirt etc.

19.4.3.3. Pitting in plaster shall be made good with plaster of paris mixed with the colour to be used. The surface shall then be rubbed down again with a fine grade sand paper and made smooth. A coat of the distemper shall be applied over the patches. The patched surface shall be allowed to dry thoroughly before the regular coat of distemper is applied.

19.4.4. **Application**

19.4.4.1 **Priming Coat**: The priming coat shall be with distemper primer or cement primer, as required in the description of the item. The application of the distemper primer shall be as described in 13.18.4.

Note: If the wall surface plaster has not dried completely, cement primer shall be applied before distempering the walls. But if distempering is done after the wall surface is dried completely, distemper primer shall be applied.

19.4.4.2. Oil bound distemper is not recommended to be applied, within six months of the completion of wall plaster. However, newly plastered surfaces if required to be distempered before a period of six months shall be given a coat of alkali resistant priming Paint conforming to IS 109 and allowed to dry for atleast 48 hours before distempering is commenced.

19.4.4.3. For old work no primer coat is necessary.

19.4.4.4. Distemper Coat: For new work, after the primer coat has dried for at least 48 hours, the surface shall be lightly sand papered to make it smooth for receiving the distemper, taking care not to rub out the priming coat. All loose particles shall be dusted off after rubbing. One coat of distemper properly diluted with thinner (water or other liquid as stipulated by the manufacturer) shall be applied with brushes in horizontal strokes followed immediately by vertical ones which together constitutes one coat.

19.4.4.5. The subsequent coats shall be applied in the same way. Two or more coats of distemper as are found necessary shall be applied over the primer coat to obtain an even shade.

19.4.4.6. A time interval of at least 24 hours shall be allowed between successive coats to permit proper drying of the preceding coat.

19.4.4.7. For old work the distemper shall be applied over the prepared surface in the same manner as in new work. One or more coats of distemper as are found necessary shall be applied to obtain an even and uniform shade.

19.4.4.8. 15 cm double bristled distemper brushes shall be used. After each days work, brushes shall be thoroughly washed in hot water with soap solution and hung down to dry. Old brushes which are dirty and caked with distemper shall not be used on the work.

20. **Security Fencing**

20.1. **Barbed Wire**. Galvanised steel barbed wire for fencing shall confirm to IS 278-2001, Specification for galvanized steel barded wire for fencing. The galvanized barbed wire shall be manufactured from galvanized mild steel wire conforming to IS 280-2006, Galvanised coating of steel wire shall conform to the requirements as laid down for medium coated wire in IS 4826, Hot dipped galvanized coatings on round steel wires. The barbed wire shall consist of two-line wire 2.24 mm nominal dia, one or both containing 2 mm dia barbs at 75 mm centre to centre and weighing 97 to 106 Kg per Km.

20.2. **Chain Link Fence**.

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20.2.1. Chain link fence shall be made of 3.15mm dia galvanized wire and 75 mm (+/-4) mesh Size, Line Wire Dia (mm): 4.00, No. of wires upto & including 2m width: 2, No. of wires above 2m width: 3. The mesh wire and line wire of the fabric shall be manufactured from galvanized steel wire conforming to IS 280:2006 having zinc coating of type heavy as laid down in IS 4826, Hot dipped galvanized coatings on round steel wires or IS 12753, Electrogalvanised coatings on round steel wires. Tensile strength of wires shall be within 400 to 500 MPa. Dia of wire and the length of side of the mesh of chain link fence and the dia of line wire shall be as indicated. The wires shall be free from scale, irregularities, imperfections, flaws, sand splits and other defects. Zinc coating shall be smooth, even and bright. Chain link in fencing shall be fixed to the fencing posts as indicated or directed.

20.2.2. Galvanised Steel Chain Link Fence Fabric with both ends of the fabric knuckled.

20.2.3. Contractors shall produce original purchase invoice and manufacturer test certificate from wire manufacturer before any payment.

21. **Internal Wiring**

21.1. **Materials**

21.1.1. All the Electrical Accessories incorporated in the work shall conform to the relevant IS and shall bear ISI mark. The steel conduit shall be of maximum 16 SWG thickness and rigid PVC conduit shall be suitable for heavy mechanical stresses as given in IS and will be ISI marked.

21. 2. Work under this part will cover the point wiring and fixing of various light fittings in the building as per drawing. Work will be carried out as per provision of IS 732-1989. IE Rules and as per Sound Engineering Practices.

21.3. Recessed terminal boxes for housing switches, socket outlets, power plug, regulator etc. shall be provided flushed with the walls.

21.4. The internal wiring shall be in concealed PVC conduits. The PVC conduits and its fittings shall conform to the requirements of IS-9537-1983 and IS-3480-1966. PVC conduit shall be suitable for heavy duty as asked in IS. The size of wiring cable shall be as stipulated in Schedule 'A' (BOQ). The PVC unsheathed cable should conform to IS-694-2010 and suitable for 650/1100 volt grade. All cables and switches in work shall have ISI mark.

21.5. It shall however be noted by the contractor that layout of the fittings shall be completed to match the casted structural members and cost of extension/supports considered unavoidable and essential by the tenderer shall deemed to be inclusive in the unit rate quoted for wiring.

21.6. The switch boards shall be located in such a manner that they are easily accessible and such that there is adequate working space around the switch boards. The tentative location shall be actually marked on the walls in chalk and written approval of Engineer-in-Charge shall be obtained before proceeding with the erection of the switch boards. The Engineer-in-Charge and the contractor shall associate themselves during the civil work so as to finalize the firm locations of switch boards, DBs, etc in consultation with departmental staff while executing the civil work.

21.7. All conductors used in point wiring/ sub-main wiring shall be FR-LSH (Flame retardant low smoke and halogen) Copper conductor conforming to IS 694-2013 and shall have ISI mark. Insulated wire used in point wiring will have colour code matching with phase i.e. wire starting from 'R' phase will have red colour and similarly with 'Y & B' phase will have yellow and blue respectively. In neutral, only black colour wire will be used. No joints in PVC sheathed Copper conductor for phase and neutral or in earth wire is permitted. All stranded wires will be crimped with suitable Copper lug before they are connected to MCB. Green colour wire shall be used in earth wire along with other wires.

21.8. The cable and the flexible cords shall be stranded Copper conductor. Same colour code suggested in above said para shall be followed.

21.9. The surface wiring for points outside the building shall run on internal face of wall as far as practicable. Only at terminal points it shall be taken out by puncturing the wall and connect with light fitting/switches.

21.10. The maximum number of point wiring of light/socket 5/6 Amp on an independent circuit from DB shall not exceed 8 Nos in any case and not more than two power points in an independent circuit from DB.

20.11. Each circuit will have its independent neutral and looping is only permitted with in the circuit only. For example if five circuits are going out from one distribution board then five neutral wire will also go along with phase from neutral bus-bar.

21.12. Wherever more than two conduits are running together vertically concealed in wall, tenderer is advised to wrap the PVC conduits in wire mesh and then do plaster otherwise cement plaster may not stick to the PVC conduit and it is likely to come out. Cost of wire mesh used is deemed to be included in the quoted cost of wiring.

21.13. PVC Conduit used in Point Wiring for flushed Florescent Fitting and Ceiling Fan fixed at False Ceiling Area, can be laid on False Ceiling.

21.14. Mild Steel Conduit used for suspension of Tube Light Fittings shall conform to IS-9537.

21.15. **PVC Conduit**

21.15.1. PVC conduit to be used for point wiring/sub main wiring shall be 'Heavy Grade' and all as specified.

21.16. PVC circular box and bend used for PVC conduit shall also be conforming to IS-3419.

21.17. PVC terminal box shall be ISI Marked.

21.18. **Flexible Cable** Flexible cable shall be with tinned annealed stranded copper conductors of 1 Sqmm 3 runs (phase, neutral and earth) with PVC insulation.

21.19. **Ceiling Roses**: Ceiling rose shall be surface type and shall comply with IS-371 having three terminals plate.

21.20. **Earth Wire**

20.20.1. Copper PVC insulated wire conforming to IS-694 green in colour of size given in Schedule 'A' (BOQ) will be continuously laid along with other colour coded wire of each circuit as asked in Schedule 'A' (BOQ).

21.20.2. The cables shall be with multistranded copper conductor PVC insulated unsheathed suitable for 1100 volts, for PVC conduit as specified. For point/sub main wiring color code of cables as per IE rule shall be maintained.

21.20.3. Earthing shall conform to IS - 3043. Min. distance between Two Earth Pits shall be kept 4.5 Metre.

21.21. **MCB and Distribution Board**

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

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

21.21.3. All MCB, DBs shall be same manufacturers.

21.22. **Switch Boxes**: -The Switch Box to accommodate Switches for Light, Fan and Socket shall be fabricated with 16 SWG sheet conforming to IS-5133. The box will have cover of minimum 3 mm thick Laminated Sheet of suitable shade approved by Staff Officer-1(Works). The Switch Boxes shall be of adequate sizes to house all Switches/Regulator/ 3 Pin Plug. If space inside the box is found to be insufficient due to number of Wires then Two Switch Boxes shall be provided side by side. Before fixing the box, outer and inner surface will be treated against corrosion.

21.23. **Fixing of Fittings and Fans**: -All tube light fittings if suspended will be fixed at 2.60 Metre from finished floor level or as directed by Engineer-in-Charge. All ceiling fans will be kept at 2.70 Metre from finished floor level or as directed by Engineer-in-Charge. Air circulator will be fixed on wall with proper MS bracket grouted properly either with MS bolt or split bolt. Cost of MS brackets is deemed to be included in the quoted cost of air circulator.

21.24. **Electrical Test**

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

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

21.25. **Led Lights/Luminaries**:

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21.25.1. All LED lights/luminaries shall be meet the provision laid down in IS No-16101, IS No - 16102 Part I/II, IS No -16130 Parts I, IS No -15885 Part II/ Sec 13, IS No -16104, IS No - 16105, IS No -16106, IS No - 16108: 2012 and LM 79 & LM 80.

21.25.2 All LED light products shall be replacement warranty of complete LED luminaries fitting shall not less than three years from the date of completion and Life expectancy of LED's minimum 50,000 burning hrs. The product will be replaced free of cost in the following cases: -

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

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

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

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

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Appendix

No. P-45021/2/2017-B.E.-II
Government of India
Ministry of Commerce and Industry
Department of Industrial Policy and Promotion
****

Dated 15th June, 2017
Udyog Bhawan, New Delhi

To

All Central Ministries/Departments/CPSUs/All concerned

ORDER

Subject: Public Procurement (Preference to Make in India), Order 2017

Whereas it is the policy of the Government of India to encourage 'Make in India' and promote manufacturing and production of goods and services in India with a view to enhancing income and employment, and

Whereas procurement by the Government is substantial in amount and can contribute towards this policy objective, and

Whereas local content can be increased through partnerships, cooperation with local companies, establishing production units in India or Joint Ventures (JV) with Indian suppliers, increasing the participation of local employees in services and training them,

Now therefore the following Order is issued :

1. This Order is issued pursuant to Rule 153 (iii) of the General Financial Rules 2017.

2. **Definitions**: For the purposes of this Order:

   'Local content' means the amount of value added in India which shall, unless otherwise prescribed by the Nodal Ministry, be the total value of the item procured (excluding net domestic indirect taxes) minus the value of imported content in the item (including all customs duties) as a proportion of the total value, in percent.

   'Local supplier' means a supplier or service provider whose product or service offered for procurement meets the minimum local content as prescribed under this Order or by the competent Ministries / Departments in pursuance of this order.

   'L1' means the lowest tender or lowest bid or the lowest quotation received in a tender, bidding process or other procurement solicitation as adjudged in the evaluation process as per the tender or other procurement solicitation.

   'margin of purchase preference' means the maximum extent to which the price quoted by a local supplier may be above the L1 for the purpose of purchase preference.

   'Nodal Ministry' means the Ministry or Department identified pursuant to this order in respect of a particular item of goods or services.

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'*Procuring entity*' means a Ministry or department or attached or subordinate office of, or autonomous body controlled by, the Government of India and includes Government companies as defined in the Companies Act.

3. **Requirement of Purchase Preference**: Subject to the provisions of this Order and to any specific instructions issued by the Nodal Ministry or in pursuance of this Order, purchase preference shall be given to local suppliers in all procurements undertaken by procuring entities in the manner specified hereunder:

   a. In procurement of goods in respect of which the Nodal Ministry has communicated that there is sufficient local capacity and local competition, and where the estimated value of procurement is Rs. 50 lakhs or less, only local suppliers shall be eligible. If the estimated value of procurement of such goods is more than Rs. 50 lakhs, the provisions of sub-paragraph b or c as the case may be, shall apply.

   b. In the procurements of goods which are not covered by paragraph 3a and which are divisible in nature, the following procedure shall be followed:

      i. Among all qualified bids, the lowest bid will be termed as L1. If L1 is from a local supplier, the contract for full quantity will be awarded to L1.

      ii. If L1 bid is not from a local supplier, 50% of the order quantity shall be awarded to L1. Thereafter, the lowest bidder among the local suppliers, will be invited to match the L1 price for the remaining 50% quantity subject to the local supplier's quoted price falling within the margin of purchase preference, and contract for that quantity shall be awarded to such local supplier subject to matching the L1 price. In case such lowest eligible local supplier fails to match the L1 price or accepts less than the offered quantity, the next higher local supplier within the margin of purchase preference shall be invited to match the L1 price for remaining quantity and so on, and contract shall be awarded accordingly. In case some quantity is still left uncovered on local suppliers, then such balance quantity may also be ordered on the L1 bidder.

   c. In procurements of goods not covered by sub-paragraph 3a and which are not divisible, and in procurement of services where the bid is evaluated on price alone, the following procedure shall be followed:

      i. Among all qualified bids, the lowest bid will be termed as L1. If L1 is from a local supplier, the contract will be awarded to L1.

      ii. If L1 is not from a local supplier, the lowest bidder among the local suppliers, will be invited to match the L1 price subject to local supplier's quoted price falling within the margin of purchase preference, and the contract shall be awarded to such local supplier subject to matching the L1 price.

      iii. In case such lowest eligible local supplier fails to match the L1 price, the local supplier with the next higher bid within the margin of purchase preference shall be invited to match the L1 price and so on and contract shall be awarded accordingly. In case none of the local suppliers within the margin of purchase preference matches the L1 price, then the contract may be awarded to the L1 bidder.

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4. **Exemption of small purchases**: Notwithstanding anything contained in paragraph 3, procurements where the estimated value to be procured is less than Rs. 5 lakhs shall be exempt from this Order. However, it shall be ensured by procuring entities that procurement is not split for the purpose of avoiding the provisions of this Order.

5. **Minimum local content**: The minimum local content shall ordinarily be 50%. The Nodal Ministry may prescribe a higher or lower percentage in respect of any particular item and may also prescribe the manner of calculation of local content.

6. **Margin of Purchase Preference**: The margin of purchase preference shall be 20% .

7. **Requirement for specification in advance**: The minimum local content, the margin of purchase preference and the procedure for preference to Make in India shall be specified in the notice inviting tenders or other form of procurement solicitation and shall not be varied during a particular procurement transaction.

8. **Government E-marketplace**: In respect of procurement through the Government E-marketplace (GeM) shall, as far as possible, specifically mark the items which meet the minimum local content while registering the item for display, and shall, wherever feasible, make provision for automated comparison with purchase preference and without purchase preference and for obtaining consent of the local supplier in those cases where purchase preference is to be exercised.

9. **Verification of local content**.

   a. The local supplier at the time of tender, bidding or solicitation shall be required to provide self-certification that the item offered meets the minimum local content and shall give details of the location(s) at which the local value addition is made.

   b. In cases of procurement for a value in excess of Rs. 10 crores, the local supplier shall be required to provide a certificate from the statutory auditor or cost auditor of the company (in the case of companies) or from a practicing cost accountant or practicing chartered accountant (in respect of suppliers other than companies) giving the percentage of local content.

   c. Decisions on complaints relating to implementation of this Order shall be taken by the competent authority which is empowered to look into procurement-related complaints relating to the procuring entity.

   d. Nodal Ministries may constitute committees with internal and external experts for independent verification of self-declarations and auditor's/ accountant's certificates on random basis and in the case of complaints.

   e. Nodal Ministries and procuring entities may prescribe fees for such complaints.

   f. False declarations will be in breach of the Code of Integrity under Rule 175(1)(i)(h) of the General Financial Rules for which a bidder or its successors can be debarred for up to two years as per Rule 151 (iii) of the General Financial Rules along with such other actions as may be permissible under law.

   g. A supplier who has been debarred by any procuring entity for violation of this Order shall not be eligible for preference under this Order for procurement by any other procuring entity for the

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duration of the debarment. The debarment for such other procuring entities shall take effect prospectively from the date on which it comes to the notice of other procurement entities, in the manner prescribed under paragraph 9h below.

h. The Department of Expenditure shall issue suitable instructions for the effective and smooth operation of this process, so that:

   i. The fact and duration of debarment for violation of this Order by any procuring entity are promptly brought to the notice of the Member-Convenor of the Standing Committee and the Department of Expenditure through the concerned Ministry /Department or in some other manner;

   ii. on a periodical basis such cases are consolidated and a centralized list or decentralized lists of such suppliers with the period of debarment is maintained and displayed on website(s).

   iii. in respect of procuring entities other than the one which has carried out the debarment, the debarment takes effect prospectively from the date of uploading on the website(s) in the such a manner that ongoing procurements are not disrupted.

10. **Specifications in Tenders and other procurement solicitations**:

a. Every procuring entity shall ensure that the eligibility conditions in respect of previous experience fixed in any tender or solicitation do not require proof of supply in other countries or proof of exports.

b. Procuring entities shall endeavour to see that eligibility conditions, including on matters like turnover, production capability and financial strength do not result in unreasonable exclusion of local suppliers who would otherwise be eligible, beyond what is essential for ensuring quality or creditworthiness of the supplier.

c. Procuring entities shall, within 2 months of the issue of this Order review all existing eligibility norms and conditions with reference to sub-paragraphs 'a' and 'b' above.

d. If a Nodal Ministry is satisfied that Indian suppliers of an item are not allowed to participate and/ or compete in procurement by any foreign government, it may, if it deems appropriate, restrict or exclude bidders from that country from eligibility for procurement of that item and/ or other items relating to that Nodal Ministry. A copy of every instruction or decision taken in this regard shall be sent to the Chairman of the Standing Committee.

e. For the purpose of sub-paragraph 10 d above, a supplier or bidder shall be considered to be from a country if (i) the entity is incorporated in that country, or ii) a majority of its shareholding or effective control of the entity is exercised from that country; or (iii) more that 50% of the value of the item being supplied has been added in that country. Indian suppliers shall mean those entities which meet any of these tests with respect to India."

Contd p 5/-

Signature of the tenderer & Stamp

(Uddipto Dhara)
Lt Col
Staff Officer-I (Works)
for Accepting Officer

11. **Assessment of supply base by Nodal Ministries**: The Nodal Ministry shall keep in view the domestic manufacturing / supply base and assess the available capacity and the extent of local competition while identifying items and prescribing minimum local content or the manner of its calculation, with a view to avoiding cost increase from the operation of this Order.

12. **Increase in minimum local content**: The Nodal Ministry may annually review the local content requirements with a view to increasing them, subject to availability of sufficient local competition with adequate quality.

13. **Manufacture under license/ technology collaboration agreements with phased indigenization**: While notifying the minimum local content, Nodal Ministries may make special provisions for exempting suppliers from meeting the stipulated local content if the product is being manufactured in India under a license from a foreign manufacturer who holds intellectual property rights and where there is a technology collaboration agreement / transfer of technology agreement for indigenous manufacture of a product developed abroad with clear phasing of increase in local content.

14. **Powers to grant exemption and to reduce minimum local content**: Ministries /Departments of Government of India and the Boards of Directors of Government companies or autonomous bodies may, by written order,

    a. reduce the minimum local content below the prescribed level;

    b. reduce the margin of purchase preference below 20% ;

    c. exempt any particular item or procuring or supplying entities or class or classes of items or procuring or supplying entities from the operation of this Order or any part of the Order.

    A copy of every such order shall be marked to the Member-Convenor of the Standing Committee constituted under this Order.

15. **Directions to Government companies**: In respect of Government companies and other procuring entities not governed by the General Financial Rules, the administrative Ministry or Department shall issue policy directions requiring compliance with this Order.

16. **Standing Committee**: A standing committee is hereby constituted with the following membership

    Secretary, Department of Industrial Policy and Promotion—Chairman
    Secretary, Commerce—Member
    Secretary, Ministry of Electronics and Information Technology—Member
    Joint Secretary (Public Procurement), Department of Expenditure—Member
    Joint Secretary (DIPP)—Member-Convenor

    The Secretary of the Department concerned with a particular item shall be a member in respect of issues relating to such item. The Chairman of the Committee may co-opt technical experts as relevant to any issue or class of issues under its consideration.

Contd p 6/

Signature of the tenderer & Stamp

Sd/xx xx xx
(Uddipto Dhara)
Lt Col
Staff Officer-I (Works)
for Accepting Officer

17. **Functions of the Standing Committee**: The Standing Committee shall meet as often as necessary but not less than once in six months. The Committee

    a. shall oversee the implementation of this order and issues arising therefrom, and make recommendations to Nodal Ministries and procuring entities.

    b. shall annually assess and periodically monitor compliance with this Order

    c. shall identify Nodal Ministries and the allocation of items among them for issue of notifications on minimum local content

    d. may require furnishing of details or returns regarding compliance with this Order and related matters

    e. may, during the annual review or otherwise, assess issues, if any, where it is felt that the manner of implementation of the order results in any restrictive practices, cartelization or increase in public expenditure and suggest remedial measures

    f. may examine cases covered by paragraph 13 above relating to manufacture under license/ technology transfer agreements with a view to satisfying itself that adequate mechanisms exist for enforcement of such agreements and for attaining the underlying objective of progressive indigenization

    g. may consider any other issue relating to this Order which may arise.

18. **Removal of difficulties**: Ministries /Departments and the Boards of Directors of Government companies may issue such clarifications and instructions as may be necessary for the removal of any difficulties arising in the implementation of this Order.

19. **Ministries having existing policies**: Where any Ministry or Department has its own policy for preference to local content approved by the Cabinet after 1st January 2015, such policies will prevail over the provisions of this Order. All other existing orders on preference to local content shall be reviewed by the Nodal Ministries and revised as needed to conform to this Order, within two months of the issue of this Order.

20. **Transitional provision**: This Order shall not apply to any tender or procurement for which notice inviting tender or other form of procurement solicitation has been issued before the issue of this Order.

(B. S. Nayak)
Under Secretary to Government of India
Ph 23061257

Signature of the tenderer & Stamp

(Uddipto Dhara)
Lt Col
Staff Officer-I (Works)
for Accepting Officer

7/

P-45021/21/2024-BE-II (E-197009)
Government of India
Ministry of Commerce & Industry
Deptt. for Promotion of Industry & Internal Trade
(Public Procurement Section)

Udyog Bhawan, New Delhi
Dated: 02.12.2024

OFFICE MEMORANDUM

Subject: Non-compliance of Public Procurement (Preference to Make in India) Order, 2017 while Floating tenders on CPPP and GeM Portal- reg

The undersigned is directed to refer to the above-mentioned subject and to say that the Department for Promotion of Industry and Internal Trade (DPIIT) scrutinizes high-value tenders of Central Government Procuring Entities published on CPPP and GeM Portals for their compliance with Public Procurement (Preference to Make in India) Order, 2017(PPP-MII Order) last revised on 19.07.2024. Recent assessments reveal that certain conditions articulated in the tender documents by government procuring entities are not in compliance with the PPP-MII Order. This issue is particularly significant among procuring entities within the Ministry of Home Affairs, where 85 tenders (copy enclosed) were found to be non-compliant with the PPP-MII Order. Details of such tenders have been regularly sent by DPIIT to various procuring entities under MHA. Incorporating restrictive and discriminatory eligibility criteria in tenders is violative of PPP-MII Order and also contrary to General Financial Rules.

2. It is stated that the Make in India initiative is a cornerstone of our economic strategy, aimed at fostering a robust domestic manufacturing sector capable of competing on a global scale. To realize this vision, it is essential that our procurement processes be inclusive and equitable, thereby facilitating participation from local manufacturers without imposing unnecessary barriers.

3. In this regard, it is requested that all procuring entities under Ministry of Home Affairs may kindly be directed to ensure complete compliance with PPP-MII Order 2017 while floating tenders and take immediate and decisive action to eliminate any restrictive or discriminatory eligibility criteria from their tender documents. Further Status/ATR to pending grievances may be shared with this Department within 15 days.

Surendra Singh

(Surendra Singh)
Under Secretary to the Government of India
Email: ssingh.dopt@nic.in
Tel: 23061592

To

1. Secretary, Ministry of Home Affairs

Signature of the tenderer & Stamp

Sd/xx xx xx
(Uddipto Dhara)
Lt Col
Staff Officer-I (Works)
for Accepting Officer

Appendix B

CERTIFICATE FOR ABIDING BY CODE OF INTEGRITY FOR PUBLIC PROCUREMENT VIDE RULE 175 (1) OF GFR-2017

1. It is hereby certified that I/We Mr/Mrs/Ms _____(Full name of owner/ proprietor of Bidder Firm) on behalf of M/S _____(Full Name and address of Firm) are bidding for this Tender duly adhering to the **'Code of Integrity' vide Rule 175 (1) of GFR-2017**.

2. The under mentioned aspects under 'Code of Integrity' are hereby certified for non-indulgence in:-

(a) Making offers, solicitation towards bribes/ gratification, reward, gift or any material benefit either directly or indirectly in exchange for an unfair advantage in the procurement process or to otherwise influence the procurement process.

(b) Omission, or misrepresentation of facts that may mislead or attempt to mislead so that financial or other benefit may be obtained or an obligation is avoided.

(c) Any sort of collusion, bid-rigging or anti-competitive behavior/ act that may impair transparency, fairness and progress of the procurement process.

(d) Improper use of information provided by the procuring entity to the bidders with an intent to gain unfair advantage in the procurement processes or even for personal gains.

(e) Any financial, material or business transactions (including un-official communication/ correspondence) between the bidder and any official of the procuring entity related to tender or executing the process of contract, which can affect the decision(s) of the procuring entity either directly or indirectly.

(f) Any coercion or threat to impair or harm, directly or indirectly any official or related party or its property to influence or affect the procurement process in any manner.

(g) Acts or attempts to obstruct or hinder any investigation or auditing of the procurement process during tendering stage or post supply order stage.

(h) Making false declarations/ disclaimers or providing false information for participation in a Tender process, or to secure a contract or to affect the participation of other prospective Bidders.

3. The under mentioned aspects under 'Code of Integrity' are hereby certified for adherence:-

(a) Promise on the part of the principal not to seek or accept any benefit, which is not legally available.

(b) Principal to treat all bidders with equity and reason.

(c) Promise on the part of bidders not to offer any benefit to the employees of the Principal not available legally.

(d) Bidders not to enter into any undisclosed agreement or understanding with other bidders with respect to prices, specifications, certifications, subsidiary contracts, etc.

(e) Bidders not to pass any information provided by Principal as part of business relationship to others and not to commit any offence under PC/ IPC Act.

(f) Foreign bidders to disclose the name and address of agents and representatives in India and Indian Bidders to disclose their foreign principals or associates.

(g) Bidders to disclose the payments to be made by them to agents/ brokers or any other intermediary.

(h) Bidders to disclose any transgressions with any other company that may impinge on the anti corruption principle.

S

(j) A person signing IP shall not approach the Courts while representing the matters to IEMs and he/ she will await their decision in the matter.

(k) In case of a joint venture, all the partners of the joint venture should sign the Integrity Pact. In case of sub-contracting, the Principal contractor shall take the responsibility of the adoption of IP by the sub-contractor. It is to be ensured that all sub-contractors also sign the IP.

4. I/We make the following "Disclosure of Conflict of Interest" in accordance to Rule 5.1.4(ix) of Manual for Procurement of Goods and Services-2017:-

_____

_____

5. I/We make the following "Disclosure of any previous transgressions made in respect of provisions certified vide Para 2 (a) to (h) above with any entity in any country during the last three years or of being debarred/ blacklisted by any other Govt of India procuring agency:-

_____

_____

6. It is fully understood that in case of the aforesaid information provided proved to be false or misleading, I/We are liable to disqualification from the procurement process and the contract, if awarded, is liable to be cancelled. In the event of contract already having been executed, the balance payment be stopped till finalisation of the case and in the event of payment already been made, the Firm/ Concern is liable to be 'Banned from Business by Blacklisting' and recovery of dues already paid with respect to the Contract.

7. Details of Independent External Monitor (IEM) are as under :-

Shri Ashwani Kumar, Ex CMD, Dena Bank
Flat No. 101, 1st Floor,
Plot No. F.P.No. 81, Ruby Bandra West,
Ruby CHSL, 29th Road,
Near Duruoella Convent High School,
Bandra West, Mumbai-400050
Telephone : 9920262626
E-Mail – ashwani_ashwani1@yahoo.co.in

Place :

Date :

(Signature & Stamp of Owner/ Proprietor of the Firm/ Concern)

Note:-

1. In Para 4 above - Bidder to endorse in own handwriting "***I have no conflict of interest with any bidder nor with any official from the procuring entity***".

2. In Para 5 above - Bidder to endorsed in own handwriting "***NO***".

3. In case of any conflict of interest, bidder to mention same accordingly in Para 4 and 5 above.

Signature of the tenderer & Stamp

Sd/xx xx xx
(Uddipto Dhara)
Lt Col
Staff Officer-I (Works)
for Accepting Officer

(26)

Appendix 'A'
(Refer Para 1 of Vigilance Branch, HQ DGAR letter No I.12015/Policy/ Vig/2020/ 850 dt 12 Feb 2020

CERTIFICATE OF CONFIRMATION ON RULE 175 (1) (II) OF GENERAL FINANCIAL RULES-2017 AND PARAGRAPH 5.1.4 (IX) OF MANUAL FOR PROCUREMENT OF GOODS-2017

1 It is hereby certified that as per Rule 175 (1) (II) of General Financial Rules-2017 there are no 'Conflicts of Interests' pertaining to this Firm/ Company/ Proprietorship/ Concern.

2. As per Para 5.1.4 of (ix) of Manual for Procurement of Goods 2017, it is certified that my/ our firm/ company/ proprietorship/ concern:-

(a) Do not have controlling partner(s) in common who are Participants/ Bidders in the Tender.

(b) Do not receive or have received any direct or indirect subsidy/ financial stake from any of these bidders.

(c) Do not have the same legal representative/ agent with other common bidders for purpose of this bid.

(d) Do not have relationship with each other, directly or through common third parties for this Tender.

(e) Have not participated in more than one bid of the Tender (Participation by a bidder in more than one bid will result in the disqualification of all bids in which the parties are involved. However, this does not limit the inclusion of the components/ sub-assembly/ assemblies from one bidding manufacturer in more than one bid).

(f) Have not quoted as agent/ agents in offshore procurements on behalf of their principal manufacturers, is/ are aware that one agent cannot represent two manufacturers or quote on their behalf in a particular tender enquiry. Is/ Are aware that one manufacturer can also authorise only one agent/ dealer and that there can be only one bid from the following:-

(i) The principal manufacturer directly or through one Indian Agent on his behalf.

(ii) Indian/ Foreign Agent on behalf of only one principal.

(g) Have not as Bidder or any of its affiliates participated as a Consultant in the preparation of the design or technical specifications of the said contract/ NIT that is the subject of this Bid/ Tender.

(h) As a holding company/ firm/ concern do not have more than one independently manufacturing units, or more than one unit having common business ownership/ management and have only one unit quoting the Bid. Declare proactively that such sister concern/ common business/ management unit in same/ similar line of business have not participated in the said Bid/ Tender.

3. It is fully understood that in case of the aforesaid information provided proved to be false or misleading, the contract if allotted is liable to be cancelled. In the event of contract already having been executed the balance payment be stopped till finalisation of the case and in the event of payment already been made, the Firm/ Concern is liable to be 'Banned from Business' with Assam Rifles.

Place .

Date

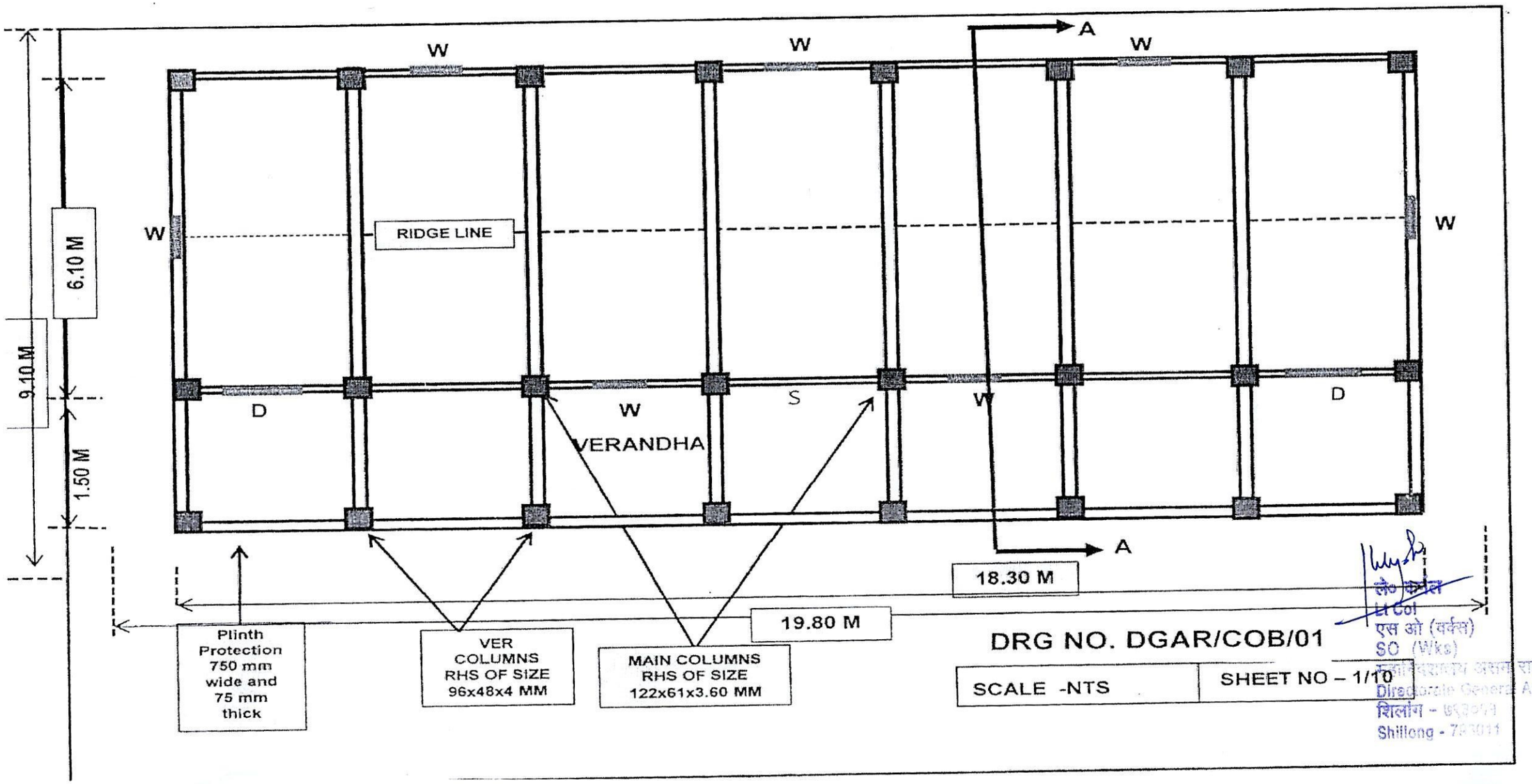
(Signature & Stamp of Owner/ Proprietor of the Firm/ Concern)

Signature of the tenderer & Stamp

Sd/xx xx xx
(Uddipto Dhara)
Lt Col
Staff Officer-I (Works)
for Accepting Officer

PLAN: LIVING SHELTER (SM BK)

Appx F



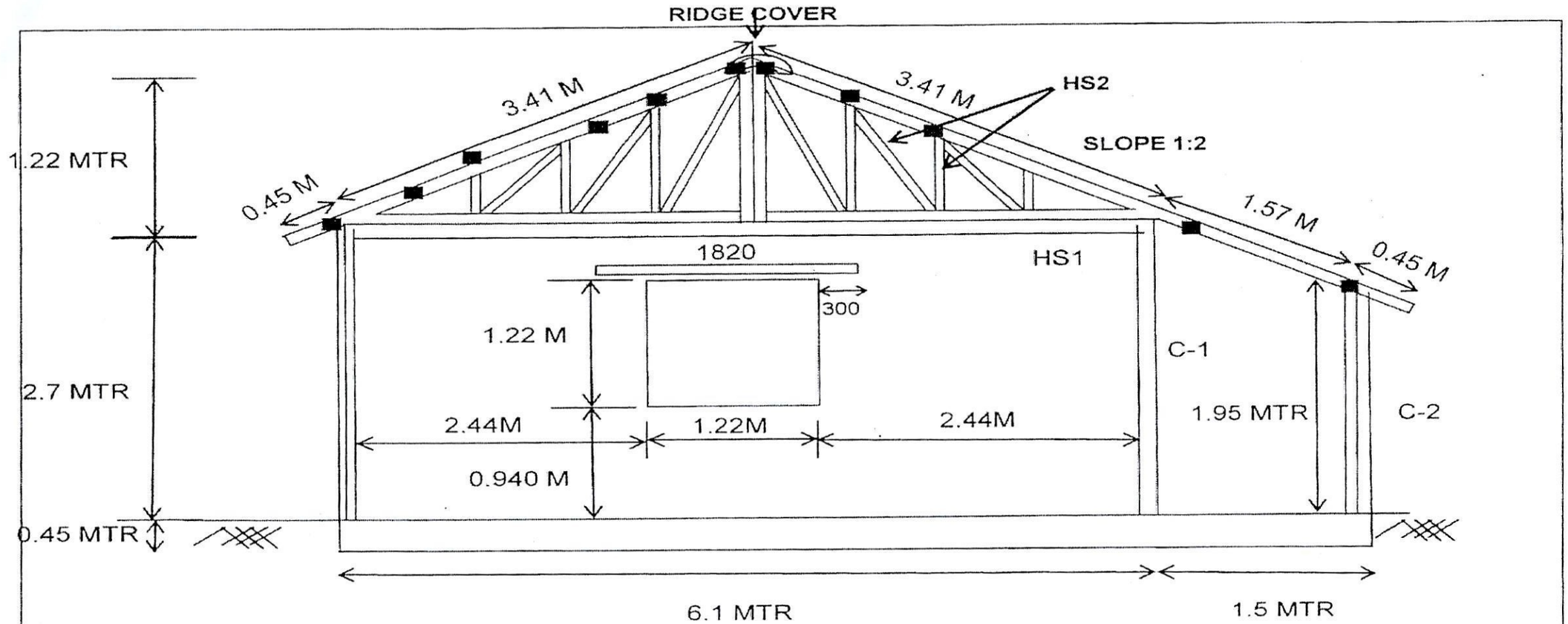
DRG NO. DGAR/COB/01

SCALE -NTS | SHEET NO – 1/10

Lt Col
एस ओ (वर्क्स)
SO (Wks)
Directorate General Assam Ri
Shillong - 793011

CROSS SECTION: LIVING SHELTER (SM BK)

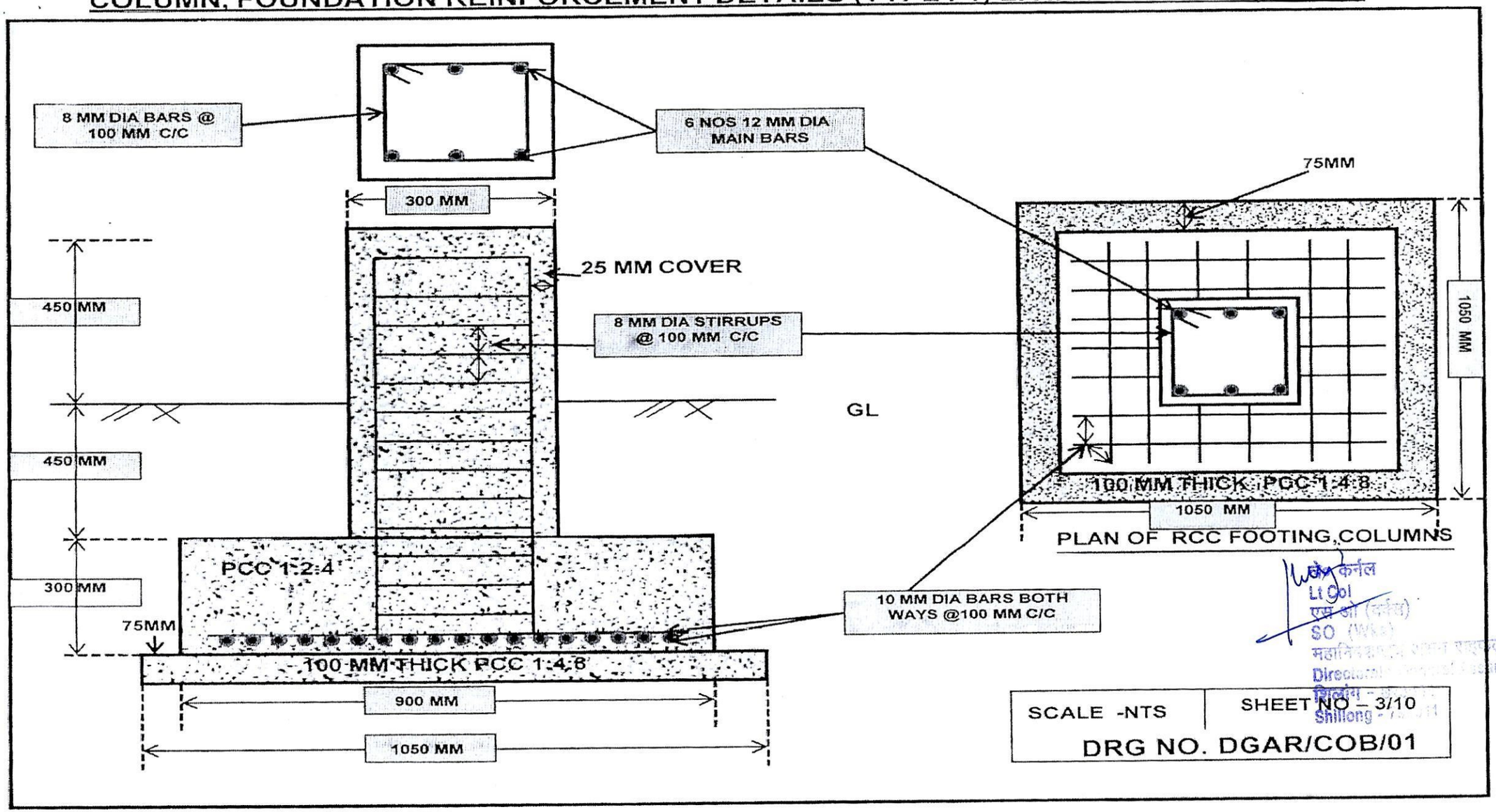
Appx F



SCALE -NTS	SHEET NO – 2/9
DRG NO. DGAR/COB/01	

लेफ्ट कर्नल
Lt Col
एस ओ (वर्क्स)
SO (Works)
महानिदेशालय असम राइफल्स
Directorate General Assam Rifles
शिलांग - 793011
Shillong - 793011

COLUMN, FOUNDATION REINFORCEMENT DETAILS (TYPE F1) LIVING SHELTER (SM BK)



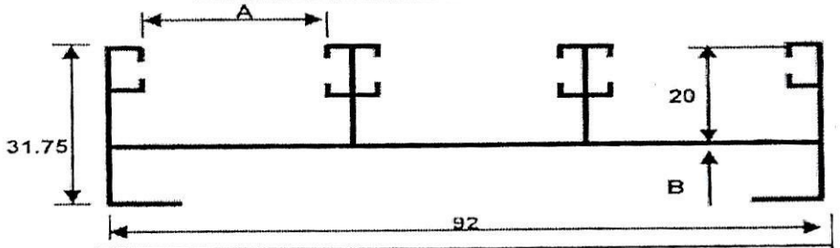
कर्नल
Lt Col
एस ओ (वर्क्स)
SO (Wks)
महानिदेशक सीमा सड़क संगठन
Director General Border Roads
शिलांग
Shillong

SCALE -NTS	SHEET NO – 3/10
DRG NO. DGAR/COB/01	

Appx F

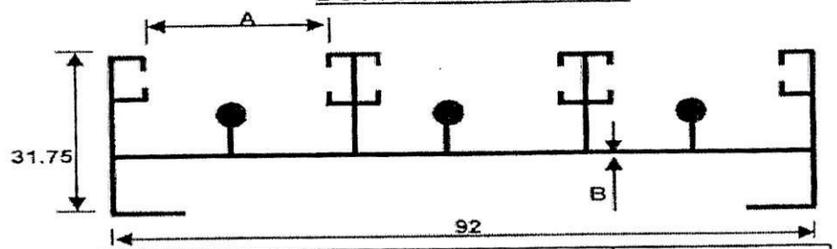
DETAILS OF SLIDING WINDOW SECTIONS LIVING SHELTER (SM BK)

TOP & SIDE MEMBER : WINDOW FRAME



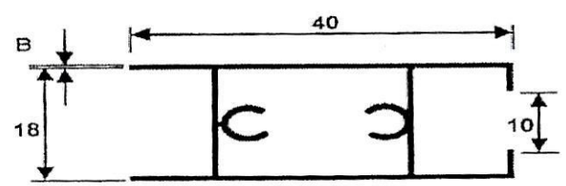
MODEL NO	A	B	WEIGHT KG/M
20831	22.70	1.50	1.060

BOTTOM RAIL : FRAME



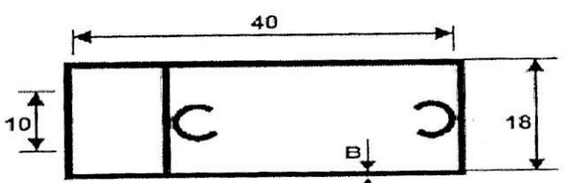
MODEL NO	A	B	WEIGHT KG/M
20832	22.70	1.50	1.248

TOP & BOTTOM RAIL: SLIDE SHUTTER



MODEL NO	B	WEIGHT KG/M
20736	1.55	0.547

SIDE RAIL : SLIDING SHUTTER



MODEL NO	B	WEIGHT KG/M
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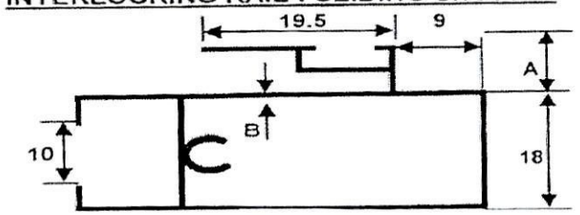
INTERLOCKING RAIL : SLIDING SHUTTER



MODEL NO	A	B	WEIGHT KG/M
20737	9.0	1.45	0.607

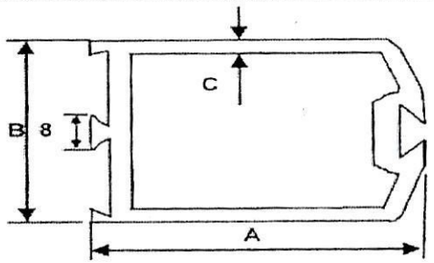
Lt Col
एस ओ (वर्क्स)
SO (Works)
महानिदेशालय असम राइफल्स
Directorate General Assam Rifles
शिलांग - 793011
Shillong - 793011

DRG NO. DGAR/COB/01

SCALE -NTS	SHEET NO – 4/10

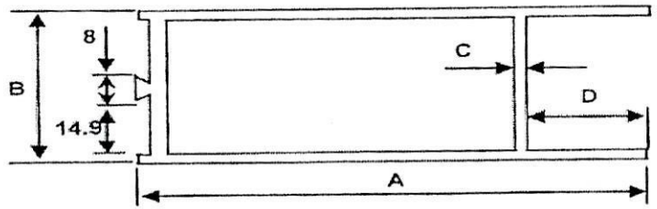
DETAILS OF MAIN DOOR/ FLY PROOFING DOOR SECTIONS LIVING SHELTER (SM BK)

VERTICAL STYLE OF DOOR / FLYPROOF DOOR BOTH SIDES



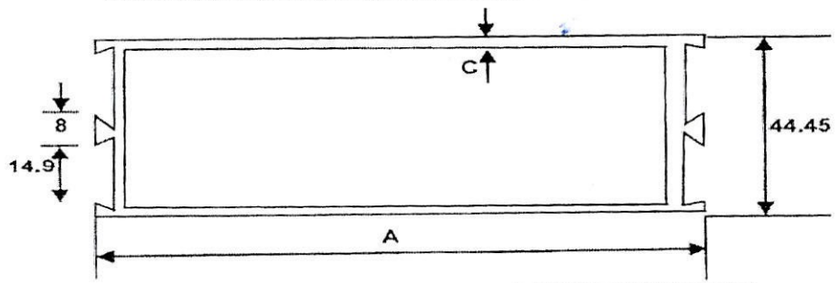
MODEL NO	A	B	C	WEIGHT KG/M
19560	85.00	44.45	2.00	1.417

TOP & BOTTOM RAIL OF DOOR / FLY PROOFING SHUTTER



MODEL NO	A	B	C	D	WEIGHT KG/M
19505	95.25	44.45	2.00	25.40	1.511

MIDDLE RAIL OF DOOR / FLY PROOFING SHELTER



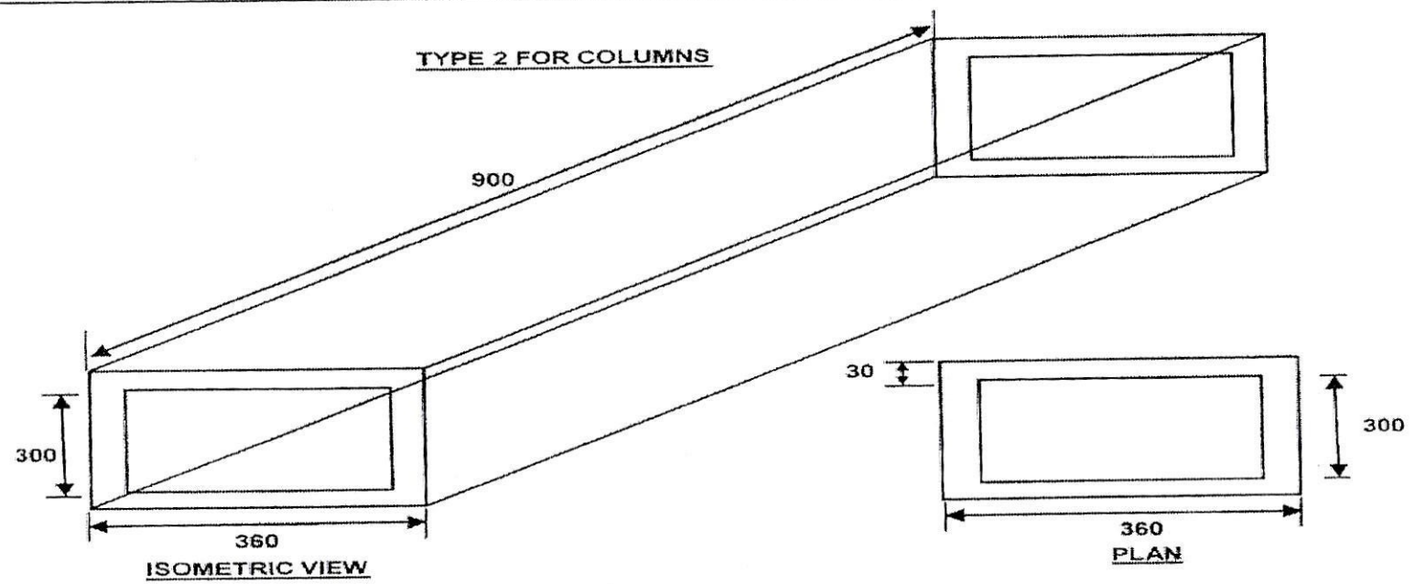
MODEL NO	A	C	WEIGHT KG/M
19564	100.00	2.00	2.145

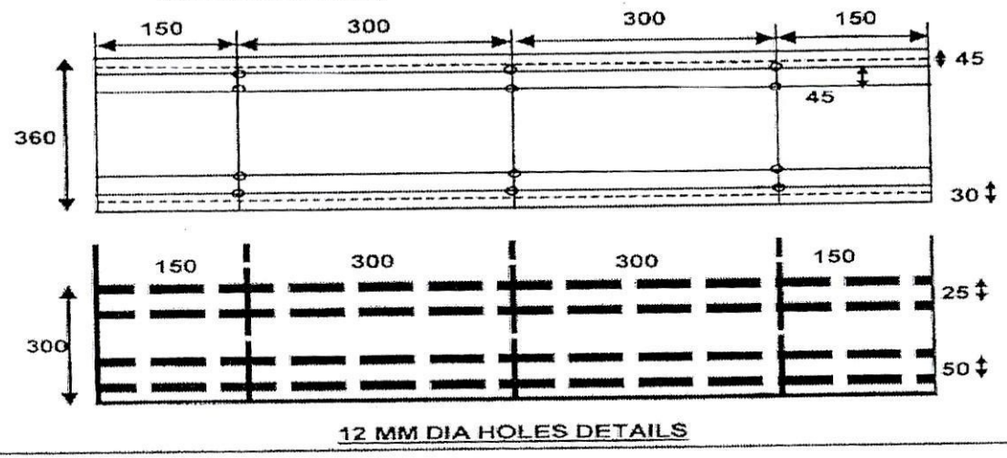
लेo कर्नल
Lt Col
एस ओ (वर्क्स)
SO (Works)
महानिदेशालय असम राइफल्स
Directorate [illegible] Assam Rifles
शिलांग - [illegible]
Shillong - 793011

DRG NO. DGAR/COB/01

SCALE -NTS	SHEET NO – 5/10

WOODEN FORM WORK OF SIZE 300 X 300 X 900 MM LIVING SHELTER (SM BK)



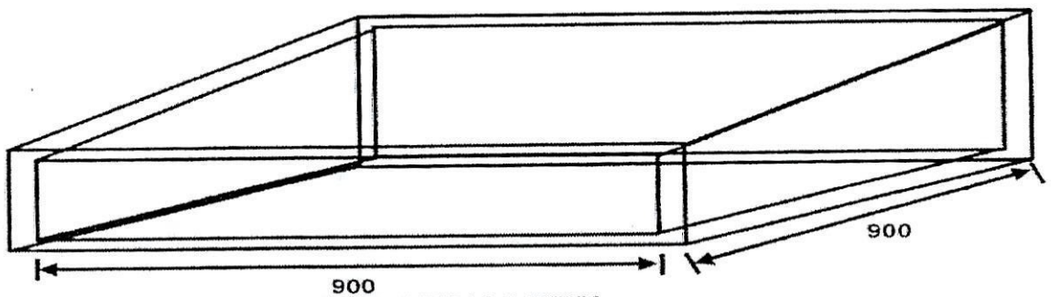


लेफ्ट कर्नल
LT COL
एस ओ (वर्कस)
SO (Works)
सहायक महानिदेशक असम राइफल्स
Director General Assam Rifles
शिलांग - 793 011
Shillong - 793 011

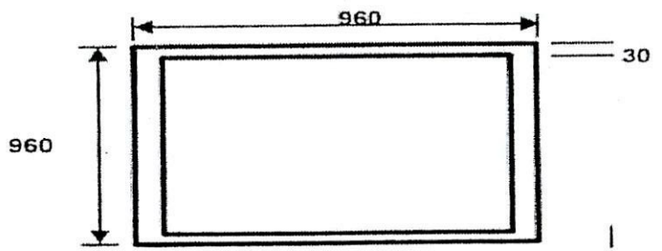
DRG NO. DGAR/COB/01

SCALE -NTS	SHEET NO – 6/10

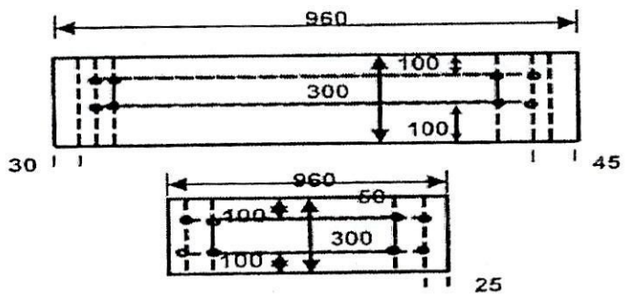
WOODEN FORM WORK OF SIZE 900 X 900 X 300 MM FOR COLUMN FOOTINGS (TYPE-2)
LIVING SHELTER (SM BK)



ISOMETRIC VIEW



PLAN



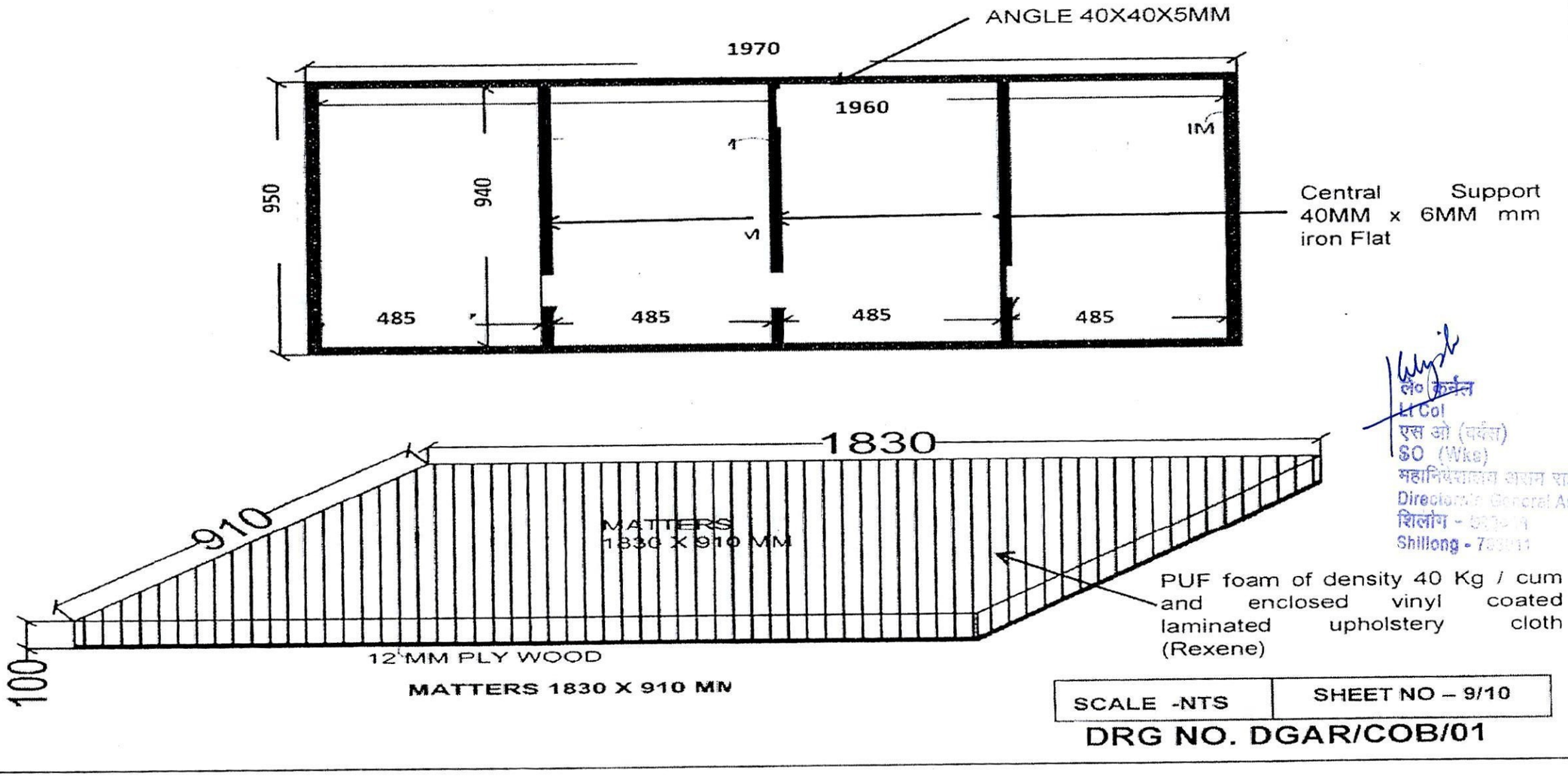
Lt Col
एस ओ (वर्क्स)
SO (Wks)
महानिदेशालय असम राइफल्स
Directorate General Assam Rifles
शिलांग - 793011
Shillong - 793011

DRG NO. DGAR/COB/01

SCALE -NTS	SHEET NO – 7/10

Appx F

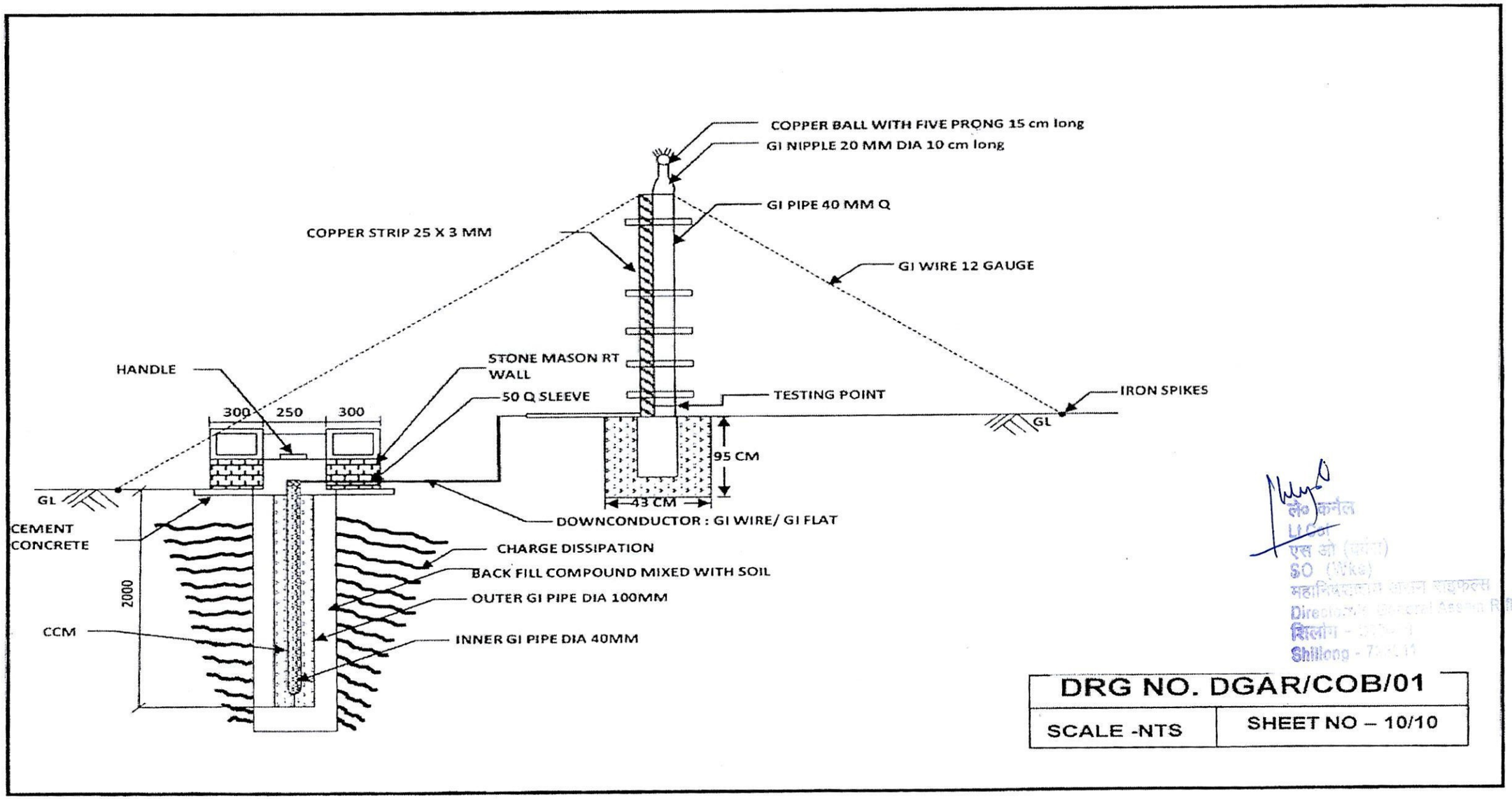
100 MM TH CUSHIONED PLATFORM FOR TWO TIER SLEEPING BUNKS



Lt Col
SO (Wks)
Shillong - 793011

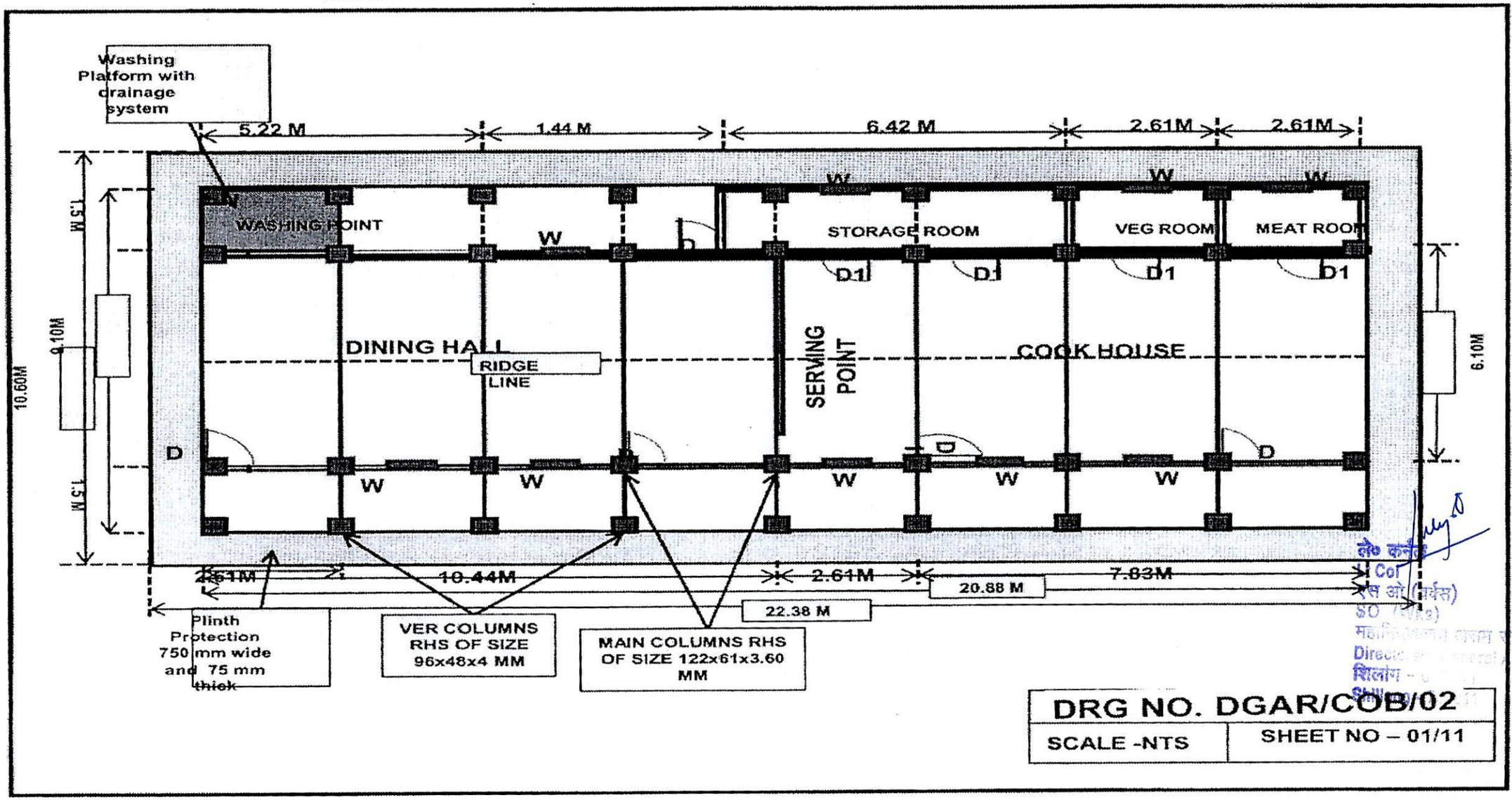
LIGHTNING CONDUCTOR (LC)

Appx 'F'



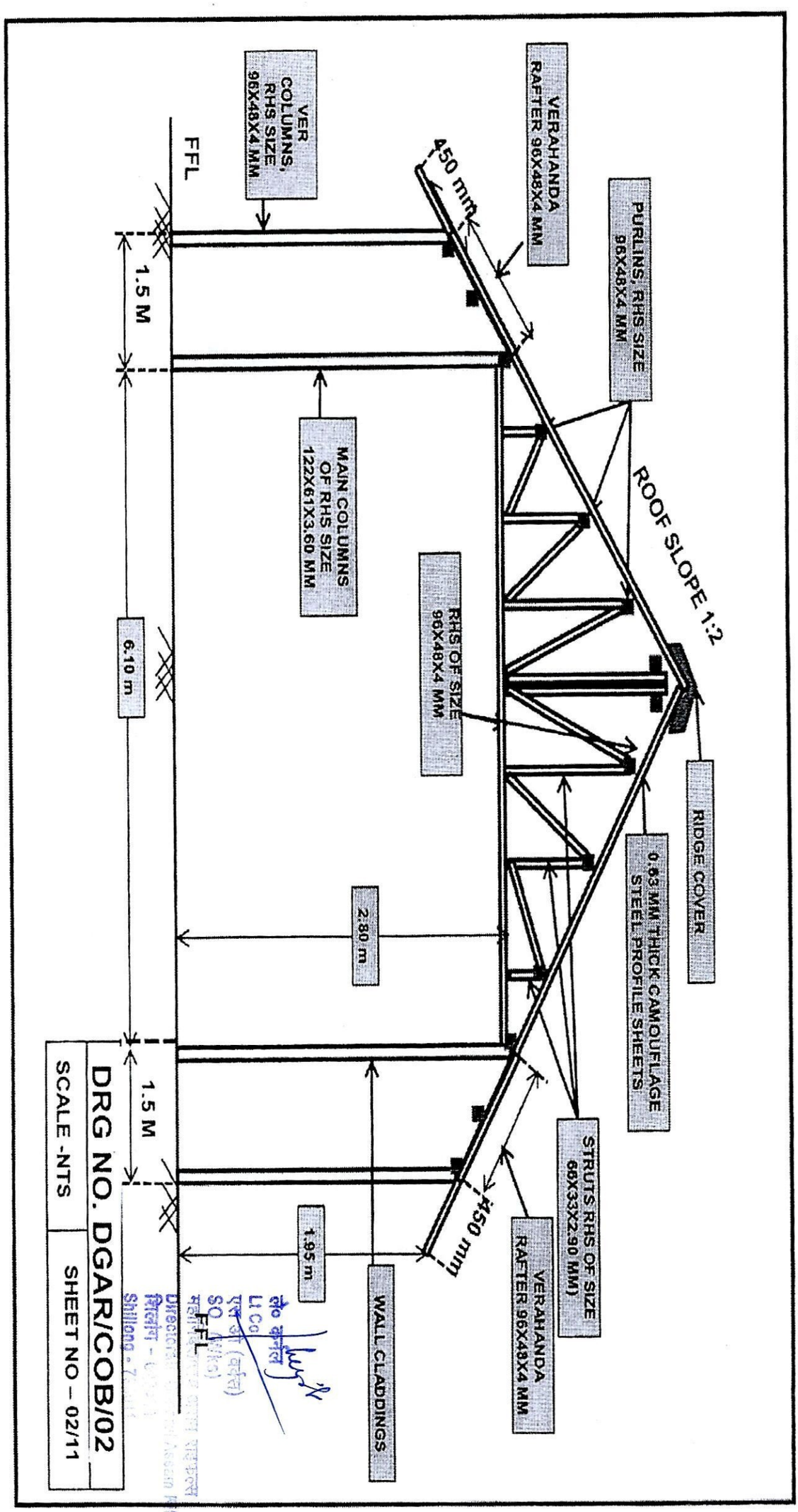
DRG NO. DGAR/COB/01	
SCALE -NTS	SHEET NO – 10/10

PLAN: COOK HOUSE AND DINING HALL (CHDH)

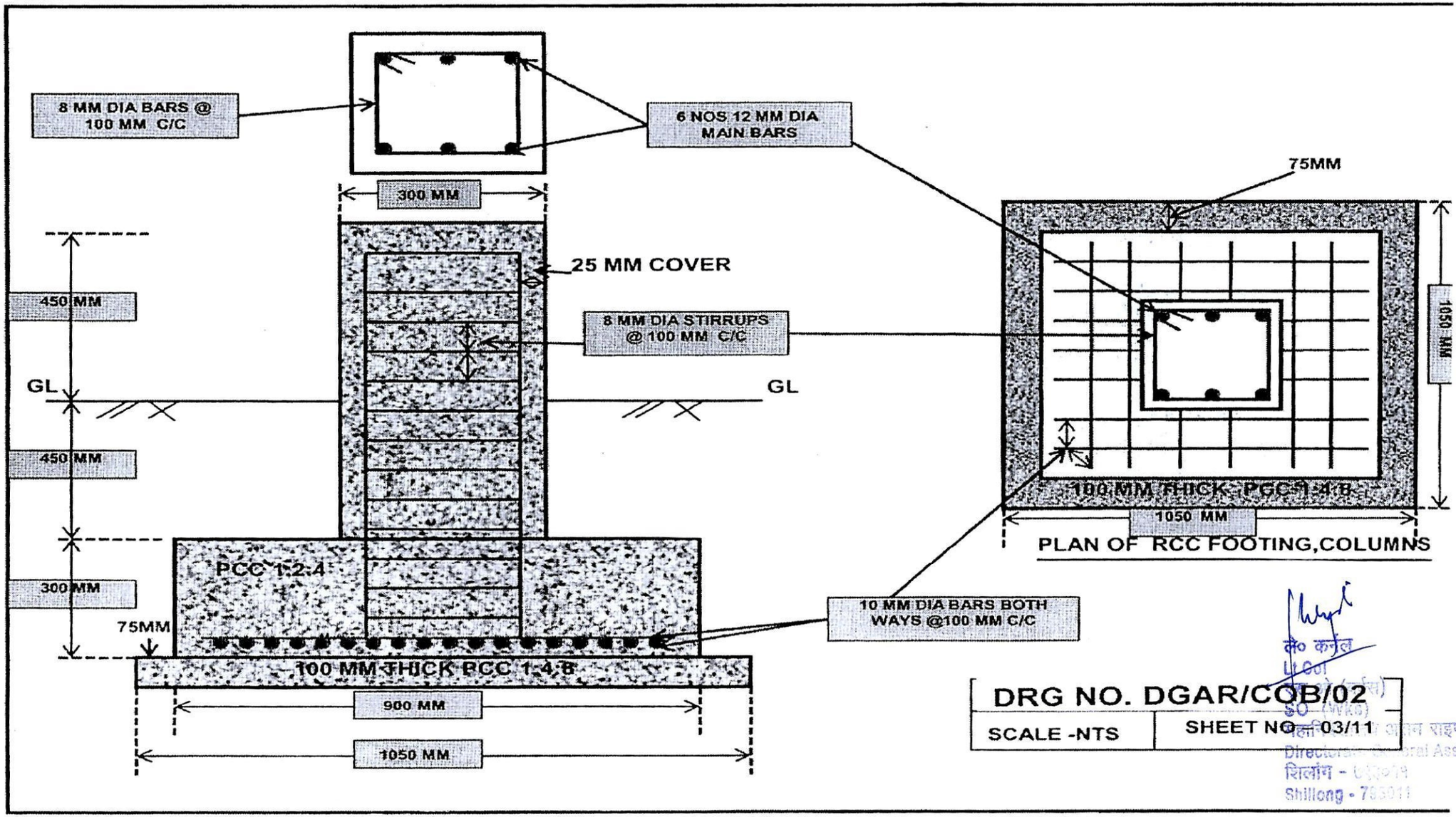


APPX 'F'

CROSS SECTION: COOK HOUSE DINING HALL (CHDH)



COLUMN, FOUNDATION REINFORCEMENT DETAILS (TYPE F1) COOK HOUSE DINING HALL (CHDH)



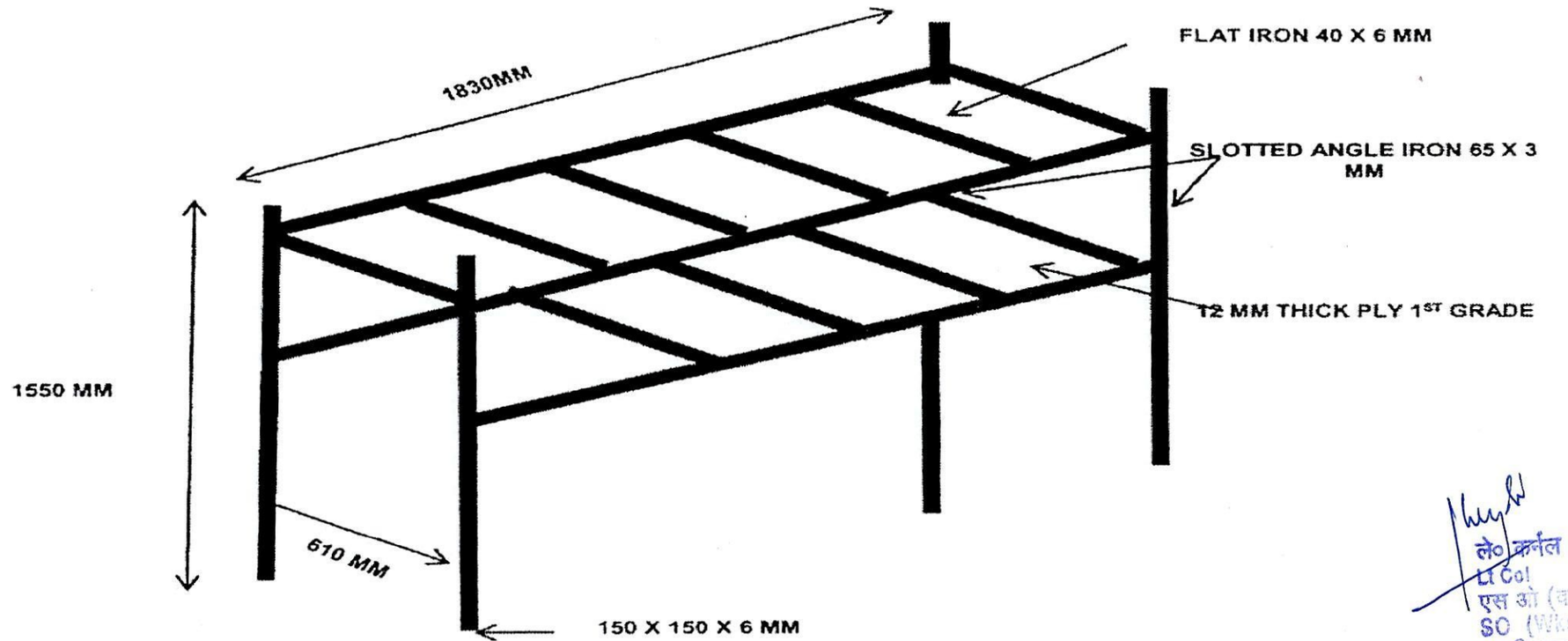
DRG NO. DGAR/COB/02

SCALE -NTS	SHEET NO – 03/11

Lt. Col
SO (Works)
Directorate General Assam Rifles
Shillong - 793011

Appx 'F

DETAILS OF STORAGE RACK: COOK HOUSE DINING HALL (CHDH)

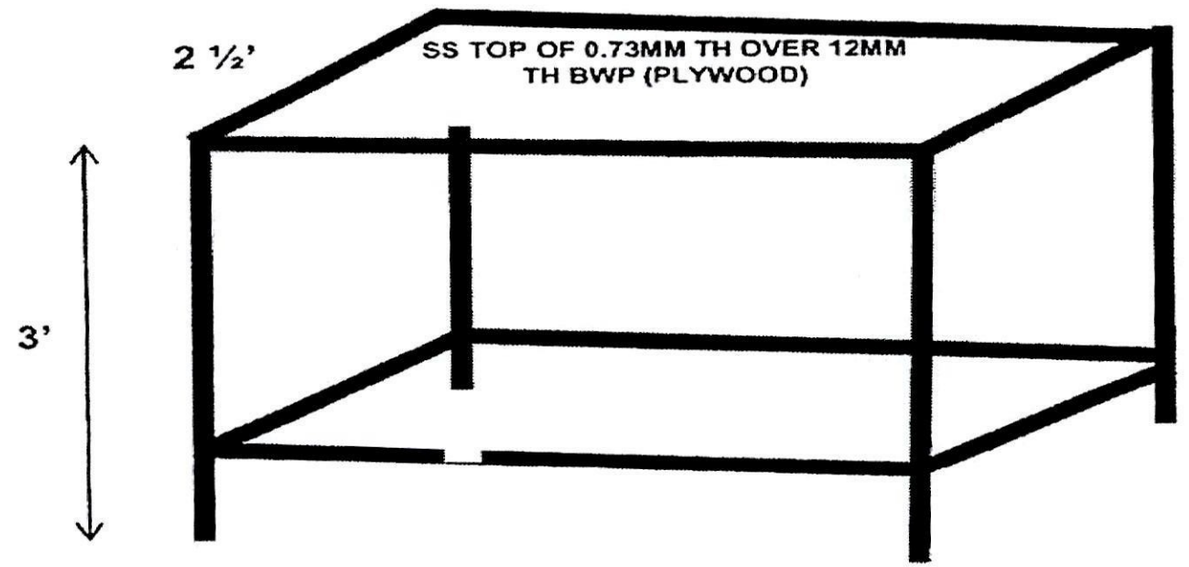


Lt Col
एस ओ (वर्क्स)
SO (Wks)
महानिदेशालय असम राइफल्स
Directorate General Assam Rifles
शिलांग - 7
Shillong - 7

DRG NO. DGAR/COB/02	
SCALE -NTS	SHEET NO – 04/11

Appx 'F

DETAILS OF VEGETABLE CUTTING STAINLESS STEEL TABLE (CHDH)



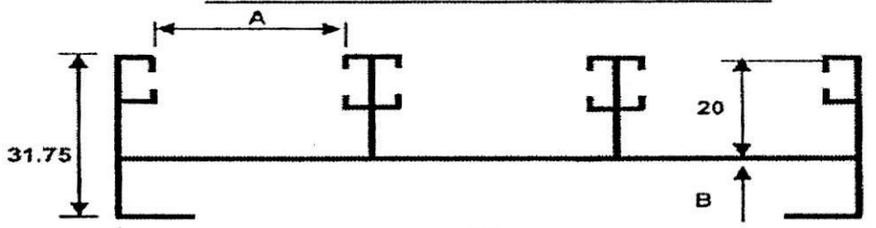
Lt Col
एस ओ (वर्क्स)
SO (Works)
Directorate General Assam Rifles
शिलांग - 793011
Shillong - 793011

DRG NO. DGAR/COB/02	
SCALE -NTS	SHEET NO – 05/11

Appx F

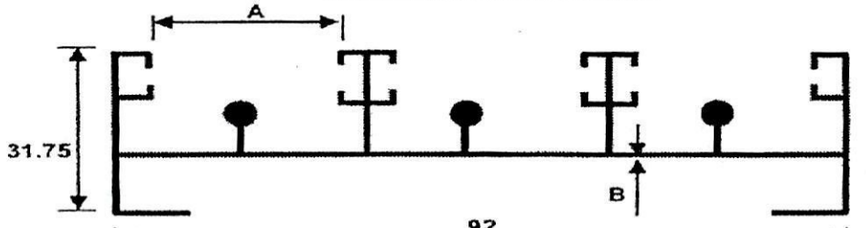
DETAILS OF SLIDING WINDOW SECTIONS COOK HOUSE DINING HALL (CHDH)

TOP & SIDE MEMBER : WINDOW FRAME



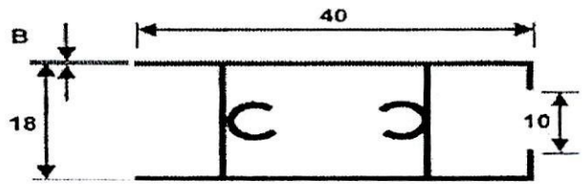
MODEL NO	A	B	WEIGHT KG/M
20831	22.70	1.50	1.060

BOTTOM RAIL : FRAME



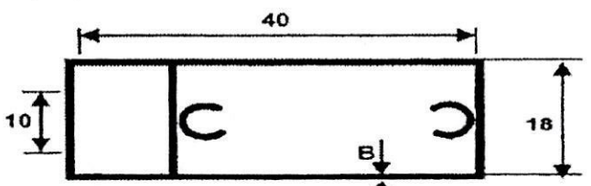
MODEL NO	A	B	WEIGHT KG/M
20832	22.70	1.50	1.248

TOP & BOTTOM RAIL: SLIDE SHUTTER



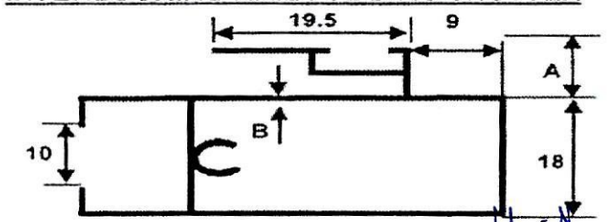
MODEL NO	B	WEIGHT KG/M
20736	1.55	0.547

SIDE RAIL : SLIDING SHUTTER



MODEL NO	B	WEIGHT KG/M
20735	1.55	0.547

INTERLOCKING RAIL : SLIDING SHUTTER



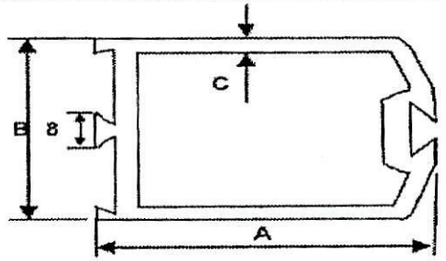
MODEL NO	A	B	WEIGHT KG/M
20737	9.0	1.45	0.607

DRG NO. DGAR/COB/02	
SCALE -NTS	SHEET NO – 06/11

Appx F

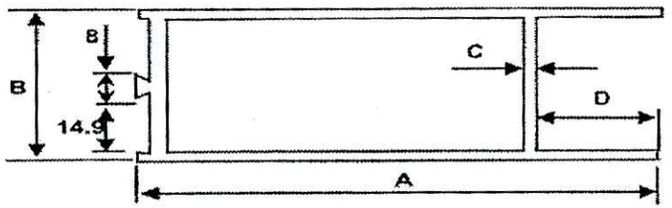
DETAILS OF MAIN DOOR/ FLY PROOFING DOOR SECTIONS COOK HOUSE DINING HALL (CHDH)

VERTICAL STYLE OF DOOR / FLYPROOF DOOR BOTH SIDES



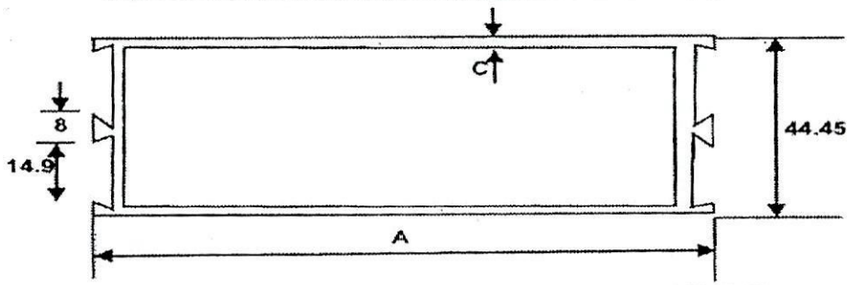
MODEL NO	A	B	C	WEIGHT KG/M
19560	85.00	44.45	2.00	1.417

TOP & BOTTOM RAIL OF DOOR / FLY PROOFING SHUTTER



MODEL NO	A	B	C	D	WEIGHT KG/M
19505	95.25	44.45	2.00	25.40	1.511

MIDDLE RAIL OF DOOR / FLY PROOFING SHELTER



MODEL NO	A	C	WEIGHT KG/M
19564	100.00	2.00	2.145

लेo कर्नल
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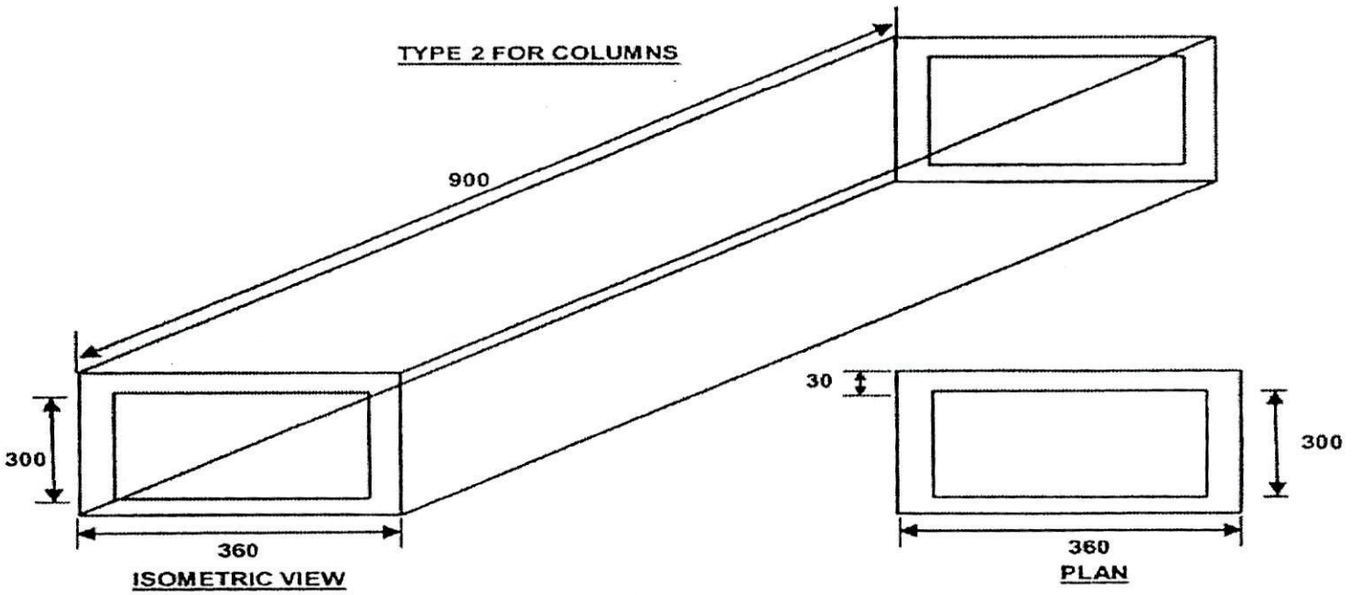
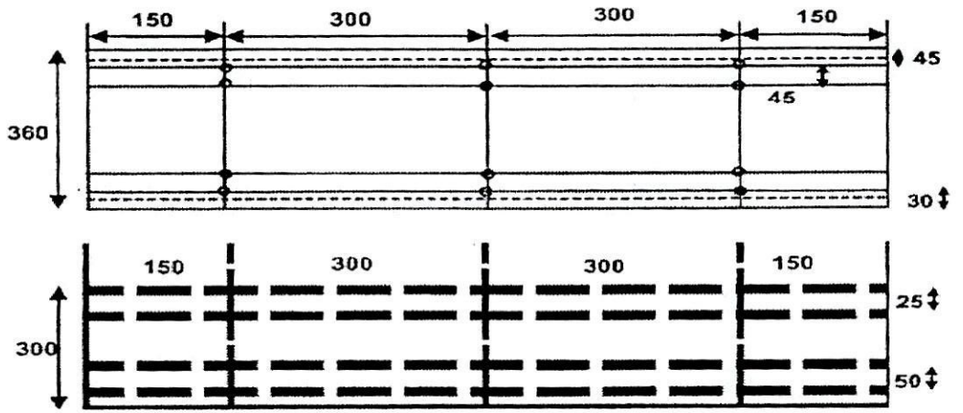
Directorate General Assam Rifles
शिलांग - 793011
Shillong - 793011

DRG NO. DGAR/COB/02	
SCALE -NTS	SHEET NO – 07/11

Appx F

WOODEN FORM WORK OF SIZE 300 X 300 X 900 MM COOK HOUSE DINING HALL (CHDH)





12 MM DIA HOLES DETAILS

लै० कर्नल
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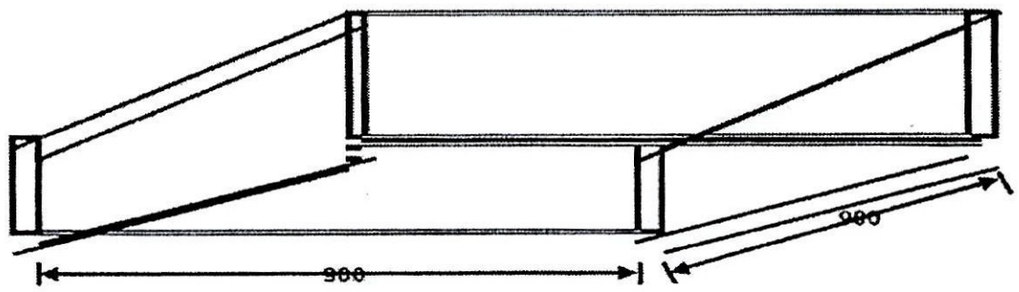
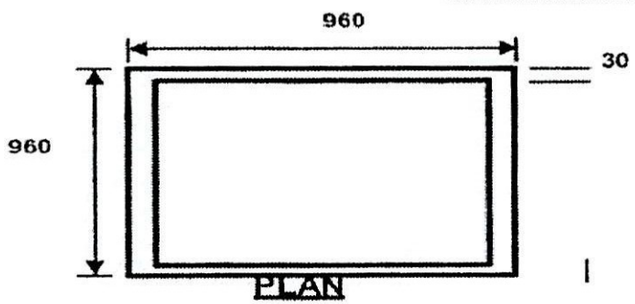
शिलांग - 7[illegible]
Shillong - 7[illegible]

DRG NO. DGAR/COB/02	
SCALE -NTS	SHEET NO – 08/11

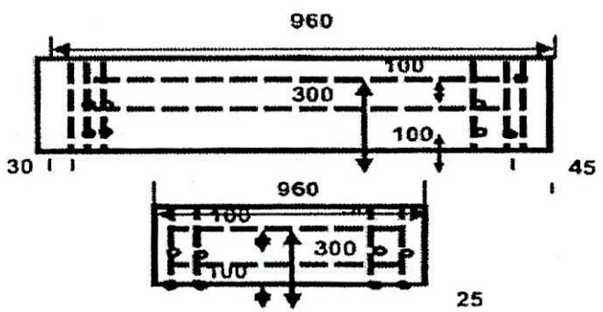
WOODEN FORM WORK OF SIZE 900 X 900 X 300 MM FOR COLUMN FOOTINGS (TYPE-2) COOK HOUSE DINING HALL (CHDH)



ISOMETRIC VIEW



PLAN

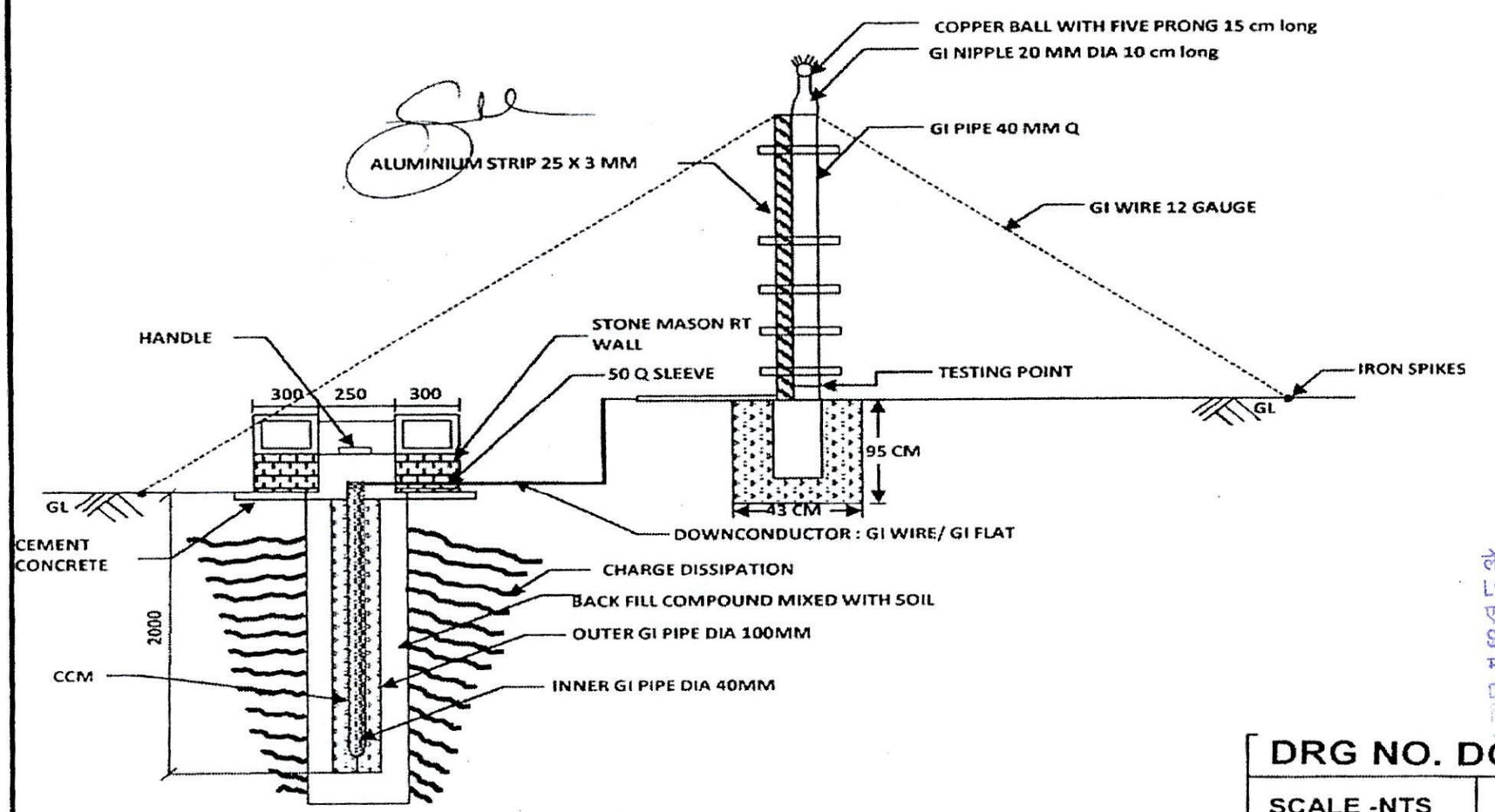


लेo कर्नल
Lt Col
एस ओ (वर्क्स)
SO (Works)
महानिदेशालय असम राइफल्स
Directorate General Assam Rifles
शिलांग - 7[illegible]
Shillong - 7[illegible]

DRG NO. DGAR/COB/02	
SCALE -NTS	SHEET NO – 09/11

LIGHTNING CONDUCTOR (LC)

Appx 'F'

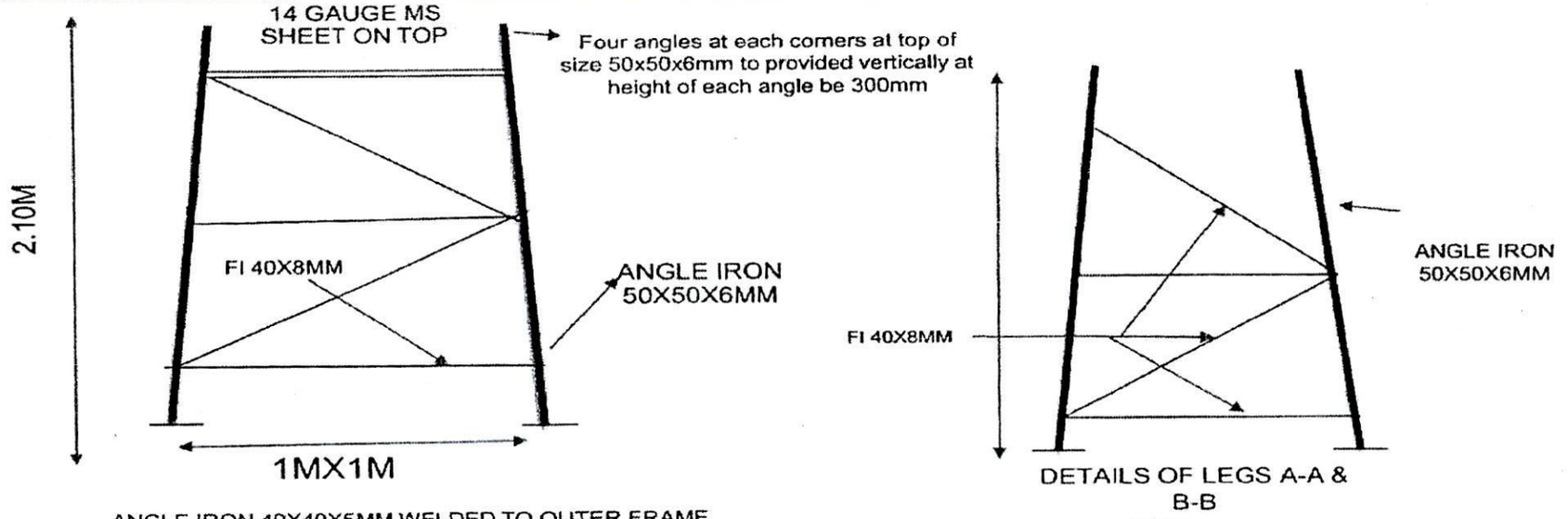


ले० कर्नल
Lt Col
एस ओ (वर्क्स)
SO (Wks)
महानिदेशालय असम राइफल्स
Directorate General Assam Rifles
शिलांग - ७९३०११
Shillong - 793011

DRG NO. DGAR/COB/02	
SCALE -NTS	SHEET NO – 10/11

Appx 'F'

PRE FABRICATED MS STAND FOR WATER TANK 500 AND 1000 LTR



NOTES :- 1.vertical legs will be welded in two sets of two legs in each A-A & B-B
2 Top frame shall be fabricated separately with top frame.
3. Horizontal and diagonal FI wil be fixed with nut and bolt 14 mm dia for two sets of legs and top frame with vertical legs also

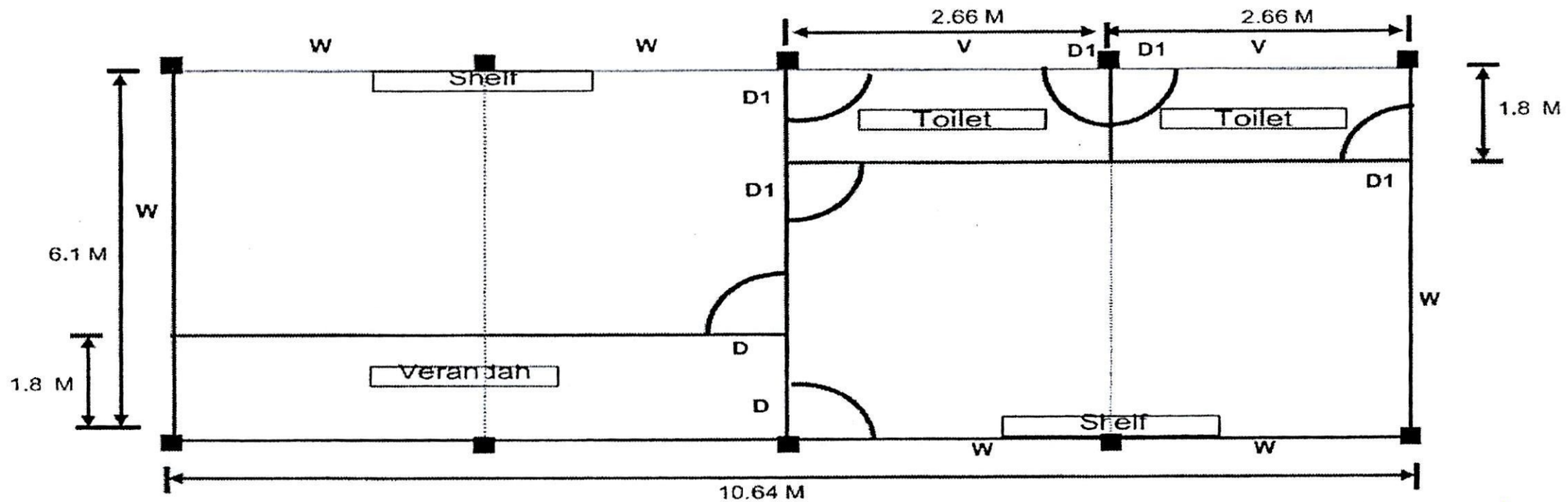
DRG NO. DGAR/COB/02

SCALE - NTS	SHEET NO – 11/11

ले० कर्नल
एस ओ (वर्क्स)
SO (Wks)
Director
शिलांग
Shillong

Appx 'G'

PLAN : OFFR/ JCO LIVING SHELTER



D	DOOR	1100 MM X 2100 MM	(02 NOS)
D1	DOOR	750 MM X 2100 MM	(05 NOS)
W	WINDOW	1175 MM X 1175 MM	(06 NOS)
V	VENTILATOR	450 MM X 300 MM	(02 NOS)

SHELVES – 02 NOS FIXED TO WALL PANELS WITH SUITABLE FIXING ARRANGEMENTS

ले० कर्नल
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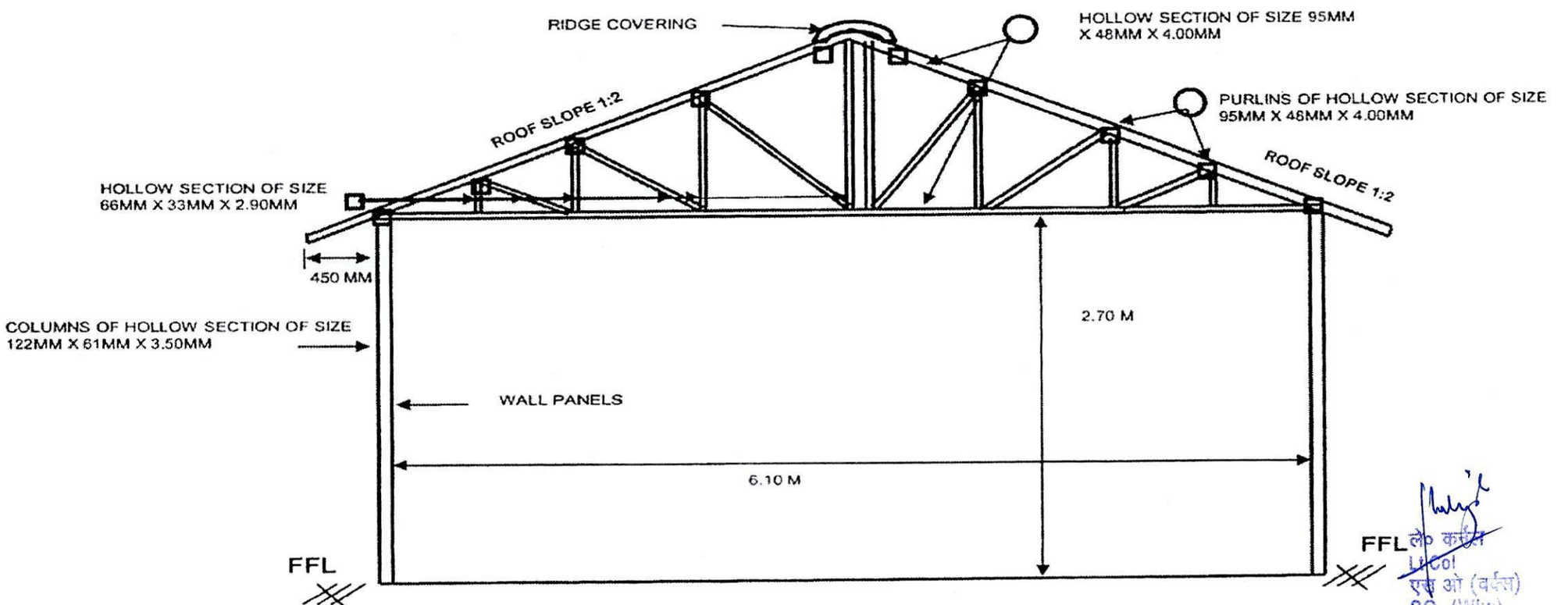
Directorate General Assam Rifles
शिलांग - 793011
Shillong - 793011

DRG NO. DGAR/COB/03	
SCALE -NTS	SHEET NO – 01/10

Appx 'G'

CROSS SECTION LEFT SIDE : OFFR/ JCO LIVING SHELTER

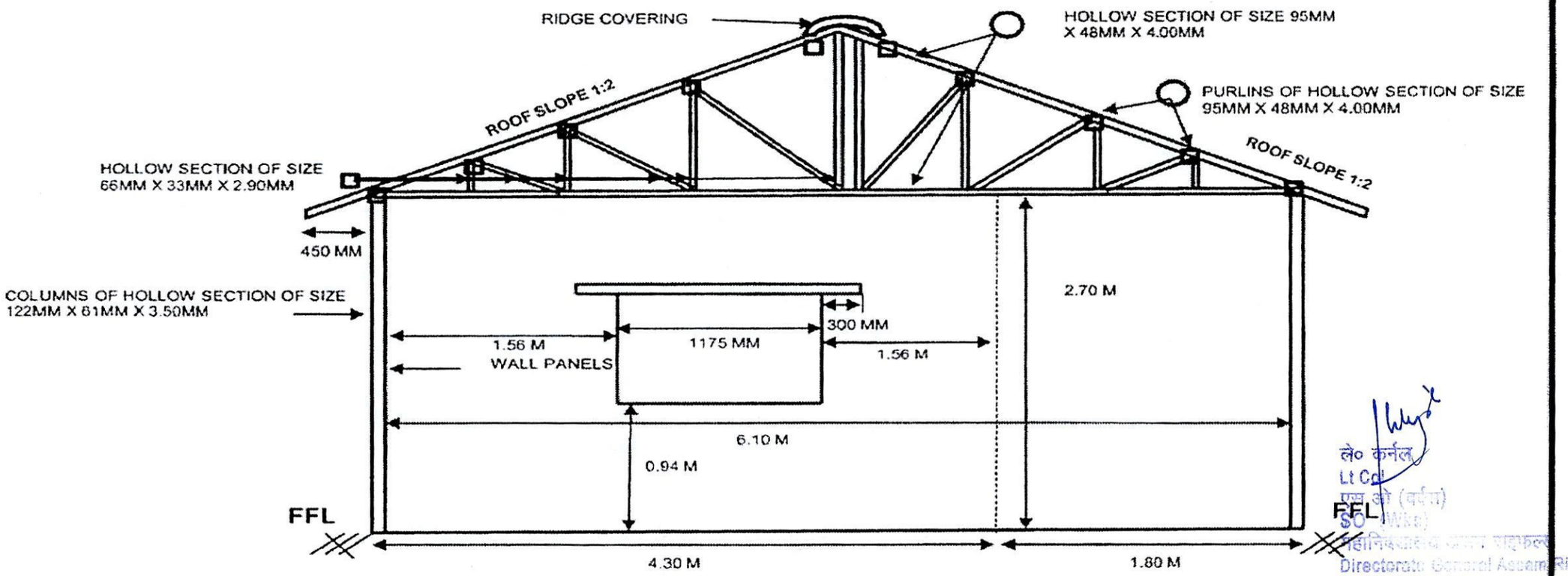


लेफ्टिनेंट कर्नल
Lt Col
एस ओ (वर्क्स)
SO (Wks)
महानिदेशालय असम राइफल्स
Directorate General Assam Rifles
शिलांग - 793009

DRG NO. DGAR/COB/03	
SCALE -NTS	SHEET NO – 02/10

Appx 'G'

CROSS SECTION RIGHT SIDE: OFFR/ JCO LIVING SHELTER

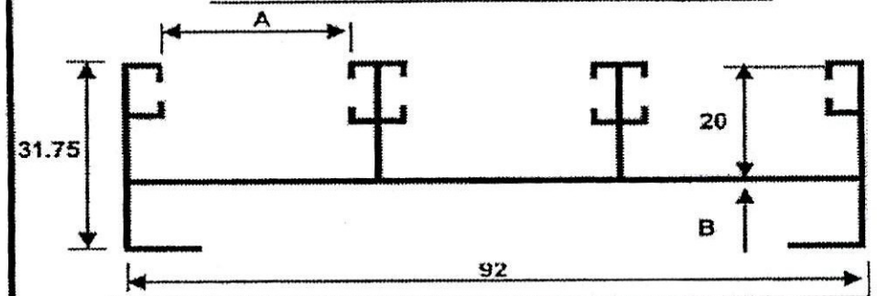


ले० कर्नल
Lt Col
एस० डी० (वर्क्स)
SO (Works)
महानिदेशालय असम राइफल्स
Directorate General Assam Rifles
शिलांग - ७९३०११
Shillong - 793011

DRG NO. DGAR/COB/03	
SCALE -NTS	SHEET NO – 03/10

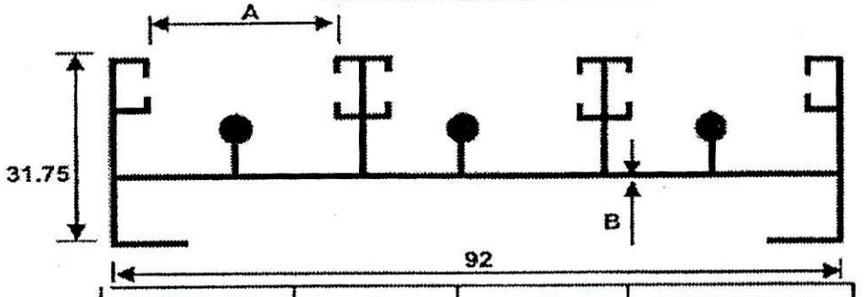
DETAILS OF SLIDING WINDOW SECTIONS

TOP & SIDE MEMBER : WINDOW FRAME



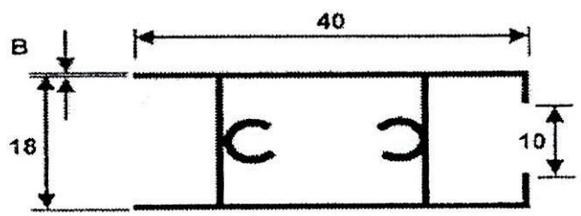
MODEL NO	A	B	WEIGHT KG/M
20831	22.70	1.50	1.060

BOTTOM RAIL : FRAME



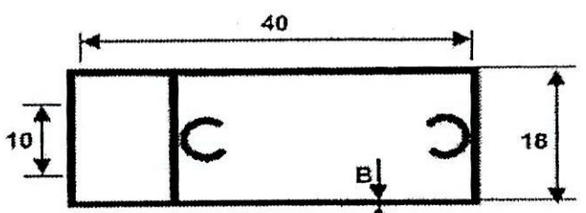
MODEL NO	A	B	WEIGHT KG/M
20832	22.70	1.50	1.248

TOP & BOTTOM RAIL: SLIDE SHUTTER



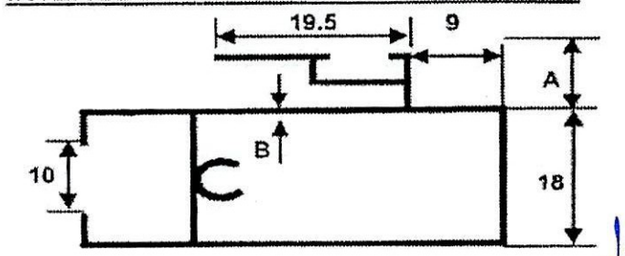
MODEL NO	B	WEIGHT KG/M
20736	1.55	0.547

SIDE RAIL : SLIDING SHUTTER



MODEL NO	B	WEIGHT KG/M
20735	1.55	0.547

INTERLOCKING RAIL : SLIDING SHUTTER



MODEL NO	A	B	WEIGHT KG/M
20737	9.0	1.45	0.507

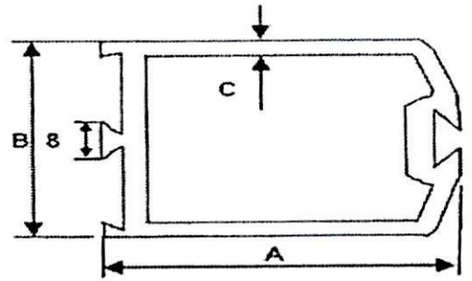
Directorate General Assam Rifles Shillong

DRG NO. DGAR/COB/03

SCALE -NTS | SHEET NO – 04/10

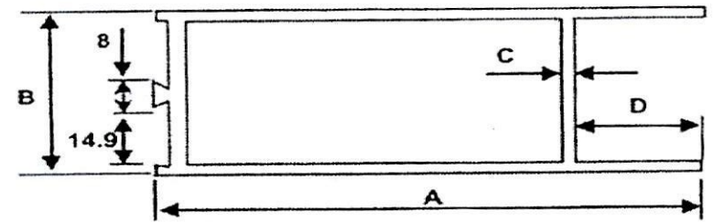
DETAILS OF MAIN DOOR/ FLY PROOFING DOOR SECTIONS

VERTICAL STYLE OF DOOR / FLYPROOF DOOR BOTH SIDES



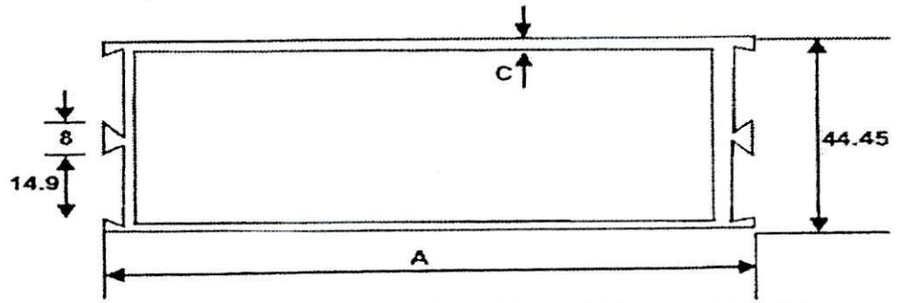
MODEL NO	A	B	C	WEIGHT KG/M
19560	85.00	44.45	2.00	2.417

TOP & BOTTOM RAIL OF DOOR / FLY PROOFING SHUTTER



MODEL NO	A	B	C	D	WEIGHT KG/M
19505	95.25	44.45	2.00	25.40	1.511

MIDDLE RAIL OF DOOR / FLY PROOFING SHELTER

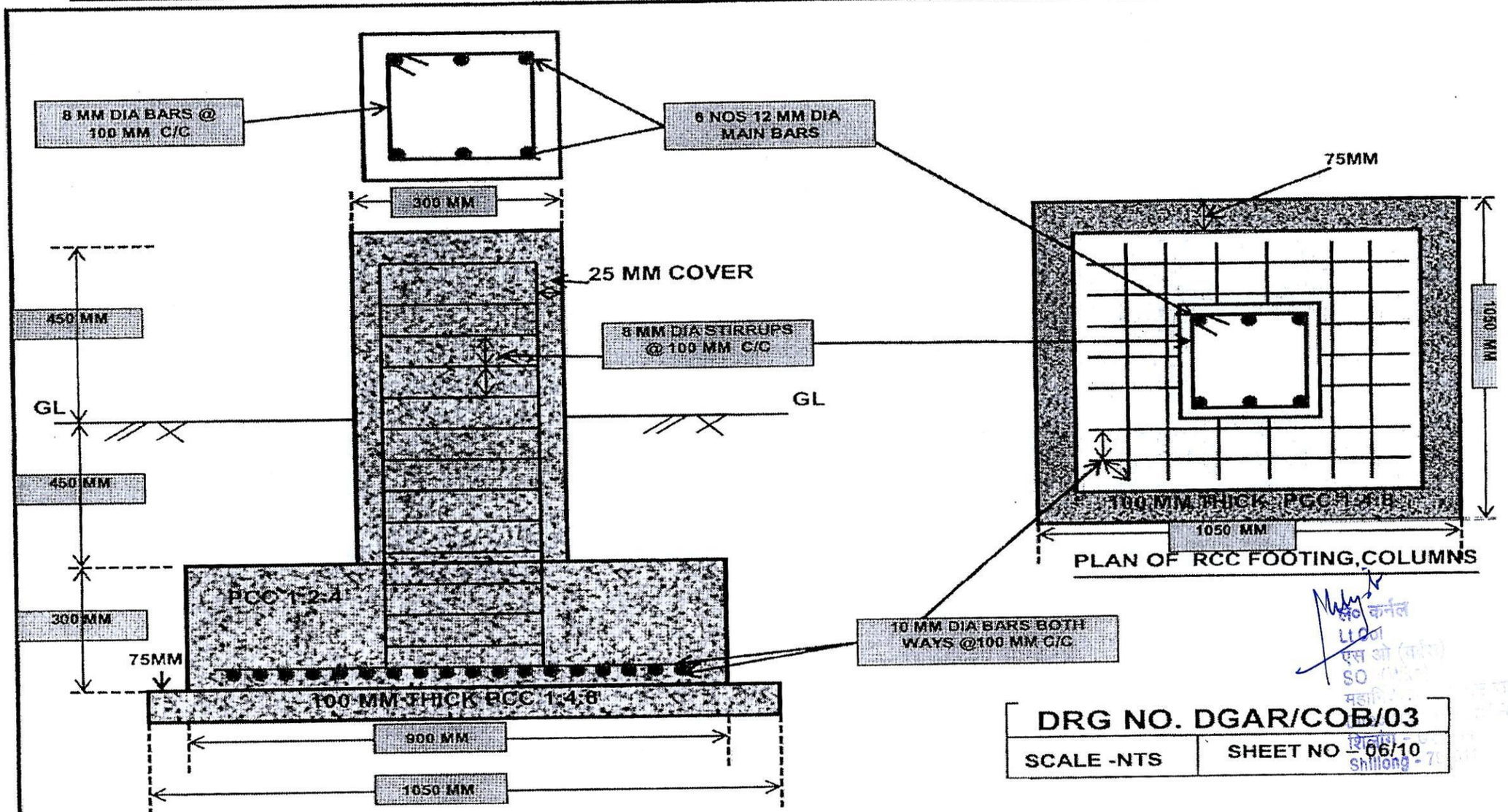


MODEL NO	A	C	WEIGHT KG/M
19564	100.00	2.00	2.145

लेo कर्नल
एस ओ (वर्क्स)
SO (Works)
महानिदेशालय असम राइफल्स
Directorate General Assam Rifles
शिलांग - 793011
Shillong - 793011

DRG NO. DGAR/COB/03	
SCALE -NTS	SHEET NO – 05/10

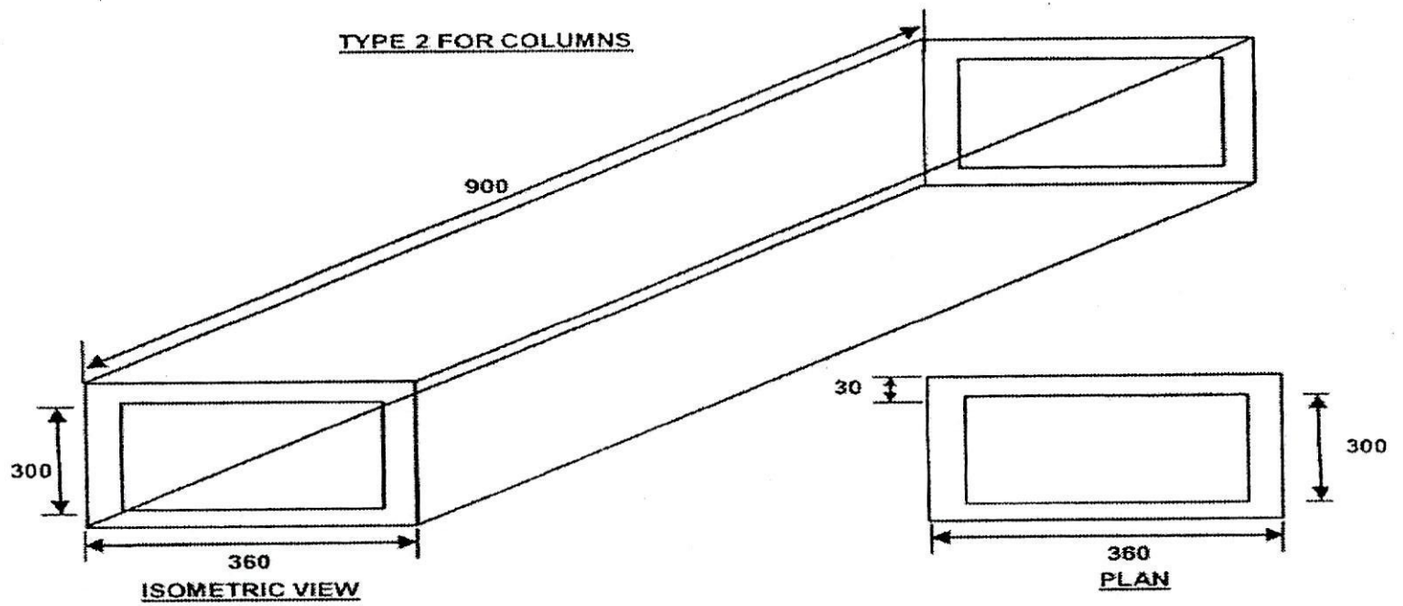
COLUMN, FOUNDATION REINFORCEMENT DETAILS (TYPE F1) OFFR/ JCO LIVING SHELTER

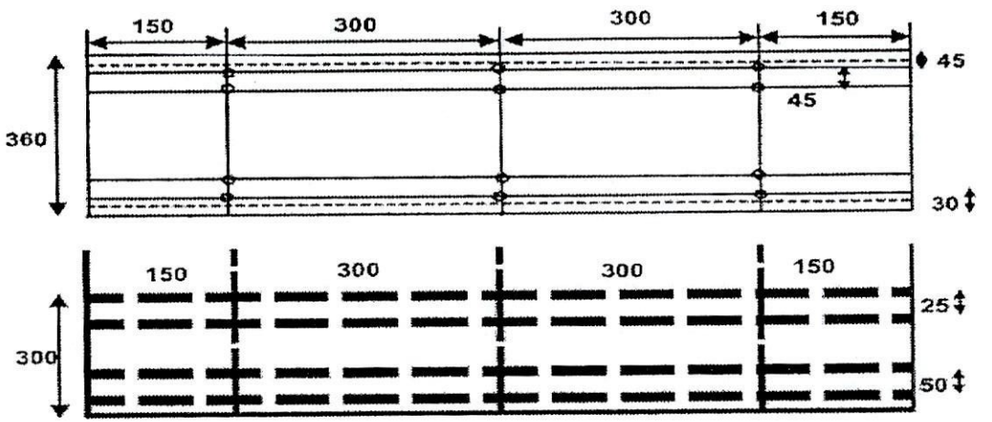


DRG NO. DGAR/COB/03	
SCALE -NTS	SHEET NO – 06/10

Appx 'G'

WOODEN FORM WORK OF SIZE 300 X 300 X 900 MM: OFFR/JCO LIVING SHELTER





लेo कर्नल
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SO (Wks)
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Directorate General Assam Rifles
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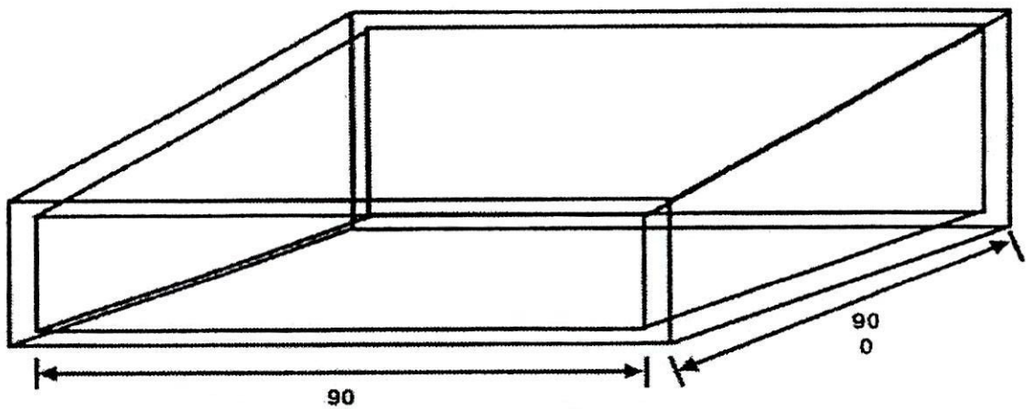
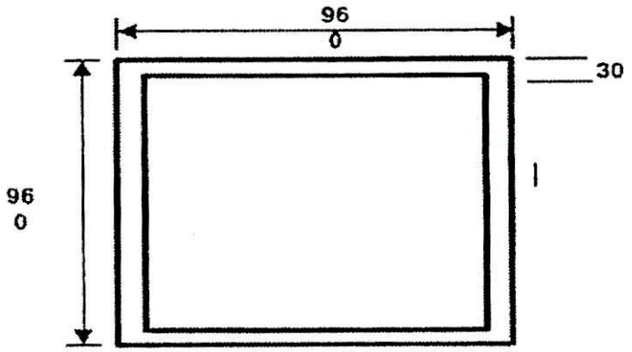
Shillong - 793011

DRG NO. DGAR/COB/03	
SCALE -NTS	SHEET NO – 07/10

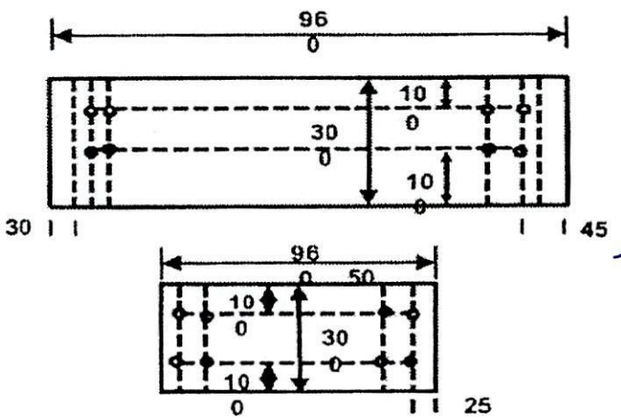
WOODEN FORM WORK OF SIZE 900 X 900 X 300 MM FOR COLUMN FOOTINGS (TYPE-2): OFFR/JCO LIVING SHELTER



ISOMETRIC VIEW



PLAN

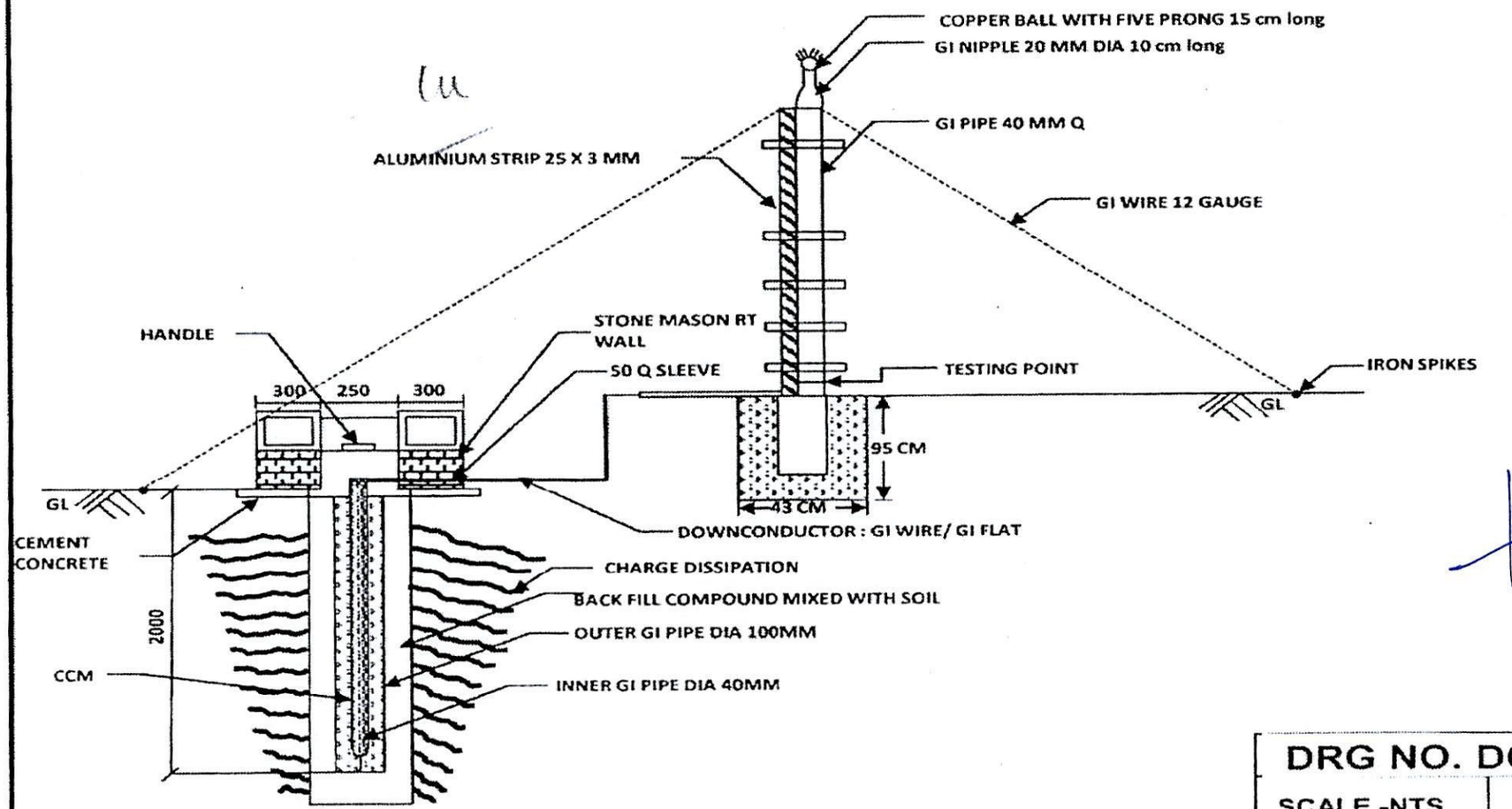


Lt Col
एस ओ (वर्क्स)
SO (Works)
Directorate General Assam Rifles
शिलांग - 7
Shillong - 7

DRG NO. DGAR/COB/03	
SCALE -NTS	SHEET NO – 08/10

Appx 'G'

LIGHTNING CONDUCTOR (LC)



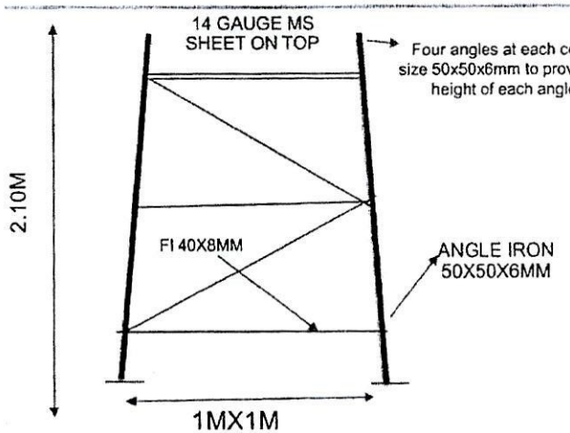
Lt Col
एस ओ (वर्क्स)
SO (Works)
महानिदेशालय असम राइफल्स
Directorate General Assam Rifles
शिलांग - 793011
Shillong - 793011

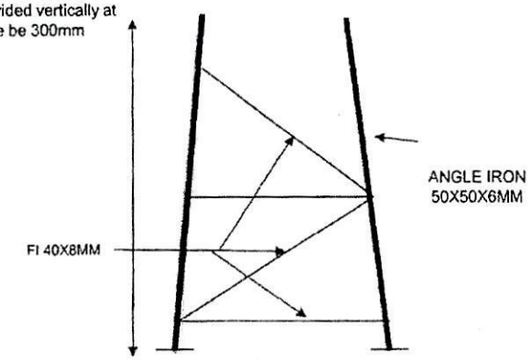
DRG NO. DGAR/COB/03	
SCALE -NTS	SHEET NO – 09/10

(31)

Appx 'G'

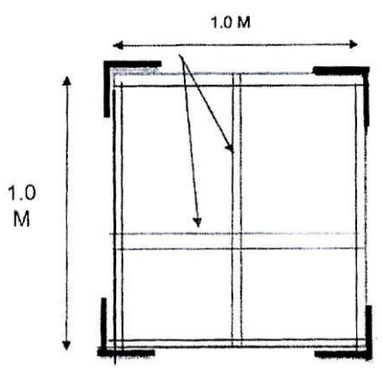
PRE FABRICATED MS STAND FOR WATER TANK 500 LTR AND 1000 LTR



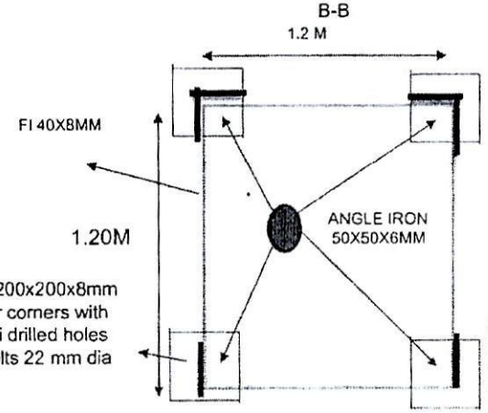


DETAILS OF LEGS A-A & B-B

ANGLE IRON 40X40X5MM WELDED TO OUTER FRAME



TOP PLAN



BOTTOM PLAN

NOTES :- 1.vertical legs will be welded in two sets of two legs in each A-A & B-B
2 Top frame shall be fabricated separately with top frame.
3. Horizontal and diagonal FI wil be fixed with nut and bolt 14 mm dia for two sets of legs and top frame with vertical legs also

DRG NO. DGAR/COB/03	
SCALE - NTS	SHEET NO – 10/10

लेफ्टिनेंट कर्नल
Lt Col
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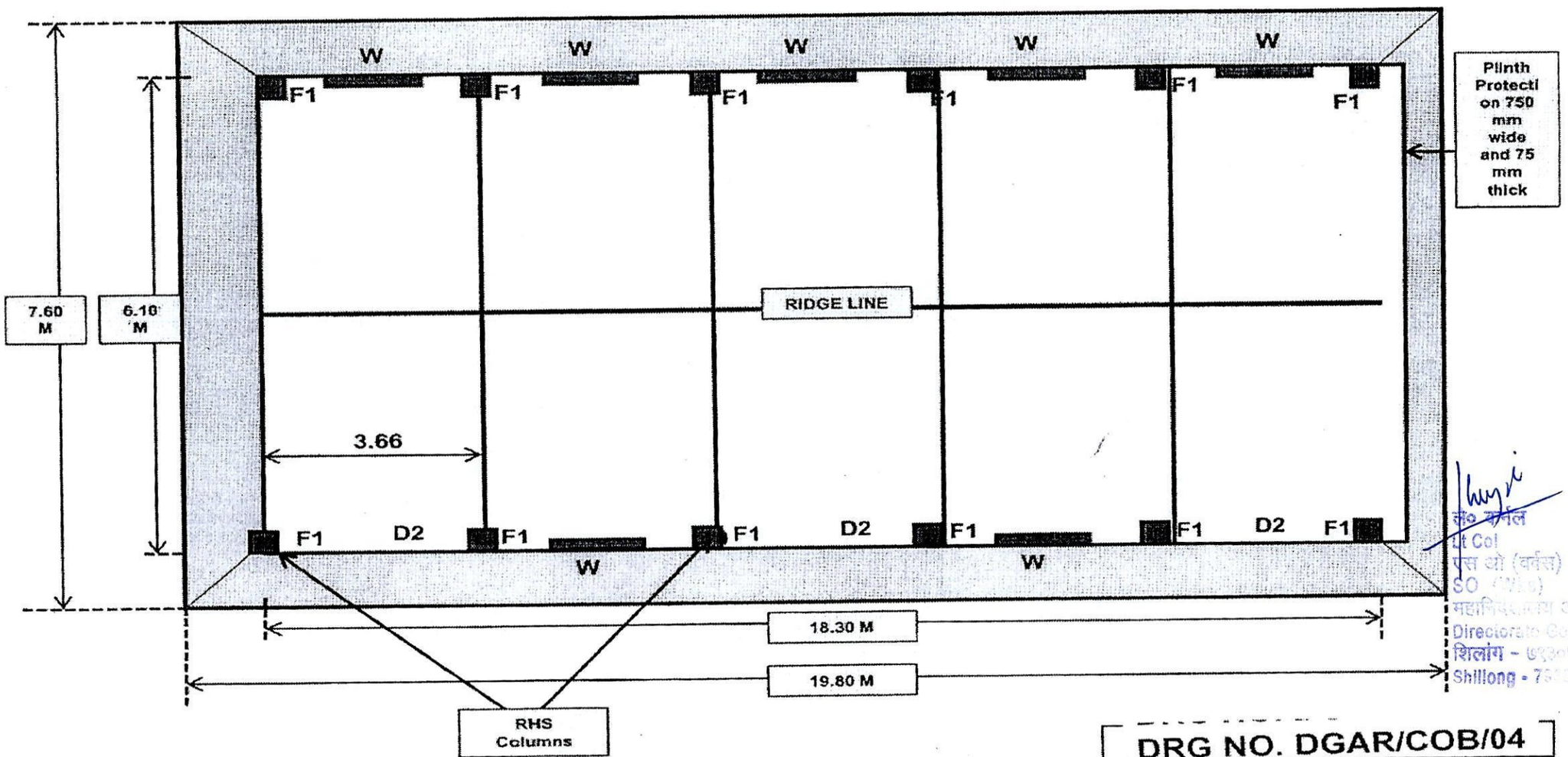
Directorate General Assam Rifles
शिलांग - ७९३०११
Shillong - 793011

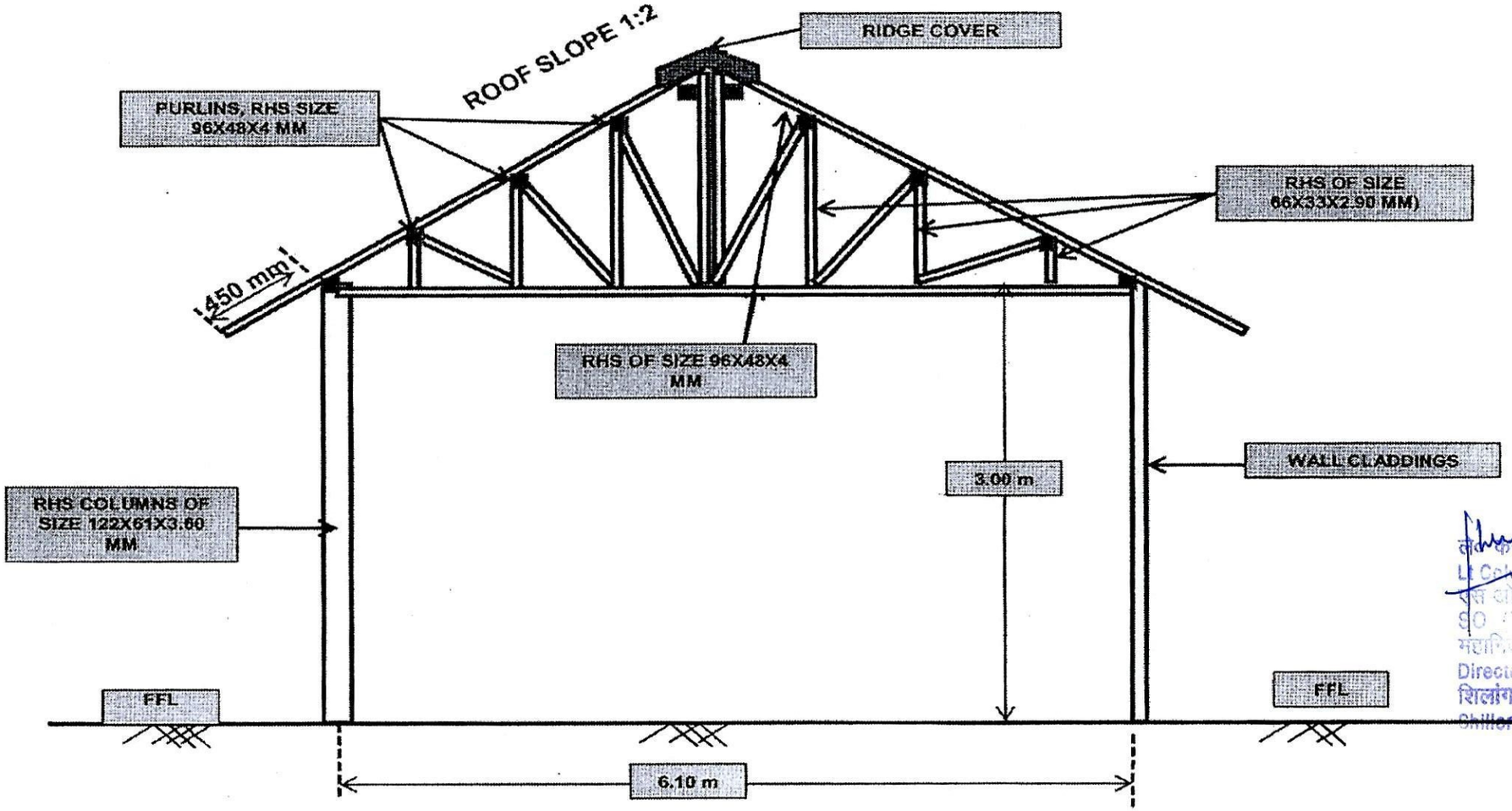
STORE/KOTE/SIGNAL CENTRE/MI ROOM/COY OFFICE



DRG NO. DGAR/COB/04	
SCALE -NTS	SHEET NO – 01 /09

Appx 'E'

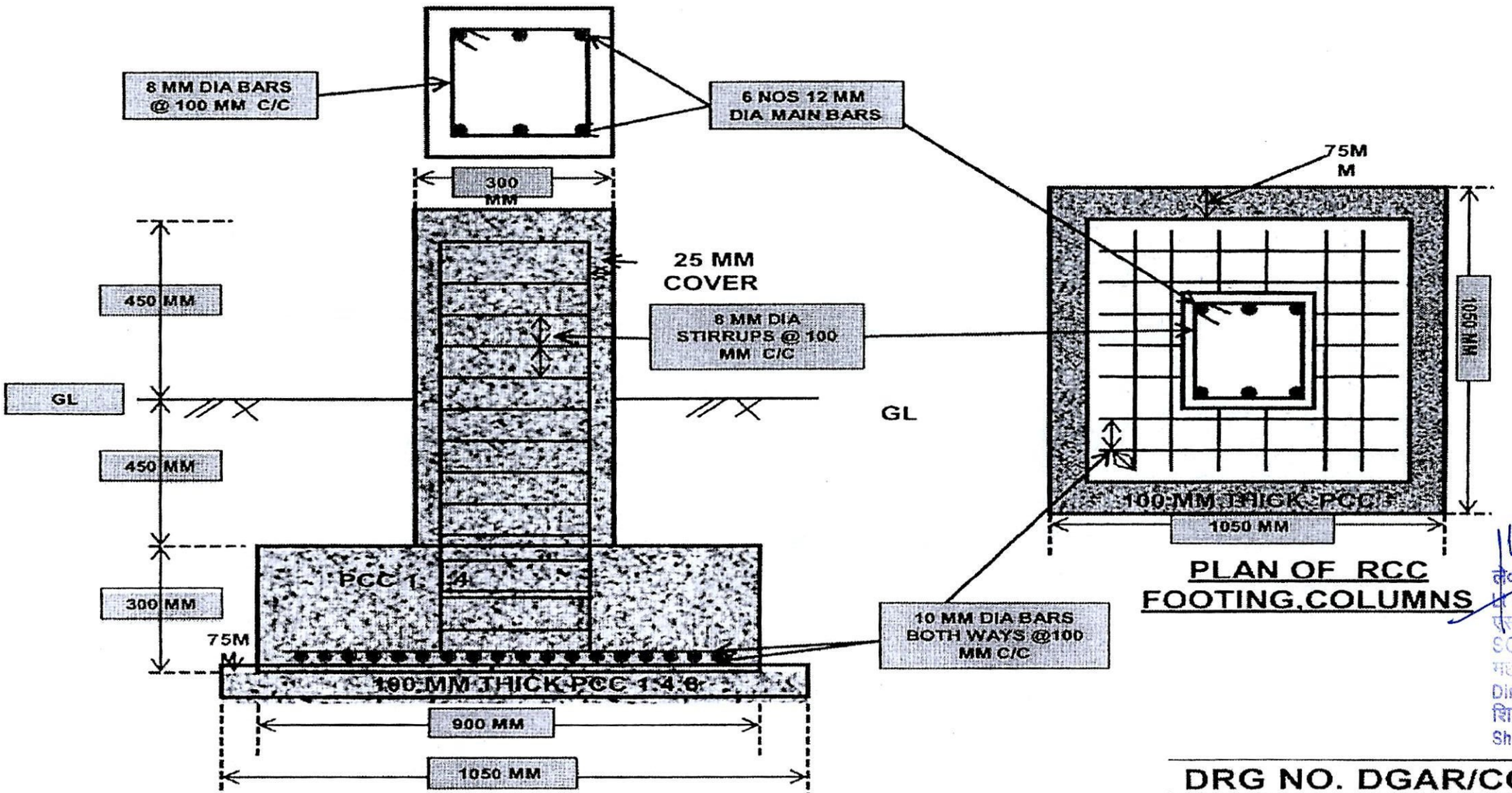
CROSS SECTION OF STORE SHELTER



DRG NO. DGAR/COB/04	
SCALE -NTS	SHEET NO – 02 /09

Appx 'E'

COLUMN, FDN REINFORCEMENT DETAILS (TYPE F1) OF STORE SHELTER



CROSS SECTION OF RCC FOOTING,COLUMNS

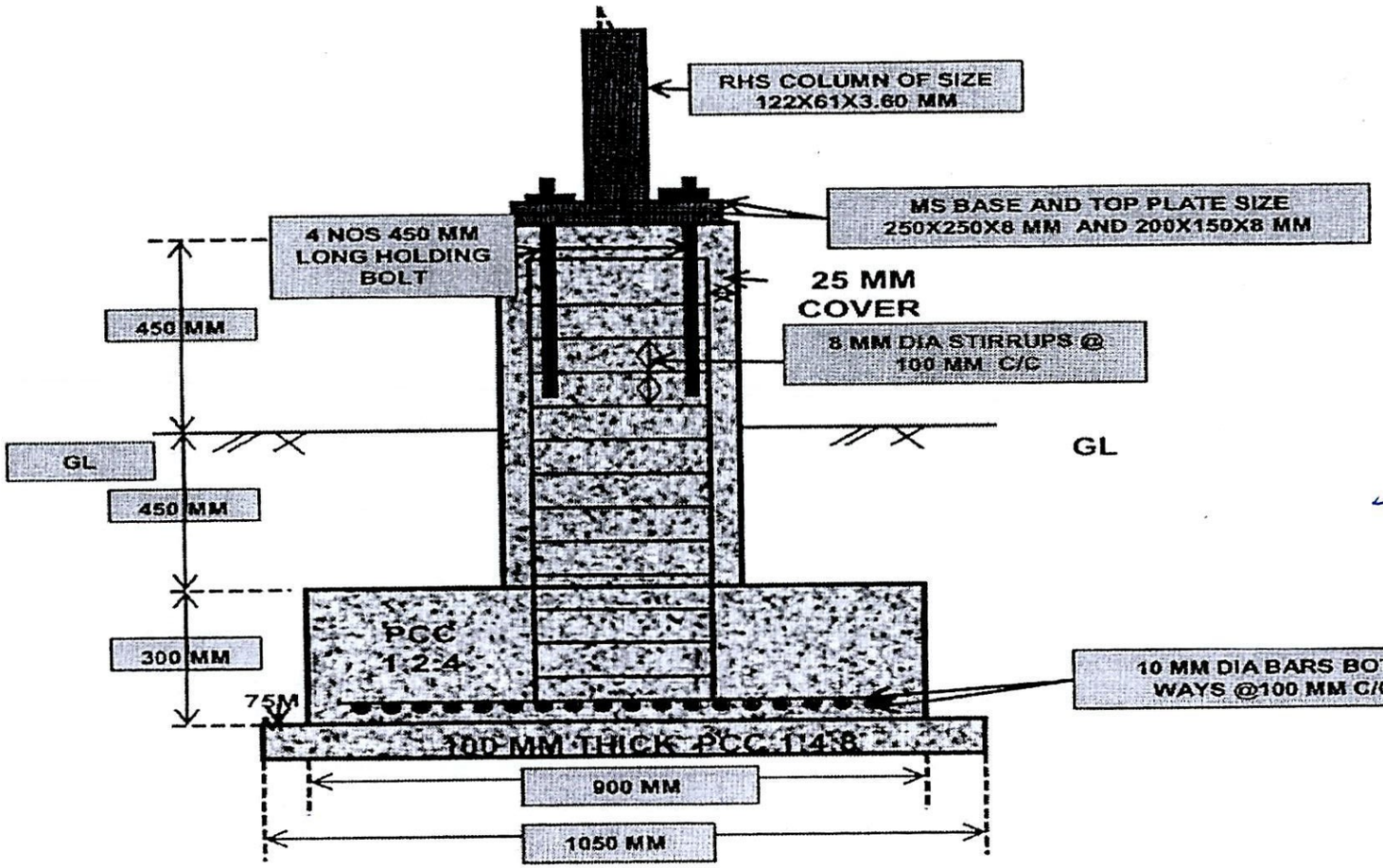
PLAN OF RCC FOOTING,COLUMNS

DRG NO. DGAR/COB/04

SCALE -NTS	SHEET NO – 03 /09

Appx 'E'

COLUMN FDN REINFORCEMENT DETAILS (TYPE F1) OF STORE SHELTER

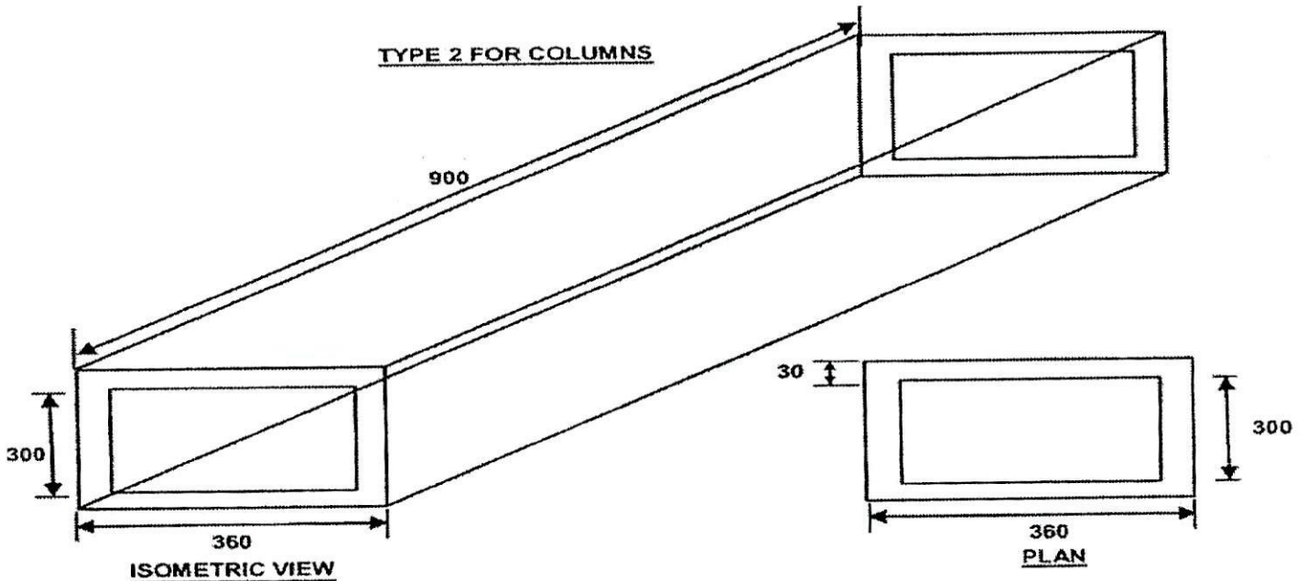


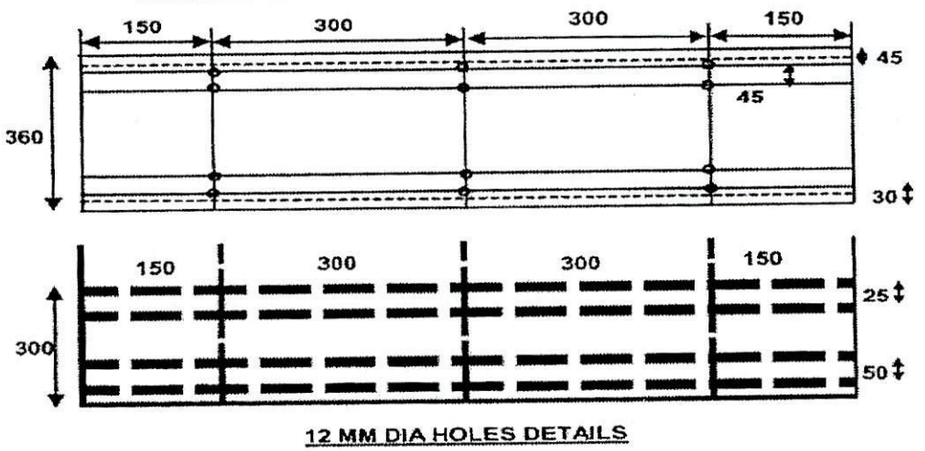
JOINT DETAIL OF RCC COLUMN AND RHS COLUMNS

DRG NO. DGAR/COB/04	
SCALE -NTS	SHEET NO – 04 /09

Appx 'E'

WOODEN FORM WORK OF SIZE 300 X 300 X 900 MM STORE SHELTER





लेफ्टिनेंट कर्नल
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एस ओ (इंजी)
SO (Engg)
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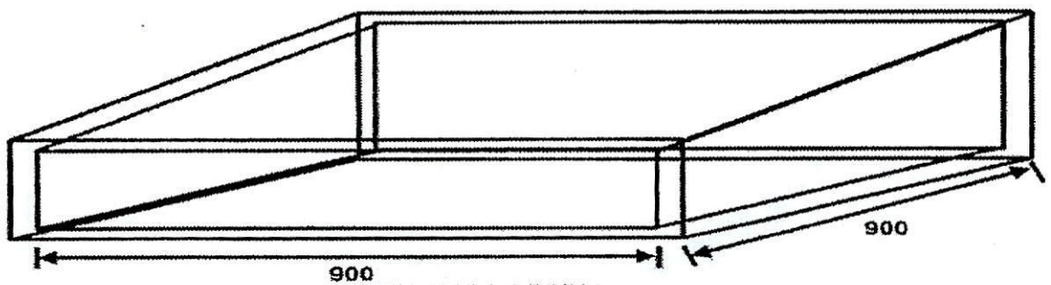
Directorate General Assam Rifles
शिलांग - 793011
Shillong - 793011

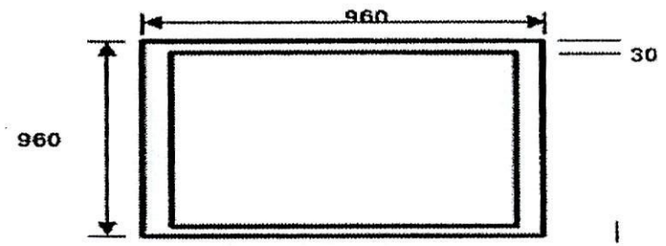
DRG NO. DGAR/COB/04	
SCALE -NTS	SHEET NO – 05 /09

Appx 'E'

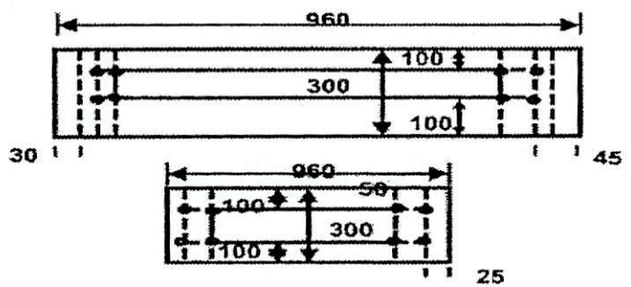
WOODEN FORM WORK OF SIZE 900 X 900 X 300 MM FOR COLUMN FOOTINGS (TYPE-2) STORRE SHELTER



ISOMETRIC VIEW



PLAN



लेo कर्नल
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एस ओ (ड्रग्स)
SO (Drugs)
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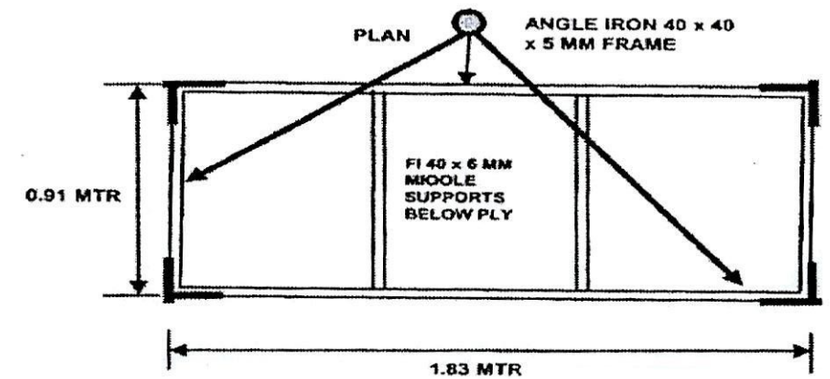
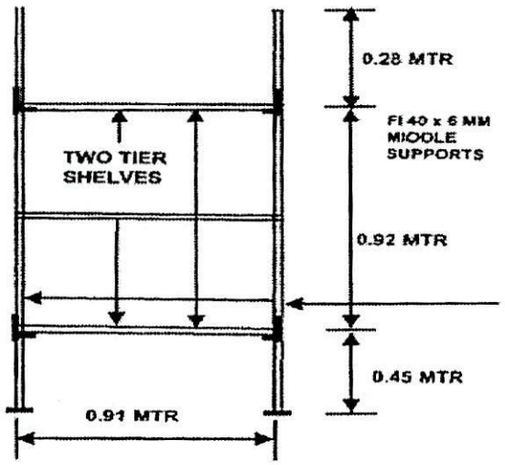
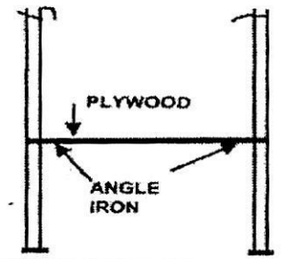
Directorate General Assam Rifles
शिलांग - 793011
Shillong - 793011

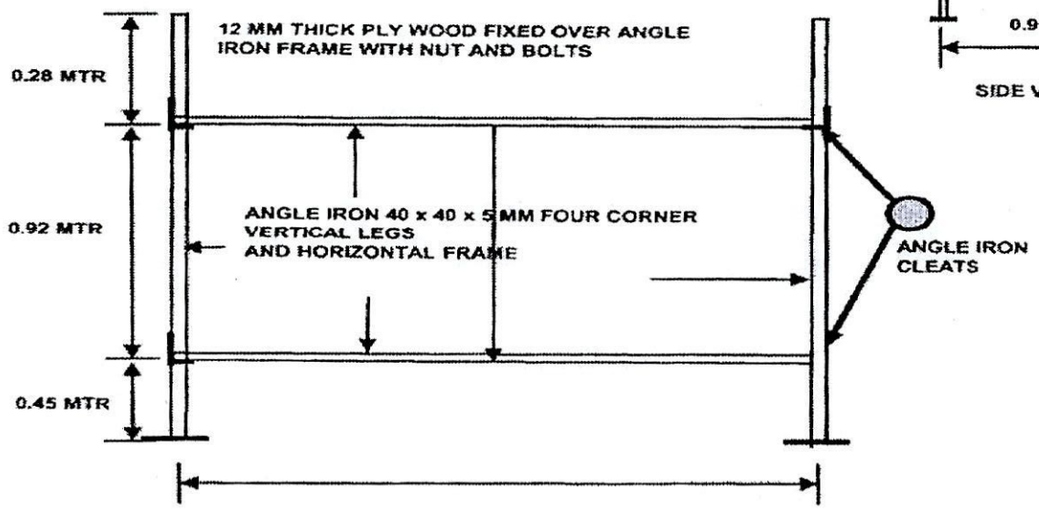
DRG NO. DGAR/COB/04	
SCALE -NTS	SHEET NO – 06 /09

STORAGE RACKS FOR STORE SHELTER







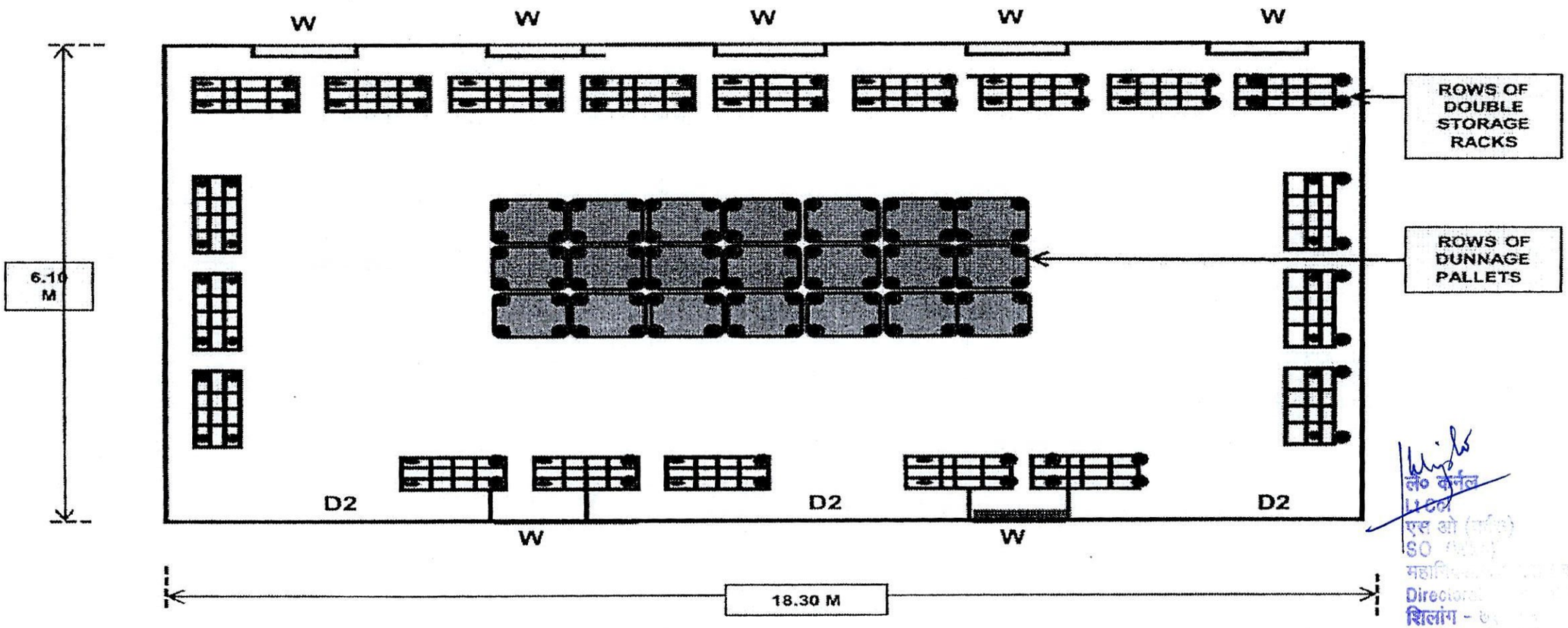


Lt Col
SO (Works)
Directorate General Assam Rifles
Shillong - 793 009

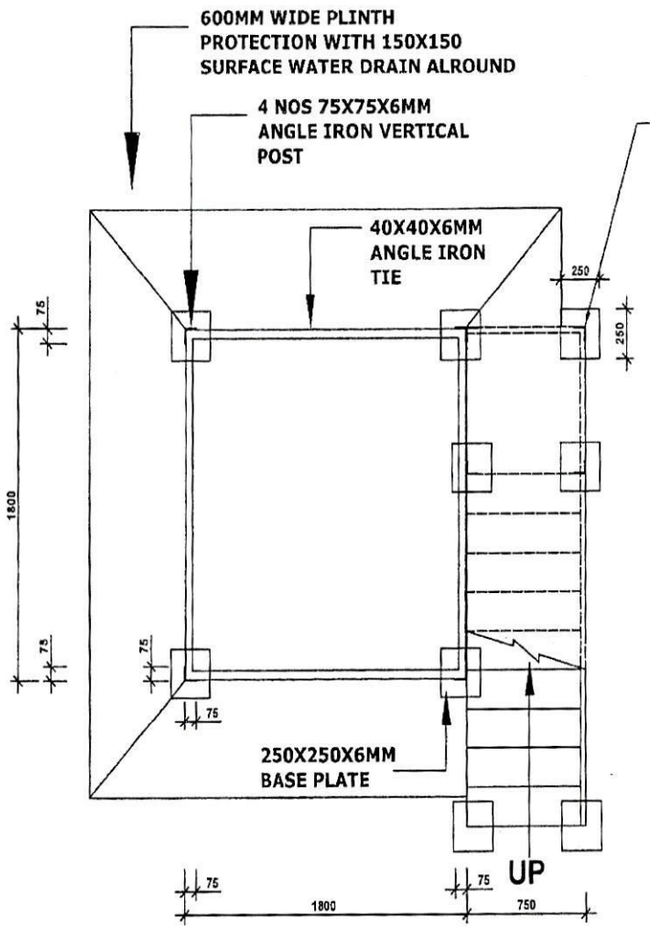
DRG NO. DGAR/COB/04	
SCALE -NTS	SHEET NO – 07 /09

Appx 'E'

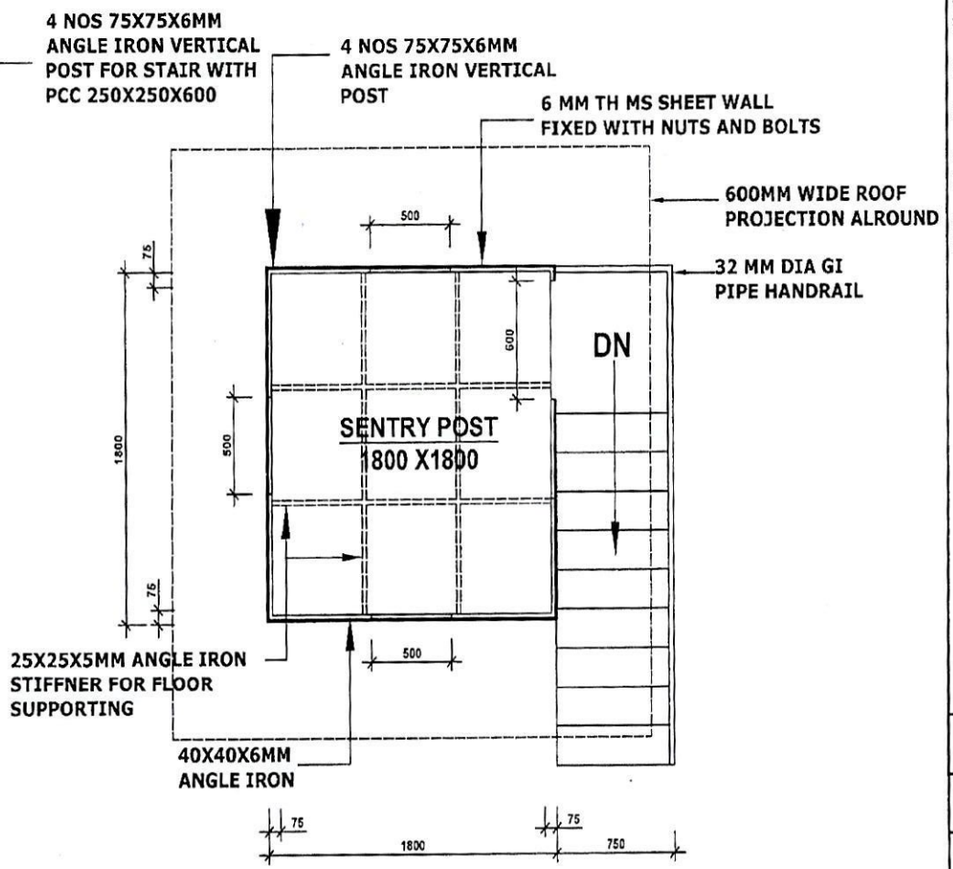
LAYOUT PLAN OF DOUBLE STORAGE RACKS & DUNNAGE PALLETS OF STORE SHELTER



DRG NO. DGAR/COB/04	
SCALE -NTS	SHEET NO – 08 /09



GROUND FLOOR PLAN



FIRST FLOOR PLAN

NOTES :-

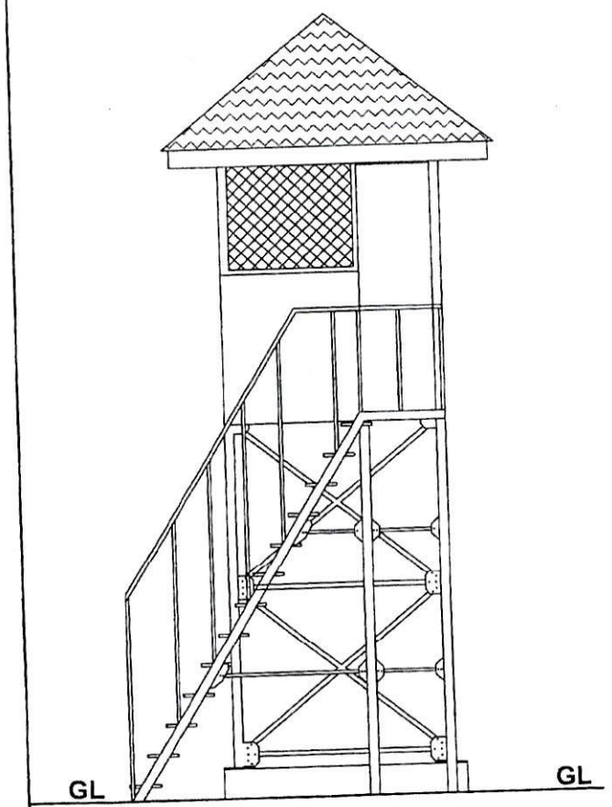
1. CONTRACTOR TO CHECK AND VERIFY ALL DIMENSIONS BEFORE EXECUTION OF WORKS.
2. FIGURED DIMENSION SHALL BE FOLLOWED.
3. ALL DIMENSION ARE GIVEN IN MMS.
4. TWO COAT OF SYNTHETIC ENAMEL PAINT OVER ONE COAT OF PRIMER/RED OXIDE FOP ALL STEEL SURFACE.
5. EVERY JOINT SHOULD BE DETACHABLE WITH NUT AND BOLTS.

Lt Col
एस ओ (वर्क्स)
SO (Works)
Directorate
शिलांग - 793009
Shillong - 793009

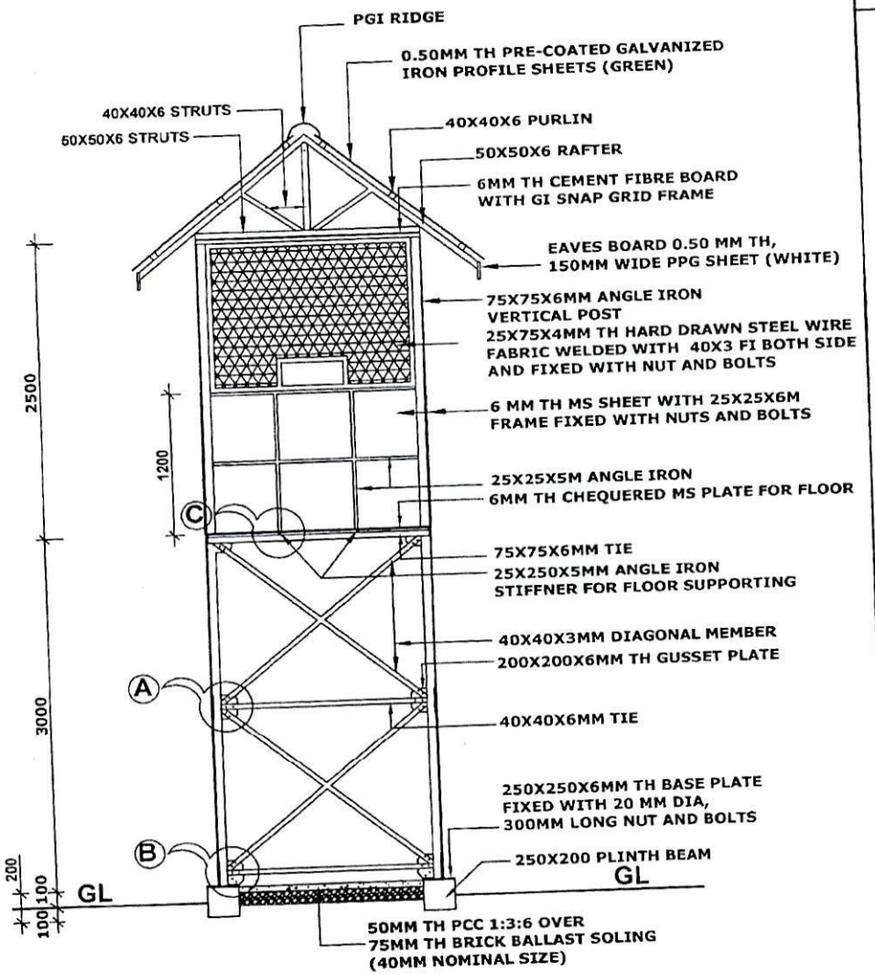
SENTRY POST (WATCH TOWER)

GROUND AND FIRST FLOOR PLAN

DRN BY :- JINOJITH AP	HQ DGAR ENGR BRANCH SHILLONG
CKD BY :- SUB(SA) SANTHOSH D SUB(E&M) S HUSSAIN	
DRG NO:- DGAR/ENGR/COB/115	SHEET NO:- 1/4
SCALE :- 1:100	
DATE :-	



SIDE ELEVATION



SECTIONAL DETAILS

NOTES :-

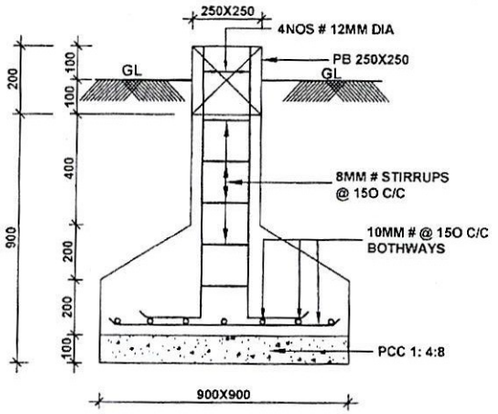
1. CONTRACTOR TO CHECK AND VERIFY ALL DIMENSIONS BEFORE EXECUTION OF WORKS.
2. FIGURED DIMENSION SHALL BE FOLLOWED.
3. ALL DIMENSION ARE GIVEN IN MMS.
4. TWO COAT OF SYNTHETIC ENAMEL PAINT OVER ONE COAT OF PRIMER/RED OXIDE FOP ALL STEEL SURFACE.
5. EVERY JOINT SHOULD BE DETACHABLE WITH NUT AND BOLTS.

ले० कर्नल
Lt Col
एस ओ (वर्क्स)
SO (Wks)
महानिदेशालय असम राइफल्स
Directorate General Assam Rifles
शिलांग - ७९३०११
Shillong - 793011

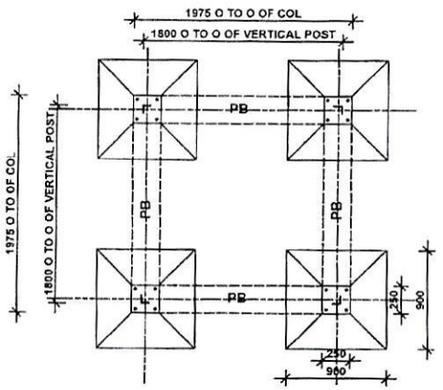
SENTRY POST (WATCH TOWER)

SIDE ELEVATION AND SECTION

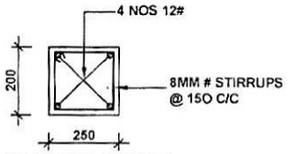
DRN BY :- JINOJITH AP	HQ DGAR ENGR BRANCH SHILLONG
CKD BY :- SUB(SA) SANTHOSH D SUB(E&M) S HUSSAIN	
DRG NO:- DGAR/ENGR/COB/115	SHEET NO:- 2/4
SCALE :- 1: 50	
DATE :-	SO1 (WORKS)



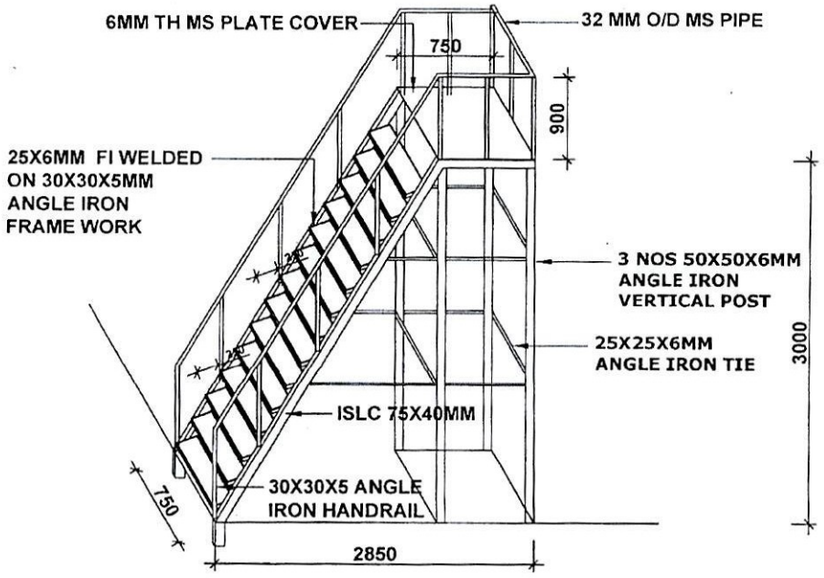
DETAILS OF COL FOOTING



FOUNDATION PLAN



DETAILS OF PB



DETAILS OF STAIR CASE

NOTES :-

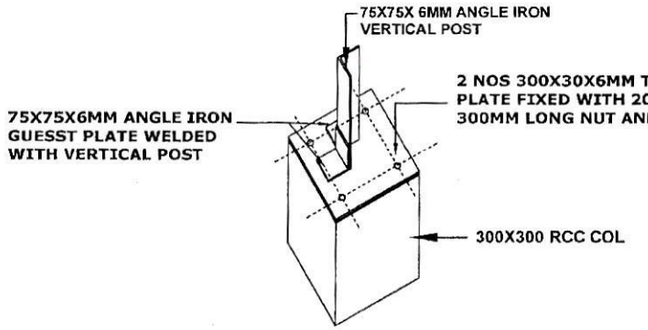
1. CONTRACTOR TO CHECK AND VERIFY ALL DIMENSIONS BEFORE EXECUTION OF THE WORK.
2. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHER WISE SPECIFIED.
3. FIGURED DIMENSIONS SHALL BE FOLLOWED.
4. ALL STRUCTURAL CONCRETE MIX OF GRADE M 15 (1:2:4)
5. COVER TO REINFORCEMENT :- (AS/IS 456-1978)
   - (a) FOUNDATION - 75MM AT BOTTOM AND 50MM AT TOP AND SIDES
   - (b) COLUMN - 40 MM
   - (c) BEAM - 25MM
   - (d) SLAB - 15 MM
6. LAP LENGTH/ DEVELOPMENT LENGTH:-
   - (i) FOR M 15 GRADE CONCRETE WITH HYSD BAR
   - (a) FOR TENSION - 57 X DIA OF THE BAR

Lt Col
SO (Works)
Directorate General Assam Rifles
Shillong - 793011

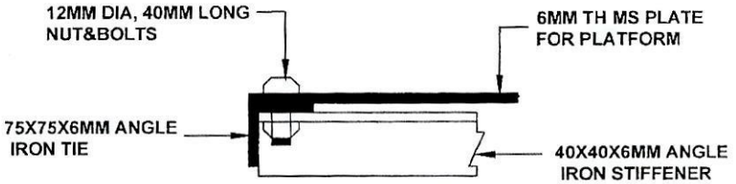
SENTRY POST (WATCH TOWER)

DETAILS OF COL FOOTING & OTHER DETAILS

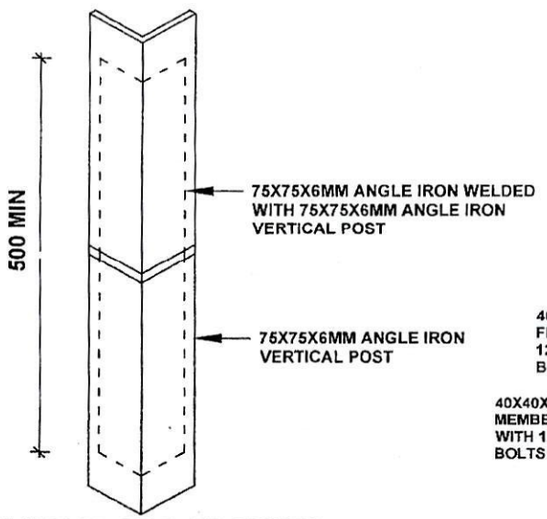
DRN BY :- JINOJITH AP	HQ DGAR ENGR BRANCH SHILLONG
CKD BY :- SUB(SA) SANTHOSH D SUB(E&M) S HUSSAIN	
DRG NO:- DGAR/ENGR/COB/115	SHEET NO:- 3/4
SCALE :- 1:50 & 1:20	
DATE :-	SO1 (WORKS)



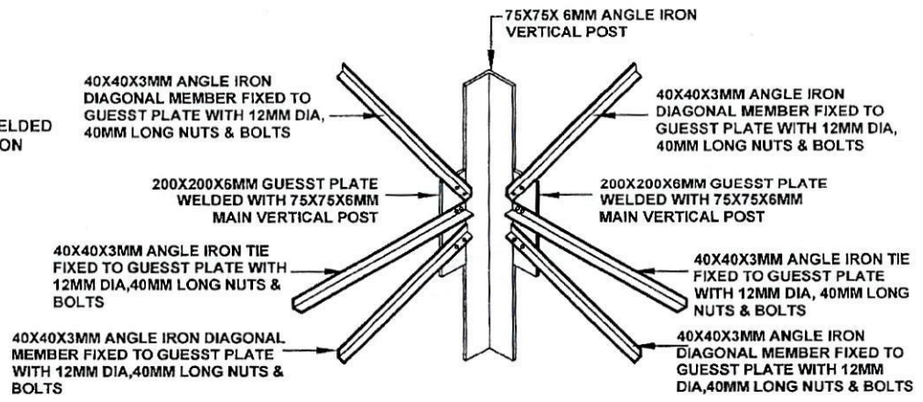
DETAILS AT "B"



DETAILS AT "C"



TYPICAL SEC OF JOINTS (MAIN COL)



DETAILS AT "A"

NOTES :-

1. CONTRACTOR TO CHECK AND VERIFY ALL DIMENSIONS BEFORE EXECUTION OF WORKS.
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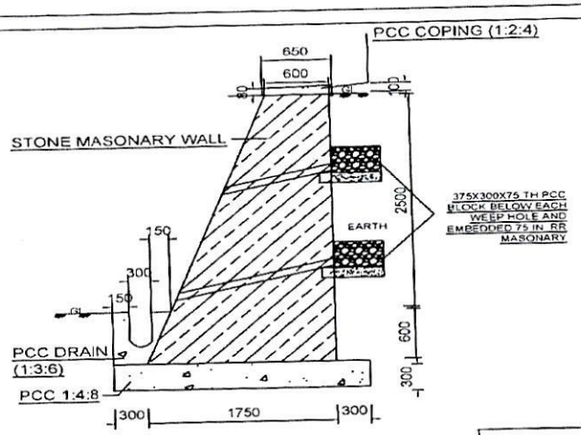
3. ALL DIMENSION ARE GIVEN IN MMS.
4. TWO COAT OF SYNTHETIC ENAMEL PAINT OVER ONE COAT OF PRIMER/RED OXIDE FOP ALL STEEL SURFACE.
5. EVERY JOINT SHOULD BE DETACHABLE WITH NUT AND BOLTS.

लेo कर्नल
Lt Col
एस ओ (वर्क्स)
SO (Works)
महानिदेशालय असम राइफल्स
Directorate General Assam Rifles
शिलांग - ७९३०११
Shillong - 793011

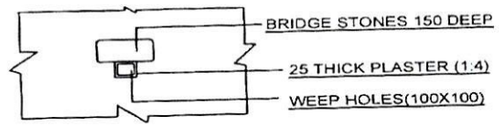
SENTRY POST (WATCH TOWER)

TYPICAL DETAILS

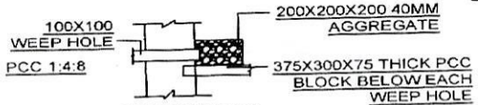
DRN BY :- JINOJITH AP	HQ DGAR ENGR BRANCH SHILLONG
CKD BY :- SUB(SA) SANTHOSH D SUB(E&M) S HUSSAIN	
DRG NO:- DGAR/ENGR/COB/115	SHEET NO:- 4/4
SCALE :- 1:100	
DATE :-	SO1 (WORKS)



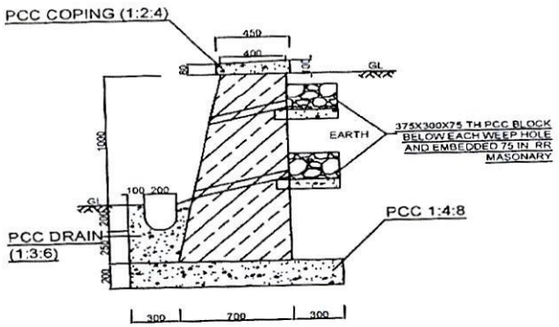
SECTIONAL DETAIL OF RETAINING WALL OF HEIGHT 2500 ABOVE GL



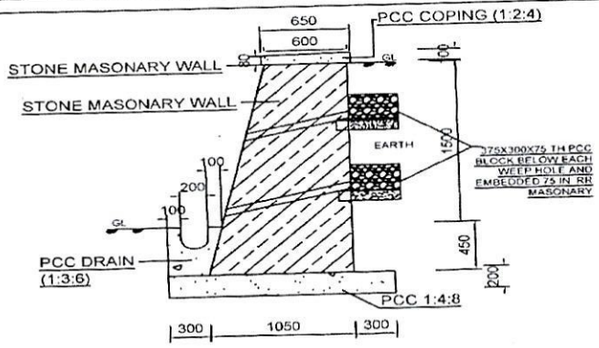
ELEVATION



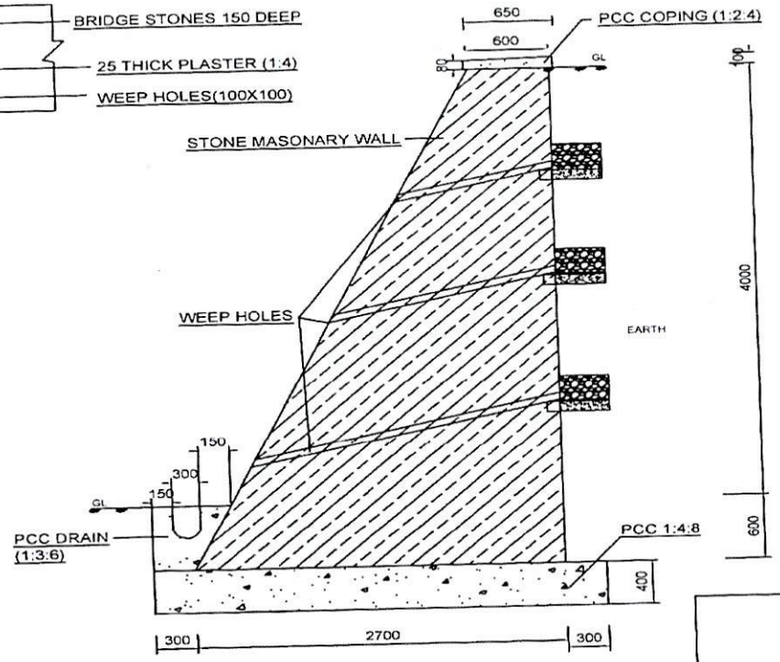
CROSS SECTION TYPICAL DETAILS OF WEEP HOLE



SECTIONAL DETAIL OF RETAINING WALL OF HEIGHT 1000 ABOVE GL



SECTIONAL DETAIL OF RETAINING WALL OF HEIGHT 1500 ABOVE GL



SECTIONAL DETAIL OF RETAINING WALL OF HEIGHT 4000 ABOVE GL

NOTES :

1. CONTRACTOR TO CHECK AND VERIFY ALL THE DIMENSIONS BEFORE EXECUTION OF THE WORK.
2. ALL DIMENSIONS GIVEN ARE IN MILLIMETRES, UNLESS OTHERWISE MENTIONED.
3. DO NOT SCALE OUT ANY DIMENSIONS FROM THE DRG. FOLLOW WRITTEN DIMENSIONS ONLY.

कर्नल
LDO
एस ओ (वर्क्स)
SO (Works)
महानिदेशालय सेंट्रल एकेम राइफल्स
Directorate General Assam Rifles
शिलांग - 793009
Shillong - 793009

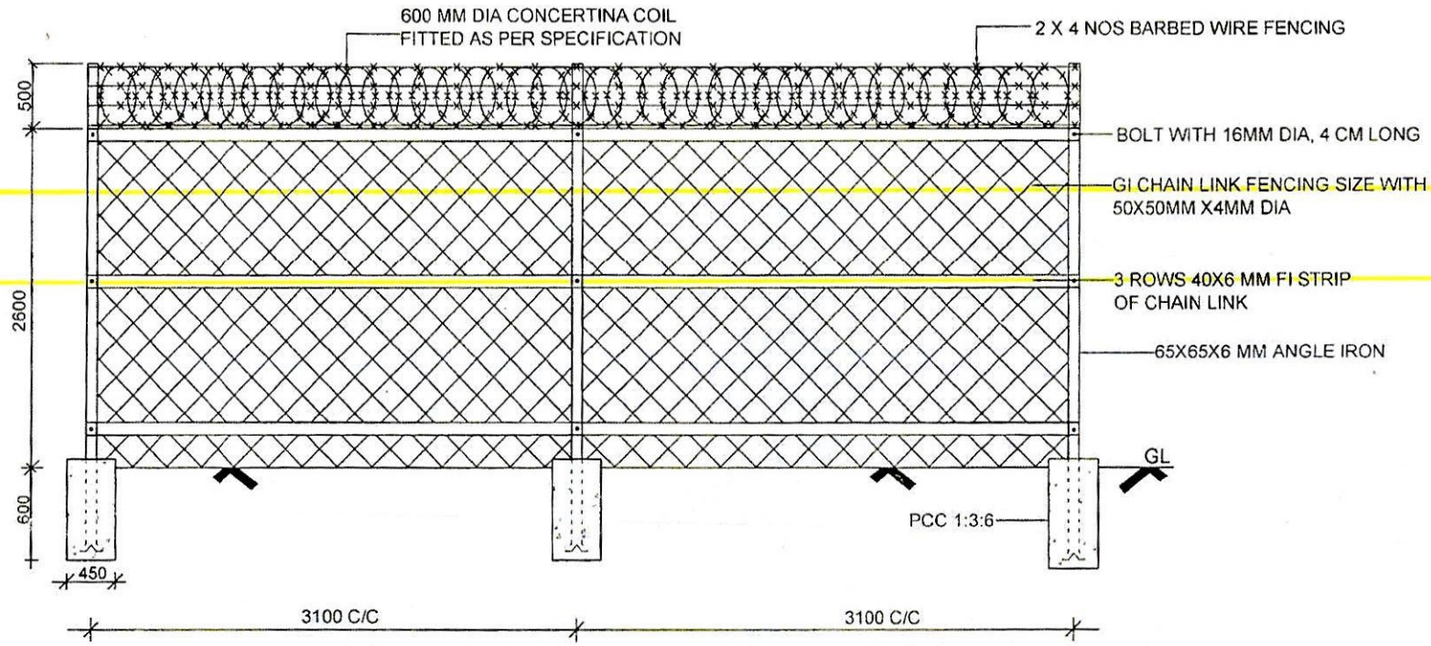
RR MASONRY RETAINING WALL OF HEIGHT 1000, 1500, 2500 & 4000,

TYPICAL SECTIONAL DETAILS

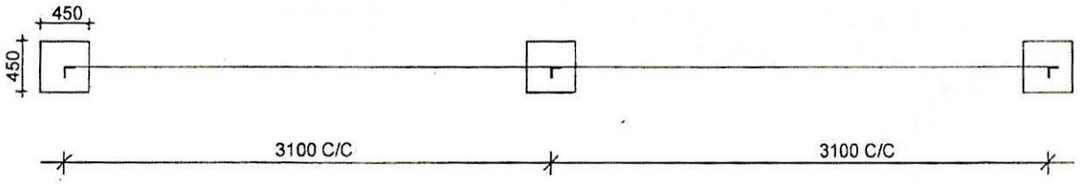
DRN	Sh kumari Roy	HQ DGAR ENGR BRANCH SHILLONG
CKD		
DATE		
SCALE	1:20	

DRG NO : DGAR/STD DRG/COB/12 | SHT NO. 1/1

SO1 (WKS) SECT HQ	SO2 (ARCH)	SO1 (WKS)	CHIEF ENGR



ELEVATION



PLAN

NOTES :

1. CONTRACTOR TO CHECK AND VERIFY ALL THE DIMENSIONS BEFORE EXECUTION OF THE WORK.
2. ALL DIMENSIONS GIVEN ARE IN MILLIMETRES, UNLESS OTHERWISE MENTIONED.
3. DO NOT SCALE OUT ANY DIMENSIONS FROM THE DRG. WRITTEN DIMENSIONS ONLY WILL BE FOLLOWED.
4. TWO COAT OF SILVER PAINT OVER ONE COAT OF RED OXIDE ON IRON SURFACES.

लेo कर्नल
Lt Col
एस ओ (वर्क्स)
SO (WKS)
महानिदेशालय असम राइफल्स
Directorate General Assam Rifles
शिलांग - 793011
Shillong - 793011

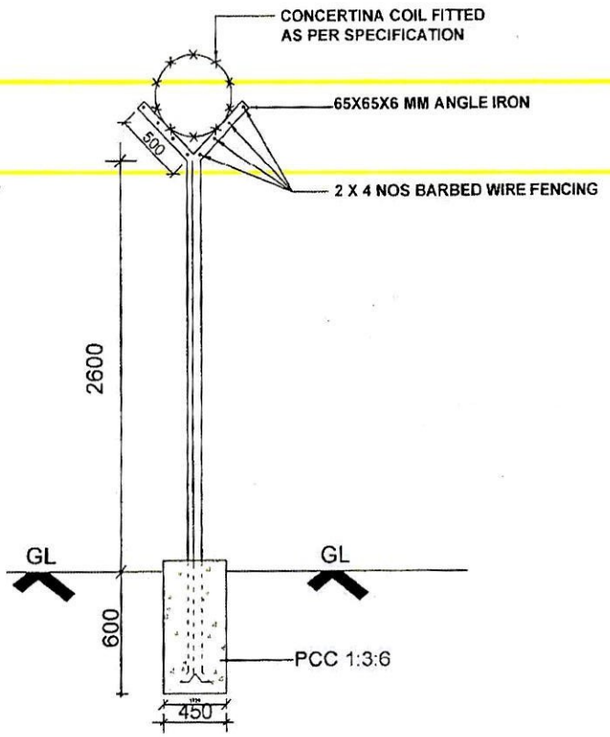
CHAIN LINK FENCING

PLAN, ELEVATION & TYPICAL SECTION

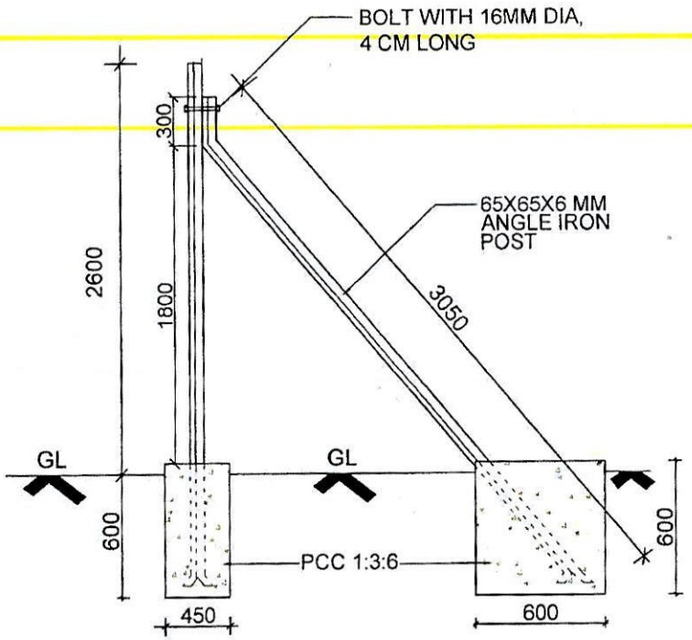
DRN BY:- JINOJITH AP	HQ DGAR ENGR BRANCH SHILLONG
CKD SUB(SA)SANTHOSH D SUB(E&M)S HUSSAIN	
DRG NO DGAR/ENGR/COB/116	SHT NO. 1/2
DATE JAN 2022	
SCALE 1:50 & 1:10	

Directorate General Assam Rifles SHILLONG

लेo कर्नल
Lt Col
एस ओ (वर्क्स)
SO (WKS)
महानिदेशालय असम राइफल्स
Directorate General Assam Rifles
शिलांग - 793011
Shillong - 793011



DETAILS OF CONCERTINA COIL



DETAILS OF STRUT POST

NOTES :

1. CONTRACTOR TO CHECK AND VERIFY ALL THE DIMENSIONS BEFORE EXECUTION OF THE WORK.

2. ALL DIMENSIONS GIVEN ARE IN MILLIMETRES, UNLESS OTHERWISE MENTIONED.

3. DO NOT SCALE OUT ANY DIMENSIONS FROM THE DRG. WRITTEN DIMENSIONS ONLY WILL BE FOLLOWED.

4. TWO COAT OF SILVER PAINT OVER ONE COAT OF RED OXIDE ON IRON SURFACES.

लेo कर्नल
Lt Col
एस ओ (वर्क्स)
SO (Wks)
महानिदेशालय असम राइफल्स
Directorate General Assam Rifles

CHAIN LINK FENCING

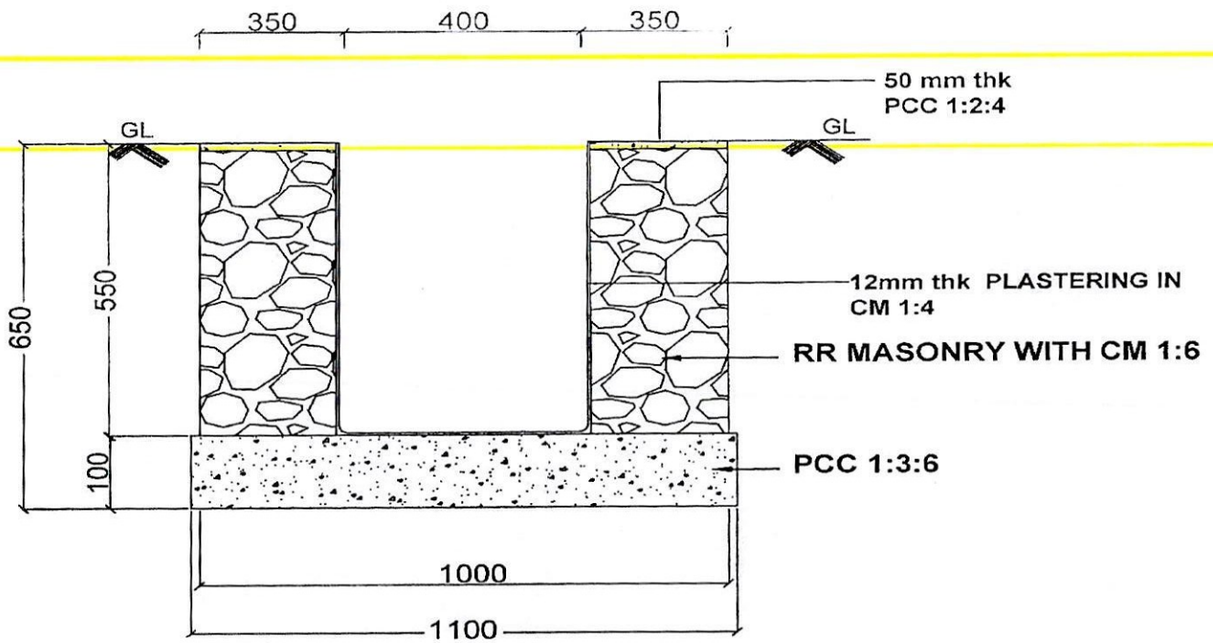
TYPICAL DETAILS

DRN BY:- JINOJITH AP	HQ DGAR ENGR BRANCH SHILLONG
CKD SUB(SA)SANTHOSH D SUB(E&M)S HUSSAIN	
DRG NO : DGAR/ENGR/COB/116	SHT NO. 2/2
DATE JAN 2022	
SCALE 1:50 & 1:10	

Directorate General Assam Rifles SHILLONG

लेo कर्नल
Lt Col
एस ओ (वर्क्स)
SO (Wks)
महानिदेशालय असम राइफल्स
Directorate General Assam Rifles
शिलांग - ७९३०११

SO1 (Wks)



DRAIN (RR MASONRY)

NOTES :

1. CONTRACTOR TO C… DIMENSIONS BEFOR…
2. ALL DIMENSIONS G… UNLESS OTHERWISE…
3. DO NOT SCALE OUT … DRG. WRITTEN DIME… FOLLOWED.
4. WEEP HOLE FOR DRA…
5. ALL PFTs DRAIN TO I… DRAINAGE AND DISC… AS PER THE DISCRET… SITE.

TYPICAL DETA… SECTIONA…

DRN	JINOJITH AP
CKD	SUB(SA)SANTHO… SUB(E&M)S HUSS…
DATE	JAN 2022
SCALE	1 : 10

DRG NO : DGAR/ENGR/CC…

SO1 (WKS)

…HECK AND VERIFY ALL THE …E EXECUTION OF THE WORK.

…IVEN ARE IN MILLIMETERS, …E MENTIONED.

…NY DIMENSIONS FROM THE …NSIONS ONLY WILL BE

…IN AS PER SITE REQUIREMENT

…NTERCONNECTED TO AREA …HARGE OF AREA DRAIN TO BE …ION OF ENGR-IN-CHARGE AT

…AILS OF DRAIN

…L DETAILS

…SH D… …AIN

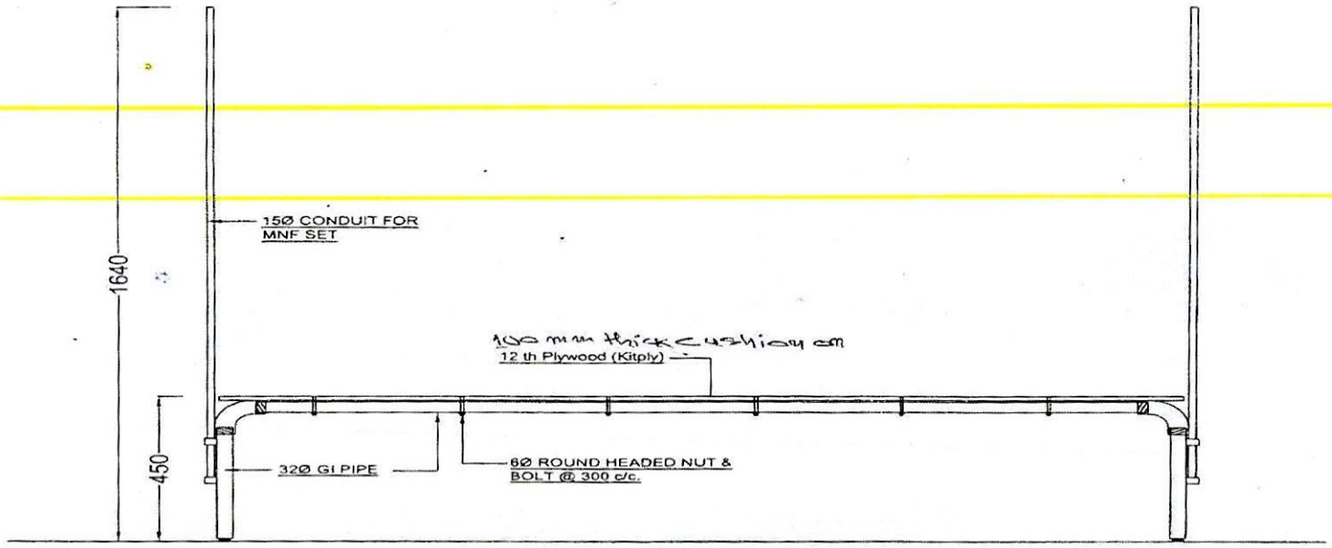
HQ DGAR
ENGR BRANCH
SHILLONG

…DB/10 | SHT NO. 1/1

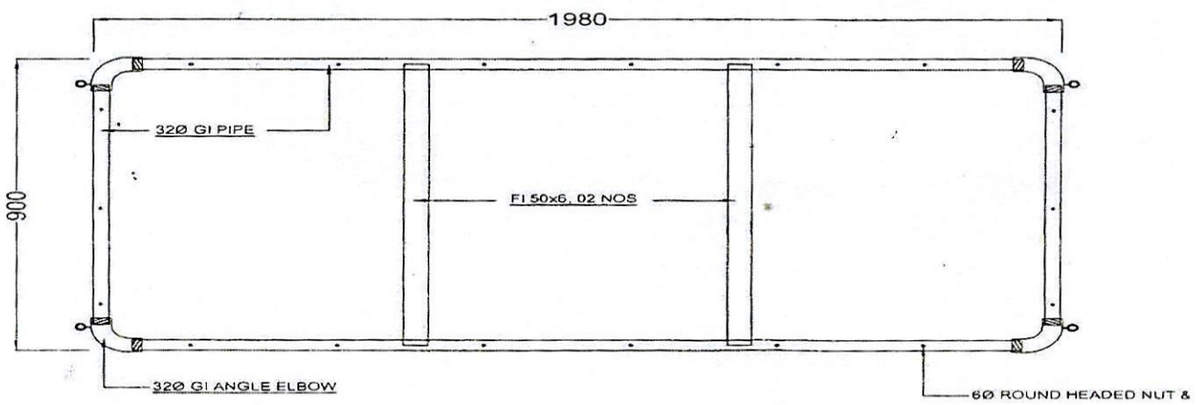
CHIEF ENGR

लै कर्नल
Lt Col
एस ओ (वर्क्स)
SO (Wks)
महानिदेशालय असम राइफल्स
Directorate General Assam Rifles
शिलांग - …
Shillong - …

Appx F



ELEVATION



NOTES:

1. THIS DRG READ IN CONJUCTION WITH THE DRG NO. DGAR/ENGR/FD/04 SHT NO 1/1.
2. AMMENDMENT MADE ON PLAN AND ELEVATION ONLY. ALL OTHER DETAILS GIVEN ARE STANDS NO CHANGE.
3. ALL DIMENSIONS ARE GIVEN IN MILLIMETRES UNLESS OTHERWISE METIONED.
4. DO NOT SCALE OUT ANY DIMENSIONS FROM THE DRG. FOLLOW WRITTEN DIMENSIONS ONLY.

ले० कर्नल
Lt Col
एस ओ (वर्क्स)
SO (Wks)
महानिदेशालय असम राइफल्स
Directorate General Assam Rifles
शिलांग - 793009

AMENDED DRG OF GI PIPE CHARPOY WITH MNF SET	
PLAN AND ELEVATION	
Drn : Anil Kumar	HQ DGAR
Date: 19 JUL 2011	ENGR BRANCH
Scale:	SHILLONG
DRG NO DGAR/COB/FUR/08	
	Sheet NO: 1/5

FURNITURE

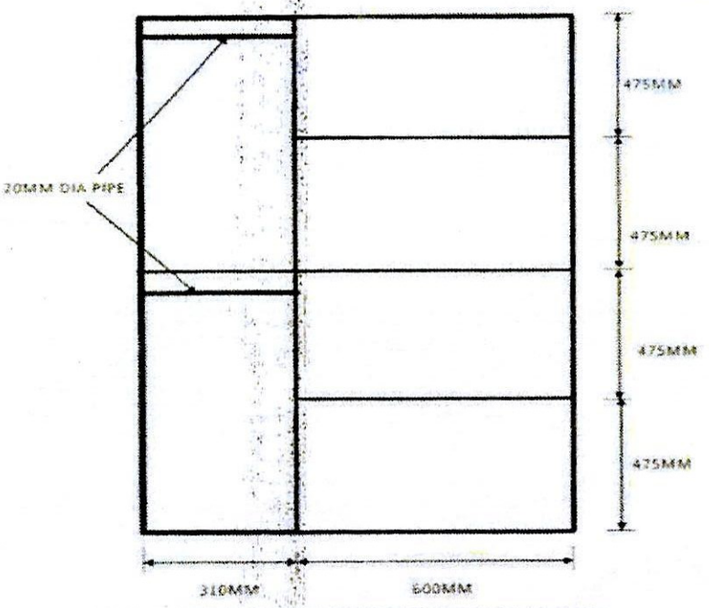
CHAIR WRITING

ALMIRAH 2

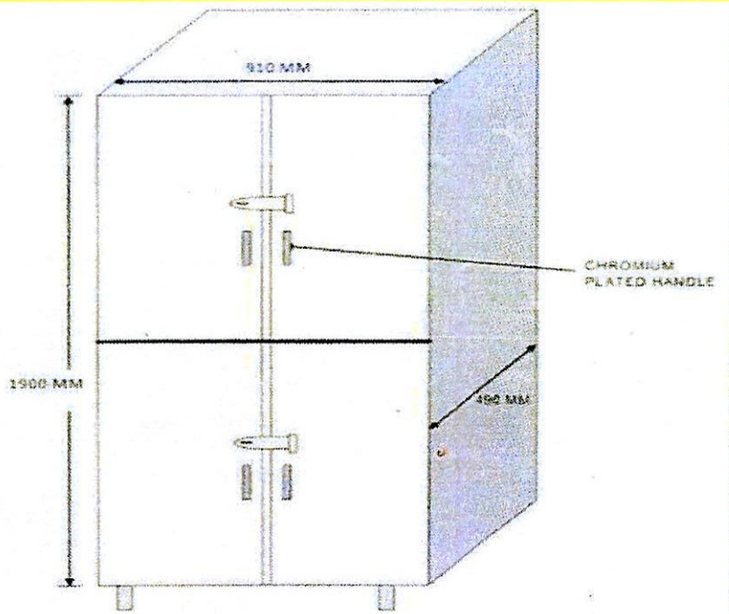
ALMIRAH 2

10CM THICK I
ON 3MM TH

25MM DIA MS
MEDIUM GR



STEEL ALMRAH LARGE SHOWING POSITION OF SHELVES



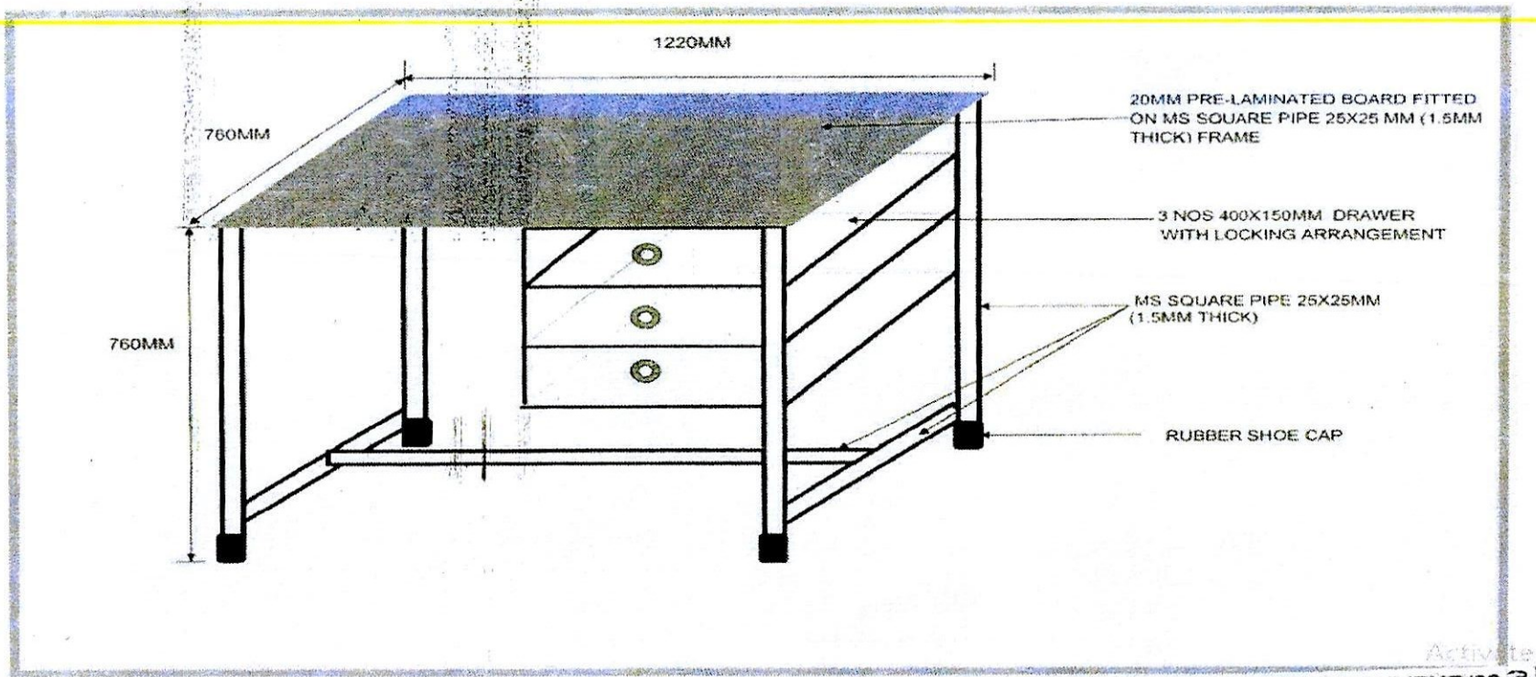
STEEL ALMIRAH LARGE

DRG NO. DGAR/COB/FUR/08, 2/5

Lt Col
एस ओ (वर्क्स)
SO (Works)
महानिदेशालय असम राइफल्स
Directorate General Assam Rifl
शिलांग - 7
Shillong - 7

FURNITURE

STUDY TABLE

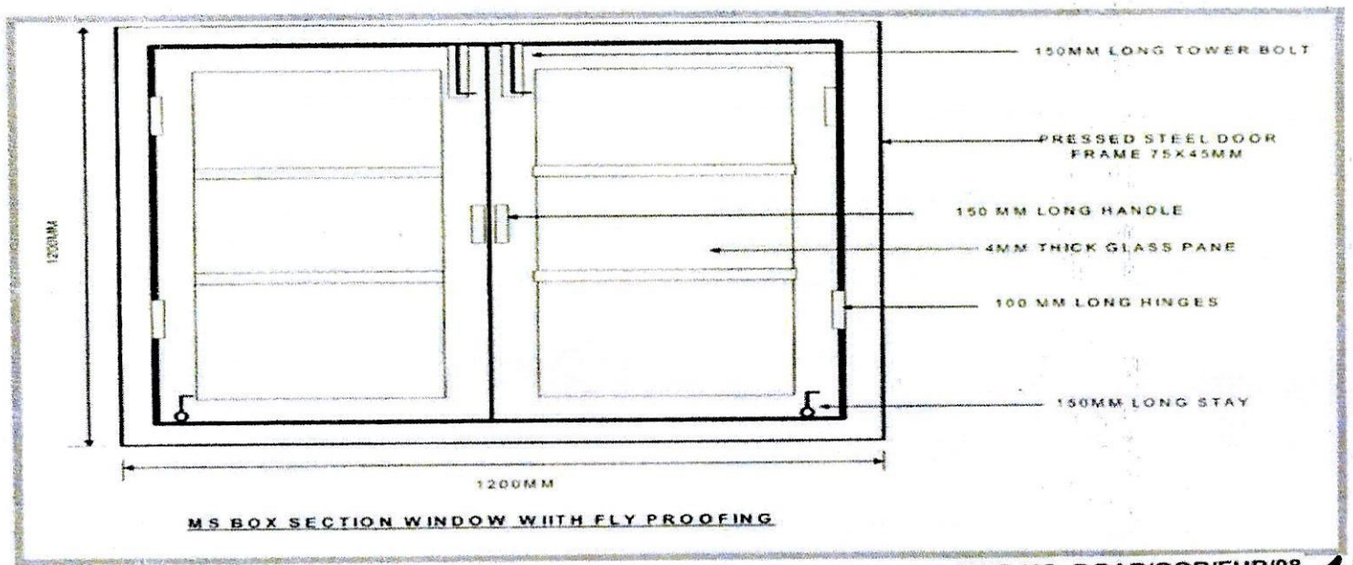


DRG NO. DGAR/COB/FUR/08/315

Activate V

ले० कर्नल
Lt Col
एस ओ (वर्क्स)
SO (Wks)
महानिदेशालय असम राइफल्स
Directorate General Assam Rifles
शिलांग - 79
Shillong - 79

FURNITURE



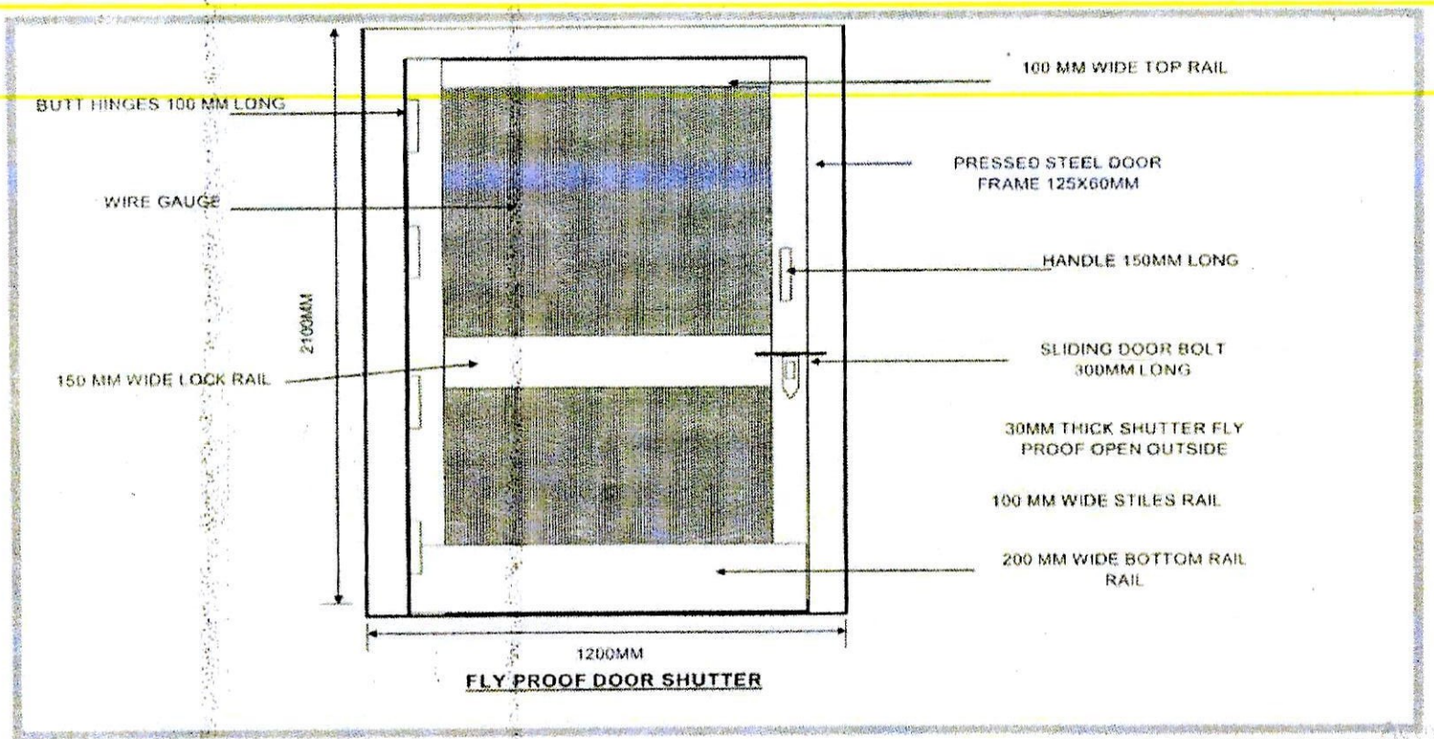
MS BOX SECTION WINDOW WIITH FLY PROOFING

DRG NO. DGAR/COB/FUR/08 ,415

Activat

Lt Col
कस ओ (वर्क्स)
SO (Wks)
महानिदेशालय असम राइफल्स
Directorate General Assam Rifles
शिलांग - 793011
Shillong - 793011

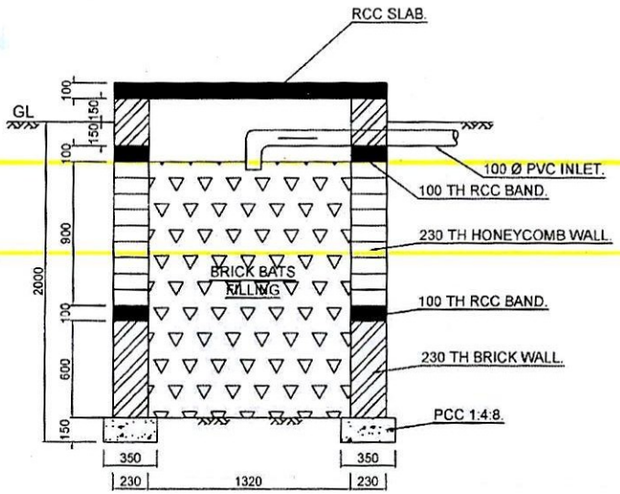
FURNITURE



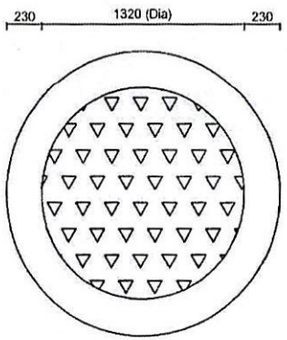
FLY PROOF DOOR SHUTTER

DRG NO. DGAR/COB/FUR/08 , 5/5

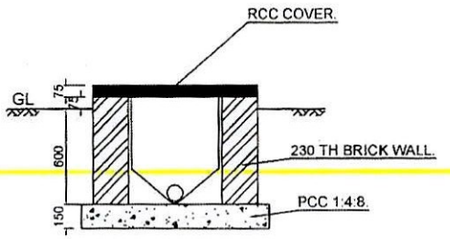
Lt Col
एस ओ (वर्क्स)
SO (Works)
Director General Assam Rifles
Shillong



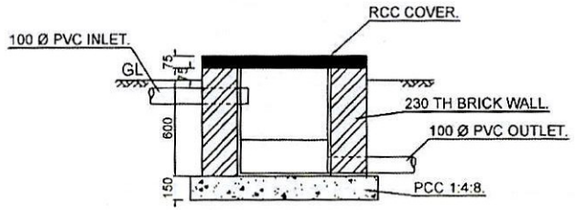
SECTION



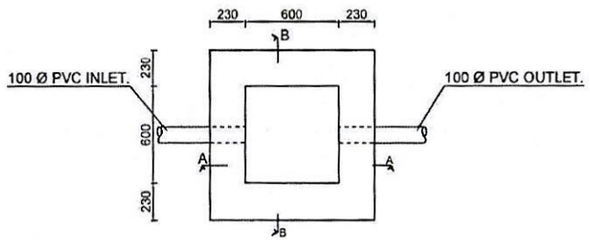
PLAN OF SOAK PIT



SECTION AT B - B



SECTION AT A - A



PLAN OF MAN HOLE

NOTES :

1. CONTRACTOR TO CHECK AND VERIFY ALL THE DIMENSIONS BEFORE EXECUTION OF THE WORK.
2. ALL DIMENSIONS ARE GIVEN IN MILLIMETRES, UNLES OTHERWISE MENTIONED.
3. DO NOT SCALE OUT ANY DIMENSIONS FROM THE DRG. ONLY WRITTEN DIMENSIONS WILL BE FOLLOWED.
4. REINFORCEMENT FOR RCC SLAB IS 10 TOR @ 150 c/c BOTHWAYS AND DISTRIBUTION 6Ø @ 200 c/c. AND MANHOLE COVER SLAB SHALL BE 8 TOR @ 150 c/c BOTHWAYS.

लै० कर्नल
LT COL
एस ओ (वर्क्स)
SO (Wks)
महानिदेशालय असम राइफल्स
Directorate General Assam Rifles
शिलांग - 793011
Shillong - 793011

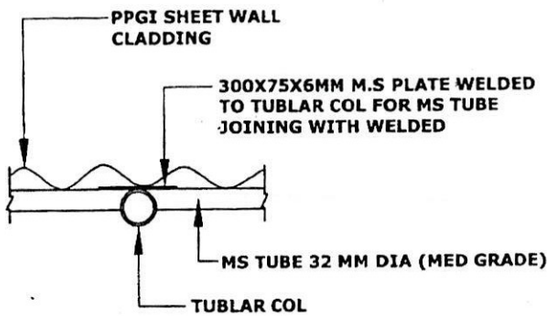
TYPICAL SOAKPIT & MANHOLE DETAILS

PLAN & SECTION

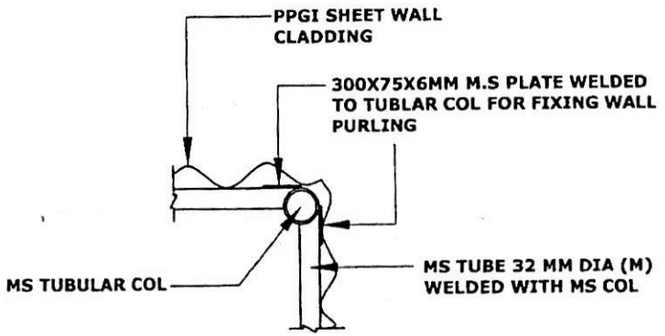
DRN	JINOJITH AP	HQ DGAR ENGR BRANCH SHILLONG
CKD	SUB(SA) SANTHOSH SUB(E&M) S HUSSAIN	
DATE		
SCALE	1:15	

DRG NO : DGAR/ENGR/356 | SHT NO. 1/1

SO1 (WKS) | CHIEF ENGR



FIXING DETAILS OF MIDDLE TUBULAR POST WITH MS TUBE



FIXING DETAILS OF CORNER TUBULAR POST WITH MS TUBE

NOTES :-

01 - ALL DIMENSIONS ARE GIVEN IN MILLIMETERS UNLESS OTHERWISE SPECIFIED.

02 - FIGURED DIMENSIONS SHALL BE FOLLOWED.

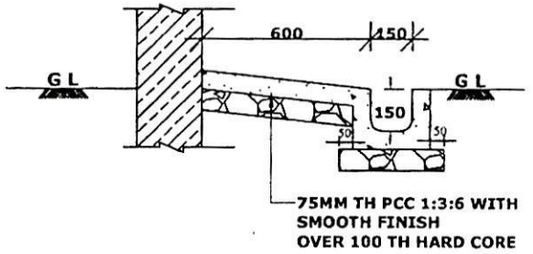
03 - CONTRACTOR TO CHECK AND VERIFY ALL DIMENSIONS BEFORE EXECUTION OF THE WORK.

06 SEATED TOILET BLOCK (PUF 7.20 x 2.20 MTR)

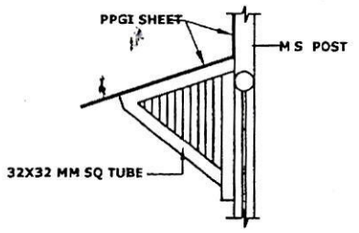
FIXING DETAILS OF TUBULAR POST WITH MS TUBE FRAME WORK

DRN BY	JINOJITH AP	DIRECTOR GENERAL ASSAM RIFLES SHILLONG - 10
CKD BY	SUB(SA)SANTHOSH D SUB(E&M)S HUSSAIN	
DRG NO :- DGAR/ENGR/COB/114		SHT NO :- 3/3
SCALE:- 1:50		कर्नल LO Col एस ओ (वर्क्स) SO (Wks) SO1 (WORKS) HQ DGAR
DATE :- JAN 2022		

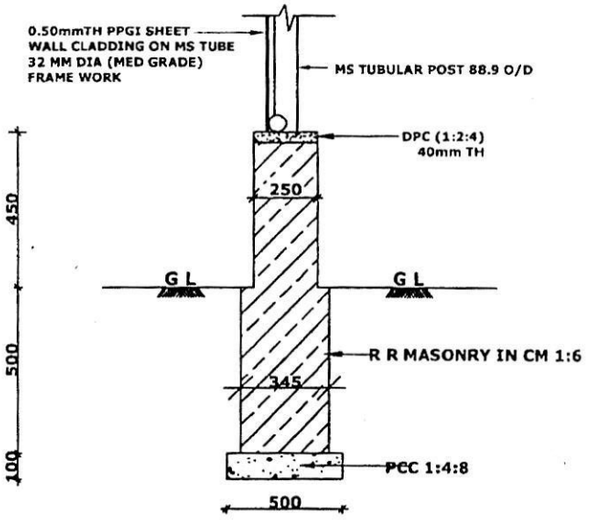
Director General Assam Rifles
793011



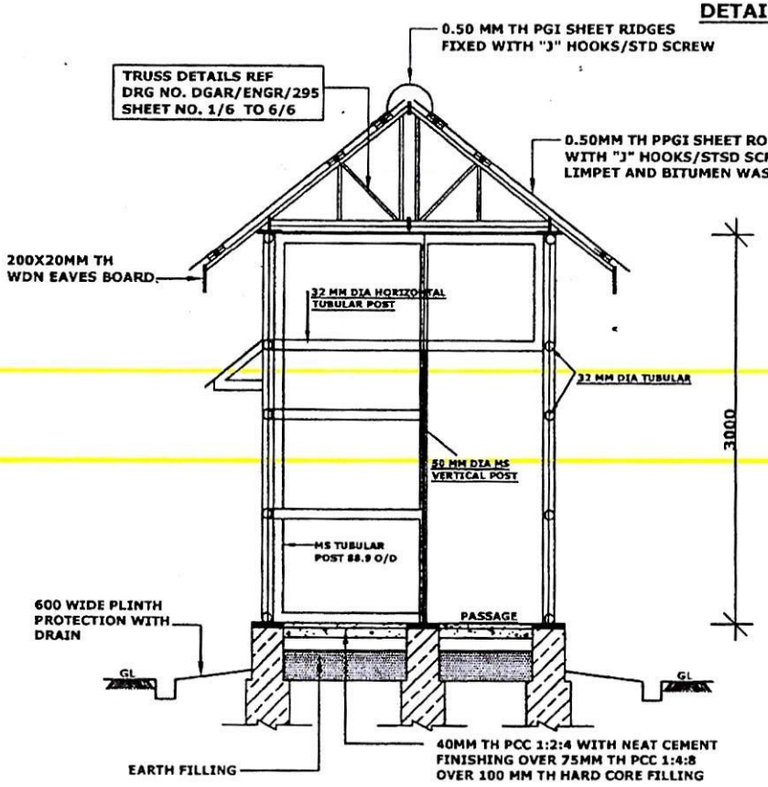
DETAILS OF PLINTH PROTECTION WITH DRAIN



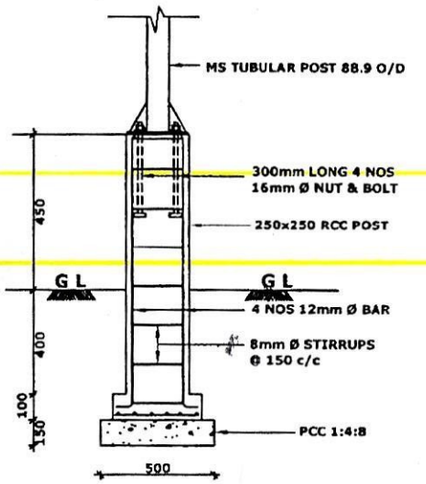
DETAILS OF CHAJJA



250 TH WALL FDN & DWARF WALL



SECTION AT "A-A"



FDN DETAIL OF TUBULAR POST

NOTES :-

(46)

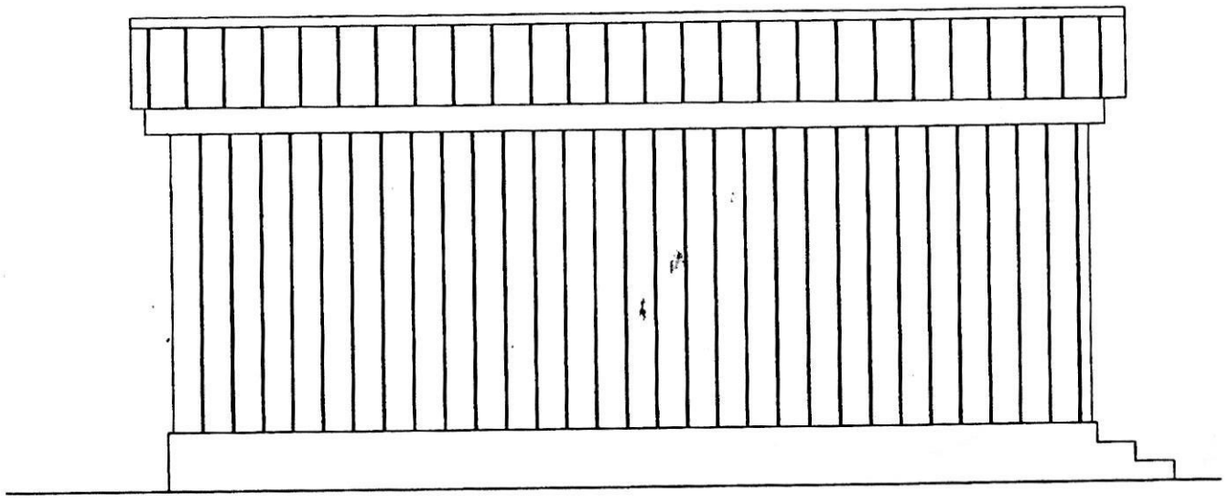
1. CONTRACTOR TO CHECK AND VERIFY ALL DIMENSIONS BEFORE EXECUTION OF THE WO
2. ALL DIMENSIONS ARE IN MILLIMETERS UNLE OTHERWISE SPECIFIED.
3. FIGURED DIMENSIONS SHALL BE FOLLOWED
4. PAINTING OF WOODEN SURFACE SHALL BE PAINTED WITH 2 COATS OF SYNTHETIC ENAM PAINT OVER A COAT OF PRIMER.
5. PREFABRICATED STRUCTURE DETAILS FOLLOI DRAWING NO. DGAR/ENGR/295 SHEET NO. 1, 6/6.

06 SEATED TOILET BLOCI (PUF 7.20 x 2.20 MTR)

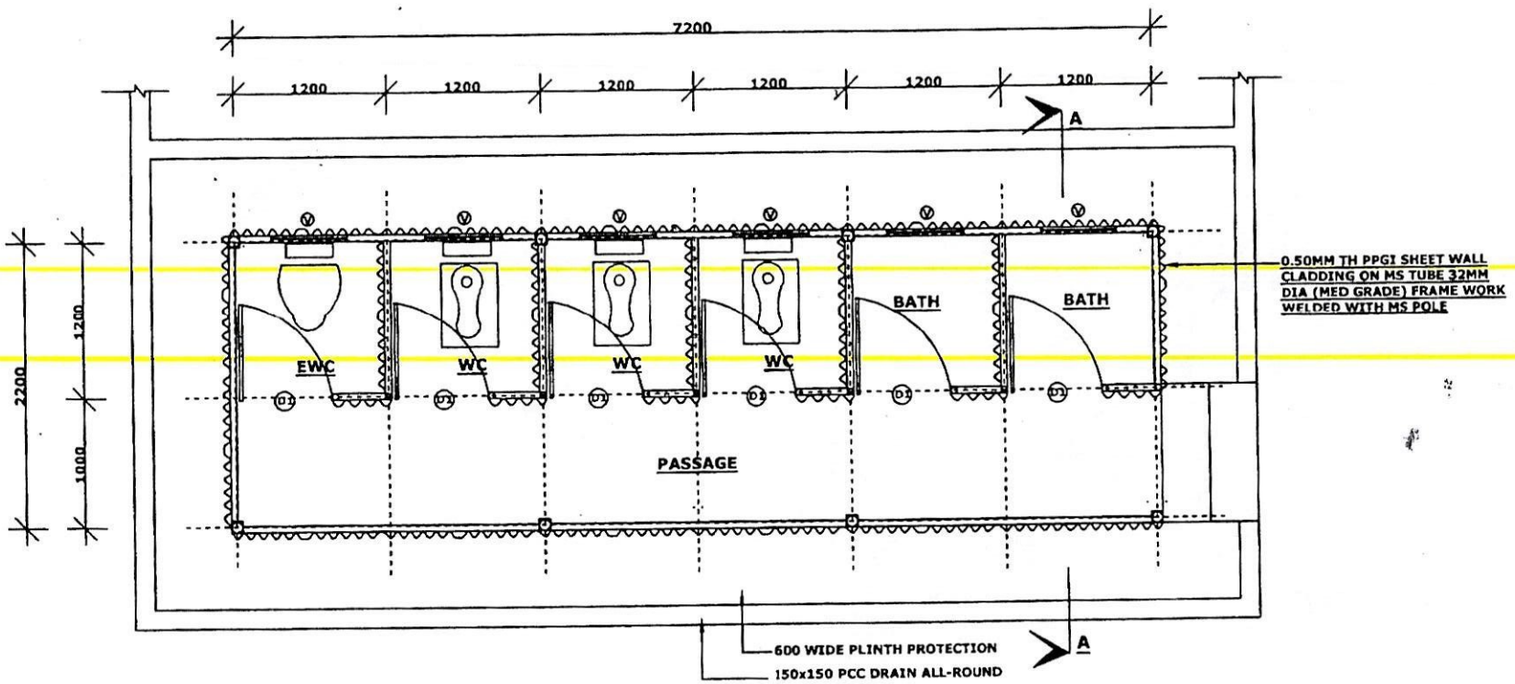
SECTION AT "A-A" AND OTHER DETAILS

DRN BY	JINOJITH AP	DIRECTOR GENE ASSAM RIFLE SHILLONG - 1
CKD BY	SUB(SA)SANTHOSH D SUB(E&M)S HUSSAIN	
DRG NO :- DGAR/ENGR/COB/114		SHT NO :- 2/3
SCALE:- 1:50		SO1 (WORKS) HQ DGAR
DATE :- JAN 2022		

Col
एस ओ (वर्क्स)
SO (Wks).
असम राइफल्स
Assam Rifles
- 093099



FRONT ELEVATION



PLAN

NOTES :-

(41)

1. CONTRACTOR TO CHECK AND VERIFY ALL DIMENSIONS BEFORE EXECUTION OF THE WC
2. ALL DIMENSIONS ARE IN MILLIMETERS UNLE OTHERWISE SPECIFIED.
3. FIGURED DIMENSIONS SHALL BE FOLLOWED
4. PAINTING OF STEEL SURFACE SHALL BE PAIN WITH 2 COATS OF SYNTHETIC ENAMEL PAINT OVER A COAT OF PRIMER.
5. PREFABRICATED STRUCTURE DETAILS FOLLO DRAWING NO. DGAR/ENGR/295 SHEET NO. 1 6/6.

SCHEDULE OF OPENING

D1	DOOR	750X2100MM	- PVC DOOR SHU
V	VENTILATOR	600X450	- MS FRAME WITI GLAZED SHUTTI

06 SEATED TOILET BLOCK (PUF 7.20 x 2.20 MTR)

PLAN AND FRONT ELEVATION

DRN BY	JINOJITH AP	DIRECTOR GEN ASSAM RIFL SHILLONG -
CKD BY	SUB(SA)SANTHOSH D SUB(E&M)S HUSSAIN	
DRG NO :- DGAR/ENGR/COB/114		SHT NO :- 1/
SCALE:- 1:50		
DATE :- JAN 2022		SO1 (WORKS) HQ DGAR

Col
एस ओ (वर्क्स)
SO (Wks)
महानिदेशालय असम राइफल्स
Directorate General Assam Rifl
- 793011

Signature Not Verified
Digitally signed by UDDIPTO DHARA
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