

REQUEST FOR PROPOSAL JOB NO : OT/EC/4/5/26-27/2532
02 x FIELD TOILET (BIO)

1. **Instructions / Conditions.** Your online offer for Provn of 02 x Fd Toilet (Bio) Shall be submitted as follows:-
 - (a) Bids should be uploaded / submitted through GeM Portal. The uploaded bids will be opened as per the schedule of GeM activities.
2. This RFP is divided into 3 parts as under:-
 - 2.1 Part I. Addl Terms & Conditions
 - 2.2 Part II List of Store: Store list (Complete set) to be delivered to the GFFR.
 - 2.3 Part III Technical Specifications & Drawings
3. Bidders are requested to read the RFP carefully and adhere to the instructions.
4. This **RFP** is being issued with no financial commitment and the Buyer reserves the right to change or vary any part thereof at any stage. Buyer also reserves the right to withdraw the **RFP**, should it become necessary at any stage.

PART I: ADDL TERMS & CONDITIONS (ATC)

1. **Documents required to be submitted Online & Physically.** The scanned copies of the following documents to be uploaded on GeM Portal of GOI :-

1.1. All documents/ drawing/specification shall remain confidential and to be disseminated restrictively for the sole purpose of executing order. In this regard a certificate as per **Appendix 'A'** attached shall be submitted.

1.2. **Tender Condition Acceptance Certificate.** The bidder shall certify for acceptance of all the tender conditions of the online RFP and furnish a certificate as per **Appendix 'B'**. The certificate duly signed shall be scanned and uploaded. In case of deviations, the bid shall be rejected. If the certificate is signed by legally authorized signatory, a copy of the authorization letter will be enclosed & uploaded online as well.

1.3. **Bid Security Declaration.** The bidder shall furnish a certificate as per **Appendix 'C'** regarding the non-withdraw or modify the bid during the period of validity. If the certificate is signed by legally authorized signatory, a copy of the authorization letter will be enclosed & uploaded online as well. The certificate duly signed shall be scanned and uploaded. In case of deviations, the bid shall be rejected. If any bidder withdraw or modify his bid during the period of validity, he (bidder) will be suspended for a period of one year.

1.4. **Technical Bid including Technical Specifications Acceptance Certificate.** A cert as per **Appendix 'D'** regarding acceptance of tech bid and tech specifications acceptance certificate duly signed be scanned and uploaded. All pages of the Additional Terms & Conditions (ATC) including all technical specifications of all items duly stamped & ink signed will be submitted. Same shall be scanned and uploaded online.

1.5 **Undertaking Certificate.** The participating bidder shall submit following undertaking :-

1.5.1 The bidder will have to give an undertaking **as per Appendix 'E'** online that if the information/ declaration/scanned documents furnished in respect of eligibility criteria are found to be wrong or misleading at any stage they will be liable to punitive action.

1.5.2. The bidder will have to give another undertaking **as per Appendix 'F'** online that all the stores as per technical specification and quantity in full will be delivered by or before the last date of delivery and in event fail to do so, Commanding Officer, 269 Engineer Regiment (Accepting Officer) may cancel contract/supply order.

1.5.3. Participant vendors shall submit a certificate stating that the firm has not been blacklisted/ banned in past 3 financial years from any Central/ State Govt Department. Vendor needs to also certify that no LD has been imposed on his/ her firm past 3 financial years. If the vendor/ firm has been issued with any show cause notice/ Final notice for any job in past 3 financial years the bid is liable to be rejected. Firms need to furnish undertaking certificate to this effect as per **Appendix 'G'**, failing which the bid will be considered technically disqualified in technical bid.

1.5.4. The bidder shall submit a certificate against the product intended to be supplied by him for item number in list of stores, that its product will satisfy the test parameters as per para 9 of Technical Specification in Part – III. The certificate shall be obtained from NABL laboratory or government of India approved laboratory. The non-submission of certificate will **lead to rejection of bid.**

1.6. Submission of EMD.

1.6.1. The bidder are required to deposit 2% EMD of bid amount along with the tender documents in form of **Bank Guarantee or Account Payee Demand Draft or Bankers cheque or FDR of any Nationalized Bank in favour of Commanding Officer, 269 Engineer Regiment**. Bidder has to upload scanned copy/ proof of the Demand Draft/Fixed Deposit Receipt/ Banker's Cheque along with the bid in relevant place in GeM Portal along with the bid and has to ensure delivery of hard copy to this office in below mentioned address within bid end date/ bid opening date. It shall be the sole responsibility of the bidder to ensure that the physical EMD reaches the buyer within the stipulated time. Any delay due to post/ courier or any other reason shall not be considered. **In case of failure to submit the physical EMD within the prescribed time, or submission of invalid/ incomplete EMD instrument, the bid shall be summarily rejected without any further consideration.**

(Office Address: Commanding Officer, 269 Engineer Regiment, Chuje GG, Near SP Office, Tawang, Arunachal Pradesh-790104)

1.6.2. **MSME (MSE) Preference and EMD Exemption.** It shall be **applicable only to Micro and Small Enterprises (MSEs)** engaged in manufacturing of the quoted items. Traders, resellers or distributors shall not be eligible for MSE benefits unless they are bidding on behalf of an eligible MSE manufacturer and submits valid OEM authorization along with supporting MSE documents of the manufacturer.

1.6.3. **Turnover Validation with MSE Category.** The annual turnover of the bidder/ OEM shall be verified with declared MSE categorization (Micro/Small/Medium) as per Udyam Registration. In case the turnover exceeds the prescribed limits of Micro or Small Category, the bidder shall not be eligible for MSE benefits.

1.6.4. **Mandatory EMD in case of Ineligibility.** In case the bidder is found ineligible for MSE exemptions for any reason, including but not limited to invalid documents or mismatch in turnover category, the bidder must submit EMD as per bid conditions. **Failure to submit EMD in such cases shall result in rejection of the bids.**

1.6.5. EMD amount will be returned to the unsuccessful bidders. EMD amount of the successful bidder will be returned after receipt and confirmation of the Performance Bank Guarantee.

1.7. **Technical Bid including Technical Specifications Acceptance Certificate.** All pages of the RFP including all technical specifications of all items duly stamped & ink signed will be submitted. Same shall be scanned and uploaded online.

1.8. **No Outstanding Tax Liability Certificate.** GST/VAT/Tax/CST/Excise clearance certificate for last two years duly authenticated by CA.

1.9. **Banker's details** alongwith **NEFT Form** duly authenticated by bank manager.

1.10 Photocopy of **PAN Card of the firm and owner** duly self-attested.

1.11. **Registration of Firm/ Company.** Scanned copy of **proof of valid registration/renewal of registration and Tax Identification Number.**

1.12. **Performance.** Firms who have executed supply in the past should submit their performance statement indicating details of stores, name of the ordering Deptt, quantity ordered, Delivery Period (original) and quantity and dates of supplies made and should enclose copies of inspection notes in support of supplies made. Firms not submitting their performance statement would be treated as disqualified and be rejected.

1.13. Any editing to any Certificates, Terms and Conditions, Technical Specifications or any part of the tender while submission of bids; will lead to rejection of bid. Such bidder/ vendor will become liable for penal actions as per directions of higher HQ.

1.14. **Turnover Clause** Minimum turnover of bidder should be 50% of bid amount.

2. Non-Submission of any Documents mentioned above will make the bid liable to be **REJECTED**.

3. **Instructions and Conditions.** The bidder shall take all steps necessary to ensure that all persons employed on the works by him / her, have noted that the Indian Official Secret Act 1923 (XIX of 1923) is applicable to them and shall continue to be applied even after the execution of the works awarded by this unit.

4. **Validity of Bid** The rates offered should be valid minimum for a period of **180 days** unless contrary provisions appear in quotation by the firm.

5. **Clarification Regarding Contents of the RFP.** A prospective bidder who requires clarification regarding the contents of the bidding documents shall notify to the Buyer in writing about the clarifications to the above signatory.

6. **Clarification regarding contents of the Bids.** During evaluation and comparison of bids, the Buyer may, at discretion, ask the bidder for clarification of his bid. The request for clarification will be given in writing and no change in prices or substance of the bid will be sought, offered or permitted. No post-bid clarification on the initiative of the bidder will be entertained.

7. **Placement of Order.** The purchase order will be placed on successful conclusion of negotiations on L1 vendor/firm.

8. **Opening of Bid.** The commercial bid of only those bidders whose physical EMD is received (except for EMD exemption applied for and valid documents submitted in support) and have uploaded scanned copies of all documents asked on GeM Portal of GOI and meets all the stipulated Technical & Commercial requirements, shall be opened. The date of opening will be intimated to the bidders through GeM Portal.

9. **Forwarding of Bids.** The **TECHNICAL BID** and the **COMMERCIAL BID** should be uploaded online by the bidder duly digitally signed by the legal owner of the firm or the person authorize by him to do so.

10. Quantity written in this quotation is approximate and it may vary as per requirement.

11. Should there be any dispute hereafter; the decision of Commanding Officer, 269 Engineer Regiment will be final and binding.

12. **Evaluation Criteria & Price Bid Issue.** The guideline for evaluation of bid will be as follows :-
- 12.1. Only those bidder will be technically evaluated which are found for evaluation to be fulfilling all the eligibility and qualifying requirement of Bid documents and Additional Terms & Conditions.
 - 12.2. The lowest acceptable bid will be considered for further placement of contract/ supply order (SO) after completed clarification and price negotiation as decided by the buyer. The buyer will have the right to award contract to different bidders for being lowest in the particulars items. The buyer also reserve the right to do apportionment of quantity, if, it is conceived that lowest bidder is not in position to supply full quantity in stipulated time.
 - 12.3. A **price justification** will be asked from bidder on GeM as and when L1 amount is found **below 20% of approved Technical Sanction amount**. The bidder may be rejected during Financial Evaluation if submitted justification is not found to be admissible or an additional amount of 10% of L1 value will be asked from vendor to deposit as Bank Guarantee.
13. **Warranty.** The stores supplied against the supply order shall bear a warranty against defective materials and workmanship under Defect Liability Period.
14. **Deviations.** The supplier shall not make any addition, alteration or omission from the works as described in the documents which have been offered and accepted by the Commanding Officer, 269 Engineer Regiment (Accepting Officer). If in case any given detail is found to be in contrast to the sound engineering practice, it is the supplier's responsibility to bring out the same to the notice of the Commanding Officer, 269 Engineer Regiment (Accepting Officer) and obtain written instructions on such amendments/clarification so as to produce a best product.
15. **Cancellation of Part / Full Quotation.** If in the assessment of Commanding Officer, 269 Engineer Regiment (Accepting Officer) the rates quoted are not satisfactory for one or more circles then he has the right to cancel the bid in that particular circle code and go for re-tendering process again. The tender of balance circles may not be cancelled.
16. **Payment.**
- 16.1. Payment will be made only on 100% receipt of all stores of the shelter and satisfaction by a board of officers at designated location.
 - 16.2. All taxes/supplementary charges are deemed to be included in the quoted price.
 - 16.3. No advance payment shall be admissible without receipt of stores.
17. **Documents.** The following documents shall be prepared and submitted by the supplier to the paying authority along with the bill for making payment:-
- 17.1. Ink signed copy of invoice.
 - 17.2. CRVs in duplicate
 - 17.3. Guarantee /warranty certificate, (if applicable)
 - 17.4. Purchase Vouchers of structural steel.
 - 17.5. Test Certificates of structural steel.
 - 17.6. Copy of Performance Bank Guarantee.
 - 17.7. Prescribed pre-stamped bills in triplicate.

18. **Performance Bank Guarantee.** Performance Bank Guarantee @ 3% of Supply Order amount in favour of Paying Officer as per prescribed format shall be **deposited within 15 days from date of issue of supply order**, failing to do so contract will be cancelled by Accepting Officer. Vendor shall ensure that PBGs to be submitted by them should preferably be sent to paying officer directly by issuing Bank by registered post (AD). PBG should remain valid for a period of sixty days beyond the successful completion of all obligations under supply order including warranty and will be released by the Department post completion of Defect Liability Period. Submission of PBG is mandatory for all successful **L1 Vendors** irrespective of the registration status of the firm. L1 vendor must revalidate Bank Guarantee, in case of grant of extension of delivery period (if any).

19. **Risk and Cost.** In the event of failure on the part of vendor to supply the full quantity in the time stipulated or within any extended period granted by the accepting officer or in the event of failure to supply on any account, the Accepting Officer shall have the right to cancel the supply order and obtain the undelivered supplies from other sources at risk and expense of the vendor. The vendor is liable to pay the additional amount spent by the department in procuring the said stores though a fresh supply order i.e. the defaulting vendor has to bear the excess cost incurred as compared with the amount contracted with the vendor.

20. **Force Majeure.** Should any Force Majeure circumstances arise, each of the contracting party shall be excused for the non-fulfillment or for the delayed fulfillment of any of its contractual obligations, if the affected party within 15 days of its occurrence informs the other party in writing. Force Majeure shall mean fires, floods, natural disasters or other acts, that are unanticipated or unforeseeable, and not brought about at the instance of the party claiming to be affected by such event, or which, if anticipated or foreseeable, could not be avoided or provided for, and which has caused the non-performance or delay in performance, such as war, turmoil, strikes, sabotage, explosions, quarantine restriction beyond the control of either party. A party claiming Force Majeure shall exercise reasonable diligence to seek to overcome the Force Majeure event and to mitigate the effects thereof on the performance of its obligations under this contract.

21. **Liquidated Damages (LD).** In the event of the Seller's failure to submit the bonds, Guarantees and documents, supply the stores/goods and conduct trials, installation of equipment, training etc as specified in this contract, the BUYER may also deduct from the SELLER as agreed, liquidated damages to the sum of 0.5% of the contract price of the delayed/undelivered stores/services mentioned above for every week of delay or part of a week. Subject to the maximum value of the Liquidated Damage being not higher than 10% of the value of the contract.

22. **Litigation / Arbitration.** The timely supply of shelters as per the supply order by the vendor is of paramount importance for Operational reasons. Hence no time extension of any kind shall be granted except under natural calamities and exceptional circumstances. In case of non-adherence of delivery period the supply order can be cancelled at the sole discretion of the Commanding Officer, 269 Engineer Regiment (Accepting Officer). **No litigation or arbitration under any circumstances at any stage shall be applicable.** The decision of Commanding Officer, 269 Engineer Regiment (Accepting Officer) shall be final and binding in all matters. **Vendors not willing for this pre-condition are advised not to participate in the tendering process.**

23. **Subletting, Transfer, Assigning the supply to other Agencies.** The firm shall not sublet, transfer, assign the supplies of the items given in Schedule I or any part thereof to any other firm. Any violation on this count shall render the offer / supply order to be cancelled and the security deposit/Performance Bank Guarantee shall be forfeited.

24. **Delivery.**

24.1. Super structure, Substructure, Construction Materials and erection tools shall be delivered to following work location **within 60 days of placing of Supply Order.**

24.1.1 GFFR - 02 x Complete Set (Bumla Circle)

24.2 **Supply of complete items as per PART II – LIST OF STORES shall be completed within 60 days from placing of Supply Order.** Supply shall be deemed complete when store delivery is physically completed by due date and duly received by consignee unit at the specified location.

25. **Tolerance Limit.** Accepting officer reserves the right to increase or decrease 50% of the quantity of the required stores up to that limit without any change in terms and conditions and the rates quoted by the vendor to take care of any change in the requirement during the period starting from issue of quotation till placement of supply order. While placing the supply order, the quantity ordered can be increased or decreased by the accepting officer within this tolerance limit.

26. **Option Clause.** Accepting officer reserve the right to place an additional 50% of the original supply ordered quantity in accordance with the same rates, terms and conditions of the present supply order within the currency of supply order.

27. **Miscellaneous.**

27.1. A comprehensive list of stores and part identification manual will be handed over to the user unit along with erection schedule within 10 days from placement of supply order. Stores will be checked as per these documents when received.

27.2. Schedule of delivery will be provided to the paying officer within 10 days of receipt of supply order. Further the sequence of supply will be strictly as per broad sequence of items required for erection like foundation bolts, structure (i.e. column, purlin and rafters etc) ,roof sheet, wall panels, false ceiling(if applicable),doors and windows.

27.3. All ridge cover, corner pieces and PPGI sheet should be pre cut to size prior to delivery.

28. **GST and Other Taxes.** Firm will ensure that all taxes including GST and any other kind of taxes as applicable are paid at firm's end. This unit will bear no liability for any dispute on this account. For all invoices issued on or after 1st July 2017, it is mandatory to mention GSTIN number. (Section 31 (3) (C) of GST Act, 2017). The invoices generated on or after 1st July without GST Number will be returned and supplier will be asked to submit fresh invoice with GST No. If the vendor is exempted from the registration in accordance with the CGST Act, a certificate from the contract concluding authority/supplier for seeking exemption from this condition, should accompany the bills. Therefore **“Vendor will provide invoice with GST No and in case vendor is exempted from GST, certificate of exemption from designated authority should be enclosed with invoice.”**

29. **Correspondence.** All correspondence shall be addressed to **Commanding Officer, 269 Engineer Regiment, Chuje GG, Near SP Office, Tawang, Arunachal Pradesh-790104.**

30. **Work location:** Work/ Delivery location as mentioned in Para 24 (a) of this RFP. The tenderers/ bidders willing to visit the work site are advised to take prior appointment with the Commanding Officer, 269 Engineer Regiment. The bids submitted by the vendor / Firm should be on the basis of his prior site survey.

31. **Termination of a Concluded Contract.** Contract will be terminated in the following circumstances:-

31.1. When the supplier fails to honour any part of the contract including failure to deliver the contracted stores/render services in time.

31.2. When the contractor is found to have made any false or fraudulent declaration or statement to get the contract or he is found to be indulging in unethical or unfair trade practices.

31.3. When both parties mutually agree to terminate the contract.

31.4. When the item offered by the supplier repeatedly fails in the inspection and/or the supplier is not in a position to either rectify the defects or offer items conforming to the contracted quality standards.

31.5. Any special circumstances, which must be recorded to justify the cancellation or termination of a contract.

32. **Pre Bid Meeting.** Vender has to attend pre bid meeting within 04 days of uploading the tender .i.e on **04 May 2026** at **269 Engineer Regiment, Chuje GG, Near SP Office, Tawang, Arunachal Pradesh-790104.**

33. **Defect Liability Period/ Warranty.** The defect liability period of all items/articles supplied except items intended to be incorporated in construction or work, stands for a period of one year from the date of completion certificate issued. In case of structural or manufacturing failure or defect in any component within the warranty period, the consignee shall inform the supplier for joint inspection. Within a period of one month of the receipt of such information, the rejected material shall be removed and replaced by the supplier at his own expense and no extra payment shall be made on this account.

34. **User Manual.** L1 Vendor shall submit hard and soft copy of the user manual to include the store list, photographs of parts for easy identification and drawings along with connected literature to the Accepting Officer within 15 days of placing the supply order and to the paying authorities at the time of deliver.

Appendix 'A'**CERTIFICATE**

It is certified that our concern / establishment requires _____ copy / copies of Defence specification / Drawing in connection with the Tender Enquiry No _____ . It is further certified that the information contained in RFP, NIT, Technical Specifications, and other documents and that required in producing, supplying and inspection of defence stores will not be divulged / supplied / disclosed in any form to any outside agencies / person not authorized to receive the same without prior approval of the issuing authority.

Place :

Date :

(Name of Signatory in Block letters)

(Complete address of the firm and Firm's seal)

Appendix 'B'

TENDER CONDITIONS ACCEPTANCE LETTER
(to be given on Company letter pad)

Date:

To:

SUB : ACCEPTANCE OF TERMS AND CONDITIONS OF TENDER

Tender Reference No: _____

Name of Tender Work:

Dear Sir,

1. I/We have downloaded/obtained the tender document (s) for the above mentioned 'Tender/Work' from the website namely _____ as per your advertisement, given in the above mentioned website.

2. I/We hereby certify that I/We have read entire terms and conditions of the tender documents from Page No _____ to _____ (including all documents like annexure (s), schedule (s), etc.), which form part of the contract agreement and I/We shall abide hereby the terms/conditions/clauses contained therein.

3. The corrigendum(s) issued from time to time by your unit/organization too have also been taken into consideration, while submitting this acceptance letter.

4. I/We hereby unconditionally accept the tender conditions of above mentioned tender document(s) or corrigendum(s) in its totality/entirely.

5. The Tech Bid and its enclosures (scanned copy of all pages of technical specifications including all enclosures and drawings duly stamped and ink signed on each page) as uploaded on the GeM portal.

6. In case any provisions of this tender are found violated, your department/organization shall be at liberty to reject this tender/bid including the forfeiture of the full said **Earnest Money Deposit** absolutely and we shall not have any claim/right against unit/organization in satisfaction of this condition.

Enclosures : (As per Paragraph 5 above)

Place :

(Name of Signatory in Block letters)

Date :

(Complete address of the firm and Firm's seal)

Appendix 'C'**BID SECURITY DECLARATION CERTIFICATE**

I/We, M/s _____ hereby declared that I/We will not modify or withdraw my bid during the bid validity. If I/We withdraw or modify bid during the bid validity I/We will be liable to be suspended for a period of one or more years.

Place :

Date :

(Name of Signatory in Block letters)
(Complete address of the firm and
Firm's seal)

Appendix 'D'**CERTIFICATE FOR ACCEPTANCE OF TECHNICAL BID INCLUDING
TECHNICAL SPECIFICATION**

I/ We hereby certify that I/We have read entire terms and conditions of the tender documents (including all documents like annexure (s), schedule (s), etc.), which form part of the contract agreement and I/We shall abide hereby the terms/conditions/clauses of technical bid and technical specification contained therein.

Place :

Date :

(Name of Signatory in Block letters)
(Complete address of the firm and
Firm's seal)

Appendix 'E'

UNDER TAKING CERTIFICATE

I / We hereby certify that if the information/ declaration/scanned documents furnished in respect of eligibility criteria are found to be wrong or misleading at any stage I/We will be liable to be rejection of bid.

Place :

Date :

(Name of Signatory in Block letters)
(Complete address of the firm and
Firm's seal)

Appendix 'F'**UNDER TAKING CERTIFICATE**

I / We hereby declare that all the stores as per technical specification and quantity in full will be delivered by or before the last date of delivery. If I/we fail to do so, Commanding Officer, 269 Engineer Regiment (Accepting Officer) may cancel my/our contract/supply order. I/we further declare that I we will not represent against the cancellation of contract / supply order.

Place :

Date :

(Name of Signatory in Block letters)
(Complete address of the firm and
Firm's seal)

Appendix 'G'**UNDER TAKING CERTIFICATE**

I We, M/s _____ hereby declare that my firm has not been blacklisted/banned in last 3 years financial years from any Central State Govt Department & no LD has been imposed on my firm in last 3 financial, I/ We also declare that no show cause notice/ Final notice for any job has been furnished by the user unit in past 3 financial years. At any stage of tender if my declaration is found to be false, then my bid/ Supply order may be rejected or cancelled. I/ We further declare that I/ We will not represent against the rejection/ cancellation of bid/supply order.

Place:

(Name of Signatory in Block letters)

Date

(Complete address of the firm and Firm's seal)

PART II – LIST OF STORES FOR THE LOCATION GFFR

S No	Description of Items	A/U	Qty for 01 x Fd Toilet	Qty for 02 x Fd Toilet
1	Superstructure Supply of Fd Toilet Bio (7.32M x 7.10M x 4.40M Height) as per CE HQ 4 Corps drawing No CE Corps/PUF/CTB(7.32M)/2017-18, Sheet No ¼ to 4/4.	Set	1	2
2	Construction Material Cement 43 Grade OPC packed in HDPE bag each 50 kg wt conform to IS 8112 to 1989 make Birla Gold or Ambuja or Ultratech or JK or Dalmia or ACC	Bags	80	160
3	Coarse sand free from vegetation	Cum	10	20
4	Coarse aggregate 20mm graded	Cum	2.5	5
5	Coarse aggregate 40 mm graded	Cum	8	16
6	Coarse Aggregate 40 to 63 mm graded	Cum	9	18
7	Stone for RR masonry less than 6 inch	Cum	11	22
8	Mild steel bar of size 6 to 8 mm dia conform to IS 432 Part 1 1982 make TATA or SAIL or JSW	Kg	20	40
9	Mild steel bar of size 10 mm dia and above conforming to IS 432 Part 1 1982 make TATA or SAIL or JSW	Kg	21	42
10	Water proofing compound conforming to IS 2645 to 2003 Make Pidilite or Dr Fixit or Fevicol	Kg	8	16
B/R Items				
11	Supply of 04 KLD High Altitude Bio Digester Tank with 4/5 CUM Tank Dimension 2m L x 2m B x 1m H Double Walled FRP Biodigester Tank with one 100mm pipe with ball valve at the bottom of the tank. Made of FRP with insulation as per technical specification and drawing attached.	Nos	2	4
12	Water Storage tank triple layer 1000 Ltrs confirming to IS 12701 to 1996 Make Sintex or Ultrapure Aqua or Polywell	Nos	2	4
13	Fabrication from Structural steel section for staging of water storage tank made of capacity 500 or 1000 ltrs made out of MS angle iron frame of size 50 x 50 x 6mm thick with height of 4.0 mtr above ground level and 0.6 mtr below ground level embedded in PCC 1:2:4 of 20mm graded agg below the ground level. The inner bracing of staging should be fixed with 40 x 40 x 5mm MS angle iron fixed with suitable size MS plate of 3mm thick and top of the staging 1.2m x 1.2m x 3mm for placing the PVC tank and anchored with MS angle iron frame of size 25 x 25 x 5 mm thick with ht of 0.80 mtr from the bottom of Base plate of tank incl ladder complete with two coats of metal painting over one coat of primer (Make of angle iron : TATA/SAIL/JSW)	Nos	2	4
14	IWC of vitreous china squatting Pan Orissa pattern of size 580mmx440mm dark coloured with P or S trap Make Parryware or Hindware incl connection to trap and no flushing pipe etc and incl provn of cement conc bedding complete in all respects	Nos	5	10

15	WC European type model 2008 EWC and combi flush PVC flushing cistern of 10 Ltr capacity Make Cera or equivalent models in Hindware or Parryware	Nos	1	2
16	Flushing Cistern PVC combi flush model 2603 of Cera flushing cistern valve less symphonic action pipe flushing cistern, low level, white with in-let ball valve float with handle of capacity 10 ltr incl brackets and flush pipe line complete in all respects (Make : Hindware/ Parryware/ Cera)	Nos	5	10
17	Looking Mirror frameless of size 600X450x5mm with 4mm ply baking Make Prayag or Saint Gobin or Modigaurd	Nos	4	8
18	Brass Chromium plated Towel Rail 600 mm Long 20 mm dia with cloth hooks Make Ess Ess or Prayag Johnson Suisse	Nos	8	16
19	Chromium plated Piller cock swan neck with aerator Make Ess Ess or Prayag or Johnson Suisse	Nos	4	8
20	Stop Cock angular type chromium plated brass 15mm weight not less then 330 gms Make Ess Ess or Prayag or Johnson Suisse	Nos	14	28
21	Two Way bib cock long spout brass chromium plated 15mm weight not less then 330 gm Make Ess Ess or Prayag or Johnson Suisse	Nos	5	10
22	Stop Cock L Type Chromium plated Brass 15 mm Make Ess Ess or Prayag or Johnson Suisse	Nos	14	28
23	Stop Cock T Type Chromium plated Brass 15 mm Make Ess Ess or Prayag or Johnson Suisse	Nos	2	4
24	Bib Cock long spout chromium plated 15 mm Make Ess Ess or Prayag or Johnson Suisse	Nos	10	20
25	PVC Connection 45 cm long 15 mm Make Supreme or Johnson Suisse or Famingo or KPT or equivalent	Nos	12	24
26	Peg set of six fitted with galvanised screws along the internal surface of the walls in the rooms Make Ess Ess or Prayag or Johnson Suisse or equivalent	Nos	2	4
27	PPR Pipe 32 mm dia Make SFMC or Finolex or Supreme	RM	40	80
28	PPR Pipe 20 mm Dia Make SFMC or FINOLEX or SUPREME	RM	48	96
29	PPR Socket 32 mm Make SFMC or Finolex or Supreme	Nos	15	30
30	PPR Elbow 90 degree 32 mm Make SFMC or Finolex or Supreme	Nos	8	16
31	PPR female thread socket 20 mm dia Make SFMC or Finolex or Supreme	Nos	24	48
32	PPR female thread Elbow 90 degree elbow 20 mm dia Make SFMC or Finolex or Supreme or KPT	Nos	15	30
33	PPR female thread T 20 mm Make SFMC or Finolex or Supreme or KPT	Nos	15	30
34	PPR Plain T 32 mm Make SFMC or Finolex or Supreme or KPT	Nos	6	12
35	PPR Reducer Elbow 32mm x 20mm Make SFMC or FINOLEX or SUPREME or KPT	Nos	16	32
36	PPR Union 32 mm Make SFMC or Finolex or Supreme or KPT	Nos	4	8
37	Tank Connector 32 mm Make SFMC or Finolex or Supreme or KPT	Nos	2	4
38	PVC Wall Clamp 32 MM Make SFMC or Finolex or Supreme or KPT	Nos	20	40
39	PVC Wall Clamp 20 mm Make SFMC or Finolex or Supreme or KPT	Nos	30	30

40	Float Valve 25 mm Make SFMC or Finolex or Supreme or KPT	Nos	2	4
41	Gate Valve 32 mm Make SFMC or Finolex or Supreme or KPT	Nos	4	8
42	M Seal 150 GM Pkt Make Pidilite or Fevicol or M Seal	Pkt	5	10
43	Taflon Tape Roll ISI Marked Make Supreme or Omega or Asbestos	Roll	5	10
44	Solvent Cement 150 GM Tube Make Finolex or Fit Well or Jindal	Nos	5	10
45	PVC Waste Pipe 32 mm and 1 m long Make Prince or Finolex or Supreme or KPT	Nos	6	12
46	Chromium Plated Waste coupling 32 mm dia Make Supreme or Johnson Suisse or Famingo or KPT	Nos	6	12
47	Non Skid Ceramic tiles of size 300mmx300mm on the floor Minimum thickness shall be between 6 to 8 mm tiles as per TS	Nos	606	1212
48	CP grating 100 mm dia Make Ess Ess or Prayag or Johnson Suisse	Nos	10	20
49	PVC Pipe 110 mm dia each 3 mtr length Make Prince or Finolex or Supreme or KPT	Nos	8	16
50	PVC Socket 110 mm dia Make Prince or Finolex or Supreme or KPT	Nos	16	32
51	PVC Bend 110 mm dia Make Prince or Finolex or Supreme or KPT	Nos	16	32
52	P Trap Make Hindware or Parryware or Cera	Nos	1	2
53	S Trap Make Hindware or Parryware or Cera	Nos	5	10
54	PVC air piep 25mm dia, length 3M (Make : SFMC/Finolex/Supreme)	Nos	4	8
55	White Cement confirming to IS 8042 to 1989 Make ACC or Birla Gold or Ambuja	Kgs	17	34
56	Vitreous china Wash hand basin white of size 450mmx300mm with vitreous china pedestal of suitable size as per TS	Nos	4	8
57	PPR Reducer Elbow 32mmx20mm dia Make SFMC or Finolex or Supreme or KPT	Nos	20	40
58	Electric Geyser 25 Ltr	Nos	2	4
59	Brass CP wall mixer for mixing hot and cold water screwed down for PPR pipe of dia 20mm . (Make : Cera/Hindware/Parryware)/ISI equivalent.	Nos	4	8
60	Brass chromium plated shower rose 100mm dia with bend (Make: Ess/Prayag/Johnson Suisse).	Nos	4	8
61	Urinal Pot Vitreous China bowl urinal pot flat back Model 5004 confirming to IS 771 Part 3 Sec 2 Make Cera or Parryware or Hindware	Nos	2	4
62	PVC T 110 mm Make Prince or Finolex or Supreme or KPT	Nos	8	16
63	Brass CP Jet water spray for EWC Make ESS ESS or Prayag or Johnson suisse	Nos	1	2
64	PPR reducer socket 32-25 (Make: SKMC/Finolex/Supreme)	Nos	2	4
65	PPR plain socket 20mm dia (Make : SFMC/Finolex/Supreme)	Nos	25	50
66	PPR elbow 20mm dia (Make : SFMC/Finolex/Supreme)	Nos	2	4

67	E/M Items Distribution box 6 way SPN 240 volts copper bus bar and neutral link earthing stud conforming as per TS	Nos	1	2
68	MCB SPN 240 Volts 32 Amps Make Havells or L and T or Standard	Nos	1	2
69	MCB SP 6 to 32 Amps Make Havells or L and T or Standard	Nos	4	8
70	PVC tape 19mm wide 5 m long Make Steelgrip or Anchor or Kinjal	Nos	2	4
71	Cable PVC insulated electric cables heavy duty 1100 volts grade multi stranded copper conductor of size 1.5 Sqmm single core	RM	450	900
72	PVC casing capping 1 inch x6 ft long Medium Grade snow white Make Presto or Polycab or Finolex	RM	45	90
73	Switch Piano 5 Amp 230 Volts Flush type one way snow white Make Anchor or SSK or CONA	Nos	20	40
74	LED Tube light fittings 20 w Rechargeable Type box type 4 feet with CRCA body Pre coated white and Prewired for LED tube complete as per TS	Nos	6	12
75	LED mirror lights 1 feet 5 watts Make HAVELLS or BAJAJ or PHILIPS or CROMPTON	Nos	4	8
76	Steel screw full thread with rawl plug of 1 1 by 2 inch size ISI Marked 100 Nos per Pkt	Pkt	2	4
77	PVC switch board snow white size 7 inch x4 inch for sockets and switches Make Supreme or Polycab or Finolex	Nos	3	6
78	PVC switch board snow white size 8 inch x 10inch for main switches DB Make Supreme or Polycab or Finolex	Nos	1	2
79	PVC L bend and T junction joint for PVC casing and capping confirming to IS 3419 Part 3 Make Supreme or Polycab or Finolex	Nos	20	40
80	Service bracket 40mm dia GI Tubing medium grade 1 point 5 Mtr Long Make Jindal or Tata or Kalinga	Nos	1	2
81	Cable PVC insulated electric cables heavy duty 1100 volts grade served with inner PVC sheathing aluminum conductor of size 6 Sqmm twin core as per TS	Rm	40	80
82	Ceiling Rose three terminal snow white Make Anchor or SSK or CONA	Nos	20	40
83	LED Bulk head fitting high pressure die cast aluminum front cover with glass cover with specially design gasket with LED lamp 10 watts as per TS	Nos	4	8
84	PVC Flexible wire copper conductor multi stranded 0 point 0016 by 76 Make Havells or Finolex or Plaza	Rm	10	20
85	PVC Flexible Conduit pipe 15 mm dia Make Polycab or Supreme or Finolex	RM	4	8
86	PVC Round or Squire Block Make Polycab or Supreme or Finolex	Nos	12	24
87	Plastic Body fresh air fan with louvers shutter of 200mm sweep model brisk air of Crompton or equivalent model in Havells or Bajaj or Khaitan	Nos	6	12
88	Cable PVC insulated electric cable Heavy duty 1100 volts grade multi stranded copper conductor of size 2.5 sqmm single core as per TS	RM	200	400

89	Switch socket combination snow white multipurpose 2 in 1, 15 Amp 230 volts Make Anchor or SSK or CONA	Nos	4	8
90	Monoblock pump set suitable for 230 V, single phase system having capacity 2HP (Make : Kirloskar/ Crompton)	Nos	1	2
91	Distribution box 2 way with MCB SPN 240 Volts 10 Amps (Make Havells or L&T or Standard)	Nos	1	2
92	PVC Flexible suction hose pipe 25mm dia heavy duty	RM	60	120
93	Non return valve (NRV) metal metal 25mm dia	Nos	1	2
94	Earthing Items Earthing plate 600 x 600 x 6 mm Galvanised steel suitable for GI strip fittings drilled with 2 nos holes for 6 mm dia near one side	Nos	1	2
95	Testing point terminal block make of gun metal and phosphorus bronze size 75 x 75 x 25 mm drilled and screwed including as per TS	Nos	1	2
96	CI Earthing Pit Cover of size 300 x 300 x 6 mm with Angle iron 20x20mm 3 mm thick	Nos	1	2
97	Funnel fitted with 20 mm diameter GI Pipe 1 point 5 m Long Pipe Make Jindal or Tata or Kalinga	Nos	1	2
98	GI wire 4 mm diameter for earthing	RM	20	40
99	Charcoal	Kgs	25	50
100	Salt normal	Kgs	25	50

Part III - TECHNICAL SPECIFICATIONS
TECHNICAL SPECIFICATIONS OF (CTB) COMBINED TOILET BATHROOM
(7.32M X 7.10 M X 4.40 M)

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TECHNICAL SPECIFICATIONS OF (CTB) COMBINED TOILET BATHROOM
(7.32M X 7.10 M X 4.40 M)

Part II - TECHNICAL SPECIFICATIONS
TECHNICAL SPECIFICATIONS OF FD TOILET (BIO) (7.32M X 7.10 M X 4.40 M)

1. **Fd Toilet (Bio) (7.32 M x 7.10 M x 4.40 M Height)** Pre-fabricated PUF shelter of size 7.32m x 7.10m with Rectangular Hollow Section (RHS) frame conform to IS – 4923: 1997 grade Yst 240. The shelter shall have dimensions as per the drawings number CE, 4 Corps/PUF/ FD TOILET (BIO) (7.32M) having four sheets from sheet No 1/4 to 4/4 attached. The structure shall conform to IS 2062 and fabricated and supplied on the basis of parameters as given under. The walls shall be made up of 40mm thick composite PUF panel sandwiched between PPGI sheets as enumerated in the detailed specifications. Roof shall be provided with 40mm thick composite PUF panel sandwiched between PPGI sheets. The shelter is to be installed on the concrete platform (to be constructed by department). The structure shall be suitable for wind conditions, seismic zone and snow load as mentioned in the specification below

2. **Design Criteria**

(a)	Seismic	-	As applicable for seismic Zone V
(b)	Snow load	-	1.5m standing on roof
(c)	Live loads	-	120-150 Kg/Sqm
(d)	Wind speed	-	55 m/s (As per IS-875)
(e)	Temperature	-	(-) 40 ° to (+) 50 °
(f)	Length	-	7.32 m
(g)	Width	-	7.10 m
(h)	Height(Ridge)	-	4.40 m
(h)	Height (clear up to false ceiling)	-	3.00 m
(j)	The shelter shall be made of pre-fabricated steel structure conforming to IS 4923 of 1992 and IS 2062 of 1984.		

(k) Roof covering shall be provided with PPGI sheets of 0.60 mm. The roof truss shall be designed for 1.5 m standing snow load and roof slope shall be 1:2.

3. **Workmanship**

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

(b) **Fabrication** The general provisions in section 11 of IS 800 of 2007 shall apply to all types of steel being used for fabrication.

(c) **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 shall be provided for the items to be fitted at the time of erection. 10% of (in number) spare nuts, bolts, STSD screws and washers shall be provided per shelter. The fasteners supplied shall conform to relevant BIS specification.

4. All steel items shall be procured from primary manufacturers e.g. SAIL / JSW / TATA STEEL / ESSAR conforming to relevant IS specifications and all accessories shall be ISI marked.

5. **Finish** All steel work shall be given two coat of anti corrosive red oxide zinc chromate primer and one coat of synthetic enamel Paint (Make Berger / Nerolac / Asian) by the manufacturer in the factory. Thereafter, one coat of synthetic enamel Paint shall be applied at site on prepainted surface (Paint of 20 ltr with thinner(qty as per appropriate mix) and two painting brush of size 4" to be supplied by the vendor).

6. **Panel Joining Arrangements** Each panel shall be completed with tongue and groove joint and provided with cam locks to ensure rigid interlocking between wall panels & Tongue & Groove system for false ceiling.

7. **Sunshades.** Suitable sunshades made out of PPGI Sheets & angle iron frame of 35 x 35 x 3 mm and flat iron 35 x 3 mm shall be provided to all external doors. The minimum projection for the sunshades will be 450 mm and 300 mm wider than the width of the doors.

8. **PUF Insulated Wall Panels.**

(a) All materials required for the manufacture of shelter shall be new and shall comply with relevant Bureau of Indian Standard specification and bear the mark.

(b) The main walls shall be made up of 40 mm thick and partition walls shall be made up of 40mm thick composite PUF panel sandwiched between PPGI sheets. 0.50 mm thick hot dipped galvanized steel sheets (Total coated thickness 0.54mm) on both side with 40 mm thick layer of rigid CFC free close cell polyurethane foam (Density 40 Kg \pm 2 Kg /Cum) insulation sandwiched panels. The wall panels shall be provided with cam lock systems for inter locking. The PUF panel sandwiched between PPGI sheets shall have fire retarding and self extinguishing properties as per any international standard B2 DIN 410 3 Part I.

9. **Partition Wall Panel.** All PUF insulated partition wall panels of 40 mm thick shall be provided up to the height of 3.00m.

10. **GI Metal Skin PUF Panels.**

(a) Thickness of Skin - 0.50 mm thick hot dipped galvanized steel sheets (Total coated thickness 0.54mm) on inner and outer side with 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. Make : UniFix/ Jindal Mectec or equivalent brand with IS specification.

(b) The panels shall be insulated with PUF Foam.

(c) These panels shall 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 shall be 40 Kg and the impending machinery shall 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 shall have minimum coating of 4-5 micron epoxy primer and 25 micron polyester top coat on the finished surface and 7-8 micron primer alkyl base on reverse, which is bounded to the polyurethane foam. The pre coated GI sheet shall conform to IS-14246-1995 with manufacture test certificates conforming above specification.

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

(i)	Density per cum.	- 40 \pm 2 Kg
(ii)	Compressive Strength at 10% deformation	- 2.10 Kg/cm ²
(iii)	Tensile Strength	- 3.7 Kg/Cm ²
(iv)	Bending Strength	- 4.0 Kg/Cm ²
(v)	Adhesion Strength	- 2.90 Kg/Cm ²
(vi)	Dimensional Stability (48 hours)	
	(aa) 25 ° C	- 0.10%
	(ab) + 38 ° C & 90% RH	- 0.10%
	(ac) + 100 ° C	- 0.40%
(vii)	Close cell content	- 90 – 95%
(viii)	Temperature Range	- (-180 ° C to + 110 ° C)
(ix)	Thermal conductivity at 10 ° C	-0.018k-cal/m-hr° C
	(Design value 0.020k-cal/m-hr° C or 0.023 W/m-k)	

(x) Fire Resistant	-(Horizontal Extent of burn BS 4735)<125mm
(xi) Self Extinguishing ASTM D 1692 (Fire retarded foam chemical) Not easily ignitable as per BS : 476Pt 5 Class-I as per BS:476 pt 7.	- Passes
(xii) Water Absorption	- 0.20% volume at 100% RH
(xiii) Water Vapour Permeability	- 0.08 – 0.12 gms /hr m ²

(f) The Iso – cyanide and polyol liquid components used for in situ process of polyurethane foam for panels shall be accompanied with manufacture's test certificate indicating batch numbers, date of manufacture and expiry dates.

(g) All panels shall 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 desired finish, bonding and structural properties. All panels shall be manufactured in single piece as per approved panel layout drawings using the above materials and manufacturing process. The wall panels at the corners shall be joined by PPGI corner angles. The wall panels shall also have PPGI top trade. As all flashings are of PPGI, no welding shall be allowed. The PPGI angle and flashings shall be banded riveted to form desired shape and size.

(h) The inside colour of panels shall be white. The outside colour of wall panel shall be Bus Green / Camouflage Pattern shade No 0209 of Asian paints or equivalent in Nerolac / Berger. The L1 vendor should submit the sample colour / Camouflage Pattern to the Accepting Officer within 15 days of placing of the supply order for the final approval. Clarification if any will be referred to Accepting Officer, choice of Accepting Officer is deemed to be final.

11. **Doors.** Two numbers powder coated Aluminium door (D) of size 1000 x 2095 mm shall be provided. Door frame shall be made up of suitable Aluminium profile sections weighing 0.55 Kg/m. Door shutter shall be of 25mm thick puf panel fixed with aluminium lapping all around. The door shall be provided with aluminium aldrops 300mm long, two numbers Tower bolts of 200 mm & two numbers Aluminum D type handle of 150mm length.

12. **Toilets.**

(a) **Doors.** Ten numbers of PUF Panel doors of thickness 25 mm with aluminium 'C' section lapping all around and size 750 mm x 2095 mm shall be provided to each toilet with all necessary fixtures including three hinges stainless steel. The door shall be provided with aluminium aldrops 300mm long, two numbers Tower bolts of 200 mm & two numbers Aluminum D type handle of 150mm length. The doors shall be integrated along with partition walls.

(b) **Ventilator.** Ventilators shall be provisioned at sill height of 600 X 450 mm. Twelve numbers of louver type aluminium ventilators of 600 mm x 450 mm with all fittings and fixtures shall be provided. Glazing shall be provided with 8mm thick multi-walled polycarbonate sheet. Four Nos of ventilators should be facilitate for fixing of fresh air fan of size 300mm sweep out of its size. Top portion of Twelve Nos ventilator should facilitate for fixing of fresh air fan.

13. **Roof.**

(a) **PPGI Sheet Specification.** Thickness of roofing sheet shall be - 0.80 mm with guard film. The PPGI sheet shall have minimum coating of 4-5 micron epoxy primer and 18-20 micron polyester top coat. The top of PPGI shall have a Guard film of 30-40 micron on the finished surface only for protection against-scratches during handling and transportation. The pre coated GI sheet should conform to IS-14246-1995 with manufacture test certificates conforming for the above specification. Base metal of PPGI shall be of CRCA as per IS-513 & Galvanizing of 120gsm as per IS-277. Make : UniFix / Jindal Mectec or equivalent brand with IS specification :-

(b) Roof members and Columns shall be designed to take one meter standing snow over roof, the steel shall be conforming to IS – 1161 of 1979 or IS – 1984. The roof shall be provided with 0.80 mm thick PPGI sheets Make : UniFix / Jindal Mectec or equivalent brand with IS specification with depth of crest -28-30 mm, pitch 195-200 mm. Sheet covering shall be fixed with using hot dip zinc coated self drilling hexagonal washer head fasteners. Ridge shall be covered by a colour coated steel sheet of size 600 mm wide and 0.80 mm thick, 50 mm wide Foam Filler of appropriate shape shall be placed/ fixed in all the gaps between the

corrugated PPGI roof sheets and the Ridge cover to prevent reverse flow/leak of snow/rain water/Air. Each Foam filler shall be secured to the roof sheets through double-sided adherence Industrial tape. Self tapping self drilling (STSD) screws are fixed on each ridge of PPGI sheet in all purlins of the Roof. All overlaps between sheets shall also be tightened using STSD screws. All the (STSD) screws should be fully tightened. The inside colour of sheet shall be white. The outer colour of Roof sheet shall be bus green Green / Camouflage Pattern shade No 0209 of Asian paints or equivalent in Nerolac / Berger. The L1 vendor should submit the sample colour / Camouflage Pattern to the Accepting Officer within 15 days of placing of the supply order for the final approval. Clarification if any will be referred to Accepting Officer, choice of Accepting Officer is deemed to be final.

(c) **Roof Projection** The roof shall have minimum projection of 0.45m from the eaves wall and 0.30m from the gable end. Purlin shall also be in the roof at the eaves and at gable roof extension (outside the structure).

(d) **Gable End** Gable end shall be covered with same panels as of wall. These panels to be fixed on arrangements made on the end trusses..

(e) **Bird Board** Bird Board of size minimum 30cm width will be provided of PPGI sheet 0.60mm thick in shape best suited for aesthetics of the shelter. The bird boards will ensure no gaps with suitable over lapping where required. The bird board will be painted in the same colour as of walls.

(f) **Ridge Cover** Provided with 0.80 mm thick pre-coated plain sheet matching with the roof sheet of size 3.0m long and 0.60m wide.

(g) **Sealing Material** Silicon sealing materials as per standard IS specification which is capable of withstanding temperature varying from ± 40 degree centigrade be provided to seal at all joints between PUF panels.

14. **Fresh air fans** The provision of openings for the fresh air fans to be provided in the following.
(a) Toilets. Alternate toilets As per para 12 (b) above.

15. **Details of Structural Members.**

(a) All steel items shall be procured from primary manufacturers e.g. SAIL / JSW / TATA STEEL / ESSAR conforming to relevant IS specifications and all accessories shall be ISI marked.

(b) The roof shall be laid over a framework of trusses, purlins and columns fixed using STSD screws.

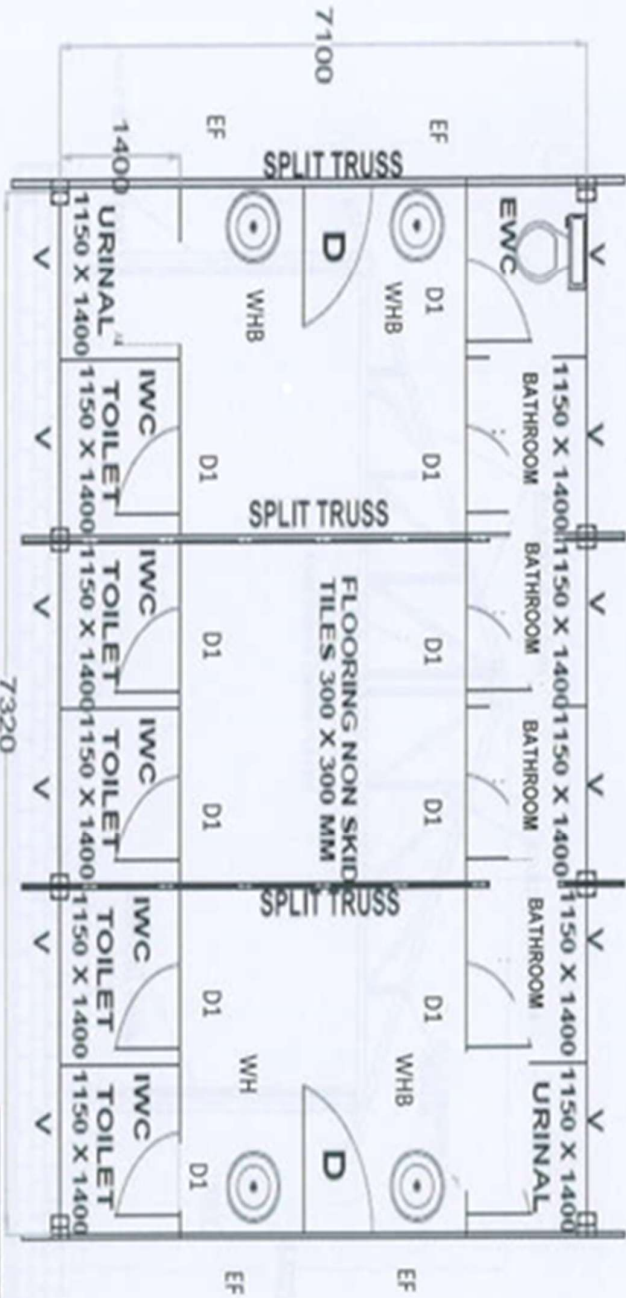
(c) The main frame of trusses shall be made using rectangular hollow steel sections of size 80 x 40 x 3.2 mm conforming to IS: 4923: 1997. Inner stiffeners of trusses shall be made using rectangle hollow steel sections of size 50 x 25 x 2.9 mm. Split trusses shall be joined using connection plate of 6mm thick with nuts and bolts. The trusses shall be provided at distances as per drawing enclosed and shall be supported on truss columns made using rectangular hollow steel sections of size 122 x 61 x 3.6 mm conforming to IS: 4923: 1997 fixed with each using 6 mm thick MS top end plates of size 150mm x 200mm and 10 mm dia nut/bolts at top level. The columns shall be welded with 6 mm thick MS bottom end plates of size 170mm x 220mm and shall be fixed to the foundation bolts through this plate.

(d) The purlins shall be made using RHS of size 96 x 48 x 3.2 mm thick confirming to IS: 4923: 1997 provided on the trusses and are fixed with the truss.

16. **Civil Works** Foundation, plinth protection, flooring and all related works shall be executed departmentally.

17. **Foundation.** The following material shall be provided by the firm:-
- (a) **Bolts.** Stanchion proposed shall have base plate, holding down high tensile strength bolts (0.45 meter long and 12 mm diameter) and nuts for embedding into concrete.
 - (b) **Base Plate.** 6 mm thickness.
 - (c) Template for casting of foundation bolts.
18. **Wind Tie.** Four numbers of Wind tie shall be provided on both side Slopes of roof longitudinally with FI 40 x 4mm including adequate fixing arrangements for protection of PPGI sheets. The colour of wind tie should match with that of roof.
19. **Materials.** All materials required for manufacture of the shelter shall be new and shall comply with relevant bureau specifications and bear the mark.
20. **Minor Details.** Details not mentioned in the specifications but required as per sound and good engineering practice shall be provided by the supplier, after obtaining written clearance from the Chief Engineer HQ 4 Corps. Only superior specifications shall be accepted,
21. **Welding.** Proper welding joint shall be formed where specified as per the design. All welding works shall be continuous and butt-fillet type, as per IS: 823 – 1964 and IS: 816 – 1976.
22. **Rain Water Harvesting.** Eaves gutter shall be provided on both sides with PPGI Sheet, duly painted matching the roof colour. Galvanized class 3 (three) thickness of sheet shall be 0.6mm and 200 x 200 x 200mm. It shall be fixed to truss with adequate fixing arrangements. Both ends of eaves gutter should be sealed with PPGI sheet and one end shall be provided 3.0 m length and 110mm dia PVC pipe with necessary fixing accessories and fittings for water collection tank placed by user.
23. **Internal Fittings.** Fd Toilet (Bio) of size 7.32 M x 7.10 M x 4.40 M height is to be provided with 05 x IWC, 01 x EWC, 02 x Urinal , 04 x Wash basin & 04 x Bathroom complete in all respect as specified in drg.
23. **User Manual.** L1 Vendor shall submit hard and soft copy of the user manual to include the store list, photographs of parts for easy identification and drawings along with connected literature to the Accepting Officer within 15 days of placing the supply order and to the paying authorities at the time of delivery.

FD TOILET (BIO) (FD TOILET (BIO) (7.32M X 7.10M X 4.40M HEIGHT)

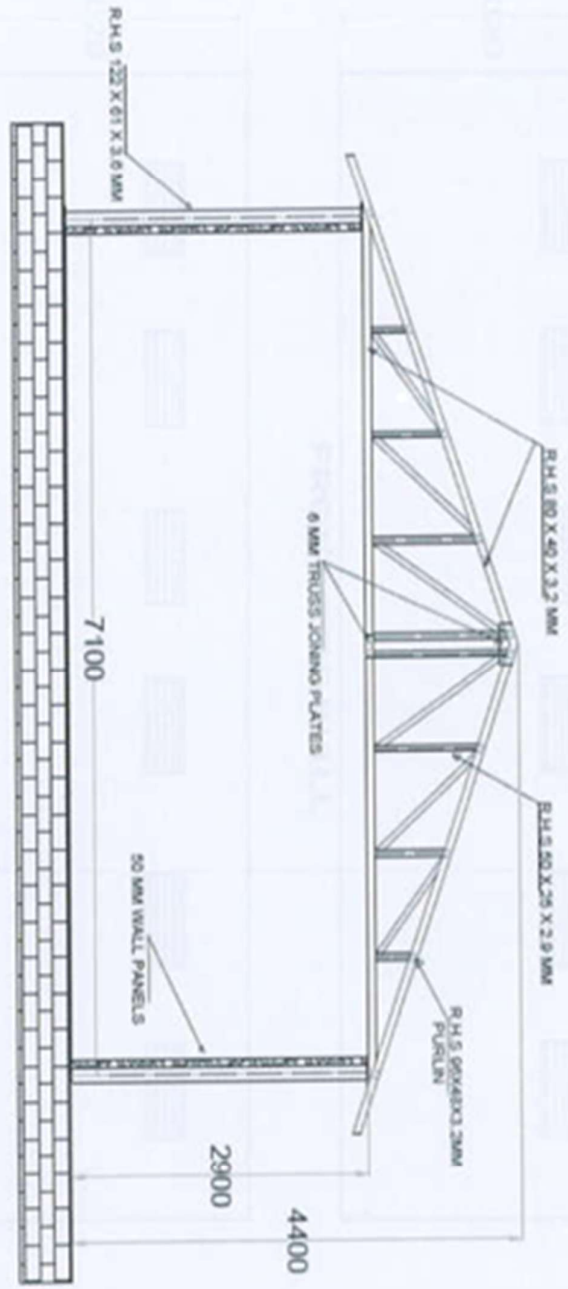


LAYOUT PLAN
 FD TOILET (BIO) 7.32 X 7.10 MTR X 4.40 M HEIGHT

- LEGEND**
- D = MAIN DOOR (1000 X 2095 MM)
 - D1 = DOOR (750 X 2095 MM)
 - V = VENTILATOR (600 X 450 MM)
 - EF = 300 MM SWEEP EXHAUST FAN

CHIEF ENGINEER HQ 4 CORPS			
Drng Name	FD TOILET (BIO) 7.32 X 7.10 MTR		
DRG NO:	CE 4 CORPS/PUF/ FD TOILET (BIO) (7.32M)		
Approved by			
Date:-			
SCALE	NTS		SHEET 1/4

[FD TOILET (BIO) (7.32M X 7.10M X 4.40M HEIGHT)]

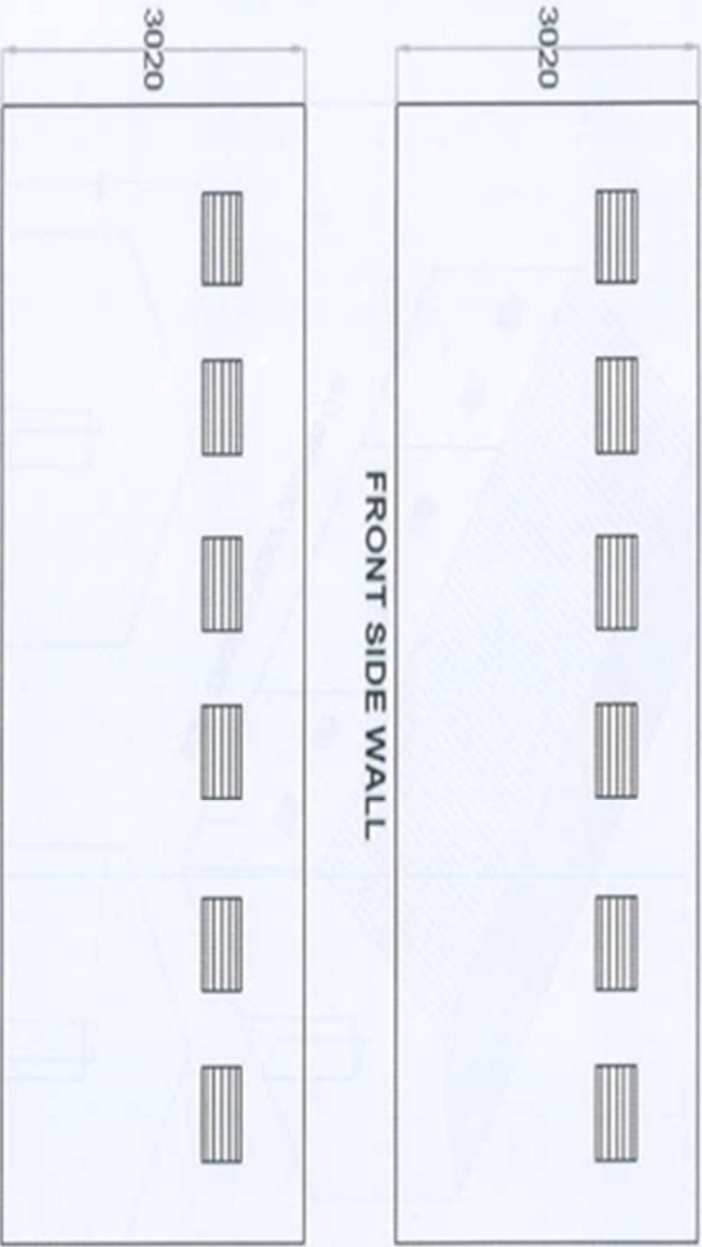


TRUSS PLAN

FD TOILET (BIO) 7.32 X 7.10 MTR X 4.40 M HEIGHT

CHIEF ENGINEER HQ 4 CORPS		
Drq Name	FD TOILET (BIO) 7.32 X 7.10 MTR	
DRG NO:	CE 4 CORPS/PUF/ FD TOILET (BIO) (7.32M)	
Approved by		
Date:-	SCALE NTS	SHEET 2/4

FD TOILET (BIO) (FD TOILET (BIO)) (7.32M X 7.10M X 4.40M HEIGHT)



REAR SIDE WALL

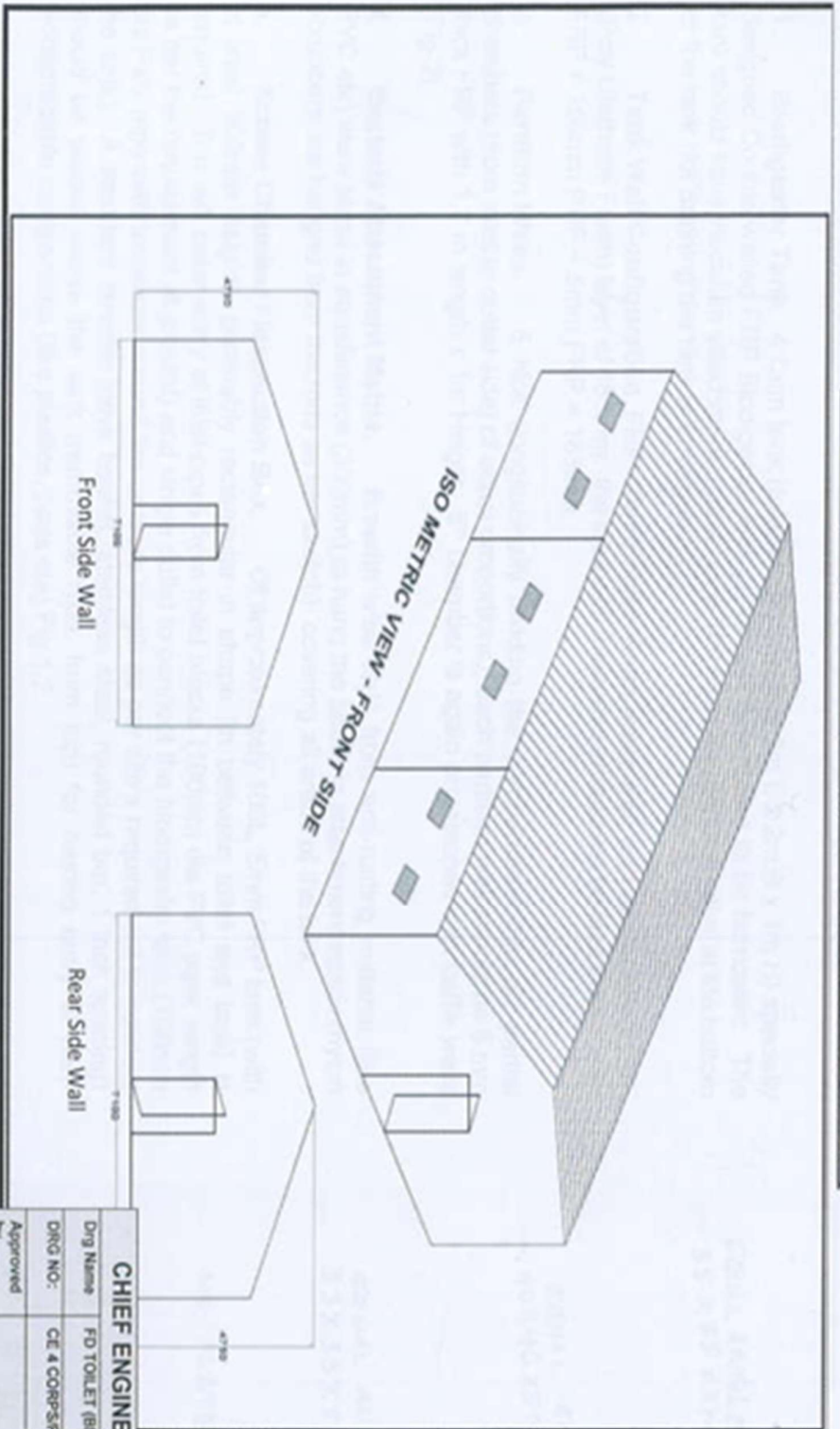
FRONT SIDE WALL

3020

3020

CHIEF ENGINEER HQ 4 CORPS			
Drwg Name	FD TOILET (BIO) 7.32 X 7.10 MTR		
DRG NO:	CE 4 CORPS/PUF/ FD TOILET (BIO) (7.32M)		
Approved by			
Date:-	SCALE MTS		SHEET 3/4

FD TOILET (BIO) (FD TOILET (BIO)) (7.32M X 7.10M X 4.40M HEIGHT)



CHIEF ENGINEER HQ 4 CORPS		
Draw Name	FD TOILET (BIO) 7.32 X 7.10 MTR	
Draw NO:	CE 4 CORPS/PUR/ FD TOILET (BIO) (7.32M)	
Approved by		
Date:-	SCALE	SHEET
	MTS	44

SPECIFICATION OF HIGH ALTITUDE BIODIGESTER TANK 4 CUM

1. **Biodigester Tank.** 4 Cum tank (Internal dimensions: 2m L x 2m B x 1m H) specially designed Double walled FRP Biodigester leak proof tank is required to be fabricated. The tank should have inoculum attachment matrix. One 100 mm pipe with ball valve at the bottom of the tank (for draining the tank in emergency).
2. **Tank Wall Configuration.** FRP 10mm outer, 5mm inner wall with sandwiched PUF (Poly Urethane Foam) layer of 150mm. the total wall thickness should not be less than 10mm FRP + 150mm PUF + 5mm FRP = 165mm.
3. **Partition Walls.** 5 Nos (longitudinally dividing the compartment into six partial chambers (from inlet to outlet side) of equal proportions); each partition wall should be 5 mm thick FRP with 1.7 m length x 1m Height. 6th chamber is again provisioned with baffle walls (Fig-2).
4. **Bacteria Attachment Matrix.** Breadth wise rods from anti-rusting material (like PVC etc) were place in equidistance (300mm) to hang the bacteria attachment matrix (nylon scrubbers are hanged from the rods as per sketch) covering all areas of the tank.
5. **Screen Chamber / Inspection Box.** Of approximately 100L, 5mm FRP tank (with at least 500mm height), preferably rectangular in shape (in between toilet and tank) is required. This will cater entry of inlet pipes from toilet blocks (100mm dia PVC pipe; length as per the requirement at ground) and single outlet to connect the biodigester tank (100mm dia PVC pipe with minimum around 3m or more length as per site's requirement to connect the tank). A standard strainer sieve basket (stainless steel, rounded bar, 1 inch spacing) should be placed inside the tank (removable type, from top) for barring entry of non-biodegradable components (like plastics, pads etc) Fig 1.2.
6. **Inlet Pipe Into The Biodigester Tank.** From the junction box. 100mm dia PVC pipe with door bend; should travel inside the tank 50% downward from the tank's cover rooftop (i.e, as tank is of 100mm of height, the inlet pipe should be of 500mm from the roof of the cover of the tank). Outlet pipe from the tank to the secondary treatment (as specs given below); should be 100 mm diameter (T type, with one extension above the roof top, with appropriate cover and another will form the outlet from the side wall). The pipe should be 300mm long inside the tank (i.e, 30% height of the tank). Entry of inlet should be from top of the tank, while effluent exit from the side wall (100mm below from top cover).
7. **Thermostatically Controlled Heating Elements.** Two sets of thermal sensors and thermostats are required that will control the water temperature around $30 \pm 2^\circ\text{C}$ inside the tank. Required customized 2 sets of heating elements (each element 1200mm L (dipped inside the tank in SS case) x 10mm dia) total 1200w (one set : heating elements : 200w x 3 =600 watts x 2sets; each set independently controlled thermostatically, displayed in sensor display box); provision of changing the heating elements, sensors as and when required; each heating element should be emersed in a proper SS case (with screw cap) having high term oil. Necessary electric wires, cables, MCB, switches must be incorporated to connect at site from electric sources(s).
8. **Base of harstanding .** The dimensions of Harstanding 2.4m L x 2.4m B . Layers of PCC shall be 150 mm thk PCC 1:4:8 and 150 mm thk PCC 1:3:6 over 150 mm Hard Core. The work shall be carried out as per specification and the direction of the Engineer in-Charge. Admixture.

-2-

- 8.1 Cement. All cement and concrete work should add admixture (Make : CICO/FOSROC/Roff/Pidilite/Somani/JK Birla ISI equivalent) as per the manufacturing instructions and climatic condition.
- 8.2 Concrete. All plain cement concrete shall be as per IS-456 (2000) as amended up to date for minimum 1: grade.
- 8.3 Aggregate. Coarse aggregate for all cement concrete work, unless otherwise specified shall be crushed and graded hard stone. Coarse aggregate and fine aggregate (sand) shall be approved by the consignee and shall conform to IS-383.
- 8.4 Water. Quality of water to be used for mixing and curing of concrete work shall conform to the requirement of clause No 5.4 of IS-456 (2000) and to ensure that the water used for making concrete or mortar and for curing conform to IS-456.
9. Test parameters as given below or amendments, if any:
- 9.1 Tank should not leak while filling with water up to the top.
 - 9.2 Specific gravity 1.5 ± 0.05 (test standard : BIS IS 13360-3-1 : 1995 (R 2003))
 - 9.3 Glass Fiber content $>30\%$ (test method : IS 12986)
 - 9.4 Water absorption: Max 0.5% (test method IS 12966-89, Annex A)
 - 9.5 Tensile strength : $>400 \text{ kg/cm}^2$ (Test method : IS 1998-62)
 - 9.6 Cross breaking strength : $> 250 \text{ kg/cm}^2$ (test method IS 1998-62)
 - 9.7 Impact resistance $>120 \text{ J/m}$ (test method IS 1998-62)
 - 9.8 Film should provide a certificate of tests of test parameters b-h from a NABL laboratory or Government of India approved laboratory.
10. Climatic parameters.
- 10.1 Seismic Zone Zone V
 - 10.2 Snow load : 1m.
 - 10.3 Wind speed : 55 m/s
 - 10.4 Temp : -40°C
11. **Installation At Sites.**
- 11.1 Final assembly /fitting of individual biodigester must be carried out a designated site of installation and subsequent connection with existing toilet block must be done to complete the installation.
 - 11.2 All pipes, portion walls attachment matrix, gaskets (wherever required) should be properly fitted so to make the system leak -proof. Suitable resin/fiber mat may be used at installation site, if required.
 - 11.3 Proper digging and levelling of soil to be carried out for installation of Biodigester.

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11.5 Anaerobic microbial inoculum (AMI) of 1200L is to be provided to each biodigester tank through screen chamber after final assembly and before handing over. AMI should be procured from DRDO approved facility, prior to charging (into the Biodigester) the quality must be having certification from Defence Research Laboratory, DRDO, Tezpur. However, DRL reserves right to check the quality of inoculum at the installation site, also.

11.6 The exact site of installation will be provided to the successful bidder. In general, transportation and installation site should be at forward locations or northeast Himalayan region of Arunachal Pradesh.

11.7 Two-year Warranty must be inclusive (for all digester components and maintenance).

11.8 Inspection of Biodigester. A joint team (including member from DRL) will inspect the Biodigester after fabrication for quality assurance prior to shipment of first total factory.

Fig 1. Schematic representation of Screen chamber, & biodigester

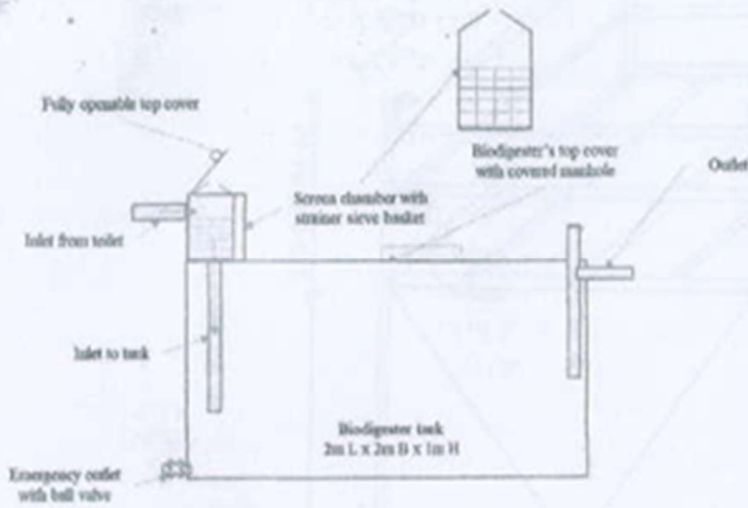
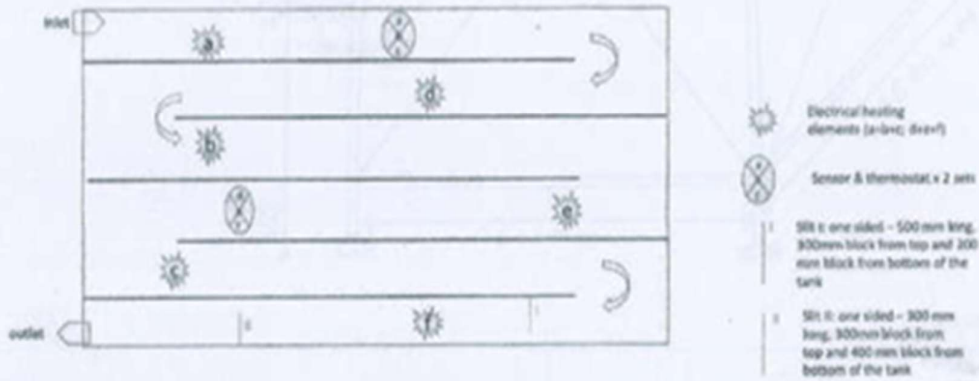
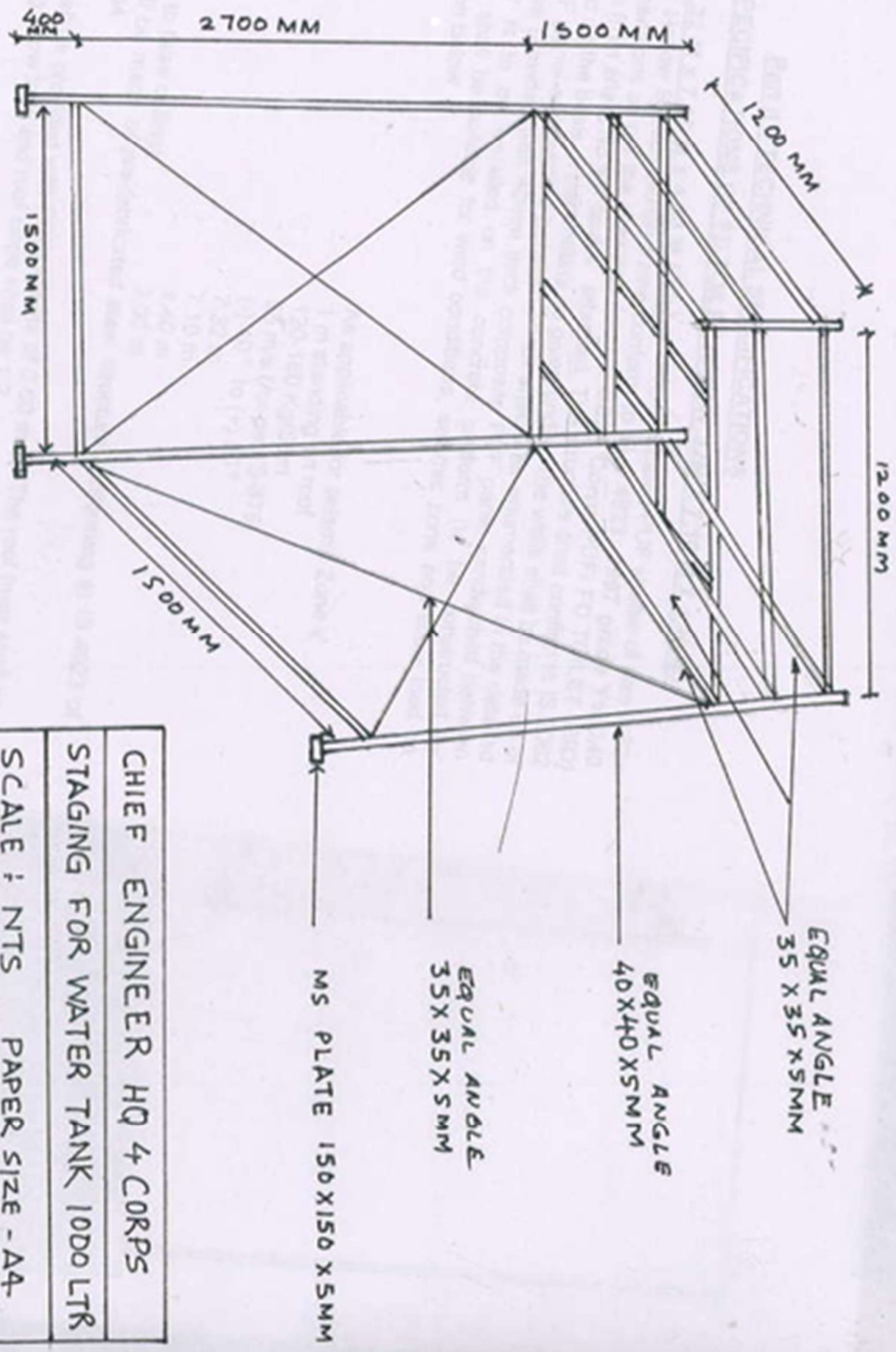


Fig 2. Schematic representation of biodigester tank with heater and thermostat modules



STAGING FOR WATER TANK (1000LTR)



CHIEF ENGINEER HQ 4 CORPS
STAGING FOR WATER TANK 1000 LTR
SCALE : NTS PAPER SIZE - AA-
DATE : MAR 2026
SHEET NO : 5/5

