ITI LIMITED

Network Systems Unit

ESG Office

C/o. HQ 5 Sig Group,
Opp. HQ Western Air Command,
NH-8, Asmara Lines,
Delhi Cantt. 110010.

www.itiltd-india.com
civil_nsu@itiltd.co.in

CIVIL ENGINEERING DEPARTMENT

Tender for Construction of Forward Communication Hubs [FCH-Nodes] including Access control system, Video surveillance system, Physical intrusion system, Fire suppression & prevention systems, etc., works for the National Importance project in Jammu, Kashmir, Himachal Pradesh & Uttarakhand region. [Two bid system].

Sl. No.	ITEM	DESCRIPTION
1	Tender No.	ITI/NSU/CIVIL-DEL/2023/0106/01 dated 15-03-2023.
2.	Sale of Tender document	Available on ITI e-Tendering portal www.itiltd.in or https://itilimited.euniwizarde.com/
3.	Bid Submission Start Date	16/03/2023 from 03:00 P.M.
4.	Bid Submission Last Date	30/03/2023 Up to 03: 00 P.M.
5.	Bid Opening Date	30/03/2023 Up to 03:30 P.M.
6.	Tender Fee	Rs. 10,000/- [Exclusive of GST @ 18%, i.e., Rs. 11800/-]
7.	Tender Opening Address	**General Manager-(CIVIL)** ITI Limited ESG (ASCON), C/o. HQ 5 Sig Group, Opp. HQ Western Air Command, NH-8, Asmara Lines, Delhi Cantt. 110010.

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ITI LIMITED

NOTE: COUNTER OFFERS/CONDITIONAL OFFERS IF MADE WILL NOT BE ACCEPTED AND SUMMARILLY REJECTED

Tenderer:

Shri/ M/s
……....
…….
…….
To,

General Manager-(CIVIL)
ITI Limited ESG (ASCON),
C/o. HQ 5 Sig Group,
Opp. HQ Western Air Command,
NH-8, Asmara Lines,
Delhi Cantt. 110010.

Tender for Construction of Forward Communication Hubs [FCH-Nodes] including Access control system, Video surveillance system, Physical intrusion system, Fire suppression & prevention systems, etc., works for the National Importance project in Jammu, Kashmir, Himachal Pradesh & Uttarakhand region. [Two bid system].

Dear Sir,

I/We have read and examined the following documents relating to the above works for the Communication Project.

a. General Notice & intimation to the tenderer.

b. Specifications, Bill/Schedule of Quantities, and Schedule of rates & Special conditions.

c. Drawings (Indicative for the tender purpose only)

d. General conditions of contract including Contractor's Labour Regulations, Model Rules for Labour Welfare and Safety Code appended to these conditions together with the amendments thereto.

I/We hereby tender for the execution of the works referred to in the aforesaid document upon the terms and conditions contained or referred to therein and in accordance in all respects with the specifications, designs, drawings, and other relevant details at the rates contained in the schedule of rates and within the period(s) of completion as stipulated for the total sum of Rs----------

In consideration of I/We being invited to tender, I/We agree to keep the tender open for acceptance for 120 days from the date of opening of the Technical bid thereof and not to make any modification in its terms and conditions which are not acceptable to the Company.

A sum of Rs.---------- is hereby enclosed a Bank Draft / Banker's pay order as earnest money. If we fail to keep the tender open as aforesaid or make any modifications in the terms and conditions of the tender which are not acceptable to the company, I/We agree that the Company shall without prejudice to any other right or remedy be at liberty to forfeit the full earnest money.

Should this tender be accepted, I/We hereby agree to abide by and fulfil all the terms, conditions, and provision of the aforesaid documents.
I/We further agree that in case my/our tender is accepted to deposit the additional Security amount of 3% in the form of Bank Guarantee Performance Security deposit under the General Terms and Conditions enclosed herewith.

If, after the tender is accepted, I/We fail to commence the execution of the works as provided in the conditions, I/We agree that the company shall without prejudice to any of their right or remedy be at liberty to forfeit the said total earnest money absolutely i.e. Rs. ----------. I/We attach herewith by Me/Us statement showing the details of construction works carried out for reference and to substantiate my/our experience and capacity to carry the work on tender.

Our Bankers
are**……**
……
……..

I/We also undertake to complete all works and hand over the same in a satisfactory manner to the company or their authorized representatives **within the stipulated time as mentioned in the NIT** from the 15th day of the orders issued to start the works.

I/We understand and note that the decision to entrust the above to the lowest tenderer or otherwise rests with the company.

Yours Faithfully,

(CONTRACTOR/S)

Address:

Dated:

Signed in the presence of

1. Witness**……**

   Address**……...**

   Date:**……**

2. Witness**……**

   Address**……**

   Date**:……**

NAME OF FCH NODES- TABLE –A

Ser No.	Node Name	Tender Group
Uttarakhand sites [05 sites]- Group-1		
1	Harsil	**Group-1**
2	Nelang	
3	Kalapani	
4	PDA	
5	Chhiyalek	
Uttarakhand sites [08 sites]- Group-2		
1	Geldung	**Group-2**
2	Goting	
3	Malari	
4	Lapthal	
5	Rimkhim	
6	Sumna	
7	Gunji	
8	Jibti	
Kashmir Sites [11 sites]- Group-3		
1	Balbir	**Group-3**
2	Baraf	
3	Chamkot	
4	Guguldhar	
5	Jogi	
6	Kissan	
7	NC Pass	
8	Shararat	
9	TMG	
10	Ustad	
11	Vayu	
Himachal Sites [02 sites]- Group-7		
1	Malling	**Group-7**
2	Shipki La	

Ser No.	Node Name	Tender Group
Kashmir Sites [10 sites]- Group-4		
1	Baaz	**Group-4**
2	Cheema	
3	Himmat	
4	Kaman Post	
5	Kathi	
6	Mike	
7	Padam	
8	Rustam	
9	Torna	
10	Two tree	
Kashmir Sites [09 sites]- Group-5		
1	Baraub	**Group-5**
2	Chakkigam	
3	Kanzalwan	
4	Naini	
5	Niru	
6	Pt4040	
7	Rana	
8	T Shuntwari	
9	SP Gali	
Jammu Sites [06 sites]- Group-6		
1	Jhangar	**Group-6**
2	Gulpur	
3	KDL 478	
4	Lam	
5	Pir Bhadeshwar	
6	FDL 640	

ITI LIMITED

IMPORTANT PARTICULARS: BUILDING WORKS [FCH-NODES]

SL NO.	DESCRIPTION	INFORMATION
1	Reference No. of Tender Document	ITI/NSU/CIVIL-DEL/2023/0106/01 dated 15-03-2023.
2	Date of Issue of Notice Inviting Tender	15-03-2023
3	Last Date & Time for Submission of Bids	30-03-2023 AT 03 PM
4	Date & Time of Opening of Technical Bids	SAME DAY 30-03-2023 AT 03.30 PM
5	Pre-Bid Meeting	21-03-2023 AT 11 AM to 13 hrs at the office of GM-CIVIL
6	Opening of Financial Bids	WILL BE INTIMATED LATER
7	Cost of Tender Document	Rs. 10,000 plus GST @18% i.e., Total Rs. 11,800 (Rupees Eleven thousand eight hundred only)
8	Earnest Money Deposit (EMD)	Group-1 Rs. 26 Lakhs, Group-2 Rs. 42 Lakhs, Group-3 Rs. 65 Lakhs, Group-4 Rs. 59 Lakhs, Group-5 Rs. 53 Lakhs, Group-6 Rs. 35 Lakhs, Group-7 Rs. 11 Lakhs.
9	Average Financial Turnover [Last Three Years]	Group-1 Rs. 6.64 Crs, Group-2 Rs. 10.62 Crs, Group-3 Rs. 16.47 Crs, Group-4 Rs. 14.99 Crs, Group-5 Rs. 13.48 Crs, Group-6 Rs. 8.98 Crs & Group-7 Rs. 2.65 Crs.
10	Solvency Certificate Value	Group-1 Rs. 5.3 Crs, Group-2 Rs. 8.5 Crs, Group-3 Rs. 13.18 Crs, Group-4 Rs. 11.99 Crs, Group-5 Rs. 10.78 Crs, Group-6 Rs. 7.18 Crs & Group-7 Rs. 2.12 Crs. [Issued within six month from the original last date of submission of tender.]
11	Security Deposit	Ten percent of contract value.
12	Validity	120 days from the last date of submission opening of financial bid
13	Price Escalation	NIL
14	Performance Guarantee	3% OF CONTRACT VALUE.
15	Period of Completion	12 (Twelve) Months
16	Estimated Cost	Group-1 Rs. 13.28 Crs, Group-2 Rs. 21.25 Crs, Group-3 Rs. 32.95 Crs, Group-4 Rs. 29.99 Crs, Group-5 Rs. 26.96 Crs, Group-6 Rs. 17.97 Crs & Group-7 Rs. 5.30 Crs. [Excluding GST]

Note: The tender documents can be downloaded from the Company website www. itiltd. in or https://itilimited.euniwizarde.com/ **and from Government portal e**procure.gov.in
Corrigendum: Any corrigendum/addendum/errata in respect of the above tender shall be made available at our official website www.itiltd.in. or https://itilimited.euniwizarde.com/ **No further press advertisements will be given. Hence, all bidders are advised to check the ITI ltd website regularly. Documents submitted in connection with Pre-Qualification will be treated confidential and will not be returned.**

SECTION - I

NOTICE INVITING TENDER

ITI ltd invites item rate offers from Class I/Class-II registered contractors in CPWD or equivalent registration under MES, State PWDs, or Central / State PSUs/ ITI Ltd for the tender for construction of Forward Communication Hubs [FCH-Nodes] including access control system, video surveillance system, physical intrusion system, fire suppression & prevention systems, etc., works for the national importance project [Two bid system].

NAME OF WORK : Construction of Forward Communication Hubs [FCH-Nodes] including access control system, video surveillance system, physical intrusion system, fire suppression & prevention systems, etc., works for the national importance project.

Tenders not submitted/uploaded on time will not be considered and will be summarily rejected. Tender documents shall be filled and submitted/uploaded in digitally signed format.

The tenders are invited in TWO BIDS, consisting of Technical Bid (Part-A) and Price/ Commercial Bid (Part-B).

1. ELIGIBILITY CONDITIONS FOR THE BIDDERS

I. ELIGIBILITY CRITERIA FOR PARTICIPATION IN THE TENDER

a) Should have registration certificate for **Class I/Class-II** contractor in CPWD or equivalent registration under MES, State PWDs, or Central / State PSUs/ITI Ltd.

b) Should have undertaking from OEMs of IT related works as per annexure 15A/B/C.

c) Declaration certificate for system integrator of IT related works as per annexure 15D.

Note: Class II registration will be applicable only for group 1& 7.

II. WORK EXPERIENCE FOR ELIGIBILITY.

Experience of having completed construction of similar works during the last 7 years ending 01-03-2023.

a) Three similar works each costing not less than 40% of the estimated cost put to tender.

b) Two similar works each costing not less than 60% of the estimated cost put to tender.

c) One similar work costing not less than 80% of the estimated cost put to tender.

Similar works mean construction of residential/non-residential buildings of any nos. of stories.

The experience in similar nature of work should be supported by certificates issued by the client's organization. In case the work experience is other than Govt//Semi Govt./PSU's/autonomous bodies, the completion certificate shall be supported with copies of the letter of work order as well.

The value executed works shall be brought to the current level by enhancing the actual value of work done at a simple rate of 7% per annum, calculated from the date of completion to the previous day of the last day of submission of tenders.

Joint venture/Consortia of firms /Companies shall not be allowed and the bidders should meet the criteria themselves.

III. FINANCIAL STRENGTH:

a) The average annual financial turnover on construction for the last 3 years shall be at least as specified in the tender. The requisite Turnover shall be duly certified by a Chartered Accountant with his seal/Signatures and registration number.

b) Bank Solvency Certificate issued from nationalized or any schedule Bank should be at least value specified in the NIT. The certificate should have been issued within six months from the last date of submission of tender.

c) Even though the bidders meet the above qualifying criteria, they are subject to be disqualified if they have:

i. Made misleading or false representation in the forms, statements, affidavits, and attachments submitted in proof of the qualification requirements, or record of submission of any false/fake documents.

ii. Record of poor performance such as abandoning the works, not properly completing the contract, inordinate delays in completion, litigation history, or financial failures, etc.,

iii. Participated in the previous bidding for the same work and had quoted unreasonably high or low bid prices and could not furnish rational justification for it to the Employer**.**

IV. The Technical Bid (Part-A) without the Price/Rate shall contain the following details:

e-Envelope-I [Technical Bid]

The submitted Tender shall consist of the following:

i. Cover note by the Bidder indicating name of the Company/Organization, address, communication details (mobile numbers, land line numbers, fax numbers, e-mail ids for correspondence), name of the contact person, designation of the Bid submission authority.

ii. Complete set of tender documents original as sold dully/downloaded filled and signed (digitally) by the tenderer as prescribed in the different places of the tender document.

iii. Information regarding the tenderer [organization set up] as in the Performa enclosed at Annexure- 8.

iv. Declaration regarding the Tenderers work of comparable nature and constructions organization in the Performa enclosed in Annexure –9.

v. Cost of tender documents, and EMD.

vi. Income Tax Return for the last three financial years.

vii. PAN Number and GST Registration certificate

viii. Earnest Money Deposit (EMD) as specified in the tender and Tender document fee of Rs. 10,000 (Rupees Ten Thousand Only) plus GST @18% i.e. Total Rs. 11,800 (Rupees Eleven thousand eight hundred only) shall be payable with the bid. This shall be paid well in advance of tender submission time through Demand Draft or NEFT or

bank transfer or Pay Order drawn at a Scheduled Bank/Post Office in favor of ITI Limited (N S UNIT), Dooravani Nagar, Bengaluru - 560016. The Bank details for crediting/Transferring money to ITIL is as below.

Account No: 10637729843
Bank: State Bank of India
Branch: IFB
IFSC Code: SBIN0009077
MICR Code: 560002016
Type of Account: CC A/c.

Note: The DD no. /Bankers pay order no. shall be clearly indicated on the letter head along with a scanned copy of the above payment must be uploaded during tender submission.

ix. Power of attorney in the case as an authorized representative who has signed the tender.

x. Solvency Certificate of value as specified in NIT.

xi. An integrity pact duly signed by the tenderer shall be submitted. Any bid without a signed Integrity pact shall be rejected.

xii. Undertaking from OEMs of IT related works as per annexure 15A/B/C.

xiii. Declaration certificate for system integrator of IT related works as per annexure 15D.

MANDATORY DOCUMENTS FOR ELIGIBILITY CRITERIA.

Certificate	Registration certification
Average Financial Turnover certificate of last three financial year from CA	Group-1 Rs. 6.64 Crs, Group-2 Rs. 10.62 Crs, Group-3 Rs. 16.47 Crs, Group-4 Rs. 14.99 Crs, Group-5 Rs. 13.48 Crs, Group-6 Rs. 8.98 Crs & Group-7 Rs. 2.65 Crs.
Solvency certificate	Group-1 Rs. 5.3 Crs, Group-2 Rs. 8.5 Crs, Group-3 Rs. 13.18 Crs, Group-4 Rs. 11.99 Crs, Group-5 Rs. 10.78 Crs, Group-6 Rs. 7.18 Crs & Group-7 Rs. 2.12 Crs. [Issued within six month from the original last date of submission of tender.]
EMD	Group-1 Rs. 26 Lakhs, Group-2 Rs. 42 Lakhs, Group-3 Rs. 65 Lakhs, Group-4 Rs. 59 Lakhs, Group-5 Rs. 53 Lakhs, Group-6 Rs. 35 Lakhs, Group-7 Rs. 11 Lakhs.
Work Experience certificate [Completion]	3 similar works each costing not less than 40% of the estimated cost put to tender
	2 similar works each costing not less than 60% of the estimated cost put to tender
	1 similar works costing not less than 80% of the estimated cost put to tender
GST	GST Registration certificate
PAN	PAN card copy
Company Registration certificate	Relevant documental proof should be submitted.
Company Profile	Organization setup, Previous completed projects, Ongoing work etc.
Undertaking Certificates	Litigation History
	Annexure 15A – From M/s. RBH Access Technologies
	Annexure 15B – From M/s. MOBITIX
	Annexure 15C – From M/s. OPTEX
Declaration Certificate	Annexure 15D – Declaration Certificate of System Integrator.
Other Documents	As per Tender Document

V. **e-Envelope 2 [Financial BID]**

Financial bid- consists of a document with the rate quoted in figures and words only.

Note:

- Bidder can bid for any of the groups.
- The bidder who desires to bid for two or more groups, has to submit separate EMD and Tender fee for each group.
- The bidder who-desires to bid for two or more groups, has to submit **separate financial bid** for each group.

- If the financial bid of an agency is L-1 in two groups, then his financial bid will not be opened or considered for rest of the group(s).

Thanking you
Yours faithfully

For ITI Limited
General Manager-Civil

----- END OF SECTION –I -----

SECTION - II

INFORMATION AND INSTRUCTIONS TO TENDERERS

ITI Ltd invites item rate offers from Class I/Class-II registered contractors in CPWD or equivalent registration under MES, State PWDs, or Central / State PSUs/ ITI Ltd for the tender for construction of Forward Communication Hubs [FCH-Nodes] including access control system, video surveillance system, physical intrusion system, fire suppression & prevention systems, Electrification, Roads, Drains, Water supply, and Sewerage works, etc., works for the national importance project.

ASCON Ph-IV is a Mega Communication Project of army, which is being executed by ITI LTD. As a part of this project, there are 51 Forward Communication Hubs to be constructed for army across the border area of Northern India, Western India, and Eastern India.

Tenders not submitted/uploaded on time will not be considered and will be summarily rejected. Tender documents shall be filled and submitted/uploaded in digitally signed format.

1. Interpretation to Tender Document before tenders are received:

If any person contemplating to submit a tender for the work covered in these tender documents is in doubt as to the meaning of any part of the tender documents, he may submit to the authority inviting tender a written request for interpretation or clarification thereof **within five days** of uploading of the tender. Any interpretation of the tender documents will be made only by a formal addendum issued by the authority inviting the tender whose interpretation shall be final and binding on all parties. The company will not be responsible for any other interpretation and the same will not be binding on the company.

2. Addenda:

a. Addenda to the tender documents may be issued before the date of opening of the Tenders to clarify the documents or to reflect modifications in their design or contract terms which will be published in the Company web site only.

b. All the addenda issued by the authority inviting tender shall be part of the tender document.

3. Only One Proposal

The bidder shall only submit one proposal. If a bidder submits or participates in more than one proposal, such proposals shall be disqualified.

4. Proposal Validity

The tender must remain valid for 120 days after the last date fixed for submission of tender including the extension(s) given if any.

5. Clarifications and Amendment of Bid Documents

5.1 Bidders may request clarification on any clause(s) of the Bid documents **within 5 days** from the date of uploading of Tender on the website. Any request for clarification must be sent in writing, or by standard electronic means to ITI LTD's address. ITI LTD will respond in writing, or by standard electronic means and will send written copies of the response (including an explanation of the query but without disclosing the Source of the query) to bidders. Should ITI LTD deem it necessary to amend the bid document as a result of a clarification or any

other reasons it shall do so. However, ITI LTD reserves the right to respond to the queries after the cut-off date as mentioned above.

5.2 At any time before the submission of tender, ITI LTD may modify/ amend the bid document and extend the last date of submission/ opening of the tender by issuing a corrigendum/addendum.

Any Corrigendum/Addendum thus issued shall form part of tender document and shall be posted only on website www.itiltd.in, or https://itilimited.euniwizarde.com/ or www.eprocure.gov.in, and the bidders are thus advised to update their information by using said website. To give the bidders reasonable time to take an amendment into account in their bids and on account of any other reasonable circumstances, ITI LTD may at its discretion, extend the deadline for the submission/ opening of the tender.

5.3 Bidders desirous of seeking clarifications on the Tender, may send their queries through email to: civil_nsu@itiltd.co.in also on https://itilimited.euniwizarde.com/ , Ph:08651991828.

5.4 On the Bid opening day, only technical bids will be opened. The Bidders who are desirous of attending bid opening may do so as per the e-Tendering process (TOE).

5.5 Bids without authenticated proof of Bid document fee, EMD and other technical compliances as required and prescribed in this Tender, will be rejected.

5.6 The date for opening the financial bids will be communicated to all technically qualified and eligible bidders separately, through registered email.

5.7 The address for all correspondences regarding this Tender shall be marked to GM (CIVIL), NS Unit, ITI Limited through E-mail: civil_nsu@itiltd.co.in

5.8 The offers prepared by the Bidders and all the correspondences and documents relating to the offers submitted/exchanged by the Bidder, shall be written in English language.

5.9 ITI reserves the right to suspend or cancel the Tender process at any stage, or to accept, or reject any, or all offers at any stage of the process and / or to modify the process, or any part thereof, at any time without assigning any reason, without any obligation or liability whatsoever and the same shall be published in the ITI website or intimated through email.

5.10 ITI Ltd does not take any responsibility for the delay caused due to non-availability of internet connection or sever/traffic jam, etc. for online biding.

5.11 The Bidder shall bear all costs associated with the preparation and submission of its Tender, including cost of presentation for the purpose of clarification of the offer, if so desired by ITI.

5.12 At any time prior to the last date for receipt of offers, ITIL, may, for any reason, whether at its own initiative or in the response to a clarification requested by the prospective bidders, modify the Tender document.

5.13 Also, ITI may, at its discretion, extend the last date and time for the receipt of offers and/or make other changes in the requirements set out in the Invitation for Tender at its own accord

or in order to provide reasonable time to bidders to take the amendments into account in preparing their offers.

5.14 If the last day for the bid submission is declared as a holiday, the bid will be opened at the same time on the next working day.

6. SIGNING OF BID

The bidder shall prepare, as a part of his bid, the bid documents duly signed to be uploaded/submitted (digital signatures accepted on e-tendering portal), establishing the conformity of his bid to the bid documents of all the works to be executed by the bidder under the contract and the credentials claimed to comply the bid conditions.

The bid shall contain no inter-lineation, erasures or overwriting except as necessary to correct errors made by the bidder in which case such corrections shall be signed with dated by the person or persons signing the bid.

7. DISCLAIMER:

ITI and/or its officers, employees disclaim all liability from any loss or damage, whether foreseeable or not, suffered by any person acting on or refraining from acting because of any information including statements, information, forecasts, estimates or projections contained in this document or conduct ancillary to it whether or not the loss or damage arises in connection with any omission, negligence, default, lack of care or misrepresentation on the part of ITI and/or any of its officers, employees.

All information contained in this Tender provided / clarified is in good faith and interest. This is not an agreement and is not an offer or invitation to enter into an agreement of any kind with any party.

Though adequate care has been taken in the preparation of this Tender document, the interested bidders shall satisfy themselves that the information contained in the document is complete in all respects to enable to make an informed decision to bid. Interested Bidders are required to make their own enquiries and assumptions wherever required.

Information provided in this document or imparted to any respondent as part of the Tender process is confidential and shall not be used by the respondent for any other purpose, distributed to, or shared with any other person or organization.

8. The Company reserves the right (i) to reject any or all the tenders without assigning any reasons, therein (ii) to distribute the work between more than one contractor. The whole work may be split up and accepted in parts entirely at the sole discretion of the company (In the ratio of 60:40 at the rate of L-1). The tenderer should specifically state in case he would be unwilling to accept a part of the work.

9. GENERAL INFORMATION TO THE BIDDER ON EMD, SECURITY DEPOSIT, AND REFUND OF SECURITY DEPOSIT.

9.1 Earnest money deposit of an amount as mentioned in NIT is required to be submitted along with the tender in favor of ITI Ltd NS Unit Bengaluru as per NIT.

9.2 The EMD shall be payable to the ITI without any conditions, recourse, or reservations.

9.3 The bid will be rejected by the ITI a non-responsive and shall not be considered in case if amount of EMD is not received as specified in NIT.

9.4 Return of Earnest Money deposit: No interest shall be allowed on the Earnest Money deposit by the Tenderer. The earnest money of the unsuccessful tenderer will be refunded within 15 days on their request after issuance of LOA to the successful bidder.

9.5 The Earnest Money deposited by the successful tenderer will be retained towards the Security deposit for the fulfillment of the contract, but shall be forfeited if the tenderer fails to submit the Performance Guarantee of 3% of the tendered value, the requisite security deposit as per General Terms and conditions of the contract and/or Fails to start the work within a period of 15 days after issue of the Work Order in writing.

9.6 The earnest money deposit of L-1 will be released only after submission of the Performance guarantee of 3% on the award of work and their confirmation from the bank.

9.7 Security Deposit: Total Security deposit in the work is 10% of the contract value. The security deposit will be recovered by deduction from the running bills of the contractors at the rate of 7% of the gross value of work done. This is in addition to the performance guarantee of 3% mentioned above. Further, the contractor has to furnish the “No Claim Certificate to ITI Ltd at the time of claiming refund of retention money in confirmation of his having no claim against ITI Ltd on getting refunded the security deposit

9.8 Refund of Security Deposit: S.D deducted from the contractor’s bill shall be refunded to the agency on the certificate of Engineer-In – Charge after the expiry of the Defects liability period of one year [01] and obtaining no defect certificate from the concerned officials.[Engineer in charge]

9.9 The EM**D may be forfeited:**

a. If a bidder withdraws the bid after bid opening during the period of validity.
b. In the case of the successful bidder, if the agency fails to sign the Agreement within the 15 days from the date of issue of LOA or furnish the required performance security or fails to commence the work within the stipulated period prescribed in the contract.

9.10 ORDER OF PRECEDENCE:

In case of differences, contradictions, discrepancies with regard to General Conditions of Contract, specifications, Special Conditions, Corrigendum issued, Drawings, bill of quantities, etc., forming part of the contract, the following shall prevail in order of precedence.

a. Letter of the award, along with the statement of agreed variations and its enclosures if any.dum, Clarifications, etc.,
b. Special conditions of Contract
c. Descriptions of the bill of quantities /Schedule of quantities.
d. General lConditions of Contract
e. Drawings.
f. CPWD specifications [as specified in Technical specification of the tender] updated with correction slips issued up to the last date of receipt of tenders.
g. Relevant IS codes/National building code-2015.

10. TIME SCHEDULE FOR COMPLETION OF WORK

Forward Communication Hub -Twelve months [12 months].

The date of commencement will be reckoned from the 15th day of the date of issue of this work order. The time of completion mentioned above will run concurrently and independently

Each station will contain the following ancillary structures/items, which will have to be taken up simultaneously. However, the priority for any work will be decided by the engineer-in-charge.

a) Main building [Technical and Residential block]
b) Kitchen
c) PHE Service (Internal and External)
d) Electrical Services (Internal and External)
e) AC installation

The schedule contains different subheads as indicated below:

a) Civil works for buildings including roads, Water Proofing Treatment works
b) Water supply and sanitary works
c) Electrical works, including AC installation
d) IT Related Works (Access control system, video surveillance, physical intrusion system and detection system and Fire detection and suppression system.

However, the priority for any work will be decided by the Engineer-In –charge.

11. PAYMENT TERMS:

STAGE OF PAYMENT

Payment will be made on completion of the respective stages with the following payment conditions: -

Stage	Description of stage	Payment condition
1st stage	From Ground level to plinth level	Payment will be made for 75% of the work done in 1st stage based on actual measurement.
2nd stage	From plinth level to roof level (after casting of roof slab).	Payment will be made for 75% of the work done in 2nd stage based on actual measurement.
3rd Stage	Finishing Works [plastering/painting/ flooring/ plumbing /electrical / IT and Fire related works /wooden & steel works/ and water proofing works.]	Payment will be made for 75% of the work done in 3rd stage based on actual measurement.
4th stage	Completion of entire building as per specifications and Scope of works, along with submission of As - built Drawing.	Payment for 15% of works executed in stages 1 to 3, along with payment for 90% of the pending works other than stages 1 to 3 will be made after completion of 4th stage.
5th Stage	Handing over and acceptance of the building by the USER.	Payment for 10% of entire work will be made after completion of 5th stage and on handing/ taking over and completion of AITP jointly signed by authorized Board of Representatives of the USER and authorized representative of the ITI.

- **Note:** 7% of the gross amount payable to the contractor will be retained from each running bills as a security deposit in addition to the performance guarantee of 3%. The security deposit will be released to the bidders after successful completion of the defect liability period [one year after the date of completion of the building]. To claim for IT ralated items, bidders has to submit completion certificate from system integrator/OEMs.

6.1 ITI reserves the right to forfeit of the Performance guarantee in addition to security deposit in the event of the tenderer's failure any of the contractual obligations or in the event of termination of the contract as per terms and conditions of the contract.

6. The Tenderer shall quote rates both in figures as well as in words. In case the tenderer has quoted Two different rates in word and figures, the rates which correspond to the amount worked out by the contractor are taken as correct. When the amount of an item is not worked out by the contractor, or if it does not correspond with the rates written either in figures or in words, then the rate quoted by the contractor in words is taken as correct. When the rate quoted by the contractor in figures and words tallies, but the amount is not worked out correctly, the rates quoted by the contractor is taken as correct and not the amount.

All the corrections and alterations made in the entries by the tenderer must be attested with his/their full signatures and date. Erasures and overwriting are not permissible and may disqualify the Tender.

7. The Tender shall contain the name, address, and place of business or person or persons making the tender and shall be signed by the tenderer with his signature. Partnership firm shall furnish the full name of all partners in the tender. It may, however, be signed in the partnership name by one of the partners or duly authorized representatives, followed by the name and designation of the person signing tender. Tenders by a corporation or by a person are signed in the name of the corporation by a person duly authorized to do so. In case it is signed by an authorized representative, a power of attorney on that behalf shall accompany the tender. A copy of the constitution of the firm with the names of the partner shall be furnished.

8. When the tenderer signs a tender in a language other than English, the total amount of tendered should also be written in English language only. The signature should be attested by at least one witness.

9. Witnesses and sureties shall be persons of status and property and the names, occupations, and addresses shall be stated below the signature.

10. All the signatures in the tender document shall be dated and pages of all the sections of the tender document shall be signed at the lower right-hand corner or where ever required in the tender document by the tenderer or his authorized representatives.

11. Before submission of tender, the tenderer is advised to visit the site (with prior arrangement with the officer issuing the tender) and inspect the site of work and its environments, and be well acquainted with the actual working and other prevalent conditions and fluctuations thereof, and to quote his rates accordingly after taking all the factors into account.

12. Responsibility of obtaining permission for tree cutting if any will be the scope of contractor.

13. Water supply at the site of work: The contractor has to make his arrangements for the water required for the work at his own cost.

14. Power supply at the site of work: The Contractor has to make his arrangement for the power required for the work at his own cost.

15. Inspection facilities: The contractors while erecting the sheds, storehouses, and yards as per the clause of the contract, shall also provide space of above 20 sq. meters for the inspecting staff of the company.

16. It shall be deemed that the tenderer has visited the site, whether he does it or not, and have taken all the aforesaid factors into account while quoting his rates and no claim whatsoever shall be entertained on this account at a later.

17. The tenders submitted by the tenderer shall remain valid for acceptance for 120 days from the last date of receipt of bids. The tenderer shall not be entitled during the said period of 120 days, without the consent in writing of the company to revoke or cancel his tender or to vary the tender given or any terms thereof.

18. The acceptance of the tender will rest with the accepting authority who does not bind himself to accept the lowest or any other tender and reserves the right to reject any or all the tenders without assigning any reason whatsoever.

19. **Rejection of Tender:**

a) Tenders in which any of the particulars and prescribed information is missing or incomplete in any respect are liable to be rejected.

b) Canvassing of any kind is strictly prohibited and the tender submitted by the tenderer who resorts to canvassing is liable to be rejected.

c) The tender containing uncalled remarks for any conditions are liable to be rejected.

d) No Page of the tender documents shall be removed or altered and the whole set must be submitted after being duly filled in and signed. Failure to comply with these instructions may result in the rejection of their tender.

The Company reserves the right to call off the tender process at any stage without assigning any reason.

20. Should tenderer have relative or relatives or in the case of a firm or private limited company one or more of its partner or relatives of the partners employed in the company, the tenderer should furnish complete information to that effect at the time of submission of the tender.

21. The successful tenderer shall be required to execute an agreement in duplicate in the Performa attached with the tender documents as Annexure-1 In the event of failure of the tenderer to sign the agreement within 15 days from the date issue of the notice of acceptance of the tender, the amount of Earnest money shall be forfeited to the company and acceptance of the tender shall be considered as withdrawn.

22. **PERFORMANCE GUARANTEE**

The successful bidder/contractor shall provide to the employer total performance security of Three percent [3%] of the Contract price covering initially the period of completion of construction work plus 90 days within 15 days after issue of Letter of acceptance but before signing the contract, performance security of Three percent of the Contract price shall be submitted by the successful bidder to ITI. In case the time for completion of work gets extended, the contractor shall get the validity of the performance Guarantee extended to cover such extended time for completion of work.

a) Performance security of Three Percent [3%] to be submitted by the successful bidder after the receipt of the letter of acceptance shall be either in the form of Bank Guarantee or Fixed deposit receipts in the name of ITI from a scheduled commercial bank or demand draft in favor of ITI Limited, payable at Bengaluru.

b) Failure of the successful bidder to comply with the requirement of delivery of Performance Security as per provisions of the tender clause shall constitute sufficient ground for cancellation of award and forfeiture of the Earnest Money. Such a successful bidder who fails to comply with the above requirements is liable to be debarred from participating in bids under ITI Limited for one year.

c) For delay in submission of Performance of guarantee more than 15 days from the date of issue of LOA penal interest of 18% per annum to be charged on the amount of performance guarantee.

23. **Taxes and Duties**: On implementation of GST many of the previously existing taxes have been subsumed in the same. However, taxes, duties, cess royalty, if any remaining in vogue which a bearing on the rates should be considered while submitting the tender. **GST as applicable will be paid Separately. In the event of non-payment/default of any statutory compliances in payment of any tax or any labor dues**, EPF, ESIC, etc., by the contractor or in case of any financial implication on ITI Limited the ITI reserves the right to hold the dues/payment of the contractor and make payment to local/State/Central government authorities or labors as may applicable including penalty thereof.

a) The Contractor Price is inclusive of all taxes, duties, cess, and statutory levies payable under any laws, Other than Goods and Services Tax (GST) levied by Union and State Governments (CGST, SGST, UTGST, IGST).

b) In case of a change in the rate of tax or any provision relating levy of tax resulting in an increased burden of tax on the contractor, the contractor shall not be entitled to receive any compensation for such increase in quantum of tax payable by the contractor., however, recovery shall be made from the contractor on account of a decrease in rates of tax.

c) The contractor must be registered under the goods and services tax (GST) laws, and a copy of the registration certificate shall be submitted to ITI.

d) Apart from registration as mentioned at c) above, Contractors shall also obtain all other necessary registration required under any other Local / State/Union Government Statute, for the execution of this contract, if any.

e) Apart from compliances mentioned above, in the event of non-payment/default in payment of taxes and duties and any other statutory compliances, under any other Local/State/Union Government Statute, ITI reserves the right to withhold the dues/payment of contractor and make payment to Local/State/Union Government authorities or Labourers, as may be applicable.

f) It is clearly understood that the contractor is fully aware of all GST Laws and his liabilities and responsibilities under the said laws including but not restricted to correct HSN/SAC code, the applicable rate of taxes of GST, or otherwise on which his liability has to be paid and discharged. ITI shall have no liability or responsibility from any penalty or proceedings or any other liability levied or leviable on the contractor because of lower deduction or any other such non-compliance of the Contractor.

g) Bidders will examine the various provisions of The Central Goods and Services Tax Act, 2017 (CGST)/Integrated Goods and Services Tax Acts, 2017 (IGST)/ Union Territory Goods and Services Tax Act,2017 (UTGST)/ respective states State Goods and Service Tax Act (SGST) also, as notified by Central/State Government and as amended from time to time and applicable taxes before bidding. Bidders will ensure that the full benefit of Input Tax Credit (ITC) likely to be availed by them is duly considered while quoting rates.

h) GST will be released after filling of GSTR return.

24. **Policy for Micro and Small Enterprises [MSE's]**

The MSE's who intend to claim benefits under MSE's act shall fulfill the following, otherwise, they run the risk of their bids being passed over as " INELIGIBLE" for the benefit applicable to MSE's and their bid will not be considered for evaluation.

a) MSE's which are specified by the Ministry of Micro, Small, and Medium Enterprises under MSED Act.2006 and Public Procurement Policy 2012 as Manufacturing/Services Enterprises should have registered with NSIC/MSME.

b) Tenderers seeking exemption should enclose a photocopy of valid registration Certificate giving details such as product/Services and Monetary limits failing which they run the risk of their tenders being passed over as ineligible for these concessions.

c) The items of Product/Services mentioned under NSIC/MSME certificate should be the same or similar to the tendered items/Schedule of items of Tender]

d) The monetary limit stipulated in the NSIC/MSME certificate of MSE's should be equal or more than the value of works /supply is/are " In hand progress" awarded under MSME benefits during the financial year plus estimated cost of this tender for availing EMD exemption.

e) If the monetary limit is less than the value of work/Supply " In hand [Progress] awarded under MSME benefits during the financial year plus estimated cost of this tender, they should obtain a "competence Certificate" from participating in this tender as well as avail MSME benefits.

f) During the bid evaluation, EMD exemption shall be granted to the NSIC/MSME registered firm. In case, the NISC, MSE's registration certificate is found invalid during evaluation the bid of such bidder shall be rejected.

g) ITI may consider the award of work to MSE's as per the provision of Public Procurement Policy for Micro and Small Enterprises [MSE's] order 2012, with special provision for Public Procurement Policy for Micro and Small enterprises owned by the Scheduled cast or the Scheduled tribe enterprises.

25. Consortium/Joint ventures companies shall not be permitted. No single firm shall be permitted to submit two separate applications.

26. If at any stage, any information/documents submitted by the applicant is found to be incorrect, false, or have some discrepancy which disqualified the bidders/firm then, the Company shall take the following action:

i. Forfeit the entire amount of EMD submitted by the firm.
ii. The bidder/Firm shall be liable for debarment from tendering in the Company apart from any other appropriate contractual legal action.

27. The tender award execution and completion of work shall be governed by tender documents consisting of Letter of award/Letter of work order, Bill of quantities, Special Conditions of Contract, General Conditions of Contract, Specifications, Drawings. The tenderer shall be deemed to have gone through the various conditions, including subsoil water conditions, the topography of the land, drainage and accessibility, etc., or any other working

conditions/Insurgency which in the opinion of a contractor will affect his price/rates before quoting their rates. No claim whatsoever against the foregoing shall be entertained.

28. **SITE VISIT AND COLLECTING OF INFORMATION ON THE SITE:**

Before submission of tender, the tenderers are advised to visit the site, its surroundings to assess and satisfy themselves about the local conditions such as the working and other constraints at site, approach roads to the site, availability of water & Power supply, existing electrical line, overground/underground electric cables, power cables, communication cables, ofc cables, tress, earthing, applicaion of taxes, duties, and levies as applicable and any other relevant information required by them to execute the complete scope of work. The bidders will have to arrange above on his own as per his requirement at sites.

a) Site conditions including access to the site, Working time, existing and required roads, and other means of transportation for use by him in connection with the work.

b) Source and extent of availability of suitable materials including water etc., and labor [skilled and un skilled] required for work and laws and regulations governing their use.

c) Geological, Metrological Topographical, and other general features of the site and its surroundings as are about and needed for the performance of the work, with other specifications, drawings for references, and guidance.

29. **TESTING OF MATERIALS**

a) Samples of various materials required for testing shall be provided free of charge by the contractor. The testing charge shall be borne by the contractor. All the other expenditures required to be incurred for taking the samples conveyance packing etc. shall also be borne by the contractor himself.

b) In case there is any discrepancy in the frequency of testing as given in the list of mandatory tests and that in individual sub-heads of work as per C.P.W.D. latest edition specifications the higher of the two frequencies of testing shall be followed and nothing extra shall be payable to the contractor on this account.

30. The rate for all items in which they use of cement is involved is inclusive of charges for curing.

31. The contractor is to bear all charges towards the cost of testing. However, ITI Ltd. will be free to engage any other agency towards performing/conducting all tests as per IS/CPWD norms.

32. **CLARIFICATIONS AFTER TENDER SUBMISSION:**

Tenderer's attention is drawn to the fact that during the period, the tenders are under consideration, the tenderers are advised to refrain from contacting by any means, the ITI and or his employees/ representatives on matters related to the tender under consideration and that if necessary, ITI will obtain clarifications in writing or as may be necessary. The tender evaluation and process or award of works is done by duly authorized Tender Scrutiny Committee and this committee is authorised to discuss and get clarification from the tenderers.

The work executed by the contractor shall be subject to audit and quality control checks from Quality Control Division & Technical Audit ITI ltd, Client, and Inspecting Agency of the Client and Chief Technical Examiner of Central Vigilance Commission, Govt. of India. In the eventuality of any defect/ substandard works as brought out in the report or noticed otherwise at any time during execution, maintenance period, etc., the same shall be made good by the contractor without any cost to ITI Ltd. In case the contractor fails to rectify the defect/sub-standard work within the period stipulated by ITI Ltd., ITI Ltd shall get it rectified at the risk and cost of the contractor and shall recover the amount from the dues of the contractor.

33. The structural and architectural drawings shall at all times be properly correlated before the execution of ay work. However, in case of any discrepancy in the item given in the schedule of the quantities appended with the tender and architectural drawings relating to the relevant item the former shall prevail unless otherwise given in writing by the Engineer-In-charge.

34. The foundation trenches shall be kept free from water while all the works below ground level are in progress.

35. The General Tender notice shall be deemed to form part of the agreement.

36. The intending tender [s] must read the terms and conditions of the GCC carefully. He should only submit his bid if eligible and in possession of all the documents required.

37. Integrity pact duly signed by the tenderer shall be submitted. Any bid without a signed integrity pact shall be rejected. [Annexure]

38. Bidder has to commence the work simultaneously within 15 days from the issue of work order.

39. The contractor has to take up the work of FCH Node as per priority given by Engineer In-Charge of ITI Ltd.

40. The project engineer should have experience of working with Army project.

41. **Site and Local conditions:**

The sites will be shown to the tenderers by the representatives of the authority inviting tender. However, a tenderer shall finalize the program of his visit to the site with authority inviting tender for necessary arrangements.

42. **Escalation in Price: No escalation will be paid on account of any increase in price index in the price of material or labour. No price escalation shall be applicable even during extended period for completing the works.**

43. The work is to be executed for and on behalf of an end user, the need and exigencies of the user shall prevail upon all the covenants and all decisions shall be taken with the knowledge of such user. The user here is the Indian army and the project being of national importance, a special care and preparation will be expected from the bidder.

44. **It is upto the discretion of army to provide the sites mentioned in the scope of work as per the feasibility of the sites. No claim in this regard will be entertained.**

45. Bidder has to get Military Intelligence (MI) clearance in advance [1 Month] for their manpower/labours/engineers, for entry to the sites. The Credencial of the persons in the prescribed formate is to be submitted for clearance.

46. **CONFIDENTIALITY:** Information relating to the evaluation of tenderers and recommendations concerning awards shall not be disclosed to the bidders who submitted the tender or to other persons not officially concerned with the process until the publication of the award of the contract. This undue use by any bidder of confidential information related to the process may result in the rejection of its tender and may be debarred from participating.

---- END OF SECTION –II -----

SECTION -III

INSTRUCTIONS FOR ONLINE BID SUBMISSION

1.	Submission of Bids shall be only through online process which is mandatory for this Tender.
1.1	**Tender Bidding Methodology:** **Sealed Bid System** Tender Type: Two bids i.e., Technical and Financial Bids shall be submitted by the bidder at the same time on the portal.
1.2	**Broad outlines of the activities from Bidder's perspective:**
1.2.1	Procure a Digital Signing Certificate (DSC)
1.2.2	Register on Electronic Tendering System® (ETS)
1.2.3	Create Users and assign roles on ETS
1.2.4	View Request for Proposal (Tender) on ETS
1.2.5	Download Official Copy of Tender Documents from ETS
1.2.6	Clarification to Tender Documents on ETS
1.2.7	Query to ITI LTD (Optional)
1.2.8	View response to queries posted by ITI LTD, as an addendum/corrigendum.
1.2.9	Bid Submission on ETS
1.2.10	Attend Public Online Tender Opening Event on ETS Opening of Technical/Financial Part
1.2.11	View Post-TOE Clarification posted by ITI LTD on ETS (Optional) Respond to ITI LTD's Post-TOE queries.
1.3	For participating in this tender online, the following instructions need to be read carefully. These instructions are supplemented with more detailed guidelines on the relevant screens of the ETS. **Note 1**: It is advised that all the documents to be submitted are kept scanned or converted to PDF format in a separate folder on your computer before starting online submission. BOQ (Excel Format) may be downloaded and rates may be filled appropriately. This file may also be saved in a secret folder on your computer. **Note 2:** While uploading the documents, it should be ensured that the file name should be the name of the document itself.

1.4	**Digital Certificates:** For integrity of data and its authenticity/ non-repudiation of electronic records, and be compliant with IT Act 2000, it is necessary for each user to have a Digital Certificate (DC) also referred to as Digital Signature Certificate (DSC) of Class 3 or above, issued by a Certifying Authority (CA) licensed by Controller of Certifying Authorities (CCA) [refer http://www.cca.gov.in].
1.5	**Registration in e-procurement portal:** Bidder has to Register first in https://itilimited.euniwizarde.com/ .and then Tender document can be downloaded from the web site: https://itilimited.euniwizarde.com/ and bid has to be submitted in the e-format.
1.6	**ITI LIMITED has decided to use process of e-tendering for inviting this tender and thus the physical copy of the tender would not be sold.**
1.7	**Special Note on Security of Bids:** Security related functionality has been rigorously implemented in ETS in a multi-dimensional manner. Starting with 'Acceptance of Registration by the Service Provider', provision for security has been made at various stages in Electronic Tender's software. Specifically, for Bid Submission, some security related aspects are outlined below: - As part of the Electronic Encrypt functionality, the contents of both the 'Electronic Forms' and the 'Main-Bid' are securely encrypted using a Pass-phrase created by the server itself. The Pass phrase is more difficult to break. This method of bid-encryption does not have the security and data-integrity related vulnerabilities which are inherent in e-tendering systems which use Public-Key of the specified officer of a User organization for bid-encryption. Bid-encryption in ETS is such that the Bids cannot be decrypted before the Public Online Tender Opening Event (TOE), even if there is connivance between the concerned tender opening officers of the User organization and the personnel of e-tendering service provider.
1.8	**Public Online Tender Opening Event (TOE):** ETS offers a unique facility for 'Public Online Tender Opening Event (TOE)'. Tender Opening Officers as well as authorized representatives of bidders can attend the Public Online Tender Opening Event (TOE) from the comfort of their offices. For this purpose, representatives of bidders (i.e. Supplier organization) duly authorized are requested to carry a Laptop and Wireless Connectivity to Internet. Every legal requirement for a transparent and secure 'Public Online Tender Opening Event (TOE)' has been implemented on ETS. As soon as a Bid is decrypted with the corresponding 'Pass-Phrase' as submitted online by the bidder himself (during the TOE itself), salient points of the Bids are simultaneously made available for downloading by all participating bidders. The work of taking notes during a manual 'Tender Opening Event' is therefore replaced with this superior and convenient form of 'Public Online Tender Opening Event (TOE)'. ETS has a unique facility of 'Online Comparison Chart' which is dynamically updated as each online bid is opened. The format of the chart is based on inputs provided by the User for each Tender. The information in the Comparison Chart is based on the data submitted by the Bidders in electronic forms. A detailed Technical and/ or Financial Comparison Chart enhance Transparency. Detailed instructions are given on relevant screens.

	ETS has a unique facility of a detailed report titled 'Minutes of Online Tender Opening Event (TOE)' covering all important activities of 'Online Tender Opening Event (TOE)'. This is available to all participating bidders for 'Viewing/ Downloading'.
1.9	**Other Instructions:** For further instructions, the vendor should visit the home page of the portal i.e. https://itilimited.euniwizarde.com/ **Important Note**: It is strongly recommended that all authorized users of Supplier organizations should thoroughly peruse the information provided under the relevant links, and take appropriate action. This will prevent hiccups, and minimize teething problems during the use of ETS.
1.10	**The following 'FOUR KEY INSTRUCTIONS for BIDDERS' must be assiduously adhered to:**
1.10.1	Obtain individual Digital Signing Certificate (DSC or DC) well in advance of your tender submission deadline on ETS.
1.10.2	Register your organization on ETS well in advance of your tender submission deadline on ETS.
1.10.3	Get your organization's concerned executives trained on ETS well in advance of your tender submission deadline on ETS.
1.10.4	Submit your bids well in advance of tender submission deadline on ETS to avoid any unforeseen last-minute problems due to internet timeout, breakdown, etc. While the first three instructions mentioned above are especially relevant to first-time users of ETS, the fourth instruction is relevant at all times.
1.11	**Minimum Requirements at Bidders end:** Computer System with good configuration and OS preferably supporting Windows, Word, Excel & PDF, High Speed Broadband connectivity, Internet Browser and Digital Certificate(s).

NB: SINCE THE WORK IS TO BE EXECUTED FOR AND ON BEHALF OF AN END USER, THE NEED AND EXEGENCIES OF THE USER SHALL PREVAIL UPON ALL THE COVENENTS AND ALL DECISIONS SHALL BE TAKEN WITH THE KNOWLEDGE OF SUCH USER. THE USER HERE BEING INDIAN ARMY AND THE PROJECT BEING OF NATIONAL IMPORTANCE, A SPECIAL CARE AND PREPERATION WILL BE EXPECTED FROM THE BIDDER.

1.0 BID OPENING AND EVALUATION:

1.1 Opening of bids by the ITIL:

The Electronic Envelope marked as 'Bid Security, Bid cost & Authorization Envelope' shall be opened first and examined by the designated Bid Opening Committee (TOC) of ITIL.

The TOC shall as certain that The bidders who has not made payment of bid cost and EMD online then the Physical Envelopes of Bid Security and Bid cost should be submitted to GM (CIVIL) ITI Ltd at ESG office before tender submission time to meet the preliminary requirement of eligibility otherwise their bids shall not be opened/downloaded from the E-tender portal.

The Qualifying Bids downloaded shall be evaluated by the designated TEC and the result of evaluation after approval by the competent authority shall be declared for the information of all concerned clearly mentioning the qualified bidders and non-qualified bidders.

2. CLARIFICATION OF BIDS BY THE ITIL:

To assist in examination, evaluation and comparison of bids, the ITIL may, at its discretion ask the bidder for clarification of its bid. The request for its clarification and its response shall be in writing. However, no post bid clarification at the initiative of the bidder shall be entertained.

3. VERIFICATION OF BIDS BY THE ITIL:

If any of the documents, required to be submitted along with the technical bid is found wanting, the offer is liable to be rejected at that stage. However, the ITIL at its discretion may call for any clarification regarding the document within a stipulated time period. In case of non-compliance to such queries in the given time, the bid will be out rightly rejected without entertaining further correspondence in this regard.

4. PRELIMINARY EVALUATION:

ITIL shall evaluate the bids to determine whether they are complete, whether any computational errors have been made, whether required securities have been furnished, whether the documents have been properly signed/authenticated and whether the bids are generally in order.

Prior to the detailed evaluation, the ITIL will determine the substantial responsiveness of each bid to the bid document. For purpose of these clauses a substantially responsive bid is one which conforms to all the terms and conditions of the bid documents without deviations.

The ITIL may waive any minor infirmity or non-conformity or irregularity in a bid which does not constitute a material deviation, provided sh waiver does not prejudice or affect the relative ranking of the bidder. Bids found technically and commercially compliant and suitable would only be considered for Price bid opening.

Signature of the Contractor
Dated

----- END OF SECTION –III-----

SECTION -IV

GENERAL CONDITIONS OF CONTRACTS

FOR
CIVIL ENGINEERING WORKS

1.0 DEFINITION AND INTERPRETATIONS:

1.1 Definition:

1.1.1 GENERAL:

In this general conditions of contract, the following terms shall have the meaning hereby assigned to them except where the context otherwise requires.

1.1.2 COMPANY:

Company shall mean ITI LIMITED, having its registered office at ITI Bhavan, Doorvaninagar, Bengaluru. 560 016 in the State of Karnataka and includes a duly authorised representatives of the Company/ or any other person empowered in their behalf by the company to discharge all or any of its functions.

1.1.3 MANAGEMENT:

Management shall mean the officer nominated by the Company to deal with the matters pertaining to the contract. The Officer so nominated shall be intimated to the contractor after the acceptance of the contract.

1.1.4 CONSULTANT:

'Consultant' shall mean the Consultant so designed by the company and/ or every other officer authorized by the Consultant for the time being to deal with matters relating to Contract.

1.1.5 GENERAL MANAGER (GM):

General Manager shall mean the officer in Administrative charge of the project.

1.1.6 CHIEF ENGINEER:

Chief Engineer shall mean the officer-In-charge of the Civil Engineering Department of the Project.

1.1.7 ENGINEER:

Engineer shall mean the Chief Engineer / Chief Manager, Deputy Chief Engineer / Manager, Senior Engineer / Deputy Manager, Executive Engineer / Assistant Manager, Assistant Executive Engineer / Engineer, Asst. Engineer or any other nominee for the execution of the work. The term Engineer- in – Charge shall also have the same meaning as the Engineer.

1.1.8 ENGINEER'S Representative:

Engineer's Representative shall mean the Assistant Engineer in Direct charge of the works and shall include any Junior Engineer/ Construction Assistant /Junior supervisors etc., appointed by the Company.

1.1.9 CONTRACTOR:

'Contractor' shall mean the person, firm or company who has entered into agreement for the execution of works and shall Include their executor's, successor's, administrator's and permitted assigns.

1.1.10 CONTRACT:

Contract shall mean the contract documents collectively, comprising agreement, Notice Inviting Tender, General terms and conditions, special terms and conditions, specifications, Time schedule of works, information and instructions to tenderers, accepted schedule of rates, and other documents and drawings constituting the tender and accepting thereof.

1.1.11 WORKS:

Work shall mean the works to be executed in accordance with the contract.

1.1.12 SPECIFICATION'S:

Specifications shall mean all directions, provisions and requirements attached to the Contract which pertain to the method and manner of performing the work or works to the quantities and qualities of work or works and the materials to be furnished under the contract for the work or works as may be amplified or modified by the Company or the Engineer during performance of the contract in order to provide for unforeseen conditions or in the best interest of the work or works.

1.1.13 ACCEPTED SCHEDULE:

Accepted Schedule in relation to the Contract means the schedule or schedules or quantities and the rates quoted /modified by the contractor in respect of which the Tender is accepted.

1.1.14 DRAWINGS:

'Drawings' shall mean the maps, drawings, Plans, and tracings or prints thereof annexed to the contract and shall include any modification of such drawings as may be issued or approved in writing by the Engineer from time to time.

1.1.15 CONSTRUCTIONAL PLANT:

'Constructional Plant' shall mean all appliances or things of whatsoever nature required for the execution, completions or maintenance of the works or temporary works (as herein after define) but does not include materials or other things intended to form or forming part of the permanent work.

1.1.16 TEMPORARY WORKS:

'Temporary work' shall mean all temporary works of every kind required for the execution, completion or maintenance of the works.

1.1.17 SITE:

'Site' shall mean the lands and other places on or through which the works are to be carried out and any other lands or places provided by the company for the purposes of the contract.

1.1.18 PERIOD OF MAINTENANCE:

Period of Maintenance shall mean a period of 12 months of maintenance from the date of completion of the work as specified by the Engineer in charge.

1.1.19 Letter of Acceptance:

'Letter of Acceptance' is an intimation by a letter to the Tenderer that his/their tender has been accepted in accordance with the provisions contained in that letter.

1.1.20 APPROVED:

'Approved' means approved in writing by the Engineer including subsequent written confirmation of previous verbal approval and Approval means approval in writing including as aforesaid.

1.1.21 CONTRACT VALUE:

'Contract value' means the sum accepted or the sum calculated in accordance with the prices accepted in the tender and/or the contract rates as payable to the contractor for the entire execution and full completion of the work.

1.1.22 WORK ORDER:

'Work Order' shall mean the order in writing by the Engineer, intimating the contractor to commence the work wholly or partly, showing the date of commencement and completion of the work as a whole or the part so ordered to be commenced.

1.1.23 DATE OF COMMENCEMENT:

'Date of Commencement' is the date or dates for commencing the whole or part of the work as set out in or ascertained in accordance with the individual work orders or any subsequent agreed agreements thereto.

1.1.24 DATE OF COMPLETION:

'Date of Completion' is the date or dates for completion of the whole work as set out in or ascertained in accordance with the individual work orders or the tender documents or any subsequent agreed agreements thereto.

1.1.25 DEVIATION:

'Deviation' order means an order given in writing by the Engineer to effect an alteration in addition to or deduction from the scope or nature of the contract.

1.1.26 ACCEPTING AUTHORITY:

'Accepting Authority' is officer nominated by the management to accept a tender/ tenders up to a particular value.

1.1.27 MONTH:

'Month' shall mean the calendar month of the Gregorian Calendar.

1.2 SINGULAR & PLURAL:

Word imparting the Singular number shall also include the plural and vice versa where the context so requires.

1.3 HEADINGS & MARGINAL HEADINGS:

The headings and Marginal headings in these General Conditions are solely for the purpose of facilitating reference and shall not be deemed to be part thereof, or be taken into consideration in thereof or the contracts.

2.0 GENERAL OBLIGATION:

2.1 EXECUTION CORRELATION & INTENT CONTRACT DOCUMENTS:

The Contract documents shall be signed in duplicate by the accepting authority and the contractor. The contract documents are complementary, and what is called for by any one shall be binding as if called for by all the intention of the documents is to include all Labour and materials, equipment and transportation necessary for the proper execution of the work. Materials or work not covered not covered by or property inferable from any heading or class of the specifications shall not be supplied by the company to the contractor unless distinctly specified in the contract documents. Materials or works described in words which so applied have a well know technical or trade meaning shall be held to refer to such recognized standard.

2.2 LAWS GOVERNING THE CONTRACT:

2.2.1 The Contract shall be governed by the laws for the time being in force in the republic of India

2.2.2 COMPLIANCE TO REGULATION & BYE-LAWS:

The Contractor shall confirm to the provision of any status relating to the works and regulations and bye-laws of any local authority and of any water and electric companies or undertakings with those system the work is proposed to be connected and shall before making any variations from the drawings or the specifications that may be necessitated by so confirming, given to the Engineer notice specifying the variation proposed to be made and the reason for making the variation and shall not carry out such variation until he has received instructions in writing from the Engineer in respect thereof. The contractor shall be bound to give all notices required by statute, regulations or Bye-Laws as aforesaid and to pay all fees and taxes payable to any authority in respect thereof.

2.3 COMMUNICATION TO BE IN WRITING:

All notices, communications, references and complaints made by the company or the Engineer or the Engineer's Representative or the contractor INTERSE concerning the work shall be in writing and no notice, communication, reference or complaint not in writing shall be recognized.

2.4 SERVICE OF NOTICE ON CONTRACTOR:

The Contractor shall furnish to the Engineer the name, designation and address of his authorized agent and all complaints, notices, communications, and references shall be deemed to have been duly given to the contractor if delivered to the contractor or his authorized agent or left at or posted (Registered Post) to the address so given and shall be

deemed to have been so given in the case of posting on the day on which they would have reached such address in the ordinary course of post or on the day on which they were so delivered of left in case of hand delivery. In the case of contract by partners, any change in the constitution of the firms shall be forthwith notified by the contractor to the Engineer with a copy of the accepting authority.

2.5 OCCUPATION AND USE OF LAND:

No land belonging to or in the possession of company shall be occupied by the contractor without the permission of the Company. The Contractor shall not use or to be used, the site for any purpose other than that of executing the works.

2.6 ASSIGNMENT OR SUBLETTING OF CONTRACT:

The Contractor shall not assign or sublet the contract or any part there of or allow any person to become interested therein any manner whatsoever without the special permission of the company, provided always that execution of the details of the works by petty contract under the direct and personal supervision of the contractor or his agent shall not be deemed to be subletting under this clause. The permitted sub-letting of work by the contractor could not establish any contractual relationship between the sub-contractor and the company and shall not relieve the contractor of any responsibility under the contract.

2.7 STORES ARRANGED BY THE COMPANY:

The Company shall render to the contractor assistance of supplying certain materials including tools and plants against payment/ Hire where so provided for in the contract documents already or may do so at a later date to be decided by the company at their sole discretion. This however, does not absolve the contractor of his responsibilities of executing the work as per the specifications detailed in the contract.

2.8 REPRESENTATIVE ON WORKS:

The Contractor shall when he is not personally present on the site of works, place and keep a responsible agent at the works during working hours who shall on receiving reasonable notice, present himself to the Engineer and orders given by the Engineer or Engineer's representative to the agent shall be deemed to have the same force as if they had been given to the contractor before absenting himself, the contractor shall furnish the name and address of his agent for the purpose of his clause failure on the part of the contractor shall render him liable for the consequences mentioned hereafter.

2.9 RELICS:

All Gold, Silver, Oil and other materials of any description and all the precious stones, coins, treasure, relics, antiques and other similar things which may be found in or upon the site shall be the property of the company, and the contractor shall duly preserve the same to such to the satisfaction of the company, and shall from time to time deliver the same to such person or persons as the company may appoint to receive the same.

2.10 EXCAVATED MATERIALS:

The contractor shall not sell or otherwise dispose of or remove except for the purpose of this contract , the sand, Stone, Clay, Ballast, Earth Rock, or Other substances , or materials which may be obtained from any excavation made for the purpose of the works or any building or produce upon the site at the time of delivery of the possession thereof, but all such substances materials, Buildings, and Product shall be the property of the company provided of course that the contractor may with the permission of the Engineer use the same for the purpose of the work by payment of the same at such rates as may be determined by the Engineer.

2.11 INDEMNITY AND CHARGES:

2.11.1 INDEMNITY AND CHARGES PAYABLE:

The Contractor shall indemnify and save harmless the company from and against all actions, suits, proceedings, losses costs, damages, claims and demands of every nature and description brought or recovered against the company by reason of any act or omission of the contractor, his agents or employees in the execution of the work or in regarding of the same**.** All sums payable by way of compensation under any of these conditions shall be considered as reasonable compensation to be applied to use of the company without references to the actual loss or damage sustained and whether or not damage shall have been sustained**.**

2.11.2 PATENT RIGHT:

The contractor shall fully indemnify the company or the agent/ servant or employees of the company, against any action claim or proceeding relating to infringement or the use of any patent or design or any alleged patent or design rights, and shall pay any royalties which may be payable in respect of any article or part thereof included in the contract**.** In the events of any claims being made or action brought against the company or any agent or servant, or employee of the company or in respect of any of the matters aforesaid the contractor shall immediately be notified thereof for taking necessary action provided that the payment of indemnify shall not apply when such infringement has taken place in complying with the specific directions issued by the company, but the contractor shall pay any royalties payable in respect of any such use**.**

2.11.3 OCTROI AND OTHER DUTIES: [TAXES AND DUTIES]

All charges on account of Octroi, terminal or sales tax and/ or other duties or any other levy as the case may be for the materials obtained for the works shall be borne by the contractor.

The Contract price quoted by the contractor is inclusive of all taxes, duties, cess and statutory levies payable under any law by the Contractor in connection with execution of the contract other than GST.

The contractors shall comply with all applicable provision of Goods and service Tax[GST] levied by Union Government and State Government[CGST]. The contractor shall get himself registered and discharge his obligation for payment of taxes, of returns etc., under the appropriate provision of law in respect of all the taxes, duties, levies, cess etc., ITI Ltd would have right to seek necessary evidence that the contractor is registered under the law and duly discharging its obligations under the tax law, enabling ITI Ltd to avail input tax credit.

In case any law requires ITI Ltd to pay tax on the contract price on reverse cage basis, the amount of tax deposited by ITI Ltd would be considered as paid to the contractor and accordingly the price payable to the contractor would stand reduced to that extent.

Tax deduction at source if any, shall be made by ITI Ltd. As per law applicable from time to time from the amount payable to the Contractor.

2.11.4 Royalties:

Except where otherwise specified the contractor shall pay all tollage and other royalties, rent, and other payment or compensation (If any) for getting stone, sand, gravel, clay, and other material required for the works or temporary works or any of them.

2.12 EARNEST MONEY AND SECURITY DEPOSITS: Security deposit will be 10% of the contract value. Performance guarantee submitted by the contractor will be 3% of the contract value, balance 7% will be recovered from the running account bills.

2.12.1 THE EARNEST MONEY, PERFORMANCE GUARANTEE AND SECURITY DEPOSITS:

a. Earnest Money Deposit (EMD) as per Tender.

b. The bid will be rejected by ITI Ltd. as non-responsive and shall not be considered in case EMD is not received.

c. The EMD of bidders other than L-1 will be returned within 15 days on their request after issuance of LOA to the successful bidder.

d. The successful bidder will have to submit a 3% Bank Guarantee as Performance guarantee which shall be submitted within 15 days of issue of Letter of Intent.

e. Bank Guarantee may be forfeited:

i. The bidder withdraws the bid after bid opening during the period of validity.

ii. Any unilateral revision in the offer made by the tenderer during the validity of the offer.

iii. Non acceptance of LOA if and when placed.

iv. In the case of a successful bidder, if the bidder fails to sign the Agreement with in the 15 days from the date of issue of LOA or fails to commence the work within the stipulated time period prescribed in the contract.

f. PERFORMANCE GUARANTEE: The successful bidder/contractor shall provide to the employer a total performance security of three percent [3%] of the Contract price covering initially the time period of completion of construction work plus 90 days within 15 days after issue of Letter of acceptance but before signing the contract.

Performance Guarantee Deposit: The total amount of Security Deposit is 10% of the contract value Performance Guarantee payable by the contractor shall be 3% of the total value of the contract.

The Performance Guarantee deposit shall remain at the entire disposal of the company for the satisfactory execution and completion of the works, in accordance with the conditions of the contract**.**

The company shall be at liberty to deduct and appropriate amount from the Performance Guarantee security deposit such compensations and dues as may be payable by the contractor under the contract and the appropriation will be made good by the further deduction from the contractor's subsequent interim bills.

REFUND OF PERFORMANCE GUARANTEE AMOUNT: Further, the contractor has to furnish No Claim Certificate to ITI at the time of claiming refund of performance guarantee amount after completion of defects liability period of **12-months.**

The Performance Guarantee shall remain at the entire disposal of the company for the satisfactory execution and completion of the works, in accordance with the conditions of the contract.

2.12.2 INTEREST ON ACCOUNTS:

No interest will be payable on the Performance Guarantee amount deposited by the contractor under this contract**.**

2.13 TIME LIMITATION:

2.13.1 Subject to any requirement in the contract as to dates of completion of any portion or portions of the work , before completion of the whole, the contractor shall fully and finally complete the whole of the works comprised in the contract (with such modifications as may be directed under these conditions) by the dated entered in the work order, provided that, if any modifications have been ordered, which in the opinion of the Engineer have materially increased the magnitude of the work, then such extension may be granted as shall appear to the Engineer to be reasonable in the circumstances, provided however that the contractor shall be responsible for requesting such extension of the date as he may consider necessary as soon as a cause thereof shall arise and in any case not less than one month before original dated fixed for completion of the works**.**

2.13.2 DELAY AND EXTENSION OF TIME:

If the contractor has delayed at any time in the progress of the works by any act or neglect of the employees of the company or by any other contractor employed by the company under **CI-3.2.4** of these conditions, or by strikes, lockouts, fire unusual delay in transportation unavoidable casualties of any cause beyond the contractor's control, or by delays authorized by the Engineers pending arbitration or by any cause which the Engineer shall decide to justify the delay, then the time of completion of the works shall be extended for such reasonable time as the engineer may decide**.**

2.13.3 EXTENSION OF TIME ON COMPANY ACCOUNT:

In the event of any failure or delay by the company to hand over the contractor possession of the lands, necessary notice to commence the works or to provide the necessary drawings or instructions or any other delay caused by the company due to any other cause whatsoever, then such failure of delay shall in no way affect or vitiate the contract or alter the character thereof entitles the contractor to damages or compensation thereof but in any such case extension or extensions of the completion date as may be considered reasonable may be granted to the contractor**.**

2.13.4 TIME TO BE ESSENCE OF THE CONTRACT AND LIQUIDATED DAMAGES:

The time for completing the works or portions where by their respect dates or extended dates fixed for their completion shall be deemed to be the essence of the contract, and if the contractor shall fail to complete the work within the time prescribed, the company shall if satisfied that the works can be completed by the contractor within a reasonable short time thereafter be entitled , without prejudice to any other right or remedy available on that behalf, to recover by way of ascertained and liquidated, damages, a sum equivalent to ONE PERCENT of the contract value of the works or portion thereof for each week or part of week the contractor is in default even though the contract as a whole is completed by the date specified in the contract for any time or group of items of works and allow the contractor such further extension of time for the whole work of portions thereof as the Engineer may decide , if the company is not satisfied that the works can be completed by the contractors

and in the event of failure on the part of the contractor to complete the works with in the further extension of time allowed as aforesaid the company shall be entitled without prejudice to any other right or remedy available on that behalf, to appropriate the contractors security deposit and rescind the contract **under clause 8.3 of these** conditions, whether or not actual damage is caused by such default**.** The amount of compensation will be adjusted or set off against any sum payable to the contractor under this or any other contract provided always that the entire amount of compensation to be paid under this clause shall not exceed 10 % of the contract value as a whole**.**

2.14 ILLEGAL GRATIFICATION:

Any bribe, commission, gift or advantage given, promised or offered by or on behalf of the contractor or his partner, agent or servant or anyone on his or on their behalf to any officer, or employee of the company or to any person or his or their behalf in relation to the obtaining or the execution of this or any other contract with the company shall in addition to any criminal liability which may incur, subject to the contractor to the recession of the contract and all other contracts with company and to the payment of any loss of damage resulting from such rescission, and the company shall be entitled to deduct the amounts so payable from any money due to the contractor under the contract or any other contracts with the company**.**

2.15 EVERYTHING AT CONTRACTOR'S RISK:

2.15.1 The contractor shall undertake all risks and liabilities of whatsoever nature arising out of the works including by way of implications but not by way of limitations all risks attendant on the nature of site, sub-soil, the levels and consistency of strata in or on which the works are to be found or constructed**.** Also all risk of fire, Earthquakes, riots, war, gales, storms, winds, variations or water level, sub soil and quantities of water to be pumped, discharged of water courses, Rains traffic delays and any other causes of whatsoever nature whether within or beyond contractor's control, which may affect or damage the works during the construction and all damages which may happen on any way howsoever to the works shall be made good by the contractor at his own risk and costs**.**

2.15.2 INSURANCE OF WORK:

Unless otherwise instructed by the accepting authority the contractor shall on signing the contract insure the works and keep them insured until the virtual completion of the contract against loss or damages by fire and / or earthquake in an office to be approved by the accepting authority in the Joint names of the accepting authority and the contractor for such amount (Including Consultant fees) as may be called upon to do so by the accepting authority**.** Such policy shall cover the property of the company and shall not cover any property of the contractor or of any Sub- Contractor or Employee**.** The contractor should deposit the policy and receipts of the premium with the accepting authority within 21 Days from the date of signing the contract unless otherwise instructed by the accepting authority**.** The default of the contractor insuring as provided above, the company on his behalf may so insure and may deduct the premiums paid from any sum due, or which may become due to the contractor**.** The contractor shall as soon as the claim on the policy is settled, or the work reinstated by the insurance office should they elect to do so, proceed with all due diligence with the completion of the works in the same manner as though the fire had not occurred and in all respects under the same conditions of contract**.** The contractor in case of rebuilding or reinstatement after fire shall be entitled to such extension of time for completion as the Engineer may deem fit**.**

2.16 NO VISITOR OR PHOTOGRAPHER:

The contractor shall neither allow any visitor on the works nor take or allow to be taken any of photographs without the permission of the Engineer in writing.

2.17 WORK SITE ORDER BOOK:

The Contractor will be required to keep a properly bound book at site of work as work site order book. The pages of the book will be numbered and initialed by the Engineer. Any special orders and instructions to be issued to the contractor shall be recorded in this book by the Engineer or his representative and noted it. The book shall be the property of the company.

3.0 EXECUTION of WORKS:

3.1 CONTRACTOR'S UNDERSTANDING:

3.1.1 It is understood and agreed that the contractor has by careful examination satisfied himself as to nature and location of the work, the confirmation of the ground, the character, quality and quantity of the materials to be encountered, the character of equipment and facilities needed preliminary to and during the execution of the works. The general and local conditions, the Labour conditions, prevailing therein and all the other matters which can in any way affect the works under the contract. No claim whatsoever on this account shall be entertained at a later date.

3.1.2 COMMENCEMENT OF WORKS:

The Contractor shall commence the works on the date or dates indicated in the work order in writing to this effect from Engineer and shall proceed with the same with due expedition and without delay.

3.1.3 TIME AND PROGRESS CHART:

a. A detailed time and progress chart for the execution of various items of work within the overall period of completion shall be prepared jointly by the Engineer and the contractor, signed by both the parties and shall adhered to.

b. Time allowed for carrying out all the works as entered in the tender shall be as mentioned in the BOQ which shall be reckoned from the 15th day from date of issue of work order to the Contractor. Time shall be the essence of the contract and contractor shall ensure the completion of the entire work within the stipulated time of completion.

c. The Contractor shall also furnish within 15 days of date of issue of work order a CPM network/PERT chart /Bar chart for completion of work within the stipulated time. This will be duly got approved from ITI Ltd. This approved network /PERT chart shall form a part of the agreement. Achievement of milestones as well as total completion has to be within the time period allowed.

d. Contractor shall mobilize and employ sufficient resources for completion of all the works as indicated in the BAR Chart/PERT Chart. No additional payment will be made to the contractor for any multiple shift work or other incentives methods contemplated by him in his work schedule even though the time schedule is approved by the Engineer – in –charge.

e. During the currency of the work the contractor is expected to adhere to the time schedule on mile stone and total completion and this adherence will be part of Contractors performance under the contract. During the execution of the work

contractor is expected to participate in the review and updating of the Network/BAR Chart undertaken by the ITI Ltd. These review may be undertaken at the discretion of Engineer in charge either as a periodical appraisal measure or when the quantum of work order on the contractor is substantially changed through deviation order or amendments. The review shall be held at site or any of the office of ITI/Consultant at the sole discretion of ITI Ltd. The contractor will adhere to the revised schedule thereafter. The approval to the revised schedule resulting in a completion date beyond the stipulated date of completion shall not automatically amount to grant extension of time to the contractor.

f. The contractor shall submit [as directed by the Engineer – in –charge] progress reports on a computer based program [Program and software to be approved by Engineer in charge] highlighting status of various activities and physical completion of work. The Contractor shall send completion report with as build drawings to the office of Engineer in charge of ITI in writing within a period of 30 days of completion of work.

The photographs of the project taken on last day of every month indicating progress of work [in soft copies] shall be attached along with the physical progress reports to be submitted to Engineer in charge.

3.1.4 IF THE WORK(S) BE DELAYED BY

i. Force Majeure or

ii. Abnormally bad weather or

iii. Serious loss or damage by fire, or

iv. Civil commotion, local commotion of workmen, strike, or lock out, affecting any or the trades employed on the work or

v. Delay in part of other contractors or tradesmen engaged by Engineer – in –charge in executing work not forming part of the contract or

vi. Any other cause which, in the absolute discretion of the ITI is beyond the contractors control then upon the happening of any such event causing delay, the contractor shall immediately give notice thereof in writing to the authority but shall nevertheless use constantly his best endeavors to prevent or make good the delay and shall do all that may be reasonably required to the satisfaction of the Engineer in charge to proceed with the works

3.2 COMPLIANCE TO ENGINEER'S INSTRUCTIONS:

3.2.1 The Engineer shall direct the sequence in which the several parts of the works shall be executed and the contractor shall execute without delay all orders given by the Engineer from time to time but the contractor shall not be relieved thereby from his/their responsibility for the due performance of the works in all respect**.**

3.2.2 ALTERATIONS TO BE AUTHORIZED:

No alterations in or additions to or omission or abandonment of any part of the work shall be deemed authorized, except under instructions in writing from the Engineer, and the Contractor shall be responsible to obtain such instruction in each and every case**.**

3.2.3 EXTRA WORKS BY ANOTHER AGENCY:

Should works over and above those included in the contract be required to be executed at the site, the contractor shall have no right to be entrusted with the execution of such works which may be carried out by another contractor or contractors or by other means at the option of the company.

3.2.4 SEPARATE CONTRACTS IN CONNECTION WITH THE WORKS:

The Company shall have the right to let out other contracts in connection with the works. The Contractor shall afford such other contractors reasonable opportunity for the storage of their materials and the execution of their work and shall properly connect and coordinate his work with theirs. If any part of the contractor's work depends for proper results upon execution of the work of another contractor, the contractor shall inspect and promptly report to the Engineer and any defect in such work that render it unsuitable for such proper results and execution. The contractor's failure to inspect and report shall constitute an acceptance of other contractor's work as fit and proper for the reception of his work, except as to defects which may develop in the other contractor's works after the execution of his work.

3.3 INSTRUCTION OF ENGINEER'S REPRESENTATIVE:

3.3.1 Any instruction or approval given by the Engineer's representative to the contractor in connection with the works shall bind the contractor as though it had been given by the Engineer provided always as follows.

3.3.1.1 Failure of the Engineer's representative to disapprove any work or materials shall not prejudice the powers of the Engineer thereafter to disapprove such work or materials and order the removal or breaking up thereof.

3.3.1.2 If the contractor shall be dissatisfied by reason of any decision of the Engineer's representative, he shall be entitled to refer the matter to the Engineer who shall there upon confirm or vary such decision.

3.4 ADHERENCE TO SPECIFICATIONS AND DRAWINGS:

3.4.1 The whole of the works shall be executed in perfect conformity with the specifications and drawings of the contract. If the contractor performs any work in a manner contrary to the specifications or drawings or any of them and without such reference to and approval from the Engineer in writing he shall bear all the costs arising or ensuing there from shall be responsible for all loss to the decision.

3.1.2.1 DRAWINGS AND SPECIFICATIONS ON THE WORKS AND OWNERSHIP THEREOF:

Any discrepancy between the specifications and the drawings or any error, omission, or ambiguity in the specifications or the drawings shall not invalidate the contract. The contractor shall, immediately on noticing any such discrepancy, error/omission or ambiguity bring the same to the notice of the engineer. Any work done by the contractor after discovery by him of such discrepancy, error, omission, or ambiguity, without authorization by the Engineer will be entirely at the contractor's risk and cost.

3.1.2.2 Any work for which no specifications or drawings have been prescribed or issued by the company, shall be carried out by the contractor in all respect in accordance with the instructions and requirement of the Engineer.

3.1.2.3 Drawings and prints of articles, machinery or fabricated materials or work entering into or forming part of permanent constructions, which are not furnished by the company and which are by the specifications, required to be furnished by the contractor, shall be submitted by the contractor to the Engineer for approval. Such approval shall not, however operate to waive or modify the provision or requirements contained in the specifications unless

expressly so stated. All such drawings and prints, as also the drawings and specifications that may be furnished by the company to the contractor shall be deemed to be the property of the company and they shall not be used on works other than for the works covered by the contract, shall be returned to the company on completion of the work or termination of the contract.

3.1.2.4 The drawings enclosed with the tender documents shall be a part of the specifications and are intended to define the general construction of the work required. All the drawings shall be for tender purposes only and shall not be certified for constructions, the contractor will receive the certified construction drawings.

3.1.2.5 The drawings for the work as listed in the tender document, show the conditions as they are believed by the company to exist based upon the interpretation of field observations. It is not intended to be inferred that the conditions as shown thereon constitute a representation by the company or its representatives that such conditions do actually exist, not shall the contractor be relieved of the liability under his/their contract to the company nor any of its representative be liable for any loss sustained by the contractor as a result of any variance between conditions as shown on the drawings and the actual conditions revealed during the progress of the work or otherwise. The contractor shall check all the drawings furnished to him immediately upon their receipt and shall promptly notify the Engineer of any omission or discrepancies. Omission from the drawings or the misdescription of details of the work which are manifestly necessary to carry out the intent of the drawings, or which is customarily performed shall not relieve the contractor from performing such omitted or misdescribed details or work, and they shall be performed as if fully and correctly asset forth and describe on the drawings. In case of conflict between the specifications and the drawings, the specification shall govern.

3.4.2.6 Revision of the drawings may be made as when deemed necessary by the Engineer during the progress of the work, additional detail drawings will be furnished to the contractor. These additional drawings shall be considered as forming a part of the contract.

3.4.2.7 One complete set of Drawings furnished for the work, shall be kept in good condition on the job. This set shall be designated 'Record Prints' A complete and exact record of any and all differences between the work as actually constructed and erected and the design indicated on the design drawings shall be approved by the Engineer in writing before any alterations work is started. All 'Record Prints' will become the property of the company.

3.4.3 COMPLIANCE WITH CONTRACTORS AND REQUEST FOR DETAILS:

The Engineer shall furnish with reasonable promptness after receipt by him of the contractor's request in writing for the same additional instruction by means of drawings or otherwise, necessary for the proper execution of the works or any part thereof. All such drawings and instructions shall be consistent with the contract documents and be reasonably inferable there from.

3.4.4 MEANING AND INTENT OF SPECIFICATIONS AND DRAWINGS:

If any ambiguity arises as to the meaning and Intent of any provisions of the specifications and drawings or as to execution or quality of any work of materials of the Engineer thereon shall be final subject to appeal (within 7 days of such decision being intimated to the contractor) to **the Deputy general Manager/ Chief Engineer(Civil) ---- who shall** have the powers to correct any errors, Omission, or discrepancies in the specifications, drawings,

classifications of work or materials, and those decision in the matter in dispute or doubt shall be final, inclusive and binding.

3.5 WORK ON HOLIDAYS AND DURING NIGHT:

The Contractor shall not carry out any work on holidays and between sunset and sunrise without previous permission of the engineer in writing.

3.6 DAMAGE TO COMPANY'S PROPERTY AND PRIVATE LIFE AND PROPERTY:

The contractor shall be responsible for all risk to the works and for trespass and shall make good at his own expense all loss or damage whether to the works themselves or any other property of the Company of the lives, persons connection with the works until they are taken over by the company and this although all reasonable and proper precautions may have been taken by the contractor, and in case the company shall be called upon to make good any such costs, loss and damages, or to pay compensation (including that payable under the provisions of the workman's thereof) to any person or persons sustaining damages as aforesaid by reason of any act, or any negligence or omission of the part of the contractor the amount of any costs or charges(including costs of charges in connection with legal proceedings), which the company may incur in reference thereof shall be charges to the contractor. The company shall have the power and right to pay or to defend or compromise any claim of threatened legal proceedings or in anticipation or legal proceedings being instituted consequent on the action or default of the contractor, to take such steps as may be considered necessary or desirable to word off or mitigate the effect of such proceeding, charging to the contractor, as aforesaid any sum or sums or money which may be paid and any expenses whether for reinstatement or otherwise which may be incurred and the propriety of any such payments, defence or compromise and the incurring of any such expenses shall not be called in question by the contractor.

3.7 SHEDS, STORE HOUSE AND YARDS:

The contractor shall at his own expenses provide himself with sheds, Store house, any yards in such situations and in such numbers as in the opinion of the Engineer is requisite for carrying on the works. He shall obtain from the Engineer in writing approval to the layout of the sheds, store houses and the extent of area to be enclosed by the yards, before undertaking constructions thereof.

The contractor shall keep at each of such sheds, store houses and yards a sufficient quantity of materials and plant in stock as not to delay the carrying out of the works with the due expedition and the Engineer and Engineer's representative shall have the free access to the sheds, store house or yards at any time for the purpose of inspecting the stock of materials or plant so kept in hand and any materials or plant which the Engineer may object to shall not be brought upon or used in the works, but shall be forthwith removed from the sheds, store house or yards by the contractor. The contractor shall at his own expenses provide and maintain suitable construction plant like Mixers, Compressors, Welding Sets, Mortar mills and soaking vats or any other equipment necessary for the execution of the works.

3.8 PROVISION OF EFFICIENT AND COMPETENT STAFF:

The contractor shall place and keep on the works at all-time efficient and competent staff to give the necessary directions to his workmen and to see that they execute their work in sound proper manner and shall employ only such supervisor, workmen and labourers in or about the execution of any works as are careful and skilled in their various trades and callings.

The contractor shall at once remove from the works any agent, permitted sub-contractor, supervisor workmen or labourer who shall be objected to by the Engineer, if any and

whenever required by the Engineer, he shall submit a correct return showing the names of all staff and workmen employed by him**.** In the event of the Engineer being of the opinion that the contractor is not employing on the works a sufficient number of staff and workmen as is necessary for the proper completion of the works within the time prescribed**.** The contractor shall forthwith or receiving intimation to this effect take on the additional number of staff and labour specified by the Engineer within seven days of being so required and failure on the part of the contractor to company to rescind the contractor under **clause 8.3 of these conditions.**

3.9 URGENT WORKS:

3.9.1 If any work [in respect whereof the decision of the Engineer – in – charge shall be final and binding] becomes necessary and the contractor is unable or unwilling at once to carry it out, the Engineer-in –charge may by his own or other work people, carry it out, as he may consider necessary, If the urgent work shall be such as the contractor liable under the contract to carry out at his expenses, all expenses incurred by the company shall be recoverable from the contractor and be adjusted or set off against any sum payable to his.

3.9.2 WORKMANSHIP AND TESTING:

The whole of the works and /or supply of materials specified and provided in the contract that may be necessary to be done in order to form and complete any part thereof shall be executed in the best and most substantial workman like manner with materials of the best approved quality of their respective kinds agreeable to the particulars contained in or implied by the specifications and as referred to in and represented by the drawings or in such other additional particulars, instructions and drawings as may be found requisite to be given during the carrying on the works and to entire satisfaction of the Engineer according to the instructions and directions which the contractor may from time to time receive from the Engineer. The materials may be subjected to tests by means of such machines, instruments and appliances as the Engineer may direct and wholly at the expenses of the contractor.

3.9.3 REMOVAL OF IMPROPER WORK AND MATERIAL:

The Engineer and the Engineer's representative shall be entitled to order from time to time:

The removal from the site with the time specified in the order of any materials which in his opinion are not in accordance with the specification and drawings.

The substitution of proper and suitable materials.

The removal and proper re-execution (Not withstanding of previous tests thereof or on account payments thereof) of any work which in respect of materials or workmanship is not in his opinion in accordance with the specification, and in case of default on the part of the contractor in carrying out such orders, the company shall be entitled to rescind the contract under Clause 8**.3 of these co**nditions.

3.10 FACILITIES FOR INSPECTION:

The contractor shall afford the Engineer and the Engineer's Representative every facility for entering in upon every portion of the work at all hours for the purpose of inspection or otherwise and shall provide all labour, materials, planks, ladders, pumps appliances and things of every kind for the purpose an Engineer and the Engineer's Representative shall at

all times have free access to every part of the works and to all places at which materials for the works are stored or being prepared.

3.11 EXAMINATION OF WORK BEFORE COVERING UP:

The contractor shall give notice of not less than 5 days in writing to the Engineer or the Engineer's Representative whenever any work or materials are intended to be covered up in the earth, in bodies or walls or otherwise to be placed beyond the reach of measurement, in order that the work may be inspected or that correct dimensions may be taken before being so covered/placed beyond the reach of measurement, in default whereof the same shall at the option of the Engineer or the Engineer's Representative be uncovered and measured at the contractor's expenses or no allowance shall be made for such work or material for the purpose of payments.

3.12 TEMPORARY WORKS:

All the temporary works necessary for the proper execution of all the works shall be provided and maintained by the contractor and subject to the consent of the Engineer shall be removed by him and at his expense when they are no longer required and in such manner as the Engineer shall direct. In the event of failure on the part of the contractor to remove the temporary works, the Engineer will cause them to be removed and cost as incurred by supervision and other incidental charges shall be recovered from the contractor. If temporary huts are provided by the contractor on the company's land which shall at the request of contractor be allotted by the Engineer in writing for labour engaged by him for the execution of the works. The contractor shall arrange for handing over vacant possession of the said land after the work is completed, if the contractor's labour refuse to vacate, and have to be evacuated by the company necessary expenses incurred by the company in connection therewith shall be borne by the contractor.

3.13 CONTRACTOR TO SUPPLY WATER & POWER FOR WORKS:

Unless otherwise provided for in the contract documents, the contractor shall be responsible for the arrangements to obtain supply of water and power necessary for the works and his workman. The cost of water and power has to be borne by the Contractor.

3.14 PROPERTY IN MATERIALS AND PLANT:

The materials and plant brought by the contractor upon the site or on the land occupied by the contractor in connection with the works and intended to be used for the execution thereof shall immediately they are brought upon the site or the said land, be deemed to be the property of the company, such of them as during the progress of the works are rejected by the Engineer under **clause 3.9.1 to 3.9.3** of these conditions or are declared by him not to be needed for the execution of the works or such as on the grant of the certificates of completion remain un-used shall immediately on such rejection, declaration or grant cease to be the property of the company and the contractor may then (But not before) remove them from the site or the said land. This clause shall not in any way diminish the liability of the contractor nor shall the company be if any way answerable for any loss or damages which may happen to or in respect of any materials or plant either by the same being lost, stolen, injured or destroyed by fire, tempest, or otherwise.

3.15 SUPPLY OF TOOLS, PLANT AND MATERIALS:

3.15.1 TOOLS, PLANT AND MATERIALS SUPPLIED BY COMPANY:

The Contractor shall take all reasonable care of all the Tools, Plant and Materials or other property whether of a like description or not belonging to the company and committed to charge for the purpose of the works and shall be responsible for all damage or loss caused by him, his agents or his workmen or others while they are in his charge. The contractor shall sign accountable receipts for tools, plant and materials made over to him by the Engineer and on completion of the works shall hand over the unused balanced of the same to the Engineer in good order and repair, fair wear and tear accepted and shall be responsible for any failure account for the same or any damage done thereto.

3.15.2 HIRE OF COMPANY PLANT:

The Company may at their discretion hire to the contractor such plant as concrete mixers, compressors and portable engines for use during execution of the works or for which smaller periods as the engineer may consider reasonable on such terms as may be specified in agreement for hire of plants.

3.16 PRECAUTIONS:

3.16.1 PRECAUTIONS DURING PROGRESS OF WORKS:

During the execution of works unless otherwise specified the contractor shall at his own cost provide the materials for and execute all shoring, Timbering and Strutting work as is necessary for the stability and safety of all structures, excavation works and shall ensure that no damages, injury or loss is caused or likely to be caused to any person or property.

3.16.2 ROADS AND WATER COURSES:

Existing roads or water courses or pipe, electrical lines and conduits shall not be blocked, cut through altered, diverted or obstructed in any way by the contractor, except with the permission of the Engineer in writing. All compensation claimed for any unauthorized closure, cutting through, alteration, diversion or obstructions to such roads or water courses etc., by the contractor or his agent or his staff shall be recoverable from the contractor by deduction from any sums which may become due to him in terms of the contract, or otherwise according to law.

3.16.3 PROVISIONS OF ACCESS TO PREMISES:

During progress of work in any street or thoroughfare, the contractor shall make adequate provision for the passage of traffic for securing safe access to all premises approached from such street or thoroughfare and for any drainage, water supply or means of lighting which may be interrupted by reason of the execution of the works and shall erect and maintain at his own cost diversions, barriers, lights and other safeguards as prescribed by the Engineer for the regulation of the traffic and provide watchmen necessary to prevent accidents. The work shall in such cases be executed in night and day if so ordered by the Engineer and with such vigor so that traffic may be impeded for as short a time as possible.

3.16.4 SAFETY OF PUBLIC:

The contractor shall be responsible to take all precautions to ensure the safety of the public whether on public of company property and shall post such look out men as may in the opinion of the Engineer be required to comply with the regulations appertaining to the work.

3.16.5 MOVEMENT OF CONSTRUCTIONS PLANT AND EQUIPMENT:

The contractor must take sufficient care in moving his construction plants and equipment's from one place to another so that they do not cause any damage to the property of the company, particularly to the overhead and underground cables, in event of any damages, resulting to the property of the company during the movement of aforesaid, the cost of such damages including eventual loss of working hours in any plant as estimated by the company shall be borne by the contractor.

3.17 USE OF EXPLOSIVES:

Explosives shall not be used on the works or on the site by the contractor without the permission of the Engineer in writing and then only in manner and to the extent which such permission is given. When explosives are required for the works they shall be stored in a special mezzanine to be provided at the cost of the contractor in accordance with the Explosive rules. The contractor shall obtain the necessary license for the storage and the use of the explosive and all operations in which or for which explosives are employed shall be at the sole risk and responsibility of the contractor and the contractor shall indemnify the company in respect thereof.

3.18 SUSPENSION OF WORKS:

3.18.1 The contractor shall on the order of the Engineer in writing suspend the progress of works or any part thereof for such times and in such manner as Engineer may consider necessary and shall during such suspension properly protect and secure the work so far as is necessary in the opinion of the Engineer.

3.18.1.1 If such suspension is provided for in the contract

OR

3.18.1.2 Necessary for the proper execution of the works or by reasons of weather conditions or by some default on the part of the contractor.

OR

3.18.1.3 Necessary for the safety of the works or any part thereof, the contractor shall not be entitled to any extra costs if any incurred by him during the period of suspensions of the works, but in the event of any suspension ordered by the Engineer for Reasons other than aforementioned and when each such period of suspensions exceeds 14 days the contractor shall be entitled to such extension of time for completion of the works as the engineer may consider proper having regards to the period or periods of such suspensions and such compensation as the Engineer may consider reasonable in respect of salaries or wages paid by the contractor to his employees during the periods of such suspensions. Contractor shall not resume work or part of work so suspended by the Engineer without a written order from the Engineer to that effect.

3.18.2 SUSPENSION LASTING MORE THAN THREE MONTHS:

If the progress of the works or any part thereof is suspended on the order of the Engineer in writing for more than three Months at a time, the contractor may serve a written notice to the Engineer requiring permission within 15 days from the receipt thereof to proceed with the work or part thereof in regards to which progress is suspended and if such permission is not granted within that time the contractor by a further written notice so served may (but is not bound to)elect to treat the suspension where it affects part only of the works as an omission of such part or where it affects the whole of the works as an abandonment of the contract by the company.

3.19 RATES FOR ITEMS OF WORKS:

The rates entered in the 'Accepted Schedule of Rates' of the contract are intended in provide for works duly and properly completed in accordance with the general and special (if any) conditions of contract and the specifications and drawings, together with such enlargements, extensions, diminutions, reductions, alterations or additions as may be ordered in terms of **clause 4.2.1 of** these conditions and without prejudice to the generally thereof and shall be deemed to include and cover superintendence and Labour, supply, including full freight, of materials, of stores, patterns, profiles, moulds fittings, centering, scaffoldings, shoring, props, timber, machinery, derricks, tackle, ropes, pegs, posts, tools, and all apparatus and plant, required on the works, except such tools, plant or materials, as may be specified in the contract to be supplied to the contractor by the company, the erections to maintenance and removal of all temporary works and buildings all watching, lighting, bailing, pumping, and draining, etc. All prevention of or compensation for trespass, all barriers and arrangements for the safety of the public or of employees during the execution of works, all sanitary and medical arrangements for labour camps as may be prescribed by the company, the setting out of all works and of the construction repair and upkeep of all center lines, bench mark and level pegs thereon. Site clearance, all fees, duties, royalties, rent and compensation to owners for surface damage or taxes and impositions payable to local authorities in respect of land, structures, and all the materials supplied for the work or other duties or expenses for which the contractor may become liable or may be put to under any provision of law for the purpose of or in connection with the execution of the contract, and all such other incidental charges or contingencies as may have been specially provided for in the specifications.

3.20 DEMURRAGE AND WHARF AGE DUES:

Demurrage charges calculated in accordance with the scales in the force for the time being of the company and incurred by the contractor failing to load or unload any goods or materials within the time allowed by the railways for loading or unloading as also wharf age charges on materials not removed in time as also charges due on consignments booked by or to him shall be paid by the contractor, failing which such charges shall be deducted from any sums which may become due to him in terms of contract.

3.21 RATES FOR EXTRA ITEMS:

If any items of work carried out by the contractor on the instructions of the Engineer which is not covered by the 'Accepted schedule of rates' (i.e. the Tendered Rates), rates for such additional, altered or substituted work shall be worked out in accordance with the following provisions in their respective order.

i) If the rates for the additional altered or substituted work are not specifically provided in the contract for the work the rates will be derived from rates for similar class of work as are specified in the contract for the work.

ii) If the altered, additional or substituted work included any work for which no rates are specified in the contract then such work shall be carried out at the rates entered in the CPWD Schedule of Rates 2019 (Civil) and the latest Schedule of Rates for Electrical Works, New Delhi minus / plus percentage which the total tendered amount bears to the estimated cost of the entire work put to tender.

iii) If rates for the altered, additional or substituted work cannot be determined in the manner specified in sub clause (i) or (ii) above then rates for such work shall be worked out on the basis of the schedule of rates specified in sub clause (ii) above minus/plus the percentage which the total tendered amount bears to the estimate cost of the entire work put to tender. Provided always that if the rate for a particular part or parts of the items is not in the schedule of rates, the rates for such part or parts will be determined by the Engineer on the basis of the prevailing market rates, when the work was done.

iv) If rates for the altered, additional or substituted work cannot be determined in the manner specified in sub clause (i) to (iii) above, then the contractor shall within 7 days of the date of receipt of order to carry out the work, inform the Engineer of the rate which it is his intention to charge supported by analysis of the rate or rates claimed and the Engineer shall determine the rates on the basis of prevailing market rates and pay the contractor accordingly. However, the Engineer by notice in writing will be at liberty to cancel his order to carry out such work and arrange to carry out it out in such manner as he may consider advisable, provided always if the contractor commences the work or incur any expenditure before determination of the rate(s) herein before mentioned, then in such case the contractor shall be entitled to be paid in respect of the work carried or expenditure incurred prior to date of determination of the rates as aforesaid to such rate or rates as shall be fixed by the company. But under no circumstances the contractor shall suspend the work on plea of non-settlement of rates for items falling under this clause.

3.22 HANDING OVER OF WORKS:

The contractor shall be bound to hand over the works executed under the contract to the company complete in all respects to the satisfaction of the Engineer. The Engineer shall determine the date on which the work is considered to have been completed in support of which his certificate shall be regarded as sufficient evidence for all purposes. The Engineer shall determine, from time to time the date on which way particular section of the work shall be have been completed, and the contractor shall be bound to observe any such determination of the Engineer.

3.23. CLEARANCE OF SITE ON COMPLETION:

On the completion of the works the contractor shall clear away and remove from the site all constructional plant, surplus materials, rubbish and temporary works of every kind and leave the whole of the site and works clean to the satisfaction of the Engineer.

No Final payment in settlement of the accounts for the works shall be made or held to be due to the contractor till in addition to any other condition necessary for such final payment, site clearance shall have been effected by him and such clearance may be made by the Engineer at the expenses of the contractor. In the event of his failure to comply with this provision within 7 days after receiving notice to that effect, should it become necessary for the Engineer to have the site cleared at the expense of the contractor, the company shall not be held liable for any loss or damage to such of the contractor's property as may be on the site and due to such removal, there from, which removal may be effected by means of public sale of such materials and property or in such a way as deemed fit and convenient to the Engineer.

3.24. ACTION AND COMPENSATION PAYABLE IN CASE OF BAD WORK

If it shall appear to the Engineer-in-Charge or his authorized subordinate in charge of the work or to the Chief Technical Examiner or to any other inspecting agency of Government/ State Government/ Owner where the work is being executed, that any work has been executed with unsound, imperfect, or unskillful workmanship or with materials of any inferior description, or that any materials or articles provided by him for the execution of the work are unsound or of a quality inferior to that contracted for or otherwise not in accordance with the contract, the contractor shall on demand in writing which shall be made within six months of the completion of the work from the Engineer in-Charge specifying the work, materials or articles complained of notwithstanding that the same may have been passed, Certified and paid for forthwith rectify, or remove and reconstruct the work so specified in whole or in part as the case may require or as the case may be, remove the materials or articles so specified and provide other proper and suitable materials or articles at his own proper charge and cost, and in the event of his failing to do so within a period to be specified by the Engineer-in-Charge in his demand aforesaid, then the Contractor shall be liable to pay compensation at the rate of one percent of the estimated amount put to tender for every day not exceeding ten days, while his failure to do so shall continue and in the case of any such failure, the Engineer-in-Charge may rectify or remove and re-execute the work or remove and replace with others, the material or articles complained of as the case may be at the risk and expense in all respects of the contractor.

3.25. POSSESSION PRIOR TO COMPLETION

3.25.1 ITI LTD shall have the right to take possession of or use any completed or partially completed work or part of the work. Such possession or use shall not be deemed to be any acceptance of any work not completed in accordance with the contract agreement. If such prior possession or use by ITI LTD delays the progress of work an equitable adjustment in the time of completion will be made and the contract agreement shall be deemed to be modified accordingly. The decision of ITI LTD in this case shall be final binding and conclusive.

When the whole of the works or the items or the groups of items of work for which separate periods of completion have been specified have been completed the contractor will give a notice to that effect to the Engineer-in-Charge in writing. The Engineer in-Charge shall within 7 days of the date of receipt of such notice inspect the works and either the Engineer-in-

Charge issues to the contractor a completion certificate stating the date on which in his opinion the works were completed in accordance with the contract or gives instructions in writing to the contractor specifying the balance items of work which are required to be done by the contractor before completion certificate could be issued. The Engineer-in-Charge shall also notify the contractor of any defect in the works affecting completion.

3.25.2 The contractor shall during the course or execution prepare and keep updated a complete set of 'as built' drawings to show each and every change from the contract drawings, changes recorded shall be countersigned by the Engineer-in-Charge and the contractor. Four copies of 'as built drawings shall be supplied to ITI LTD by the contractor within 30 days of the completion. All costs incurred in this respect shall be borne by the contractor only.

4.0 VARIATION IN EXTENT OF CONTRACT:

4.1 MODIFICATIONS TO THE CONTRACT TO BE IN WRITING:

In the event of any of the provisions of the contract requiring to be modified after the contract documents have been signed, the modifications shall be made in writing and signed by the company and the contractor. Any verbal or written arrangements abandoning, modifying, extending, reducing or supplementing the contract or any of the term thereof shall be deemed conditional and shall not be binding on the company unless and until the same is incorporated in a formal instrument and signed by the company.

4.2 POWER OF MODIFICATIONS TO CONTRACT:

4.2.1 The Engineer on behalf of the company shall be entitled by order in writing to enlarge or extend, diminish or reduce the works or make any alterations in their design, character, position, site, quantities, dimensions or in the method of their execution or in the combination and use of materials for the execution thereof and to order any additional works to be done or any works not be done as provided on **clause 4.2.2** the contractor will not be entitled to any compensation for any reductions and for approved materials furnished against a specific order.

4.2.2 VALUATION OF VARIATIONS:

The enlargements extensions, diminutions, reduction, alterations or additions referred to in **clause 4.2.1** shall in no degree affect the validity of the contract but shall be performed by the contractor as provided therein and be subject to the same conditions, stipulations and obligations as if they had been originally and expressly included and provided for in the specifications and drawings and the amounts to be paid there for shall be calculated in accordance with the accepted schedule of rates and for extra items of works at the rates determined under the **clause 3.21** of these conditions.

4.2.3 VARIATION IN QUANTITIES:

If required, the Contractor shall have to execute additional quantities of items within the site to the extent of 25% [Twenty-five percent] of the accepted contract sum. The said percentage of 25% apply separately to Civil, Water supply and Sanitary Installations Internal

External Electrical works. No adjustment of rates shall be made up to this limit and the terms and conditions of the contract shall remain unaltered.

If the variation is beyond 25% specified, the quantity of items beyond 25% increase will be considered as extra items and the rates for the same shall be worked out as per clause 3.21- II to IV. The decision of the Engineer in charge in the matter will be final and binding.

5.0 CLAIMS:

5.1 MONTHLY SETTLEMENT OF CLAIMS:

5.1.1 The contractor shall prepare and furnish to the Engineer once in every month an amount giving full and detailed particulars of all claims for any additional expense to which the contractor may consider himself entitled and of all extra or additional works ordered by the Engineer which he has expected up to and including the preceding month under the following sub-heads:

a) Deviations from items and specifications provided in contract documents.

b) Extra items of Work.

c) Quantities in excess of those provided in the contract schedule.

d) Items in respect of which the rates have not been settled.

No claim for payment for any such work will be considered which has not been included in such particular.

He should in addition furnish a clear certificate to the effect that the claims submitted by him as aforesaid cover all the claims and that no further claims shall be raised by him in respect of the works done up to and including the period under report.

5.1.2 SIGNING OF 'NO-CLAIMS' CERTIFICATE:

The contractor shall not be entitled to make any claim so ever against the company under or virtue of entertain or considered any such claim, if made by the contractor, after he shall have signed "No Claim" certificate in favour of the company, in such form as shall be required by the company.

5.1.3 SUBMISSION OF BILLS:

The contractor shall submit the bills in quadruplicate on the prescribed form(s) of the company. For "On Account" payment, bill shall be submitted by the contractor periodically depending on the progress of work at site.

All payments due shall be subject to any deductions which may be made under these presents and shall further be subject to unless otherwise required by **clause 2.12** of these conditions, a retention of 7% percent by way of security deposit until the amount of security deposit by way of the retained earnest money *and such retention shall total up to the required amount of the security deposit.*

6.0 MEASUREMENT CERTIFICATES AND PAYMENTS:

6.1 QUANTITIES IN SCHEDULE ANNEXED TO CONTRACT:

The quantities set out in the accounted schedule of rates are the estimated quantities of the works and they shall not be as the actual and correct quantities of the work to be executed by the contractor in fulfillment of his obligations under the contract.

6.2 MEASUREMENTS OF WORKS:

The contractor shall be paid for the works at the rates in the accepted schedule of rates and for extra works at the rates determined under **clause 3.21** of these conditions on the measurements taken by the Engineer or the Engineer's representative in accordance with rules prescribed for the purpose by the company.

6.3 ON ACCOUNT PAYMENTS:

6.3.1 No payments shall be made for the works estimated to cost rupees Ten thousand or less till after the whole work shall have been completed and certifications of completion given.

For works estimated to cost more than Ten thousand, the contractor shall submit a bill there on and be entitled to receive running account payment proportionate to the part there of then executed to the satisfaction of the Engineer whose certificate of the sum so payable shall be final and conclusive against the final payment only and not as payments for work actually done and completed and shall not preclude the requiring of bad, unsound and imperfect or unskilled work to be removed and taken away and reconstruct or re-erected or be considered as an admission of the due performance of the contract or the part thereof in any respect or the accruing of any claim nor shall it conclude, determine or affect in any way the powers of the engineer under these conditions or any of them as to the final settlement and adjustment of accounts or otherwise, or in any other way or affect the contract.

6.3.2 ROUNDING OFF AMOUNTS:

In calculating the amount of each item due to the contract in every certificate prepared for payment sums of less than 50 Paisa shall be omitted and the total amount on each certificate shall be rounded off to the nearest rupee, i.e. sums of less than 50 paisa shall be omitted and sums of 50 paisa and more up to one rupees shall be reckoned as one rupee.

6.3.3 'ON ACCOUNT' PAYMENT NOT PREJUDICIAL TO FINAL SETTLEMENT:

'On Account' payments made to the contractor shall be without prejudice to the final making up of the accounts (except where measurements are specifically noted in the measurement book as 'Final Measurement' and as such have been signed by the contractor) and shall in no respect be considered or used as evidence of any facts stated in or to be inferred from such accounts nor of any particular quantity of work having been executed nor of the manner of its execution being satisfactory.

6.3.4 MANNER OF PAYMENT:

Payments due to the contractor shall be made by a crossed 'A/c Payee' Cheque, forwarding the same to the registered or notified office of the contractor, alternately he may collect it personally. However, in case the contractor does not have a bank account, provided he has notified the company then ordinary crossed Cheque may be issued. In no case will the

company be responsible if the Cheque is mislaid or misappropriated by unauthorised person or persons. Or Payments shall be made through RTGS/NEFT.

The contractor shall always give a stamped receipt duly signed in token of payment of any sums by the company.

6.4 ***MAINTENANCE WORKS: [Defects liability period]***

The Contractor shall at all time during the progress and continuous of the works and for the period of Maintenance [Defects Liability period] which will **be 12 months** after the date of the passing of "Certificate of completion" by the Engineer or any other earlier date subsequent to the completion of the works that may be fixed by the Engineer be responsible for and effectually maintain and uphold the sound and perfect conditions all and every part of the works and shall make good from time to time and at all times as often as the engineer shall require any damage or defect that may during the above period arise in or be discovered or be in any way connected with the works, provided that such damage or defects not directly caused by errors in the contracts documents, and the contractor shall be liable for and shall pay and make good to the company or other persons legally entitle thereto whenever required by the engineer to do so, all losses damages costs and expenses they or any of them may occur or be put of the preparations of the contractor or his failure in any respect.
In case the contractor fails to carry out these rectifications, the same may without prejudice to any other right or remedy available be got rectified by ITI at the cost and expenses of the contractor.

6.5 CERTIFICATE OF COMPLETION OF WORK:

6.5.1 As soon as in the opinion of the engineer the work shall have been substantially completed shall have satisfactorily passed any final test that may be prescribed, the engineer shall issue a certificate of completion in respect of the works and the period of Maintenance shall commence from the date of such certificate, provided that the engineer may issue such a certificate with respect to any part of the works before the completion of the whole of the works or with respect to any substantial part of the work which has been both completed to the satisfaction of the engineer and occupier or used by the company and when any such certificate is given in respect of a part of the work, such part shall be considered as completed and the period of maintenance of such part shall commence from the date of such certificate.

6.5.2 CONTRACTOR NOT ABSOLVED BY COMPLETION CERTIFICATE:

The Certificate of completion in respect of the work referred in **clause 6.5.1** shall not absolve the contractor from his liabilities to make good any defects , imperfections, shrinkage or faults which may appear during the "Maintenance period" specified in the contract arising in the opinion of the Engineer from materials or workmanship not in accordance with the drawings or specifications for instructions of the Engineer, which defects, imperfections, shrinkages or faults shall upon the directions in writing of the Engineer be amended and made good by the contractor at his own cost and in case of default on the part of contractor, the engineer may employ labour and materials, or appoint another contractor to amend and make good such defects imperfections, shrinkages or

faults and all expenses consequent thereon and incidental thereto shall be borne by the contractor and shall be recoverable from any money due to him under the contract.

6.6 APPROVAL ONLY BY MAINTENCE CERTIFICATE:

No due certificate other than "Maintenance Certificate" referred to in ***clause 6.7*** of these condition shall be deemed to constitute approval of any work or other matter in respect of which it is issued or shall be taken as an admission of the due performance of the contract, or any part thereof or of the accuracy of any claim or demand made by the contractor or of additional or varied work having been ordered by the engineer not shall any other certificate conclude or prejudice any of the power of the engineer.

6.7 MAINTENCE CERTIFICATE:

6.7.1 The contract shall not be considered as complete until a Maintenance certificate shall have been signed by the engineer stating that the works have been completed and maintained to his satisfaction. The maintenance certificate shall be given by the engineer upon the expiration of the period of maintenance or as soon thereafter as any works ordered during such period pursuant to clause **6.5.2 of** these conditions shall have been completed to the satisfaction of the engineer and full effect shall be given to this clause notwithstanding the taking possession of our using the works or any part thereof by the Company.

6.7.2 CESSATION OF COMPANY'S LIABILITY:

The company shall not be liable to the contractor for any matters arising out of or in connection with the contract or the execution of the works unless the contractor shall have made a claim in writing in respect thereof before the issue of the Maintenance certificate under this clause.

6.7.3 UNFULFILLED OBLIGATIONS:

Notwithstanding the issue of the Maintenance Certificate the contractor or/and (subject to clause 6.7.2) the company shall remain liable for the fulfillment of any obligations incurred under the provisions of the contractor prior to the issue of the Maintenance certificate which remains unperformed at the time such certificate is issued and for the purpose of determining the nature and extent of any such obligation the contract shall be deemed to remain in force between the parties hereto.

6.8 PAYMENT:

6.8.1 FINAL PAYMENT:

On the Engineer's certificate of completion in respect of the works, an adjustment shall be made and the balance of amount based on the Engineer's representative certified measurement of the total quantity of work executed by the contractor up to the date of completion and on the accepted schedule of rates and for extra works on rates determined under **clause 3.21** of these conditions shall be paid to the contractor subject always to any deductions which may be made under these payments and further subject to the contractor having delivered to the engineer either a full account in detail of all claims he may have on the company in respect of the works having delivered a 'No Claim' certificate and to the

Engineer having after the receipt of such account given a certificate in writing that such claims are correct, that the whole of the works to be done under the provisions of the contract have been completed, that they have been inspected by him since their completion and found to be in good substantial order, that all properties works and things removed, disturbed or injured in consequence of the works, have been properly replaced and made good and all expenses and demands incurred by or made upon the company for or in the respect of damage or loss by, from or in consequence of the works, have been satisfied agreeably and in conformity with the contract.

FINAL BILL:

The final bill shall be submitted by the Contractor within one month of the date of certificate of completion furnished by the Engineer and payment shall be made within three months if the amount of contract plus that of the additional items is up to Rs. 2 lakhs and in six months if the same exceeds Rs. 2 lakhs of the submission of such bills. If there shall be any undisputed about any item or items of the work, then the undisputed items or items only shall be paid within the said period of three months or six months as the case may be.

6.8.2 REFUND OF SECURITY DEPOSIT:

Security deposit shall be refunded to the contractor on the Engineer-in-Charge certifying in writing that the work has been completed as per Conditions **6.5.1-**hereto etc. On expiry of the defects liability period [referred to in condition **6.4** hereto] or on payment of the amount of the final bill payable in accordance with condition **6.8.1.1** whichever is later, the Engineer-in-charge shall on demand from the contractor refund to him the remaining portion of the security deposit provided the Engineer – in –charge is satisfied that there is no demand outstanding against the contractor.

6.9 COMPANY'S LIEN ON ALL MONEYS DUE AND POST PAYMENT CHECK:

The company shall have a lien on and all or any moneys that may become due and payable to the contractor under these presents and/or also on and over the deposit or security amount or amounts made under the contract and which may become repayable to the contractor under the conditions in that behalf herein contained for ,or, in respect of any debt sum that may become due and payable to the company by the contractor either alone or jointly with another or others and either under this and under any other contract or transactions of any nature whatsoever between the company and the contractor.

The company reserves the right to carry out a post payment audit and/ or Technical examination of the works and the final bills including all supporting vouchers, abstracts etc., and to enforce recovery if as a result of such examination, any over-payment is discovered in respect of any work done by the contractor or alleged to have been done by him under the contract and such recovery will be made by the company from the contractor by any or all of the methods presented above. If on the other hand any under payment is discovered the amount shall be duly paid to the contractor by the company. Further the company reserves the right to make such recoveries and adjustment notwithstanding the fact that the amount of the final bill may be included by one of the parties as an item of dispute before any arbitrator appointed under the arbitration clause of the contract and notwithstanding the fact that the amount of the final bill figures in the Arbitrators award. And further unless the

contractor pays and clear the claims of the company immediately on demand, the said debit or sum by the contractor from the moneys, securities or deposit which may have become or will become payable to the contractor or under these presents or under any other contract or transactions whatsoever between the contractor and the company.

6.10 SIGNATURE ON RECEIPTS FOR AMOUNTS:

Every receipts for moneys which may become payable or for any security which may become transferable to the contractor, under these presents, shall notwithstanding anything to the contrary contained in the partnership deed, if signed in the partners in name by any one of the partners of a contractors firm be a good and sufficient discharge to the company in respect of the money or security purported to be acknowledged, thereby and in the event of death of any of the contractor partners during the tendency of contract, it is hereby expressly agreed that every receipt by any one of the surviving contractor partners shall if so signed as aforesaid to be a good and sufficient discharge as aforesaid provided that nothing in this clause contained shall be deemed to prejudice shall be deemed to prejudices or affect any claim which the company may hereafter have against the legal representatives of the contractors partner so dying or in respect of any breach of any of the conditions of the contract, provided also that nothing in this clause contained shall be deemed to prejudice or affect the respective rights or obligations of the contractor partners and of the representatives of any deceased partner.

7.0 LABOUR:

LABOUR LAWS:

The contractor shall obtain a valid license under the contract labour [Regulation &Abolition] act 1971 and the contract labour Act [Regulation & Abolition] Central rules 1971 and amended from time to time, and continue to have a valid license until the completion of the work including defects liability period. The contractor shall also adhere by the provisions of child labour [prohibition and regulation] Act 1986 and as amended from time to time.

The contractor shall also comply with the provisions of the building and other construction works [Regulation of Employment & conditions of Service] Act, 1996 and the building and other construction worker's welfare Cess Act 1996.

Any failure to fulfil the above requirement shall attract the penal provisions of this contract arising out the resultant for non-execution of the work before the commencement of work. No labour below the age of 18 years **shall be employed on the work.**

7.1 WAGES TO LABOUR:

The contractor shall comply with the provisions of the minimum wages act, (herein after referred to as the "said act") and the rules made thereunder in respect of any employees employed by him on road constructions or in building operations or in stone breaking or stone crushing or any other work being executed for the company by the contractor for the purpose of carrying out this contract.

If, in compliance with terms of the contract, the contractor supplies any labour to be used wholly or partly under the direct orders and control of the company whether in connection

with any work being executed by the contractor or otherwise for the purpose of the company such labour shall for the purpose of this clause, still be deemed to be persons employed by the contractor.

If any moneys shall, as a result of any claim or applications made under the said act be directed to be paid by the company, such moneys shall be payable to the company by the contractor. On failure by the contractor to repay the company aforesaid amount within seven days after a notice writing by the Engineer, the company shall be entitled to recover the same from any moneys due to accruing under this or any contract with the company.

a) LABOUR SAFETY PROVISION:

The contractor shall be fully responsible to observe the labour safety provisions.

The contractor shall at his own cost take all precautions to ensure safety of life and property by providing necessary barriers, lights, watchmen etc., during the progress of work as directed by Engineer in charge.

In case of all labour directly or indirectly employed in work for the performance on the contractor's part of this contract, the contractor shall comply with all rules framed by Govt. *from time to time for the protection of health and sanitary arrangement for workers.*

7.2 INSURANCE:

The contractor shall, at his own expense, carry and maintain insurance to the satisfaction of the company as follows:
If and when the Employees State Insurance Act is made applicable to the site of works, the contractor agrees to and does hereby accept the full and exclusive liability for the compliance with all obligations imposed by the Employees State Insurance Act as modified from time to time and the contractor further agrees to ensure the compliance of all sub-contractors with the applications of the said Act. The contractor further agrees to defend, indemnify and hold harmless the company from any liability or penalty which may be passed by any State or Local Authority by reason of any asserted violations by the contractor or sub-contractors of the Employees State Insurance Act and also from all claims, suits or proceedings that may be brought against the company arising under, occurring out of/or be Central or State Government authorities, or any political sub divisions thereof. The company shall retain such sums as may be necessary from the total contract value until the contractor shall furnish satisfactory proof that all payments as required by the Employees State Insurance Act have been paid.

7.3 PROVISION OF PAYMENT OF WAGES ACT:

The contractor shall comply with the provisions of the payment of wages Act and the rules made there under in respect of all employees employed by him on the works. If in compliance with the terms of the contract the contractor supplies any labour to be used whole or partly under the direct orders and control of the Engineer whether in connection with the works to be executed hereunder or otherwise for the purpose of company such labour shall nevertheless be deemed to comprise persons employed by the contractor and any moneys which may be ordered to be paid by the company shall be payable to the company by the contractor. On failure of the contractor to repay such moneys to the company within 7 days after a notice in writing by the Engineer, the company shall be entitled to deduct from any money due to the contractor (whether under this contract or any other

contract). The decision of the Engineer upon any question arising out of the effect or force of this clause shall be final and binding upon the contractor.

7.4 REPORTING OF ACCIDENTS TO LABOUR:

The contractor shall be responsible for the safety of all employees employed by him on the works and shall report serious accidents to any of them however and wherever occurring on the works to the Engineer or them Engineer's representative and shall make every arrangement to render all possible assistance.

7.5 WORKMEN'S COMPENSATION:

7.5.1 PROVISION OF WORKMEN'S COMPENSATION ACT:

i) Insurance shall be effected for all the contractor's Employees engaged in the performance of this contract. If any of the work is sublet, the contractor shall require the sub-contractor to provide workmen's compensation and Employee Liability Insurance for the latter's employees unless such employees are covered under the contractor's insurance, or by reason of the work provided for by this contract whether brought by employees of the contractor by third parties.

ii) In every case in which by virtue of the provisions of the workmen's compensation Act, company is obliged to pay compensation to a workman employed by the contractor in executing work the company will recover from the contractor the amount or the compensation so paid, and without prejudice to the right of company under the said Act, company shall be at liberty to deduct it from the security deposit or from any sums payable to the contractor, whether under this contract or otherwise company shall not be bound to contest any claim made against it under the said act except on the written request of the contractor and upon his giving to company full security for all costs for which company might become liable in consequence of contesting such claim.

7.5.2 PROVISIONS OF MINES ACT:

The contractor shall observe and perform all the provisions of the mines Act or any statutory modifications or re-enactment thereof for the time being in force and any rules and regulations made there under in respect of all the persons employed by him under this contract and shall indemnify the company from and against any claims under the mines act or the rules and regulations framed there under by or on behalf of any persons employed by him or otherwise.

7.6 COMPANY NOT TO PROVIDE QUARTERS FOR CONTRACTOR:

No quarters shall normally be provided by the company for the accommodation of the contractor or any of his staff employed on the works. In exceptional cases where accommodation is provided to the contractor at the company's discretion, recoveries shall be made at such rates as may fixed by the company for the full rent of the buildings and equipment therein as well as charges for electric current, water supply and conservancy etc.

7.7 LABOUR SAFTY:

7.7.1 LABOUR CAMP:

The contractor shall at his own expense make adequate arrangements for the housing, supply of drinking water and provision of latrines and urinals for his staff and workmen, and for temporary crèche(Balmandir) where 50 or more women are employed at a time. Suitable sites at company's land, if available may be allotted to the contractor for the erection of labour camps, either free of charge or on such terms and conditions that may be prescribed by the company. All camp-sites shall be maintained in clean and sanitary conditions by the contractor at his cost. The contractor shall have no authority to establish or to issue a concessions or permits of any kind to the third parties establishing commercial amusement or other for establishment upon land owned or controlled by the Company.

7.7.2 COMPLIANCE TO RULES FOR EMPLOYMENT OF LABOUR:

The contractor shall conform to all laws, bye laws, rules and regulations for the time being in force pertaining to the employment of local or imported labour and shall take all necessary precaution to ensure and preserve the health and safety of all staff employed on the works.

7.7.3 PRESERVATION OF PEACE:

The contractor shall take requisite precautions and use his best endeavors to prevent any riotous or unlawful behavior by or amongst his workmen and others employed on the works and for the preservation of peace and protection of the inhabitants and security of the property in the neighborhood of the work. In the event of the Company requiring the maintenance of a special police force at or in the vicinity of the site during the tenure of work, the expenses thereof shall be borne by the contractor and if paid by the company shall be recoverable from the contractor.

7.7.4 SANITARY ARRANGEMENTS:

The contractor shall obey all sanitary rules and carry out all sanitary measures that may from time to time prescribed by the company and permit inspection of all sanitary arrangements at all times by the Engineer, the Engineer's representatives or the medical staff of the Company, should the contractor fail to make adequate sanitary arrangements these will be provided by the company and the cost thereof recovered from the Contractor.

7.7.5 OUTBREAK OF INFECTIOUS DISEASE:

The contractor shall remove from his camp such labour and their families who are infected as refugee. Protective inoculation and vaccination shall be arranged by the contractor at his own cost when called upon to do so by the Engineer or Engineer's Representative. Should Cholera, Plague or any other infectious disease break out the contractor shall burn the huts, beddings, clothes and other belongings of or used by the infected parties and promptly erect new huts on healthy sites as required by the Engineer, failing which within the time specified in the Engineer's requisition, the work may be done by the company and the cost thereof recovered from the Contractor.

7.7.6 TREATMENT OF CONTRACTOR'S STAFF IN COMPANY'S HOSPITALS:

The contractor and his staff, other than labourers and their families requiring medical aid from company's hospitals and dispensaries (if so situated and existing) will be treated as Private Patients and charge accordingly. The contractor's labourers and their families may also be granted medical treatment in the company hospital and dispensaries where no other hospitals or dispensaries are available, provided the contractor pays the cost of medicines, dressings and diet according to the normal scale, as also additional charges if any for special examination e.g. X-rays etc.

7.7.7 MEDICAL FACILITIES AT SITE:

The contractor shall provide medical facilities at the site as may be prescribed by the Engineer on the advice of the prescribed Medical Authority of the company or any other authority in relation to the strength of the contractor's resident staff and workmen.

7.7.8 USE OF INTOXICANTS:

The sale of ardent spirits or other intoxicating beverages upon the work in any of the buildings encampments or tenements owned, occupied by or within the control of the contractor or any of his employee is forbidden and the contractor shall exercise his influence and authority to the utmost extent to secure strict compliance with this condition.

7.7.9 NON – EMPLOYMENT OF LABOURERS BELOW THE AGE OF 14:

The contractor shall not employ children below the age of 14 as labourers for the execution of work.

7.7.10 RETURN OF LABOUR ETC:

The contractor shall if required by the Engineer deliver to the Engineer's Representative or at is office a return in detail in such form and such intervals as the Engineer may prescribe, showing the number of the several classes of Labour from time to time employed by the contractor at the site.

8 DETERMINATION of CONTRACT:

8.1 RIGHT OF COMPANY TO DETERMINE THE CONTRACT:

The company shall be entitled to determine and terminate the contract at any time should in the company's opinion, the cessation of work become necessary owing to paucity of funds or form any other cause whatsoever, in which case the value of approved materials at site and of work done to date by the contractor will be paid for in full at the rates specified in the contract. Notice in writing from the company of such determination and the reasons there for shall be conclusive evidence thereof and binding upon the contractor.

8.2 PAYMENT ON DETERMINATION CONTRACT BY COMPANY:

Should the contract be determined under clause 8.1 and the contractor claims payment for expenditure incurred by him in the expectation of completing the whole works, the company shall admit and consider such claims as are deemed reasonable and are supported by vouchers to the satisfaction of the Engineer. The contractor shall, however, have no claim

to any payment whatsoever on account of profit and advantage which he might have derived from the execution of the work in full but which he did not derive in consequence of the determination of the contract. The company's decision on the necessity and propriety of such expenditure shall be final and conclusive.

8.3 DETERMINATION OF CONTRACT OWING TO DEFAULT OF CONTRACT:

If the contractor should –

8.3.1.1 Become bankrupt or insolvent

Or

8.3.1.2 Make an arrangement, with or assignment in favour of his creditors, or agree to carry out the contract under a committee of Inspection of his creditors.

Or

8.3.1.3 Being a company or corporation, go into liquidation (Other than a voluntary liquidation for the purpose of amalgamation or reconstruction).

Or

8.3.1.4 Have an execution levied on his goods or property on the works.

Or

8.3.1.5 Assign the contract or any part thereof otherwise than as [provided in condition 2.6 of these conditions.

Or

8.3.1.6 Abandon the contract

Or

8.3.1.7 Persistently disregard the instructions of the Engineer, or contravene any provisions of the contract.

Or

8.3.1.8 Fail to adhere to the program of work by a margin of 10% of the stipulated period.

Or

8.3.1.9 Fail to remove materials from the site or to pull down and replace work after receiving from the Engineer's notice to the effect that the said materials or work have been condemned or rejected under condition **3.9 of** these conditions.

Or

8.3.1.10 Fail to take steps to employ competent or additional staff and Labour as required under **condition 3.8** of these conditions

Or

8.3.1.11 Fail to afford Engineer or Engineer's Representative proper facilities for inspecting the works or any part thereof as required under **conditions 3.10** of these conditions.

Or

8.3.1.12 Promise offer or give any bribe, Commission, Gift or advantage either himself or through his partner, agent or servant to any officer or employee of the company, or to any person on his or in their behalf in relation to the execution of this or any other contract with company.

Then and in any of the aforesaid cases, the Engineer on behalf of the company may serve the contractor with a notice in writing to that effect and if the contractor does not within 7 days after the delivery to him of such notice proceed to make good his default in so far as the same is capable of being made good and carry on the work or comply with such directions as aforesaid to the entire satisfaction of the Engineer, the company shall be entitled after giving 42-hour notice in writing under the hand of the accepting authority to rescind the contract as a whole or in a part or parts(as may be specified in such notice) and adopt either or both of the following courses.

a) To carryout whole or part of the work from which the contractor has been removed by the employment of the required labour and materials, the costs of which shall include lead, lift, freight, supervision and all such incidental charges.

b) To Measure up the whole or part of the work from which the contractor has been removed and to get it completed by another contractor.

The manner and method in which such work is completed shall be in the entire discretion of the accepting authority whose decision shall be final and in both cases (a) and (b) mentioned above and company shall be entitled to:

i. To forfeit the whole or such portion of the security deposit as it may consider fit.

AND

ii. To recover from the contractor the cost of carrying out the work in excess of the sum which would have been payable according to the certificates of the Engineer to the contractors, if the works had been carried out by the contractor under the terms of the contract, such certificate being final and binding upon the contractor, provided however, such recovery shall be made only when the cost incurred in excess is more than the security deposit proposed to be forfeited and shall be limited to the amount by which the cost incurred in excess is more than the security deposit proposed to be forfeited and shall be limited to the amount by which the cost incurred in excess, exceeds the security deposits proposed to be forfeited. The amount thus to be forfeited or recovered may be deducted from any moneys then due or which at any time thereafter may become due to the contractor by the Company under this or any other contractor or otherwise.

Provided always that in any case, in which any of the powers conferred upon the company by sub-clause as above shall have become exercisable and the same shall not be exercised, the non-exercise thereof shall not constitute a waiver of any of the conditions thereof, such powers shall notwithstanding to exercisable in the event of any future case of default by the contractor for which his liability for past and future shall remain unaffected.

8.3.2 RIGHT OF COMPANY AFTER RESCISSION OF CONTRACT OWING TO DEFAULT OF CONTRACTOR.

In the event of any of several of the courses, referred to in conditions **8.3** of this clause, being adopted:

8.3.2.1 The Contractor shall have no claim to compensation for any loss sustained by him by reason of his having purchased or procured any materials or entered into any commitments or made any advance on account or with a view to the execution of the works of the performance of the contract and Contractor shall not be entitled to recover or be paid any sum for any work thereto or actually performed under the contract unless until the Engineer shall have certified the performance of such work and the value payable in respect where of any the Contractor shall only be entitled to be paid the value so certified.

8.3.2.2 The Engineer or the Engineer's representative shall be entitled to take possession of any materials, tools, implements, machinery and buildings on the works or on the property on which these are being or brought to have been executed, and to retain and employ the same in the further execution of the works or and part thereof until the completion of the works without the Contractor being entitled to any compensation for the use and employment there of or for wear and tear or destruction thereof.

8.3.2.3 The Engineer, shall as soon as may be practicable after removal of the Contractor fix and determine ex-party or by or after reference to the parties or after such investigation or inquiries as he may consider fit to make or institute and shall consider fit to make or had at the time or rescission of the contract been reasonably earned by or would reasonably accrue to the Contractor in respect of the work then actually done by him under the contract and what was the value of any unused, or partially used materials, any construction plant and temporary works upon the site.

8.3.2.4 The Company shall not be liable to pay to the Contractor any money on account of the contract until the expiration of the period of maintenance and thereafter until the cost of completion and maintenance damages (if any), and all other expenses incurred by the Company have been ascertained and the amount thereof certified by the Engineer. The Contractor shall then be entitled to receive only such sum or sums (if any) as the Engineer may certify would have been due to him upon due completion by him after deducting the said amount, but if such amount exceeds the sum which would have been payable to the Contractor, shall upon demand, pay to the Company the amount of such excess and it shall be deemed a debit by the Contractor to the Company and shall be recoverable accordingly.

8.3.3 TERMINATION OF CONTRACT FOR DEATH:

If the contractor is an individual or a proprietary concern and the individual or the proprietor dies and if the contractor is a partnership concern and one of the partner dies then unless the company is satisfied that the legal representative of the individual contractor or of the proprietor of the proprietary concern and in the case of partnership, the surviving partners, are capable of carrying out and completing the contract, the company shall be entitled to cancel the contract as to its incomplete part without the company being in any way liable to payment of any compensation to the estate of the deceased contractor and/or to the surviving partners of the contractors firm on account of the cancellation of the contract. The decision of the company that the legal representative of the deceased contractor or the surviving partners of the contractor's firm cannot carry out and complete the contract shall be final and binding on the parties. In the event of such cancellation the company shall not hold the estate of the deceased contractor and/or the surviving partners of the contractor's firm liable for damages for not completing the contract.

8.4 EMPLOYMENT OF APPRENTICES:

The Contractor shall comply with provision of the "Apprentice Act 1961" and rules and orders issued there under from time to time. If he fails to do so, this failure will be construed as breach of contract and the company may at its discretion, cancel the contract without prejudice to the rights of the company. The contractor shall also be liable for any pecuniary liability arising on account of any violation by him of the provisions of the said Act.

9 FORCE MAJEURE:

Any delay in or failure to perform of either party shall not constitute default so as to give rise to any claim for damages, to the extent such delay or failure to perform is caused by an act or God or by fire, explosion, flood or other natural catastrophe, governmental legislation, orders or regulation etc . Failure of the client/owner to hand over the entire site and / or release funds for the project to ITI shall also constitute for majeure. The time for performance of the obligation by the parties shall be deemed to be extended for a period equal to the duration of the force majeure event. Both parties shall make their best efforts to minimize the delay caused by the force majeure event. If the failure/delay of the client/owner in handing over the entire site and /or in releasing the funds continues even on the expiry of the stipulated date of completion ITI may at the request of the contractor, foreclose the contract without any liability to either party. In the event of such foreclosure the contractor shall not be entitled to any compensation whatsoever, If prior to such foreclosure the contractor has brought any materials to the site, the Engineer in charge shall always have the option of taking over all such materials at their purchase price or at the local current rates, whichever is lower.

10 **SETTLEMENT OF DISPUTES:**

10.1 MATTERS FINALLY DETERMINED BY THE COMPANY

All disputes or difference of any kind whatever arising out of or in connection with the contract, whether during the progress of the works or after completion and whether before or after the determination of the contract, shall be referred by the Contractor to the Company and the Company shall within a reasonable time after their representation make and notify decision thereon in writing. The decisions, direction and certificates with respect to any conditions given and made by the Company or by the Engineer on behalf of the Company which matters are referred to herein after as accepted matters shall be final and binding upon the Contractor and shall not be set aside or be attempted to be set aside on account of any informality, omission, delay of error in proceeding in about the same or any other ground or for other reason and shall be without appeal.

10.2 DEMAND FOR ARBITRATION:

10.2.1 If the Contractor be dissatisfied with the decision of the Company, on any matters in question, dispute or difference on any account or as to the withholding by the Company of any certificates to which the Contractor may claim to be entitled to or if the Company fails to make a decisions within a reasonable time, when and in any such cases but except in any of the expected matters with in ten days of the receipt of communication or such decisions or after the expiry of reasonable time (which reasonable time will in no case exceed three months) as the case may be shall demand in writing that such matters in question, dispute or difference be referred to Arbitration. Such demand for Arbitration shall

be delivered to the Company by the Contractor and shall specify the matters which are in question, dispute or difference and such disputes or difference of which the demand has been made and no other matter shall be referred to arbitration.

10.2.2 **OBLIGATION DURING PENDENCY OF ARBITRATION:**

Work during the contract shall unless otherwise directed by the Engineer, continue during proceedings and no payment due or payable by the Company shall be withheld on account of such proceedings provided, however, it shall be open for the arbitrator to decide whether such work should continue or not during arbitration proceedings.

10.2.3 **ARBITRATION:**

Except where otherwise provided for in the contract, all questions and dispute relating to the meaning of the specifications, designs, drawings, estimates, instructions and conditions herein mentioned and as to the quality of workmanship, or materials used on the work or as any way arising out of or relating to the contract, designs, drawings, specifications, estimates, Instructions, orders or these conditions or otherwise concerning the works or the execution or failure to execute the same whether arising during the progress of work or after the completion or abandonment thereof shall be referred to the sole arbitration of the General Manager and if the General Manager is unable or unwilling to act, to the sole arbitration of some other person appointed by the General Manager willing to act as such arbitrator. There will be no objection if the arbitrator so appointed is an employee of the ITI LIMITED and that he had to deal with the matters to which the contract relates and that in the course of his duties as such he has expressed views on all or any of the matters in disputes of difference. The Arbitrator to whom the matter is originally referred being transferred or vacating his office being unable to act for any reason, the accepting authority as aforesaid at the time of such transfer, vacation of office or inability to act shall appoint another person to act as Arbitrator in accordance with the terms of the contract. Such person shall be entitled to proceed with the reference from stage at which it was left by his predecessor. It is also a term of this contract that no person other than a person appointed by General Manager, as aforesaid, should act as arbitrator and if for any reason, that is not possible, the matter is not to be referred to Arbitration at all. In all cases where the amount of the claim on dispute is Rs. 50,000/- (Rupees fifty thousand) and above, the arbitrator shall give reason for the award. The venue of the arbitration shall be Corporate Office of ITI Limited, Dooravaninagr, Bengaluru, 560016.

It is term of the contract that the party invoking arbitration shall specify the dispute or disputes to be referred to arbitration under this clause together with the amount or amounts claimed in respect of each such dispute.
It is also a term of the contract that if the Contractor(s) does/do not make any demand for Arbitration in respect of any claim(s) in writing within ninety days [90] of receiving the intimation from the Company, that the bill is ready for payment the claim of the contractors will be deemed to have been waived and absolutely be barred and the Company shall be discharged of all liabilities under the contract in respect of these claims.

The arbitrator(s) may from time to time with the consent of the parties enlarge the time for making and publishing the award.

Subject as aforesaid the provisions of the Arbitration Act 1996 or any statutory modification or re-enactment thereof & the rules made there under & for the time being in force shall apply to the arbitration proceedings under this clause.

Jurisdiction of Courts: For any legal matters arising out of this contract, the designated courts in Bangalore only shall have jurisdiction.

The decision of the Arbitrator shall be final and binding on the parties to this Contract.

Each party shall bear its own cost of preparing and presenting its case. The cost of Arbitration including the fees and expenses of the Arbitrator shall be shared equally by the Contractor and the Company.

Accepting Authority

Dated

----- END OF SECTION –IV -----

SECTION –V

ANNEXURES

Sl. Nos.	ANNEXURES	Descriptions
1	ANNEXURE - 1	Performa of Agreement
2	ANNEXURE - 2	Non-Disclosure of Agreement with Appendix-A
3	ANNEXURE - 3	Integrity Pact
4	ANNEXURE - 4	Performa of Bank guarantee in lieu of EMD
5	ANNEXURE - 5	Declaration of Tenderer
6	ANNEXURE - 6	Performa of work completion certificate from clients,
7	ANNEXURE - 7	Turnover from last three years
8	ANNEXURE - 8	Organization set up
9	ANNEXURE - 9	Details of work completed in last five years
10	ANNEXURE - 10	Details of ongoing works
11	ANNEXURE – 11	Performa of Bank guarantee for performance guarantee.
12	ANNEXURE – 12	Accepting terms and condition
13	ANNEXURE – 13	Affidavit connecting to submission of documents
14	ANNEXURE - 14	Format of Solvency certificate.
15	ANNEXURE – 15A	Undertaking/Authorization letter from OEM.
16	ANNEXURE – 15B	Undertaking/Authorization letter from OEM.
17	ANNEXURE – 15C	Undertaking/Authorization letter from OEM.
18	ANNEXURE – 15D	Declaration Certificate of System Integrator.
19	ANNEXURE - 16	CHECK LIST

ANNEXURE- 1

Proforma of Agreement

An AGREEMENT made this the **……..…..** between M/s **……** and M/s ITI LIMITED, **……..…….** (hereinafter called the "COMPANY") of the second part**.**

Whereas the Contractors have by tender dated**……**offered to execute and fully complete the intended works in connection with the construction of **……..**for the company as set forth in the tender as amended and the drawings, general conditions, special conditions, specifications, bill of quantities and schedule hereto annexed according to the terms, obligations, and conditions therein contained at and for an approximate total sum of RS **……..……..** **(**Rupees **…….....……**) and the company has accepted such itemized rate tender in terms of its letter no **……..**Dated **……**

Now, this AGREEMENT witnesseth as follows :

1. The CONTRACTORS covenant and agree with the COMPANY that the CONTRACTORS will within the time of**…….** months from the date stipulated in the work order and in the manner and pursuant and subject to all and singular the terms, obligations and conditions in the said tender as amended and the drawings, general conditions, special conditions, specifications, bill of quantities and schedule provided, contained and referred to execute and fully complete all and singular the works specified, described or referred to in and by the said tender as amended and the drawings, general conditions, special conditions, specifications, bill of quantities and schedule and will well truly observe, perform, fulfill, submit to and keep all the said terms, obligations, conditions, and matters in the said tender as amended and drawings general conditions, special conditions, specifications, bill of quantities and schedule contained and referred to and on the part of the CONTRACTORS to be observed, performed, fulfilled, submitted to or kept according to the true intent and meaning of the said tender as amended and the drawings general conditions, special conditions, specifications, bill of quantities and schedule. Any items not covered by the tendered rates will be worked out as per special conditions attached to the tender documents.

In case the work is not completed in the manner mentioned above to the complete satisfaction of the COMPANY in every respect within the aforesaid time limit **…….** of months from the date stipulated in the work order, the CONTRACTORS agree to pay a penalty of**……** % of the value of the work order for each week of delay beyond the date stipulated for the completion, subject, however to a maximum of**……..** % of the work order. It is agreed that time is the essence of the contract.

2. In consideration of the premises the COMPANY covenants with the CONTRACTORS that it will pay to the CONTRACTORS at the several times and in the sums, proportions and manner in the said general conditions, special conditions in that behalf provided the amount accruing from time to time, but subject to conditions therein contained.

3. This agreement further witnesseth that the CONTRACTORS hereby covenant with the COMPANY that in the event of the non-fulfillment in any respect by the CONTRACTORS of the said covenants, terms, agreements, obligations will pay to the COMPANY all loss, damages, costs, charges and expenses as the COMPANY may be directly or indirectly put to in consequence of such non-fulfillment by the CONTRACTORS.

4. If the CONTRACTORS fail to perform the contract or carry out the contract to the satisfaction of the COMPANY within the period fixed for the purpose or at any time repudiates the contract before the expiry of such period, the General Manager (NS) or any officer of the COMPANY so authorized may, without prejudice to the right of the COMPANY to recover from the CONTRACTORS damages for the breach of the contract, terminate the contract as a whole or terminate a part of the contract at the risk and cost of the CONTRACTORS without prior notice and get the balance work executed through some other agencies and held the CONTRACTORS liable for all the loses and expenses incurred by the COMPANY. The decision of the General Manager (NS) is final concerning the satisfactory performance of the contract and is binding on both the parties.

5. In the event of any disputes arising in connection with this contract, it is further agreed that such disputes shall be referred to the sole arbitrator as per the arbitration clause in the general terms and conditions of the contract.

6. The following documents are deemed to form part and parcel of the agreement viz., the tender dated **…….** and letter no **…….**dated**……** the general terms and conditions, special conditions, the specifications, the priced bill of quantities, the schedule of rates and prices, and the drawings mentioned in the specifications, acceptance letter no**…….** dated**…….** all of which for identification have been signed by the **…….** on the behalf of the COMPANY, and **……** on behalf of acceptance and all letters referred therein will also form a part of this agreement.

7. This agreement further witnesseth that the CONTRACTORS are responsible for any accident or other compensation payable to the workman employed by the working under the control of CONTRACTORS feat the COMPANY has no sort of liability in the matter, and that if any payment would have to be made by the COMPANY, the same shall be reimbursed by the CONTRACTORS.

In witness whereof, the said parties hereto have hereunto set their hands.

For ITI LIMITED, For **PROPRIETOR……..**

Witnesses:

Witness

1. **……..** **1.** **……..**

2. **……** **2.** **……**

Place:
Date:

ANNEXURE- 2

I T I LTD.
(A Government of India Enterprise)
Network Systems Unit, Dooravaninagar
BENGALURU – 560 016.

NON-DISCLOSURE AGREEMENT

This Agreement is made on _____ day of _____ 2021 between ITI LIMITED, NETWORK SYSTEMS UNIT a Government of India Enterprise, having its registered and corporate office at ITI BHAVAN, DOORAVANINAGAR, BENGALURU – 560 016. hereinafter called ITI LIMITED which expression shall unless repugnant to the subject or the context mean and included its successor, nominees or assigns and M/s_____ a company incorporated under the Indian Companies act, 1956, and having its registered office at _____ herein after called "Bidder" which expression shall unless repugnant to the subject or the context mean and include its successors, nominees or assigns.

Whereas a Tender was floated by ITI LIMITED for **Construction of forward communication hub [FCH-Node] including Access control system, Video surveillance system, Physical intrusion system, Fire suppression & prevention systems, etc.,** and M/s_____ is one of the Bidders. The Bidder will be issued a tender document, which contains highly classified and confidential information. The information is to be protected from unauthorized use and disclosure:

In consideration of this, the Bidder agrees as follows:

1. This Agreement will apply to any information attached hereto about project disclosed by ITI LIMITED to the Bidder in writing or otherwise, information consists of tender document, specifications, designs, plans drawing, software, prototypes and/or technical information, and all copies and derivatives containing such Information, that may be disclosed to Bidder for and during the purpose. Information may be in any form or medium, tangible or intangible, and may be communicated/disclosed in writing, orally, or through visual observation, or by any other means by ITI LIMITED to the Bidder.

2. The Bidder shall use the information about this project only for the purpose and shall hold information in confidence using the same degree of care as it normally exercises to protect its proprietary information, but not less than reasonable care, taking into account the nature of the information and shall grant access to information only to its employees who need to know, but only to the extent necessary to carry out the business purposes of this project as defined in. The Bidder shall cause its employees to comply with the provisions of this Agreement applicable to his and shall not reproduce information without prior permission of ITI LIMITED. The permission to reproduce shall only be given if considered necessary and to the extent essential for fulfilling the purpose. The Bidder may, however, disclose the information to its consultants and contractors with a need to know; provided that by doing so, the Bidder agrees to bind those consultants and contractors to terms at least as restrictive as those stated herein, advise them of their obligations and indemnify ITI LIMITED for any breach of those obligations.

3. The Bidder shall not disclose any information pertaining to this project to any third party.

4. Upon the request of ITI LIMITED, he shall return all information to ITI LIMITED immediately, provided, however, that an archival copy of the information may be retained in the files of the Bidder's counsel, solely to provide the contents of the information.

5. In case the Bidder is not selected for awarding the work of this project, he shall return to ITI LIMITED all the original documents that have been made over by ITI LIMITED to him about this project Within 15 days of the outcome of the tender and/or shall destroy all hard/soft copies) of the information about this project. Intimation in this regard is to be given by Bidder to ITI LIMITED.

6. The Bidder recognizes and agrees that all the information about this project is highly confidential and is owned solely by ITI LIMITED, Govt of India and that the unauthorized disclosure or use of such confidential information would cause irreparable harm and significant injury, the degree of which may be difficult to ascertain. Accordingly, the Bidder agrees that ITI LIMITED will have the right to obtain an immediate injunction enjoining any breach of this Agreement, as well as the right to pursue any other rights and remedies available at law or in equity for such a breach.

7. The Bidder's failure to enforce any provision, right, or remedy under this agreement shall not constitute waiver of such provision, right, or remedy.

8. This Agreement will be construed in, interpreted and applied in accordance with the laws of India.

9. This Agreement and **Appendix A** attached hereto constitutes the entire agreement with respect to the Bidder's obligations in connection with information disclosed hereunder.

10. The Bidder shall not assign this Agreement without first securing ITI LIMITED's written consent.

11. This agreement will remain in effect for ten years from the date of the last disclosure of confidential information, at which time it will terminate, unless extended by ITI LIMITED in writing.

IN WITNESS WHEREOF, the parties hereto have executed this agreement by their duly authorized officer or representatives.

ITI LIMITED	ITI LIMITED
M/s…….	M/s…….
Signature……..	Signature……..
Printed Name……..	Printed Name……..
Title……...	Title……...
Signed	Signed

Appendix-A

Business Purpose: Construction of of forward communication hub [FCH-Node] including Access control system, Video surveillance system, Physical intrusion system, Fire suppression & prevention systems, etc.,

1.0 Confidential Information of ITI Limited.

1.1 Tender document for Construction of New buildings [Repeater]

1.2 The technical specifications / Bill of quantities for civil works.

1.3 Detailed drawings.

1.4 Details of Locations

1.5 All Information's shared in oral or in written by ITI Limited with M/s ----------

For ITI Limited

For M/s ----------

Signatures. ----------

Signature----------

Name----------

Name----------

ANNEXURE- 3

PRE CONTRACT INTEGRITY PACT

TENDER No. ITI/NSU/ CIVIL-DEL/2023/0106/01 dated: 15.03.2023

THIS Integrity Pact is made on……day of …….20...

BETWEEN:
ITI Limited having its Registered & Corporate Office at ITI Bhavan, Dooravaninagar, Bangalore – 560 016 and established under the Ministry of Communications, Government of India (hereinafter called the Principal), which term shall unless excluded by or is repugnant to the context, be deemed to include its Chairman & Managing Director, Directors, Officers or any of them specified by the Chairman & Managing Director in this behalf and shall also include its successors and assigns) ON THE ONE PART

AND:…….. represented by ……..….. Chief Executive Officer (hereinafter called the Contractor(s), which term shall unless excluded by or is repugnant to the context be deemed to include its heirs, representatives, successors and assigns of the bidder/contract ON THE SECOND PART.

Preamble
WHEREAS the Principal intends to award, underlaid down organizational procedures, contract for **……** of ITI Limited (name of the Stores/equipment/items). The Principal, values full compliance with all relevant laws of the land, regulations, economic use of resources, and fairness/ transparency in its relations with its Bidder(s)/ Contractor(s).

To achieve these goals, the Principal has appointed an Independent External Monitor (IEM), who will monitor the tender process and the execution of the contract for compliance with the principles as mentioned herein in this agreement.

WHEREAS, to meet the purpose aforesaid, both the parties have agreed to enter into this Integrity Pact the terms and conditions of which shall also be read as integral part and parcel of the Tender Documents and contract between the parties.

NOW, THEREFORE, IN CONSIDERATION OF MUTUAL COVENANTS STIPULATED IN THIS PACT THE PARTIES HEREBY AGREE AS FOLLOWS AND THIS PACT WITNESSETH AS UNDER:

Section 1 – **Commitments of the Principal**

1.1 The Principal commits itself to take all measures necessary to prevent corruption and to observe the following principles:

a. No employee of the Principal, personally or through family members, will in connection with the tender for or the execution of the contract, demand, take a promise for or accept, for self or third person, any material or immaterial benefit which the person is not legally entitled to.

b. The Principal will, during the tender process treat all bidder(s) with equity and reason. The Principal will in particular, before and during the tender process, provide to all bidder(s) the same information and will not provide to any bidder(s) confidential/additional information through which the bidder(s) could obtain an advantage about the tender process or the contract execution.

c. The Principal will exclude from the process all known prejudiced persons.

1.2 If the Principal obtains information on the conduct of any of its employee, which is a criminal offense under IPC/PC Actor if there be a substantive suspicion in this regard, the Principal will inform the Chief Vigilance Officer and also, can initiate disciplinary action as per its internal laid down Rules/ Regulations.

SECTION 2 – COMMITMENTS OF THE BIDDER/CONTRACTOR

1.1 The Bidder(s)/Contractor(s) commits himself to take all measures necessary to prevent corruption. He commits himself to observe the following principles during the participation in the tender process and the execution of the contract.

a. The bidder(s)/contractor(s) will not, directly or through any other person or firm offer, promise, or give to any of the Principal's employees involved in the tender process or the execution of the contract or to any third person any material or other benefit which he/she is not legally entitled to, to obtain in exchange any advantage of any kind whatsoever during the tender process or during the execution of the contract.

b. The bidder(s)/contractor(s) will not enter with other bidders/contractors into an undisclosed agreement or understanding, whether formal or informal. This applies in particular to prices, specifications, certifications, subsidiary contracts, submission or non-submission of bids, or any other actions to restrict competitiveness or to introduce cartelization in the bidding process.

c. The bidder(s)/contractor(s) will not commit any offense under IPC/PC Act, further, the bidder(s)/contractor(s) will not use improperly, for purposes of competition of personal gain, or pass onto others, any information or document provided by the Principal as part of the business relationship, regarding plans, technical proposals and business details, including information contained or transmitted electronically.

d. The Bidder(s)/Contractor(s) of the foreign original shall disclose the name and address of the agents/representatives in India if any. Similarly, the Bidder(s)/Contractor(s) of Indian Nationality shall furnish the name and address of the foreign principals, if any.

e. The Bidder(s)/Contractor(s) will, when presenting the bid, disclose any payments made, are committed to or intend to make to agents, brokers, or any other intermediaries in connection with the award of the contract.

f. The Bidder(s)/Contractor(s) will not bring any outside influence and Govt bodies directly or indirectly on the bidding process in furtherance of his bid.

g. The Bidder(s)/Contractor(s) will not instigate third persons to commit offenses outlined above or to be an accessory to such offenses.

SECTION 3 – DISQUALIFICATION FROM TENDER PROCESS & EXCLUSION FROM FUTURE CONTRACTS

3.1 If the Bidder(s)/Contractor(s), during the tender process or before the award of the contract or during execution has committed a transgression in violation of Section 2, above or in any other form such as to put his reliability or credibility in question the Principal is entitled to disqualify Bidder(s)/ Contractor(s) from the tender process.

3.2 If the Bidder(s)/Contractor(s), has committed a transgression through a violation of Section 2 of the above, such as to put his reliability or credibility into question, the Principal shall be entitled exclude including blacklisting for future tender/contract award process. The imposition and duration of the exclusion will be determined by the severity of the transgression. The severity will be determined by the Principal taking into consideration the full facts and circumstances of each case, particularly taking into account the number of transgressions, the position of the transgressor within the Company hierarchy of the Bidder(s)/Contractor(s) and the amount of the damage. The exclusion will be imposed for a period of a minimum of one year.

3.3 The Bidder(s)/Contractor(s) with its free consent and without any influence agrees and undertakes to respect and uphold the Principal's absolute right to resort to and impose such exclusion and further accepts and undertakes not to challenge or question such exclusion on any ground including the lack of any hearing before the decision to resort to such exclusion is taken. The undertaking is given freely and after obtaining independent legal advice.

3.4 A transgression is considered to have occurred if the Principal after due consideration of the available evidence concludes that based on facts available there are no material doubts.

3.5 The decision of the Principal to the effect that breach of the provisions of this Integrity Pact has been committed by the Bidder(s)/ Contractor(s) shall be final and binding on the Bidder(s)/ Contractor(s), however the Bidder(s)/ Contractor(s) can approach IEM(s) appointed for the purpose of this Pact.

3.6 On the occurrence of any sanctions/ disqualifications etc arising out from violation of integrity pact Bidder(s)/ Contractor(s) shall not be entitled to any compensation on this account.

3.7 subject to the satisfaction of the Principal, the exclusion of the Bidder(s)/ Contractor(s) could be revoked by the Principal if the Bidder(s)/ Contractor(s) can prove that he has restored/ recouped the damage caused by him and has installed a suitable corruption preventative system in his organization.

SECTION 4 – PREVIOUS TRANSGRESSION

4.1 The Bidder(s)/ Contractor(s) declares that no previous transgression occurred in the last 3 years immediately before signing of this Integrity Pact with any other Company in any country conforming to the anti-corruption/ transparency International (TI) approach or with any other Public Sector Enterprises/ Undertaking in India of any Government Department in India that could justify his exclusion from the tender process.

4.2 If the Bidder(s)/ Contractor(s) makes incorrect statement on this subject, he can be disqualified from the tender process or action for his exclusion can be taken as mentioned under Section-3 of the above for transgressions of Section-2 of the above and shall be liable for compensation for damages as per Section- 5 of this Pact.

SECTION 5 – COMPENSATION FOR DAMAGE

5.1 If the Principal has disqualified the Bidder(s)/Contractor(s) from the tender process before the award according to Section 3 the Principal is entitled to forfeit the Earnest Money Deposit/Bid Security/ or demand and recover the damages equitant to Earnest Money Deposit/Bid Security apart from any other legal that may have accrued to the Principal.

5.2 In addition to 5.1 above the Principal shall be entitled to take recourse to the relevant provision of the contract related to the termination of Contract due to Contractor default. In such a case, the Principal shall be entitled to forfeit the Performance Bank Guarantee of the Contractor or demand and recover liquidate and all damages as per the provisions of the contract agreement against termination.

SECTION 6 – EQUAL TREATMENT OF ALL BIDDERS/CONTRACTORS

6.1 The Principal will enter into Integrity Pact on all identical terms with all bidders and contractors for identical cases.

6.2 The Bidder(s)/Contractor(s) undertakes to get this Pact signed by its sub-contractor(s)/sub-vendor(s)/associate(s), if any, and to submit the same to the Principal along with the tender

document/contract before signing the contract. The Bidder(s)/Contractor(s) shall be responsible for any violation(s) of the provisions laid down in the Integrity Pact Agreement by any of its sub-contractors/sub-vendors/associates.

6.3 The Principal will disqualify from the tender process all bidders who do not sign this Integrity Pact or violate its provisions.

SECTION 7 – CRIMINAL CHARGES AGAINST VIOLATING BIDDER(S)/ CONTRACTOR(S)

7.1 If the Principal receives any information of conduct of a Bidder(s)/Contractor(s) or sub-contractor/sub-vendor/associates of the Bidder(s)/Contractor(s) which constitutes corruption or if the Principal has substantive suspicion in this regard, the Principal will inform the same to the Chief Vigilance Officer of the Principal for appropriate action.

SECTION 8 – INDEPENDENT EXTERNAL MONITOR(S)

8.1 The Principal appoints competent and credible Independent External Monitor(s) for this Pact. The task of the Monitor is to review independently and objectively, whether and to what extent the parties comply with the obligations under this pact.

8.2 The Monitor is not subject to any instructions by the representatives of the parties and performs his functions neutrally and independently. He will report to the Chairman and Managing Director of the Principal.

8.3 The Bidder(s)/Contractor(s) accepts that the Monitor has the right to access without restriction to all product documentation of the Principal including that provided by the Bidder(s)/Contractor(s). The Bidder(s)/Contractor(s) will also grant the Monitor, upon his request and demonstration of a valid interest, unrestricted and unconditional access to his project documentation. The Monitor is under contractual obligation to treat the information and documents Bidder(s)/Contractor(s) with confidentiality.

8 .4 The Principal will provide to the Monitor sufficient information about all meetings among the parties related to the project provided such meeting could have an impact on the contractual relations between the Principal and the Bidder(s)/Contractor(s). As soon as the Monitor notices, or believes to notice, a violation of this agreement, he will so inform the Management of the Principal and request the Management to discontinue or take corrective action, or to take other relevant action. The monitor can in this regard submit non-binding recommendations. Beyond this, the Monitor has no right to demand from the parties that they act in a specific manner, refrain from action, or tolerate action.

8.5 The Monitor will submit a written report to the Chairman & Managing Director of the Principal within a reasonable time from the date of reference or intimation to him by the principal and, should the occasion arise, submit proposals for correcting problematic situations.

8.6 If the Monitor has reported to the Chairman & Managing Director of the Principal a substantiated suspicion of an offence under relevant IPC/PC Act, and the Chairman & Managing Director of the Principal has not, within the reasonable time taken visible action to proceed against such offence or reported it to the Chief Vigilance Officer, the Monitor may also transmit this information directly to the Central Vigilance Commissioner.

8.7 The word 'Monitor' would include both singular and plural.

8.8 Details of the Independent External Monitor appointed by the Principal at present is furnished below: -

Shri Javed Ahmad, IPS (Retd.)
M-1101, Shalimar Gallant Apartment,
Vigyanpuri ,Mahanagar,Lucknow-226006

Any changes to the same as required/desired by statutory authorities is applicable."

SECTION 9 – FACILITATION OF INVESTIGATION

1.1 In case of any allegation of violation of any provisions of this Pact or payment of a commission, the Principal or its agencies shall be entitled to examine all the documents including the Books of Accounts of the Bidder(s)/Contractor(s) and the Bidder(s)/Contractor(s) shall provide necessary information and documents in English and shall extend all help to the Principal for the purpose of verification of the documents.

SECTION 10 – LAW AND JURISDICTION

10.1 The Pact is subject to the Law as applicable in Indian Territory. The place of performance and jurisdiction shall the seat of the Principal.

10.2 The actions stipulated in this Pact are without prejudice to any other legal action that may follow in accordance with the provisions of the extant law in force relating to any civil or criminal proceedings.

SECTION 11 – PACT DURATION

11.1 This Pact begins when both the parties have legally signed it. It expires after 12 months on completion of the warranty/guarantee period of the project/work awarded, to the fullest satisfaction of the Principal.

11.2 If the Bidder(s)/Contractor(s) is unsuccessful, the Pact will automatically become invalid after three months on the evidence of failure on the part of the Bidder(s)/Contractor(s).

11.3 If any claim is lodged/made during the validity of the Pact, the same shall be binding and continue to be valid despite the lapse of the Pact unless it is discharged/determined by the Chairman and Managing Director of the Principal.

SECTION 12 – OTHER PROVISIONS

12.1 This pact is subject to Indian Law, the place of performance and jurisdiction is the Registered & Corporate Office of the Principal at Bengaluru.

12.2 Changes and supplements, as well as termination notices, need to be made in writing by both parties. Side agreements have not been made.

12.3 If the Bidder(s)/Contractor(s) or a partnership, the pact must be signed by all consortium members and partners.

12.4 Should one or several provisions of this pact turn out to be invalid, the remainder of this pact remains valid. In this case, the parties will strive to agree with their original intentions.

12.3 Any disputes/ difference arising between the parties concerning the term of this Pact, any action was taken by the Principal under this Pact or interpretation thereof shall not be subject to any Arbitration.

12. 4 The action stipulates in this Integrity Pact are without prejudice to any other legal action that may follow under the provisions of the extant law in force relating to any civil or criminal proceedings.

In witness whereof the parties have signed and executed this Pactat the place and date first done mentioned in the presence of the witnesses:

For PRINCIPAL	For BIDDER(S)/CONTRACTOR(S)
……..	……
(Name & Designation)	(Name & Designation)
Witness	Witness
1) ……	**1)**……...
2) …….	**2)**…….....

ANNEXURE- 4

ITI LIMITED
(A GOVERNMENT OF INDIA ENTERPRISE)

PROFORMA OF BANK GUARANTEE IN LIEU OF E M D
(Judicial Stamp paper of appropriate value as per Stamp Act - of the respective state)

ITI Limited, (Address as mentioned in Notice Inviting Tender)

In consideration of ITI Limited, having ITI Corporate Office, ITI Bhawan, -Bengaluru -560 016 (hereinafter called ITI" which expression shall unless repugnant to the subject or context include its successors and assigns) having issued Notice Inviting Tender No..... and M/s ……having its Registered Head Office at..... (hereinafter called the "TENDERER'") is to participate in the said tender for..... Whereas ITI, as a special case, has agreed to accept an irrevocable and unconditional Bid Bond Guarantee for an amount of Rs..... valid up to..... from the tenderer in place of Cash Deposit of Rs.....required to be made by the tenderer, as a condition precedent for participation in the said tender. We the.....(hereinafter called the "BANK") having its Registered, Office at..... and branch office at..... do hereby unconditionally and irrevocably undertake to pay to ITI on demand in writing and without demur/protest any amount but not exceeding Rs.....

Any such demand made by ITI shall be conclusive and binding on us irrespective of any dispute or differences that may be raised by the tenderer. Any change in the constitution of the tenderer or the Bank shall not discharge our liability under the guarantee.

We, the..... Bank, lastly undertake not to revoke this guarantee during its currency without the prior consent of ITI in writing and upon expiry of which, we shall be relieved of our liability under this guarantee thereafter.

FOR AND ON BEHALF OF BANK

PLACE :

DATED :

WITNESS.

1. **……**

2. **……**

ANNEXURE-5

DECLARATION OF TENDERERS

FROM **……**

TO

……
……..……

1. I/We**……**
…….have read the conditions of the tender and tender documents attached hereto and agree to abide by such conditions**.** I/We offered to do**……..……** at the rates quoted in the attached schedule to complete the works on or before the dates mentioned in the schedule for completion of works**.**

2. I/We further agree to sign an agreement, bind to abide by the general conditions of the contract, and to carry out all works according to the specifications laid down in the tender papers**.** I/We hereby pay the earnest money of **……**by demand draft/banker's cheque**.** I/We bind myself/ ourselves to deposit the security deposit [Performance security] as prescribed within 15 days after receiving the notice that the contract has been awarded to me/us failing which I/We have no objection to the forfeiture of the earnest money in full; otherwise the said earnest money shall be retained by the said company towards security deposit as specified in the conditions**.** I/We further bind myself /ourselves to execute the contract document and to commence the work with 15 days after issue of the work order in writing as aforesaid failing I/We agree to the company forfeiting the earnest money and security deposit deposited with them**.** The accepting authority shall also be at liberty to cancel the acceptance of the tender if I/We fails to deposit the security amount as specified or to execute an agreement or to start work as stipulated in the tender documents**.**

3. I/We hereby enclose a declaration of my/our experience of execution of works of similar nature and magnitude carried out by me/us in the prescribed proforma, and also the income tax and sales tax clearance certificates**.**

4. The offer shall remain open for acceptance by the Accepting Authority for a **period of 4 months** from the date of opening of the tender**. [120 days]**

Date:

Signature of tenderer
with the seal of the firm

witness**……..**
(Name in block letters)
Power of attorney in case the tender is signed by the authorized nominee must be enclosed**.**

Address:
Occupation:

ANNEXURE- 6

Name of the Clients with Address, E-mail, and Phone No.

PROFORMA FOR WORK EXPERIENCE CERTIFICATE FROM CLIENTS,

Name of the Contractor:

1	**Name of work/project location**	
2	**Name and address of the client**	
3	**Agreement amount**	
4	**Cost of work on completion**	
5	**Date of start**	
6	**Stipulated date of completion**	
7	**The actual date of completion**	
8	**Type of work [Residential/Commercial]**	
9	**Plinth area of /Built-up area of construction**	
10	**Performance Report**	
A	**Quality of work**	
B	**Resourcefulness**	
C	**Financial soundness**	
D	**Technical proficiency**	
E	**General behavior**	

Date, Name, & Designation,

Signature with Seal of the Issuing Authority

ANNEXURE- 7.

TURN OVER FOR LAST THREE YEARS.

Sl.no.	Financial year	Turnover	Average of three years
1	2019-20		
2	2020-21		
3	2021-22		
		Average turnover	

Note:

In addition to the above, the applicant has to submit the following documents/information,

a. Copy of the balance sheets
b. Copy of the valid GST no.
c. Copy of the PAN/TAN
d. Details of litigation if any.
e. Other relevant details if any.

The requisite Turnover certificate shall be duly certified by a Chartered Accountant with his seal /Signature and Registration No.

Signature of the bidder with Seal

ANNEXURE-- 8

ORGANISATION SET UP OF THE COMPANY.

Sl. No.	Name	Designation	Qualification	Professional Experience	Registration	Years with the firm	Remarks

Signature of the bidder with Seal

ANNEXURE- 9

DETAILS OF THE WORK COMPLETED DURING THE LAST 7 YEARS

Sl. No.	Name of work	Scope of services	Value of Construction	Date of start/completion	Name and address of the client	Value of TDS in case of private work	Remarks

NOTE:

THE FOLLOWING DOCUMENTS ARE TO BE ENCLOSED FOR EACH OF THE ABOVE WORKS.

a. Completion certificate.
b. Copy of award letter.
c. Other relevant documentary evidence, if any.

Signature of the bidder with Seal

ANNEXURE- 10

DETAILS OF ONGOING WORKS.

Sl. No.	Name of work	Scope of services	Value of Construction	Date of start/completion	Name and address of the client	Remarks

NOTE:

(1) The following documents are to be enclosed for each of the above works.

a. Copy of Award letter.
b. Other relevant documentary evidence if any.

Signature of the bidder with Seal.

ANNEXURE -11

ITI LIMITED
(A GOVERNMENT OF INDIA ENTERPRISE)

PROFORMA OF BANK GUARANTEE (PERFORMANCE)
(judicial Stamp per Stamp Act - paper of appropriate value as a respective state)

ITI LIMITED,
(Address as mentioned in Notice Inviting Tender)

'Whereas the ITI Limited (hereinafter called ITI" which expression shall include its successors and assigns) having awarded a work order/contract/supply order No. dated (hereinafter called the contract) to M/S. **.....** (hereinafter called the Contractor/ firm) at a total price of RS**.....**subject to the terms and conditions contained in the contract.

WHEREAS, the terms and conditions of the contract require the civil Contractor/firm to furnish a bank guarantee for RS **……..**(RUPEES**.....**} Being**……**3% of the total value of the contract for proper execution and due fulfilment of the terms and conditions contained in the contract.

We, the Bank, (hereinafter called the "Bank") do hereby unconditionally and irrevocably undertake to pay to ITI Ltd. immediately on demand in writing and 'without protest/or demur all sums of money payable by the Contractor/firms to ITI in connection with the execution/supply of and performance of the works/equipment, inclusive of any loss, damages, charges, expenses, and costs caused to or suffered by or which would be caused to or suffered by ITI Ltd. because of any breach by the Civil Contractor/firms., of any of the terms and conditions contained in the contract as specified in the notice of demand made by ITI Ltd. to the bank. Any such demand made by ITI on the bank shall be conclusive evidence of the amount due and payable by the Bank under this guarantee. However, the Bank's liability under this guarantee shall be limited to Rs **……** in the aggregate and the Bank hereby agrees to the following terms and conditions: -

i) This guarantee shall be a continuing guarantee and irrevocable for all claims of ITI Ltd as specified above and shall be valid during the period specified for the performance of the contract**.**

ii) We, the said bank further agree with ITI Ltd. that ITI shall have the fullest liberty without our consent and without affecting in any manner our obligations and liabilities hereunder to vary any of the terms and conditions of the said contract or to extend the time for performance of contract Civil contractor/firm from time to time or to postpone for any time or from time to time any of the powers exercisable by ITI Ltd. against the Civil contractor/ firm under the contract and forbear or enforce any of the terms and conditions relating to the said contract and we shall not be relieved from our liability because of any such variations or extension being granted to the Civil Contractor.

Civil contractor/firm or for any forbearance, actor omission on the part of ITI Ltd. or any indulgence by ITI to the Civil contractor/firm or by any such matter or thing whatsoever, which under the law relating to the sureties would, but for this provision, have **the effect of so relieving us.**

(iii) This guarantee/undertaking shall be in addition to any other guarantee or security whatsoever ITI may now or at any time have concerning the performance of the works/equipment and the company shall have a full re-course to or enforce this security in performance to any other security or guarantee which ITI may have or obtained and there shall be no forbearance on the part of the company in enforcing or requiring enforcement of any other security which shall have the effect of releasing the Bank from its full liability, It shall not be necessary for ITI Ltd. to proceed against the said Civil contractor/ firm before proceeding against the Bank**.**

(iv) This guarantee/ undertaking shall not be determined or affected by the liquidation or winding up, dissolution or change of constitution or insolvency of the Civil contractor/ firm, but shall in all respects and for all purposes be binding and operative until payment of all sums of money payable to ITI in terms thereof are paid by the Bank**.**

(v) The Bank hereby waives all rights at any time inconsistent with the terms of this Guarantee and the obligations of the bank in terms hereof, shall not be otherwise effected or suspended by reasons of any dispute or disputes having been raised by the Civil contractor/firm (whether or not pending before any Arbitrator, Tribunal or Court) or any denial of liability by the civil contractor firm stopping or preventing or purporting to stop or prevent any payment by the Bank to ITI in terms hereof**.**

We, the said Bank, lastly undertake not to revoke this guarantee during its currency except with the previous consent of ITI Ltd. in writing upon expiry of which, we shall be relieved from all liabilities under this guarantee thereafter.

Signed this **.....** day of **……..** at **……..**

For and on behalf of Bank

WITNESS.

1. **……**
2. **……**

ANNEXURE- 12

ACCEPTANCE OF TENDER CONDITIONS

From: (To be submitted in ORIGINAL on the letterhead of the company by the authorized officer having power of attorney)

To,

General Manager-(CIVIL)
ITI Limited ESG (ASCON),
C/o. HQ 5 Sig Group,
Opp. HQ Western Air Command,
NH-8, Asmara Lines, Delhi Cantt. 110010.

Sub: Construction of buildings/roads for **.....**

1. This has reference to the above-referred tender. I/We are pleased to submit our tender for the above work and I/We hereby unconditionally accept the tender conditions and tender documents in their entirety for the above work.

2. I/we are eligible to submit the bid for the subject tender and I/We have all the documents required.

3. I/We have viewed and read the terms and conditions of ITI Ltd. carefully.

- **a.** Notice Inviting tender, General conditions of contract with price bid sheet.
- **b.** Special conditions of contract
- **c.** Instructions to bidder
- **d.** Integrity Pact
- **e.** Corrigendum, if any
- **f.** Other documents, if any

4. I/We have submitted mandatory documents such as cost of bid documents, EMD of the requisite amount, and other documents as per Notice inviting Tender.

Yours faithfully

[Signature of the tenderer]
With rubber stamp

Dated.

ANNEXURE – 13

AFFIDAVIT

(To be submitted by the bidder on non-judicial stamp paper of Rs. 100/- (Rupees Hundred only) duly attached by Notary Public) (To be submitted in Envelop-1)

Affidavit of Mr. .....S/o ..... R/o ..... I, the deponent above named do hereby solemnly affirm and declare as under:

1. That I am the Proprietor/Authorized signatory of M/s ..... Having its Head Office/Regd. Office at .....

2. That the information/documents/Experience certificates submitted by M/s ..... along with the tender for .....*(Name of work)*.....To ITI ltd. are genuine and true and nothing has been concealed.

3. I shall have no objection in case ITI Ltd. verifies them from issuing authorities. I shall also have no objection in providing the original copy of the document(s), in case ITI Ltd. demand so for verification.

4. I hereby confirm that in case, any document, information & / or certificate submitted by me is found to be incorrect/false/fabricated, ITI Ltd at its discretion may disqualify/reject/terminate the bid/contract and also forfeit the EMD / All dues.

5. I shall have no objection in case ITI Ltd verifies any or all Bank Guarantee(s) under any of the clause(s) of Contract including those issued towards EMD and Performance Guarantee from the Zonal Branch /office issuing Bank and I/We shall have no right or claim on my submitted EMD before ITI Ltd receives said verification.

6. That the Bank Guarantee issued against the EMD issued by (name and address of the Bank) is genuine and if found at any stage to be incorrect/false/fabricated, ITI. Ltd. shall reject my bid, cancel pre-qualification and debar me from participating in any future tender for three years

7. I hereby confirm that our firm/Company is not blacklisted /barred/banned from tendering by ITI or other government organizations. If this information is found incorrect, ITI Ltd at its discretion may disqualify /reject /terminate the bid contract and forfeit the EMD.

8. The person who has signed the tender documents is our authorised representative. The Company is responsible for all of his acts and omissions in the tender.

I, ..., the Proprietor / Authorised signatory of M/s.....do hereby confirm that the contents of the above affidavit are true to my knowledge and nothing has been concealed therefrom.....and that no part of it is false. Verified at .....this.....day of .....

DEPONENT
ATTESTED BY (NOTARY PUBLIC)

ANNEXURE- 14

Dispatch number of bank/Date:

SOLVENCY CERTIFICATE ON LETTERHEAD OF BANK

This is to state that the best of our knowledge and information that

M/s ----------having /registered office address---------- is a customer of the bank and has been maintaining his accounts with our branch since----------. As per records available with the bank, M/s ----------can be treated as solvent up to a limit of Rs----------[Rupees in words----------]

It is clarified that the above information is furnished and this certificate is being issued at the specific request of the customer.

Name Designation signature with seal

Note: The certificate shall have been issued within 6 months from the original last date of the submission of the tender.

Annexure-15A

Undertaking by Original Equipment Manufacturer(OEM)

(To be submitted in Original on Letterhead)

Date:

Bidder Name

Address

Sub: Undertaking by Original Equipment Manufacturer against tender No. ITI/NSU/CIVIL-DEL/2023/0106/01, dated 15/03/2023 - Supply, Installation & Commissioning of RBH Product for ASCON-Ph-IV Project.

Dear Sir,

We, M/s_____*(Name of the OEM)* having registered office at _____

(address of the OEM) by virtue of being original equipment manufacturer for _____*(Name of the product/s)*, hereby authorise M/s_____*(Name of the bidder)* having their office at_____*(Address of bidder)* to submit quote, supply, install and provide after sales support for our range of products quoted by them to meet the above mentioned tender requirements.

M/s _____ *(Name of the OEM)* within the scope of requirement as per the tender mentioned above undertake to provide technical & other support towards fulfilling the requirements of installation, commissioning, benchmarking, acceptance criteria and product warranty services for the Project to be supplied and installed for ASCON-Ph-IV by our authorised representative M/s_____ *(Name of bidder)* against said tender.

We will support M/s _____ **(***Name of the bidder)* on regular basis with all hardware, software related issues, technology and product updates and extends comprehensive support during the entire warranty period.

The undersigned is authorised to issue such authorisation on behalf of M/s _____*(Name of the OEM).*

For M/s_____ *(Name of the OEM)*
Signature & company seal
Name
Designation
Email

Annexure-15B

Undertaking by Original Equipment Manufacturer(OEM)

(To be submitted in Original on Letterhead)

Date:

Bidder Name

Address

Sub: Undertaking by Original Equipment Manufacturer against tender No. ITI/NSU/CIVIL-DEL/2023/0106/01, dated 15/03/2023 for Supply, Installation & Commissioning of MOBOTIX Product for ASCON-Ph-IV Project.

Dear Sir,

We, M/s_____*(Name of the OEM)* having registered office at _____

(address of the OEM) by virtue of being original equipment manufacturer for _____*(Name of the product/s)*, hereby authorise M/s_____*(Name of the bidder)* having their office at_____*(Address of bidder)* to submit quote, supply, install and provide after sales support for our range of products quoted by them to meet the above mentioned tender requirements.

M/s _____ *(Name of the OEM)* within the scope of requirement as per the tender mentioned above undertake to provide technical & other support towards fulfilling the requirements of installation, commissioning, benchmarking, acceptance criteria and product warranty services for the Project to be supplied and installed for ASCON-Ph-IV by our authorised representative M/s_____ *(Name of bidder)* against said tender.

We will support M/s _____ **(***Name of the bidder)* on regular basis with all hardware, software related issues, technology and product updates and extends comprehensive support during the entire warranty period.

The undersigned is authorised to issue such authorisation on behalf of M/s _____*(Name of the OEM).*

For M/s _____ *(Name of the OEM)*
Signature & company seal
Name
Designation
Email

Annexure-15C

Undertaking by Original Equipment Manufacturer(OEM)

(To be submitted in Original on Letterhead)

Date:

Bidder Name

Address

Sub: Undertaking by Original Equipment Manufacturer against tender No. ITI/NSU/CIVIL-DEL/2023/0106/01, dated 15/03/2023 for Supply, Installation & Commissioning of OPTEX Product for ASCON-Ph-IV Project.

Dear Sir,

We, M/s_____*(Name of the OEM)* having registered office at _____*(address of the OEM) by* virtue of being original equipment manufacturer for_____ *(Name of the product/s)*, hereby authorise M/s_____*(Name of the bidder)* having their office at _____*(Address of bidder)* to submit quote, supply, install and provide after sales support for our range of products quoted by them to meet the above mentioned tender requirements.

M/s _____ *(Name of the OEM)* within the scope of requirement as per the tender mentioned above undertake to provide technical & other support towards fulfilling the requirements of installation, commissioning, benchmarking, acceptance criteria and product warranty services for the Project to be supplied and installed for ASCON-Ph-IV by our authorised representative M/s_____ *(Name of bidder)* against said tender.

We will support M/s _____ **(***Name of the bidder)* on regular basis with all hardware, software related issues, technology and product updates and extends comprehensive support during the entire warranty period.

The undersigned is authorised to issue such authorisation on behalf of M/s _____*(Name of the OEM).*

For M/s _____ *(Name of the OEM)*
Signature & company seal
Name
Designation
Email

Annexure-15D

Declaration of System integrator for ASCON Project.

(To be submitted in Original on Letterhead)

Date:

Bidder Name

Address

Sub: Declaration of System integrator (SI) for IT Related works for ASCON-Ph-IV Project.

Dear Sir,

We, M/s_____*(Name of bidder)* having registered office at _____*(address of bidder) declared that "I will adhere all the make & model of the IT product along with contractual requirement of the IT Related works, for this specialised works we engaged, M/s* _____*(Name of the system integrator)* having registered office at _____*(address of system integrator). Our system integrator will support us for ASCPN PH-IV project upto defect liability period (one year after completion of work). The acceptance of system integrator is enclosed (on letter head of SI) herewith".*

For M/s _____ *(Name of Bidder)*
Signature & company seal
Name
Designation
Email

ANNEXURE- 16

CHECK LIST FOR THE SUBMISSION OF TENDER:

Whether the following documents are enclosed:

Sl. No.	Description	Yes	No	Page No.
1	Documents in support of submission of cost of tender document			
2	Documents in support of submission of EMD			
3	Copy of Power of Attorney of authorized signatory of the bid on stamp paper duly notarized			
4	EPF registration certificate			
5	GST registration certificate			
6	Average annual financial turnover for the last three years certified by the Chartered Accountant with registration number			
7	Bank Solvency certificate on or after ----------			
8	Work completion certificate during the last five years			
9	Organization set up of the company [as per annexure]			
10	Details of ongoing works			
11	Signed Integrity Pact			
12	Any Litigation History			
13	All the pages of tender documents signed			
14	Signed non-disclosure agreement			
15	CHECKLIST			
16	Price Bid – Part II (Separate)			

Note: Bidder has to take notice of the above points and checkmark Yes / No. The checklist shall be placed in the technical bid.

------ END OF SECTION –V -----

SECTION VI

SPECIAL CONDITIONS

General

1 These special conditions shall be read in conjunction with the General Terms and Conditions of the contract. Where the provisions of these conditions are at variance with the provisions of the General Conditions of the Contract, the provisions of these special conditions shall take precedence.

2 The work shall be executed in strict accordance with the accepted conditions of the contract, bill of quantities, specifications, and orders as may be issued by the Engineer-in-Charge and his representatives

3 The Bill of quantities is to be read in conjunction with the form of Tender, Drawings, Conditions of Contract, specifications as these documents are jointly explanatory and descriptive of the works included in the contract.

4 The rates quoted in the bill of Quantities are to be for the full inclusive value of the work described under the several items, including all costs and expense which may be required in and for the construction and full protection of the work described, together with all general risks, liabilities, and obligations set forth or implied in the documents on which the tender is based. The quoted rates will be for all heights, lifts, and leads unless otherwise mentioned specifically in the description of them.

5 The quantities of work in the schedule are not to be considered as limiting the amount of work to be done by the contractor. The quantities are an estimate of the amount of work to be executed and the work will be measured on completion and the Contract amount adjusted accordingly.

6 **The quantity variation: quantities given in the tender documents may increase/decrease up to any extent. However, rates shall remain firm for variation in quantities whatever may be the percentage of increase or decrease in the quantities of any item. Rates shall remain firm even if certain items are required to be deleted. No claim in this regard admissible.**

7 The contractor shall fully cooperate with all personal and agencies engaged by ITI Ltd for carrying out the other works. The structural and architectural drawings shall at all times be properly correlated before the execution of any work. However, in case of any discrepancy in the items given in the schedule of the quantities appended with the tender and architectural drawings relating to the relevant item, the former shall prevail unless otherwise given in writing by the Engineer in charge**.**

8 General directions and descriptions of work and materials have given elsewhere in the contract documents are not necessarily repeated in the Schedule. Reference is to be made to the other documents for full information.

8.1 It is deemed that the contractor has visited the sites before preparing the tender and to have examined for himself the conditions under which the work will be carried out, including local

conditions affecting labor and to have studied the items of the bill of quantities, the Drawings and specifications, clauses relating to them and to have satisfied himself that the rates quoted by him provide for all minor accessories and contingent works or services necessary for the works described even though they are not precisely defined.

8.2 The work shall be executed in strict accordance with the accepted conditions of the contract, bill of quantities, specifications, and orders as may be issued by the Engineer-in-charge and his representatives.

8.3 Specification shall include relevant provisions in all the following shall be supplementary to each other. In the case of conflict amongst the provisions for any item of work in the various documents under reference, the following precedence shall be followed:

a) Latest Indian Standard Specifications and code or practice.
b) Latest CPWD Specifications for works at Delhi.
c) Latest MES specifications.

9 If Specifications for any item of work are not covered by any of the documents mentioned in para above the same shall be decided and conveyed by the Engineer-in-charge to the contractor.

9.1 In case of conflict amongst the provisions of the bill of quantities, specifications, and drawings the following precedence shall be followed.

a) Descriptions of the item in the bill of quantities.
b) Provisions in the specifications, Special conditions, if any.
c) Provisions in the drawings
d) CPWD specifications,
e) Indian Standard Specifications of BIS

9.2 In the case of conflict amongst the various drawings, the decisions of the Engineer-In--Charge shall be final and binding.

9.3 Samples of all the materials and workmanship proposed to be employed in the execution of works shall be got approved by the Engineer-In-Charge in writing. The Engineer or his representative will reject all materials or workmanship not corresponding in quality or character with the approved samples. All expenses in this connection shall be borne by the contractor.

10 **TESTS & INSPECTION:** If so required by the Engineer, the contractor shall provide all facilities at the site or manufacture's works or in an approved Laboratory for testing of material/and/or workmanship. All the expenditure in respect of this shall be borne by the contractor unless specified otherwise in the contract. The contractor shall when required to do so by the Engineer, submit at his own cost, manufacturer's certificate of tests, proof sheets, mill sheets, etc. showing that the materials have been tested in accordance with the requirements of this specification.

10.1 C.P.W.D specifications for works at Delhi in respect of Civil/Electrical/ Public health works which will be generally followed for execution of works. These are kept in the office of ITI and tenderers must inspect and read carefully before submitting their tender. It will be taken that the specifications have been fully read and understood by the tenderers, irrespective of

the fact whether they have so done or not, and no claim on this account shall be entertained at a later date.

A. Wherever cement is used. The rate for that item of work shall be deemed to include proper curing of the cement work.

11 **BENCHMARKS:** Masonry pillars will be erected at suitable points in the area to serve as Bench Marks. These benchmarks shall be connected with permanent benchmarks approved by the Engineer-in-Charge. These benchmarks shall be maintained during the execution of the work. When required the contractor shall arrange for necessary equipment and labor for erecting the same.

12. MATERIAL TESTING –APPROVAL OF SAMPLES

12.1 All materials to be provided by the Contractor shall conform with the specifications laid down in the contract.

12.2 The Contractor shall at his own expense and without delay supply to the Engineer-in-charge samples of materials proposed to be used in the works. The Engineer-in-charge shall within 7 days of supply of samples or further period as he may require intimating to the Contractor in writing whether samples are approved by him or not. If samples are not approved the Contractor shall forthwith arrange to supply to the Engineer-in-charge for his approval fresh samples complying with the specification laid down in the Contract.

12.3. The Engineer-in-charge shall have full powers for removal of any or all of the materials brought to the site by the Contractor which are not under the Contract specifications or do not confirm in character or quality of samples approved by him. In case of default on the Contractor in removing rejected materials, the Engineer-in-charge shall have full powers to procure other proper materials to be substituted for rejected materials and in the event of the Contractor refusing to comply, he may supply by other means. All costs, incurred upon such removal and/or substitution, shall be borne by the Contractor.

12.4 **The** following proprietary materials shall be brought to the site after the approval of ITI Ltd.

- **i.** Waterproofing compound.
- **ii.** Cement.
- **iii.** Steel.
- **iv.** Primer/Paints/Varnish etc.
- **v.** Bitumen
- **vi.** Chemical for anti-termite treatment.
- **vii.** Any other materials as per discretion of ITI Ltd.

Cement and Steel required for the work are to be procured by the contractor and the materials should conform to the relevant Indian Standards. **Ordinary Port Land Cement of Grade 43 with ISI Mark to be used for the works and steel of TMT bars of Fe500D.**

12.5 The contractor shall submit documentary evidence e.g. challans, bills, etc. against the proprietary materials brought to the site as a check to ensure that the required quantities as required for the execution of works as per specification have been brought to the site for incorporation in the work.

12.6 Proprietary materials brought at the site shall be stored as directed by ITI Ltd and those

already recorded shall be suitably marked for identification.

12.7 The contractor shall ensure that the proprietary materials are brought to the site in original sealed containers or packing bearing manufactures markings and brands (except where the Quantity required is a fraction of the smallest packing). Materials not complying with this requirement shall be rejected. The empty containers of such proprietary materials shall not be destroyed /disposed of without the permission of ITI Ltd.

12.8 **The** contractor shall produce receipted vouchers showing quantities of the materials to satisfy the Engineer-in-charge that the materials comply with the specifications. These vouchers shall be endorsed, dated, and initiated by the Engineer-in-charge giving the contract number and name of work and a certified copy of each such voucher signed both by ITI Ltd and the Contractor shall be kept on record.

12.9 When the cost of each category of materials is less than Rs.500/- production of vouchers may not be insisted upon if the ITI Ltd is otherwise satisfied with the quantity of materials.

12.10 Reinforcement steel bars shall be of grade fe-500D & cement (excluding white cement) shall be of OPC 43 grade only.

13 RECORDS OF CONSUMPTION OF CEMENT & STEEL.

A. For the purpose of keeping a record of cement and steel received at the site and consumed in works, the contractor shall maintain a properly bound register in the form approved by the ITI Ltd, showing columns like quantity brought to the site, used in work, and balance in hand, etc. This register shall be signed duly by the Contractors representative and ITI Ltd.'s representative.

B. The register of cement and steel shall be kept at the site in the safe custody of ITI Ltd.'s Engineer during the progress of the work. This provision will not however absolve the contractor from the quality of the final product.

C. In case cement or steel quantity consumed is lesser as compared to the theoretical requirement of the same as per CPWD specification/norms the work will be devalued and/or a penal (i.e. double the rate at which cement/steel purchased last) recovery for lesser consumption of cement/steel shall be made in the item rates of the work done subject to the condition that the results of the test fall within the acceptable criteria as per CPWD specification otherwise the work shall have to be dismantled and redone by the contractor at no extra cost. In the case of cement, if actual consumption is less than 98% of the theoretical consumption, recovery shall be affected from the contractors' dues at the penal rate as actual quantity is lower than 98% of theoretical consumption.

14 MATERIALS AND SAMPLES:

A. All materials, articles, fittings and accessories, etc. shall comply with the relevant Indian Standard Specifications and shall bear the ISI mark and wherever specified shall be of approved make. The Engineer of ITI Ltd and the owner shall have the discretion to check the quality of materials and equipment's to be incorporated in the work at the source of supply or site of work and even after incorporation in the work. They shall also have the discretion to check the workmanship of various items of work to be executed in this work. The contractor shall provide the necessary facilities

and assistance for this purpose.

B. The above provision shall not absolve the contractor from the quality of the final product and in getting the material and workmanship quality checked and approved by the Engineer-in-charge of ITI Ltd.

C. The contractor shall well in advance, produce samples of all materials, articles, fittings, accessories, etc. that he proposes to use and get them approved in writing by ITI Ltd., The materials articles, etc. as approved shall be labeled as such and shall be signed by ITI Ltd., and the contractor's representative.

D. The approved samples shall be kept in the custody of the Engineer in charge of ITI Ltd., till completion of the work. Thereafter the samples except those destroyed during testing shall be returned to the contractor. No payment will be made to the contractor for the samples or samples destroyed in testing.

E. The brand of all materials, articles, fittings, etc. approved together with the name of the manufactures and firms from which suppliers have been arranged shall be recorded in the site order book.

The contractor shall provide all equipment to be compatible with the testing requirements specified. The contractor shall maintain all the equipment in good working condition for the duration of the contract.

The contractor shall provide qualified personnel to run the laboratory for the duration of the contract. The number of staff and equipment available must at all times be sufficient to keep pace with the sampling and testing program as required by the Engineer-in-charge. The contractor shall fully service the site laboratory and shall supply everything necessary for its proper functioning, including all transport needed to move equipment and samples to and from sampling points on the site, etc.

The contractor shall re-calibrate all measuring devices whenever so required by the Engineer-in charge and shall submit the results of such measurements without delay. All field tests shall be carried out in the presence of ITI Ltd’s representative.

15 TESTS AND INSPECTION

The contractor shall carry out the various mandatory tests as per specification and the technical documents that will be furnished to him during the performance of the work. All the tests, either on the field or outside laboratories concerning the execution of the work and supply of materials shall be got carried out by the contractor or ITI Ltd., at the cost of the contractor. This testing will be required in addition to the manufacture test certificate.

16 WORKS TO BE OPEN TO INSPECTION

All works executed or under the course of execution in pursuance of this contract shall at all times be open to inspection and supervision of the ITI Ltd., The work during its progress or after its completion may also be inspected by Chief Technical Examiner of Government of India (CTE) The compliance of observations/improvements as suggested by the inspecting officers of ITI Ltd/CTE/ shall be obligatory on the part of the contractor.

17 SETTING UP OF FIELD LABORATORY:

The contractor shall set up and maintain at his cost a field testing laboratory for all day to

day tests at his costs to the satisfaction of the Engineer in charge. This field testing laboratory shall be provided with equipment and facilities to carry out all mandatory field tests as per CPWD specifications. The laboratory building shall be constructed and installed with the appropriate facilities. Temperature and humidity controls shall be available wherever necessary during the testing of samples.

The contractor shall provide all equipment to be compatible with the testing requirements specified. The contractor shall maintain all the equipment in good working condition for the duration of the contract. The contractor shall provide qualified personnel to run the laboratory for the duration of the contract.

18 TESTING OF MATERIALS:

All the tests on materials, as recommended by various relevant Indian Standard Codes or other standard specifications [Including amendments current at the last date of issue of tender documents] shall be got carried out by the contractor at the field testing laboratory or any other recognized institutions/laboratory at the direction of the ITI Ltd. all testing charges expenses etc., shall be borne by the Contractor. This testing will be required in addition to manufacturing test certificate.

19 TECHNICAL STAFF:

The contractor shall employ the following technical staff during the execution of this work.
For building works [Civil works]

i. One graduate Engineer with a minimum of 05 years' experience or one diploma holder with 8 years' experience AS A PROJECT INCHARAGE for each group and also one BE/Diploma Engineer-Civil as a site engineer with one/ two years' experience respectively for each site. In case the contractor fails to employ the technical staff as aforesaid, he shall be liable to pay a sum of Rs. 20000/month for each month of default. The decision of the Engineer in charge as to the period for which the required technical staff was not employed by the contractor shall be final and binding on the contractor.

ii. One Graduate engineer for quality control will be engaged for buildings.

The employment of technical staff may be correlated to the tendered cost. [Applicable for each construction site]

20 ANTI TERMITE TREATMENT AND WATERPROOF TREATMENT:

Pre-construction treatment shall be carried out in coordination with the building work and shall be executed in such a manner that the civil works are not hampered or delayed by the Anti-termite treatment. The treatment shall be carried out as detailed in BIS 6613 [part-II] latest revision.

The waterproof treatment shall be of type and specifications as given in the schedule of quantities.
The work of Water Proofing and Anti termite treatment is to be got executed through specialized and approved agencies of CPWD/MES only. Prior approval of ITI shall be taken in this regard.

20.1 The treatment against waterproofing of basement, roofs, water retaining areas, and termite infestation shall be and remain fully effective for a period of not less than 10 [Ten] years to

be reckoned from the date of expiring of Defects liability period, prescribed in the contract. At any time during the said guarantee period, if ITI Ltd finds any defects in the said treatment or any evidence of re-infestation, dampness leakage in any part of buildings or structure and notifies the contractor of the same, the contractor shall be liable to rectify the defects or give re-treatment and shall commence the work or such rectification or retreatment within seven days from the date of issue of such letter to him. If the contractor fails to commence such work within the stipulated period, the ITI Ltd may get the same done by another agency at the Contractor's cost and risk and the decision of the Engineer-In-charge of ITI Ltd for the cost payable by the contractor shall be final and binding upon him.

20.2 Re-treatment if required shall be attended to and carried out by the Contractor within seven days of the notice from Engineer –in-charge of ITI Ltd.

20.3 The ITI Ltd reserves the right to get the quality of treatment checked under-recognized test methods and in case it is found that chemical with the required concentration and rate of application has not been applied, or the waterproof treatment is not done as per specifications, the contractor will be required to do the retreatment under the required concentration and specifications at no extra cost failing which no payment for such work will be made. The extent of work thus rejected shall be determined by ITI ltd.

20.4 Waterproofing and anti-termite treatment shall be got done through approved/specialized agencies only with the prior approval of the Engineer-in-charge.

20.5 During the execution of work, if any damage shall occur to the treatment already done, either due to rain or any other circumstances, the same shall be rectified and made good to the entire satisfaction of Engineer-in-charge by the contractor at his costs and risks.

20.6 The contractor shall make his arrangement for all equipment required for the execution of the job.

20.7 The contractor whose tender is accepted shall execute a guarantee bond in the prescribed form for guaranteeing the anti-termite treatment and waterproof treatment.

20.8 The waterproofing and anti-termite treatment works shall be guaranteed for a minimum period of ten years [10 years] from the date of expiry of defects liability period. A sum equivalent to 10% of the gross value of the final bill [total cost of waterproofing and anti-termite portion will be taken for this purpose] will be retained by ITI Limited towards the guarantee which will be refunded after the satisfactory completion of the Guarantee period of ten years.

Alternatively, the contractor may furnish a Bank Guarantee for the same amount as per the format approved by ITI Limited. The Bank Guarantee shall be submitted from a nationalized Bank before release if Security Deposit and the same shall be valid for 10 years from the date of expiry of defects liability period.

20.9 The contractor will also be required to furnish a Guarantee Agreement as per the format of ITI Limited in addition to the Submission of Bank guarantee.

21.0 TIME AND PROGRESS CHART:

a. The overall period of completion shall be prepared jointly by the Engineer and the detailed time and progress chart for the execution of various items of work within the contract, signed by both the parties and shall adhere to.

b. Time allowed for carrying out all the works as entered in the tender shall be as mentioned in the BOQ which shall be reckoned from the 15th day from date of issue of the work order to the Contractor. Time shall be the essence of the contract and the contractor shall ensure the completion of the entire work within the stipulated time of completion.

c. The Contractor shall also furnish within 15 days of the date of issue of work order a CPM network/PERT chart /Bar chart for completion of work within the stipulated time. This will be duly got approved by ITI Ltd. This approved network /PERT chart shall form a part of the agreement. Achievement of milestones as well as total completion has to be within the period allowed.

d. Contractor shall mobilize and employ sufficient resources for completion of all the works as indicated in the BAR Chart/PERT Chart. No additional payment will be made to the contractor for any multiple shift work or other incentives methods contemplated by him in his work schedule even though the schedule is approved by the Engineer -–charge.

e. During the currency of the work the contractor is expected to adhere to the schedule on milestone and total completion and this adherence will be part of the Contractors performance under the contract. During the execution of the work, the contractor is expected to participate in the review and updating of the Network/BAR Chart undertaken by ITI Ltd. This review may be undertaken at the discretion of the Engineer in charge either as a periodical appraisal measure or when the quantum of work order on the contractor is substantially changed through deviation order or amendments. The review shall be held at the site or any of the office of ITI/Consultant at the sole discretion of ITI Ltd. The contractor will adhere to the revised schedule thereafter. The approval to the revised schedule resulting in a completion date beyond the stipulated date of completion shall not automatically amount to grant to the contractor.

f. The contractor shall submit [as directed by the Engineer – in –charge] progress reports on a computer-based program [Program and software to be approved by Engineer in charge] highlighting the status of various activities and physical completion of work. The Contractor shall send completion report with as build drawings to the office of Engineer in charge of ITI in writing within a period of 30 days of completion of work.

22.0 The Forward communication Hubs are located mostly at boarder areas hence nominal mix is to be used. M25 means nominal mix of (1 cement: 1 coarse sand (zone-III): 2 graded stone aggregate 20 mm nominal size).

23.0 INDIAN STANDARDS:

Wherever any reference is made to any IS in any particular specification's drawings or bill of quantities it means the Indian Standards editions with the amendments current at the last date of receipt of tender documents.

Signature of The Contractor
Date

----- END OF SECTION –VI -----

SECTION –VII

MATERIALS, SPECIFICAATION, IT RELATED WORKS, AND SAFETY CODES

1 GENERAL

The scope of the works includes all civil works connected with the construction of Microwave Tower foundations, Nodal, Node Satellite, Repeater/Satellite/UHF Station Buildings, Paths, drains, fencing machine foundations etc. The specifications include civil works, Electrical works, Roads, Drains, Compound wall, Water supply Site Development Sewerage including Water proofing and anti-termite treatment works for Communication Project.

The work shall include but not limited to the following:

i. Brick walled/stone masonry structures with R.C.C. Columns and beams.
ii. Toilet facilities inside the buildings including disposal of waste in septic tank, soak pit, etc.
iii. Internal sanitary works including plumbing.
iv. Fencing pathways, surface drains.
v. Cable ducting under the floor inside the building with M.S. plate covers.
vi. Machine foundations for D.G. sets
vii. Earthwork in excavation/filling for ground levelling.

All materials which may be used in the work shall be of standard quality manufactured by renowned concerns conforming to Indian Standard Specifications (latest edition) or equivalent and shall bear I.S. mark as far as possible unless otherwise approved by the Engineer - in - charge. The Contractor shall get all materials approved by the Engineer- in-charge prior to procurement of the same in bulk and also before using in the works. The Engineer-in-charge shall have the right to determine whether all or any of the materials are suitable for incorporation in the work. Any materials procured or brought to site and not conforming to specifications and not upto the satisfaction of the Engineer-in-charge shall be rejected and the Contractor shall have to remove the same immediately from site at his own expenses and without any claim for compensation due to such rejection. Should it be decided by the Engineer-in-Charge to conduct any tests for materials before being approved, the cost of such tests shall be borne by the Contractor.

Method of measurement for different items of works where not specified shall be as per relevant IS code (latest edition).

2.0. MATERIALS:

2.1 Brick

Bricks shall be of best quality locally available bricks and shall have a minimum crushing strength of 50kg/cm 2 and shall be sound, hard, of homogenous texture and of regular shape and shall emit a clear metallic sound being struck.

Nominal size of bricks shall be 9 3/4"X4 3/4" X2 3/4" with Permissible tolerance on dimension up to ± 3%

Bricks shall not absorb more than 20% to 22% of water by weight when immersed in water for 24 hours.

2.2 Sand

Unless, specifically instructed otherwise, all sand to be used shall be of coarse variety natural pit sand, clean sharp, strong angular and composed of hard siliceous materials. It shall not contain any harmful materials such as iron pyrites, coal, mica, shale or similar laminated materials, clay, alkali, seashell, organic impurities etc. and silt content should not exceed 8%. Fineness modules of coarse sand shall not be less than 2.5.

Fine sand, if instructed to be used shall have fineness modulus not less than land shall have other properties same as coarse sand described in para 2.2.1 herein before.

2.3 Cement

Unless otherwise specified, cement shall be ordinary Portland cement conforming to I.S. 269. Contractor shall make proper storage arrangement of cement at the site works to the satisfaction of the Engineer-in-charge. Cement should always be stored in such a manner as to be easily accessible for proper inspection and in a suitable water tight building or storage shed to protect the cement from dampness. Cement not acceptable to Engineer-in-charge or his authorized representative being not in a conformity with relevant IS standard and/or being deteriorated due to dampness shall be rejected.

2.4 Steel:

Mild steel reinforcement for cement concrete work shall conform to IS-432 Grade I (latest edition) and relevant parts of IS-456.

Cold twisted steel reinforcement for reinforced cement concrete work shall conform toIS-1786 and relevant parts of IS - 456.

Structural steel sections and plates shall conform to ST-42-S of IS - 226 (latest edition). Steel shall be free from all grease, oil paint, loose mill scale and rust and shall be free from all defects mentioned in IS-226/IS2062 and shall have a smooth uniform finished surface.

Contractor shall invariably produce tests certificate from the manufacturer certifying the quality and strength of the steel to conform to the requirement of the aforesaid I.S. Standards. In the absence of such test certificate from the manufacturer, tests shall be carried out in a test House/Laboratory or University as approved by the Engineer-in-charge and cost of such tests shall be borne by the Contractor. Tests shall be carried out as per IS-1521 and 1608.

All reinforcement bars shall be clean and free from dirt, oil, paints, grease, mill scales and loose rust. Bars available in coils shall be uncoiled and properly straightened to the satisfaction of the Engineer-in-charge at no extra cost to the owner.

2.5 Stone Aggregate for Cement Concrete:

Aggregate shall consist of naturally occurring stone, crushed or uncrushed with grading conforming to IS-383 (latest editions) for different nominal sizes as specified in schedule of rates. Unless otherwise specified, stone aggregate for all type concrete & reinforced concrete shall be 20mm nominal size. Stone aggregate shall be hard, strong, dense clean and free from adherent coating and non-flaky and shall be obtained from the source / quarry approved by the Engineer-in-charge. Coarse aggregate of porous nature where absorption of water after 24 hours' immersion in water is more than 5 percent by weight shall not be used: Aggregate shall be thoroughly washed with water before being used in the work

2.6 Stone aggregate for Road Work.

Aggregate for Road Works shall have properties as described in the forgoing para and grading as per the table given below:

Coarse aggregate nominal size in mm

Sieve size	90mm	63mm	50mm	20mm	12.5mm	10mm
100mm	100	---	---	---	---	---
80mm	90-100	---	---	---	---	---
75mm	---	100	---	---	---	---
63mm	25-60	90-100	100	---	---	---
50mm	---	35-70	95-100	---	---	---
40mm	0-15	0-15	35-70	---	---	---
25mm	---	---	0-15	100	---	---
20mm	0-5	---	---	85-100	100	---
12.55mm	---	0-5	---	85-100	100	---
10mm	---	---	---	0-20	0-45	85-100
6.75mm	---	---	---	0-5	0-10	0-20
3.36mm	---	---	---	---	---	0-05
Percentage passing						

2.7 Bitumen:

80/100 Asphalt conforming to IS-73 (latest edition) shall be used in road work.

Other materials:

All the materials not fully specified herein and which may be used in the work shall be of best quality approved by the Engineer-in-charge and he shall have the right to determine whether all or any of the materials offered of delivered for use in the works are suitable for the intended purpose. Contractor shall produce sample of materials to the Engineer-in-Charge and shall get it approved before procurement and execution of work.

3 Site clearance and cutting and falling of trees.

Before earthwork is started, the area coming under cutting and falling shall be cleared of shrubs, vegetation's, brush wood, grass, trees and sampling of girth up to 30cm measured at a height of one meter above ground, and rubbish shall be removed up to any distance

within the station area limit. The roots of the trees shall be removed to a minimum depth of 60cm below ground level, or a minimum of 15cm below formation level whichever is lower and the hollows filled up with earth, leveled and rammed at no extra cost.

The Trees of girth above 30cms measured at a height of one meter above ground level shall be cut only after written permission from the Engineer-In-Charge. Roots shall also be removed to a minimum depth as described in the preceding para. Cutting of such trees having girth of more than 30cms will be paid for separately.

The trees having girth more than 30cms measured 1mt. above ground shall be properly marked and got approved by the Engineer-In-Charge before cutting and got approved the same. The trees shall be cut across the trunk just near the ground level preferably by means of saw to a uniform depth and shall be pulled down by means of ropes. Every precaution, such as use of rope, guys etc. shall be taken so as to avoid accident and safeguard nearby property. Any damage done during the felling operations due to the contractor's fault shall be contractor's liability and contractor shall be responsibility for making compensation for damages, if any, and reparation/restoration of the property, as the case may be.

All stems and roots shall be removed to a depth of not less than 1.0 meter below ground level. All the excavation made for grabbing roots shall be filled with approved earth in 15cm layer and rammed.

All products of cutting of trees shall be the property of the owner. The main trunks and big branches shall be cut into pieces of 1 to 2-meter length or as directed by the site Engineer and kept in a neat stack as directed. Unserviceable materials shall be disposed off outside the station area limit at contractor's own dumping ground.

Mode of measurement and payment for cutting and falling trees.

Measurement and payment for felling and cutting of trees shall be par tree and size of girth as categorized in schedule of rates. Rate shall be inclusive of cutting of trees, grabbing roots, refilling the excavation stacking serviceable materials and all labour materials, tools, tackles etc.

4.0 EARTH WORK

Earthwork is classified into 2 types namely**;**

a) All kind of soil

b) Hard rock requiring blasting and Hard rock requiring chiselling

The decision of the Engineer-In-Charge as to the classification of the type of earth work as above shall be final and binding upto the contractor.

Earth work in excavation for foundation trenches drains etc.

Earth work shall be carried out in any material met on the site the, lines, levels, and contour shown on the detailed drawings and the contractor shall remove all excavated materials to soil heaps on site of transport for use filling, at the site directed.

Excavated materials shall not be deposited within 1.5 meters from the top edge of the excavation.

Suitable types of shoring and strutting, wherever necessary shall be adopted to withhold the face of earth or cutting in slope as per site requirements and as directed by the site engineer.

Foundation pits shall be excavated to full depth. Prior to construction/concreting work, the trench shall be cleared and the bottom properly rammed, firm and to level, to satisfaction of site engineer.

The contractor shall provide suitable drainage arrangements to prevent surface water entering to foundation pits or trenches. The contractor shall engage pumps or other approved means to keep excavation free of water.

If the bottom of any excavation has been left exposed by the contractor and that in the opinion of the site engineer, it has become deleteriously affected by the atmosphere or by water, the contractor shall remove such portion of the deteriorated foundation material as the site engineer may direct and shall make good with lean concrete of mix(1:4:8) . All expenses for such additional concrete and excavation shall be borne by the contractor.

Where excavations are made in excess of the depth required the contractor shall at his own expense fill up to the required level with lean concrete of mix(1:4:8) as directed by the site engineer.

The bed of the trench shall be made level and firm by watering and ramming. Soft and defective spots shall be filled up with concrete of the same mix used for foundation concrete as per the directions of site engineer. In firm soil, the sides of trench shall be kept vertical up to a depth of 2 meters of from the bottom and for a greater depth, the trench shall be widened by allowing steps of 50cms on either side after every 2 meters depth from the bottom, so as to give virtual side slopes of 1/4 to 1. Where the soil is soft, loose or slushy, the width of steps shall be suitably increased, or the side sloped or shored up as directed. The contractor shall take complete instructions from the site engineer regarding the stepping, sloping or shoring to be done for excavation in trenches deeper than 2 meters.

The contractor shall not undertake any concreting in foundation until the excavation pit is approved by the site engineer.

1.1.0 Mode of Measurement and Payment:

Payment will be made on the cubic content of earth work excavated which shall be computed by measurement of length width and depth of excavation made. Excavation made in excess of specified requirement shall not be paid for.

Rate quoted are deemed to include

a. Excavation and deposition of earth as specified

b. Setting out of work, profiles etc.

c. Site clearance

d. Bailing out of water wherever required

e. Protection to existing Structure, If any

f. From work, shoring, strutting and sloping etc

g. Removal of slips during excavation

h. Fencing and protection against risk of accident due to open excavation

i. Excavation for insertion of planking and strutting

1.2 Refilling the excavated earth in trenches, foundations, plinth etc.

Earth obtained from excavation of foundation trenches, sump pit, drains etc. shall be used for refilling the trenches and plinth under floor as directed by site engineer. No extra payment shall be made for lead and lift and transportation of earth involved. The earth used shall be free from all vegetation, grass, roots etc., and other foreign matter. All clods shall be broken.

Where excavated material is mostly rock, the boulders shall be broken into pieces not bigger than 15cms size in one direction mixed with fine material consisting of decomposed rock, morrum or earth as available so as to fill up the voids as far as possible and the mixture is used for filling.

Filling of trenches for pipes and drains shall be commenced as soon as the joints of the pipes and drains have been tested and passed.

Where trenches are excavated in soil. The filling shall be done with earth on the sidesand top of the pipe in layers not exceeding 20cms, watered, rammed and consolidated taking care that no damage is caused to the pipe below.

Where trenches are excavated in rock, the filling up to a depth of 30 cms above the crown of the pipe shall be done with fine material such as earth, morrum etc., and remaining fill shall be done with rock filling of boulders of size not exceeding 15cms mixed with the fine material as available to fill up the voids, watered, rammed and consolidated.

As soon as the works in foundation have been measured, the spaces around foundation masonry in trenches shall be cleared of all debris, brick bats, mortar dropping etc and fill with earth in layers not exceeding 20cms each layer being watered rammed and consolidated before the succeeding one is laid. Earth shall be rammed with iron rammers where possible and with butt ends of crow bars where rammers cannot be used.

Plinth under floor shall be filled with earth in layers not exceeding 20cms watered not consolidated by ramming with iron rammers or with butt ends of crow bars. When the filling reaches the finished level the surface shall be flooded with water for at least 24 hours and allowed to dry and then refilled, rammed and consolidated in order to avoid settlement at a later stage. The finished level of filling shall be kept to slope as indicated in drawing and/or as directed at site.

1.3 Earthwork in making earth embankment with excavated earth.

Earth obtained from excavation of static water tank shall be used for making earthen embankment. No extra payment shall be made for lead and lift and transportation involved. The excavated earth to be used in filling shall be made free of all vegetation, grass, roots etc. and clods shall be broken. Before commencement of earth fill, the toe of the embankment shall be marked by pegs driven into ground at 10 meter intervals (or less as directed) to indicate limits of the toe. The area enclosed by the pegs on either side shall

than be ploughed to a depth of 15 to 20 cm. All clouds shall be broken into fine earth and the area roughly leveled. The surface shall then be watered before the earthwork is started.

Bamboo and string profiles shall be erected at intervals before commencement of earth filling.

Earth shall be laid in 20 cm layers which shall be continuous and parallel to the finished grade. The placing of the earth fill shall be done in full width of the embankment including slopes, and the sections of formation shall be kept slightly sloping away from the center to avoid spools of water formed due to rain. The height of filling in the section shall be uniform as for as possible. All clods shall be broken while the earth is being placed. Organic matter of any kind shall be removed and disposed.

Each layer of earth shall be adequately watered and compacted till it gets evenly and densely consolidated. Wherever practicable road rollers shall be used for consolidation. The degree of compaction obtained shall not be less than 90% proctor density. Before placing successive layers of earth, the previous layer (the under layer shall be moistened and scarified with pick axes or spades and rough surface obtained to provide a satisfactory bond with the next layer.

The embankment shall be dressed neatly to the designed section, and grade after it has been completed and thoroughly consolidated. The top and slopes shall be protected from any damage and maintained, till the work is completed and handed over.

The earth work in embankment shall be paid for by measuring the earth fill by computing the cross-sectional area, length etc. thereby computing the volume. The rate shall be deemed to include all operations described above including all necessary lead and lift charges. If ground on which the embankment is to the raised is undulating, the site Engineer at his discretion may take level measurement for purpose of payment. The specific method of measurement adopted shall be at the discretion of the Engineer-in-charge.

1.4 Earth work for compound leveling:

Excavation not requiring dressing of sides and bottom, reductions to exact levels such as surface levelling in the station are described as compound levelling. Cutting shall be done from top to bottom. Under no circumstances shall be undermining or under cutting be allowed. The earth from cutting higher elevations shall be directly used from filling low lying areas and no claim for double handling of earth entertained. Filling shall be done in regular horizontal layers, not exceeding 20cms in depth. The earth shall be free from all roots, grass and rubbish and all lumps and clods exceeding 8cms in any direction shall be broken. Each layer shall be consolidated by breaking clods and compacting by using of rollers 8 to 10 tonnes capacity. Watering shall be done as directed by the site Engineer. Degree of compaction obtained should not be less than 90% proctor density.

All cutting shall be done to the required levels and should the cutting be taken deeper; it shall be brought to the required level by filling in with earth duly consolidate at the contractor's cost.

The finished formation levels in the case of filling shall be kept higher than the required levels by making an allowance of 5% for consolidated fills, if so instructed by site Engineer.

During excavation, the natural drainages of the areas shall be maintained by the contractor.

Method of measurement: payment shall be made only on the basis of excavation in cutting. Levels of the site are to be taken before the start and after completion of the work and the quantity of excavation in cutting shall be computed from these levels and paid for the payment thus made shall be deemed to include transportation, filling and compaction of the excavated earth in low areas.

4.5 Earth work in filling:

Where it is specified that the earth has to be supplied by the contractor, the rates are deemed to include cost/rental of the borrow areas.

Where it is specified that the owner shall provide borrow areas, the borrows areas shall be provided by the owner, and the rates shall include only excavation, transportation and filling.

Where it is specified that filling shall be done out of surplus excavated earth available, from excavation of foundations, static water tank etc. rendered surplus after use for filling in sides of trenches, foundation, plinth etc. and making earthen embankment, road embankment etc. the balance shall be utilized for filling low lying areas.

Surplus excavated earth as obtain from ways of excavation shall be used directly for filling low laying areas as directed by site engineer. The filling shall be done in regular horizontal layers of 20 cm each. The earth shall be made free of all roots, grass rubbish etc. and clods exceeding 8cm in size shall be broken. Each layer shall be consolidated by using roller of 8 to 10 tones capacity. Watering shall be done as directed by site Engineer and degree of compaction shall be obtained not less than 90% proctor's density. Finished levels shall be kept higher than the required level by making an allowance of 5% for consolidated fills, if so instructed by site engineer.

4.6 Mode of Measurement and Payment:

Levels of the site are taken before the start and after completion of the work and the quantity of filling computed from these levels. Filling done out of operations mentioned at section 4.5.0. i.e., By excavation for compound levelling shall be deducted and balance paid for under this item

4.7 Excavation by Blasting:

Where Hard rock is met with and requires blasting operations, the Contractor shall intimate the Engineer-in-charge before actual blasting is undertaken.

The contractor shall obtain a license from the District Authorities for undertaking blasting operations as well as for obtaining and storing the explosive as per Explosives Rules corrected up to date. He shall purchase explosives fuses, detonators, etc. from a Licensed dealer. He shall be responsible for safe custody and proper accounting of explosive materials. Engineer-in-Charge shall have an access to check the Contractor's store of explosives and his accounts.

In the case where explosives are required to be transported and stored at the site, the relevant clause of explosives rules shall apply.

The contractor shall be responsible for any accident to workmen, public property damage due to blasting operation.

The Mode of Measurement as stipulated for earthwork in the excavation shall apply.

5 BRICKWORK

Brickwork will be locally available approved bricks laid in cement mortar of designed proportion as specified in item or drawings. Bricks shall be soaked in water thoroughly at the site or work for at least 6 hours before use. The bricks shall be placed in the tanks by hand, one by one, and not throwing. The mortar shall be used before it shows any signs of setting or stiffening.

Unless otherwise specified, brickwork shall be done in English bond with the frog upwards. No broken bricks shall be used except at closures. The courses shall be truly horizontal and the work strictly in plumb. The mortar joints should not exceed 10mm in thickness except where the extra thickness is required for the purpose of bringing the brickwork to the required height or level or for making both faces even. The brickwork shall not be raised by more than 14 single courses per day. Tables shall be formed at every 14 single courses and kept full of water.

The finished portion of the brick work shall be kept flooded under a depth of 25mm of water. When work is left off at night a fallout of mortar about 40mm high will be made round the edge of the last course laid to form a trough which will be filled with water. Masonry shall be kept constantly moist while under construction and for a period of at least 10days after completion. Watering shall be continued twice a day for at least one month after 10 days.

Construction of walls shall, as far as possible, be carried out in regular and level course throughout their entire length and no portion of the work shall be 0.90 Mt. lower than the other. All cross walls, buttresses counterforts step etc. shall be built up course by course, with the main walls carefully embedded into them. Where such binding is not possible in the course of the work for any reason, necessary grooves or totting shall be left in brick work for subsequent bonding. No extra payment will be made for this.

Brickwork in foundation and plinth shall be the portion of brickwork between foundation level and plinth level.

Brickwork in the superstructure will mean all brickworks above the plinth level. Parapet shall be considered as part of the wall. In exposed brickwork, specially selected bricks shall be which are irregular are not used. Wood fillets shall be placed at the edge of joints so that no mortar comes on the surface of the bricks and a regular thickness of necessary joints is maintained, no mortar shall be allowed to stick to the surface. The surface shall be rubbed down with brushes if necessary and thoroughly washed. The joints in faces that are to be plastered or pointed should be raked out while the broken mortar is green.

The rate for brickwork shall include supplying, erecting, and dismantling the necessary scaffolding. Scaffolding shall be strong and stiff. Holes left in brickwork to take the put logs

shall be properly bricked up before plastering or pointing is done. Put log holes shall not under any circumstances be allowed in pillars.

Payment will be made on a cubic meter basis on the volume of work done calculated on actual measurement of length, height, and thickness. No extra payment will be made for cutting bricks if required either for openings or for rounding or for insertion at the time of construction of small fixtures in the wall such as angles, joints small size pipes, etc. no deduction will be made for volumes occupied by such as fixtures. The Contractor's rate shall include the cost of all materials supply, fixing and removal of scaffoldings, curing, string course, blocking course and parapet over the roof, etc. Half brick wall including a reinforced wall will be measured in the square meter for payment. The thickness of walls if more than thickness computed on the basis of nominal brick sizes, if any, shall be ignored while measuring. Deduction for openings shall be as per IS:1200.

6.0 PLAIN AND REINFORCED CEMENT CONCRETE WORKS

6.1.0 General

a. This item relates to the supply, preparation, placing, and curing of all concrete work in plain, and reinforced portions of works referred to under respective items in the bill of quantities.

b. Concrete for these specifications is broadly classified into two classes, viz:

(i) Nominal Mix Concrete

(ii) Design Mix Concrete

c. All operations relating to mixing, placing, and curing shall be subject to the approval of the Engineer-in-Charge and the contractor shall provide unhindered access for this purpose for inspection and selection of samples.

d. All materials to be used in the work shall have been approved by the Engineer before their incorporation in the work for this purpose, the contractor shall whenever call upon to do so, furnish samples of materials in adequate quantities and carry out all tests on materials and concrete specimens. Testing shall be on materials and concrete specimens. Testing shall be done in close liaison with Engineer-in-Charge or his representative and methods of tests shall generally follow the standard methods described in relevant Indian Standard Specifications for methods of tests. All the cost of supplying the required materials and concrete specimens and also the cost of testing in an approved laboratory shall be borne by the contractor. The contractor shall install a laboratory at the site, which shall be equipped to make routine tests on concrete cubes and materials for concrete.

e. No concrete work shall be done in the absence of the Engineer-in-Charge or his representative. Before placing the concrete, the Engineer-in-Charge shall have inspected and approved all reinforcement in place, formwork and concreting, and arrangements for concreting. At least 24 hours' notice shall be given for this purpose. Any concrete placed in violation of this provision shall be rejected.

f. All concrete works shall be vibrated for proper compactions unless otherwise specified by Engineer-in-Charge.

g. Reference to standard specifications:

1. **IS 456** – 'Code of practice for plain and reinforced concrete
2. **IS 269** – 'Ordinary and low heat Portland cement"
3. **IS 383** – 'Coarse and fine aggregate from natural sources for concrete'.
4. **IS 515** – 'Natural and manufacture aggregate for use in mass concrete.
5. **IS 2386** – 'Methods of test for aggregate for concrete' (Part Ito VIII)
6. **IS 4925** – 'Concrete batching and mixing plant'
7. **IS 2505** – 'Concrete vibrators, immersion type'
8. **IS 3558** – 'Code of practice for use of immersion vibrators for consolidating concrete'
9. **IS 4656** – 'Form vibrations for concrete'
10. **IS 1199** – 'Methods of sampling and analysis of concrete'
11. **IS 516** – 'Methods of test for the strength of concrete,
12. **IS 9013** – 'Method of making curing and determination of compressive strength of accelerating cured concrete tests specimens
13. **IS 303** – 'Plywood for general purposes'
14. **IS 1139** – 'Hot rolled mild steel, medium tensile steel, and high yield strength steel deformed bars for concrete reinforcement'
15. **IS 1786** – 'Cold-twisted steel bars concrete reinforcement'
16. **IS 432** – 'Hard drawn steel wire'
17. **IS 4990** – 'Plywood for concrete shuttering work'
18. **IS 2750** – 'Steel scaffolding'
19. **IS 2204** – 'Code of practice for construction of reinforced concrete shell roof'
20. **IS 2210** – 'Code of practice for steel tubular scaffolding,
21. **IS 4114** – 'Code of practice for steel tubular scaffolding,
22. **IS 3696** – 'Safety code for scaffolds and ladders'

6.2 Materials:

All materials used in the work shall be new of quality and standards as specified. Materials delivered to the work shall be of the same quality as that of the approved samples, which shall be deposited with the Engineer-in-Charge well in advance for his approval before they are incorporated in the works. Delivery of materials shall be made sufficiently in advance of constructional and testing requirements to enable further samples to be selected and tested if so desired by the Engineer. No material shall be used in the work until approved. Approved materials should be stored in such a manner that by no means the qualities are changed due to any reason. Materials failing to comply with these specifications shall be immediately removed from the works at the contractor's cost.

a) Unless otherwise stated in these specifications or drawings or approved by the Engineer-in-Charge all cement to be used in the concrete shall be ordinary Portland cement conforming to IS:269.

b) It shall be stored in a dry place, in regular piles not exceeding 10 bags high and in such a manner that it is adequately protected from moisture and contamination. Different consignments shall be stacked separately and identified accordingly so that they can be used in the order in which they are received. If necessary, cement shall be screened at the contractor's expense to remove any lumps. No cement which has become damaged shall be used in the work.

c) Any cement that is to be used at the site shall be tested before use, if so directed. If on testing the cement does not comply with the specifications, the consignment from which the sample has been drawn shall be rejected and removed from the site. The cost of removal and subsequent replacement by the cement of satisfactory quality shall be borne by the contractor.

6.2.2 **Admixture**: No admixture shall be used in the concrete unless approved in writing by the Engineer-in-Charge. Approval shall be based on the evidence that with time, neither the compressive strength of concrete is reduced nor are other requisite qualities of concrete and steel impaired by the use of such admixtures. Calcium Chloride or any admixture containing this compound shall not be used under any circumstances. When permitted, the contractor shall produce test certificates from recognized laboratories before the use of admixture, if so desired by the Engineer-in-Charge.

In case of doubt, the Engineer-in-Charge may request the contractor to carry out tests, at the contractor's expense.

6.2.3 Fine Aggregates:

a. Material:
Fine aggregates shall generally conform to IS: 383 "Specification for coarse and Fine Aggregates from Natural Sources for Concrete" and to IS 515 "Specification for Natural and Manufactured Aggregates for use in Mass concrete" as the case may be. Fine Aggregate shall consist of natural sand or manufactured sand or any approved combination thereof. The sand shall be of siliceous or material, sharp, hard, strong, and durable and shall be free from an adherent coating of clay, dirt, etc. more than the limits stated in (d) below. They shall be chemically inert. The limits of any kind of dissolved or un-dissolved impurities shall be subject to the approval of the Engineer-in-Charge.

b. Gradation:
The grading of fine aggregate shall conform to either grading zone II or grading zone III defined in Table II, clause 4 of IS: 383 Grading shall be determined under IS 2386 (Part I) "Method of tests for Aggregates for concrete Part I - Particle size and shape".

c. Specific Gravity: Normal and having specific gravity below 2.5 (saturated dry basis) determined under IS 2386 (Part III) Methods of tests for Aggregates for Concrete:

Part III - Specific gravity, density, voids, absorption and bulking" shall not be used without special permission of the Engineer.

d. **Deleterious Materials:** Fine aggregate shall not contain the injurious amount of dust, clay lumps, soft or elongated flaky particles, shale, alkali, organic matter, loam, mica, and other deleterious substance in quantities over the limits of deleterious. material, given in Table I of IS:383. Deleterious materials also include material passing 75 microns IS sieve.

e. **Organic impurities:** All fine aggregate shall be free of injurious amounts of organic matter. Aggregates, when tested under IS 2386 (Part II). Methods of Test for Aggregates for Concrete: Part II - Estimation of Deleterious Materials and Organic Impurities' and producing a color darker than the standard, shall be rejected unless, when tested for mortar making properties, the mortar develops a compressive strength at 7 and 28 days of not less than 95% of that developed by a similar mortar made from another portion of the sand sample which has been washed in 3% solution of Sodium Hydroxide followed by thorough rinsing in water. Mortar cubes shall be made and tested under IS: 2386 (Part VI) "Measuring Mortar making properties of fine aggregate".

f. **Soundness:** When tested to five cycles of sulphate soundness under IS: 2386 - Part V. "Methods of test for Aggregate for Concrete: Part V - Soundness" and IS: 383 the weighted percentage of loss shall not be more than 8% by weight when sodium sulphate is used and 12% when magnesium sulphate is used.

g. **Screening and Washing:**
Natural manufactured sand shall be prepared for use by such screening or washing or both as necessary to remove objectionable foreign matter while separating the sand grains to the required size fractions. Natural sand shall be washed unless specific written authorization is given by the Engineer-in-Charge to use sand that meets specification standards of cleanliness without washing.

6.2.4 Coarse Aggregate

a. **Sources of Supply:**
Aggregate shall, where possible, to be supplied from a source that normally produces aggregate satisfactory for concrete work, and if required by the Engineer, the contractor shall supply evidence to this effect. If required by the Engineer, the contractor shall supply samples to make preliminary tests on concrete cubes made from such aggregates.

Coarse aggregate shall generally conform to the requirement IS 383 and shall consist of hard, strong, durable particles of crushed stones and shall be free from elongated, soft, pieces, vegetable matter, and other deleterious matter. It shall have no adherent coating. Flaky and elongated particles shall be avoided.

b. **Size and Grading:**

The maximum size of coarse aggregate for use in reinforced concrete work shall be limited generally to 20 mm (3/4"). For the concrete used in plain concrete work and

in massive RCC members having a sufficiently wide spacing of reinforcement, the use of 40 mm (1 1/2") size graded aggregate may be permitted. In no case shall the aggregate size exceed 1/4 times the thickness of the member.

The grading of coarse aggregate shall be selected from the standard grading given in Table II of IS: 383. The method of determining the grading of coarse aggregate shall be according to IS: 2386 (Part I).

c. Specific Gravity:

Normal aggregate shall have a specific gravity (saturated surface dry basis) not less than 2.6 Determination of specific gravity shall be done under IS:2386 (Part III).

d. Deleterious Matter:

Amount of deleterious matter determined in accordance with IS: 2386 (Part II shall not exceed the limits given in Table I of IS: 383.

e. Washing:

The coarse aggregate shall be washed if required by the Engineer and only clean fresh water shall be used for this purpose.

6.2.5 Water:

Water used for both mixing and curing shall be free from injurious amounts of deleterious matter. The Engineer-in-Charge may require the contractor to get the water tested from an approved laboratory at the latter's expense. Potable water is considered satisfactory for this purpose.
The PH value of the water shall generally lie between 6 and 8; where the water contains an excess of acid, alkali, sugar, or salt, the Engineer-in-Charge may refuse to permit its use.

6.2.6 Care and storage of concrete aggregate:

Aggregate stockpiles shall be arranged and used in a manner as to avoid excessive aggregation or contamination with other materials or with other sizes of like aggravates. To ensure that this condition is met, any test for determining conformance to the requirements of these specifications shall be performed on samples collected from the aggregates at the point of batching.

Stockpiles shall be built in successive horizontal layers of not more than 1Mtr. thickness, with each layer being completed before the next, is started.

The aggregate piles shall be allowed to drain until it has reached uniform moisture content and the last 300 mm layer from the stockpile of aggregate shall not be used if the piles are on ground.

6.3 Grade of Concrete:

Unless otherwise specified on drawings or called for the bill of quantities, the grades of concrete shall generally be selected from table No.1.

Table-1

Grade Designation	Specified Characteristic compressive strength of 15 cm cube at 28 days in N/mm^2
M-7.5	7.5
M-10	10.0
M-15	15.0
M-20	20.0
M-25	25.0
M-30	30.0
M-35	35.0
M-40	40.0

The characteristic strength is defined as the strength of material below which not more than five (5) percent of the test results are expected to fail.

In the designation of a concrete mix, the letter M refers to the mix and the number to the specified characteristic compressive strength of 15 cm cube at 28 days expressed in N/mm^2

6.3.1 Type of concrete mix:

This concrete shall be either Nominal Mix Concrete or Design Mix Concrete as defined inIS:456. Unless otherwise specified or given in Bill of Quantities, all lean and structural concrete shall be nominal mix and design mix type respectively. Nominal mix concrete shall mean concrete of grade M 10 and below.

6.3.2 Nominal Mix Concrete:

This concrete shall be made without a preliminary test by adopting nominal concrete mix specified in the volumetric mix and the aggregate shall be measured by volume, cement by

weight, mixing water shall be measured in graduated litre cans. The cement content of the mix specified in Table 3 of IS: 456 for any nominal mix shall be proportionately increased if the quantity of water in a mix has to be increased to overcome the difficulties of placement and compaction so that the water-cement ratio as specified is not exceeded.
If nominal mix concrete made under the proportions given for a particular grade does not yield the specified strength, such concrete shall be classified as belonging to the appropriate lower grade. Nominal mix concrete proportioned for a given grade under Table 3 of IS: 456 shall not, however, be placed in the higher grade on the ground that the test strengths are higher than the minimum specified. All the relevant requirements for this concrete as given in IS: 456 shall apply.

6.3.3 Design Mix Concrete:

The mix shall be designed to produce the grade of concrete having the required workability and characteristic strength not less than appropriate values given in Table-1.

Mix proportions used for a particular designation of concrete shall be based on the results of tests carried out on samples as per various preliminary mix design. Only the materials proposed for use in the works shall be used for the samples. Any of the recognized methods of mix design such as road note No.4 (H.M.S.O. London) may be used in the design of trail mixes. Trail mixes shall take into consideration the workability required at the site for placing the concrete in the structure.

A preliminary mix design will have to be made if the source of the materials changes or any change in mix proportions is to be made in the course of construction.

6.2 Proportioning of Concrete:

Proportioning is used in these specifications, shall mean the process of determining the proportions of the various ingredients to be used to produce concrete of the required strength, workability, durability, and other properties.

The Engineer-In-Charge shall verify the strength of the concrete Mix before giving the sanctions of its use. However, this does not absolve the Contractor of his responsibility as regards achieving the prescribed strength of the mix. If during the execution, the Engineer-in-charge shall order fresh trail mixes to be made by the contractor, No claim to alter the rates of concrete work shall be entertained and the cement used for making the trail mixes shall be taken into consideration for material reconciliation.

Preliminary mix designs should be established well ahead of the start of work.

The cube strengths of concrete, as observed during the preliminary mix designs, carried out under laboratory conditions shall have a minimum value as given in the table below:

Table-2

Grade of Concrete	Compressive strength of 15 cm cubes at 28 days after mixing (in N/mm^2) Preliminary test.
M 15	23.0
M 20	30.0
M 25	37.0
M 30	43.0
M 35	50.0
M 40	56.0

6.4.1 Maximum density:

Suitable proportions of sand and the several sizes of coarse aggregate for each grade of concrete shall be selected to give as nearly as practicable the maximum density. This is to

be determined by mathematical means, laboratory tests field trails, and suitable changes in aggregate gradation.

6.4.2 Proportion by W/C Ratio:

Once a mix, including its W/C Ratio, has been determined and specified for use by the Engineer-in-Charge, that W/C Ratio shall be maintained. The Contractor will determine the water content of the aggregate frequently as the work progress, and the amount of mixing water entered at the Mixer shall be changed as directed by the Engineer-in-Charge to maintain the specified W/C Ratio.

The concrete shall have a consistency such that it will be workable in the required position. It shall be of such consistency that when properly vibrated it will flow around reinforcing steel, and all embedded parts.

6.4.3 Slump:

The Slump for concrete as determined by Slump Tests as per relevant IS: shall not exceed slump indicated in table-3.

Table-3

Sl. No.	Degree of workability	Slump in mm		Type of construction
		Min	Max	
1.	Medium	40	80	Reinforced foundation walls and footings.
2.	Medium	25	75	Plain footing, substructure walls, etc.
3.	Medium	50	100	Reinforced Beams, Slabs, columns, walls, etc.

The Contractor shall not place concrete lumping the limits specified without the approval of the Engineer-in-Charge.

6.5 Batching: In proportioning concrete, the quality of both cement and aggregate should be determined by weight. Where the weight of cement is determined based on the weight of cement per bag, a reasonable number of bags should be weighed periodically to check the net weight. Where the cement is weighed on the site and not in bags it should be weighed separately from the aggregate. Water should be either measured by volume in calibrated tanks or weighed. Any solid admixture that may be added, may be measured by weight; liquid and paste were used should conform to IS: 4925. All measuring equipment should be maintained in a clean serviceable condition, and their accuracy periodically checked.

Except where it can be shown to the satisfaction of the Engineer-in-Charge that supply of properly graded aggregate of uniform quality can be maintained throughout work, the grading of aggregate should be controlled by obtaining the coarse aggregate different sizes and blending them in the right proportion when required, different sizes in being stocked in separate stockpiles. The grading of coarse and fine aggregate should be checked frequently for a given job, being determined by the Engineer-in-Charge to ensure that the specified grading is maintained.

Change from weight batching to volume batching may be done only after obtaining the specific permission of Engineer-in-Charge in writing.

The amount of the added water shall be adjusted to compensate for any observed variations in the moisture contents. For the determination of moisture content in the aggregates, IS: 2386 (Part III) may be referred to. To allow for the variation in the weight of aggregate due to variation in their moisture content, suitable adjustments in the weights of aggregate shall also be made. In the absence of exact data, only in the case of Nominal mixes, the amount of surface water may be estimated from the value given in Table - 4.

Table - 4

SURFACE WATER CARRIED BY AGGREGATE

Aggregate	Approximate qty. of surface Water	
	Percentage by mass	Ltr/cum
Very wet sand	7.5	120
Moderately wet sand	5.0	80
Moist sand	2.5	40
Moist gravel or crushed rock	1.25-2.5	20-40

No substitutions in materials used on the work or alternations in the established proportions, except as permitted in 6.6.2 and 6.6.3. shall be made without additional tests to show that the quality and strength of concrete are satisfactory.

6.6 Concrete Mixing:

The mixing of concrete shall be strictly carried out in an approved type of mechanical concrete mixer. The mixing equipment shall be capable of combining the aggregates, cement, and water within the specified time into a thoroughly mixed and uniform mass, and of discharging the mixture without segregation. The entire batch shall be discharged before recharging. No batch shall be discharged on the previously discharged batch of concrete.

6.6.1 Mixer:

Mixers may be stationary mixers of either the tilting or non-tilting type. or truck mixers approved design. The mixers shall be maintained in satisfactory operating condition and mixer drums shall be kept free of hardened concrete. Mixer blades shall be replaced when worn down more than ten percent (10%) of the depth. Should any mixer at any time produce unsatisfactory results, leak mortar, or cause waste of materials, its use shall be promptly discontinued until it is repaired.

6.6.1.1 Mixing Time:

Mixing time shall be as indicated in Table 5. Excessive mixing requiring additions of water will not be permitted. Time shall start when all solid materials are in the mixer drum, provided that all of the mixing water shall be introduced before one-fourth of the mixing time has

elapsed. The Engineer-in-Charge may, however, direct change in mixing time, if he in his opinion considers such change necessary. Each batch shall be mixed thoroughly until the mix achieves uniform color and consistency.

Table-5

Capacity of Mixer	Minimum mixing time for the Stationery item
Less than 1 Cum	1 ½ Minute
1 Cum or more but less than 3 Cum	2 ½ minutes
3 cum	3 Minutes

Stationary mixers shall be provided with a suitable device to lock the discharge mechanism until the required mixing time has elapsed. The provision also shall be made to ensure that each batch is discharged completely before the mixer is recharged.

The complete plant assembly shall include provisions to facilitate the inspection at all times.

All records and charts for the batching and mixing operations shall be prepared as specified herein and as per the instructions of the Engineer-in-Charge and promptly handed over to the Engineer-in-Charge.

The contents of the hopper shall be emptied in one operation into the drum of the mixer taking care to prevent loss of cement by being blown away in high wind. At the start of the day, when some mortar is likely to adhere to the walls of the drum and blades and cause the mixed batch to be harsh and stationary portions of coarse aggregate shall be slightly reduced for the firsts one or two batches.

Adequate mixing capacity shall be provided at the site to deliver continuously the required quantities of concrete for a pour. The quantity of material mixed per batch shall not exceed the manufacturer's rated capacity.

Hand Mixing:

Normally, hand mixing of concrete shall not be permitted. However, this may be allowed by the Engineer-in-Charge in exceptional cases (such as the mechanical breakdown of the mixer, far away isolated sites of concreting and the quantity of concrete work is very small). Ten percent (10%) extra cement shall have to be added to the normal mixes when mixed by hand. It shall be carried out on a watertight platform and care shall be taken to ensure that mixing is continued until the mass is uniform in color and consistency. No extra payment shall be made to the contractor for mixing by hand or for using extra cement due to hand mixing where allowed. However, cement consumed extra shall be considered for reconciliation purposes.

Transportation, placing, and Compacting of Concrete:

6.6.2 General:

a) Transportation and placing methods and adequacy of equipment and procedures shall be studied in advance. No concrete placing shall be started without the permission of the Engineer. On each occasion that the contractor intends to place concrete, he shall give the Engineer at least 24 hours' notice.

b) No concreting operations shall be commenced during inclement weather conditions.

c) All formwork, reinforced and location and details of embedded parts, etc. Shall be checked and approved by the Engineer-in-Charge before concreting starts.

6.6.3 Preparation before placing:

a) All sawdust, chips, and other construction debris and the extraneous matter shall be removed from the interior of the forms.

b) Hardened concrete and the foreign matter shall be removed from the inner surfaces of all conveying equipment, such as barrows, trucks chutes, etc.

c) All surfaces of concrete and semi-porous sub-grade shall be wetted and excess water drained away before the concrete is placed on it.

d) No concrete shall be placed when the temperature of the atmosphere exceeds 38°C unless adequate arrangements are made for pre-cooling the ingredients and shutters. The arrangements shall be subject to the Engineer-in-charge's approval.

6.6.4 Joints and Embedded parts:

6.6.4.1 Construction Joints:

a. Construction joints shall be made at only those positions shown on the drawing at locations approved by the Engineer.

b. The surface of the concrete at all construction joints shall be cleaned of all laitance and loose particles of concrete and thoroughly cleaned. All surfaces of construction joints shall be roughened either by wire brushes just after the concrete has set or by picking to expose the coarse aggregate but not to dislodge them. Immediately before concreting, the surface of the joint shall be dampened (but not saturated). Placing of a grout layer is not generally recommended.

c. Whenever special details are given in the drawing for construction joints they shall be strictly adhered to. No payment shall be made for construction joints.

6.6.4.2 Embedded items and recesses:

a) All sleeves, inserts, anchors, and the embedded item required for adjacent work or its support shall be placed before concreting.

b) All other contractors, whose work is related to the concrete or must be supported by it. Shall be given ample notice and opportunity to introduce and/or furnish embedded items before the concrete is placed.

c) Voids and slots in sleeves, anchors, and inserts shall be filled temporarily with readily removable material to prevent the entry of concrete into the voids.

d) Certain embedment's relating to other contractor's work shall have to be fabricated and fixed in position on instructions of the Engineer. Payments shall be made under the relevant items in the bill of quantities.

6.7 Conveying:

a) Concrete shall be handled from the mixer to the place of final deposition as rapidly as possible by methods that will prevent segregation or loss of ingredients. No concrete shall be used which does not reach its positions within the initial setting time from the time water is added to the cement.

b) Conveying equipment shall be of size and design to ensure the optimum flow of mixed concrete at the required delivery place and shall be on non-absorbent materials and shall be maintained in clean condition. Use of long troughs, chutes, etc. Shall be permitted only with the written approval of the Engineer-in-Charge.

In case such conveyors lead to the production of inferior quality of concrete, the Engineer-in-Charge may order the discontinuance of their use and substitution of alternative satisfactory methods of placing.

6.7.1 Depositing:

a) Deposition can start after the Engineer-in-Charge checked and approved the formwork, Reinforcement.

b) Concrete that has been left standing and which has become stiffened so that it cannot be placed in satisfactory condition shall not be deposited in the work.

c) Concrete shall be deposited continuously in a layer of such thickness that no concrete shall be placed on concrete that has hardened sufficiently to cause the formation of seams or planes of weakness within the section. The rate of placing shall be such that the already placed concrete which is being integrated with fresh concrete is still plastic and has not passed the safer vibration limit.

d) Concrete shall not be permitted to drop freely from a height of more than 1.3 m or strike the form work at an angle. Concrete shall be deposited as practicable in its final position to avoid segregation due to re-handling or flowing.

e) Struts, stays, braces, serving temporarily hold the forms to correct shape, position, and alignment pending the placing of concrete at their location shall be removed when the concrete placing has reached an elevation rendering their use unnecessary. These temporary members shall be entirely removed from the forms and not buried in the concrete.

f) When placing the concrete on a slope, it shall start at the bottom, the concrete shall be placed against the face of the previously placed concrete and not away from it.

g) Care shall be taken not to displace reinforcement and embedded parts during the placing and compaction of concrete.

h) No concrete shall be placed on the water covered surface.

i) Unless otherwise approved, concrete shall be placed in a single operation to the full thickness of slabs, beams, and similar members and shall be placed in horizontal layers not exceeding 0.5 m deep in walls, columns, and similar members. Concrete shall be placed continuously until completion of the part of the work between construction joints or as directed by Engineer-in-Charge.

6.7.2 Compaction:

a) All concrete shall be thoroughly compacted. The Engineer shall remain the final deciding authority on the type of vibrators to be used for any particular case.

b) As far as practicable, only internal vibration shall be used for compacting concrete unless specified otherwise. Internal vibrators of high-frequency type shall generally conform to the requirements of IS: 2505 and shall be preferable of electric or pneumatic power-driven type. Use of immersion vibrators for compaction concrete shall generally follow the recommendation of IS 3558

c) Use of other types of concrete vibrators shall be permitted only if the use of immersion vibrators is found impracticable on account of the size of members or inadequate working clearance for the vibrating head of immersion vibrators.

d) Shutter vibrators, if permitted shall generally conform to the requirements of IS: 4656. "Specification for form vibrators for concrete".

e) An adequate number of vibrating units shall be provided to compact the concrete at the rate of placing envisaged.

To provide a breakdown of units, stand by units driven by alternative power units shall also be arranged.

f) Only trained and experienced operators shall be permitted to handle and operate the vibrators.

g) In placing concrete in layers that are advancing horizontally as the work progresses, great care shall be exercised to ensure adequate vibration, bonding, and molding batches of the concrete between the succeeding batches.

h) Care shall be taken to prevent contact of vibrators against reinforcement steel and embedment. Vibrators shall not be allowed to come in contact with forms of finished surfaces.

6.8 Construction Joints and Keys:

When the work is to be interrupted, horizontal and vertical construction joints and bonding keys shall be located and shall conform in detail to the requirements of the plans unless otherwise directed by the Engineer-in-Charge. Construction joints shall be provided in position as shown or described on the drawings. Where it is not described the joints shall be under the relevant IS specifications.

Before fresh concrete is placed, the cement skin or any loose or porous material of partially hardened concrete shall be thoroughly removed and cut back until the solid face is exposed and the surface made rough by hacking or any other method as directed by the Engineer-in-Charge. The rough surface shall be thoroughly wetted for about two hours and shall be dried and coated with 1:1 freshly mixed cement sand slurry immediately before placing the new concrete. Special care shall be taken to see that the first layer of concrete placed after a construction joint is thoroughly rammed against the existing layer, before the slurry sets.

6.9 Treatment of Resumption of Work:

6.9.1 When the work has to be resumed on a surface which has hardened, such surface shall be roughened. It shall then be swept clean and thoroughly wetted. For vertical joints neat cement slurry shall be applied on the surface before it is dry. For horizontal joints, the surface shall be covered with a layer of mortar about 10 to 15 mm thick composed of cement and sand in the same ratio as the cement and sand in the concrete mix. This layer of cement slurry or Mortar shall be freshly mixed and applied immediately before placing the concrete.

6.9.2 Where the concrete has not fully hardened, all laitance shall be removed by scrubbing the wet surface with wire or bristle brushes care being taken to avoid dislodgment of particles of aggregate. The surface shall be thoroughly wetted and all free water removed. The surface shall then be coated with neat cement slurry. On this surface, a layer of concrete not exceeding 150 mm in thickness shall first be placed and shall be well rammed against old work, particular attention being paid to corners and close spots; works thereafter shall proceed in the normal way

6.10 Wash Water:

6.10.1 Wash water shall be removed in a manner to prevent running down and staining of concrete surfaces that will be exposed after the work. Should unsightly wash water streaks develop on the exposed surfaces, they shall be removed to a uniform color a texture satisfactory to the Engineer-in-Charge.

6.11 Curing and Protection:

6.11.1 Curing of concrete shall be under IS:456. Concrete shall be cured by keeping it moist for the period specified herein to ensure that complete hydration and hardening take place.

Curing shall be assured by the use of an ample water supply under pressure in pipes, with all necessary appliances of hose, sprinklers, and spraying devices. Continuous, fine mist spraying or sprinkling shall be used, unless otherwise specified or approved by the Engineer-in-Charge.

Curing of concrete shall start after 8 hours of placement and in hot weather within 4 hours of placement for exposed faces. In every hot weather, precaution shall be taken to see that the temperature of wet concrete does not exceed 38° C while placing.

Newly placed concrete shall be protected by approved means from rain, sun, and wind. Concrete placed below the ground level shall be protected from falling earth during and after placing, the surface shall be kept free from the contract with the ground or with water draining from such ground during otherwise directed by the Engineer-in-Charge. The groundwater around newly poured concrete shall be kept to an approved level by pumping or other approved means of drainage and adequate steps shall be taken to prevent floatation and flooding.

The concrete shall be initially protected from damage on account of impact, undue pressure, excessive heat drying winds, and rain, etc. by covering with wet sacking hessian or similar absorbent material soon after the initial set. After the final set, the concrete shall be kept continuously wet preferably by continued spraying with water or by ponding for at least 10 days from the date of casting, provided the temperature of the atmosphere during this period has been continuously above 10°C. When the temperature are lower, the Engineer may extend the curing period to suitably longer stretches. Other methods of curing may be used only on written permission from the Engineer.

6.12 Field Tests:

6.12.1 Grading Test:

Grading tests on coarse and fine aggregate shall be carried out at intervals specified by the Engineer-in-Charge.

6.12.2 Slump Test on concrete:

At least one slump test shall be made for every compressive strength test carried out More frequent test shall be made if there is a distinct change in work conditions, or if required by the Engineer-in-Charge.

6.12.3 Strength Test of concrete:

Samples from fresh concrete shall be taken as per IS: 1199 and cubes shall be made, cured, and tested at 28 days under IS: 516.

To get a relatively quicker idea of the quality of concrete, optional tests on beams for modules of strength tests at 7 days may be carried out in addition to 28 days compressive strength test, for this purpose, the values are given in Table, 6 may be taken for general guidance in the case of concrete made with ordinary Portland cement. In all cases, the 28 days compressive strength specified in Table - 1 shall alone be the criterion for acceptance or rejection of the concrete. If, however, from tests carried out in a particular work over a reasonably long period, it has been established to the satisfaction of the Engineer-in-Charge that suitable ratio between 28 days compressive strength and the modulus of rupture at 72 ± 2 hours or 7 days or compressive strength at 7 days may be accepted, the Engineer-in-

Charge may suitably relax the frequency of 28 days compressive strength specified in Clause 6.13.3.3. provided the expected strength values at the specified early age are consistently met.

Table – 6
Optional Tests Requirements of Concrete

Grade of concrete	Compressive strength of 15 cm cubes, min. at 7 Days	Modulus of Rupture by Beam test min.	
		At 72± 2 hour (N/mm^2)	At 7 days (N/mm^2)
M-10	7.0	1.2	1.7
M-15	10.0	1.5	2.1
M-20	13.5	1.7	2.4
M-25	17.0	1.9	2.7
M-30	20.0	2.1	3.0
M-35	23.5	2.3	3.2
M-40	27.0	2.5	3.4

6.12.3.1 Sampling: -:- A random sampling procedure shall be adopted to ensure that each concrete batch shall have a reasonable chance of being tested; that is the sampling should be spread over the entire period of concreting and cover all mixing units.

6.12.3.2 Frequency of sampling

The minimum frequency of sampling of concrete for each grade shall be under the following: -

Quantity of Concrete in the work (M^3)	Number of samples
1-5	1
6-15	2
16-30	3
31-50	4
51 and above	4
	Plus, one additional Sample for each additiona cum. Or part thereof

6.12.3.3 Test Specimen:

Three test specimens shall be made from each sample for testing at 28 days. Additional cubes may be required for various purposes such as to determine the strength of concrete at 7 days or at the time of striking the formwork, or to determine the duration of curing or to check the testing error. Additional cubes may also be required for testing cubes cured by accelerated methods as described in IS: 9013. The specimen shall be tested as described in IS: 516.

6.12.3.4 Test strength of samples:

The strength of the samples shall be the average of the strength of three specimens. The individual variations should not be more than ±15 percent of the average.

6.12.3.5 Standard Deviation:

Standard deviation based on test results:

a) Number of test results - The total number of test results required constitute and acceptable record for calculation of standard deviation shall be not less than 30. Attempts should be made to obtain 30 tests results, as early as possible, when a mix is used for the first time.

b) Standard deviation to be brought up to date. The calculation of the standard deviation shall be brought up to date after every change of mix design and at least once a month.

Determination of standard deviation:

a) Concrete of each grade shall be analysed separately to determine its standard deviation.

b) The standard deviation of concrete of a given grade shall be calculated using formula from the results of individual tests of concrete of that grade obtained as specified in 6.13.3.4.

S = Estimate standard deviations = $\frac{\sqrt{\Sigma\Delta 2}}{n-1}$

Where Δ = deviation of the individual test strength from the average strength of n samples and n = number of samples test results.

c) When significant changes are made in the production of concrete batches (for examples changes in the materials used, mix design equipment or technical control), the standard deviation value shall be separately calculated for such batches of concrete.

6.12.3.6 Acceptance criteria

6.12.3.6.1 The concrete shall be deemed to comply with the strength requirements if:

a) Every samples have a test strength not less than the characteristic value; or

b) The strength of one or more samples though less than the characteristic value, is in each case not less than the greater of:

1. The characteristic strength minus 1.35 times the standard deviation; and

2. 0.80 times the characteristic strength; or

c) Average strength of all the samples is not less than the characteristic strength plus

$\left[\ 1.65-\frac{1.65}{\sqrt{\text{number of samples}}}\right]$ Times the standard deviation

6.12.3.6.2 The concrete shall be deemed not to comply with the strength requirements if:

a) The Strength of any samples is less than the greater of:

1. The characteristic strength minus 1.35 times the standard deviation; and
2. 0.80 times the characteristic strength; or

b) The average strength of all the samples is less than the characteristic strength plus

$\left[1.65-\frac{1.65}{\sqrt{\text{number of samples}}}\right]$ Times the standard deviation

Concrete which does not meet the strength requirements as specified in 6.13.3.7.1 but has a strength greater than the required by 6.13.3.7.2., may at the discretion of the Engineer-in-charge be accepted as being structurally adequate without further testing.

If the concretes is deemed not to comply pursuant to 6.13.3.7.2, the structural adequacy of the parts affected shall be investigated and any consequential action as needed shall be taken. Concrete of each grade shall be assessed separately.

Concrete shall be assessed daily for compliance. Concrete is liable to be rejected if it is porous or honey-combed; its placing has been interrupted without providing a proper constructions joint; the reinforcement has been displaced beyond the tolerance. However, the hardened concrete may be accepted after carrying out suitable remedial measures to the satisfaction of the Engineer-in-charge.

6.13 Inspection and testing structures

6.13.1 Inspections.

Immediately after striping the formwork, all concrete shall be carefully inspected and any defective work or small defects either removed or made good before concrete has thoroughly hardened.

In case of doubt regarding the grade of concrete used, either due to poor workmanship or based on results of cube strength tests, compressive strength tests of concrete on the basis of clause, 6.14.2 and/or load test (ref. Clause 6.14.4) may be carried out. The contractor must provide for hammer testing equipment which shall always be kept at site.

6.13.2 Core test:

The points from which cores are to be taken and the number of corers required shall be at the direction of the Engineer-In-Charge and shall be representative of the whole of concrete concerned. In no case, however, shall fewer than three cores be tested. Corers shall be prepared and tested as described in IS: 516

Concrete in the member represented by a core test shall be considered acceptable if the average equivalent cube strength of the cores is equal to at least 85 percent of the cube strength of the grade of concrete specified for the corresponding age and no individual core has a strength less than 75 percent.

In case the core test results do not satisfy, the requirements of above para or where such tests have not been made, load test may be resorted to. The cost of taking out cores samples and testing the same shall be borne by the contractor.

6.13.3 Failure to meet strength requirement:

In the event that concrete tested in accordance with the requirements of clause 6.13 of this specification fails to meet the requirement, the Engineer-In-Charge shall have the right to require any one or all of the following which shall be carried out by the contractor at his own expenses.

1) Load testing of the concrete member concerned represented by the tests which failed. The method and manner of load test shall be as given in clause 6.14.4 below.

2) Replacement of any such portions of the structure, no payment for the dismantled concrete, relevant formwork and reinforcement shall be made. Embedded fixtures and reinforcement or adjoining structure damaged during dismantling shall be made good by the contractor at his own expense.

3) Extended curing of the concrete represented by the specimen.

6.13.4 Load Test on parts of structures:

6.13.4.1 The Engineer-in-charge may instruct for a load test to be carried out on any structure if in his opinion such a test is deemed necessary for any of the following reasons:

1) The work site-made concrete test-cube failing to attain the specified strength.

2) Suspected overloading during construction of the structure under review.

3) Shuttering being prematurely removed and not as per the specification,

4) The concrete being improperly cured.

5) There being a reasonable doubt by the Engineer-in-charge as to the adequacy of the strength of the structure.

If the results of the load test be unsatisfactory, the Engineer-in-charge may instruct the contractor to demolish and reconstruct the structure or part thereof at the contractor's cost.

6.13.4.2 The load test of structure shall be carried out as given below.

Load tests should be carried out as soon as possible after expiry of 28 days from the time of placing of concrete. The structure should be subjected to a load equal to full dead load of the structure plus 1.25 times the imposed load for a period of 24 hours and then the imposed load shall be removed.

The deflection due to imposed load only shall be recorded. If within 24 hours of removal of the imposed load, the structure does not recover at least 75 percent of the deflection under super imposed load, the test may be repeated after a lapse of 72 hours.

If the recovery is less than 80 percent, the structure shall be deemed to be unacceptable.

If the maximum deflection in mm, shown during 24 hours under load is less than 40 [L^2/D], where L is the effective span in meter and D is overall depth of the section in mm, it is not necessary for the recovery to be measured and recovery provisions, given above will not apply.

Other non-destructive test methods may be adopted, in which case the acceptance criteria shall be agreed upon between the Engineer-in-charge and the contractor and the tests shall be done under expert guidance. The cost of conducting load test etc. shall be borne entirely by the contractor.

6.14 Finishing of concrete.

On striking the formwork, all blow holes and honey combing observed shall be brought to the notice of the Engineer-in-charge. The Engineer-in-charge may, at his discretion allow such honey-combing or blow holes to be rectified by necessary chipping and packing or grouting with concrete or cement mortar. If mortar is used, it shall be 1:3 mix or as specified by the Engineer-in-charge. However, if honey combing or blow holes of such extent as being undesirable the Engineer-in-charge may reject the work as being undesirable and his decision shall be binding. No extra payments shall be made for rectifying these defects. All burrs and uneven faces shall be rubbed smooth with the help of carborundum stone.

The surface of non-shuttered faces shall be smoothened with a wooden float to give a finish equal to that of the rubbed down shuttered faces. Concealed concrete faces shall be left as from the shuttering except that honey-combed surface shall be made good as detailed above. The top faces of slabs not intended to be surfaced shall be levelled and floated to a smooth finish at the levels or falls shown on the drawings or elsewhere. The floating shall not be executed to the extent of bringing excess fine materials to the surface. The top faces of slabs intended to be concerned with screed, granolithic or similar faces shall be left with a rough finish.

6.14.1 Repair and replacement of unsatisfactory concrete:

Concrete which is unsatisfactory shall be repaired by cutting out the unsatisfactory material and by replacing it with new concrete. Voids to be so filled shall be provided with anchors, keys or dovetail slots wherever necessary to attach the new material securely in place. Surface of prepared voids shall be wetted for 24 hours immediately before the patching material is placed. Repair of concrete shall be made by skilled workmen. Repairs shall be made as soon as practicable after removal of the forms and in a manner to meet the requirements for the finish specified for the particular location.

The use of an epoxy for binding fresh concrete used for repair will be permitted on written approval of the Engineer-in-charge. Epoxies shall be applied in strict accordance with the instruction of the manufacturer.

6.14.2 Method of repair:

Dry-Pack' filling shall be used for small size holes having surface dimension nearly equal to the depth of the hole, for holes left after removal of form ties, grout insert holes and slots cut for repair of cracks. Mortar filling by cement gun shall be used for repair of areas and holes too large for dry-pack, and too shallow for concrete filling. For holes extending entirely through the concrete section, for areas greater than 0.1 sq.m. and deeper than 100mm and holes in reinforced concrete which are greater in area than 0.05 sqm. and which extend beyond the reinforcement, the repair shall be made by making a complete filling of the voids with broken stone and liquid Portland cement grout shall be placed through filler pipes under pressure. Pipe nipples shall be placed through the forms at bottom of the void so that the grout rises upward through the aggregate to spill through a vent at the top edge of the void.

6.14.3 Matching of patch surface:

Filling material used in repair of surface which will be exposed after completion of the project shall be made with cement from the same source as that used in concrete and blended with sufficient amount of white Portland cement to produce the same colour as in the adjoining concrete. Patched surfaces shall be given a final treatment as required to make the texture of the patch to match with that of the surrounding material.

6.14.4 Curing Patched Work:

Immediately after patching is completed, the patch shall be covered with an approved non-staining, water saturated material which shall be kept wet and protected against sun and wind for a period of 12 hours. Thereafter the patched area shall be continuously wet by a fine spray of sprinkling for not less than 10 days.

All materials, procedures and operations used in the repair of concrete and also the finished work shall be subject to the approval of the Engineer-in-Charge. All filling shall be tightly bonded to the concrete and shall be sound, free from shrinkage cracks, or dummy areas after the fillings have been cured and dried.

6.14.5 No extra payment shall be made for the above works.

6.15 Tolerance:

All concrete work shall be constructed to the dimensions shown on the drawings and within the tolerance set out below except where otherwise specified.

Super structure tolerance:

1. Variation from vertically: Max Tolerance
- **a)** Reinforced concrete columns, walls, piers etc : ±20 mm per 15 m
- **b)** Mass concrete columns and walls etc: ± 40 mm per 15 m

2. Variation from level or specified gradient or batter:

a) Reinforced concrete floors, beams : ± 6 mm

b) Exposed lintels, sills and conspicuous lines and finished seating's for rains and plant : + 3mm

c) Mass concrete walls etc. : ± 12 mm

3. Variation from specified alignments:

a) R.C. Columns, walls, beams : ± 6 mm

b) Mass concrete walls etc.: ±25mm

4. Variation in cross-sectional dimensions:

a) R.C. Columns, beams, walls and slabs **:** - 6 mm to + 12 mm (±2 mm for precast)

b) Mass concrete walls, etc**:** 20 mm per m.

5. Variation of size and location of openings, sleeves and embedded fixtures: ±15mm. Precast concrete: ±3mm.

6. Variation in steps:

a) In a flight, riser : ± 3 mm

Tread : + 6 mm

Where a tolerance is related to a given length (e.g ± 20mm per 15m) the tolerance for any greater or lesser length shall be in linear proportion thereto, subject to the discretion of the Engineer. The tolerance for each lift of concrete shall be calculated on the same basis with a normal minimum of ±3mm.

Foundation tolerances (below ground level)

These tolerances apply to the outside dimensions of works below ground level. Recesses in the foundations and all internal dimension, if there is a basement, shall be regarded as a superstructure and therefore covered by the preceding clause.

1. Variations from specific dimensions +50mm to -12mm

2. Variations from specific thickness 12mm per m

3. Variations from level of top surface (if not forming part of a floor or other exposed work) 25mm

4. Variations from specified position for starter bars, bolts, boxes etc. 25mm

5. Variation from specified position for foundation bolts. 6mm.

6.16 Site Laboratory

The contractor shall provide for a site laboratory for testing concrete and materials at his own cost. The laboratory shall be equipped to carry out the following tests (But not limited to them only) at site:

a) Sand

i. Sieve analysis

ii. Organic impurities

iii. Specific gravity

iv. Moisture content and absorption

v. Silt content

b) Coarse aggregates:

i. Sieve analysis

ii. Specific gravity

iii. Moisture content and absorption

c) Concrete:

i. Slump

ii. Cube tests (May be got done outside the site laboratory)

iii. Specific gravity

d) Cement:

i. Setting time (Initial and final)

6.17 Mode of payment:

Payment for plain and reinforced cement concrete in site shall be made on cubic meter basis of actual finished work done excluding plastering and for the design sections. Deductions shall be made for openings as per IS code 1200.

Reinforcement shall be paid separately under the respective item of schedule of quantities. No deduction shall be made for volume occupied by the reinforcement. No deduction shall also be made for voids formed by rain water pipes, ducts and embedded parts and other bodies and recesses having less than 65 sq.cm. cross sectional area. No extra payment will be made for the cost of forming such voids or recesses. The concrete in place shall be measured for length, breadth and depth or thickness, limiting the dimensions to those specified in the drawings or as directed by the Engineer-in-charge and measurements shall be made to the nearest cm except for the thickness of slab and partition which shall be measured to the nearest 5mm. Area shall be worked out to the nearest 0.01 Sq.m and the cubical content of consolidated concrete shall be worked out to the nearest 0.001 cu.m Any work done in excess over the specified dimension or sections shown in the drawing or as required by the Engineer-in-Charge shall be ignored.

The quoted rate for concrete shall cover the supply of materials, labour, tools and tackle, plant and equipment. The quoted rate shall also include, wherever applicable, the cost of placing and keeping in position any embedment or inserts providing cuts and openings, treatments on suspensions of works, preparing construction joints etc. as shown in drawing and as specified and all other works incidental to the completion of the work as per these specifications.

Any reinforcement or other projections from vertical faces shall be provided, cutting suitable holes in formwork at no extra cost.

The cost of the sack rubbed finish over the form finished surface shall also be included in the rate.

The rates shall be deemed to include complete cost of taking and testing concrete cubes and carrying out other tests as per specifications and as directed by Engineer-in-charge.

Where the strength of concrete mix (nominal or controlled) as indicated by tests, lies in between the strengths of any two grades given in clause 6.3 and it is accepted by the Engineer-in-charge, such concrete shall be classified as a grade belonging to the lower of the two grades between which it lies. In case the cube strength shows higher results than those specified for the higher payment on such account. The concrete giving lower strength than specified of the structure by checking it with devices such as impact hammer, load test etc. or rejected concrete shall be dismantled at no extra cost. No payment will be made for the concrete so rejected and the shuttering and reinforcement used for the same. In case the concrete of lower strength can be improved by carrying out some strengthening measures entirely at the discretion of the Engineer-in-Charge then the said measure shall be carried not by the contractor at his own cost. The concrete of lower strength shall however be paid as per above.

7.0 Reinforcement

7.1.0 Bonding, binding, lapping and placing reinforcement in position shall be done as per exhibit drawings and as per provision of IS - 456 and other relevant IS codes. Bars shall bent cold correctly to the size and shape as detailed in the drawings and as per provision of IS: 2503 and as per directions of the site Engineer. Bars shall be thoroughly cleaned of rust, scales, grease, oil any other foreign matters before placing in position. The bars crossing one another shall be tied with two stands of 18-gauge GI wires. Unless otherwise specified, minimum cover and spacing and bond length for reinforcement bars shall be provided as per provision of IS - 456 (latest edition). No concrete work shall be started prior to approval of placing and binding of reinforcement by the site Engineer.

7.2.0 Payment for M.S. reinforcement or twisted bars shall be on the basis of weight. The weight shall be derived from the sizes and corresponding weights given in hand-book of Bureau of Indian Standards. Standard hook length, chairs, spacer bar and authorized laps shall only be included in the calculation of total weight and paid. Binding wires shall not be included in the calculated weight. Measurement for weight shall not include cutting allowance/wastage etc. Rate quoted for reinforcement shall include, cost of reinforcing bars, cutting straightening, bending, cleaning, binding wires etc. as also wastage and placing in position as per drawings and instruction of the Site Engineer.

8.0 Form Work

Shuttering shall either be of wooden plank 30mm minimum thickness or steel plates with stiffened edges. The shuttering shall be supported on battens and props vertical Sal Ballies properly cross braced together so as to make the form work rigid. The shuttering shall have a smooth and even surface and joints shall not permit leakage of cement grouts. The timber planks shall be accurately sawn and planed on one side. The surface of the shuttering that would come in contract with concrete shall be covered with a thin sheet of polythene paper

roll. Alternatively, application of raw linseed oil or soap solution, to the surface of the shuttering may be allowed at the discretion of the site engineer. Sufficient camber shall be provided to the shuttering so as to offset subsequent deflection after pouring of concrete in it. A minimum camber of 4 mm per meter length of beam and 1/50 of length of cantilever projected member shall be provided as directed by the Site Engineer. Minimum period that shall elapse after the concrete is laid, before removal of centering and shuttering for the work shall be as per IS:456. The complete formwork shall be inspected and approved by the Site Engineer before reinforcement bars are placed in position.

8.1.0 Removal of forms:

a) Form work for columns, walls, sides of beams, and other parts not supporting the weight of the concrete may be removed as soon as the concrete has hardened sufficiently to resist damage from removal operation but not earlier than 24 hours from the time of casting the concrete.

b) Formwork for RCC beam and slab soffits and other parts that supports the weight of concrete unless otherwise specified in the drawings is directed by the Engineer-in-charge may be removed after the period indicated below, provided that the ambient temperature during the period has been not less than 16° C.

i) Slab (props left under) : 3 days

ii) Beam soffits (Props left under) : 7 days

iii) Removal of props of slabs:

Spanning up to 4.5M : 7 days

- Spanning more than 4.5M : 14 days

iv) Removal of props of beams and arches:

- Spanning up to 6 meter: 14 days
- Spanning more than 6 M : 21 days

v) Walls, Columns and vertical faces of all structural members : 24 to 48 hours as may be decided by the Engineer-in-charge.

vi) Cantilever construction: Not until adequate fixity is developed subject to min of 10 days.

Note:

1. The number of props left under, their sizes and disposition shall be such as to be able to safely carry the full load of slab, beam and any other super imposed loads likely to be placed on them.

2. In the determination of time for removal of forms, consideration shall be given to the location and character of the structure, the weather and other conditions including the setting and curing of the concrete and materials used in the mix.

3. All formwork shall be removed without shock or vibration as would damage the concrete. Before the soffit form or struts are removed, the concrete surface shall be exposed, where necessary in order to ascertain that the concrete has sufficiently hardened.

4. Sequence of removal of props and supports shall follow the instructions given in the drawings or by the Engineer-in-charge. Removal of props in general shall be done in such a manner as to permit the concrete to take uniformly and gradually the stresses due to its own weight.

5. Stacking of cement, formwork materials or any other material, will not be permitted on any newly constructed floor without the permission of the Engineer.

8.2.0 Re-use of Forms:

Before re-use, all forms shall be thoroughly scraped and cleaned joints gone over, repaired and insides re-treated to prevent adhesion. The shape, strength, rigidity, mortar tightness and surface smoothness of re-used forms shall be maintained at all times.

9.0 Flooring:

9.1.0 Floors shall be laid on concrete sub-grade where so provided in the relevant drawings. The sub-grade shall be provided with slope, as per direction of Site Engineer, to drain off washing and rain water. Where sub-grade is not provided, such as in the plinth protection pathways etc. the earth below shall be properly sloped, watered, rammed and consolidated. Before laying flooring it shall be moistened. The surface of the sub-grade shall be roughened concrete and wetted and smeared with a coat of cement slurry at 2.75 Kg of cement per square meter of floor area.

9.2.0 Flooring of specified thickness shall be laid in the pattern as given in the drawings and as directed by the Site Engineer. Floors shall be laid in panels of uniform size not exceeding 3.5 sq.m in area for ordinary cement concrete floors and 2 sq.m. for mosaic floors. Alternate panels shall be laid on different days.

9.3.0 The joints in between the panels of mosaic floors shall be provided with glass strips of thickness 4mm and width equal to thickness of the floors specified.

9.4.0 The junction of floor with wall, dado or skirting shall be rounded off up to 25 mm radius where so required by the Site Engineer.

9.5.0 After the floor has begun to harden it shall be protected from quick drying with moist gunny bags or by some suitable means as approved by the site Engineer. After 24 hours of laying floor the surface shall be cured by flooding with water of minimum 25mm depth or by covering with wet gunny bags. The curing shall be continued for at least ten consecutive days.

9.6.0 For ordinary cement concrete floor, final finishing and smoothing of the top surface shall be. done with steel floats Polishing of mosaic floors shall be made by machine grinder. First grinding shall be done with special rapid cutting grit blocks of coarse grade (No.60) after 36 hours of laying the top layer. After first grinding the surface shall be thoroughly washed with

cement grouts. The surface shall then be allowed to cure for 5 to 7 days and then ground with machine fitted with fine grit block (No.120). The surface is then cleaned and followed by cement wash and allowed to cure for 3 to 5 days. Final grinding shall be with fine grit block (No. 320). After the final grinding, oxalic acid shall be dusted over the surface @ 33 gm. Per Square meter sprinkled with water and rubbed hard with a pair of wooden rags.

9.7.0 Payments shall be made on square meter basis.

10.0 Plastering

Unless otherwise specified, brick surface is to be plastered with cement mortar (1:6) 12mm thickness using medium coarse sand. Before plastering work is started all joints shall be raked out and loose mortar shall be brushed out. For plaster over cement concrete surface,

the surface shall be thoroughly chipped. The surface, shall then be thoroughly washed with water, cleaned kept wet before commencement of wall plasters. Plastering over stone masonry shall be in CM (1:6) 20mm thickness where so specified in the schedule of rates.

Curing for plastered surface shall be started 24 hours after finishing the plaster and shall be kept wet for a period of 7 days.

Payment for plastering shall be made on square meter basis. Deduction shall not be made for openings less than 0.5 M^2 For openings 0.5 M^2 to 3.0 M^2 each, deduction shall be made for 50% of the opening size and no payment shall be made for jambs and sills. For openings of area more than 3.0 M^2 deduction shall be made for the full area but jambs, sills etc. shall be measured and paid. All measurement shall be made for each face. The rate of plastering shall be inclusive of all cost of scaffolding, labour, materials etc. complete.

11.0 **Fixing of templates.**

The mild steel templates are used as the media for fixing anchor bolts in the columns of Microwave Tower Foundation.

It should be ensured that the templates are fixed rigidly and is free from the columns shuttering and all the templates are in the same level. The method adopted for fixing the templates should be such that it is possible to fix the center of columns precisely and also take measurements of each leg to ensure the dimensions are correct upto ± 3mm.

12.0 Integral Cement Water Proofing Compound:

12.1 Water proofing compound shall in general conform to IS:2645 and shall be of a brand approved by the Engineer-in-Charge. Water proofing compound shall be brought to site in sealed/packed condition. Approval of the Engineer-in-charge or his authorised representative shall be obtained prior to using the same in works. Proportion and manner of mixing the water proofing compound with cement shall be as per manufacturer's specifications and instructions.

12.2 Contractor may be ordered to use water proofing compound in cement concrete works, in floorings, damp proof course, reinforced cement concrete works, or plastering works etc. at the directions of the site engineer. Usage of water proofing compound shall be paid for as a separate item of work under relevant item in the schedule of rates. Payments shall be made on the weight of water proofing compound actually used.

13.0 Precast cement concrete:

13.1 Precast cement concrete shall be used for making shelves, small lintels, pit over slabs, drain cover slab etc. All relevant specifications and workmanship mentioned for reinforced cement concrete shall in general be observed for precast element unless otherwise specified. Formwork for precast element shall be such as to ensure true corners, plain surface etc. Metal forms shall be used when directed by the site engineer. Precast concrete element after 24 hours of casting shall be kept immersed in water tank of suitable size for at least 14 days. No precast unit shall be erected within 28 days of casting. Stacking of the precast element shall be done as per instructions of the site engineer. Erections of precast members shall be done to the desired position, alignment, level, plumb, etc. for all heights and jointed with such cement mortar 1:3 (1 cement: 3 Coarse sand). Rate quoted for precast members shall be inclusive of all labour, materials, equipment required for erection and erection charges. Complete steel reinforcement as shown in relevant drawing or as per instruction of the site engineer shall be provided and shall be paid extra. Mode of payment and measurement shall be by the volume of precast concreting done. Reinforcement used shall be on same lines as per reinforced cement concrete.

14 Precast R.C. Jali.

14.1.0 Precast R.C. Jali shall be of the design as per relevant drawings or as per the sample approved by the site engineer. Precast Jali shall be 100mm thick and not more than 2'-0" X 3'-0" size made with cement concrete mix 1:2:4 (1 cement: 2: Coarse sand: 4 stone aggregate 6mm nominal size) and reinforced with 1.6 mm thick GI wires. Form for precast jaii shall be such that the finished surface is smooth and even. There should be no honey combing.

15 White Washing.

15.1.0 Before wash the surface shall be thoroughly brushed free from mortar dropping and foreign matter.

15.2.0 The wash shall be prepared from fresh lime approved by the engineer-in-charge. The lime shall be thoroughly soaked and screened through a clean coarse cloth and admixed with gum and indigo. 3 gms of indigo and 20 gms of gum per kg. of lime shall be used. Alternatively, other types admixtures may be used on the specific written approval of the Engineer-in-Charge. Approximately, 1Kg. of lime will produce 5 liters of white milky solution. The solution shall be got approved by the site engineer before application. Number of coats shall be as specified in the schedule of rates and each cost shall be allowed to dry before next one is applied. Mode of measurement and payment shall be same as for plastering as mentioned in clause No**. 10.3.0**

16 Distemper:

16.1.0 Oil bound distemper of approved brand and manufacture shall be used. The shade shall be got approved by the Engineer-in-charge before application of the distemper. The oil bound distemper shall be stirred slowly in clean water using 0.6 liter of water per kg of distemper or as specified by the manufacturer. Mixture shall then be well stirred before use. The

finished surface shall be even and uniform and shall show no brush marks. Mode of payment and measurement shall be same as for plastering as mentioned in **clause. 10.3.0.**

17 Water proof cement paint:

17.1.0 The water proof cement shall be 'Apex ' Asian paints or equivalent approved brand and manufacture. The shade and color of the paint shall be got approved by the site engineer before application. Preparation of the mix shall be done as per manufacture specifications and as directed at site.

17.2.0 The surface to be coated with water proof cement paint shall be thoroughly cleaned of all dust and falling mortar by washing and scrubbing. The surface shall be thoroughly wetted with clean water before the water proof cement paint is applied. Water proof cement paint shall be mixed in such quantity as can be used up within a hour of its mixing.

17.3.0 Mode of measurement and payment shall be same as for plastering as mentioned in **clause 10.3.0**

18 Steel Doors, Windows, Ventilators.

Doors, windows, ventilators etc. shall be manufactured from standard rolled steel sections. The steel shall be fusion welding quantity S-42 W designation. In all respects the steel sections shall conform to IS:2062 - 1962 for structural steel. Types, overall sizes, side openings and position shall be all as per IS:1038 (latest edition) and as per exhibit drawings. The weight of different rolled steel sections, used in fabricators shall conform to these specified in IS: 1038 (latest edition). Lowest panel of the door, called as kick panels shall be approved of 1.25 mm M.S sheet on either face of door shutters when desired.

The doors and windows shall be according to the specified size and design. The sizes of doors, windows and ventilators openings shall be calculated so as to allow 1.25mm clearance on all the four sides of the frame to allow for easy fitting into the opening. The actual size of the doors, windows and ventilators shall not vary more than 1.5mm from those given in the design. All doors, windows and ventilators etc. shall be provided with a priming coat with zinc chromate/wood primer as the case may be.

Payment shall be made on square meter basis of the area of the opening in the wall covered by the door/window/ventilators. Rate shall include breaking and making good the walls, sill etc. glazing and providing and fixing all fixtures and fastening, all labour, material etc complete.

18.1.0 Glazing:

Ordinary glass panes of not less than 3mm thickness shall be provided. The glass panes shall be free from flaws specks or bubbles and shall have square corner and straight edges. Special metal sash putty of approved make and conforming to relevant IS Code shall be used for fixing glass panes. Putty shall be applied between glass panel and glazing bars. Putty shall be painted within 2 to 3 weeks after glazing is fixed to avoid its cracking. No separate payment shall be made for glazing. Rate quoted for glazed door/windows/ventilators shall be including glazing work.

19 Rolling shutter.

19.1.0 Rolling shutters shall consist of 1.25mm thick mild steel sheet with 80mm. M.S. sheet laths, machine rolled and straightened with an effective bridge depth of 26mm. Laths shall be interlocked together at the end with and locks. These shall be mounted on pipe shaft. The springs shall be of coil type manufactured from tested high tensile spring steel wire. The spring pipe shaft shall be mounted on strong mild steel or malleable cast iron brackets. Side guides and bottom rails shall be joint less and of single piece of pressed steel. The top cover of shaft shall be of same materials as that of lath.

20 Painting

20.1.0 Paints, enamel etc. of approved brand and manufacture as approved by the site engineer shall be used. Paints manufacture by M/s. Johnson & Nicholson, Asian paints, British Paints, ICI and Shalimar shall only be approved. Primer and thinners use ready mixed paints as received from the manufactures without any admixtures shall be used as per the manufacturer's instructions. If for any reason thinning is necessary (in case of ready mixed paint) the brand of thinner recommended by the manufacturer or as instructed by the site engineer shall be used.

20.2.0 The surface be thoroughly cleaned and dusted. All the rust, dirt, scales, smokes and grease shall be thoroughly removed before painting is started. The prepared surface shall have received the approval of the site engineer after inspection, before painting is commenced.

20.3.0 The wood work to be painted shall be dry and free from moisture. The unevenness shall be rubbed down smooth with sand paper and shall be well dusted. Knots, if any, shall be covered with preparation of red lead made by grinding lead in water and mixing with strong glue sized and used hot.

21 Flush Door Shutters:

21.1.0 Flush shutter (soil core type) shall in general conform to IS:2202 and of exterior grade with block board core. Block board core shall conform to the requirements specified in IS:1650. The wooden strips for the core shall not exceed 25mm in width. In any one block board the core strip shall be one piece of timber only. A wooden frame good quality work shall be provided for holding the core. The width of the member shall not be less than 50mm and not more than 100mm.

21.2.0 The core surface shall have two or more commercial or teak plywood veneer firmly glued on each face and pressed. The combined thickness of all the veneers on each face shall not be less than 4mm. Only phenol formaldehyde resin glue shall be used for door manufacture and a certificate to this effect from the manufacture shall be furnished on demand.

21.3.0 The flush door shutters shall be obtained from firms of repute and the supply be in accordance with the approved full size sample.

21.4.0 All fittings for wooden doors shall be of aluminum anodised of approval type. Each door shutters shall be provided with the following fixtures and rate quoted for door item in the schedule of rate shall be inclusive of all these fittings.

a) Three Nos. of hinges of sizes 125mm X 40mm heavy quality. (Six no's. in case of double leaf shutters)
b) Two nos. 150mm long Barrel Bolt.
c) One No. wooden stopper per leaf.

22. Hydraulic Door Closer.

22.1.0 Hydraulically regulated door closer shall be Everite model viscount G 1109 or approved equivalent make con forming to IS:3564. The door should open tight upto 90°.

22.2.0 Suitable adjustment shall be made such that the closing time can be varied between five to twenty seconds. The closer shall be securely fixed with door frames and door panel with brass screws and washers. Hydraulic oil filling shall work well in all seasons and shall not show any sign of leakage of oil under working condition.

23 Sanitary Fittings:

23.1.0 All glass earthenware shall be of 'Parry', 'Hindustan' or other equivalent approved make and white in colour. All metallic fixtures like taps, stop cocks, etc., shall be of C.P. brass of approved make. All wall fittings shall be fixed with wooden cleats and C.P. brass screws and C.P. washers.

24 European type water closet:

24.1.0 Water closet shall be white vitreous china clay and shall be of wash down type conforming to IS:2556 part VIII and all as described in the schedule of rates. The closet shall be of one piece constructions and have integral flushing rim of suitable type. Each water closet shall have four holes with its pedestal for fixing to the floor. The water closet shall have an integral S or P trap outlet with at least 50mm water seal. The closet shall be provided with 15 liters white vitreous china low level flushing cistern with all fittings, M.S. or C.I. brackets, and 40mm dia flush pipe. The closet shall be provided with black plastic seat and lid.

25 Urinals:

25.1.0 Urinals shall be of white vitreous china clay flat back type conforming to IS:2556-part VI. Urinal shall be of one piece constructions with integral flushing rim. These shall be mounted on walls. The flushing inlet pipe connection piece shall be of P.V.C. 15mm dia and waste pipe 750mm long, 32mm dia, G.I. with necessary brass union and C.P. bottle tap. Rawl plug and C.P. brass screws shall be used for fixing the urinals. Fixing shall ensure that no liquid left over in the pan after flushing. Urinals shall be connected to automatic flushing cistern either individually, or in groups. For set of three urinals one cistern of 15 liters capacity shall be provided.

26 Wash Basins:

26.1.0 Wash basins shall be white vitreous china clay flat back type conforming to IS:2556-part IV. Wash basin shall be of one piece constructions including a combined over flow. This shall be fitted on C.I. or M.S. brackets (Conforming to IS: 775). The wall side shall be fixed well flushed with the plaster of the wall and the joint, if any, shall be properly stopped with mortar and painted white. The basin shall be provided with two C.P. brass pillar cocks, 35mm dia C.P. brass waste trap, C.P. brass china, rubber stopper and 32mm dia, C.P. brass water pipe. The basin shall be fixed at 800mm above finished floor level or as directed by the site Engineer.

27 Beveled Edge Mirror:

27.1.0 The beveled edge mirror shall be of best quality of 'Hindustan Pilkington' or equivalent make approved by the Engineer-in-charge. The size of mirror shall be 600 X 450mm and of thickness 6mm mirror shall be provided with a backing of particle board sheet of 6mm thickness and fixed to wooden cleat with C.P. brass screws.

28 Bib and stop cocks:

28.1.0 Bib cocks and stop cocks of screw down type shall conform to IS:781. All taps shall be of heavy grade and chromium plated brass.

29 G.I. Pipe and fittings:

29.1.0 All G.I. Pipe and fittings shall conform to IS:1239 and shall be of medium grade for water supply services. All screwed tubes and sockets shall pipe thread in accordance with the requirements specified in IS: 554.

29.2.0 All fittings shall be of malleable galvanized iron approved by the Engineer-in-charge. Fitting in G.I. line shall include all couplings, elbows, tees, bends, union nipples reducers, rubber insertion etc. No extra payment shall be made for these fittings. Payment shall be made on running meter basis. All pipes above ground shall fixed with GI holder bat clamps clear off the wall at 1-2 Mtrs. centre to center as directed. All visible pipes and clamps inside and outside the buildings shall be painted with two coats of white paint or aluminum paint as directed by the site engineer. No extra payments shall be made for clamps, hooks, cuttings holes in walls, chasing and making good and same and or painting. All couplings, elbows, tees, bends, union, nipples, reducers, etc. shall also be deemed to be included and covered by the rates for running meters of G.I. pipes.

29.3.0 All underground pipes shall have a minimum earth, cover of 600mm or as directed by the site engineer. No extra payment shall be made for excavation in trenches and refilling the same.

30 H.C.I Pipes and C.I. Spun pipes:

30.1.0 Heavy cast iron pipes, socket and spigot shall be of standard quality conforming of IS:1729. C.I. (Spun) iron pipe shall conform to IS:1536 (latest).

30.2.0 The spigot end of the pipe shall be inserted in the socket and right up to the back. Spur yarn shall be of clean hemp and of good quality. Spun yarn twisted into rope of uniform thickness and soaked in hot coal tar shall be inserted carefully into the socket two or three laps. Lead conforming to IS:782 in molten state shall then be poured into the joint filling the some in one pouring. The lead shall be caulked by proper tools to make it even all round. Quantity of lead used per joint for various sizes of pipes shall be as below.

Pipe Size	Quality of lead in kg. per joint
300mm	8.16
200mm	5.44
150mm	4.08
100mm	2.72

30.3.0 All pipes shall be fixed 25mm clear off the wall with M.S. holder bat clamps. All pipes and holder bat clamps shah be painted with two coats of primer of approved shade.

All holes in walls and floors shall be made good with cement concrete 1:2:4 without any extra cost to the owner.

30.4.0 Payment will be made on running meter basis inclusive of all materials, jointing, fitting and fixing in position pipes and specials such as bends, tees and vent cowls etc.

30.5.0 C.I. Bends, tees, etc. shall conform to specifications mentioned hereafter for H.C.I. pipes. Bends shall be 90° standard bends. Jointing of these fittings, specials etc. with the main pipe shall be done in a manner as specified for joints of pipes.

31 C.I. Water Pipes:

31.1.0 Pipes shall be approved manufacture, true have smooth and cylindrical, inner and outer surface and be as nearly as practicable concentric. These shall be sound and uniform casting, free from laps, pin holes imperfections and shall be neatly finished and carefully fitted with both inside and outside. The pipes shall be factory painted with a coat of Tar both inside and outside.

31.2.0 Pipes shall be secured of wall at all joints with M.S. holder bat clamps. The clamps shall be made from 1.6. mm thick M.S. flat 30mm width, bent to the required shape so as to fit light on the socket of the pipe. The clamps shall be fixed to wall by embedding their hooks in cement concrete blocks 10 X 10 X 10 X cm. 1:2:4 mix (1 cement: 2 coarse sand: 4 stone aggregate 20 mm nominal size) for which the necessary holes shall be made in proper places. The annular space between spigot and socket shall be provided with cement slurry and then filled with cement mortar 1:2 (1 cement: 2 fine sand) and finished flush.

31.3.0 Payment will be made on running meter basis inclusive of all materials jointing, fitting and fixing in position, except bends and shoes which will be separately paid for.

31.4.0 C.I. Bends, shoes for Rain water pipes:

C.I. Bends, shoes shall conform to specifications mentioned here-in-after for over all length. Jointing of these fittings with rain water pipe shall be done in a manner as specified for joints of pipes.

32 A.C. Rain Water Pipes:

The pipe shall conform to IS:1626. These shall be straight, true and smooth and regular in thickness. To determine the straightness of a pipe it shall be rolled along a plane surface in such a manner that the socket over hangs on the edges of the plain surface.

32.1.0 Fixing and Jointing:

Pipes shall be secured to face of the wall, below all joints by standard holder bat clamps. The bat clamps shall consist of a cast iron base with a projecting "I" shaped lug, to the web of which the two semi-circular halves of the flat iron clamps are bolted. The base of the holder bat clamps shall be screwed on a pair of wooden plugs fixed in the wall with screw of designation No.18 of slotted counter sunk head wood screws driven through the holes in the base. The screws shall be not less than 75 mm long for 80mm diameter pipes and 100 mm for 100mm dia pipes. The plugs shall be fixed in the wall to be depth 15 cm, in cement mortar 1:2 (1 cement: 2 fine sand) centrally to the holes in the base of the clamps and with their front face projecting to such a length from the brick face that when the bat clamp is fixed, the outer face of its base shall be 11 X 5 cm wide at face increasing to 16 X 7 cm width at rear and shall be 7 cm deep throughout.

The finished pipe line shall be truly vertical or to lines and slopes as directed and shall be at a uniform distance of 40mm from the finished face of the wall.

33 Acid Proof Tiles:

33.1 Acid resistant tiles in general shall conform to IS:4556. The concrete or paltered surface should be completely dried and cleaned free of dust and other foreign material. Bituminous primer followed by one coat of bituminous mastic shall be applied and allowed to dry for 12 hours.

33.2 Acid proof tiles of size 225 X 112 X 37mm shall be laid uniformly over the floor and dado thus prepared. The joints between the floor tiles shall be 6mm and shall be filled with hot plasticized sulphur cement. After the final setting joints should be smoothened with emery stone and using water.

34.0 Wood Work:

All wood works shall be 2nd class Indian Teak Wood unless otherwise specifically mentioned. The timber shall be of good quality, well-seasoned, uniform in colour, reasonably straight grain and shall be free from dead knots, cracks and sap wood. Permissible defects in the timber shall be as indicated in IS:883 (latest Edition). Hard and sound knots shall not be more than 25mm in diameter and the aggregate of all the live knots shall not exceed 1% of the area of the piece.

34.1 Wooden Frame for Doors, Windows, Ventilators & Other Frames:

Wooden frame shall be made of 2nd class Indian Teak wood conforming to the specification mentioned herein before. Workmanship for wooden frames, doors, windows etc. shall in general conform to IS:4021 unless otherwise mentioned. The work shall be carried out as per detailed drawings or as directed by the site engineer. The timber shall be sawn in the direction of grains. Rebates, rounding and mouldings as show in drawings or as directed by the Site Engineer shall be done without any extra cost. The scantling shall be finished smooth and rubbed plane with sand papers to accurate dimensions before the same is framed. The joints shall be pinned with hard wood or bamboo pins of 10 to 15mm diameter. Using iron nails shall never be permitted. All mortise and tenon joints shall fit in fully and accurately without wedging or filling.

All portions of the timber frame abutting or embedded in brick work or in concrete shall be painted with coal tar before being placed in position, without any extra cost. For door or other frames without nay 'Chowkhat' (bottom horizontal member), the vertical members, shall be buried in the floor for at least 40mm depth.

Each frame up to 1.5M length shall be provided with 4 nos. hold fast, two on each vertical member and for frames above 1.5M length 6 nos. 3 on each vertical member. Hold fast shall be 40 X 3 mm M.S. flat 40 cm long. Hold fast shall be split and splayed at ends and embedded in cement concrete block (1:2:4)

Payment for Lames shall be made on gross volume of the frame. No deduction shall be made for rebates. Rates quoted shall be inclusive of labour, material, fabrications, fitting, fixing and coal tar etc. complete.

34.2 Panel Door, Window etc.

Workmanship for panel door, window, shutter etc. shall conform in general to IS:1003. Timber for panel door windows shall be 1s' class Indian teak conforming to the specifications. Door, windows panels shall be 12mm thick one-piece plank finished smooth and fixed with style and rail 35mm thick. Styles and end rails and intermediate rail shall be 150mm wide and 35mm thick. Styles and rails shall be properly and accurately morticed and tenon jointed and pinned with hard wood or bamboo pin 6mm dia. Wire nails shall never be permitted. The styles and rails shall have 12mm groove in paneled portion for the panel to fit in. All pieces shall be of accurate dimension, planed smooth rebating, rounding moulding etc. complete as shown in the drawing.

Each double left door shall be provided with the following heavy quality aluminum anodized fitting.

a) 6 nos. 100mm long Butt hinges.

b) One 30cm. Long Al drop bolt.

c) Two 150mm long barrel bolt.

d) Two 150mm long door handles

e) One pair of cleats.

And each panel of window shutters shall be provided with following aluminium anodised heavy quality fittings.

a) One cleat.

b) One 150mm long handle

c) One 150mm long barrel bolt

d) Two nos. 100mm long butt hinges.

Rate quoted for respective item in schedule of rates for door/windows shutters shall be deemed to include all labour, material, fabrication and fixing in position with necessary fitting as mentioned above etc. complete. Payment will be made on square meter basis of the area of the shutters.

35.0 Barbed Wire Fencing.

The barbed wire shall be of G.I. wires and in general conform to IS:278. Line wire and point wire shall be of 2.5mm, 2.24 mm diameter respectively. Distance between the barbs shall be 75mm nominal. The barb shall have a length not less than 13mm and points shall be sharp and well pointed. The barbs shall carry four points and shall be formed by twisting two point wires each two turns, lightly round on line wire making altogether 4 complete turns. The barbs shall be so finished that the four points are set and locked at right angle to each other.

The line wire shall be in continuous length shall be generally free from welds. The barbed wire shall be formed by twisting two lines wires.

The barbed wire shall be stretched tight and fixed in the manner (horizontal and diagonal) as show in the drawing and fitted in slots of angle iron post and held by binding with G.I. binding wires or with G.I, staples or nibs in case of R.C.C. Posts. Turn buckles and straining bolts shall be used at the end post.

Payment will be made **on** weight basis.

36. Stone ware pipes:

36.1. All pipes shall be with spigot and socked and conforming to Grade A of IS:651. These shall be free from visible defect such as fire cracks or hair cracks. The glaze of the pipe shall be free from cracking. Thickness of 100mm dia pipe shall be 12mm and weight 14 kg per meter.

36.2. All piece shall be laid on a bed 100mm concrete of 1:3:6 (1 cement: 3 coarse sand: 6 coarse aggregate 20mm nominal size stone aggregate). Pipes shall be jointed with hessian gasket and cement mortar 1:1 (1 cement: 1 fine sand) filled in completely and fillet of 45 inclinations being formed with the cement mortar of same mix. Width of the bed concrete shall not be less than 55 cm and shall be provided with side haunch finished tangential to the pipe all as shown in drawing. Excavation and filling of trenches shall be done in the manner as specified under relevant clauses covering earth work in excavation and filling.

36.3. Payment shall be made on the basis of running meter inclusive of cost of pipes, bed concrete excavation, refilling etc., complete.

37. Cement Concrete Hume Pipes:

The pipes shall be with reinforcement conforming to IS:458 and class NP2. The pipes shall be centrifugally cast, true to shape, straight, perfectly sound and free from cracks and flaws. The external and internal surface of the pipe shall be smooth and hard. Wall thickness of the pipes shall be 25mm and 30 mm for 250 and 300 mm diameter pipes respectively.

The pipes shall be laid across the road, paths and similar locations for drainage purposes as per the drawings and instructions of the site Engineer. Two adjoining pipes shall be butted against each other and adjusted in correct position. The collar shall be slipped over the joint covering equally both pipes. The annular space shall be filled with stiff mixture of cement mortar 1:2 (1 cement : 2 fine sand).

38. **Septic Tanks and Soak Pits:**

Specifications relating to earth work in excavation and filling, plain and reinforced concrete, brick work plastering etc. shall be as per the specifications mentioned under different clauses: septic tank and soak pits shall be constructed as per details drawing true to dimension. Payment will be made in lump sum basis inclusive of all works fittings, fixtures as shown in the drawings.

39. Angle Iron Post for Fencing:

Angle Iron post shall be fabricated all as shown in the drawing cut to required shape and size and making slots for housing barbed wire or chain link fencing wire. Payment shall be made on weight basis under respective item of schedule of rates. Concrete foundations shall be paid under relevant items for cement concrete work.

40 Specification for Road Works:

33.1.0 Earth Work in Embankment:

40.1.1 The specifications for earthwork in embankment for roads shall be as per c**lause 5.8.0** in the specifications and shall in additional include the following.

40.1.2 The compaction of earthwork shall be done under suitable moisture conditions to give 95% of the maximum dry density (Proctor density) obtained by B.S. compaction test (British Standard 1377-1961 Test No. 10). For this purpose, each layer of earth shall be spread with sufficient to give moisture content of about 1 to 2% more than optimum moisture content so that at the time of compaction the moisture content shall in no case be less than the O.M.C. Earth layers shall then be compacted by rolling with power road roller and sheep foot roller, if required to give the density of compaction nearly equal to the theoretical density obtained in the laboratory. Variations up to 5% only from the theoretical optimum density will be accepted. As the work progress field density tests shall be conducted on different layers. One test for every 4000 square meter shall be done to check whether the desired compaction has been achieved.

40.2 Cutting:

40.2.1 In place where the formation level of the road is higher than ground level, cutting shall be done up to the formation levels per drawing and direction of the site engineer. The side

slopes should be evenly trimmed and dressed as per drawing and instructions of the site engineer.

40.3 Preparations of Sub-Grade:

40.3.1 The surface of the formation for a width required as per drawing, shall first be cut, to a depth below the proposed finished level, equal to the combined depth of soling and wearing courses with the allowance made for consolidation. The entire surface area shall be cleaned off from all foreign substances. Any ruts of soft yielding places that may appear due to improper drainage conditions, traffic or from any other causes, shall be corrected and the sub-grade should be dressed off parallels to the finished profile.

40.3.2 The consolidation of the sub-grade shall be done by 8 to 12 tons power road roller, till the soil is evenly and densely consolidated and behave as an elastic mass, (Road roller shall pass minimum 5 runs on the sub-grade).

During rolling process, all the undulation formed shall be made good with earth and finally the sub-grade is to be re-rolled.

40.4 Herring-Bone Brick Paving:

40.4.1 Preparation of the sub-grade shall be done all as mentioned hereinbefore and second-class brick shall be laid on the prepared sub-grade with proper grade and camber. Brick shall be laid on edge, lengthwise, standing in opposite direction in a zigzag pattern. Joints shall be filled up with fine sand, brick edging on the two edges of the pathways shall be laid first and properly embedded in earth. Herring and bone paving shall be done subsequently brick edging shall be paid separately under relevant item of schedule of rates.

40.4.2 Payment and measurement of the herring bone paving shall be made on square mater basis. The rate shall be inclusive of supplying of fine sand for filling joints between the bricks.

40.5 Soling:

40.5.1 Soling shall be hand packed with boulders size 22.5 cm. (9") laid with its greatest length across the road. These shall be laid closely in position on the sub-grade with its broadest side downwards and to make up the specified thickness of base with single stones to correct camber and grade. The joint should be staggered and all interstices between boulders shall be wedged in with smaller pieces of suitable size well driven in to enable tight packing and complete filling of the interstices. Such filling work shall be carried out simultaneously with the placing in position of soling stones and shall not lag behind. The surface shall be checked with templates of approved design (templates to be supplied by the contractor) and high and low spots corrected by removing soling and re-packing. The soil shall be thoroughly consolidated with power roller 8 to 10 tone weight. The roller shall run over the same surface of rolling for at least 8 times till the soling course is well consolidated.

40.6 Consolidation of Road metal:

40.6.1 Stone aggregate used for water bound macadam above the soling shall be 50mm nominal size and free from all dirt, mud and other foreign materials. The grading of stone aggregate

shall be as described in clause No. 2.6.1 herein before. Stone aggregate shall be consolidated by dry rolling followed by wet rolling with power roller 8 to 10 tones. Moorum shall be used, as binder while wet rolling. Wet rolling shall be continued till the toiler makes no visible impression on the surface and interstices between the stone have been filled by consolidation of aggregate.

41 Conduit System for Wiring and Electrical Works

Conduits used shall conform to IS:1553 and IS:732 and shall be black enameled and galvanised iron pipes. All conduit accessories shall be used. Conduits shall be fixed by heavy gauge saddles secured in an approved manner at an interval of not more than one meter. All elbows, tees, etc. the conduits placed in the concrete shall ensure proper clean cover in the concrete. All outlets of conduits system shall be properly drained and ventilated in order to minimize condensation or sweating. Chases shall be neatly filled up after the installation of conduits.

Regarding the makes of materials, only the makes mentioned in the list of materials enclosed may be supplied.

The measurement shall be made in meter. The rates shall include, supplying, laying and fixing conduit including spacers, saddles, screws rawl plugs, wooden plugs, plugging compound etc. All conduit fitting viz., tee, elbows, bends shall be included in the rate.

Drawings of all fabricated items like Switch Boards, M.V Panels, Distribution Boards, Power Boards shall be submitted and approval of the engineer shall be obtained before fabrication. Contractor shall arrange to take the engineer for inspection during fabrication of LT Panels.

Wherever required by the engineer, sample of items shall be submitted for his approval before supply of items.

The descriptive technical literatures and drawings shall be submitted along with the tender.

41.1 The contractors have to follow the safety regulations strictly.

Supply of cables should be in continuous lengths. No joints will be allowed.

All Cable lengths, Switch Boards, MV Panels, Distribution Boards, Power Boards should be meggered and tested for the specified insulation level, before commissioning.

Concrete cable route markers of standard size to be placed along the route of the cable at regular intervals of 10m at all turning points and at both ends of road crossing.

42 Stone for masonry work:

42.1 Quality of rubble stone:

Rubble stone for hearting shall be of approved quality should, hard, dense and durable, free from segregation seams, cracks, weathered portions and others structural defects or imperfections tending to affect their soundness and strength. Stones shall generally de

freshly quarried with sharp edges and clean faces. They shall be free rounded, worn or weathered surface or skin or coating which prevents the adherence of mortar. Size and shape of stone shall be as per the requirement of each item of work

Dressing:

Stone shall be hammer dressed on the face, the sides and the beds, to enable it to cone into close proximity with the neighbouring stone. The 'bushing' in the face shall not project more than 4 cm. on a exposed face, and one cm, on a face, to be plastered. The hammer dressed stone shall also have a rough tooling for a minimum width of 2.5 cm along the four edges of the face of the stone.

42.1.1 Quality face stones:

The stone to be used in the face shall be tough, hard, dense, sound and durable, resistant to weathering action, reasonable fine-grained, uniform in colour and texture and free from seams cracks or other defects which would adversely affects their strength, durability or appearance. They shall also be free from weathered portion and skins.

Dressing:

Face stones shall be hammer dressed on all beds. The beds and joints, so as to give them approximately rectangular block shape.

These shall be squared on all joints and beds. The bed joints shall be rough chisel dressed for at least 5 cm back from the face, and side joints for at least 4 cm such that no portion of the dressed surface is more than 6 mm from a straight edge placed on it. The remaining portion of the stone shall not project beyond the surface of bed and side joints. The 'bushing' on the faces shall not project more than 4 cm in an exposed face and 1cm on a face to he plastered.

The hammer dressed stone shall also have- a rough tolling for a minimum width of 2.5 cm along the four edge of the face of the stone.

42.1.2 Quality of other stones:

Stones to be used as headers, pinheaded, quoins, copings etc. shall comply with the requirement of facing and hearting stones as may be relevant and shall further comply with the requirement of size and shape stipulated in the drawings.

42.1.3 General:

Stone to be used in the masonry shall be trap, granite, or quartzite or any other type locally available hard stone that may be permitted by the site engineer. The stone shall stand weathering well when immersed in water for 24 hours shall not absorb water more than 5 percent of its dry weight when tested according to IS:1124.

42.1.4 Royalty, Octroi, duties etc:

Royalty, compensation, octroi, duties etc. payable in connection with securing the stone shall be paid by the contractor. The contractor shall be responsible for observing laws, rules and regulations impressed under the minor minerals act such other rules etc., laid down by government department and local authorities.

42.2 Un coursed random rubble masonry:

42.2.1 Laying:

All Stones shall be wetted before use. The wall shall be carried up truly plumb or to specified batter. Every stone shall be carefully fitted to the adjacent stones, so as to form neat and close joints, stones may be laid at random without being brought up to any level course except at plinth, window sills and roof level. Levelling up at plinth level, shall be done with 1:6:12 (1 cement:6 coarse sand: 12 graded stone aggregate of 20mm nominal size) and shall be included in the item. The bond shall be obtained by fitting in closely, the adjacent stones and by using bond stones.

Face stones shall extend and bond well into the backing. These shall be arranging to break joints as much as possible, and to avoid long vertical lines of joints. Their height shall not be greater than the breadth at the face or the face or the wall face, shall consist of rubble stone which may be of any shape but shall not pass through a circular ring of 15 cm inner diameter, thickness of these stones in any directions shall not be less than 10 cm. these shall be carefully laid, hammered down with a wooden mallet into position and solidly bedded in mortar; chips and spawls of stone being used wherever necessary to avoid thick mortarboards of joints and at the same time ensuring that no hollow spaces are left any where the masonry. The hearting will be laid nearly level with facing and backing, except at about one-meter intervals, vertical "Plumb" projecting about 15cm to 20cm shall be firmly embedded to form a bond between successive courses. The chips shall not be used below the hearting stones to bring these up to the level of face stones. The use of chips shall be restricted to the filling of interstices between the adjacent stones in hearting, and those shall not exceed 20% of the quantity of stone masonry

The masonry is a structure shall be carried regularly. where the masonry of one part has to be delayed, the work shall be raked be back at an angle not steeper than 45°. Tooting in masonry shall not be allowed.

42.2.2 Bond Stones:

Bond or through stones running right through the thickness of walls shall be provided in walls up to 60cm thick. If the walls are more than 60cm thick, two or more bond stones overlapping each other by at least 15cm shall be provided for every 0.5 sq. meter of wall surface.The quoins shall be of a selected stone neatly dressed with the hammer or chisel to form the required angle, and laid header and stretcher alternately. These stones shall have a minimum of 2.5 cm wide chisel draft at four edges, all the edges being in the same place. No quoin stone shall be less than 25 cubic decimetres (0.025 Cum.)

42.2.3 Joints:

Stones shall be so laid that all joints are full of mortar. Face joints shall not be more than 2.5cm thick.

When plastering or pointing is not required to be done, the joints shall be struck flush and finished at the time of laying. Otherwise, the joints shall be raked to a minimum depth of 20mm by raking tool during the progress of work, when the mortar is till green.

42.2.4 Curing:

Green work shall be protected from rain by suitable covering. Masonry work in cement or composite mortar shall be kept constantly moist on all the faces for a minimum period of seven days. The top of masonry work shall be left flooded at the close of the day. In case of fat lime mortar, curing shall commence two days after the laying of masonry and shall continue for seven days.

42.2.5 Scaffolding:

For this class of work, single scaffolding having one set of vertical support shall be allowed. This support shall be sound and strong, tied together by horizontal pieces, over which the scaffolding planks shall be fixed. The inner end of the horizontal scaffolding member may rest in a hole provided in the masonry. Such holes, however shall not be allowed in pillars under one meter in width. The holes left in masonry work for supporting scaffolding, shall be filled and made good before plastering. The contractor shall be responsible for providing and maintaining scaffolding strong enough, so as to withstand all likely loads coming on it.

42.3 Coursed rubble masonry:

42.3.1 Laying:

All stones shall be wetted before use. The walls shall be carried up truly plumb or to specified batter. All course shall be laid truly horizontal and all vertical joints shall be truly vertical. The height of each course shall not be less than 14.5 cm nor more than 30cm.

Face stones shall be laid alternate headers and stretchers. These shall have break joints at least half the height of the course. No pinning shall be allowed on the face. No face stone shall be less in breadth than its height, and at least one third of the stone shall tail into the work for length not less than twice their height.

The hearting or the interior filling of the wall shall consist of flat bedded stones carefully laid on their proper beds in mortar; chips and spells of stone being used where necessary to

avoid thick beds or joints of mortar and at the same time ensuring that not hollow spaces are left anywhere in the masonry. The chips shall not be used below the hearting stone to bring these up to level of face stones. The use of chips shall be restricted to the filling to interstices between the adjacent stones. In hearting and these shall not exceed 10% of the quantity of stone masonry.

The masonry in a structure shall be carried up regularly but where breaks are unavoidable the joints shall be racked back at an angle not steeper than 45° toothing shall not be allowed.

42.3.2 Bond stones:

Same as in random rubble masonry, given under relevant para except that a bond stone or a set of bound stones shall be inserted 1.5 to 1.8 meters apart, clear, in every course.

42.3.3 Quoins:

The quoins, which shall be of the same height as the course in which these occur, shall be formed of stones at least 40 cm (nominal) long, laid stretchers and headers alternately.

These shall be laid square on the beds, which shall be rough-chisel, dressed to a depth of at least 10cm. These stone shall have a minimum of 2.5-cm wide chisel drafts at four edges. All the edges being in the same plane.

42.3.4 Joints

All bed joints shall be horizontal and ail side joints vertical, all joints shall be full of mortar. Face joints shall not be more than 1 cm thick.

When plastering or pointing is not required to be done, the joints shall be struck flush and finished at the time of laying. Otherwise, the joints shall be raked to a minimum depth of 20mm by raking tool during the progress of work, when the mortar is still green.

42.3.5 Curing:

Green work shall be protected from rain by suitable covering. Masonry work in cement or composite mortar shall be kept constantly moist on all the faces for a minimum period of seven days. The top of masonry work shall be left flooded at the close of the day. In case of fat lime mortar, curing shall commence two days after the laying of masonry and shall continue for seven days.

42.3.6 Scaffolding:

For this class of work, single, scaffolding having one set of vertical support shall be allowed. The supports shall be sound and strong, tied together by horizontal pieces, over which the scaffolding planks shall be fixed. The inner end of the horizontal scaffolding member may rest in a hole provided in the masonry such holes, however, shall not be allowed in pillars under one meter in width or near the skewback of arches. The holes left in masonry work for supporting scaffolding, shall be filled and made good before plastering. The contractor shall be responsible for providing and maintaining scaffolding strong enough, so as to withstand all likely loads coming on it.

42.3.7 Measurement and payment:

Payment for both un-coursed and coursed rubble masonry will be made in cubic meter basis nearest to two places of decimal. The length, height and thickness shall be measured correct to cm. The thickness of wall shall be measured at joints, excluding the bushing. Only specified dimensions shall be allowed anything extra shall be ignored. The rates shall be inclusive of cement pointing, striking out joints whenever mentioned in the schedule of rates.

43.0 Specification for laying of water proofing treatment works:

40.1.0 Water proofing treatment under the foundation & the vertical surface of the basement:

The materials to be used shall be as described in the nomenclature of the item, The technical data of the material shall comply with the following:

Technical data

Properties	**Test Results**		**Method of Testing**
Thickness (+)	3mm	4mm/4.5mm	ASTM D 751
Reinforcement base	180 gms/$\mathbf{m^2}$ Non woven Spunbond Polyester matt		
Softening Point(R+B) of Coating Mixture	**>135^0 C**		ASTM D 36
Penetration of coating mixture at 95˚c	25-35 dmm		ASTM D 5
Flexibility at low temperature	**-**10 to **-20^0C**		UEAtc
Service Ambient temperature	**-**40 to **80^0C**		
Tensile Strength Longitudinal Transverse	 850 N/5 cm 700 N/5cm		UEAtc
Elongation Longitudinal Transverse	 50% 55%		UEAtc
Tear Resistance Longitudinal Transverse	 550 N 350 N		ASTM D 5147
Lap Joint Strength Longitudinal Transverse	 **>**850 N/5cm **>**700 N/5cm		UEAtc
Puncture Resistance Static Dynamic	L4 (Not perforated at 25 Kgs; 10 mm ball) 14(Not perforated at 9 joules impact energy, 5mm ball)		UEAtc
Heat flow resistance **100^0 C,** 2 hrs	No flow		UEAtc
Water absorption	Less than 0.15%		ASTM D 5147
Impermeability of the Membrane to Water	Absolutely impermeable		UEAtc
Resistance to thermal Ageing	No Signs of Deterioration after the test.		UEAtc
Resistance to Ageing due to UV-Radiation	No Signs of Deterioration after 2000 Hours		ASTM G 53
Water Vapour permeability	Absolutely Impermeable		ASTM E 96
Hydrostatic pressure Resistance	**>**110 PSI		DIN 1048

40.2.0 Application:

The membrane must first be unrolled and laid down on the area to which it is to be applied. Check the orientation carefully. Adjacent rolls should then be laid, each overlapping the one

next to it by 10 cm on the side and 15 cm at the ends. Taking care not to change the orientation of each roll, reverse the process until each has been re-rolled.

When laying the roll, the lower surface should be heated with a torch, using sweeping left to right movements. This will melt the lower surface of the membrane and allow it to stick to the substrate. Continue this process for each subsequent roll, remembering that the overlaps must be 10 cm for the edges and 15 cm at the ends. When the process is complete, carry out an inspection to ensure total adhesion.

Water proofing treatment on the roof tops shall be using APP modified water proofing membrane the specification and the method of application shall be as described in the nomenclature of the item.

40.3.0 Guarantee:

The Water Proofing Treatment shall be guaranteed for a **minimum period of Ten years from the date of expiry of the defects liability period.** A sum equivalent to 10% of gross value of the final bill (on Water Proofing portion) will be retained by ITI LIMITED towards the guarantee which will be refunded after the satisfactory completion of the Guarantee period of 10 years.

Alternatively, the contractor may furnish a Bank Guarantee for the same amount as per the format to be approved by ITI LIMITED. The Bank Guarantee shall be submitted from a Nationalized Bank before the release of security deposit and the same shall be valid for 10 years from the date of expiry of defect liability period.

Contractor will also be required to furnish a Guarantee Agreement as per the format enclosed with this Tender document in addition to the submission of Bank Guarantee.

44.0 specification for Anti Termite treatment works:

Sub-terrane termites are responsible for most of the termite damage in buildings. Typically, they form nests or colonies underground, in the soil near ground level in a stump or other suitable piece of timber in a conical or dome shaped mound. The termites find access to the super-structure of the building either through the timber buried in the ground or by means of mud shelter tubes constructed over unprotected foundations.

Termite control in existing as well as new building structures is very important, as the damage likely to be caused by the termites to wooden members of building and other household article like furniture, clothing, stationary etc. is considerable. Anti-termite treatment can be either during the time of construction, i.e. pre-constructional chemical treatment or after the building has been constructed, i.e. treatment for existing buildings.
Prevention of the termite from reaching the super-structure of the building and its contents can be achieved by creating a chemical barrier-between the ground, from where the termites come and other contents of the building which may form food for the termites. This is achieved by treating the soil beneath the building and around the foundation with a suitable insecticide.

44.1.0 MATERIALS

Chemicals: The following chemical in water emulsion to achieve the percentage concentration specified against the chemical shall be used for anti-termite treatment.

Table of materials

Chemical	Relevant Indian Standard	Centration by Volume
1.(a) Chloropyruphos emulsifiable concentrate	IS: 8944	1.0%

Chemicals are available in concentrated form in the market and concentration is indicated on the sealed containers. To achieve the specified percentage of concentration, chemical should be diluted with water in required quantity before it is used. Graduated containers shall be used for dilution of chemicals with water in the required proportion to achieve the desired percentage of concentration. For example, to dilute chemical of 30% concentration. 59 parts of water shall be added to one part of chemical for achieving 0.5% concentration.

Contractor shall procure the chemical of required concentration in sealed original containers directly from the reputed and authorized dealer approved by the Engineer-In-Charge. The chemical shall be kept in the joint custody of the Engineer-in-Charge or his authorized representatives and the Contractor and issued for use to meet the day's requirements. Empty containers after washing and concentrated chemical left unused at the end of day's work shall be returned to the Engineer-in-Charge or his authorized representative.

44.2 SAFETY PRECAUTIONS

All chemical used for ant termite treatment are poisons. These chemicals can have an adverse effect upon health when absorbed through the skin, inhaled as vapours or spray mists or swallowed.
The containers having emulsifiable concentrates shall be clearly labelled and kept securely closed in stores so that children or pet cannot get at them. Storage and mixing of concentrates shall not be done near any fire source or flame. Persons using these chemicals shall be warned that absorption through skin is the most likely source of accidental poisoning. Particular care shall be taken to prevent skin contact with concentrates and prolonged exposure to dilute emulsion shall also be avoided. After handling the concentrates or dilute emulsion, worker shall wash themselves with soap and water and wear clean clothing, especially before eating and smoking. In the event of severe contamination, clothing shall be removed at once and the skin washed with soap and water. if chemical has splashed into the eyes, they shall be flushed with plenty of soap and water and immediate medical attention shall be sought. Care should be taken in the application of chemicals to see that they are not allowed to contaminate wells or springs which serve as source of drinking water.

44.3 PRE-CONSTRUCTION CHEMICAL. TREATMENTS

Chemical treatment of soils for the protection of building from attack of subterranean termites shall be done as per IS: 6313(Part II). Graduated containers shall be used for dilution and spraying of the chemical shall be done using hand operated pressure pumps. Proper check should be kept to ensure that the specified quantity of chemical is used for the required area during the operation.

44.4 Time of application:

Soil treatment should start when foundation trenches and pits are ready to take bed concrete/leveling course in foundations. Laying of bed concrete/leveling course should start when the chemical emulsion has been absorbed by the soil and the surface is quite dry. Treatment should not be carried out when it is raining or soil is wet with rain or sub-soil water. Treatment to the surface of earth filling within the plinth shall also be done in the same manner before laying the sub-grade for flooring.

44.5 Disturbance:

The treated soil barrier shall not be disturbed. If for some reasons the treated soil barriers are disturbed, immediate steps shall be taken to restore the continuity and completeness of the barrier system.

44.6 Treatment for Masonry Foundations & Basements:

(a) The bottom surface and the sides (upto a height of 300 mm) of the excavations made for masonry foundations and basements shall be treated with the chemical at the rate of 5 litres per square meter surface area.

(b) After the masonry foundations and the retaining wall of the basements come up the backfill in the immediate contact with the foundation structure shall be treated at the rate of 7.5 litres per Sqm of the vertical surface of the sub-structures for each side. **If** water is used for ramming the earth fill, the chemical treatment shall be carried out after the ramming operation is done by rodding the earth at 150 mm centres close to the wall surface and spraying the chemical with the above dosage. The earth is usually returned in layers and the treatment shall be carried out in similar stages. The chemical emulsion shall be directed towards the concrete or masonry surfaces of the columns and walls so that the earth in contact with these surfaces is well treated with the chemical

44.7 Treatment for RCC foundation and Basements: Soil in immediate contact with the vertical surfaces of RCC foundations shall be treated at the rate of 7.5 litres per sqm for the entire height. The other details of treatment shall be as laid down above (i.e same as treatment for masonry foundation and basements. The top surface of the earth filled along the external periphery of the building shall be treated with chemical emulsion @ 5 litres per Sqm for a width of 1 metre from the face of the wall.

44.8 Treatment of Top surface of Plinth Filling: The top surface of the filled earth within the plinth walls shall be treated with chemical emulsion at the rate of 5 litres per sqm of the surface before the sand/ sub-grade is laid. Holes upto 50 to 75 mm deep at 150 mm centres both ways shall be made with crow bars on the surface to facilitate saturation of the soil with chemical emulsion.

44.9 Treatment at Junction of the walls and the floor: To achieve continuity of the vertical chemical barrier on inner wall surfaces from the ground level, a small channel 30 x 30 mm shall be made at all the junctions of walls and columns with the floor (before laying the sub-grade) and rod holes made the channel upto ground level 150 mm apart and the chemical

emulsion poured along the channel © 7.5 litres per sqm of the vertical walls or column surfaces so as to soak the soil right to bottom. The soil shall be tamped back into place after this operation.

44.10 Treatment of soil along external perimeter of building: After building is completed, 300 mm deep holes shall be provided in the soil with iron rods along the external parameter of the building at intervals of about 150 mm and these holes shall be filled with chemical emulsion at the rate of 7.5 litres per sqm (of vertical surfaces of the external walls). If the depth of filling is more than 300 mm, the external parameter treatment shall be extended to the full depth of filling up to the ground level so as to ensure continuity of the chemical or barrier. In the case the earth outside the building is graded on completion of building, these treatments shall be carried out on completion of such grading.

44.11 Treatment of soil under Apron (Plinth protection) along external parameter of building: Top surface of the consolidated earth over which the apron is to be laid shall be treated with chemical emulsion at the rate of 5 litres per sqm of the surface before apron is laid. If consolidated earth does not allow emulsion to seep through, holes up to 50 to 75 mm deep at 150 mm centres both ways may be made with 12 mm diameter mild steel rod on the surface to facilitate saturation of the soil with chemical emulsion.

44.12 Treatment for Expansion joints: Anti-termite treatment shall be supplemented by treating with chemical emulsion through the expansion joint after the sub-grade has been laid @ 2 liters per linear meter of expansion joint.

44.13 Treatment of walls Retaining soil above floor level: Retaining walls like the basement walls or outer walls above floor level retaining soil need to be protected by providing chemical barrier by treatment of retained soil in the immediate vicinity of the walls, so as to prevent entry of termites through the voids in masonry, cracks and crevices, etc. above the floor level. The soil retained by the walls shall be treated at the rate of 7.5 liters per sqm of the vertical surface so as to effect a continuous outer chemical barrier, in continuation of the one formed under the items of treatment for masonry foundation and basements.

44.14 Treatment of soil surrounding pipes, Wastes and Conduits: When pipes, wastes and conduits enter the soil inside area of the foundation, the soil surrounding the points of entry shall be loosened around each such pipe water or conduit for a distance of 150 mm and to a depth of 75 mm before treatment is commenced. When they enter the soil external to the foundations, they shall be similarly treated for a distance of over 300 mm unless the stand clear of the walls of the building by about 75 mm.

44.15 Measurements: All dimensions shall be measured corrected to a cm. The measurements for all the operations described above shall be the plinth area of the building in sqm at floor one level (ground floor/ basement in case of Underground/Semi Underground buildings). Nothing extra shall be measured for payment.

Rate: The rate for the anti-termite treatments shall include the cost of all the materials and labour and all other inputs involved in all the operations described above.

45.0 Guarantee:

The Anti Termite Treatment shall be guaranteed for a minimum period of **Ten years** from the **date of expiry of the defects liability period.** A sum equivalent to 10% of gross value of the final bill (on Anti termite Portion) will be retained by ITI LIMITED towards the guarantee which will be refunded after the satisfactory completion of the Guarantee period of 10 years. Alternatively, the contractor may furnish a Bank Guarantee for the same amount as per the format to be approved by ITI LIMITED. The Bank Guarantee shall be submitted from a Nationalised Bank before the release of security deposit and the same shall be valid for 10 years from the date of expiry of defect liability period.

Contractor will also be required to furnish a Guarantee Agreement as per the format enclosed with this Tender document in addition to the submission of Bank Guarantee.

46.0 SPECIFICATIONS FOR PVC DOOR

(WOODEN SHADE)

SINTEX DOOR SHUTTER - 301125 (29 MM Thickness)

extruded PVC section the configuration of 'A' having an overall dimension of 59mm x 29mm with usual process variation having a wall thickness of maximum of 2mm with a variation of ± 0.3mm. Provided with concealed all plastic reinforcement of the size 220mm x 135 mm at the corner. The shutter frames further have a pre laminated teakwood. finish with gloss for extra beauty. The Infill of the door shutter is consisting of a seamless one piece Multi chamber hollow extruded PVC section of the size of 762mm x 25mm or less as per requirement with an average wall thickness of 1 mm variation of ± 0.3mm. Shall have all plastic reinforcement of the-size of 22mm x 22mm x 255mm at the position of lock-rail.

The entire door shutter have S.S. screws at appropriate places for rust free quality. The elements like frame and Infill to be made in India and door to be assembled in a proper factory in India.

SINTEX DOOR FRAME (DWUF- 414, 40 X 48}

Sintex Door Frames are made from PVC extruded sections in an overall dimension of 40mm x 48mm with all thickness of 2mm±0.3 mm and with usual process variation. Reinforced with special polymeric reinforcement. The corner joints shall be miter cut and welded OR jointed by means of concealed cleats with necessary screws fitting. A tie rod will be provided at the bottom.

47.0 Detailed Specifications for Providing and Laying Ceramic tiles

1.0 GENERAL INFORMATION:

1.1 The following types of Ceramic tiles are required to be supplied.

a. Floor tiles for Equipment room, Power room, Battery room, &Toilets thickness of 8 mm Non slippery tiles.

b. Tiles for skirting and dadoing 5.50 mm thick.

c. The materials shall conform to standard specifications and of first quality tiles free from cracks as per IS: ·13755: 1993.

d. All the materials supplied by the manufacturers is to be tested as per the standard practice and test certificates are to be furnished.

e. The size of the tiles shall be as per the requirement

f. General Shade of the tiles shall be IVORY.

2.0 DETAILED SPECIFICATIONS FOR CERAMIC TILES

a. All the tiles shall confirm to standard specification and free from cracks.

b. Quality Parameters

The tiles adequately meet the following standards.

i. Size tolerance length and width: ± 75%

ii. Thickness tolerance: ±5%

iii. Modulus of rupture: > 22 N/mm2

iv. Water absorption ≤6%

v. Warpage: ± 5%

vi. Chemical resistance: Resistant to alkalis and acids (except Hydrofluoric acid)

vii. Scratch resistance: Hardness is around 6 for glazed and 7 for non-glazed tiles on MOH's scale.

viii. Straightness of sides: ± 0.50%

ix. Rectangularity: ± 0.60%

48.0 Detailed Specifications for Steel Doors, Windows and Ventilator

48.1 General Information:

The following types of doors, windows and ventilators are required to be manufactured for the work.

a.

i. Steel door of overall size 1.98 m x 2.08m with double leaf shutter: 40 mm thick pressed steel door with angle iron frame of size 45 x 45 x 6mm (openable outside) for main building.

ii. Steel door 1.98 x 2.08 with double leaf shutter for DG Set building (open able outside).

b. Steel door of overall size 1.48 m x 2.08 m with double leaf shutter conforming to the provisions of IS: 1038 (openable inside) only if required.

c. Steel door 0.98 m x 2.08 m with single leaf shutter conforming to the provisions of IS: 1038 (Openable inside)

d. Side hung windows 12HS12 conforming to the provisions of IS: 1038. The overall size of the window shall be 1.18m x 1.18m. (Openable outside).

e. Fixed windows 12HF12 conforming to the provisions of IS: 1038. The overall size of the fixed windows shall be 1.18m x 1.18 m.

f. Top hung ventilators of overall size 0.88 m x 0.58 m conforming to the provisions of IS: 1038 (Openable outside).

g. Mosquito proof windows of overall size 1.18 m x 1.18 m conforming to the provisions of IS: 1038 (Openable inside).

48.2 The doors, windows, fixed windows and ventilators are required to be fixed in masonry walls. Hence fixed hold fasts to be provided.

48.3 Projecting types of hinges shall be used.

48.4 Fittings shall be provided as per the detailed specifications.

48.5 The doors, windows, fixed windows, ventilators etc shall be finished with one coat of red oxide primer after the completion of the fabrication.

48.6 Necessary holes for fixing the beadings shall be provided.

48.7 Each door shall have 6 lugs (hold fasts) and each window and ventilator shall have 4 lugs (hold fasts). The lugs shall be made of 10 X 10 mm Mild steel sguare bars 100 mm long welded to the frames.

48.8 Doors , Windows , fixed Windows and Ventilators etc shall be manufactured using hot rolled steel sections conforming to IS: 7452 and as per the recommendations therein. The steel doors of size 1.98 x 2.08 m shall be manufactured using rolled steel sections as per the detailed specifications. The paneling for the steel doors shall be with 1 mm thick MS sheets conforming to relevant IS code.

48.9 The material, fabrication and finish shall conform to IS:1038.

48.10 The Side Hung windows and fixed windows and ventilators shall be provided with 10 x 10 mm square MS guard bars welded to the frame at approximately 125 mm center to center.

49 Detailed specifications for steel door of overall size 198 m x 2.08 m / 148 x 2.08

Frame shall be made of 45 x 45 x 6 mm angle iron frame. The shutter shall be 4D mm thick made of two pressed steel sheets 16 gauge thick with a gap between the two with necessary stiffeners as per the enclosed drawing.

Fittings: Each door shall have the following fittings.

a. Oxidised Mild steel Sliding Door bolt 300 x 16 mm size - 1 No.

b. Oxidised Mild steel Tower bolts 250 x 10 mm - 4 Nos.

c. Handles 125 mm made of 10 x 10 mm Square MS bars - 2Nos.

50 Detailed specifications for steel door of overall size 148 m x 2.08 m and 0.98 m x 2.08 m.

The shutter shall have 1 mm thick M.S. sheet panels welded to styles, bottom rail, lock rail and top rails. The shutter for 1.48 m x 2.08 m shall be in two leaves with a meeting stile as per IS : 7452. The shutter for 0.98 m x 2.08 m shall have single leaf.

Fittings : Each door shall have the following fittings.

.

a. Oxidised Mild steel Sliding Door bolt 300 x 16 mm size - 1 No.

b. Oxidised Mild steel Tower bolts 250 x 10 mm - 4 Nos.

c. Handles 125 mm made of 10 x 10 mm Square MS bars - 2Nos.

The door shall be supplied as a complete unit including MS sheet paneling.

51 Detailed specifications of side hung windows: (Openable outside)

The windows shall be supplied without any panels. There shall be three glazing bars in each leaf of the shutters.

Fittings : Each window shall have the following fittings .

a) Oxidised Mild steel Handles 125 mm made of 10 x 10 mm Square MS bars - 2N os.

The windows shall be openable outside.

52 Detailed specifications for fixed windows.

The fixed windows shall be supplied without any panels.

Each fixed window shall have one sub - dividing bar and three horizontal glazing bars.

The bare fixed windows (without panels), shall be supplied.

53 Detailed specifications for top hung ventilators: -

The top hung ventilators shall be supplied without any panels.
Each top hung ventilator shall have one sub dividing bar and one horizontal glazing bar.

Fittings: Each ventilator shall have the following fittings.

a. Oxidised Mild steel Handles 125 mm made of 10 x 10 mm Square MS bars - 1No.

The bare top hung ventilators shall be supplied without any panels.

54 Detailed specifications for Mosquito Proof Windows (Openable inside)

Windows only in living accommodation i.e. O.R. & JCO. Specification is same as 4.0 i.e side hung windows except there will not be M.S. square bars for these windows.

55 The mode of measurement for Steel doors and Windows are as indicated in the Bill of Quantity

IT Related Works

IT Related works is a specialized work, required system integrator to integrate all component of IT works like Access control system, video surveillance system, physical intrusion and detection system, fire detection and suppression system etc.

Bidders are advised to take the consultation of OEM's of the product and system integrators to get complete solution and detailed items involved (like: nozzles, data switch, cables, gas cylinders, environmental sensors, server, computers etc.) to provide the solution.

Bidder should take the IT Related works as a turnkey solution and quote accordingly, no additional payment against IT works will be made.

a) **Physical Security**.

i. Sentry posts will be provided for security. Proper securing arrangements for doors and windows will be made to eliminate any kind of illegal access.

ii. Camouflage and concealment shall be incorporated as per details given for civil works separately. The pattern of camouflage and concealment will be as specified by formations. The material used shall sustain the vagaries of weather and also limited assaults.

iii. Where Solar Panels are proposed they shall preferably be non- reflective to avoid detection.

b) **Electronic Security**.

Complete electronic security and surveillance systems will be provided at all sites. List of these sites will be given by the user. Access and fire control system will, however, be provided at all sites. Bidder will submit overall plan along with technical details and datasheet of proposed system with his offer. Following requirements are, however, inescapable: -

i. **Access Control Systems**. These systems will provide limited access to authorized personnel only for entry in restricted areas of the node.

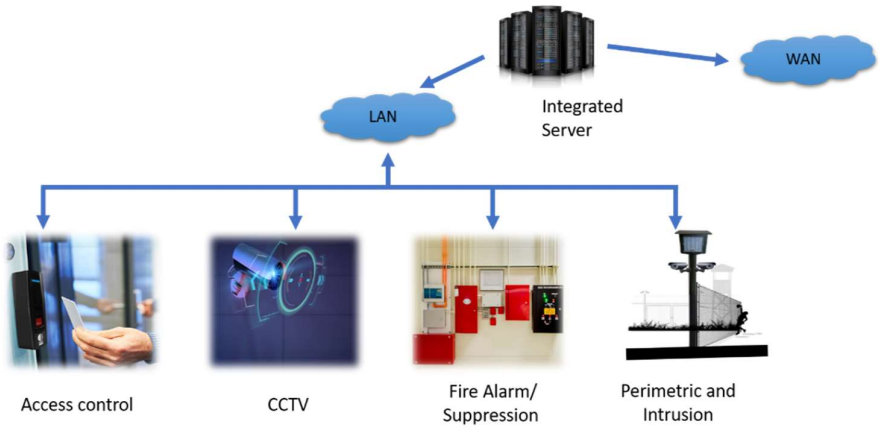
ii. **Fire Detection and Suppression Systems**. These systems will activate both visual and aural alarms and automatically activate appropriate extinguishing systems in the locality of the fire. All constructions will follow National Building Code of India 2005 standards for fire prevention and fire resistant ducts for cabling, ducts etc.

iii. **Physical Intrusion Detection and Prevention Systems**. These systems shall automatically detect intrusion by any unauthorized means i.e. breaching of a wall or fence or intruder access through a window. The system will also cater for limited intrusion prevention.

iv. **Remote Video Surveillance**. This system shall provide zone wise networked video surveillance of adjoining areas of each node using close circuit television cameras (CCTV). The area around any specific node shall be clearly visible on a screen/monitor from any other node. The video surveillance in nodes must be available at NOC for monitoring.

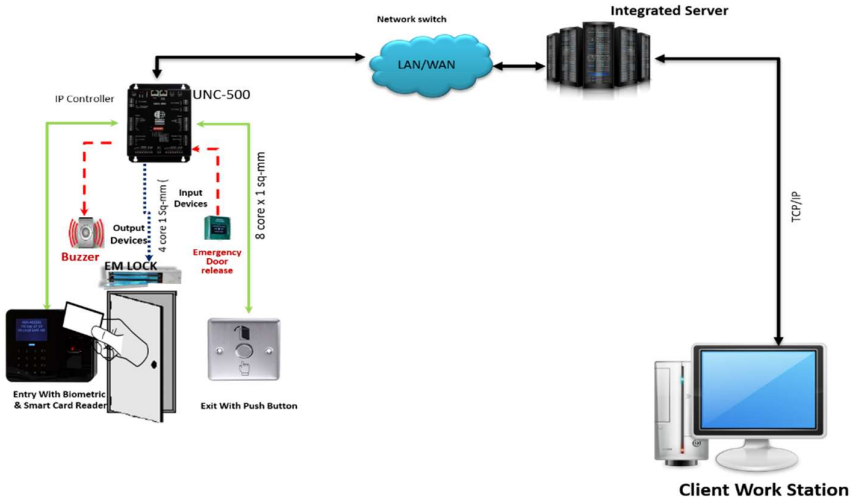
Below is the integrated security system for ASCON nods. Every node will require following security systems.

- Access Control System.
- Video Surveillance System
- Physical Intrusion and Detection System
- Fire detection and suppression System.



Security systems are to be monitored from zonal and central locations. Philosophy of design and integration.

Access Control System

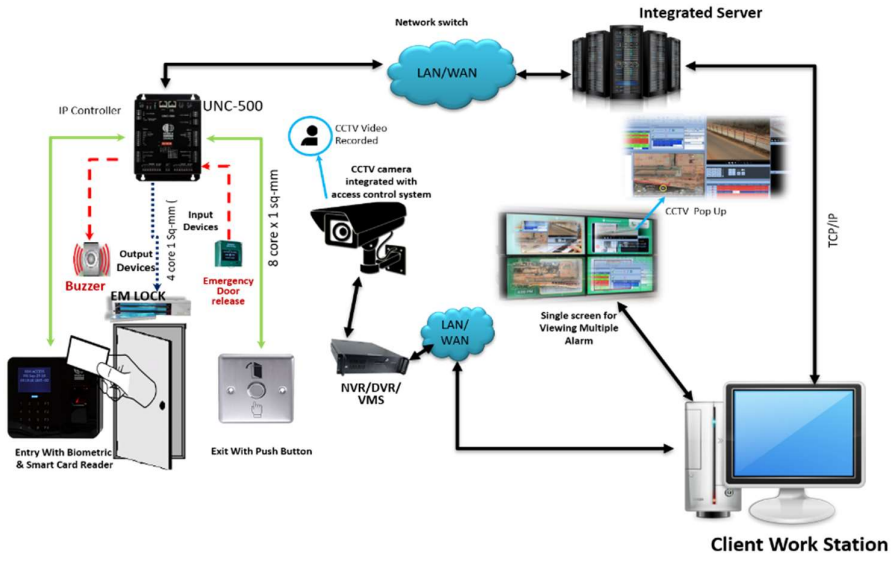


All nodes will have secured entry and exit via biometrics, card and PIN. We can choose any combination for entry Finger only, card only, card+ Finger, Card+ Finger+ PIN. All combinations can be programmed specific to person being given access rights.
Access rights and finger print enrolment can be done from specific node or zonal office as per the requirement. 5 doors- with biometrics and lock.

All biometrics will have separate door controller unit. This door controller unit will be installed at safe location so that even if biometrics is damaged or switched off door is secured.

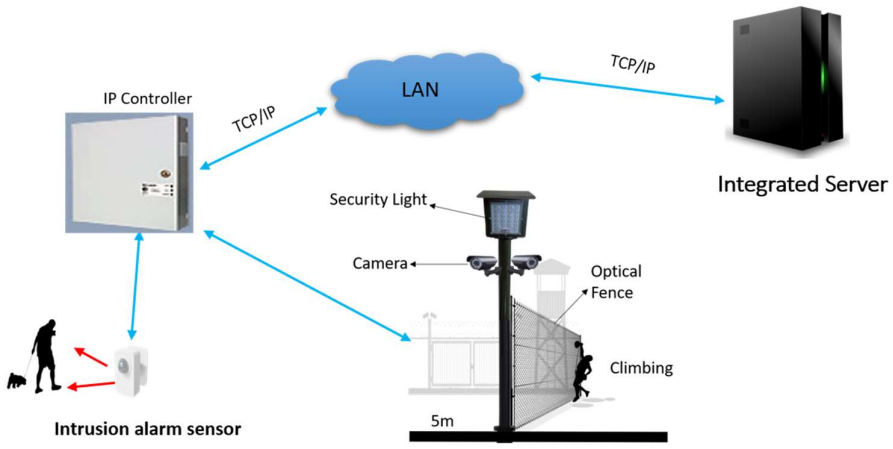
Access Controllers will be integrating all other systems for monitoring any alarms in a node to zonal and central level.

Video Surveillance system



There will be a CCTV integrated to alarm points of any system enabling POP up of camera system in central software in case of alarm. There should be a provision to connect more than one camera to a single alarm point as many times alarm point cannot be covered by a single camera view.

In case of any alarm from any sub systems hooter is activated and CCTV camera view is POP up in server and zonal office as well. Up to 3-4 camera POP up in case of any alarm should be possible.

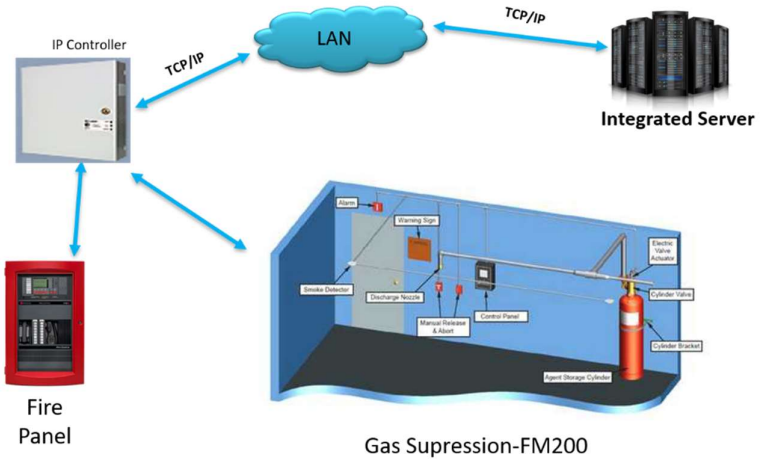


Intrusion alarm system having PIR sensors in equipment room and one more in any critical area where user wants to monitor any movement in any critical areas. Alarm will be raised based on Integrated with centralised alarm management system.

Beam detector will be installed covering all four perimeter length divided in four zones, in case of any alarm from any of perimeter zone all four perimeter camera will show a POP UP in server at node or zonal/Central location as desired.

130 DB hooter and a alarm panel with keypad. This alarm panel will be integrated with Security command and control centre to do all alarm monitoring.

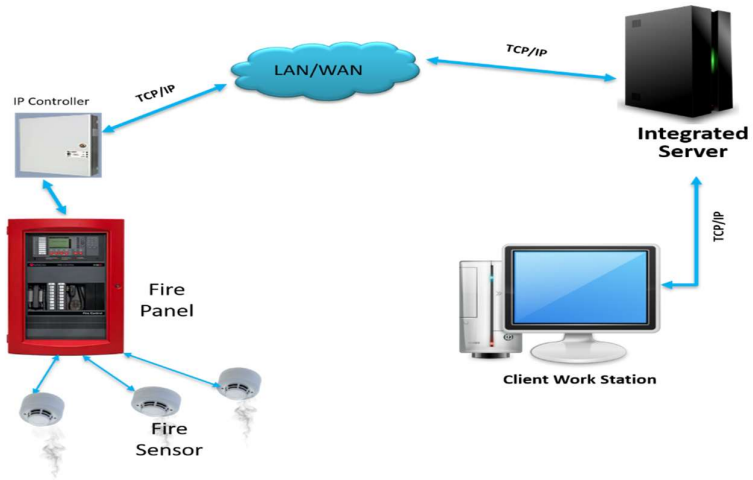
Fire Suppression System



FM200 based gas suppression system is required for Equipment room as equipment room has all critical communications systems installed. In case there is a simultaneous alarm from fire alarm system and fire detection sensor of suppression system FM200 gas is released and will put off the fire if in equipment control room.

FM200 system is designed to same critical electronics systems in case of fire. CCTV of equipment room is integrated with suppression system alarm and in case of alarm CCTV pop up of the equipment room is shown for live view.

FAS



Following type of fire detectors are installed in node premises. Fire alarm system integrated with

- Smoke detectors
- Heat detectors
- Multi criteria.

In case of detection of fire by fire alarm system access control doors should be able to be programmed in fail safe or fail secured mode as desired by node officer.

CCTV pop up is there in central software in case of fire.

1. Centralized software to connect to all security devices manage CCTV cameras and give local, zonal and central control and view of system. Enterprise class architecture with PTR (Proven Track Record) of handling critical security infrastructure.

2. System should have end to end encryption AES256 bits.
3. System should be monitoring all cables connected and alarm raised in case any cable is cut or short or any controller is not functional or damaged.

4. System should be operational in 100% design mode even in case server fails or connection to server fails.

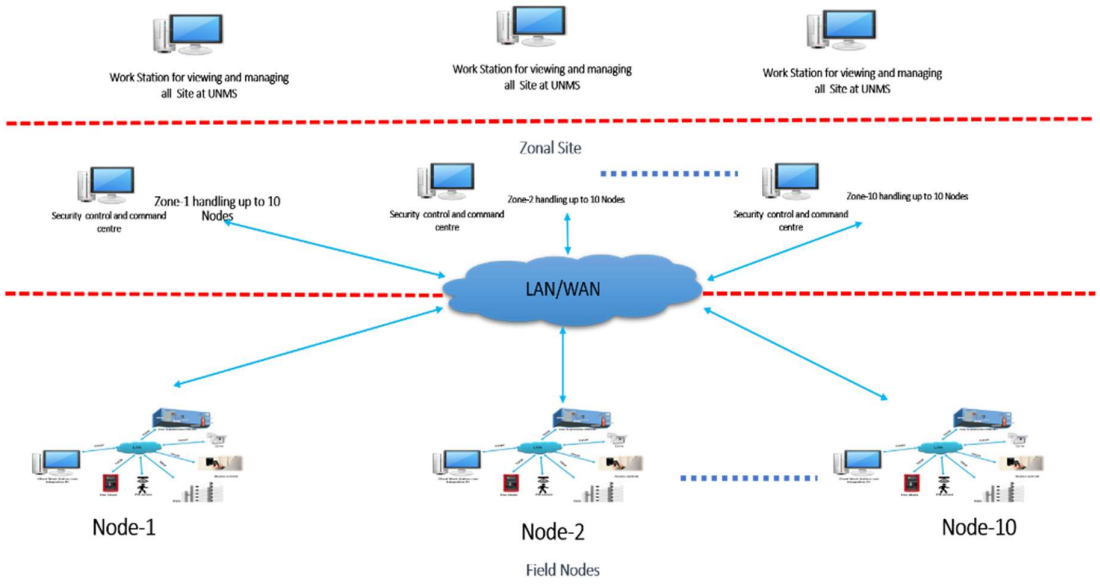
5. Controllers to be cyber secured from external cyber-attacks.

6. Certifications UL294B version 6 and level 1 or more for access control system, UL1076 for alarm management, ULCS319 for hardware and software. CE, FCC Class A, BIS, EN 50131.

7. 100% fail secure mode of complete system - Mimic panel to be operational in case server is nonfunctional or disconnected. MIMIC panel is IP rated stand-alone devise and controls all alarms, hooter, raise manual alarm. This unit should be able to be used by any non-computer literate person just by 10-15 minutes of training.

8. IP network of security system have to sink with network addressing of ASCON WAN.

ASCON network architecture layout of Integrated Security and safety system.



SAFETY CODES

1. Suitable scaffolds shall be provided for workmen for all work that cannot safely be done from the ground or from solid constructions except such short period work as can be done safely from ladders. When a ladder is used an extra mazdoor shall be engaged for holding the ladder and if ladder is used for carrying materials as well, suitable footholds and hand holds shall be provided on the ladder and the ladder shall be given an inclination not steeper than 14 (1/4 horizontal and 1 vertical).

2. Scaffolding or staging more than 3.25 meters above the ground or floor, swing or suspended from an overhead support, shall have a guard rail properly attached, bolted, braced and otherwise secured at least 1 meter high above the floor or platform of such scaffolding or staging and extending along the entire length of the outside and ends thereof with only such openings as may be necessary for the delivery of materials. Such scaffolding or staging shall be so fastened as to prevent it from swaying from the building or structure.

3. Working platform, gangways, and stairways shall be so constructed that they do not sag unduly or unequally, and if height of a platform or gangway or stairway is more than 3.25 meter above ground level or floor level, it shall be closely boarded, have adequate width and be suitably fenced as described in 2 above.

4. Every opening in floor of building or in a working platform shall be provided with suitable means to prevent fall of persons or materials by providing suitable fencing or railing with a minimum height of 1 meter.

5. Safe means of access shall be provided to all working platforms and other places. Every ladder shall be securely fixed. No portable single ladder shall be over 9 meters in length. Width between side rails in a run ladder shall in no case be less than 30 cm for ladders up to and including 3 meters in length. For longer ladders this shall be increased at 6mm. for each additional 30 cm of length. Uniform step spacing shall not exceed 30 cm. Adequate precautions shall be taken to prevent danger from electrical equipment. No materials on any of the sites shall be so stacked or placed as to cause danger or inconvenience to any person or the public. The sub-contractor shall provide all necessary fencing and lights to protect public from accidents and shall be bound to bear expenses of defense of every proceedings at law that may be brought by any person for injury sustained during the above precautions and to pay any damages and costs which may be awarded in any such suit, action or proceedings to any such person or which may with the consent of the sub-contractor be paid to compromise any claim by any such person.

6. EXCAVATION AND TRENCHING:

All trenches, 1.5 meters or more in depth, shall at all times be supplied with at least one ladder for each 20 meters in length or fraction ladder shall be extended from bottom of trench to at least 1 meter above surface of the ground, sides of a trench which is 1.5 meters or more in depth shall be stepped back to give suitable slope of security held by timber bracing, so as to avoid the danger of sides collapsing, excavated material shall not be placed with in 1.5 m of edge of trench or half depth of trench, whichever is more, cutting shall be done from top to bottom. Under no circumstances shall undermining or undercutting be done.

7. **DEMOLITION**: Before any demolition work is commenced and also during the process of the work.

a) All roads and open areas adjacent to the work site shall either be closed or suitably protected.

b) No electric cable or apparatus which is liable to be a source of danger over a cable or apparatus used by operator shall remain electrically charged.

c) No floor, roof, or other part of a building shall be over loaded with debris or materials as to render it unsafe.

8. All necessary personal safety equipment as considered adequate by the Engineer-in-charge shall be available for use of persons employed on the site and maintained in a condition suitable for immediate use, and the sub Contractor shall take adequate steps to ensure proper use of equipment by those concerned.

b) Workers employed on mixing asphalted materials, cement and lime mortars concrete shall be provided with protective footwear and protective goggles.

c) Those engaged in handling any material which is injurious to eyes shall be provided with protective goggles.

d) Those engaged in welding works shall be provided with welder's protective eye-shields.

e) Stone breakers shall be provided with protective goggles and protective clothing and seated at sufficiently safe intervals.

When worker are employed in sewers and manholes, which are in use the Contractor shall ensure that manhole covers are opened and manholes are ventilated it for an hour before workers are allowed to get in to them, Manholes so opened shall protected off with suitable railing and provided with warning signals or boards to prevent accident to public.

f) The Contractor shall not employ men below the age of 18 years and women on the work of painting with products containing lead in any form. Whenever men above age of 18 are employed on the work of lead painting the following precautions shall be taken.

1) No paint containing lead or lead products shall be used except in the form of paste or readymade paints.

2) Suitable face masks shall be supplied for use by workers when paint is applied in the form of spray or a surface having lead paint dry rubbed and scrapped.

3) Overalls shall be supplied by the Contractor to workmen and adequate facilities shall be provided to enable working painters to wash during and on cessation of work.

9. When work is done nearer any place where there is risk of drowning, all necessary equipment shall be provided and kept ready for use and all necessary steps taken for prompt rescue of any person in danger and adequate provision made for prompt first aid and treatment of all injuries likely to be sustained during the course of the work.

10. Use of hoisting machines and tackle including their attachments, anchorage and supports shallconfirm to the following.

a) i) There shall be good mechanical construction, sound material and adequate strength and free from patent defects and shall be kept in good working order and properly maintained.

ii) Every rope used in hoisting or lowering materials or as a means of suspension shall be of durable quality and adequate strength, and free from patent defects.

b) Every crane operator or hoisting appliance operator shall be properly qualified and no persons under age of 21 years shall be in charge of any hoisting machine including any scaffold to give signals to operator.

c) In case of every hoisting machine and of every chain ring hook, shackle swivel and pulley block used in hoisting or lowering or as means of suspension, safe working lead shall be ascertained by adequate means. Every hoisting machine and all gear referred to above shall be plainly marked with the safe working load. In case of a hoisting machine a variable safe working load, each safe working load and the conditions under which it is applicable shall be clearly indicated. No part of any machine or of any geared referred to above in the paragraph shall be loaded beyond safe working load except for the purpose of testing.

d) In case of a hoisting machine, safe working load should be verified by the Engineer-in charge assigned to such Contractor's machines the Contractor shall get checked working load of each machines to Engineer-in-charge whenever he brings it to site of work and get it verified by the Engineer-in-charge.

11. Motors gearing, transmission, electric wiring and other dangerous parts of hoisting appliance shall be provided with efficient safeguards, hoisting appliances shall be provided with such means as will reduce to the minimum risk of accidental descent of load. Adequate precautions shall be taken to reduce to the minimum risk of any part of a suspended load becoming accidentally displaced. When workers are employed on electrical installations which are already energized, insulation mars, working apparel such as gloves, sleeves and boots, as may be necessary, shall be provided; workers shall not wear any rings, watches and carry keys or other materials which are good conductors of electricity.

12. All scaffolds, ladders and other safety devices mentioned or described herein shall be maintained in a safe condition and no scaffold, ladder or equipment shall be altered or removed while it is in use. Adequate washing facilities shall be provided at or near places of work.

13. These safety provisions shall be brought to the notice of all concerned by display on a notice board at a prominent place at the workshop. Persons responsible for ensuring compliance

with the safety codes shall be named therein by the sub Contractor.

14. To ensure effective enforcement of the rules and regulations relating to safety precautions, arrangements made by the sub Contractor shall be open to inspection by the Engineer-in-charge or his representatives and the Inspecting Officers as defined in the Contract Labour Regulation.

15. Notwithstanding the above conditions 1 to 14, the Contractor is not exempted from the operation of any other Act or Rule in force.

-----END OF SECTION VII-----

SECTION –VIII

ARMY REQUIREMENT FOR NECESSARY COMPLIANCE
[FCH BUILDING SPECIFICATIONS]

1. Plinth Area

Ser No	Rooms	Plinth area in (Sqm)
		Cat-H
(a)	Utility room	10.00
(b)	MDF room	16.00
(c)	Equipment Room + Strong Room	25.00
(d)	NMS Room	15.00
(e)	Battery Room	20.00
(f)	Power Room	20.00
(g)	Admin staff Room	-
(h)	Supervisor Room	-
(j)	Work shops	-
(k)	Store room	-
(l)	Visitor Room with toilet	-
(m)	Control Room	-
(n)	Corridor 1.50 meter wide	-
(o)	Living Room with Toilet	20.00
(p)	Cook House with Dinning hall	24.00
(q)	Crew Room with 02 Toilets	-
(r)	Crew Room with 02 Toilets	-
(s)	Guard Room + Toilet	-
(t)	Sentry post at gate	-
(u)	MT Garage	-
(v)	Gen Set room	50.00
(w)	Vehicle Parking	-
	Total	**200.00**
(x)	Hard Standing	50.00
(y)	Underground fuel tank	3500 Ltrs Capacity
(z)	Approach road	L = 50 m or as per layout drawing, W = 3.75 m
(aa)	Boundary wall	L = 100 m, 2.25m ht and 05m ht barbed wire fencing including concertina coil or as per layout drawing
(ab)	Security Fencing	L = 100 m 2.5m ht barbed wire fencing or as per layout drawing
(ac)	Arboriculture	25% of total area of total land.

2. Building and Road Specifications: Overground Buildings

Ser No.	Description	Specification
A	Construction Area – as given in para 1	M-25 RCC Construction Footing (As per structural design based on soil investigation), up to Plinth beam. The plinth level of the building is +0.45mtr from NGL. the plinth may be increased up to +600 mm in exceptional cases where the need for a higher plinth is required.
B	RCC framed Construction	RCC as per IS 456:2000 and Earth quake Resistance the earth quake forces shall be calculated in the accordance with IS 1893-1984 and also ref the IS 4326: 1993 on earth quake design and construction of building.
C	Flooring	(i) Vitrified tiles/ ceramic tiles (size 600x600x10mm thick) over 20mm thick screed bed in CM 1:4 over a layer of PCC 1:2:4 over sub base of PCC 1:5:10 for all rooms. (ii) Dadoing in toilet and kitchen wash room up to 2.1mtr height will be provided of glazed tiles (size 300x450x10mm thick) over 10mm cement screed in CM 1:3. (iii) Matt finished vitrified tiles/ flooring in corridor. (iv) Joints treated with white cement mixed with matching pigment including rubbing and curing complete at all level.
D	Finishing	(i) Plaster to internal surfaces 12mm thick in CM 1:6 finished even & smooth without using extra cement shall be provided over all internal surface of wall. (ii) Plastering to ceiling surface 06mm thick shall be plastered in CM1:3 finished even and smooth. (iii) Plaster to external surface External surface shall be plastered 18 to 20mm thick in two layers first layer of plaster shall be 12mm thick in CM 1:4 & second layer shall be 6mm to 8mm thick in CM 1:4 with cement mortar for both the layers mixed with water proofing compound as per manufacturer instruction, unless shown otherwise in drawing. (iv) The rendering coat shall be scored out to provide key for the finishing coat. The rendering coat shall be kept wet at least for two days before applying finish coat. The finishing coat shall be finished fair and even. (v) All external plaster shall be carried out upto 150mm below ground level except where steps, ramp, plinth protection and shaft with PCC provided. (vi) Plastering work shall be done as per IS: 1661-1972.

E	Painting	(i) Internal walls/External walls of the buildings shall be applying wall care putty like Birla wall care, JK white cement wall putty. (ii) Internal walls of the buildings shall be painted with two coat of plastic emulsion paint /textured paint over a coat of primer. (iii) All steel doors, windows, ventilators etc shall be painted with two coat of synthetic enamel paint over a coat of zinc chrome primer of good quality like Asian, Berger paint etc. (iv) Wooden doors & Windows painting/ polishing on wooden work as per design requirement. (v) Exterior walls will be painted with two coat of Apex paint over a coat of primer. (vi) Exterior surface of ASCON building will be given camouflaging pattern with tricolor (Apex paint), as per approval of respective user formation.
F	Doors & Windows	(i) Door frame of 2nd class teak wood or equivalent frame size125mmx65mm. (ii) Panelled door shutters 25mm/30mm/35mm thick 2nd class teakwood or flush door including 125mm SS butt hinges with stainless steel screw complete all as specified. (iii) 30mm thick fly proof shutters for doors & windows including SS butt hinges with stainless steel screw. (iv) PVC/FRP door frames (size 50x47mm) & shutters including SS butt hinges with stainless steel screw in wet areas. (v) All types of door & windows size as per user requirement. (vi) Provision of partition by toughen glass & sliding doors in equipment room shall be consider.
G	Steel window & Doors	(i) The rolled steel sections for fabrication of steel doors and windows shall confirm to IS 7452-1982 and will be fabricated as per the approved drawing by uses. (ii) The corners or fixed and opening frame shall be welded to form a solid fused welded joint. (iii) All frames shall be square and flat. (iv) The process of welding adopted may be flash butt welding or any other suitable method which gives the desired requirements. (v) All the steel surface shall be thoroughly cleaned free of rust, dirt, oil etc. (vi) Steel window with glazed and fly proof shutter including MS grill, complete all as specified. (vii) Steel door required in Eqpt room & strong room and other places for security purpose. (viii) Glass pane at least 4mm thick for glazing.
H	Curtain rod	32mm dia powder coated drapery rod with two nos of bracket/ holders for each door/window, complete all as specified.
I	Mosquito Proofing	Double leaf wire gauge shutter will be providing for cook house or DSU and JCO block for door and window. Stainless steel mosquito net should be used in this work.
J	Fitting And	All articles of builders hardware shall comply with the relevant IS

	Fixtures On Doors And Window	specifications. In case the size of particular fittings is not shown in drawings, it shall be of the size as directed by the user. The vendor shall produce sample of each article of builder's hardware. Which he proposed to use and get it shall be approved by user. (i) All articles shall be made Anodized aluminum /stainless steel or equivalents. (ii) Size of sliding bolt unless otherwise specified shall be 300mm with 16mmdia shoot. (iii) Tower/bolts shall be shoot 12mm dia for size 150mm and above. (iv) Door handles size 150mm and above. (v) Door stopper (vi) Hydraulic door closer (vii) Butt hinges 125mm
K	Sanitary fittings	All sanitary fittings shall be provided as per requirements and shall be of approved quality and brand. (i) CP toilet paper holder, CP stop/angle cock, CP bib cock, CP recessed stop cock, SS towel rail, CP shower rose, CP health faucet, CP hot and cold mixer, SS grating, soap dish etc. All items original quality approval by user during test bed. (ii) Looking mirror (iii) EWC/IWC. (iv) Flushing cistern. (v) PVC seat for EWC. (vi) Stainless steel sink. (vii) Granite counter for sink.
L	Roof treatment	Roof treatment will be carried out as per local practice i.e., Brick bat coba/brick tiles, APP water proof treatment.
M	False ceiling	False ceiling in case of CGS roofing will be provided. frame and Gypsum board in the technical area and frame with wooden board in toilets to cover the services as per design requirement and user requirement.
N	Anti-termite treatment	(i) Anti-termite treatment will be carried out for all civil buildings. (ii) The work will be done by a specialized agency which is a member of Indian pest control Association holding valid license as per clause 13 of insecticides Act 1968. (iii) Person employed to do the anti-termite treatment shall be qualified as rule 10 of the rule framed under the Insecticide rule 1971. (iv) The work will be done by specialized agency with 05 years' warranty confirming to IS: 6313 (Part-III), 2001 and the chemical used for Anti termite treatment shall confirm to IS: 8944-1978.
O	Approach road	All around approach road (length as per site requirement) of PCC with 3.75mtr wide shall be provided as per specification given below: - (i) Soling - 100mm (ii) PCC 1:4:8 50 mm thickness (iii) PCC 1:2:4 50 mm thickness (iv) Earth compacting and leveling at sides
P	Hard standing	Hard standing for parking (Area 50 Sqm)

		(i) PCC 1:4:8 75mm thick (base) (ii) 50 mm thick paving/hard standing in PCC 1:2:4 40mm graded stone aggregate, laid in bays, surface finished even & smooth using extra cement & finished with brooming impression complete. (iii) Forming Construction (Dummy) Joint 65mm deepX10mm wide, filled with sealing compound Grade 'A' Complete.
Q	Water tank	Water tanks shall be provided in FCH Building of total 3000 ltrs capacity. (Inclusive of multiple tanks).
R	Security fencing	Security fencing (200mtrs length) of 2.5m ht with Angle Iron post size 65x65x6mm & galvanized barbed (wt. 9.38kg/100RM) wire 15 Nos of row in horizontal and 02 Nos cross in each bay (post to post) one steel gate will be provided all around the periphery of the site area for the sites located in cantonment area. The Fence length may vary depending upon site conditions.
S	Steel gate	Steel gate should be provide as per following specification. (i) Excavation and earth work in any type soil, surplus soil shall be removed. (ii) Lean concrete below RCC column shall be 1:4:8 using 40mm graded stone aggregate. (iii) RCC in column shall be M-25 reinforced as per design. (iv) All steel work shown on drawing. (v) All steel surfaces shall be given two coat of synthetic enamel paint over a coat of zinc chrome primer. (vi) All the faces of RCC column shall be provided with two coat of Apex Paint of approved tint. (vii) Shutter with locking arrangement, pintail hinges, wheel guide, hold fast etc
T	Ducting and cabling	(i) Ducting and cabling shall be done as per standards. Minimum size of duct will be 0.3mtr x 0.45 mtr (depth to cater all types of cables which shall be covered at top by 4mm MS chequered plates. (ii) Cables shall also be buried at min 0.60mm depth, wherever laid externally, with brick lining at cable top wearing tape, then cable trenches will be filled up with available soft earth up to ground level. Marking will also be done at ground level to indicate cable layouts. (iii) RCC pipes of minimum 150mm diameter will be provided underneath roads, wherever required to cross cables. Similarly, power cable will be taken to duct of the buildings thorough same type of RCC pipes depending upon types of buildings. Final layout of cabling will be submitted once building drawing are finalized. (iv) Ducting floor type for running equipment cable, with metal cover. (v) Overhead cable laying tray may be provided if required by ducting wall/ceiling.
U	Drainage	Wherever drainage is required to drain out the rain water, Brick masonry/ stone masonry in cement mortar 1:6 and plastered in CM 1:4 in drain shall be constructed along the road side and the water will be taken out through RCC Hume pipes for crossing the roads. PCC

		1:2:4 using 12.5mm graded stone aggregate in hunching in drain. PCC 1:3:6 using 40mm graded stone aggregate in foundation and mass concrete/filing, complete.
V	Sewerage	Appropriate arrangements shall be made for disposal of sewerage from toilets of the building by using SCI pipes, SW pipes/PVC, gully trap, nahani traps etc. of approved quality and make 75mm SCI pipes will be used to connect nahani trap to gully trap and 100 mm dia SW/PVC pipes will be used to connect Inspection chambers and Manholes. 100/150 mm dia SW/PVC pipes will be laid to appropriate slope over a bed concrete 1:4:8 and covered up to haunches with cement concrete to carry sewerage from toilet to septic tank and soakage pit (25 users), wherever sewerage system is not existing. Specification of MH & IC are as under: - (i) Foundation, PCC 1:4:8 (ii) Walls - Brick masonry in CM 1:4 (iii) PCC channel 1:3:6 fair finished with extra cement (iv) Coping PCC 1:2:4 (v) Cover RCC 1:2:4 (vi) Internal plaster 15mm thick in CM1:4 finished with extra cement. (vii) 75x75x6mm thick Manhole frame 50x6mm lugs 250mm long welded with frame.
W	Septic tank	(i) Size 2.73x1.56x2.5mtr depth (ii) BBM In CM 1:6 (iii) Internal plastering 1:4 (iv) External plastering 1:4 (v) RCC roof slab (M-25) (vi) CI Cover(610x450) (vii) CI vent pipe (viii) CI cowl (ix) SW glazed 'T'
X	Soakage well	(i) Size Dia =2.20Mtr Depth =2.5Mtr (ii) Brick masonry in CM 1:6 (iii) 45x45cm dry laid honey combing band with brick. (iv) SW drain pipes of 100mm dia. (v) RCC roof slab Min thickness 100mm
Y	Arboriculture	(i) The landscaping will be done once activity of construction is completed by developing greenery, grass, shrubs, around the buildings. Trees will also be planted along the inner periphery of the site. Site location at prescribed/ required intervals to protect soil erosion and absorb pollutants. Best quality carpet grass and covering with earth organic manure farm yard manure and neem cake etc. (ii) The trees/plants will be chosen as per the site conditions, weather conditions of the site locations. Approval of the same will be obtained from user before planting hedges, shrubs trees etc,

		relating to create spares enclosures, framing views, visual relief etc. (iii) Effort will be made to protect existing trees, shrubs and other plants by preventing disturbances and damages during construction works. (iv) Arboriculture area would be approx. 25% of total land.
Z	Rain water harvesting	(i) Provision will be made for rain water harvesting as per Govt. regulation. (ii) Rain water harvesting will be done by the method of constructing storm water drains all around the building to collect surface rain water and roof top water as well. Storm water drain will be of minimum 5mtr width and varying depth depending upon site locations. The diameter of recharge pit shall be 0.3M to 0.5M and depth up to 1M depending upon the annual rain fall and soil strata for the site location to facilitate percolation of excess rain water into ground, which will finally be guided to underground water storage tank of min size 1mx2mx2m (depth). (iii) Minimum no of recharge pits- 01 Nos per sites. IS: 17597 (2008) will be guidelines for construction of rain water harvesting system. (iv) In the case of sloped roof, the water flowing through the gutter will be guided to one or more exit down take pipe of PVC. (v) In case of RCC flat roof, the roof top will be given adequate slope to the outlets from where the down pipes will be interlinked.
AA	Furniture	Living room be provided with steel Almira (Godrej) and table of good quality.
AB	C.G.S. Sheets	As per requirement/ climatic conditions, roofing can be of C.G.S. Sheets (0.63 mm thick with zinc coating). Purlins of the specified material or M.S. rolled sections of requisite size shall be fixed over the principal rafters.

3. **Earthing and lighting protection system.** The System shall be as per IS:2309, IS: 3043, MIL STD 188/124B Standards.

(a) **Building Earthing.** Earthing complete with copper plate of size 600mm X 600 mmX3.00mm thick buried directly in ground (earth plate not less than 2.25m deep below normal ground level) with top edge of the plate not less than 1.5 m below normal ground level connected to and including Copper earth lead of copper strip 32X6mm size by means of copper bolts, nuts, check nuts and washers test points made of Copper strip40X8mm, 10 cm long, PCC 1:2:4 type B-1 in pit, angle iron 25x25x3mm frame work with pre cast RCC 1:2:4 type B-1 cover reinforced with 8mm dia TMT bars @ 150mm C/C both ways and 12mm dia MS fabricated handle, medium grade GI watering pipe 20mm bore with funnel, wire mess and light grade GI protection pipe 40mm bore up to 5m length for drawing in earth lead, salt, charcoal etc. including excavation and earth work in any type of soil, removal of surplus soil to a distance not exceeding 50m complete all and connected complete all as specified including testing on completion.

(b) **Equipment Earthing**: Supply, Installation, Testing and commissioning of maintenance free earthing system. The earthing set shall comprise of: -

(i) 1 No of copper bonded rod of diameter 17.2 mm and length 10 feet UL approved with 25 KA current discharge test from CPRI. The material shall be low carbon high tensile copper bonded rods with 99.9% of copper on the surface. The UL approval certificate shall be provided.

(ii) 30 kg of earth enhance compound as per IEC 62561-7. There should not be requirement of any salt and charcoal. The RoHS certificate shall be provided from any NABL accredited labs for earth enhancement material.

(iii) 1 No of copper busbar of size 25x6x150mm should be exothermic welded with copper bounded rod 17.2 mm dia x 3 mtr length.

(iv) 1 No of PVC pit cover for covering of earthing.

(v) Exothermic connection of 25x6x150mm busbar to 35 Sqmm copper cable.

(vi) 35 Sqmm PVC insulated copper cable for interconnection of earthing and Equipment.

Note: Earthing Protection. The Bidders will undertake all civil works related with installation, provision of good earth and lightning protection system at the FC Hub. Chemical Earthing Systems such as the Bonded/Faraday's cage earthing system will be catered for. The earthing should be within permissible **value of 1 ohm.**

Lightning Protectors. Advanced state-of-the-art active lightning systems shall be used. External lightning protection system and internal lightning protection system will be provided with adequate surge protection devices.

4. **Lightening Protection System**: It Shall be designed as per IS standards including Lighting Arrestors, conductors. Separate Earthing pits will be provided for lightening protection system as per IS Code of practice relevant and approved by the user as below: -

Ser No	Building	Qty
(a)	Main building	02 Sets
(b)	DG building	02 Sets
(d)	Cook House	01 Set

5. **Electrical Fittings:** All Electrical fittings will be provided of ISI approved and reputed brand. No of fittings, location of switch board, rating etc. shall be submitted through drawings for approval before execution of the work. Make Legrand/ ABB/ Havells / Crompton reaves / Schneider.

6. **Lighting arrangement in buildings:** The minimum Qty of light points, power sockets is as given below: -

S No	Building	15 Amp Socket	5 Amp Socket	Lighting point	Ceiling Fan	Exhaust Fan
(a)	Utility Room	04	04	02	01	-
(b)	MDF Room	04	04	02	01	-
(c)	Equipment Room/Strong Room	06	06	04	01	01
(d)	NMS Room	04	04	02	-	-
(e)	Battery Room	04	04	03	01	02 *
(f)	Power Room	04	04	02	01	-
(o)	Living room with toilet	02	02	02	01	01
(p)	Cook House with dining hall	02	02	02	01	01*
(u)	Gen Set room	04	04	06	02	04
Total		**34**	**34**	**25**	**09**	**09**

Note: 1. Additional power points will be provided as per requirement.
2. Power point for extending various equipment will be as per user.

3. *Exhaust fan heavy duty 450 mm sweep and balance of exhaust fan heavy duty 300/305 mm sweep, Iron body, 900 RPM with & including all accessories to be provided. Make: Bajaj/Usha/Khaitan.

7. <u>Security Lights</u>:

(a) <u>Qty</u>

Sr. No	Building	Qty	Remarks
(i)	Main buildings	02Nos	With street pole
(ii)	DG Room	02 Nos	
(iii)	Kitchen	01 Nos	
(iv)	Security lights on fencing	04 Nos	With street pole

(b) <u>Description</u>:

(i) **<u>LED Light</u>** : 80 watt LED street light/road light luminaire type efficiency energy saving dia cast aluminum roadway luminaire with high power complete with connections fittings and including connecting with twin core 2.5 sqmm weatherproof aluminum conductor cable complete set, street light brackets made out of GI tubing, light grade 40 mm bore 1200mm long bend to shape at 120 degree, fixed on pole by providing

MS clamp made up of flat iron 50x6mm including bolts nuts and washers of suitable size complete. Make Havells/Legrand/Philips.

(ii) **Street Pole:** Erection steel tubular swaged pole type 410 SP-31 (9-meter-long) complete base plate, taper plug, bolts, nuts and screws etc. duly painted internally and externally with metal oxide anti-corrosive paint before erection and painting with two coats aluminum paint after erection complete all as confirming to IS 2713 (part-1 to 111) and complete. Make: Subham/ Bombay tubing/ Kalinga/ Indian Eletric.

8. **Solar Lighting System:** PIR motion sensor for lighting (Range 3m) and connecting panel with complete wiring as per exiting wiring of lighting will be made to cater for street lighting, emergency lighting etc.: -

(a) Capacity with battery bank -01 KW

(b) No of street lights -02 upto 60 watt (LED)

(c) No of Emergency lights inside Building -04 upto 20 watt (LED)

(d) Solar standalone street light system includes LED street DC luminaire, SPV panel lead acid battery, Power coated MS pole including foundation and fixing complete all as specified and directed. Make: Havells/Philips.

9. **Solar Heating:** Provision for the solar water heating with a capacity of 200 Ltrs will be made to cater running hot water requirement.

(a) Supply & installation, testing and commissioning of solar hot water system (Flute plate collector) based on direct transfer of heat of capacity 200 LPD. Including all accessories are non-return cast copper alloy screwed down high pressure with crutch or butterfly handle screwed both and for iron pipes or union of as require size 15mm/20mm dia and including all accessories etc.

(b) 15mm/20mm dia angle cock CP cast copper alloy screwed down high pressure with capston head screwed both ends for iron pipe or union end fixed.

(c) Cold water pipe GI medium grade with all for proper fitting 20mm/15mm to wall

(d) Hot water pipe insulated with glass wool and aluminiumgladi as per dia of GI pipe.

(e) Central hall basin mixture 15mm/20mmchromium plate with crutch butterfly handle screwed for iron pipe or for brass ferrule.

(f) Wall mixture 15mm/20mm chromium plated with crutch butterfly handle screwed for pipe or iron pipe or brass ferrule.

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(g) Bib tap 15mm/20mm chromium plated with crutch butterfly handle screw down screwed for iron pipe or for brass ferrule.

10. Fire Detection & Suppression System:

(a) Supplying, Installing, Testing and commissioning of addressable main control panel comprising of visual and audible fire alarms and signals, indicators, High power 130 db, Police siren sound suitable for indoor and outdoor will be done. Panel shall be IS approved. Nos of smoke detectors, Heat detectors and multi-criteria detector detectors for FCH type of buildings shall be provided as below:
-

S No	Building Type -FCH	Qty
(i)	Smoke Detectors	10 or A/R
(ii)	Heat Detectors	01 or A/R
(iii)	Multi Criteria Detectors	05 or A/R

A/R: As per requirement*

(b) Copper cable, PVC conduits, Manual call points (breaking glass type) etc. shall be provided at least one per corridor, and in addition one at Generator room, one at eqpt room and one at FOL store.

11. **Gas Suppression System:** Fm 200 Gas based Fire suppression system shall be for equipment room of Technical building as per requirement. Water based Fire extinguishers shall be provided in DG Block, kitchen, etc. as per requirement Qty of these will be submitted at the time of approval of drawing.

12. **Air Conditioning**: All Node building will be provided with 4 Nos of 2 Ton capacity air conditioners.

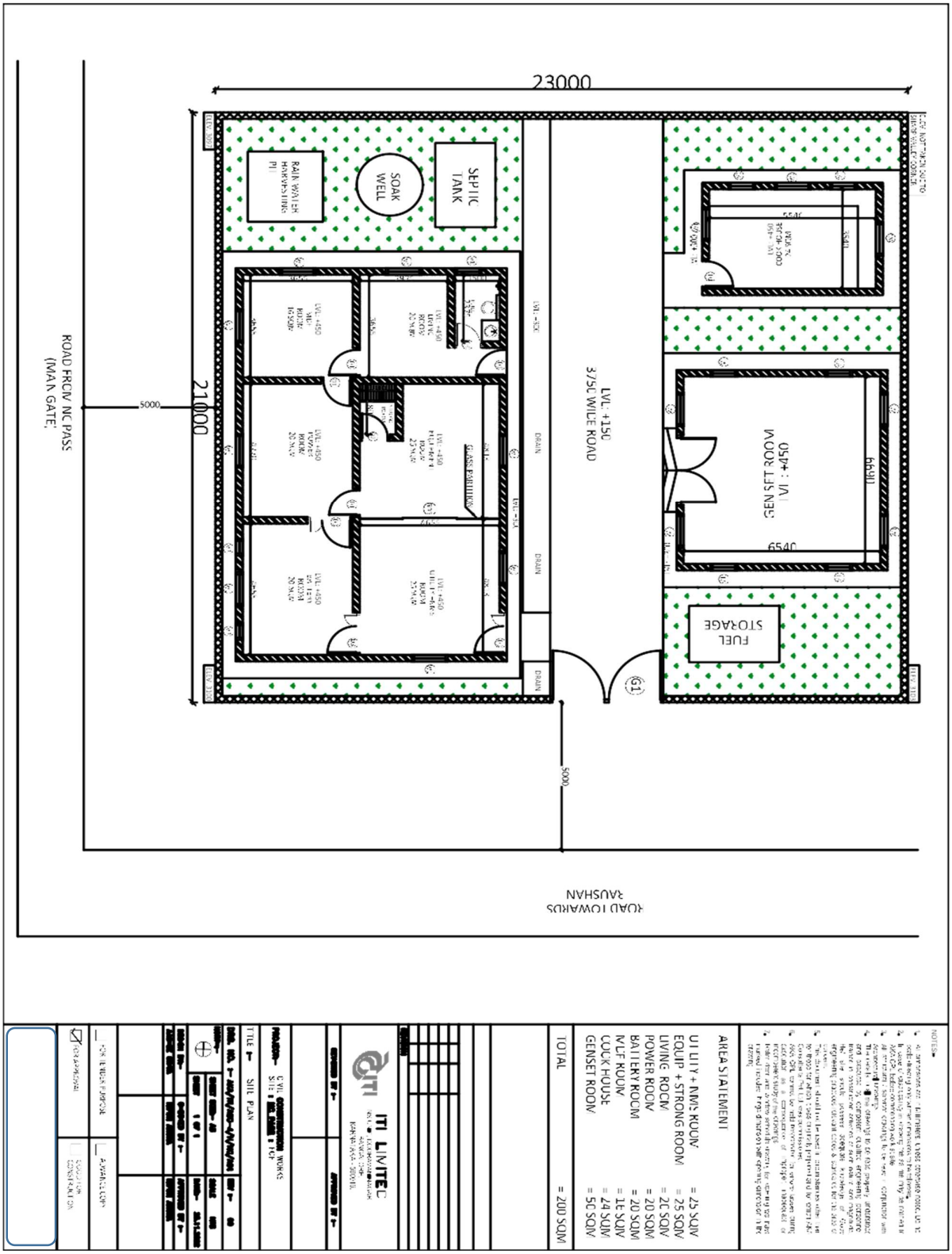
(a) Supply & Installation high wall split units indoor/outdoor complete with cordless remote control unit and within build air ionizer and plasma filter for better indoor air quality with minimum 5-star rating and EER 3.2 of capacity 2 TR with complete set.

(b) Supply and fixing voltage stabilizer for automatic operation, single phase, naturally air cooled indoor type and designed for input variation between 110V to 250V with output voltage stabilizer at 230 with accuracy of $\pm$ 2.5 % and capacity of 5 KVA.

(c) Supply and fixing bracket and clamps heady duty for outdoor unit of split type AC complete all as specified and directed.

13. Heating arrangements: Air conditioning units will be having heating facilities, which will be supplied to wherever temperature is below the normal temperature.

TYPICAL LAYOUT OF FCH NODE



----- END OF SECTION –VIII ----

SECTION –IX

MATERIALS TO BE USED IN CIVIL CONSTRUCTION

Sr. No.	Material	Make and Model
A	**Civil Works**	
1	Cement	ACC, Ultratech, JK Cement, Ambuja Cement, Jaypee or Better
2	Coarse Aggregate	Locally available approved by WMG
3	RCC (Nominal Mix)	As per IS Code
4	Reinforcement Steel (TMT FE-500D / 500)	SAIL, TATA Steel, RINL, JSW, Essar, Jindal or better
5	Bricks	Locally available
6	Floor Tile	Kajaria, Somany, Nitco, Varmora, H&R Johnson, Qutone or better
7	Glazed Tile	Kajaria, Somany, Nitco, Varmora, H&R Johnson, Qutone or better
8	Ready Mix Concrete (RMC)	Lafarge, Ultra Tech, ACC, Jaypee or better
B	**Joinery**	
9	Glazed, Wire gauze , Paneled door shutter and Frame	2nd class teakwood or better
10	UPVC Doors, Windows and Ventilators	Fenesta, Vico, Enox, Ozone. Kitch, Yale, Godrej or better
11	Steel Windows, Ventilators, Door Frames, Shutters	Godrej & Boyce Steel, Jindal, TATA or better
12	Factory Made Flush Doors (ISI Marked)	Century, Kitply, Euro, Duro, '3reenply, Archiolv, Anchor, JAYNA or better
13	Aluminium section of Shutters / Frames for door **/** window / ventilator	Hindalco, Banco, Sterlite, Jindal, TATA or better
14	Steel Rolling Shutters / Grills & Collapsible Gates	Sarvottam, Suryoday, Gandhi, Sagar, shall be fabricated with TATA, Jindal, SAIL, RINL or better
15	Factory made PVC / FRP Frame and Shutters	Sintex, Rajshree, Dura Plast, Accucell or better
C		
16	Hydraulic Door Closer	Geze, Dyana, Godrej, Ozone, Dorma, Hettich, Hardwyn, Everite or better
17	Stainless Steel Plate Rack	Bluestar Sanitary Industries Pvt Ltd (Silver Shine), Prayag Polymer Pvt Ltd, Diamond or better.
18	PTMT Bathroom and Hardware Fitting	R.S. Industries (POLYTUF), ASTRAL or better
19	Aluminum Tower Bolt / Aldrops / Door Handle / Butt Hinges	Dorma, Godrej, Kitch, Ozone.Yale, Hindalco, Jindal, Everite, Hardima or better
20	Towel Rails	Jaquar, Crown, Jindal, Kitch or better.

21	Mortice Locks	Godrej, Yale, Dorma, Kitch or better
22	Drapery Rod	Vista Levolor, Mac Decor, Sophia or better
23	Venetian Blinds	Vista Levolor, Aerolux, Mac or better
24	Roller Blinds motorised system	Farrari, Toso, Somphy Marvel, Hunter Douqlas or better

D	**Roof Covering**	
25	Pre-Painted Galvalume Plain/ Galvanized Corrugated Steel Sheets As per IS Code	TATA, Sail, Jindal or better
26	Pre-moulded non bituminous joint filler board	Elcon, Duron Board HD-100, Supreme Duraboard or better
27	Pre-moulded bituminous joint filler board	STP Ltd, Tikitar Industries Ltd, Sikka or better
28	Water Proofing Compound	Fosroc, Pidilite, Dr Fix1t or better
29	APP Membrane	STP Ltd, Texsa India Ltd, IWL Ltd, Tiki Tech or better
E	**Ceiling and linings**	
30	Plywood	Century, Green, Duro, Kitply or better
31	Particle Board Gypsum	NCL, Everest, Armstrong, Aerolite or better
32	Particle Board Cement Bonded	NCL Industries Ltd (BISON PANEL), Everst (Eternite) Shera, Gree, ply/ Century ply or better
33	Adhesives	Pidilite, Fevicol, Vamicol or better
34	Pre-Laminated Particle board	Novapan, Bhutan (Exterior Grade Only), Kitply, Greenply (Green Panelmax),Century Plywood or better
F	**Floor Finishes & Pavings**	
35	Glazed Ceramic Wall / Flooring tiles	Kajaria, Somany, Nitco, Vermora or better
36	Non-skid Ceramic tiles	Kaiaria, Somany, Nitco, Vermora or better
37	Vitrified Tiles	Kajaria, Somany, Nitco, Vermora or better
38	Wooden Flooring	Armstrong, Pergo, Mikasa, Ecosoft, Quick Step or better
39	Granite	As approved by Works Monitoring Group (WMG)
40	Cement Concrete Interlocking Paver Blocks / Tiles	Ultra-Tiles, NITCO, Topaz Tiles, Supreme Tiles, Vyara, Super, Sona tiles or as approved by WMG
G	**White washing, Distempering & Coloring**	
41	Distemper oil emulsion (OBD)	Nerolac, Asian Paints, Berger Paints, ICI, Dulux or better
42	Plastic Emulsion Paint	Asian Paints, Berger Faints, Nerolac, Pidilite waterproof or better
43	Cement Base Paint	Duracem, Berger, Asian, Accrocem or better
44	Cement Putty	Birla Cement, JK White, Asian, Beqer or better
45	Synthetic Enamel Paint	Asian Paints, Nerolac Paints, Berge paints, Dulux, ICI or better
H	**Glazing**	

46	Sheet Glass Plain/ Frosted, Rough Cast wired Glass	Saint Gobain, Modi Guard, Asahi or better
47	Glass Film	3M Dinoc Film, Avery, Garvey or better
48	Mirror/ Float Glass	Saint Gobain, Modi Guard, Asahi or better
49	Glass Partition	Sonic, Otic, Gebb, Benne, Kubik or better
J	**Water supply, Plumbing, drains & Sanitary appliance**	
50	CI Pipe & Fittings	Jindal, TATA (Metaliks/ Kubota), NECO, SKF, RPMF, Electro steel Equivalent or better
51	GI Pipes & Fittings	Zoloto, DRP-M, R-Brand, TATA, Jindal, Surya, New, surya prakash, Unik, KS, R brand or better
52	DI Pipes & Fittings	Jindal ,TATA Metaliks or better
53	MS Pipes & Fittings	TATA, Jindal, Swastik SAIL, Suryaprakash or better
54	HDPE Pipes & Fittings	Finolex, Supreme, VP-, Dutron, Oriplast, Vectus, Vertex, APL Apollo or better
55	CPVC Pipes & Fittings	Finolex, Dutron, Astral, Supreme, Oriplast, APL Apollo, AKG or better
56	PVC - Soil waste, rainwater (SWR) & Drainage Pipes	Supreme, Finolex, Astron Plastic, Ashirvad Pipes or better
57	PPR Pipes & Fittings	Finolex, Supreme, Dutron or better
58	PVC Pipes & Fittings	Finolex, Dutron, Astral, Supreme or better
59	UPVC Pipes & Fittings	Finolex, Dutron, Astral, Supreme or better
60	UPVC Pipes & Fittings for SWR	Finolex, Dutron, Astral, Supreme or better
61	CI - Soil waste, rainwater, SWR) & Drainage pipes	Jindal, TATA (Metaliks/ Kubota), NECO, EQ or better
62	RCC pipes, drain pipes	Indian Hume Pipes, Everest, Himalaya, Pranali, Pragati concrete, Lakshmi, Jain & Co or better
63	Butterfly valves/ DISC Valves	AUDCO, Zoloto, R.B., L&T, Kirloskar or better
64	Gate Valves	AUDCO, Zoloto, R.B., L&T, Kirloskar or better
65	PVC water storage tanks	Sintex, Rotex, Polywell, Polycon or better
66	CP Bib Cock, Stop cock, pillar cock and accessories	Jaquar, Vitra, Hindware, Kohler or better
67	PVC Stop Cock and Bib Cock/ float valves and accessories	SEIKO, Jaquar, Zoloto or better
68	Gun Metal Globe/ Gate Valves / Angle Valves	Zoloto, Kirloskar, L&T (AUDCO), Kartar, Castle, L&K or better
69	Shower Rose	Jaquar, Vitra, Hi dware, Kohler or better
70	Water Closet - Vitreous China	Cera, Jaquar, Hmdware, Kohler or better
71	Flushing Cistern - PVC Low level incl. Flush valves and Fittings for WC and Urinals	Cera, Jaquar, Hindware, Kohler, Somany, Kerovit or better

72	Plastic Seat Covers for EWC	Cera, Jaquar, Hindware, Kohler or better
73	Urinals Vitreous China	Cera, Jaquar, Hindware, Kohler or better
74	Wash Basin - Vitreous China	Cera, Jaquar, Hindware, Kohler or better
75	Sink Steel	Jayna, Nirali, Neelkanr, Carysil or better
76	Centrifugal / Monoblock pump	Kirloskar, Amrut, Crompton Greaves, KSB or better
K	**Electrical Works**	
77	Pole - Steel Tubular	Shubham, Bombay, Tubes, Kalinga Tubes, Indian Electric or better
78	Change Over Switch / Starter/ Contactor DOL / Star Delta / Synchronous/Single Phase preventer	HH Elecon, L&T, ABB HPL, Havells or better
79	Main Switch Iron Clad	Havells, Siemens, L&T, Crompton, lndo Asian, C&S, KEW, Super or better
80	Street Light Fitting (MH/SV/LED)	Legrand, Philips, Havells, Crompton, Halonix, Polycab or better
81	Solar Street Light Fitting	Philips, Havells, TATA, Crompton or better
82	High Mast Light	Legrand, Philips, Havells, Crompton, Halonix, Polycab or better
83	Light fitting LED	Legrand, Havells, Phillips, Wipro, Xal, Endo, Osram, Panasonic, Jaquar or better
84	PVC wire & cables 650 / 1100 V	Havells, Polycab, Finolex, RR Kabel or better
85	Electronic/ Photoelectric Switch for Auto Op of street lights	L&T, Siemens, Legrand or better
86	DBs / MCB (Miniature Circuit Breakers & MCCB (Moulded case circuit breakers)	L&T Englaze, Legrand, ABB, Seimens, Hager, Schneider, C&S, Mitsubishi or better
87	Electric Accessories, Piano switches, Ceiling rose, call bells, buzzers, lamp Holders/ Socket outlet etc	Crabtree, Legrand-myrius-Blenze, ABB, Seimens, L&T Englaze or better
88	Modular Switches / Sockets	Crabtree, Legrand-myrius-Blenze, ABB, Seimens, L&T Enalaze or better
89	Electronic Energy Meters, Tamper proof	L&T, Havells, Neptune or better
90	Ceiling Fan	Usha, Crompton, Khaitan, Orient, Havells, Finolex or better
91	Exhaust Fan / Air circulators	Crompton, Khaitan, Usha, Bajaj, Almonard
92	Fan Regulator	Crabtree, Legrand-myrius-Blenze, ABB, Seimens, L&T Enqlaze or better
93	Geyser/ Storage Water Heater	Crompton Greaves, Racold, Havells, Venus, Bajaj, Photon, Jaauar ·x better
94	PVC Insulated Copper / Aluminium Cable 1100 V of all types	Finolex, Havells, Polycab, Torrent or better

95	PVC conduits (Rigid or flexible) / FRLS rigid PVC conduits / fittings	Nihir, Polycab, BEC, Precision, AKG, BEC Prince, Polypack or better
96	PVC Tape	Steel Grip, Anchor or better
97	Casing capping & Accessories	Precision, Supreme, Polycab, Plaza or better
98	Cable Junction Boxes, Circuit breaker Boxes	Hensel, Adhunik Switch Gear or better
L	**Heating & Ventilation**	
99	Window type Air Conditioner	Carrier, Blue Star, Hitachi, Daikin or better
100	Split type Air Conditioner	Carrier, Blue Star, Hitachi, Daikin or better
M	**Solar Water System**	
101	Solar Water System	TATA-BP Solar, RACOLD, Soaheart or better
N	**Furniture**	
102	Furniture (Steel / Wooden)	Godrej Interio, Wipro, EPL, Monarch, Featherlite, Ethos, Haworth, HNI ERGO or better
O	**False Ceiling**	
103	False Ceiling	Armstrong, Aerolite, Saint Gobain or better

Note: Make & Model of any material will be on the sole discretion of ITI Limited and same will decided with prior approval of army. No Material will be used without approval of ITI. As per site condition/location, ITI reserve the right to change the make & model specified in above table, no claim will be entertained on account of any make & model change.

----- END OF SECTION –IX ----

SECTION –IX

[PART-II]

PRICE BID:

Ref: ITI/NSU/CIVIL-DEL/2023/0106/01			Date 15-03-2023
ITI LIMITED NETWORK SYSTEM UNIT DOORVANINAGAR, BANGALORE 560 016.			
SUMMARY SHEET:- GROUP 1, No. of Buildings are 5, Type-H.			
BIDDER'S NAME			
Sl.No.	**DESCRIPTION**	**AMOUNT (Rs.)**	**AMOUNT IN WORDS (Rs.)**
I	**SECTION A**		
	CIVIL WORKS	0.00	
II	**SECTION B**		
	ELECTRICAL WORKS	0.00	
III	**SECTION C**		
	PLUMBING WORKS	0.00	
IV	**SECTION D**		
	IT AND FIRE FIGHTING WORKS	0.00	
	GRAND TOTAL FOR THE PROJECT	**0.00**	

Ref: ITI/NSU/CIVIL-DEL/2023/0106/01 **Date 15-03-2023**

ITI LIMITED
NETWORK SYSTEM UNIT
DOORVANINAGAR, BANGALORE 560 016.

BILL OF QUANTITY : CIVIL WORKS :- GROUP 1 (Uttarakhand), No. of Buildings are 5, Type-H.

BIDDER'S NAME					
S.No	**DESCRIPTION**	**UNIT**	**QTY**	**RATE**	**AMOUNT**
1	**SECTION-1: EARTHWORK**				
1.1	Earth work in excavation by mechanical means (Hydraulic excavator)/ manual means over areas (exceeding 30 cm in depth, 1.5 m in width as well as 10 sqm on plan) including getting out and disposal of excavated earth lead upto 50 m and lift upto 1.5 m, as directed by Engineer-in- charge.				
	All kinds of soil.:	Cum	94.98		0.00
1.2	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 kinds of soil.:	cum	189.96		0.00
1.3	Excavation work by mechanical means (Hydraulic excavator)/ manual means in foundation trenches or drains (not exceeding 1.5m 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 soils as directed, within a lead of 50 m.				
	Ordinary rock	cum	949.82		0.00
1.4	Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift upto 1.5 m.	cum	2753.97		0.00
1.5	Extra for every additional lift of 1.5 m or part thereof in excavation / banking excavated or stacked materials. **: For Excavation beyond 1.5m depth**				
	All kinds of soil	cum	176.00		0.00
1.6	Supplying and filling in plinth with sand under floors, including watering, ramming, consolidating and dressing complete.	cum	124.37		0.00
	NOTE: Deduction shall be made of columns, brick walls etc. for calculation of quantity of sand filling for payment				
1.7	Surface dressing of the ground including removing vegetation and inequalities not exceeding 15 cm deep and disposal of rubbish, lead up to 50 m and lift up to 1.5 m.				
	All kinds of soil	sqm	3750.00		0.00
1.8	Supplying chemical emulsion in sealed containers including delivery as specified.				
	Chlorpyriphos/ Lindane emulsifiable concentrate of 20%	Litre	221.17		0.00

1.9	Diluting and injecting chemical emulsion for POST-CONSTRUCTIONAL anti-termite treatment (excluding the cost of chemical emulsion):				
	Along external wall where the apron is not provided using chemical emulsion @ 7.5 litres / sqm of the vertical surface of the substructure to a depth of 300mm including excavation channel along the wall & rodding etc. complete:				
	With Chlorpyriphos/ Lindane E.C. 20% with 1% concentration	Metre	337.50		0.00
1.10	Along the external wall below concrete or masonry apron using chemical emulsion @ 2.25 litres per linear metre including drilling and plugging holes etc.:				
	With Chlorpyriphos/ Lindane E.C. 20% with 1% concentration	Metre	675.00		0.00
1.11	Treatment of soil under existing floors using chemical emulsion @ one litre per hole, 300 mm apart including drilling 12 mm diameter holes and plugging with cement mortar 1 :2 (1 cement : 2 Coarse sand) to match the existing floor:				
	With Chlorpyriphos/Lindane E.C. 20% with 1% concentration	Sqm	588.00		0.00
1.12	Treatment of existing masonry using chemical emulsion @ one litre per hole at 300 mm interval including drilling holes at 45 degree and plugging them with cement mortar 1:2 (1 cement : 2 coarse sand) to the full depth of the hole :				
	With Chlorpyriphos/Lindane E.C. 20% with 1% concentration	Metre	27.00		0.00
1.13	Treatment at points of contact of wood work by chemical emulsion Chlorpyriphos/ Lindane (in oil or kerosene based solution) @ 0.5 litres per hole by drilling 6 mm dia holes at downward angle of 45 degree at 150 mm centre to centre and sealing the same	Sqm	50.00		0.00
	Total for Earthwork				**0.00**
2	**SECTION-2: CONCRETE WORK**				
2.1	Providing and laying in position cement concrete of specified grade excluding the cost of centering and shttering - All work up to plinth level:				
	1:2:4 (1 cement : 2 coarse sand (zone-III) derived from natural sources : 4 graded stone aggregate 20 mm nominal size derived from natural sources)	cum	140.00		0.00
2.2	1:4:8 (1 Cement : 4 coarse sand : 8 graded stone aggregate 20 mm nominal size)	cum	250.00		0.00
2.3	Providing and laying damp-proof course 50mm thick with cement concrete 1:2:4 (1 cement : 2 coarse sand(zone-III) : 4 graded stone aggregate 20mm nominal size).	sqm	129.23		0.00
2.4	Making plinth protection 50mm thick of cement concrete 1:3:6 (1 cement : 3 coarse sand (zone - III) : 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 necessary excavation, levelling & dressing & finishing the top smooth.	Sqm	89.70		0.00
	Total for Concrete Work				**0.00**

3	**SECTION-3: REINFORCED CEMENT CONCRETE**				
3.1	Providing and laying in position specified grade of reinforced cement concrete, excluding the cost of centering, shuttering, finishing and reinforcement - All work up to plinth level:				
	M 25 (1 cement : 1 coarse sand (zone-III) : 2 graded stone aggregate 20 mm nominal size)	cum	236.50		0.00
3.2	Reinforced cement concrete work in walls (any thickness), including attached pilasters, buttresses, plinth and string courses, fillets, columns, pillars, piers, abutments, posts and struts etc. above plinth level up to floor five level, excluding cost of centering, shuttering, finishing and reinforcement:				
	M 25 (1 cement:1 coarse sand (zone-III): 2 graded stone aggregate 20 mm nominal size)	cum	42.77		0.00
3.3	Reinforced cement concrete work in beams, suspended floors, roofs having slope up to 15° landings, balconies, shelves, chajjas, lintels, bands, plain window sills, staircases and spiral stair cases above plinth level up to floor five level, excluding the cost of centering, shuttering, finishing and reinforcement with M 25 (1 cement: 1 coarse sand (zone-III):2 graded stone aggregate 20 mm nominal size)	cum	30.00		0.00
	Centering & shuttering including strutting, propping etc. and removal of form work for:				
3.4	Foundations, footings, bases of columns etc. for mass concrete.	sqm	549.56		0.00
3.5	Suspended floors, roofs, landings, balconies and access platform	sqm	50.00		0.00
3.6	Lintels, beams, plinth beams, girders, bressumers and cantilevers.	sqm	1298.37		0.00
3.7	Columns, Pillars, Piers, Abutments, Posts and Struts	sqm	486.00		0.00
3.8	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 of grade Fe-500D or more.	kg	30000.00		0.00
	Total for RCC Work				**0.00**
4	**SECTION-4: BRICK WORK**				
4.1	Brick work with common burnt clay F.P.S. (non modular) bricks of class designation 7.5 in foundation and plinth in:				
	Cement mortar 1:6 (1 cement : 6 coarse sand)	cum	159.67		0.00
4.2	**Brick work** with common burnt clay F.P.S. (non modular) bricks of class designation 7.5 in superstructure above plinth level up to floor V level in all shapes and sizes in :				
	Cement mortar 1:6 (1 cement : 6 coarse sand)	cum.	374.79		0.00
	HALF BRICK WORK				
4.3	Half brick masonry with common burnt clay F.P.S. (non modular) bricks of class designation 7.5 in superstructure above plinth level up to floor V level.				
	Cement mortar 1:4 (1 cement :4 coarse sand)	sqm	355.95		0.00

4.4	Extra for providing and placing in position 2 Nos 6mm dia. M.S. bars at every third course of half brick masonry. Quantities same as DSR item no. 6.13.2	sqm	355.95		0.00
	Total for Brick Work				**0.00**
5	**SECTION-5: STONE WORK**				
5.1	Random rubble masonry with hard stone in foundation and plinth including levelling up with cement concrete 1:6:12 (1 cement : 6 coarse sand : 12 graded stone aggregate 20 mm nominal size) upto plinth level with :				
	Cement mortar 1:6 (1 cement : 6 coarse sand)	Cum	3.43		0.00
5.2	Coursed rubble masonry with hard stone (first or second sort) in superstructure above plinth level and upto floor five level.				
	Masonry work (first sort), in cement mortar 1:6 (1 cement : 6 coarse sand)	Cum	6.90		0.00
	Total for Stone Work				**0.00**
6	**SECTION-6: GRANITE WORK**				
6.1	Providing and fixing 18 mm thick gang saw cut, mirror polished, premoulded and prepolished, machine cut for kitchen platforms, vanity counters, window sills, facias and similar locations of required size, approved shade, colour and texture laid over 20 mm thick base cement mortar 1:4 (1 cement : 4 coarse sand), joints treated with white cement, mixed with matching pigment, epoxy touch ups, including rubbing, curing, moulding and polishing to edges to give high gloss finish etc. complete at all levels.				
	Granite of any colour and shade				
	Area of slab over 0.50 sqm	Sqm	2.25		0.00
6.2	Extra for providing opening of required size & shape for wash basin/ kitchen sink in kitchen platform, vanity counter and similar location in marble/ Granite/ stone work, including necessary holes for pillar taps etc. including moulding, rubbing and polishing of cut edges etc. complete.	Each	5.00		0.00
6.3	Providing and fixing Ist quality ceramic glazed wall tiles conforming to IS: 15622 (thickness to be specified by the manufacturer), of approved make, in all colours, shades except burgundy, bottle green, black of any size as approved by Engineer-in-Charge, in skirting, risers of steps and dados, over 12 mm thick bed of cement mortar 1:3 (1 cement : 3 coarse sand) and jointing with grey cement slurry @ 3.3kg per sqm, including pointing in white cement mixed with pigment of matching shade complete.	Sqm	78.88		0.00
	Total for Cladding Work				**0.00**
7	**SECTION-7: DOORS & WINDOWS WORKS**				
7.1	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).				
	Second class teak wood	cum	0.22		0.00
7.2	Providing and fixing panelling or panelling and glazing in panelled or panelled and glazed shutters for doors, windows and clerestory windows (Area of opening for panel inserts excluding portion inside grooves or rebates to be measured). Panelling for panelled or panelled and glazed shutters 25 mm to 40 mm thick:				
	Float glass panes				
	4 mm thick glass pane (weight not less than 10kg/sqm).	Sqm	305.71		0.00
7.3	5.0 mm thick glass panes (weight not less than 12.50 kg/sqm).	Sqm	41.25		0.00
7.4	Providing and fixing ISI marked flush door shutters conforming to IS : 2202 (Part I) decorative type, core of block board construction with frame of 1st class hard wood and well matched teak 3 ply veneering with vertical grains or cross bands and face veneers on both faces of shutters.				
	35 mm thick including ISI marked Stainless Steel butt hinges with necessary screws	Sqm	122.43		0.00
7.5	Extra for providing lipping with 2nd class teak wood battens 25 mm minimum depth on all edges of flush door shutters (over all area of door shutter to be measured).	Sqm	250.80		0.00
7.6	Extra for providing vision panel not exceeding 0.1 sqm in all type of flush doors (cost of glass excluded) (overall area of door shutter to be measured):				
	Rectangular or square	Sqm	122.43		0.00
7.7	Providing and fixing wire gauge shutters using galvanized M.S. wire gauge of average width of aperture 1.4 mm in both directions with wire of dia 0.63 mm, for doors, windows and clerestory windows with hinges and necessary screws :				
	30 mm thick shutters				
	With ISI marked stainless steel butt hinges of required size				
	Second class teak wood	Sqm	24.26		0.00
7.8	Providing and fixing wooden moulded beading to door and window frames with iron screws, plugs and priming coat on unexposed surface etc. complete:				
	2nd class teak wood				
	50x12 mm	meter	29.25		0.00
7.9	Providing and fixing nickel plated M.S. pipe curtain rods with nickel plated brackets :				
	20 mm dia (heavy type)	meter	123.75		0.00
7.10	Providing and fixing aluminium extruded section body tubular type universal hydraulic door closer (having brand logo with ISi, IS : 3564, embossed on the body, door weight upto 36 kg to 80 kg and door width from 701 mm to 1000 mm), with double speed adjustment with necessary accessories and screws etc. complete.	Each	5.00		0.00
7.11	Providing 40x5 mm flat iron hold fast 40 cm long including fixing to frame with 10 mm diameter bolts, nuts and wooden plugs and embedding in cement concrete block 30x10x15cm 1:3:6 mix (1 cement : 3 coarse sand : 6 graded stone aggregate 20mm nominal size).	Each	5.00		0.00

7.12	Providing and fixing ISI marked oxidised M.S. handles conforming to IS:4992 with necessary screws etc. complete :				
	100 mm	Each	50.00		0.00
7.13	Providing and fixing aluminium sliding door bolts, ISI marked anodised (anodic coating not less than grade AC 10 as per IS : 1868), transparent or dyed to required colour or shade, with nuts and screws etc. complete				
	250x16 mm	Each	55.00		0.00
7.14	Providing and fixing aluminium tower bolts, ISI marked, anodised (anodic coating not less than grade AC 10 as per IS : 1868) transparent or dyed to required colour or shade, with necessary screws etc. complete :				
	250x10 mm	Each	55.00		0.00
7.15	200x10 mm	Each	55.00		0.00
7.16	Providing and fixing aluminium handles, ISI marked, anodised (anodic coating not less than grade AC 10 as per IS : 1868) transparent or dyed to required colour or shade, with necessary screws etc. complete :				
	125 mm	Each	100.00		0.00
7.17	Providing and fixing aluminium hanging floor door stopper, ISI marked, anodised (anodic coating not less than grade AC 10 as per IS : 1868) transparent or dyed to required colour and shade, with necessary screws etc. complete.				
	Single rubber stopper	Each	50.00		0.00
7.18	Providing and fixing PTMT door catcher of length 72 mm and dia. of 42 mm with suitable washers weighing not less than 33 gms	Each	50.00		0.00
7.19	Providing and fixing factory made uPVC white colour sliding glazed window upto 1.50 m in height dimension comprising of uPVC multi-chambered frame with in-built roller track and sash extruded profiles duly reinforced with 1.60 ± 0.2 mm thick galvanized mild steel section made from roll forming process of required length (shape & size according to uPVC profile), appropriate dimension of uPVC extruded glazing beads and uPVC extruded interlocks, EPDM gasket, wool pile, zinc alloy (white powder coated) touch locks with hook, zinc alloy body with single nylon rollers (weight bearing capacity to be 40 kg), G.I fasteners 100 x 8 mm size for fixing frame to finished wall and necessary stainless steel screws etc. Profile of frame & sash shall be mitred cut and fusion welded at all corners, including drilling of holes for fixing hardware's and drainage of water etc. After fixing frame the gap between frame and adjacent finished wall shall be filled with weather proof silicon sealent over backer rod of required size and of approved quality, all complete as per approved drawing & direction of Engineer-in-Charge. (Single / double glass panes, wire mesh and silicon sealent shall be paid separately). Variation in profile dimension in higher side shall be accepted but no extra payment on this account shall be made.				
	Note: For uPVC frame and sash extruded profiles minus 5% tolerance in dimension i.e. in depth & width of profile shall be acceptable.				

	Two track two panels sliding window made of (small series) frame 52 x 44 mm &sash 32 x 60 mm both having wall thickness of 1.9 ± 0.2 mm and single glazing bead of appropriate dimension. (Area of window upto 1.75 sqm)	Sqm	6.68		0.00
7.20	Three track three panels sliding window with fly proof S.S wire mesh (Two nos. glazed & one no. wire mesh panels) made of (big series) frame 116x45mm & sash 46x62mm both having wall thickness of 2.3 ± 0.2 mm and single glazing bead / double glazing bead of appropriate dimension. (Area of window above 1.75 sqm).	Sqm	79.20		0.00
7.21	Providing and fixing zinc alloyed (white powder coated) touch lock for uPVC sliding window with necessary screws etc. complete.	Each	44.00		0.00
	Total for Wood Work				**0.00**
8	**SECTION-8: STEEL WORK**				
8.1	Structural steel work riveted, bolted or welded in built up sections, trusses and framed work, including cutting, hoisting, fixing in position and applying a priming coat of approved steel primer with two coat of synthetic enamel paint all complete.	kg	28000.00		0.00
8.2	Providing and fixing 1mm thick M.S. sheet door with frame of 40x40x6 mm angle iron and 3 mm M.S. gusset plates at the junctions and corners, all necessary fittings complete, including applying a priming coat of approved steel primer.				
	Using M.S. angels 40x40x6 mm for diagonal braces	Sqm	115.20		0.00
8.3	Supplying and fixing rolling shutters of approved make, made of required size M.S. laths, interlocked together through their entire length and jointed together at the end by end locks, mounted on specially designed pipe shaft with brackets, side guides and arrangements for inside and outside locking with push and pull operation complete, including the cost of providing and fixing necessary 27.5 cm long wire springs manufactured from high tensile steel wire of adequate strength conforming to IS: 4454 - part 1 and M.S. top cover of required thickness for rolling shutters.				
	80x1.20 mm M.S. laths with 1.20 mm thick top cover	Sqm	60.00		0.00
8.4	Providing and fixing ball bearing for rolling shutters.	Each	10.00		0.00
8.5	Providing and fixing factory made ISI marked steel glazed doors, windows and ventilators, side /top /centre hung, with beading and all members such as F7D,F4B, K11 B and K12 B etc. complete of standard rolled steel sections, joints mitred and flash butt welded and sash bars tenoned and riveted, including providing and fixing of hinges, pivots, including priming coat of approved steel primer, but excluding the cost of other fittings, complete all as per approved design, (sectional weight of only steel members shall be measured for payment).				
	Fixing with 15x3 mm lugs 10 cm long embedded in cement concrete block 15x10x10 cm of C.C. 1:3:6 (1 Cement:3 coarse sand : 6 graded stone aggregate 20 mm nominal size)	kg	862.13		0.00

8.6	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.				
	Hot finished seamless type tubes	kg	11982.26		0.00
8.7	Providing and fixing mild steel round holding down bolts with nuts and washer plates complete.	kg	208.00		0.00
8.8	Providing and fixing bolts including nuts and washers complete.	kg	358.80		0.00
8.9	Steel work welded in built up sections/ framed work, including cutting, hoisting, fixing in position and applying a priming coat of approved steel primer using structural steel etc. as required.				
	In gratings, frames, guard bar, ladder, railings, brackets, gates and similar works	kg	500.00		0.00
8.10	Providing & fixing glass panes with putty and glazing clips in steel doors, windows, clerestory windows, all complete with:				
	4.0 mm thick glass panes	Sqm	222.75		0.00
	Total for Steel Works				**0.00**
9	**SECTION-9: FLOORING WORK**				
9.1	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	269.50		0.00
9.2	Cement plaster skirting up to 30 cm height, with cement mortar 1:3 (1 cement : 3 coarse sand), finished with a floating coat of neat cement.				
	18 mm thick	sqm	14.15		0.00
9.3	Providing and fixing glass strips in joints of terrazo/cement concrete floors.				
	40 mm wide and 4 mm thick	rmt	141.50		0.00
9.4	Marble stone flooring with 18 mm thick marble stone, as per sample of marble approved by Engineer-in-charge, over 20 mm (average) thick base of cement mortar 1:4 (1 cement : 4 coarse sand) laid and jointed with grey cement slurry, including rubbing and polishing complete with :				
	Udaipur green marble	Sqm	1.00		0.00
9.5	Extra for pre finished nosing to treads of steps of marble stone.	Metre	5.00		0.00
9.6	Providing and laying Glazed Ceramic floor tiles of size 300x300 mm or more (thickness to be specified by the manufacturer), of 1st quality conforming to IS : 15622, of approved make, in colours White, Ivory, Grey, Fume Red Brown, laid on 20 mm thick cement mortar 1:4 (1 Cement: 4 Coarse sand), jointing with grey cement slurry @ 3.3 kg/ sqm including grouting the joints with white cement and matching pigments etc., complete.	Sqm	19.39		0.00
9.7	Providing and laying Vitrified tiles in floor in different sizes (thickness to be specified by the manufacturer) with water absorption less than 0.08% and conforming to IS:15622, of approved brand & manufacturer, in all colours and shade, laid on				

	20 mm thick cement mortar 1:4 (1 cement: 4 coarse sand) jointing with grey cement slurry @3.3 kg/sqm including grouting the joints with white cement and matching pigments etc. The tiles must be cut with the zero-chipping diamond cutter only. Laying of tiles will be done with the notch trowel, plier, wedge, clips of required thickness, leveling system and rubber mallet for placing the tiles gently and easily.				
	Glazed vitrified floor tiles polished finish of size				
	Size of Tile 600x600 mm	sqm	539.00		0.00
9.8	Glazed Vitrified tiles Matt/Antiskid finish of size				
	Size of Tile 600x600 mm	sqm	19.39		0.00
9.9	Providing and laying Vitrified tiles in different sizes (thickness to be specified by manufacturer), with water absorption less than 0.08 % and conforming to I.S. 15622, of approved make, in all colours & shade, in skirting, riser of steps, over 12 mm thick bed of cement mortar 1:3 (1 cement: 3 coarse sand), jointing with grey cement slurry @ 3.3 kg/ sqm including grouting the joint with white cement & matching pigments etc. complete.				
	Size of Tile 600x600 mm	sqm	34.65		0.00
9.10	Grouting the joints of flooring tiles having joints of 3 mm width, using epoxy grout mix of 0.70 kg of organic coated filler of desired shade (0.10 kg of hardener and 0.20 kg of resin per kg), including filling / grouting and finishing complete as per direction of Engineer-in-charge.				
	Size of Tile 600x600 mm	sqm	563.50		0.00
	Total for Flooring				**0.00**
10	**SECTION-10: ROOFING**				
10.1	Providing gola 75x75 mm in cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 stone aggregate 10 mm and down gauge), including finishing with cement mortar 1:3 (1 cement : 3 fine sand) as per standard design :				
	In 75x75 mm deep chase	Metre	210.00		0.00
10.2	Making khurras 45x45 cm with average minimum thickness of 5 cm cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate of 20 mm nominal size) over P.V.C. sheet 1 m x1 m x 400 micron, finished with 12 mm cement plaster 1:3 (1 cement : 3 coarse sand) and a coat of neat cement, rounding the edges and making and finishing the outlet complete.	Each	20.00		0.00
10.3	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	Sqm	1100.28		0.00

	surfaces, excluding the cost of purlins, rafters and trusses and including cutting to size and shape wherever required.				
10.4	Providing and fixing false ceiling at all height including providing and fixing of frame work made of special sections, power pressed from M.S. sheets and galvanized with zinc coating of 120 gms/sqm (both side inclusive) as per IS : 277 and consisting of angle cleats of size 25 mm wide x 1.6 mm thick with flanges of 27 mm and 37mm, at 1200 mm centre to centre, one flange fixed to the ceiling with dash fastener 12.5 mm dia x 50mm long with 6mm dia bolts, other flange of cleat fixed to the angle hangers of 25x10x0.50 mm of required length with nuts & bolts of required size and other end of angle hanger fixed with intermediate G.I. channels 45x15x0.9 mm running at the spacing of 1200 mm centre to centre, to which the ceiling section 0.5 mm thick bottom wedge of 80 mm with tapered flanges of 26 mm each having lips of 10.5 mm, at 450 mm centre to centre, shall be fixed in a direction perpendicular to G.I. intermediate channel with connecting clips made out of 2.64 mm dia x 230 mm long G.I. wire at every junction, including fixing perimeter channels 0.5 mm thick 27 mm high having flanges of 20 mm and 30 mm long, the perimeter of ceiling fixed to wall/partition with the help of rawl plugs at 450 mm centre, with 25mm long dry wall screws @ 230 mm interval, including fixing of gypsum board to ceiling section and perimeter channel with the help of dry wall screws of size 3.5 x 25 mm at 230 mm c/c, including jointing and finishing to a flush finish of tapered and square edges of the board with recommended jointing compound , jointing tapes , finishing with jointing compound in 3 layers covering upto 150 mm on both sides of joint and two coats of primer suitable for board, all as per manufacturer's specification and also including the cost of making openings for light fittings, grills, diffusers, cutouts made with frame of perimeter channels suitably fixed, all complete as per drawings, specification and direction of the Engineer in Charge but excluding the cost of painting with :				
	12.5 mm thick tapered edge gypsum plain board conforming to IS: 2095- (Part I) : 2011 (Board with BIS certification marks)	Sqm	650.00		0.00
	Total for Roofing work				**0.00**
11	**SECTION-11: Finishing Work**				
11.1	12 mm cement plaster of mix:				
	1:6 (1 cement: 6 fine sand):	sqm	2337.12		0.00
11.2	20 mm cement plaster of mix:				
	1:6 (1 cement: 6 fine sand)	sqm	10.00		0.00
11.3	12 mm cement plaster finished with a floating coat of neat cement of mix:				
	1:3 (1 cement: 3 fine sand)	sqm	588.00		0.00
11.4	6 mm cement plaster of mix:				
	1:3 (1 cement : 3 fine sand)	sqm	108.00		0.00
11.5	Providing and applying white cement-based putty of average thickness 1 mm, of approved brand and manufacturer, over the	sqm	5728.00		0.00

	plastered wall surface to prepare the surface even and smooth complete.				
11.6	18 mm cement plaster in two coats under layer 12 mm thick cement plaster 1:5 (1 cement : 5 coarse sand) and a top layer 6 mm thick cement plaster 1:3 (1 cement : 3 coarse sand) finished rough with sponge.	sqm	2684.88		0.00
11.7	Pointing on stone work with cement mortar 1:3 (1 cement : 3 fine sand) :				
	Flush/ Ruled pointing	sqm	10.00		0.00
11.8	Applying one coat of water thinnable cement primer of approved brand and manufacture on wall surface:				
	Water thinnable cement primer	sqm	6845.94		0.00
11.9	Finishing walls with textured exterior paint of required shade:				
	New work (Two or more coats applied @ 3.28 ltr/10 sqm) over and including priming coat of exterior primer applied @ 2.20kg/10 sqm	sqm	2684.88		0.00
11.10	Painting with synthetic enamel paint of approved brand and manufacture of required colour to give an even shade:				
	Two or more coats on new work over an under coat of suitable shade with ordinary paint of approved brand and manufacture	sqm	178.20		0.00
11.11	Wall painting with premium acrylic emulsion paint of interior grade, having VOC (Volatile Organic Compound) content less than 50 grams/ litre of approved brand and manufacture, including applying additional coats wherever required to achieve even shade and colour.				
	Two or more coats on new work	sqm	3043.12		0.00
	Total for Finishing Work				**0.00**
12	**SECTION-12: ALUMINIUM WORKS**				
12.1	Providing and fixing aluminium work for doors, windows, ventilators and partitions with extruded built up standard tubular sections/ appropriate Z sections and other sections of approved make conforming to IS: 733 and IS: 1285, fixing with dash fasteners of required dia and size, including necessary filling up the gaps at junctions, i.e. at top, bottom and sides with required EPDM rubber/ neoprene gasket etc. Aluminium sections shall be smooth, rust free, straight, mitred and jointed mechanically wherever required including cleat angle, Aluminium snap beading for glazing / paneling, C.P. brass / stainless steel screws, all complete as per architectural drawings and the directions of Engineer-in-charge. (Glazing, paneling and dash fasteners to be paid for separately):				
	For Fixed portions				
	Powder coated aluminium (minimum thickness of powder coating 50 micron)	Kg	831.60		0.00
12.2	Providing and fixing double action hydraulic floor spring of approved brand and manufacture conforming to IS : 6315, having brand logo embossed on the body / plate with double spring mechanism and door weight upto 125 kg, for doors, including cost of cutting floors, embedding in floors as required and making				

	good the same matching to the existing floor finishing and cover plates with brass pivot and single piece M.S. sheet outer box with slide plate etc. complete as per the direction of Engineer-in-charge.				
	With stainless steel cover plate minimum 1.25 mm thickness	each	44.00		0.00
12.3	Filling the gap in between aluminium frame & adjacent RCC/ Brick/ Stone work by providing weather silicon sealant over backer rod of approved quality as per architectural drawings and direction of Engineer-in-charge complete.				
	Upto 5mm depth and 5 mm width	Metre	88.28		0.00
	Total for Aluminium Works				**0.00**
13	**SECTION-13: WATER PROOFING**				
13.1	Providing and laying in situ seven course water proofing treatment with APP (Atactic Polypropylene) modified Polymeric memberane over roof consisting of first coat of bitumen primer @ 0.40 litre per sqm, 2nd, 4th & 6th courses of bonding material @ 1.20 kg/sqm, which shall consist of blown type bitumen of grade 85/25 conforming to IS : 702, 3rd and 5th layers of roofing membrane APP modified Polymeric membrane 2.0 mm thick of 3.00 Kg/sqm weight consisting of five layers prefabricated with centre core as 100 micron HMHDPE film sandwiched on both sides with polymeric mix and the polymeric mix is protected on both side with 20 micron HMHDPE film. 7th, the top most layer shall be finished with brick tiles of class designation 10 grouted with cement mortar 1:3 (1 cement : 3 fine sand) mixed with 2% integral water proofing compound by weight of cement over a 12 mm layer of cement mortar 1:3 (1 cement : 3 fine sand) and finished neat (item of laying brick tiles shall be paid for separately).	sqm	11.25		0.00
13.2	Providing and laying integral cement-based water proofing treatment including preparation of surface as required for treatment of roofs, balconies, terraces etc consisting of following operations:				
	(a) Applying a slurry coat of neat cement using 2.75 kg/sqm of cement admixed with water proofing compound conforming to IS. 2645 and approved by Engineer-in-charge over the RCC slab including adjoining walls upto 300 mm height including cleaning the surface before treatment.				
	(b) Laying brick bats with mortar using broken bricks/brick bats 25 mm to 115 mm size with 50% of cement mortar 1:5 (1 cement : 5 coarse sand) admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge over 20 mm thick layer of cement mortar of mix 1:5 (1 cement :5 coarse sand) admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge to required slope and treating similarly the adjoining walls upto 300 mm height including rounding of junctions of walls and slabs.				
	(c) After two days of proper curing applying a second coat of cement slurry using 2.75 kg/ sqm of cement admixed with water				

	proofing compound conforming to IS: 2645 and approved by Engineer-in- charge				
	(d) Finishing the surface with 20 mm thick jointless cement mortar of mix 1:4 (1 cement :4 coarse sand) admixed with water proofing compound conforming to IS:2645 and approved by Engineer-in- charge including laying glass fibre cloth of approved quality in top layer of plaster and finally finishing the surface with trowel with neat cement slurry and making pattern of 300x300 mm square 3 mm deep.				
	e) The whole terrace so finished shall be flooded with water for a minimum period of two weeks for curing and for final test. "All above operations to be done in order and as directed and specified by the Engineer-in-Charge :				
	With average thickness of 120 mm and minimum thickness at khurra as 65 mm.	sqm	50.00		0.00
	Total for waterproofing				**0.00**
14	**SECTION-14: ROAD WORKS**				
14.1	Preparation and consolidation of sub grade with power road roller of 8 to 12 tonne capacity after excavating earth to an average of 22.5 cm depth, dressing to camber and consolidating with road roller including making good the undulations etc. and re-rolling the sub grade and disposal of surplus earth with lead upto 50 metres.	Sqm	468.75		0.00
14.2	Supplying and stacking at site.				
	90 mm to 45 mm size stone aggregate	Cum	46.88		0.00
14.3	63 mm to 45 mm size stone aggregate	Cum	46.88		0.00
14.4	Over burnt (Jhama) brick aggregate 120 mm to 40 mm	Cum	23.44		0.00
14.5	Over burnt (Jhama) brick aggregate 90 mm to 45 mm	Cum	23.44		0.00
14.6	Stone screening 13.2 mm nominal size (Type A)	Cum	23.44		0.00
14.7	Red bajri	Cum	23.44		0.00
14.8	Dry stone pitching 22.5 cm thick including supply of stones and preparing surface complete.	Sqm	187.50		0.00
14.9	Fencing with angle iron post placed at required distance embedded in cement concrete blocks, every 15th post, last but one end post and corner post shall be strutted on both sides and end post on one side only and provided with horizontal lines and two diagonals interwoven with horizontal wires, of barbed wire weighing 9.38 kg per 100 m (minimum), between the two posts fitted and fixed with G.I. staples, turn buckles etc. complete. (Cost of posts, struts, earth work and concrete work to be paid for separately). Payment to be made per metre cost of total length of barbed wire used.				
	With G.I. barbed wire	Metre	11000.00		0.00
14.10	Supplying at site Angle iron post & strut of required size including bottom to be split and bent at right angle in opposite direction for 10 cm length and drilling holes upto 10 mm dia. etc. complete	Kg	2203.20		0.00

14.11	Providing and fixing concertina coil fencing with punched tape concertina coil 600 mm dia 10 metre openable length (total length 90 m), having 50 nos rounds per 6 metre length, upto 3 m height of wall with existing angle iron 'Y' shaped placed 2.4m or 3.00 m apart and with 9 horizontal R.B.T. reinforced barbed wire, stud tied with G.I. staples and G.I. clips to retain horizontal, including necessary bolts or G.I. barbed wire tied to angle iron, all complete as per direction of Engineer-in-charge, with reinforced barbed tape(R.B.T.) / Spring core (2.5mm thick) wire of high tensile strength of 165 kg/ sq.mm with tape (0.52 mm thick) and weight 43.478 gm/ metre (cost of M.S. angle, C.C. blocks shall be paid separately)	Metre	550.00		0.00
	Total for ROAD WORK				**0.00**
15	**SECTION-15: HORTICULTURE WORKS**				
15.1	Supplying and stacking of good earth at site including royalty and carriage upto 5 km lead complete (earth measured in stacks will be reduced by 20% for payment).	Cum	150.00		0.00
15.2	Supplying and stacking at site dump manure from approved source, including carriage upto 5 km lead complete (manure measured in stacks will be reduced by 8% for payment):				
	Screened through sieve of I.S. designation 20 mm	Cum	150.00		0.00
15.3	Fine dressing of the ground.	Sqm	750.00		0.00
15.4	Spreading of sludge, dump manure and/or good earth in required thickness as per direction of officer-in-charge (cost of sludge, dump manure and/ or good earth to be paid separately).	Cum	300.00		0.00
15.5	Grassing with selection No. 1/ Doob grass including watering and maintenance of the lawn for 30 days or more till the grass forms a thick lawn, free from weeds and fit for mowing including supplying good earth, if needed (the grass and good earth shall be paid for separately).				
	With grass Turf	Sqm	750.00		0.00
	Total for Horticulture				**0.00**
16	**Glass & Furniture**				
16.1	Providing and fixing 12 mm thick frameless toughened glass door shutter of approved brand and manufacture, including providing and fixing top & bottom pivot & double action hydraulic floor spring type fixing arrangement and making necessary holes etc. for fixing required door fittings, all complete as per direction of Engineer-in-charge (Door handle, lock and stopper etc.to be paid separately).	Sqm	83.70		0.00
16.2	Providing and fixing 12 mm thick frameless toughened glass door shutter of approved brand and manufacture, including providing and fixing top & bottom pivot & double action hydraulic floor spring type fixing arrangement and making necessary holes etc. for fixing required door fittings, all complete as per direction of Engineer-in-charge (Door handle, lock and stopper etc.to be paid separately).	Each	5.00		0.00
	TOTAL FOR ITEMS				**0.00**
	GRAND TOTAL OF CIVIL WORKS				**0.00**

Ref: ITI/NSU/CIVIL-DEL/2023/0106/01					Date 15-03-2023
ITI LMITED NETWORK SYSTEM UNIT DOORVANINAGAR, BANGALORE 560 016.					
BILL OF QUANATITY: ELECTRIC WORKS :- GROUP 1 (Uttarakhand), No. of Buildings are 5, Type-H.					
	BIDDER's NAME				
S.No	**Description**	**Unit**	**Qty**	**RATE**	**AMOUNT**
1	**SUB-HEAD-I: CIRCUIT CUM POINT WIRING**				
1.1)	Wiring for light point/ fan point/ exhaust fan point/ call bell point with 1.5 sq.mm FRLS PVC insulated copper conductor single core cable in surface / recessed steel conduit, with modular switch, modular plate, suitable GI box and earthing the point with 1.5 sq.mm FRLS PVC insulated copper conductor single core cable etc. as required.				
a)	Group-C (Primary point)	Point	85		0.00
1.2)	Wiring for group controlled (looped) light point/fan point/exhaust fan point/ call bell point (without independent switch etc.) with 1.5 sq. mm FRLS PVC insulated copper conductor single core cable in surface/ recessed steel conduit, and earthing the point with 1.5 sq. mm FRLS PVC insulated copper conductor single core cable etc. as required				
a)	Group-C (looping point)	Point	60		0.00
1.3)	Supplying and fixing modular blanking plate on the existing modular plate & switch box excluding modular plate as required.	Each	50		0.00
1.4)	Supplying and fixing two module stepped type electronic fan regulator on the existing modular plate switch box including connections but excluding modular plate etc. as required.	Each	60		0.00
1.5)	Supplying and fixing suitable size GI box with modular plate and cover in front on surface or in recess, including providing and fixing 3 pin 5/6 A modular socket outlet and 5/6 A modular switch, connections etc. as required.	Each	130		0.00
1.6)	Supplying and fixing suitable size GI box with modular plate and cover in front on surface or in recess, including providing and fixing 6 pin 5/6 A & 15/16 A modular socket outlet and 15/16 A modular switch, connections etc. as required.	Each	160		0.00
1.7)	Wiring for circuit/ submain wiring along with earth wire with the following sizes of FRLS PVC insulated copper conductor, single core cable in surface/ recessed medium class PVC conduit as required				
a)	2 X 1.5 sq. mm + 1 X 1.5 sq. mm earth wire For 6A Light Circuit Point	Metre	500		0.00
b)	2 X 2.5 sq. mm + 1 X 2.5 sq. mm earth wire For Switch Board Circuit.	Metre	937.5		0.00
c)	2 X 4 sq. mm + 1 X 4 sq. mm earth wire For 6A and 16A Power Circuit Point	Metre	5800		0.00
d)	4 X 10 sq. mm + 2 X 6 sq. mm earth wire For Light DB Submain wire	Metre	250		0.00
e)	4 X 16 sq. mm + 2 X 6 sq. mm earth wire For PDB Submain wire	Metre	500		0.00

f)	2 X 10 sq. mm + 1 X 6 sq. mm earth wire For UPSDB/IDB/All SPN LPDB Submain wire	Metre	2900		0.00
1.8)	Providing and fixing 6 SWG dia G.I. wire on surface or in recess for loop earthing along with existing surface/ recessed conduit/submain wiring/ cable as required.	Metre	500		0.00
	SUB-HEAD-1 TOTAL CARRIED TO SUMMARY				**0.00**
2	**SUB-HEAD-II:- DISTRIBUTION BOARDS**				
2.1)	Supplying and fixing following way, single pole and neutral, sheet steel, MCB distribution board, 240 V, on surface/ recess, complete with tinned copper bus bar, neutral bus bar, earth bar, din bar, interconnections, powder painted including earthing etc. as required. (But without MCB/RCCB/Isolator)				
a)	8Way, Double door	Each	40		0.00
b)	12Way, Double door	Each	15		0.00
2.2)	Supplying and fixing following way, horizontal type three pole and neutral, sheet steel, MCB distribution board, 415 V, on surface/ recess, complete with tinned copper bus bar, neutral bus bar, earth bar, din bar, interconnections, powder painted including earthing etc. as required. (But without MCB/RCCB/Isolator)				
a)	4 way (4 + 12), Double door	Each	5		0.00
2.3)	Supplying and fixing following ways, surface/recess mounting, Vertical type 415V ,TPN MCB distribution board of sheet steel, dust protected duly powder painted ,inclusive of 200A tinned copper bus bar ,common neutral link, earth bar, din bar, for mounting MCBs etc. as required. (But without MCB/Incomer) as required. (Note Vertical type MCB TPDB is normally used where 3phase outlets are required.)				
a)	12 way (4 + 36), Double door	Each	10		0.00
2.4)	Supplying and fixing 5 A to 32 A rating, 240/415 V, 10 kA, “C” curve, miniature circuit breaker suitable for inductive load of following poles in the existing MCB DB complete with connections, testing and commissioning etc. as required.				
a)	Single pole (6/32 Amps)	Each	620		0.00
2.5)	Supplying and fixing single pole blanking plate in the existing MCB DB complete etc. as required.	Each	50		0.00
2.6)	Supplying and fixing following rating, double pole, 240 V, isolator in the existing MCB DB complete with connections, testing and commissioning etc. as required.				
a)	40A	Each	50		0.00
b)	63A	Each	10		0.00
2.7)	Supplying and fixing following rating, four pole, 415 V, isolator in the existing MCB DB complete with connections, testing and commissioning etc. as required.				
a)	40A	Each	5		0.00
b)	63A	Each	10		0.00
2.8)	Supplying and fixing following rating, double pole, (single phase and neutral), 240 V, residual current circuit breaker (RCCB) having				

	a sensitivity current 30mA in the existing MCB DB complete with connections, testing and commissioning etc. as required.				
a)	40A	Each	50		0.00
b)	63A	Each	10		0.00
2.9)	Supplying and fixing following rating, four pole, (three phase and neutral),415 V, residual current circuit breaker (RCCB) having a sensitivity current 30mA in the existing MCB DB complete with connections, testing and commissioning etc. as required.				
a)	40A	Each	5		0.00
b)	63A	Each	10		0.00
2.10)	Providing and fixing M.V. danger notice plate of 200 mm X 150 mm, made of mild steel, at least 2 mm thick, and vitreous enameled white on both sides, and with inscription in single red colour on front side as required.	Each	75		0.00
	SUB-HEAD-II TOTAL CARRIED TO SUMMARY				**0.00**
3	**SUB-HEAD - III :- CONDUITING WIRING AND CABLING FOR TELEPHONE / TV NETWORK SYSTEM**				
3.1)	Supplying and fixing of following sizes of medium class PVC conduit along with accessories in surface/recess including cutting the wall and making good the same in case of recessed conduit as required.				
a)	20mm	Meter	250		0.00
b)	25mm	Meter	250		0.00
c)	32mm	Meter	125		0.00
3.2)	Supplying and fixing following modular switch/ socket on the existing modular plate & switch box including connections but excluding modular plate etc. as required.				
a)	Telephone socket outlet	Each	1		0.00
b)	TV antenna socket outlet	Each	1		0.00
c)	RJ-45 face plate (computer line) with shutter DN-460	Each	1		0.00
3.3)	Supplying and fixing following size/ modules, GI box along with modular base & cover plate for modular switches in recess etc. as required.				
a)	1 or 2 Module (75mmX75mm)	Each	1		0.00
3.4)	Providing, fixing connecting and testing of solder less telephone Tag block of following capacity ties as required in suitable size of m.s. hinged lockable cover box duly painted etc. as required of Krone type.				
a)	10 pair Tele Tag Blk	Each	1		0.00
3.5)	Supplying drawing, connecting and testing of 0.61mm dia annealed copper conductor PVC insulated PVC sheathed telephone Wire/cables in Existing PVC conduit or a rack as required.				
a)	2 pair Telephone cable.	Meter	1		0.00
b)	4 pair Telephone cable	Meter	1		0.00
3.6)	Supplying and drawing co-axial TV cable RG-6 grade, 0.7 mm solid copper conductor PE insulated, shielded with fine tinned copper braid, and protected with PVC sheath in the existing surface/ recessed steel/ PVC conduit as required.	Meter	1		0.00

3.7)	Providing, fixing connecting and testing of solder less Television Junction Box of following capacity ties as required in suitable size of m.s. hinged lockable cover box duly painted etc. as required of Krone type.				
a)	2 pair T.V Junction Box.	Each	1		0.00
3.8)	Supplying and drawing of UTP 4 pair CAT 6 LAN Cable in the existing surface/ recessed steel/ PVC conduit as required.				
a).	**1Run of cable**	Meter	1		0.00
3.9)	Supplying and fixing metal box of following sizes (nominal size) on surface or in reces with suitable size of phenolic laminated sheet cover in front including painting etc as required.				
a)	75 mm x 75 mm x 60 mm deep	Each	1		0.00
b)	100 mm x 100 mm x 60 mm deep	Each	1		0.00
	SUB-HEAD-Ill TOTAL CARRIED TO SUMMARY				**0.00**
4	**SUB-HEAD-lV:- SUPPLY OF LIGHTING FIXTURES.**				
4.1)	Supplying, installing, Fixing, testing and commissioning of **1 X 20W LED single tube Surface mounted fixture** & all accessories as required.	Each	20		0.00
4.2)	Supplying, installing, Fixing, testing and commissioning of **1 X 10W LED mirror light Surface mounted fixture** & all accessories as required.	Each	10		0.00
4.3)	Supplying, installing, Fixing, testing and commissioning of **1 X 10W LED Surface mounted fixture** & all accessories as required.	Each	10		0.00
4.4)	Supplying, installing, Fixing, testing and commissioning of 1**X 36W LED single tube** Surface mounted fixture & all accessories as required.	Each	105		0.00
4.5)	Supplying, installing, Fixing, testing and commissioning of **1200 mm Sweep Celling Fan** all accessories as required.	Each	60		0.00
4.6)	Supplying, installing, Fixing, testing and commissioning of **600 mm Sweep Celling Fan** all accessories as required.	Each	1		0.00
4.7)	Supplying, installing, Fixing, testing and commissioning of **Heavy Duty Exhaust fan 450 mm sweep** all accessories as required	Each	20		0.00
4.8)	Supplying, installing, Fixing, testing and commissioning of **Heavy Duty Exhaust fan 300/305 mm sweep** all accessories as required	Each	15		0.00
4.9)	Supplying, installing, Fixing, testing and commissioning of security light having 80 watt LED street light/road light luminaire type efficiency energy saving dia cast aluminium roadway luminaire with high power complete with connections fittings and including connecting with twin core 2.5 sqmm weather proof aluminium conductor cable complete set, street light brackets made out of GI tubing, light grade 40 mm bore 1200mm long bend to shape at 120 degree, fixed on pole by providing MS clamp made up of flat iron 50x6mm including bolts nuts ans washers of suitable size complete. Fixed upon steel tublar pole type 410 sp31 (9.00 mtr lng) with complete base plate, taper plug, bolts, nuts and screws etc duly painted internally and externally with metal oxide anti corrosive paint before erection and painting with two coats aluminium paint	Each	5		0.00

	after erection complete all as confirming to IS 2713 (part-1 to 111) and complete.				
4.10)	Supplying, installing, Fixing, testing and commissioning of security light having 80 watt LED street light/road light luminaire type efficiency energy saving dia cast aluminium roadway luminaire with high power complete with connections fittings and including connecting with twin core 2.5 sqmm weather proof aluminium conductor cable complete set, street light brackets made out of GI tubing, light grade 40 mm bore 1200mm long bend to shape at 120 degree, fixed on pole by providing MS clamp made up of flat iron 50x6mm including bolts nuts ans washers of suitable size complete. Fixed upon steel tublar pole type 410 sp31 (9.00 mtr lng) with complete base plate, taper plug, bolts, nuts and screws etc duly painted internally and externally with metal oxide anti corrosive paint before erection and painting with two coats aluminium paint after erection complete all as confirming to IS 2713 (part-1 to 111) and complete.	Each	5		0.00
4.11)	Supplying, installing, Fixing, testing and commissioning of security light AIO is made with High Efficiency Mono Crystalline Solar PV Module, Lithium Ferro Phosphate battery with in-built BMS technology, High Efficacy LED, MPPT Solar Charge Controller and Aluminium Extruded body, specially designed Intelligent microwave sensor to control the dimming and brightness of light leads to extend working time. Multi-angle adjustable light module and Light Arm suitable for installation in different latitude regions. The Adjustable range of light source is -20º to +20º and the adjustable range for rotating the arm is -90º to +90º. wattage 60w having system lumen of 5000 lumen, Havells cat No: SOLAR AIO ALFA 60 W or Equivalent to Philips with connections fittings and including connecting with twin core 2.5 sqmm weather proof aluminium conductor cable complete set, street light brackets made out of GI tubing, light grade 40 mm bore 1200mm long bend to shape at 120 degree, fixed on pole by providing MS clamp made up of flat iron 50x6mm including bolts nuts ans washers of suitable size complete. Fixed upon steel tublar pole type 410 sp31 (9.00 mtr lng) with complete base plate, taper plug, bolts, nuts and screws etc duly painted internally and externally with metal oxide anti corrosive paint before erection and painting with two coats aluminium paint after erection complete all as confirming to IS 2713 (part-1 to 111) and complete.	Each	5		0.00
	SUB-HEAD - IV TOTAL CARRIED TO SUMMARY				**0.00**

5	**SUB-HEAD-V:- AIR CONDITIONING**				
5.1)	Supply & Installation high wall split units indoor/outdoor complete with cordless remote control unit and within build air ionizer and plasma filter for better indoor air quality with minimum 5-star rating and EER 3.2 of capacity 2 TR with complete set, including Supply and fixing bracket and clamps heady duty for outdoor unit of split type AC complete all as specified and directed.Air conditioning units will be having heating facilities, which will be supplied to wherever temperature is below the normal temperature				
	2.0 TR Hi Wall Unit (Invertor Units with 5 Star Rating)	Each	40		0.00
5.2)	Supply and fixing voltage stabilizer for automatic operation, single phase, naturally air cooled indoor type and designed for input variation between 110V to 250V with output voltage stabilizer at 230 with accuracy of + 2.5 % and capacity of 5 KVA.	Each	40		0.00
	SUB-HEAD - V TOTAL CARRIED TO SUMMARY				**0.00**
6	**SUB HEAD- VI : EARTHING**				
6.1)	Earthing with G.I. earth plate 600 mm X 600 mm X 6 mm thick including accessories, and providing masonry enclosure with cover plate having locking arrangement and watering pipe of 2.7 metre long etc. with charcoal/ coke and salt as required.	Set	15		0.00
6.2)	Earthing with copper earth plate 600 mm X 600 mm X 3 mm thick including accessories, and providing masonry enclosure with cover plate having locking arrangement and watering pipe of 2.7 metre long etc. with charcoal /coke and salt as required.	set	15		0.00
6.3)	Supplying and laying 6 SWG G.I. wire at 0.50 metre below ground level for conductor earth electrode, including connection/ termination with GI thimble etc. as required.	RM	150		0.00
6.4)	Providing and fixing 25 mm X 5 mm G.I. strip in 40 mm dia G.I. pipe from earth electrode including connection with G.I. nut, bolt, spring, washer excavation and re-filling etc. as required.	RM	100		0.00
6.5)	Providing and fixing 25 mm X 5 mm G.I. strip on surface or in recess for connections etc. as required.	RM	1		0.00
6.6)	Providing and fixing 25 mm X 5 mm copper strip in 40 mm dia G.I. pipe from earth electrode including connection with brass nut, bolt, spring, washer excavation and re-filling etc. as required	RM	50		0.00
6.7)	Supply, Installation, Testing and commissioning of maintenance free earthing system. The earthing set shall comprise of (i) 1 No of copper bonded rod of diameter 17.2mm and length of 10 feet UL approved with 25 KA current discharge test from CPRI. The material shall be low carbon high tensile copper bonded rods with 99.9% of copper on the surface. The UL approval certificate shall be provided. (ii) 30 kg of earth enhance compound as per IEC 62561-7. There should not be requirement of any salt and charcoal. The RoHS certificate shall be provided from any NABL accredited labs for earth enhancement material. (iii) 1 No of copper busbar of size 25x6x150mm should be exothermic welded with copper bounded rod 17.2 mm dia x 3 mtr length. (iv) 1 No of PVC pit cover for	set	15		**0.00**

	covering of earthing. (v) Exothermic connection of 25x6x150mm busbar to 35 Sqmm copper cable. (vi) 35Sqmm PVC insulated copper cable for interconnection of earthing and Equipment.				
	SUB-HEAD - VI TOTAL CARRIED TO SUMMARY				**0.00**
7	**SUB HEAD- VII: EXTERNAL CABLING AND CABLE END TERMINATION**				
7.1)	Supplying and laying of following size DWC HDPE pipe ISI marked along with all accessories like socket, bend, couplers etc. conforming to IS 14930, Part II complete with fitting and cutting, jointing etc. direct in ground (75 cm below ground level) including excavation and refilling the trench but excluding sand cushioning and protective covering Earthing etc., complete as required. (For External lighting)				
	63 mm dia (OD-63 mm & ID-51 mm nominal)	Metre	150		0.00
7.2)	Supplying of following 1100 volt grade XLPE insulated PVC sheathed copper conductor armoured cables				
	3.5C X 120 sq. mm Al. Ar. Cable For Incoming Power Supply	Metre	100		0.00
	3.5 core 50 sq. mm Cu.Cond.Ar.Cable.	Metre	100		0.00
	3core 6 sq. mm	Metre	500		0.00
7.3)	Supplying and making end termination with brass compression gland and copper lugs for following size of PVC insulated and PVC sheathed / XLPE aluminium conductor cable of 1.1 KV grade as required.				
	3.5C X 120 sq. mm Al. Ar. Cable For Incoming Power Supply	Nos.	10		0.00
	3.5 core 50 sq. mm Cu.Cond.Ar.Cable.	Nos.	10		0.00
	3core 6 sq. mm	Nos.	170		0.00
7.4)	Laying of one number PVC insulated and PVC sheathed/XLPE power cable of 1.1KV grade of following size direct in ground including excavation, sand cushioning, protective covering and refilling the trench etc. as required. . (For External lighting/power cable)				
a)	Up to 35 sq. mm	Metre	250		0.00
b)	Above 35sqmm and up to 95sqmm	Metre	100		0.00
c)	Above 95sqmm and up to 185sqmm	Metre	100		0.00
	SUB-HEAD - VII Total of Sub Head carried to Summary				**0.00**
8	**SUB HEAD - VIII FEEDER PILLAR PANEL**				
8.1)	SITC Of free standing suitable for out door installation dust & vermin proof feeder pillar made out of CRCA sheet ,required hard ware, duly painted by either two coats of zink /red oxide primer followed by two coats of synthetic enmel paint for powder coating in grey or required shade . The feeder pillar having Neoprene rubber gasket of not less than 3mm thickness, hingled door with locking arrangement, gland plate. Thickness of sheet shall not be less than 2mm.Sheet metal works shall be processed with seven tank process,200A TPN 415V Electrolytic Cu Conductor bus bar with 100% Neutral (Fixed on 50x50x6mm thick MS Angle iron frame& covered with sheet metal from all sides)and having the following components.				

	Incoming :				
	One (1) No. 63A 4P MCCB (25KA)				
	3 Nos of LED type phase indicating lamps (RYB) with controlled by 2Amp MCB .				
	1 No.6A, 2 pole Auto/OFF/Manual (2 way with OFF) selector switch.				
	2 Nos. of push button actuator				
	Busbar :				
	Electrolytic high conductivity Copper three pole and 100%neutral bus bars rated at 200 amps having a maximum current density of 1 amp per sq mm insulated with heat shrinkable PVC sleeves & SMC/DMC supports.				
	Outgoings :				
	Three (3) Nos. 10 A-32A DP 10KA MCBs. with 10A-32A DP contactor (AC 1 Category with 230V Control Coil) using 1 No. 24 hour astronomical time switch on Auto/Manual arrangement with Auto/Manual selection switch, ON/OFF Push Buttons, Indication lamps & Control fuses etc.				
	Three (3) Nos. 32 A DP 10KA MCBs.				
	Full Set as above				
	Feedder pillar as described above	Set	5		0.00
8.2)	**MAIN ELECTRICAL PANEL FOR BUILDING BLOCK**				
	Designing, fabrication, supply, installation, testing and commissionings of front operated cubicle type compartmentalised, front access, free standing on 75MM "[" MS channel, dust and vermin proof (IP 42 degree protection) panel suitable for use at 415V, 3 phase, 4-wire 50Hz system suitable for fault level of required value symmetrical at 415V fabricated from 2mm thick CRCA MS sheets with hinged, gaskettted (Metal based neoprene) locable doors having structural reinforcement including 3mm thick gland plates on top and bottom, lifting hooks, GI earth strip of required size with 2 nos earth terminals, 2 nos 230V AC operated 250mm X 250mm size axial fans for exhaust of heat with On-Off toggle switches including 2 coated primer and 2 powder coated paint fnish of approved shade over metal surface cleaned and treated with seven tank process complete with interconnections etc as per specifications as required.main panel board should be CPRI Approved.				
	Panel shall have provision for entry of cables from the top or bottom through Cable Alley. All live accessible parts shall be shrouded and all equipment shall be finger touch proof. The busbars insulation shall be with heat shrinkable sleeves SMC/DMC shrouds and busbar supports shall be used. Padlocking facility shall				

	be provided on all outgoing feeders doors and switch handles shall be locable in OFF position.				
	Suitable arrangement shall be made for termination of multiple incoming cables.				
	INCOMER				
	1 No. 250 Amp four pole MCCB with microprocessor Release O/L,S/C,E/F protection+ Spreder+Extended rotary handle. Moulded Case Circuit Breaker (Ics =100% Icu,36 KA).				
	Enclosure				
	Fabrication 400 Amps, TPN Electrolytic grade Aluminium Bus Bar (Ambient temperature 45° C, temperature rise limited to 40° C above ambient), PVC sleeving, control wiring, necessary hardware. for LT Panel as well as for functioning of Single / multi functioning Energy Meters.capacitors (Each vertical bay shall be equipped with space heater + thermostat, door switch illumination lamp all duly wired) **Space to be provided for Harmonic Filters to be installed in Future if required.For selecting the bus bar size 0.7 derating factor to be considered.**				
	INSTRUMENTS & ACCESSORIES				
	1 No. 96x96 MFM with 3Nos 250/5A CTs for 3 phase, 4 wire operation with LED display and selector switch with controlled by 3 sets of 2Amp MCB				
	3 Nos of LED type phase indicating lamps (RYB) with controlled by 2Amp MCB .				
	1 No.6A, 2 pole Auto/OFF/Manual (2 way with OFF) selector switch.				
	2 Nos. of push button actuator				
	OUTGOING				
	1 Nos.40A FP MCB For 4Way TPN DB				
	2Nos.63A FP MCB For 12Way TPN DB				
	9 Nos.40A DP MCB For 8Way/12Way SPN DB				
	1 Nos.63A FP MCCB For External Lighting feeder pillar				
	SPARE				
	1 Nos.40A FP MCB For 4Way TPN DB				
	1Nos.63A FP MCB For 12Way TPN DB				
	1 Nos.40A DP MCB For 8Way/12Way SPN DB				
	MAIN ELECTRICAL PANEL FOR BUILDING BLOCK as described above	Set	5		0.00
	SUB-HEAD - VIII Total of Sub Head carried to Summary				**0.00**
9	**SUBHEAD - IX Lightning Protection & Earthing System (LIGHTNING PROTECTION AS PER IEC 62305 / IS IEC 62305 AT LVL -I) (5X5MTR)**				
9.1	Supplying, Installation, Testing and commissioning of Vertical Aluminium Lighting Arrester of 16MM dia, 1000 mm long with Gun Metal base plate . Model : APSAT116AL+APSTB16-253 Make : APS	Nos.	30		0.00

9.2	Supplying, Installation, Testing and commissioning 8 mm round aluminium conductor for horizontal lightning protection - run in roof. Model : AL8. Make :APS	Mtr.	1000		0.00
9.3	SITC of roof conductor holder for 8 mm round aluminium conductor made of Gun Metal for horizontal installation. The distance between each holder should be min of 1 mtr. Model : APSRCS50. Make : APS	Nos.	1000		0.00
9.4	Supplying, Installation, Testing and commissioning of **T connector** for connecting of 8 mm Al round conductor . The connector should be of Gun Metal with SS nuts and bolt. Model : APSTCRC50 , Make :APS	Nos.	85		0.00
9.5	Supplying, Installation, Testing and commissioning of **Cross connector** for connecting of 8 mm Al round conductor . The connector should be of Gun Metal with SS nuts and bolt. Model : APSCCRC50 , Make : APS	Nos.	15		0.00
9.6	Supplying, Installation, Testing and commissioning of Expansion piece along with connector to compensate the expansion of round 8 mm Al conductor when temperature variation . Connection should be in every 20 mtr. Model : APSEXP50 , Make : APS	Nos.	30		0.00
9.7	GLUE- Glue is used to fix roof conductor holder on roof.	Nos.	30		0.00
	DOWN CONDUCTOR & RING CONDUCTOR AS PER IEC 62305				
9.8	Supplying, Installation, Testing and commissioning of 8 mm round aluminium conductor as a down conductor mounted in the surface of wall which will carry the lightning current to earth pit. Model : AL8. Make : APS	Mtr.	150		0.00
9.9	SITC of Down conductor holder for 8 mm round aluminium conductor of min distance between the wall to the conductor will be of 50 mm. The distance between each holder should be min of 1 mtr. Model : APSRCS50 Make : APS	Nos.	150		0.00
9.10	Supplying, Installation, Testing and commissioning of straight connector for connecting of 8 mm Al round conductor . The connector should be of Aluminium with SS nuts and bolt. Model : APSPCRC50, Make : APS	Nos.	30		0.00
9.11	SITC of 7-digit lightning strike counter. Model - LSR2; Make - LPI	Nos.	30		0.00
9.12	Supplying, Installation, Testing and commissioning of Test Joint Point for 25X3MM CU STRIP , the size should be of 25 x 3 x 150 mm copper in ABS boxes. Model : APSTLBCU. Make : APS	Nos.	50		0.00
	EARTHING AS PER IEC 62561- 2 & 7				

9.13	Supplying, Installation, Testing and commissioning of advance chemical gel earthing system for the proper dissipation of fault / leakage current to the ground and ensure the continuous electrical connectivity and proper functioning to the electrical system. The earth rod shall be of UL listed & CPRI tested 3 meter long 17.2 mm dia 250 microns copper bonded steel rod with the connecting clamp (ss - rod to tape). The UL listed copper bonded rod also should be tested & ceritifed from CPRI for a short circuit current of 46 KA or more. The UL listing shall be punched / engraved on the rod for the physical verification at site. The engravings shall contain the following details - UL Control number, Dimension details of the rod, Product model number & UL certificate reference number as per detailed technical specification attached. To ensure the electrical conductivity, 50 Kgs (per pit) or more resistance grounding minerals per earth pit / earth rod shall be used along with the copper bonded rod. As per IEEE 80-2013 (Clause 14.5 d), the grounding minerals shall be tested & certified for the resistivity of less than 0.12 ohm-mtr. The grounding minerals should be ROHS certified to ensure it does not pollute the ground water as per technical specification attached.	Nos.	30		0.00
9.14	**GI STRIP (25X6 MM) :** FOR EARTHING INTERCONNECTION	Mtr.	500		0.00
	SUB-HEAD - IX Total of Sub Head carried to Summary				**0.00**
10	**SUB HEAD - X: SOLAR SYSTEMS**				
10.1)	Supply, installation, testing and commissioning of 1 kw solar panel systems along with supplyinh, installaing, testing and comminsioning of 2 kw battery bank to store the energy generated from solar panels during the day and supplying the same to solar led lighting systems in the internal and external areas of the buildings and campus. The batteries shall be solar photo voltaic batteries of Tubular Gel type, low maintenance, lead Acid and made of hard rubber container. Storage batteries should conform IEC 61427 / IS 1651 / IS 133369 as per specifications. The batteries shall use 2 / 12V cells and battery capacity is to be designed at C10 rate with end cell cut off voltage of 1.85 V / cell.	Each	5		0.00
10.2)	Supply, installation, testing and commissioning of (Flute plate collector) based on direct transfer of heat of capacity 200 LPD. Including all accessories are nonreturn cast copper alloy screwed down high pressure with crutch or butterfly handle screwed both and for iron pipes or union of as require size 15mm/20mm dia and including all accessories etc.	Each	5		0.00
	SUB-HEAD - X Total of Sub Head carried to Summary				**0.00**
	GRAND TOTAL ELECTRIC WORKS				**0.00**

Ref.: ITI/NSU/CIVIL-DEL/2023/0106/01					Date 15-03-2023
ITI LMITED NETWORK SYSTEM UNIT DOORVANINAGAR, BANGALORE 560 016.					
BILL OF QUANATITY: PLUMBING WORKS:- GROUP 1 (Uttarakhand), No. of Buildings are 5, Type-H.					
BIDDER'S NAME					
S.No.	**DESCRIPTION OF ITEM**	**UNIT**	**QTY**	**RATE**	**AMOUNT**
	PLUMBING WORKS				
1.0	**SUBHEAD - I: Internal Drainage (Rainwater, Soil, Waste & Fittings)**				
1.1	Providing and fixing on wall face unplasticised rigid pvc rain water **pipes** conforming to IS 13592 type a including jointing with seal ring conforming to IS 5382 leaving 10mm gap for thermal expansion (i) single socketed pipes				
	110mm diameter	Metre	80.00		0.00
1.2	Providing and fixing on wall face unplasticised PVC moulded **fittings/ accessories** for unplasticised rigid PVC rain water pipes conforming to IS 13592 type A including jointing with seal ring conforming to IS 5382 leving 10mm gap for thermal expansion				
	Coupler				
	110mm	Each	25.00		0.00
1.3	Single tee without door				
	110x110x110 mm	Each	15.00		0.00
1.4	Bend 87.5o				
	110mm bend	Each	15.00		0.00
1.5	Shoe (plain)				
	110mm shoe	Each	10.00		0.00
1.6	Providing and fixing unplasticised PVC **pipe clips** of approved design to unplasticised PVC rain water pipes by means of 50x50x50mm hard wood plugs screws with MS screws of required length including cutting brick work and fixing in cement mortar 1:4(1cement 4 coarse sand) and making good the wall etc. complete				
	110mm	Each	25.00		0.00
1.7	Providing and fixing to the inlet mouth of rain water pipe cast iron **grating** 15cm dia meter and weighing not less than 440 grams	Each	25.00		0.00
1.8	Providing & fixing stainless steel A ISI 304(18/8) kitchen sink as per I.S 13983 with C.I. brackets and stainless steel plug 40 mm including painting of fittings and brackets, cutting and making good the walls wherever required: Kitchen sink with drain board.				
	510x1040mm bowl depth 250mm	Each	5.00		0.00
1.9	Providing & fixing C.P. brass (Long body) bib cock of approved quality conforming to IS standerd and weight not less then 690 gms.				
	15 mm nominal bore	Each	30.00		0.00
1.10	Providing and fixing grease trap of approved quality & make and as per the direction of Engineering-charge.				
	Grease trap (1.6 LPS) Sise: 600(L) X 450(W) X 415(H) For Stall	Each	5.00		0.00

1.11	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes having thermal stability for hot & cold water supply including all (CPVC) plain & brass threaded fittings including fixing the pipe with clamps at 1.00 m spacing. This includes jointing of pipes & fittings with one step CPVC solvent cement and testing of joints complete as per direction of engineer in charge.				
	Internal Work - Exposed on Wall				
	15 mm nominal outer dia Pipes	RM	20.00		0.00
1.12	20 mm nominal outer dia Pipes	RM	30.00		0.00
1.13	25 mm nominal outer dia Pipes	RM	10.00		0.00
1.14	32 mm nominal outer dia Pipes	RM	5.00		0.00
1.15	Providing and fixing Chlorinate Polyvinyl Chloride (CPVC) pipes having thermal stability for hot & cold water supply including all CPVC plain & brass threaded fittings i/c fixing the pipe with clamps at 1.00 m spacing. This including jointing of pipes & fittings with one step CPVC solvent cement and the cost of cutting chases and making good the the same including testing of joints complete as per direction of engineer in charge.				
	Concealed work including cutting chases and making good the walls etc.				
	15 mm nominal outer dia Pipes	RM	20.00		0.00
1.16	20 mm nominal outer dia Pipes	RM	90.00		0.00
1.17	25 mm nominal outer dia Pipes	RM	20.00		0.00
	TOTAL OF RAIN WATER PIPES AND FITTINGS CARRIED TOSUMMARY				**0.00**
2	**SUBHEAD- II MAN HOLE**				
2.1	Providing and laying non-pressure NP2 class (light duty) R.C.C. pipes with collars jointed with stiff mixture of cement mortar in the proportion of 1:2 (1 cement : 2 fine sand) including testing of joints etc. complete :				
	100 mm dia. R.C.C. pipe	RM	25.00		0.00
2.2	150 mm dia. R.C.C. pipe	RM	50.00		0.00
2.3	250 mm dia. R.C.C. pipe	RM	100.00		0.00
2.4	Providing, laying and jointing glazed stoneware pipes class SP-1 with stiff mixture of cement mortar in the proportion of 1:1 (1 cement : 1 fine sand) including testing of joints etc. complete :				
	100 mm diameter	RM	25.00		0.00
2.5	150 mm diameter	RM	100.00		0.00
2.6	Providing and laying cement concrete 1:5:10 (1 cement : 5 coarse sand : 10 graded stone aggregate 40 mm nominal size) up to haunches of S.W. pipes including bed concrete as per standard design :				
	100 mm diameter	RM	50.00		0.00
2.7	150 mm diameter	RM	100.00		0.00
2.8	250 mm diameter	RM	100.00		0.00
2.9	Constructing brick masonry manhole in cement mortar 1:4 (1 cement : 4 coarse sand) R.C.C. top slab with 1:2:4 mix (1 cement : 2 coarse sand : 4 graded stone aggregate 20mm nominal size), foundation concrete 1:4:8 mix (1 cement : 4 coarse sand : 8 graded stone				

	aggregrate 40mm nominal size) inside plastering 12 mm thick with cement mortar 1:3 (1 Cement : 3 coarse sand) finished with floating coat of neat cement & making channels in cement concrete 1:2:4 mix (1 Cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) finished with a floating coat of neat cement complete as per standard design:				
	Inside size 90x80cm and 45cm deep including C.I. cover with frame (light duty) 455x610mm internal dimensions total weight of cover and frame to be not less than 38kg (weight of cover 23kg and weight of frame 15 kg)				
	With common burnt clay FPS (non modular)bricks of class designation 7.5	Each	20.00		0.00
2.10	Inside size 120x90cm and 90cm deep including C.I. cover with frame (medium duty) 500mm internal diameter, total weight of cover and frame to be not less than 116 kg (weight of cover 58 kg and weight of frame 58 kg)				
	With common burnt clay FPS (non modular) bricks of class designation 7.5.	Each	10.00		0.00
2.11	Extra for depth for manholes				
	Size 90x80 cm				
	With common burnt clay FPS (non modular) bricks of class designation 7.5	Metre	10.00		0.00
2.12	Size 120x90cm				
	With common burnt clay FPS (non modular) bricks of class designation 7.5	Metre	2.50		0.00
2.13	Providing and fixing square-mouth S.W. gully trap class SP1 complete with C.I. grating brick masonry chamber with water tight C.I. cover with frame of 300 x300 mm size (inside) the weight of cover to be not less than 4.50 kg and frame to be not less than 2.70 kg as per standard design :				
	With common burnt clay F.P.S. (non modular) bricks of class designation 7.5	Each	5.00		0.00
2.14	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 50m.				
	All kinds of soil	Cum	75.00		0.00
2.15	Excavating trenches of required width for pipes, cables, etc including excavation for sockets, and dressing of sides, ramming of bottoms, depth upto 1.5 m including getting out the excavated soil, and then returning the soil as required, in layers not exceeding 20cm in depth, including consolidating each deposited layer by ramming, watering, etc. and disposing of surplus excavated soil as directed ,within a lead of 50m.				
	Pipes. cables exceeding 80mm dia but not exceeding 300mm dia.	Metre	100.00		0.00

2.16	Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth: consolidating each deposited layer by ramming and watering, lead up to 50 m and lift upto 1.5 m	Cum	75.00		0.00
2.17	Providing orange colour safety foot rest of minimum 6mm thick plastic encapsulated as per IS : 10910 on 12mm dia steel bar conforming to IS : 1786 having minimum cross section as 23 mmx25mm and over all minimum length 263mm and width as 165mm with minimum 112 mm space between protruded legs having 2mm thread on top surface by ribbing or chequering besides necessary and adequate anchoring projections on tail length on 138mm as per standard drawing and suitable to with stand the bend test and chemical resistant test as per specification and having manufacture's permanent identification mark to be visible even after fixing, including fixing in manhole with 30x20x15 cm cement concrete block 1:3:6 (1cement : 3coarse sand : 6 graded stone aggregate 20 mm nominal size) complete as per design.	Each	100.00		0.00
	Constructing brick masonry road gully chamber 50x45x60 cm with bricks in cement mortar 1:4 (1 cement :4 coarse sand) including 500x450mm precast R.C.C. horizontal grating with frame complete as per standard design:				
	With common burnt clay F.P.S. bricks(non modular) of class designation 7.5	Each	10.00		0.00
2.18	Constructing brick masonry road gully chamber 45x45x77.5 cm with bricks in cement mortar 1:4 (1 cement :4 coarse sand) with precast R.C.C. vertical grating complete as per standard design:				
	With common burnt clay F.P.S. bricks(non modular) of class designation 7.5	Each	10.00		0.00
2.19	Providing, fixing, jointing and testing in position of ISI marked UV stabilized UPVC pipes for soil, waste and vent, Type-B as per IS : 13592 suitable for rubber ring joints, including all neccessary specials and fittings (confirming to IS:14735) i.e. bends, tees, junctions (with or without doors), reducers, WC connectors, couplers, cowels, clamps, rubber rings, clean outs etc. fixing at wall/ ceiling/ floor level supported by clamp & hangers etc. in concealed / inside duct / under floor & basement ceiling / external work etc. including chase cutting as required, excavation and back filling in all kind of soils, suspended from floor under false ceiling or embedding the pipes laid under floors / building in 75 mm. alround 1:2:4 cement concrete (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) including cost of shuttering for proper completion of the work, breaking and making good the walls and floors etc. after pipes have been duly laid and tested. The rubber ring shall confirm to IS:5382.				
	The Pipes will be supported with threaded G I rods & clamps on 50x50x5 mm slotted angle. The cost will include all support arrangements. The work includes commissioning of all pipes lines as per drawings and specifications and as directed by engg-in-charge at site.				
	75mm outer dia	Metre	15.00		0.00
	110mm outer dia	Metre	15.00		0.00

	160mm outer dia	Metre	20.00		0.00
2.20	Providing, fixing, jointing and testing in position ISI marked (IS:4985) UPVC pipes of min 6 Kg/ Sqcm rating with fitting for waste pipe from fixtures to floor trap including reduces, enlarger, socket, couplers, bends, tees etc including fixing at wall/ ceiling level supported by clamp & hangers etc. cutting holes in wall/ floors/ slabs and making good the same with cement concrete 1:2:4 complete as required.				
	40mm outer dia	Metre	15.00		0.00
	50mm outer dia	Metre	15.00		0.00
	63mm outer dia	Metre	15.00		0.00
2.21	Providing & fixing UPVC **Floor trap** of self cleansing design with CP Jali complete in all respects. (Make: Supreme / Finolex / Prince).				
	a) 100 mm inlet and 100 mm outlet.				
	(with 127dia Glossy CP Grating Jayna				
	model no. RRB 127)	Each	5.00		0.00
	b) 100 mm inlet and 75 mm outlet.				
	(with 102 mm dia CP Glossy Grating Jayna				
	model no. RRB 102)	Each	1.00		0.00
2.22	Providing & fixing 110m x 50mm waste with PVC reducer including cutting chases in floor, cutting RCC slab complete as required.	Each	5.00		0.00
	TOTAL OF MAN HOLE CARRIED TO SUMMARY				**0.00**
3	**SUBHEAD -III PUMP**				
3.1	Providing & fixing fully submersible sump pumps for dewatering with C.I casing & shaft suitable for operation on 400 / 440 V,3 phase, pH 50 cycle A/C power supply.				
	Sump Pumps (For basement drainage)				
	Location - Inside Drainage sump with electrical panel & all controls, cyclic operation				
	2 pumps- both working during extra high level in sump.				
	Flow rate (each pump) = 3 lps, head=12m.				
	Solid Handlling-15mm	Set	1.00		0.00
	Providing and fixing gun metal non- return valve of approved quality (screwed end) :				
	32 mm nominal bore	Each	5.00		0.00
3.2	Vertical				
	40 mm nominal bore	Each	5.00		0.00
3.3	Vertical				
	50 mm nominal bore	Each	5.00		0.00
	TOTAL OF PUMP CARRIED TO SUMMARY				**0.00**
4	**Subhead-IV: External Water Supply**				
4.1	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes having thermal stability for hot & cold-water supply including all (CPVC) plain & brass threaded fittings. This includes jointing of pipes & fittings with one step CPVC solvent cement, trenching, refilling and testing of joints complete as per direction of engineer in charge.				

	20 mm nominal outer dia Pipes	RM	25.00		0.00
4.2	25 mm nominal outer dia Pipes	RM	25.00		0.00
4.3	32 mm nominal outer dia Pipes	RM	25.00		0.00
4.4	40 mm nominal outer dia Pipes	RM	25.00		0.00
4.5	Providing and fixing gun metal gate valve with C.I. wheel of approved quality (screwed end) :				
	25 mm dia nominal bore	Each	5.00		0.00
4.6	20 mm dia nominal bore	Each	10.00		0.00
4.7	32 mm dia nominal bore	Each	10.00		0.00
4.8	40 mm dia nominal bore	Each	10.00		0.00
	TOTAL OF External Water Supply CARRIED TO SUMMARY				**0.00**
5	**Subhead-V: RAIN WATER HARVESTING PIT**				
5.1	Providing and constructing Rainwater harvesting pit of 2500 (Dia mm) X 2500mm (D) size (Internal) in overall size with inlet and outlet connection with upto 150mm from ground level 1st class brick 230mm thick in Cement mortar 1:4 (1 Cement : 4 Coarse sand) inside and outside 12mm thick plaster with Cement mortar 1:3 (1 Cement : 3 Coarse sand) with a floating coat of neat cement on inside surface. After 1500, depth 500mm thick border. C.I. (heavy duty) manhole cover 560mm (weight not less than 208 kg) including necessary excavation (all type SOIL hard-rock)backing filling, disposal of surplus earth, providing and fixing of C.I. manhole steps complete as per standard design.	Each	5.00		0.00
5.2	Boring/drilling bore well of required dia for casing / strainer pipe, by suitable method prescribed in IS:2800 (part-1) including collecting samples from different strata, preparing and submitting strata chart/bore log, including hire & running charges of all equipments, tools, plants & machineries required for the job, all complete as per direction of engineer-in-charge, upto 90 metre depth below ground level.				
	All type sof soil				
	350mm dia	Metre	60.00		0.00
5.3	Supplying, assembling, lowering and fixing in vertical position in bore well unplasticized PVC medium well screen (RMS) pipes with ribs, conforming to IS : 12818, including hire & labour charges, fittings & accessories etc, all complete, for all depths, as per direction of engineer-in-charge.				
	200mm nominal dia	Metre	60.00		0.00
5.4	Supplying & filling, sepreading & leveling stone boulders of size range 5cm to 20cm, in the recharge pit, in the required thickness, for all leads & lifts, all complete, for all depths, as per direction of engineer-in-charge.	Cum	25.00		0.00
5.4	Supplying & filling, sepreading & leveling gravels of size range 5mm to 10mm, in the recharge pit, over the existing layer of boulders, in the required thickness, for all leads & lifts, all complete, as per direction of engineer-in-charge.	Cum	25.00		0.00
5.6	Supplying & filling, sepreading & leveling coarse sand of size range 1.5mm to 20mm, in the recharge pit, in the required thickness over	Cum	25.00		0.00

	gravel layer, for all leads & lifts, all complete, as per direction of engineer-in-charge.				
5.7	Providing and fixing Bail plug / Bottom plub of required dia to the bottom of pipe assembly of tubewell as per IS : 2800 (part -1)				
	200mm dia	Each	5.00		0.00
5.8	Providing and fixing in position pre-cast RCC manhole cover and frame of required shape & approved quality				
	EHD-35				
	Circular shape 560 mm internal diameter	Each	10.00		0.00
	TOTAL OF RAIN WATER HARVESTING CARRIED TO SUMMARY				**0.00**
6	**Subhead:- VI - Sanitary Fixtures**				
6.1	Providing & fixing of white vitreous china pedestal type water closet(European type) with seat and lid, 10 liter low level white viterous china flushing cistern C.P.flush bend with fittings & C.I.brackets ,40mm flush bend, overflow arrangment with specials of standard make and mosquito proof coupling of approved municipala design complete including painting of fittings and brackets, cutting and making good the wall and Floors wherever required:				
	W.C pan with ISI marked white solid plastic seat and lid.	Each	5.00		0.00
6.2	Providing & fixing wash basin with C.I. brackets, C.P brass pillar taps,32 mm C.P. brass waste of standard pattern, including painting of fittings and brackets,cutting and making good the walls wherever required:				
	White Vitreous China Wash basin size 550x400 mm with a pair of 15 mm C.P. brass pillar taps	Each	5.00		0.00
6.3	Providing and fixing PTMT towel ring trapezoidal shape 215 mm long, 200 mm wide with minimum distances of 37 mm from wall face with concealed fittings arrangement of approved quality and colour, weighing not less than 88 gms.	Each	5.00		0.00
6.4	Providing & fixing PTMT soap dish Holder having length of 138mm, breadth 102mm, height of 75mm with concealed fitting arrangements. Weighing not less than 106gms.	Each	5.00		0.00
6.5	Providing & fixing mirror of superior glass(of aproved quality) and of required shape and size with plastic moulded frame of approved make and shade with 6mm thick hard board backing:				
	Rectangular Shape 453x357mm	Each	5.00		0.00
6.6	Providing and fixing toilet paper holder :				
	C.P. brass	Each	5.00		0.00
6.7	Providing and fixing P.V.C waste pipe for sink or wash basin including P.V.C waste fitting complete.				
	Semi rigid pipe				
	a) 40 mm dia	Each	5.00		0.00
6.8	Providing and fixing C.P.brass bottle trap 32mm size bottle trap of approved quality & make as approved by Engineer-in-charge.	Each	5.00		0.00
6.9.	Providing and fixing P.V.C connection with brass union.				

	45cm length.				
	15mm nominal bore	Each	20.00		0.00
6.10	Providing and fixing C.P. bass angle valve for basin mixer and geyser points of approved quality conforming to I.S:8931.				
	15 mm nominal bore	Each	20.00		0.00
6.11	Providing & fixing C.P. hand spray with lever control (health faucet) and flexible hose 1 m long connection with C.P. holder for hand spray complete in all respects as per direction of Engineer-Incharge.	Each	5.00		0.00
6.12	Providing and placing on terrace (at all floor levels) polyethylene water storage tank, IS : 12701 marked, with cover and suitable locking arrangement and making necessary holes for inlet, outlet and overflow pipes but without fittings and the base support for tank.	per ltr	1000.00		0.00
6.13	Providing and fixing white vitreous china flat back half stall urinal of size 580x380x350 mm with white PVC automatic flushing cistern, with fittings, standard size C.P. brass flush pipe, spreaders with unions and clamps (all in C.P. brass) with waste fitting as per IS :2556, C.I. trap with outlet grating and other couplings in C.P. brass,including painting of fittings and cutting and making good the walls and floors wherever required :				
	Single half stall urinal with 5 litre P.V.C. automatic flushing cistern	Each	5.00		0.00
	TOTAL OF SANITARY FIXTURES CARRIED TO SUMMARY				**0.00**
7	**Subhead:- VII SEPTIC TANK FIXTURES**				
7.1	Supplying and fixing C.I. cover without frame for manholes :				
	455x610 mm rectangular C.I. cover (light duty) the weight of the cover to be not less than 23 kg	Each	10.00		0.00
7.2	Supplying and fixing CI vent pipe--80 mm dia	RM	25.00		0.00
7.3	Supplying and fixing CI cowl.	Each	5.00		0.00
7.4	Making soak pit 2.5 m diameter 3.0 metre deep with 45 x 45 cm dry brick honey comb shaft with bricks and S.W. drain pipe 100 mm diameter, 1.8 m long complete as per standard design.				
	With common burnt clay F.P.S. (non modular) bricks of class designation 7.5	Each	5.00		0.00
	TOTAL OF SEPTIC TANK CARRIED TO SUMMARY				**0.00**
	GRAND TOTAL OF PUMBING WORKS				**0.00**

Ref: ITI/NSU/CIVIL-DEL/2023/0106/01				Date 15-03-2023	
ITI LMITED **NETWORK SYSTEM UNIThip** **DOORVANINAGAR, BANGALORE 560 016.**					
BILL OF QUANTITY: IT & FIRE FIGHTING WORKS :- GROUP 1 (Uttarakhand), No. of Buildings are 5, Type-H.					
BIDDER'S NAME					
S.No.	**Description**	**Unit**	**QTY**	**RATE**	**Amount**
1	**ACCESS CONTROL SYSTEM consisting of the following** (a) Supply, Installation, testing and commissioning of the access control system including the following equipments including necessary fitting, fixtures, cables, etc. (Model No./make RBH-Axiom) 1 nos per node. (b) 2-Door Control Panel with universal cabinet and power supply and required license.(Model No./make RBH-IRC-2000) 3 nos each per node. (c) Biometric reader. (Model No./make BFR-350) 5 nos each per node. (d) PROXIMITY CARD. (Model No./make PBH Smart Card) 20 nos each per node.	Set	5.00		0
	TOTAL FOR ACCESS CONTROL SYSTEMS WORKS				**0**
2	**VIDEO SURVEYLANCE SYSTEMS** Supply, installation, testing and commissioning of physical intrusion detection and prevention system including all necessary accessories, wires and fixtures. The system should be equipped with central monitoring software and server at NOC with complete necessary licenses (a) Indoor Dome Camera (Model No Mobotix m 26) 3 Nos per node (b) Out door type camera (Model No Mobotix m 26) 5 Nos per node (c) Network Vide Recorder system (Brand Mobotix) 1 Nos per node (d) 22" lcd display complete with all wiring and necessary fittings. (Make Samsung/LG) 1 Nos per node (e) 1 no PC loaded/ installed with necessary lisc. Software for video surveylance. (Make Software: Mobotix, PC Hardware: Dell/HP) 1 Nos per node	**Set**	5.00		0
	TOTAL FOR VIDEO SURVEYLANCE SYSTEMS				**0**
3	**PHYSICAL INTRUSION DETECTION AND PREVENTION SYSTEM consisting of the following:** (a) Supply, installation, testing and commissioning of physical intrusion detection and prevention system including all necessary accessories.(Model No Securico President) 1 nos each per node. B)Intrusion Controller panel(Make :Securico President). 1 no per node. C)Keypad - Alpha Addressable LCD Keypad (Model No Securico President). 1 per node. D) PIR Sensor (make: Optex). Qty: 8 nos per node. E) Beam Protector (Covering the entire parameter of the node) (make:Optex). Qty: 10 per node. F) Ground sensor (make: Optex). Qty: 8 nos per node. G) 130 db hooter (Make: Securico) Qty: 4 no per node. H) 2ft pole for beam detector (GI Pipe). Qty: 5 nos per node.	**Set**	5.00		0
	TOTAL FOR PHYSICAL INTRUSION SYSTEM WORKS				**0**

4	**FIRE DETECTION AND SUPPRESSION SYSTEM consisting of the following:** **(**a) Supplying, installing, testing and commissioning of addressable Main control panel comprising of visual and audible fire and fault alarms and signals, indicators and all other accessories. Panel shall be IS Approved. The system shall be nstalled with complete necessary fittings and fixtures including 2C x 1.5 sqmm and 2C x 2.5 sqmm ISI marked cables and wires. All the conduits hall be as per NBC specifications. (Model No Kentek Syncro As) 1 nos each per node. (b) OTI-AX-200TE - Photoelectric Detector with Synchronized twin beam, 200ft outdoor all weather range, IP65 Lightning Protection Level 14kV, 99% beam blocking stability includes pole mounting kit (Model No OTI-AX-200TE) 5 nos each per node. (c) OTIBC3 - Back cover for OTIAX200TF (Model No OTIBC3) 5 nos each per node. (d) SOUNDER 12V - High power 130 db, Police Siren Sound, Suitable for Indoor and Outdoor application. Tamper Loop. (Model No Roshni red 32 tone) 4 nos each per node. (e) Smoke detectors (Model No Apollo Discover / 58000-600) 32 nos each per node. (f) Heat detectors (Model No Apollo Discover / 58000-400) 1 nos each per node. (g) Multi-Criteria detectors(Model No Apollo Discover) 3 nos each per node. (h) Manual Call Point (Breaking Glass type)(Model No Apollo Discover /55000-971) 5 nos each per node. (j) Sounder / Flasher with Control Module (Model No Apollo Discover) 8 nos each per node. (k) Short Circuit Isolator 1 nos each per node. (l) Control modules for AHU / FAN trappings(Model No/Make: SS) 2 nos each per node. (m) Fire Signages- photoluminescent Green or Red color safety signages in different sizes / graphics / colours /texts can be made according to the standards 2 nos each per node. **(a) GAS SUPPRESSION SYSTEM** FM 200 Gas based Fire Suppression System shall be considered for equipment storage room and server room. Qty 1 no system per node. **FIRE EXTINGUISHER** **(a)** CO2 type cylindrical shape fire extinguisher - 4.5 Kg Capacity with requisite fixing arrangement (Model No/make Ventex) 5 nos each per node. (b) ABC type fire extinguisher - 6 Kg capacity with requisite fixing arrrangement (Model No/make Ventex) 5 nos each per node. (c) Dry chemical powder type cylindrical shape fire extinguisher - 6 Kg Capacity with requisite fixing arrangement (Model No/make Ventex Dry powder 4308/14609) 5 nos each per node. (d) Mechanical foam type fire extinguishers with requisite fixing arrangement (Model No/make Ventex) 5 nos each per node. (e) Trolley mounted type - 9 litres capacity. 1 nos each per node. (f) Trolley mounted type -50 litres capacity. 1 nos each per node.	**Set**	5.00		0

	(g) Supply and installation of Fire buckets of 9 litres capacity. Stand made of MS Channel and angle to accommodate 4 Nos. of buckets filled with cleaned soft sand. Rate shall be inclusive of red panit for buckets and MS Sand as per Fire Code. 5 nos each per node.				
	TOTAL FOR FIRE FIGHTING WORKS				**0**
	GRAND TOTAL OF IT & FIRE FIGHTING WORKS				**0**

Ref: ITI/NSU/CIVIL-DEL/2023/0106/01			Date 15-03-2023
ITI LMITED NETWORK SYSTEM UNIT DOORVANINAGAR, BANGALORE 560 016.			
SUMMARY SHEET :- GROUP 2 (Uttarakhand), No. of Buildings are 8, Type-H.			
BIDDER'S NAME			
Sl.No.	**DESCRIPTION**	**AMOUNT (Rs.)**	**AMOUNT IN WORDS (Rs.)**
I	**SECTION A**		
	CIVIL WORKS	0.00	
II	**SECTION B**		
	ELECTRICAL WORKS	0.00	
III	**SECTION C**		
	PLUMBING WORKS	0.00	
IV	**SECTION D**		
	IT AND FIRE FIGHTING WORKS	0.00	
	GRAND TOTAL FOR THE PROJECT	**0.00**	

Ref: ITI/NSU/CIVIL-DEL/2023/0106/01				Date 15-03-2023	
ITI LMITED NETWORK SYSTEM UNIT DOORVANINAGAR, BANGALORE 560 016.					
BILL OF QUANTITY : CIVIL WORKS :- GROUP 2 (Uttarakhand), No. of Buildings are 8, Type-H.					
BIDDER'S NAME					
S.No	**DESCRIPTION**	**UNIT**	**QTY**	**RATE**	**AMOUNT**
1	**SECTION-1: EARTHWORK**				
1.1	Earth work in excavation by mechanical means (Hydraulic excavator)/ manual means over areas (exceeding 30 cm in depth, 1.5 m in width as well as 10 sqm on plan) including getting out and disposal of excavated earth lead upto 50 m and lift upto 1.5 m, as directed by Engineer-in- charge.				
	All kinds of soil.:	Cum	151.97		0.00
1.2	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 kinds of soil.:	cum	303.94		0.00
1.3	Excavation work by mechanical means (Hydraulic excavator)/ manual means in foundation trenches or drains (not exceeding 1.5m 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 soils as directed, within a lead of 50 m.				
	Ordinary rock	cum	1519.71		0.00
1.4	Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift upto 1.5 m.	cum	4406.35		0.00
1.5	Extra for every additional lift of 1.5 m or part thereof in excavation / banking excavated or stacked materials. **: For Excavation beyond 1.5m depth**				
	All kinds of soil	cum	281.60		0.00
1.6	Supplying and filling in plinth with sand under floors, including watering, ramming, consolidating and dressing complete.	cum	199.00		0.00
	NOTE: Deduction shall be made of columns, brick walls etc. for calculation of quantity of sand filling for payment				
1.7	Surface dressing of the ground including removing vegetation and inequalities not exceeding 15 cm deep and disposal of rubbish, lead up to 50 m and lift up to 1.5 m.				
	All kinds of soil	sqm	6000.00		0.00

1.8	Supplying chemical emulsion in sealed containers including delivery as specified.				
	Chlorpyriphos/ Lindane emulsifiable concentrate of 20%	Litre	353.87		0.00
1.9	Diluting and injecting chemical emulsion for POST-CONSTRUCTIONAL anti-termite treatment (excluding the cost of chemical emulsion):				
	Along external wall where the apron is not provided using chemical emulsion @ 7.5 litres / sqm of the vertical surface of the substructure to a depth of 300mm including excavation channel along the wall & rodding etc. complete:				
	With Chlorpyriphos/ Lindane E.C. 20% with 1% concentration	Metre	540.00		0.00
1.10	Along the external wall below concrete or masonry apron using chemical emulsion @ 2.25 litres per linear metre including drilling and plugging holes etc.:				
	With Chlorpyriphos/ Lindane E.C. 20% with 1% concentration	Metre	1080.00		0.00
1.11	Treatment of soil under existing floors using chemical emulsion @ one litre per hole, 300 mm apart including drilling 12 mm diameter holes and plugging with cement mortar 1 :2 (1 cement : 2 Coarse sand) to match the existing floor:				
	With Chlorpyriphos/Lindane E.C. 20% with 1% concentration	Sqm	940.80		0.00
1.12	Treatment of existing masonry using chemical emulsion @ one litre per hole at 300 mm interval including drilling holes at 45 degree and plugging them with cement mortar 1:2 (1 cement : 2 coarse sand) to the full depth of the hole :				
	With Chlorpyriphos/Lindane E.C. 20% with 1% concentration	Metre	43.20		0.00
1.13	Treatment at points of contact of wood work by chemical emulsion Chlorpyriphos/ Lindane (in oil or kerosene based solution) @ 0.5 litres per hole by drilling 6 mm dia holes at downward angle of 45 degree at 150 mm centre to centre and sealing the same	Sqm	80.00		0.00
	Total for EarthWork				**0.00**
2	**SECTION-2: CONCRETE WORK**				
2.1	Providing and laying in position cement concrete of specified grade excluding the cost of centering and shttering - All work up to plinth level:				
	1:2:4 (1 cement : 2 coarse sand (zone-III) derived from natural sources : 4 graded stone aggregate 20 mm nominal size derived from natural sources)	cum	223.57		0.00
2.2	1:4:8 (1 Cement : 4 coarse sand : 8 graded stone aggregate 20 mm nominal size)	cum	396.56		0.00
2.3	Providing and laying damp-proof course 50mm thick with cement concrete 1:2:4 (1 cement : 2 coarse sand(zone-III) : 4 graded stone aggregate 20mm nominal size).	sqm	206.77		0.00
2.4	Making plinth protection 50mm thick of cement concrete 1:3:6 (1 cement : 3 coarse sand (zone - III) : 6 graded stone aggregate 20 mm nominal size) over 75mm thick bed of dry brick ballast 40 mm nominal size, well rammed and	Sqm	143.52		0.00

	consolidated and grouted with fine sand, including necessary excavation, levelling & dressing & finishing the top smooth.				
	Total for Concrete Work				**0.00**
3	**SECTION-3: REINFORCED CEMENT CONCRETE**				
3.1	Providing and laying in position specified grade of reinforced cement concrete, excluding the cost of centering, shuttering, finishing and reinforcement - All work up to plinth level:				
	M 25 (1 cement : 1 coarse sand(zone-III) : 2 graded stone aggregate 20 mm nominal size)	cum	378.40		0.00
3.2	Reinforced cement concrete work in walls (any thickness), including attached pilasters, buttresses, plinth and string courses, fillets, columns, pillars, piers, abutments, posts and struts etc. above plinth level up to floor five level, excluding cost of centering, shuttering, finishing and reinforcement :				
	M 25 (1 cement : 1 coarse sand(zone-III) : 2 graded stone aggregate 20 mm nominal size)	cum	68.43		0.00
3.3	Reinforced cement concrete work in beams, suspended floors, roofs having slope up to 15° landings, balconies, shelves, chajjas, lintels, bands, plain window sills, staircases and spiral stair cases above plinth level up to floor five level, excluding the cost of centering, shuttering, finishing and reinforcement with M 25 (1 cement : 1 coarse sand(zone-III) : 2 graded stone aggregate 20 mm nominal size)	cum	30.00		0.00
	Centering & shuttering including strutting, propping etc. and removal of form work for:				
3.4	Foundations, footings, bases of columns etc. for mass concrete.	sqm	879.30		0.00
3.5	Suspended floors, roofs, landings, balconies and access platform	sqm	80.00		0.00
3.6	Lintels, beams, plinth beams, girders, bressumers and cantilevers.	sqm	2077.39		0.00
3.7	Columns, Pillars, Piers, Abutments, Posts and Struts	sqm	777.60		0.00
3.8	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 of grade Fe-500D or more.	kg	47000.00		0.00
	Total for RCC Work				**0.00**
4	**SECTION-4: BRICK WORK**				
4.1	Brick work with common burnt clay F.P.S. (non modular) bricks of class designation 7.5 in foundation and plinth in:				
	Cement mortar 1:6 (1 cement : 6 coarse sand)	cum	255.48		0.00

4.2	**Brick work** with common burnt clay F.P.S. (non modular) bricks of class designation 7.5 in superstructure above plinth level up to floor V level in all shapes and sizes in :				
	Cement mortar 1:6 (1 cement : 6 coarse sand)	cum.	599.67		0.00
	HALF BRICK WORK				
4.3	Half brick masonry with common burnt clay F.P.S. (non modular) bricks of class designation 7.5 in superstructure above plinth level up to floor V level.				
	Cement mortar 1:4 (1 cement :4 coarse sand)	sqm	569.52		0.00
4.4	Extra for providing and placing in position 2 Nos 6mm dia. M.S. bars at every third course of half brick masonry. Quantities sames as DSR item no. 6.13.2	sqm	569.52		0.00
	Total for Brick Work				**0.00**
5	**SECTION-5: STONE WORK**				
5.1	Random rubble masonry with hard stone in foundation and plinth including levelling up with cement concrete 1:6:12 (1 cement : 6 coarse sand : 12 graded stone aggregate 20 mm nominal size) upto plinth level with :				
	Cement mortar 1:6 (1 cement : 6 coarse sand)	Cum	5.49		0.00
5.2	Coursed rubble masonry with hard stone (first or second sort) in superstructure above plinth level and upto floor five level.				
	Masonry work (first sort), in cement mortar 1:6 (1 cement : 6 coarse sand)	Cum	11.04		0.00
	Total for Stone Work				**0.00**
6	**SECTION-6:GRANITE WORK**				
6.1	Providing and fixing 18 mm thick gang saw cut, mirror polished, premoulded and prepolished, machine cut for kitchen platforms, vanity counters, window sills, facias and similar locations of required size, approved shade, colour and texture laid over 20 mm thick base cement mortar 1:4 (1 cement : 4 coarse sand), joints treated with white cement, mixed with matching pigment, epoxy touch ups, including rubbing, curing, moulding and polishing to edges to give high gloss finish etc. complete at all levels.				
	Granite of any colour and shade				
	Area of slab over 0.50 sqm	Sqm	3.60		0.00
6.2	Extra for providing opening of required size & shape for wash basin/ kitchen sink in kitchen platform, vanity counter and similar location in marble/ Granite/ stone work, including necessary holes for pillar taps etc. including moulding, rubbing and polishing of cut edges etc. complete.	Each	8.00		0.00

6.3	Providing and fixing Ist quality ceramic glazed wall tiles conforming to IS: 15622 (thickness to be specified by the manufacturer), of approved make, in all colours, shades except burgundy, bottle green, black of any size as approved by Engineer-in-Charge, in skirting, risers of steps and dados, over 12 mm thick bed of cement mortar 1:3 (1 cement : 3 coarse sand) and jointing with grey cement slurry @ 3.3kg per sqm, including pointing in white cement mixed with pigment of matching shade complete.	Sqm	126.21		0.00
	Total for Cladding Work				**0.00**
7	**SECTION-7:DOORS & WINDOWS WORKS**				
7.1	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).				
	Second class teak wood	cum	0.35		0.00
7.2	Providing and fixing panelling or panelling and glazing in panelled or panelled and glazed shutters for doors, windows and clerestory windows (Area of opening for panel inserts excluding portion inside grooves or rebates to be measured). Panelling for panelled or panelled and glazed shutters 25 mm to 40 mm thick :				
	Float glass panes				
	4 mm thick glass pane (weight not less than 10kg/sqm).	Sqm	489.13		0.00
7.3	5.0 mm thick glass panes (weight not less than 12.50 kg/sqm).	Sqm	66.00		0.00
7.4	Providing and fixing ISI marked flush door shutters conforming to IS : 2202 (Part I) decorative type, core of block board construction with frame of 1st class hard wood and well matched teak 3 ply veneering with vertical grains or cross bands and face veneers on both faces of shutters.				
	35 mm thick including ISI marked Stainless Steel butt hinges with necessary screws	Sqm	195.89		0.00
7.5	Extra for providing lipping with 2nd class teak wood battens 25 mm minimum depth on all edges of flush door shutters (over all area of door shutter to be measured).	Sqm	401.28		0.00
7.6	Extra for providing vision panel not exceeding 0.1 sqm in all type of flush doors (cost of glass excluded) (overall area of door shutter to be measured):				
	Rectangular or square	Sqm	195.89		0.00

7.7	Providing and fixing wire gauge shutters using galvanized M.S. wire gauge of average width of aperture 1.4 mm in both directions with wire of dia 0.63 mm, for doors, windows and clerestory windows with hinges and necessary screws :				
	30 mm thick shutters				
	With ISI marked stainless steel butt hinges of required size				
	Second class teak wood	Sqm	38.81		0.00
7.8	Providing and fixing wooden moulded beading to door and window frames with iron screws, plugs and priming coat on unexposed surface etc. complete :				
	2nd class teak wood				
	50x12 mm	meter	46.80		0.00
7.9	Providing and fixing nickel plated M.S. pipe curtain rods with nickel plated brackets :				
	20 mm dia (heavy type)	meter	198.00		0.00
7.10	Providing and fixing aluminium extruded section body tubular type universal hydraulic door closer (having brand logo with ISi, IS : 3564, embossed on the body, door weight upto 36 kg to 80 kg and door width from 701 mm to 1000 mm), with double speed adjustment with necessary accessories and screws etc. complete.	Each	8.00		0.00
7.11	Providing 40x5 mm flat iron hold fast 40 cm long including fixing to frame with 10 mm diameter bolts, nuts and wooden plugs and embedding in cement concrete block 30x10x15cm 1:3:6 mix (1 cement : 3 coarse sand : 6 graded stone aggregate 20mm nominal size).	Each	8.00		0.00
7.12	Providing and fixing ISI marked oxidised M.S. handles conforming to IS:4992 with necessary screws etc. complete :				
	100 mm	Each	80.00		0.00
7.13	Providing and fixing aluminium sliding door bolts, ISI marked anodised (anodic coating not less than grade AC 10 as per IS : 1868), transparent or dyed to required colour or shade, with nuts and screws etc. complete				
	250x16 mm	Each	88.00		0.00
7.14	Providing and fixing aluminium tower bolts, ISI marked, anodised (anodic coating not less than grade AC 10 as per IS : 1868) transparent or dyed to required colour or shade, with necessary screws etc. complete :				
	250x10 mm	Each	88.00		0.00
7.15	200x10 mm	Each	88.00		0.00

7.16	Providing and fixing aluminium handles, ISI marked, anodised (anodic coating not less than grade AC 10 as per IS : 1868) transparent or dyed to required colour or shade, with necessary screws etc. complete :				
	125 mm	Each	160.00		0.00
7.17	Providing and fixing aluminium hanging floor door stopper, ISI marked, anodised (anodic coating not less than grade AC 10 as per IS : 1868) transparent or dyed to required colour and shade, with necessary screws etc. complete.				
	Single rubber stopper	Each	80.00		0.00
7.18	Providing and fixing PTMT door catcher of length 72 mm and dia. of 42 mm with suitable washers weighing not less than 33 gms	Each	80.00		0.00
7.19	Providing and fixing factory made uPVC white colour sliding glazed window upto 1.50 m in height dimension comprising of uPVC multi-chambered frame with in-built roller track and sash extruded profiles duly reinforced with 1.60 ± 0.2 mm thick galvanized mild steel section made from roll forming process of required length (shape & size according to uPVC profile), appropriate dimension of uPVC extruded glazing beads and uPVC extruded interlocks, EPDM gasket, wool pile, zinc alloy (white powder coated) touch locks with hook, zinc alloy body with single nylon rollers (weight bearing capacity to be 40 kg), G.I fasteners 100 x 8 mm size for fixing frame to finished wall and necessary stainless steel screws etc. Profile of frame & sash shall be mitred cut and fusion welded at all corners, including drilling of holes for fixing hardware's and drainage of water etc. After fixing frame the gap between frame and adjacent finished wall shall be filled with weather proof silicon sealent over backer rod of required size and of approved quality, all complete as per approved drawing & direction of Engineer-in-Charge. (Single / double glass panes, wire mesh and silicon sealent shall be paid separately). Variation in profile dimension in higher side shall be accepted but no extra payment on this account shall be made.				
	Note: For uPVC frame and sash extruded profiles minus 5% tolerance in dimension i.e. in depth & width of profile shall be acceptable.				
	Two track two panels sliding window made of (small series) frame 52 x 44 mm &sash 32 x 60 mm both having wall thickness of 1.9 ± 0.2 mm and single glazing bead of appropriate dimension. (Area of window upto 1.75 sqm)	Sqm	10.69		0.00

7.20	Three track three panels sliding window with fly proof S.S wire mesh (Two nos. glazed & one no. wire mesh panels) madeof(bigseries)frame116x45mm&sash46x62mm both having wall thickness of 2.3 ± 0.2 mm and single glazing bead / double glazing bead of appropriate dimension. (Area of window above 1.75 sqm).	Sqm	126.72		0.00
7.21	Providing and fixing zinc alloyed (white powder coated) touch lock for uPVC sliding window with necessary screws etc. complete.	Each	70.40		0.00
	Total for Wood Work				**0.00**
8	**SECTION-8:STEEL WORK**				
8.1	Structural steel work riveted, bolted or welded in built up sections, trusses and framed work, including cutting, hoisting, fixing in position and applying a priming coat of approved steel primer with two coat of synthetic enamel paint all complete.	kg	45000.00		0.00
8.2	Providing and fixing 1mm thick M.S. sheet door with frame of 40x40x6 mm angle iron and 3 mm M.S. gusset plates at the junctions and corners, all necessary fittings complete, including applying a priming coat of approved steel primer.				
	Using M.S. angels 40x40x6 mm for diagonal braces	Sqm	184.32		0.00
8.3	Supplying and fixing rolling shutters of approved make, made of required size M.S. laths, interlocked together through their entire length and jointed together at the end by end locks, mounted on specially designed pipe shaft with brackets, side guides and arrangements for inside and outside locking with push and pull operation complete, including the cost of providing and fixing necessary 27.5 cm long wire springs manufactured from high tensile steel wire of adequate strength conforming to IS: 4454 - part 1 and M.S. top cover of required thickness for rolling shutters.				
	80x1.20 mm M.S. laths with 1.20 mm thick top cover	Sqm	96.00		0.00
8.4	Providing and fixing ball bearing for rolling shutters.	Each	16.00		0.00
8.5	Providing and fixing factory made ISI marked steel glazed doors, windows and ventilators, side /top /centre hung, with beading and all members such as F7D,F4B, K11 B and K12 B etc. complete of standard rolled steel sections, joints mitred and flash butt welded and sash bars tenoned and riveted, including providing and fixing of hinges, pivots, including priming coat of approved steel primer, but excluding the cost of other fittings, complete all as per approved design, (sectional weight of only steel members shall be measured for payment).				

	Fixing with 15x3 mm lugs 10 cm long embedded in cement concrete block 15x10x10 cm of C.C. 1:3:6 (1 Cement : 3 coarse sand : 6 graded stone aggregate 20 mm nominal size)	kg	1379.40		0.00
8.6	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.				
	Hot finished seamless type tubes	kg	19171.62		0.00
8.7	Providing and fixing mild steel round holding down bolts with nuts and washer plates complete.	kg	332.80		0.00
8.8	Providing and fixing bolts including nuts and washers complete.	kg	574.08		0.00
8.9	Steel work welded in built up sections/ framed work, including cutting, hoisting, fixing in position and applying a priming coat of approved steel primer using structural steel etc. as required.				
	In gratings, frames, guard bar, ladder, railings, brackets, gates and similar works	kg	800.00		0.00
8.10	Providing & fixing glass panes with putty and glazing clips in steel doors, windows, clerestory windows, all complete with:				
	4.0 mm thick glass panes	Sqm	356.40		0.00
	Total for Steel Works				**0.00**
9	**SECTION-9:FLOORING WORK**				
9.1	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	431.20		0.00
9.2	Cement plaster skirting up to 30 cm height, with cement mortar 1:3 (1 cement : 3 coarse sand), finished with a floating coat of neat cement.				
	18 mm thick	sqm	22.64		0.00
9.3	Providing and fixing glass strips in joints of terrazo/ cement concrete floors.				
	40 mm wide and 4 mm thick	rmt	226.40		0.00
9.4	Marble stone flooring with 18 mm thick marble stone, as per sample of marble approved by Engineer-in-charge, over 20 mm (average) thick base of cement mortar 1:4 (1 cement : 4 coarse sand) laid and jointed with grey cement slurry, including rubbing and polishing complete with :				
	Udaipur green marble	Sqm	1.00		0.00

9.5	Extra for pre finished nosing to treads of steps of marble stone.	Metre	8.00		0.00
9.6	Providing and laying rectified Glazed Ceramic floor tiles of size 300x300 mm or more (thickness to be specified by the manufacturer), of 1st quality conforming to IS : 15622, of approved make, in colours White, Ivory, Grey, Fume Red Brown, laid on 20 mm thick cement mortar 1:4 (1 Cement: 4 Coarse sand), jointing with grey cement slurry @ 3.3 kg/ sqm including grouting the joints with white cement and matching pigments etc., complete.	Sqm	31.02		0.00
9.7	Providing and laying Vitrified tiles in floor in different sizes (thickness to be specified by the manufacturer) with water absorption less than 0.08% and conforming to IS:15622, of approved brand & manufacturer, in all colours and shade, laid on 20 mm thick cement mortar 1:4 (1 cement: 4 coarse sand) jointing with grey cement slurry @3.3 kg/sqm including grouting the joints with white cement and matching pigments etc. The tiles must be cut with the zero chipping diamond cutter only . Laying of tiles will be done with the notch trowel, plier, wedge, clips of required thickness, leveling system and rubber mallet for placing the tiles gently and easily.				
	Glazed vitrified floor tiles polished finish of size				
	Size of Tile 600x600 mm	sqm	862.40		0.00
9.8	Glazed Vitrified tiles Matt/Antiskid finish of size				
	Size of Tile 600x600 mm	sqm	31.02		0.00
9.9	Providing and laying Vitrified tiles in different sizes (thickness to be specified by manufacturer), with water absorption less than 0.08 % and conforming to I.S. 15622, of approved make, in all colours & shade, in skirting, riser of steps, over 12 mm thick bed of cement mortar 1:3 (1 cement: 3 coarse sand), jointing with grey cement slurry @ 3.3 kg/ sqm including grouting the joint with white cement & matching pigments etc. complete.				
	Size of Tile 600x600 mm	sqm	55.44		0.00
9.10	Grouting the joints of flooring tiles having joints of 3 mm width, using epoxy grout mix of 0.70 kg of organic coated filler of desired shade (0.10 kg of hardener and 0.20 kg of resin per kg), including filling / grouting and finishing complete as per direction of Engineer-in-charge.				
	Size of Tile 600x600 mm	sqm	901.60		0.00
	Total for Flooring				**0.00**
10	**SECTION-10:ROOFING**				

10.1	Providing gola 75x75 mm in cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 stone aggregate 10 mm and down gauge), including finishing with cement mortar 1:3 (1 cement : 3 fine sand) as per standard design :				
	In 75x75 mm deep chase	Metre	336.00		0.00
10.2	Making khurras 45x45 cm with average minimum thickness of 5 cm cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate of 20 mm nominal size) over P.V.C. sheet 1 m x1 m x 400 micron, finished with 12 mm cement plaster 1:3 (1 cement : 3 coarse sand) and a coat of neat cement, rounding the edges and making and finishing the outlet complete.	Each	32.00		0.00
10.3	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	1760.44		0.00

10.4	Providing and fixing false ceiling at all height including providing and fixing of frame work made of special sections, power pressed from M.S. sheets and galvanized with zinc coating of 120 gms/sqm (both side inclusive) as per IS : 277 and consisting of angle cleats of size 25 mm wide x 1.6 mm thick with flanges of 27 mm and 37mm, at 1200 mm centre to centre, one flange fixed to the ceiling with dash fastener 12.5 mm dia x 50mm long with 6mm dia bolts, other flange of cleat fixed to the angle hangers of 25x10x0.50 mm of required length with nuts & bolts of required size and other end of angle hanger fixed with intermediate G.I. channels 45x15x0.9 mm running at the spacing of 1200 mm centre to centre, to which the ceiling section 0.5 mm thick bottom wedge of 80 mm with tapered flanges of 26 mm each having lips of 10.5 mm, at 450 mm centre to centre, shall be fixed in a direction perpendicular to G.I. intermediate channel with connecting clips made out of 2.64 mm dia x 230 mm long G.I. wire at every junction, including fixing perimeter channels 0.5 mm thick 27 mm high having flanges of 20 mm and 30 mm long, the perimeter of ceiling fixed to wall/partition with the help of rawl plugs at 450 mm centre, with 25mm long dry wall screws @ 230 mm interval, including fixing of gypsum board to ceiling section and perimeter channel with the help of dry wall screws of size 3.5 x 25 mm at 230 mm c/c, including jointing and finishing to a flush finish of tapered and square edges of the board with recommended jointing compound , jointing tapes , finishing with jointing compound in 3 layers covering upto 150 mm on both sides of joint and two coats of primer suitable for board, all as per manufacturer's specification and also including the cost of making openings for light fittings, grills, diffusers, cutouts made with frame of perimeter channels suitably fixed, all complete as per drawings, specification and direction of the Engineer in Charge but excluding the cost of painting with :				
	12.5 mm thick tapered edge gypsum plain board conforming to IS: 2095- (Part I) : 2011 (Board with BIS certification marks)	sqm	1040.00		0.00
	Total for Roofing work				**0.00**
11	**SECTION-11:Finishing Work**				
11.1	12 mm cement plaster of mix :				
	1:6 (1 cement: 6 fine sand):	sqm	3739.39		0.00
11.2	20 mm cement plaster of mix :				
	1:6 (1 cement: 6 fine sand)	sqm	16.00		0.00
11.3	12 mm cement plaster finished with a floating coat of neat cement of mix :				
	1:3 (1 cement: 3 fine sand)	sqm	940.80		0.00
11.4	6 mm cement plaster of mix :				
	1:3 (1 cement : 3 fine sand)	sqm	172.80		0.00

11.5	Providing and applying white cement based putty of average thickness 1 mm, of approved brand and manufacturer, over the plastered wall surface to prepare the surface even and smooth complete.	sqm	9164.80		0.00
11.6	18 mm cement plaster in two coats under layer 12 mm thick cement plaster 1:5 (1 cement : 5 coarse sand) and a top layer 6 mm thick cement plaster 1:3 (1 cement : 3 coarse sand) finished rough with sponge.	sqm	4295.81		0.00
11.7	Pointing on stone work with cement mortar 1:3 (1 cement : 3 fine sand) :				
	Flush/ Ruled pointing	sqm	16.00		0.00
11.8	Applying one coat of water thinnable cement primer of approved brand and manufacture on wall surface :				
	Water thinnable cement primer	sqm	10953.50		0.00
11.9	Finishing walls with textured exterior paint of required shade :				
	New work (Two or more coats applied @ 3.28 ltr/10 sqm) over and including priming coat of exterior primer applied @ 2.20kg/10 sqm	sqm	4295.81		0.00
11.10	Painting with synthetic enamel paint of approved brand and manufacture of required colour to give an even shade :				
	Two or more coats on new work over an under coat of suitable shade with ordinary paint of approved brand and manufacture	sqm	285.12		0.00
11.11	Wall painting with premium acrylic emulsion paint of interior grade, having VOC (Volatile Organic Compound) content less than 50 grams/ litre of approved brand and manufacture, including applying additional coats wherever required to achieve even shade and colour.				
	Two or more coats on new work	sqm	4868.99		0.00
	Total for Finishing Work				**0.00**
12	**SECTION-12:ALUMINIUM WORKS**				

12.1	Providing and fixing aluminium work for doors, windows, ventilators and partitions with extruded built up standard tubular sections/ appropriate Z sections and other sections of approved make conforming to IS: 733 and IS: 1285, fixing with dash fasteners of required dia and size, including necessary filling up the gaps at junctions, i.e. at top, bottom and sides with required EPDM rubber/ neoprene gasket etc. Aluminium sections shall be smooth, rust free, straight, mitred and jointed mechanically wherever required including cleat angle, Aluminium snap beading for glazing / paneling, C.P. brass / stainless steel screws, all complete as per architectural drawings and the directions of Engineer-in-charge. (Glazing, paneling and dash fasteners to be paid for separately) :				
	For Fixed portions				
	Powder coated aluminium (minimum thickness of powder coating 50 micron)	Kg	1330.56		0.00
12.2	Providing and fixing double action hydraulic floor spring of approved brand and manufacture conforming to IS : 6315, having brand logo embossed on the body / plate with double spring mechanism and door weight upto 125 kg, for doors, including cost of cutting floors, embedding in floors as required and making good the same matching to the existing floor finishing and cover plates with brass pivot and single piece M.S. sheet outer box with slide plate etc. complete as per the direction of Engineer-in-charge.				
	With stainless steel cover plate minimum 1.25 mm thickness	each	70.40		0.00
12.3	Filling the gap in between aluminium frame & adjacent RCC/ Brick/ Stone work by providing weather silicon sealant over backer rod of approved quality as per architectural drawings and direction of Engineer-in-charge complete.				
	Upto 5mm depth and 5 mm width	Metre	141.24		0.00
	Total for Aluminium Works				**0.00**
13	**SECTION-13:WATER PROOFING**				

13.1	Providing and laying in situ seven course water proofing treatment with APP (Atactic Polypropylene) modified Polymeric memberane over roof consisting of first coat of bitumen primer @ 0.40 litre per sqm, 2nd, 4th & 6th courses of bonding material @ 1.20 kg/sqm, which shall consist of blown type bitumen of grade 85/25 conforming to IS : 702, 3rd and 5th layers of roofing membrane APP modified Polymeric membrane 2.0 mm thick of 3.00 Kg/sqm weight consisting of five layers prefabricated with centre core as 100 micron HMHDPE film sandwiched on both sides with polymeric mix and the polymeric mix is protected on both side with 20 micron HMHDPE film. 7th, the top most layer shall be finished with brick tiles of class designation 10 grouted with cement mortar 1:3 (1 cement : 3 fine sand) mixed with 2% integral water proofing compound by weight of cement over a 12 mm layer of cement mortar 1:3 (1 cement : 3 fine sand) and finished neat (item of laying brick tiles shall be paid for separately).	sqm	18.00		0.00
13.2	Providing and laying integral cement based water proofing treatment including preparation of surface as required for treatment of roofs, balconies, terraces etc consisting of following operations:				
	(a) Applying a slurry coat of neat cement using 2.75 kg/sqm of cement admixed with water proofing compound conforming to IS. 2645 and approved by Engineer-in-charge over the RCC slab including adjoining walls upto 300 mm height including cleaning the surface before treatment.				
	(b) Laying brick bats with mortar using broken bricks/brick bats 25 mm to 115 mm size with 50% of cement mortar 1:5 (1 cement : 5 coarse sand) admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge over 20 mm thick layer of cement mortar of mix 1:5 (1 cement :5 coarse sand) admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge to required slope and treating similarly the adjoining walls upto 300 mm height including rounding of junctions of walls and slabs.				
	(c) After two days of proper curing applying a second coat of cement slurry using 2.75 kg/ sqm of cement admixed with water proofing compound conforming to IS : 2645 and approved by Engineerin- charge				

	(d) Finishing the surface with 20 mm thick jointless cement mortar of mix 1:4 (1 cement :4 coarse sand) admixed with water proofing compound conforming to IS : 2645 and approved by Engineerin- charge including laying glass fibre cloth of approved quality in top layer of plaster and finally finishing the surface with trowel with neat cement slurry and making pattern of 300x300 mm square 3 mm deep.				
	e) The whole terrace so finished shall be flooded with water for a minimum period of two weeks for curing and for final test."All above operations to be done in order and as directed and specified by the Engineer-in-Charge :				
	With average thickness of 120 mm and minimum thickness at khurra as 65 mm.	sqm	80.00		0.00
	Total for waterproofing				**0.00**
14	**SECTION-14:ROAD WORKS**				
14.1	Preparation and consolidation of sub grade with power road roller of 8 to 12 tonne capacity after excavating earth to an average of 22.5 cm depth, dressing to camber and consolidating with road roller including making good the undulations etc. and re-rolling the sub grade and disposal of surplus earthwith lead upto 50 metres.	Sqm	750.00		0.00
14.2	Supplying and stacking at site.				
	90 mm to 45 mm size stone aggregate	Cum	75.00		0.00
14.3	63 mm to 45 mm size stone aggregate	Cum	75.00		0.00
14.4	Over burnt (Jhama) brick aggregate 120 mm to 40 mm	Cum	37.50		0.00
14.5	Over burnt (Jhama) brick aggregate 90 mm to 45 mm	Cum	37.50		0.00
14.6	Stone screening 13.2 mm nominal size (Type A)	Cum	37.50		0.00
14.7	Red bajri	Cum	37.50		0.00
14.8	Dry stone pitching 22.5 cm thick including supply of stones and preparing surface complete.	Sqm	300.00		0.00
14.9	Fencing with angle iron post placed at required distance embedded in cement concrete blocks, every 15th post, last but one end post and corner post shall be strutted on both sides and end post on one side only and provided with horizontal lines and two diagonals interwoven with horizontal wires, of barbed wire weighing 9.38 kg per 100 m (minimum), between the two posts fitted and fixed with G.I. staples, turn buckles etc. complete. (Cost of posts, struts, earth work and concrete work to be paid for separately). Payment to be made per metre cost of total length of barbed wire used.				
	With G.I. barbed wire	Metre	17600.00		0.00

14.10	Supplying at site Angle iron post & strut of required size including bottom to be split and bent at right angle in opposite direction for 10 cm length and drilling holes upto 10 mm dia. etc. complete	Kg	3525.12		0.00
14.11	Providing and fixing concertina coil fencing with punched tape concertina coil 600 mm dia 10 metre openable length (total length 90 m), having 50 nos rounds per 6 metre length, upto 3 m height of wall with existing angle iron 'Y' shaped placed 2.4m or 3.00 m apart and with 9 horizontal R.B.T. reinforced barbed wire, stud tied with G.I. staples and G.I. clips to retain horizontal, including necessary bolts or G.I. barbed wire tied to angle iron, all complete as per direction of Engineer-in-charge, with reinforced barbed tape(R.B.T.) / Spring core (2.5mm thick) wire of high tensile strength of 165 kg/ sq.mm with tape (0.52 mm thick) and weight 43.478 gm/ metre (cost of M.S. angle, C.C. blocks shall be paid separately)	Metre	880.00		0.00
	Total for ROAD WORK				**0.00**
15	**SECTION-15:HORTICULTURE WORKS**				
15.1	Supplying and stacking of good earth at site including royalty and carriage upto 5 km lead complete (earth measured in stacks will be reduced by 20% for payment).	Cum	240.00		0.00
15.2	Supplying and stacking at site dump manure from approved source, including carriage upto 5 km lead complete (manure measured in stacks will be reduced by 8% for payment) :				
	Screened through sieve of I.S. designation 20 mm	Cum	240.00		0.00
15.3	Fine dressing of the ground.	Sqm	1200.00		0.00
15.4	Spreading of sludge, dump manure and/or good earth in required thickness as per direction of officer-in-charge (cost of sludge, dump manure and/ or good earth to be paid separately).	Cum	480.00		0.00
15.5	Grassing with selection No. 1/ Doob grass including watering and maintenance of the lawn for 30 days or more till the grass forms a thick lawn, free from weeds and fit for mowing including supplying good earth, if needed (the grass and good earth shall be paid for separately).				
	With grass Turf	Sqm	1200.00		0.00
	Total for Horticulture				**0.00**
16	**SECTION 16: Glass & Furniture**				
16.1	Providing and fixing 12 mm thick frameless toughened glass door shutter of approved brand and manufacture, including providing and fixing top & bottom pivot & double action hydraulic floor spring type fixing arrangement and making necessary holes etc. for fixing required door fittings, all complete as per direction of Engineer-incharge (Door handle, lock and stopper etc.to be paid separately).	Sqm	133.92		0.00

16.2	Providing and fixing 12 mm thick frameless toughened glass door shutter of approved brand and manufacture, including providing and fixing top & bottom pivot & double action hydraulic floor spring type fixing arrangement and making necessary holes etc. for fixing required door fittings, all complete as per direction of Engineer-incharge (Door handle, lock and stopper etc.to be paid separately).	Each	8.00		0.00
	TOTAL FOR ITEMS				**0.00**
	GRAND TOTAL OF CIVIL WORKS				**0.00**

Ref: ITI/NSU/CIVIL-DEL/2023/0106/01 **Date 15-03-2023**

ITI LMITED
NETWORK SYSTEM UNIT
DOORVANINAGAR, BANGALORE 560 016.

BILL OF QUANATITY : ELECTRIC WORKS :- GROUP 2 (Uttarakhand), No. of Buildings are 8, Type-H.

	BIDDER's NAME	

S. No.	Description	Unit	Qty	RATE (Rs.)	TOTAL AMOUNT
1	**SUB-HEAD-I: CIRCUIT CUM POINT WIRING**				
1.1)	Wiring for light point/ fan point/ exhaust fan point/ call bell point with 1.5 sq.mm FRLS PVC insulated copper conductor single core cable in surface / recessed steel conduit, with modular switch, modular plate, suitable GI box and earthing the point with 1.5 sq.mm FRLS PVC insulated copper conductor single core cable etc. as required.				
a)	Group-C (Primary point)	Point	136		0.00
1.2)	Wiring for group controlled (looped) light point/fan point/exhaust fan point/ call bell point (without independent switch etc.) with 1.5 sq. mm FRLS PVC insulated copper conductor single core cable in surface/ recessed steel conduit, and earthing the point with 1.5 sq. mm FRLS PVC insulated copper conductor single core cable etc. as required				
a)	Group-C (looping point)	Point	96		0.00
1.3)	Supplying and fixing modular blanking plate on the existing modular plate & switch box excluding modular plate as required.	Each	80		0.00
1.4)	Supplying and fixing two module stepped type electronic fan regulator on the existing modular plate switch box including connections but excluding modular plate etc. as required.	Each	96		0.00
1.5)	Supplying and fixing suitable size GI box with modular plate and cover in front on surface or in recess, including providing and fixing 3 pin 5/6 A modular socket outlet and 5/6 A modular switch, connections etc. as required.	Each	208		0.00
1.6)	Supplying and fixing suitable size GI box with modular plate and cover in front on surface or in recess, including providing and fixing 6 pin 5/6 A & 15/16 A modular socket outlet and 15/16 A modular switch, connections etc. as required.	Each	256		0.00
1.7)	Wiring for circuit/ submain wiring along with earth wire with the following sizes of FRLS PVC insulated copper conductor, single core cable in surface/ recessed medium class PVC conduit as required				
a)	2 X 1.5 sq. mm + 1 X 1.5 sq. mm earth wire For 6A Light Circuit Point	Metre	800		0.00

b)	2 X 2.5 sq. mm + 1 X 2.5 sq. mm earth wire For Switch Board Circuit.	Metre	1500		0.00
c)	2 X 4 sq. mm + 1 X 4 sq. mm earth wire For 6A and 16A Power Circuit Point	Metre	9280		0.00
d)	4 X 10 sq. mm + 2 X 6 sq. mm earth wire For Light DB Submain wire	Metre	400		0.00
e)	4 X 16 sq. mm + 2 X 6 sq. mm earth wire For PDB Submain wire	Metre	800		0.00
f)	2 X 10 sq. mm + 1 X 6 sq. mm earth wire For UPSDB/IDB/All SPN LPDB Submain wire	Metre	4640		0.00
1.8)	Providing and fixing 6 SWG dia G.I. wire on surface or in recess for loop earthing along with existing surface/ recessed conduit/submain wiring/ cable as required.	Metre	800		0.00
	SUB-HEAD-I TOTAL CARRIED TO SUMMARY				**0.00**
2	**SUB-HEAD-II:- DISTRIBUTION BOARDS**				
2.1)	Supplying and fixing following way, single pole and neutral, sheet steel, MCB distribution board, 240 V, on surface/ recess, complete with tinned copper bus bar, neutral bus bar, earth bar, din bar, interconnections, powder painted including earthing etc. as required. (But without MCB/RCCB/Isolator)				
a)	8Way ,Double door	Each	64		0.00
b)	12Way ,Double door	Each	24		0.00
2.2)	Supplying and fixing following way, horizontal type three pole and neutral, sheet steel, MCB distribution board, 415 V, on surface/ recess, complete with tinned copper bus bar, neutral bus bar, earth bar, din bar, interconnections, powder painted including earthing etc. as required. (But without MCB/RCCB/Isolator)				
a)	4 way (4 + 12), Double door	Each	8		0.00
2.3)	Supplying and fixing the following ways, surface/recess mounting, Verticl type 415V, TPN MCB distribution board of sheet steel,dust protected duly powder painted ,inclusive of 200A tinned copper bus bar ,common neutral link, earth bar, din bar, for mounting MCBs etc. as required. (But without MCB/Incomer) as required.(Note Vertical type MCB TPDB is normally used where 3phase outlets are required.)				
a)	12 way (4 + 36), Double door	Each	16		0.00
2.4)	Supplying and fixing 5 A to 32 A rating, 240/415 V, 10 kA, “C” curve, miniature circuit breaker suitable for inductive load of following poles in the existing MCB DB complete with connections, testing and commissioning etc. as required.				
a)	Single pole (6/32 Amps)	Each	80		0.00
2.5)	Supplying and fixing single pole blanking plate in the existing MCB DB complete etc. as required.	Each	80		0.00

2.6)	Supplying and fixing following rating, double pole, 240 V, isolator in the existing MCB DB complete with connections, testing and commissioning etc. as required.				
a)	40A	Each	80		0.00
b)	63A	Each	16		0.00
2.7)	Supplying and fixing following rating, four pole, 415 V, isolator in the existing MCB DB complete with connections, testing and commissioning etc. as required.				
a)	40A	Each	8		0.00
b)	63A	Each	16		0.00
2.8)	Supplying and fixing following rating, double pole, (single phase and neutral),240 V, residual current circuit breaker (RCCB) having a sensitivity current 30mA in the existing MCB DB complete with connections, testing and commissioning etc. as required.				
a)	40A	Each	80		0.00
b)	63A	Each	16		0.00
2.9)	Supplying and fixing following rating, four pole, (three phase and neutral),415 V, residual current circuit breaker (RCCB) having a sensitivity current 30mA in the existing MCB DB complete with connections, testing and commissioning etc. as required.				
a)	40A	Each	8		0.00
b)	63A	Each	16		0.00
2.10)	Providing and fixing M.V. danger notice plate of 200 mm X 150 mm, made of mild steel, at least 2 mm thick, and vitreous enameled white on both sides, and with inscription in single red colour on front side as required.	Each	120		0.00
	SUB-HEAD-II TOTAL CARRIED TO SUMMARY				**0.00**
3	**SUB-HEAD - III :- CONDUITING WIRING AND CABLING FOR TELEPHONE / TV NETWORK SYSTEM**				
3.1)	Supplying and fixing of following sizes of medium class PVC conduit along with accessories in surface/recess including cutting the wall and making good the same in case of recessed conduit as required.				
a)	20mm	Meter	400		0.00
b)	25mm	Meter	400		0.00
c)	32mm	Meter	200		0.00
3.2)	Supplying and fixing following modular switch/ socket on the existing modular plate & switch box including connections but excluding modular plate etc. as required.				
a)	Telephone socket outlet	Each	1		0.00
b)	TV antenna socket outlet	Each	1		0.00
c)	RJ-45 face plate(computer line) with shutter DN-460	Each	1		0.00

3.3)	Supplying and fixing following size/ modules, GI box alongwith modular base & cover plate for modular switches in recess etc. as required.				
a)	1 or 2 Module (75mmX75mm)	Each	1		0.00
3.4)	Providing, fixing connecting and testing of solder less telephone Tag block of following capacity ties as required in suitable size of m.s. hinged lockable cover box duly painted etc. as required of Krone type.				
a)	10 pair Tele Tag Blk	Each	1		0.00
3.5)	Supplying drawing, connecting and testing of 0.61mm dia annealed copper conductor PVC insulated PVC sheathed telephone Wire/cables in Existing PVC conduit or a racks as required.				
a)	2 pair Telephone cable.	Meter	1		0.00
b)	4 pair Telephone cable	Meter	1		0.00
3.6)	Supplying and drawing co-axial TV cable RG-6 grade, 0.7 mm solid copper conductor PE insulated, shielded with fine tinned copper braid and protected with PVC sheath in the existing surface/ recessed steel/ PVC conduit as required.	Meter	1		0.00
3.7)	Providing, fixing connecting and testing of solder less Television Junction Box of following capacity ties as required in suitable size of m.s. hinged lockable cover box duly painted etc. as required of Krone type.				
a)	2 pair T.V Junction Box.	Each	1		0.00
3.8)	Supplying and drawing of UTP 4 pair CAT 6 LAN Cable in the existing surface/ recessed steel/ PVC conduit as required.				
a).	**1Run of cable**	Meter	1		0.00
3.9)	Supplying and fixing metal box of following sizes (nominal size) on surface or in reces with suitable size of phenolic laminated sheet cover in front including painting etc as required.				
a)	75 mm x 75 mm x 60 mm deep	Each	1		0.00
b)	100 mm x 100 mm x 60 mm deep	Each	1		0.00
	SUB-HEAD-III TOTAL CARRIED TO SUMMARY				**0.00**
4	**SUB-HEAD-lV:- SUPPLY OF LIGHTING FIXTURES.**				
4.1)	Supplying, installing, Fixing, testing and commissioning of **1 X 20W LED single tube Surface mounted fixture** & all accessories as required.	Each	32		0.00
4.2)	Supplying, installing, Fixing, testing and commissioning of **1 X 10W LED mirror light Surface mounted fixture** & all accessories as required.	Each	16		0.00
4.3)	Supplying, installing, Fixing, testing and commissioning of **1 X 10W LED Surface mounted fixture** & all accessories as required.	Each	16		0.00
4.4)	Supplying, installing, Fixing, testing and commissioning of 1**X 36W LED single tube** Surface mounted fixture & all accessories as required.	Each	168		0.00

4.5)	Supplying, installing, Fixing, testing and commissioning of **1200 mm Sweep Celling Fan** all accessories as required.	Each	96		0.00
4.6)	Supplying, installing, Fixing, testing and commissioning of **600 mm Sweep Celling Fan** all accessories as required.	Each	1		0.00
4.7)	Supplying, installing, Fixing, testing and commissioning of **Heavy Duty Exhaust fan 450 mm sweep** all accessories as required	Each	32		0.00
4.8)	Supplying, installing, Fixing, testing and commissioning of **Heavy Duty Exhaust fan 300/305 mm sweep** all accessories as required	Each	24		0.00
4.9)	Supplying, installing, Fixing, testing and commissioning of security light having 80 watt LED street light/road light luminaire type efficiency energy saving dia cast aluminium roadway luminaire with high power complete with connections fittings and including connecting with twin core 2.5 sqmm weather proof aluminium conductor cable complete set, street light brackets made out of GI tubing, light grade 40 mm bore 1200mm long bend to shape at 120 degree, fixed on pole by providing MS clamp made up of flat iron 50x6mm including bolts nuts ans washers of suitable size complete. Fixed upon steel tublar pole type 410 sp31 (9.00 mtr lng) with complete base plate, taper plug, bolts, nuts and screws etc duly painted internally and externally with metal oxide anti corrosive paint before erection and painting with two coats aluminium paint after erection complete all as confirming to IS 2713 (part-1 to 111) and complete.	Each	8		0.00
4.10)	Supplying, installing, Fixing, testing and commissioning of security light having 80 watt LED street light/road light luminaire type efficiency energy saving dia cast aluminium roadway luminaire with high power complete with connections fittings and including connecting with twin core 2.5 sqmm weather proof aluminium conductor cable complete set, street light brackets made out of GI tubing, light grade 40 mm bore 1200mm long bend to shape at 120 degree, fixed on pole by providing MS clamp made up of flat iron 50x6mm including bolts nuts ans washers of suitable size complete. Fixed upon steel tublar pole type 410 sp31 (9.00 mtr lng) with complete base plate, taper plug, bolts, nuts and screws etc duly painted internally and externally with metal oxide anti corrosive paint before erection and painting with two coats aluminium paint after erection complete all as confirming to IS 2713 (part-1 to 111) and complete.	Each	8		0.00

4.11)	Supplying, installing, Fixing, testing and commissioning of security light AIO is made with High Efficiency Mono Crystalline Solar PV Module, Lithium Ferro Phosphate battery with in-built BMS technology, High Efficacy LED, MPPT Solar Charge Controller and Aluminium Extruded body, specially designed Intelligent microwave sensor to control the dimming and brightness of light leads to extend working time. Multi-angle adjustable light module and Light Arm suitable for installation in different latitude regions. The Adjustable range of light source is -20º to +20º and the adjustable range for rotating the arm is -90º to +90º. wattage 60w having system lumen of 5000 lumen, Havells cat No: SOLAR AIO ALFA 60 W or Equivalent to Philips with connections fittings and including connecting with twin core 2.5 sqmm weather proof aluminium conductor cable complete set, street light brackets made out of GI tubing, light grade 40 mm bore 1200mm long bend to shape at 120 degree, fixed on pole by providing MS clamp made up of flat iron 50x6mm including bolts nuts ans washers of suitable size complete. Fixed upon steel tublar pole type 410 sp31 (9.00 mtr lng) with complete base plate, taper plug, bolts, nuts and screws etc duly painted internally and externally with metal oxide anti corrosive paint before erection and painting with two coats aluminium paint after erection complete all as confirming to IS 2713 (part-1 to 111) and complete.	Each	8		0.00
	SUB-HEAD - IV TOTAL CARRIED TO SUMMARY				**0.00**
5	**SUB-HEAD-V:- AIR CONDITIONING**				
5.1)	Supply & Installation high wall split units indoor/outdoor complete with cordless remote control unit and within build air ionizer and plasma filter for better indoor air quality with minimum 5-star rating and EER 3.2 of capacity 2 TR with complete set, including Supply and fixing bracket and clamps heady duty for outdoor unit of split type AC complete all as specified and directed.Air conditioning units will be having heating facilities, which will be supplied to wherever temperature is below the normal temperature				
	2.0 TR Hi Wall Unit (Invertor Units with 5 Star Rating)	Each	32		0.00
5.2)	Supply and fixing voltage stabilizer for automatic operation, single phase, naturally air cooled indoor type and designed for input variation between 110V to 250V with output voltage stabilizer at 230 with accuracy of + 2.5 % and capacity of 5 KVA.	Each	32		0.00
	SUB-HEAD - V TOTAL CARRIED TO SUMMARY				**0.00**

6	**SUB HEAD- VI : EARTHING**				
6.1)	Earthing with G.I. earth plate 600 mm X 600 mm X 6 mm thick including accessories, and providing masonry enclosure with cover plate having locking arrangement and watering pipe of 2.7 metre long etc. with charcoal/ coke and salt as required.	Set	24		0.00
6.2)	Earthing with copper earth plate 600 mm X 600 mm X 3 mm thick including accessories, and providing masonry enclosure with cover plate having locking arrangement and watering pipe of 2.7 metre long etc. with charcoal /coke and salt as required.	set	24		0.00
6.3)	Supplying and laying 6 SWG G.I. wire at 0.50 metre below ground level for conductor earth electrode, including connection/ termination with GI thimble etc. as required.	RM	240		0.00
6.4)	Providing and fixing 25 mm X 5 mm G.I. strip in 40 mm dia G.I. pipe from earth electrode including connection with G.I. nut, bolt, spring, washer excavation and re-filling etc. as required.	RM	160		0.00
6.5)	Providing and fixing 25 mm X 5 mm G.I. strip on surface or in recess for connections etc. as required.	RM	1		0.00
6.6)	Providing and fixing 25 mm X 5 mm copper strip in 40 mm dia G.I. pipe from earth electrode including connection with brass nut, bolt, spring, washer excavation and re-filling etc. as required	RM	80		0.00
6.7)	Supply, Installation, Testing and commissioningof maintenance free earthing system. The earthing set shall comprise of (i) 1 No of copper bonded rod of diameter 17.2mm and length of 10 feet UL approved with 25 KA current discharge test from CPRI. The material shall be low carbon high tensile copper bonded rods with 99.9% of copper on the surface. The UL approval certificate shall be provided. (ii) 30 kg of earth enhance compound as per IEC 62561-7. There should not be requirement of any salt and charcoal. The RoHS certificate shall be provided from any NABL accredited labs for earth enhancement material. (iii) 1 No of copper busbar of size 25x6x150mm should be exothermic welded with copper bounded rod 17.2 mm dia x 3 mtr length. (iv) 1 No of PVC pit cover for covering of earthing. (v) Exothermic connection of 25x6x150mm busbar to 35 Sqmm copper cable. (vi) 35Sqmm PVC insulated copper cable for interconnection of earthingand Equipment.	set	24		**0.00**
	SUB-HEAD - VI TOTAL CARRIED TO SUMMARY				**0.00**
7	**SUB HEAD- VII : EXTERNAL CABLING AND CABLE END TERMINATION**				

7.1)	Supplying and laying of following size DWC HDPE pipe ISI marked along with all accessories like socket, bend, couplers etc. conforming to IS 14930, Part II complete with fitting and cutting, jointing etc..direct in ground (75 cm below ground level) including excavation and refilling the trench but excluding sand cushioning and protective covering Earthing etc., complete as required. (For External lighting)				
	63 mm dia (OD-63 mm & ID-51 mm nominal)	Metre	240		0.00
7.2)	Supplying of following 1100 volt grade XLPE insulated PVC sheathed copper conductor armoured cables				
	3.5C X 120 sq. mm Al. Ar. Cable For Incoming Power Supply	Metre	160		0.00
	3.5 core 50 sq. mm Cu.Cond.Ar.Cable.	Metre	160		0.00
	3core 6 sq. mm	Metre	800		0.00
7.3)	Supplying and making end termination with brass compression gland and copper lugs for following size of PVC insulated and PVC sheathed / XLPE aluminium conductor cable of 1.1 KV grade as required.				
	3.5C X 120 sq. mm Al. Ar. Cable For Incoming Power Supply	Nos.	16		0.00
	3.5 core 50 sq. mm Cu.Cond.Ar.Cable.	Nos.	16		0.00
	3core 6 sq. mm	Nos.	272		0.00
7.4)	Laying of one number PVC inulated and PVC sheathed/XLPE power cable of 1.1KV grade of following size direct in ground including excavation,sand cushioning,protective covering and refilling the trench etc. as required. . (For External lighting/power cable)				
a)	Up to 35 sq. mm	Metre	400		0.00
b)	Above 35sqmm and up to 95sqmm	Metre	160		0.00
c)	Above 95sqmm and up to 185sqmm	Metre	160		0.00
	SUB-HEAD - VII Total of Sub Head carried to Summary				**0.00**
8	**SUB HEAD- VIII FEEDER PILLAR PANEL**				
8.1)	SITC Of free standing suitable for out door installation dust & vermin proof feeder pillar made out of CRCA sheet ,required hard ware,duly painted by either two coats of zink /red oxide primer followwed by two coats of synthetic enmel paint for powder coating in grey or required shade . The feeder pillar having Neoprene rubber gasket of not less than 3mm thickness,hingled door with locking arrangement,gland plate.Thickness of sheet shall not be less than 2mm.Sheet metal works shall be processed with seven tank process,200A TPN 415V Electrolytic Cu Conductor bus bar with 100% Neutral (Fixed on 50x50x6mm thick MS Angle iron frame& covered with sheet metal from all sides)and having the following components.				
	Incoming :				

	One (1) No. 63A 4P MCCB (25KA)				
	3 Nos of LED type phase indicating lamps (RYB) with controlled by 2Amp MCB .				
	1 No.6A, 2 pole Auto/OFF/Manual (2 way with OFF) selector switch.				
	2 Nos. of push button actuator				
	Busbar :				
	Electrolytic high conductivity Copper three pole and 100%neutral bus bars rated at 200 amps having a maximum current density of 1 amp per sq mm insulated with heat shrinkable PVC sleeves & SMC/DMC supports.				
	Outgoings :				
	Three (3) Nos. 10 A-32A DP 10KA MCBs. with 10A-32A DP contactor (AC 1 Category with 230V Control Coil) using 1 No. 24 hour astronomical time switch on Auto/Manual arrangement with Auto/Manual selection switch, ON/OFF Push Buttons, Indication lamps & Control fuses etc .				
	Three (3) Nos. 32 A DP 10KA MCBs.				
	Full Set as above				
	Feedder pillar as described above	Set	8		0.00
8.2)	**MAIN ELECTRICAL PANEL FOR BUILDING BLOCK**				
	Designing, fabrication, supply, installation, testing and commissionings of front operated cubicle type compartmentalised, front access, free standing on 75MM "[" MS channel, dust and vermin proof (IP 42 degree protection) panel suitable for use at 415V, 3 phase, 4-wire 50Hz system suitable for fault level of required value symmetrical at 415V fabricated from 2mm thick CRCA MS sheets with hinged, gaskettted (Metal based neoprene) locable doors having structural reinforcement including 3mm thick gland plates on top and bottom, lifting hooks, GI earth strip of required size with 2 nos earth terminals, 2 nos 230V AC operated 250mm X 250mm size axial fans for exhaust of heat with On-Off toggle switches including 2 coated primer and 2 powder coated paint fnish of approved shade over metal surface cleaned and treated with seven tank process complete with interconnections etc as per specifications as required.main panel board should be CPRI Approved.				
	Panel shall have provision for entry of cables from the top or bottom through Cable Alley. All live accessible parts shall be shrouded and all equipment shall be finger touch proof. The busbars insulation shall be with heat shrinkable sleeves SMC/DMC shrouds and busbar supports shall be used. Padlocking facility shall be provided on all outgoing feeders doors and switch handles shall be locable in OFF position.				
	Suitable arrangement shall be made for termination of multiple incoming cables.				
	INCOMER				

	1 No. 250 Amp four pole MCCB with microprocessor Release O/L,S/C,E/F protection+ Spreder+Extended rotary handle. Moulded Case Circuit Breaker (Ics =100% Icu,36 KA).				
	Enclosure				
	Fabrication 400 Amps, TPN Electrolytic grade Aluminium Bus Bar (Ambient temperature 45° C, temperature rise limited to 40° C above ambient), PVC sleeving, control wiring, necessary hardware. for LT Panel as well as for functioning of Single / multi functioning Energy Meters.capacitors (Each vertical bay shall be equipped with space heater + thermostat, door switch illumination lamp all duly wired) **Space to be provided for Harmonic Filters to be installed in Future if required.For selecting the bus bar size 0.7 derating factor to be considered.**				
	INSTRUMENTS & ACCESSORIES				
	1 No. 96x96 MFM with 3Nos 250/5A CTs for 3 phase, 4 wire operation with LED display and selector switch with controlled by 3 sets of 2Amp MCB				
	3 Nos of LED type phase indicating lamps (RYB) with controlled by 2Amp MCB .				
	1 No.6A, 2 pole Auto/OFF/Manual (2 way with OFF) selector switch.				
	2 Nos. of push button actuator				
	OUTGOING				
	1 Nos.40A FP MCB For 4Way TPN DB				
	2Nos.63A FP MCB For 12Way TPN DB				
	9 Nos.40A DP MCB For 8Way/12Way SPN DB				
	1 Nos.63A FP MCCB For External Lighting feeder pillar				
	SPARE				
	1 Nos.40A FP MCB For 4Way TPN DB				
	1Nos.63A FP MCB For 12Way TPN DB				
	1 Nos.40A DP MCB For 8Way/12Way SPN DB				
	MAIN ELECTRICAL PANEL FOR BUILDING BLOCK as described above	Set	8		0.00
	SUB-HEAD - VIII Total of Sub Head carried to Summary				**0.00**
9	**SUB HEAD- IX Lightning Protection & Earthing System(LIGHTNING PROTECTION AS PER IEC 62305 / IS IEC 62305 AT LVL -I) (5X5MTR)**				
9.1	Supplying, Installation, Testing and commissioning of Vertical Aluminium Lighting Arrester of 16MM dia, 1000 mm long with Gun Metal base plate . Model : APSAT116AL+APSTB16-253 Make : APS	Nos.	48		0.00

9.2	Supplying, Installation, Testing and commissioning 8 mm round aluminium conductor for horizontal lightning protection - run in roof. Model : AL8. Make :APS	Mtr.	1600		0.00
9.3	SITC of roof conductor holder for 8 mm round aluminium conductor made of Gun Metal for horizontal installation. The distance between each holder should be min of 1 mtr. Model : APSRCS50. Make : APS	Nos.	1600		0.00
9.4	Supplying, Installation, Testing and commissioning of **T connector** for connecting of 8 mm Al round conductor . The connector should be of Gun Metal with SS nuts and bolt. Model : APSTCRC50 , Make :APS	Nos.	136		0.00
9.5	Supplying, Installation, Testing and commissioning of **Cross connector** for connecting of 8 mm Al round conductor . The connector should be of Gun Metal with SS nuts and bolt. Model : APSCCRC50 , Make : APS	Nos.	24		0.00
9.6	Supplying, Installation, Testing and commissioning of Expansion piece along with connector to compensate the expansion of round 8 mm Al conductor when temperature variation . Connection should be in every 20 mtr. Model : APSEXP50 , Make : APS	Nos.	48		0.00
9.7	GLUE- Glue is used to fix roof conductor holder on roof.	Nos.	48		0.00
	DOWN CONDUCTOR & RING CONDUCTOR AS PER IEC 62305				
9.8	Supplying, Installation, Testing and commissioning of 8 mm round aluminium conductor as a down conductor mounted in the surface of wall which will carry the lightning current to earth pit. Model : AL8. Make : APS	Mtr.	240		0.00
9.9	SITC of Down conductor holder for 8 mm round aluminium conductor of min distance between the wall to the conductor will be of 50 mm. The distance between each holder should be min of 1 mtr. Model : APSRCS50 Make : APS	Nos.	240		0.00
9.10	Supplying, Installation, Testing and commissioning of straight connector for connecting of 8 mm Al round conductor . The connector should be of Aluminium with SS nuts and bolt. Model : APSPCRC50, Make : APS	Nos.	48		0.00
9.11	SITC of 7 digit lightning strike counter. Model - LSR2 Make - LPI	Nos.	48		0.00
9.12	Supplying, Installation, Testing and commissioning of Test Joint Point for 25X3MM CU STRIP , the size should be of 25 x 3 x 150 mm copper in ABS boxes. Model : APSTLBCU. Make : APS	Nos.	80		0.00
	EARTHING AS PER IEC 62561- 2 & 7				

9.13	Supplying, Installation, Testing and commissioning of advance chemical gel earthing system for the proper dissipation of fault / leakage current to the ground and ensure the continuous electrical connectivity and proper functioning to the electrical system. The earth rod shall be of UL listed & CPRI tested 3 meter long 17.2 mm dia 250 microns copper bonded steel rod with the connecting clamp (ss - rod to tape). The UL listed copper bonded rod also should be tested & ceritifed from CPRI for a short circuit current of 46 KA or more. The UL listing shall be punched / engraved on the rod for the physical verification at site. The engravings shall contain the following details - UL Control number, Dimension details of the rod, Product model number & UL certificate reference number as per detailed technical specification attached. To ensure the electrical conductivity, 50 Kgs (per pit) or more resistance grounding minerals per earth pit / earth rod shall be used along with the copper bonded rod. As per IEEE 80-2013 (Clause 14.5 d), the grounding minerals shall be tested & certified for the resistivity of less than 0.12 ohm-mtr. The grounding minerals should be ROHS certified to ensure it does not pollute the ground water as per technical specification attached.	Nos.	48		0.00
9.14	**GI STRIP(25X6 MM) :** FOR EARTHING INTERCONNECTION	Mtr.	800		0.00
	SUB-HEAD - IX Total of Sub Head carried to Summary				**0.00**
10	**SUB HEAD- X: SOLAR SYSTEMS**				
10.1)	Supply, installation, testing and comminsioning of 1 kw solar panel systems along with supplyinh, installaing, testing and comminsioning of 2 kw battery bank to store the energy generated from solar panels during the day and supplying the same to solar led lighting systems in the internal and external areas of the buildings and campus. The batteries shall be solar photo voltaic batteries of Tubular Gel type, low maintenance, lead Acid and made of hard rubber container. Storage batteries should conform IEC 61427 / IS 1651 / IS 133369 as per specifications. The batteries shall use 2 / 12V cells and battery capacity is to be designed at C10 rate with end cell cut off voltage of 1.85 V / cell.	Each	8		0.00
10.2)	Supply, installation, testing and comminsioning of (Flute plate collector) based on direct transfer of heat of capacity 200 LPD. Including all accessories are nonreturn cast copper alloy screwed down high pressure with crutch or butterfly handle screwed both and for iron pipes or union of as require size 15mm/20mm dia and including all accessories etc.	Each	8		0.00
	SUB-HEAD - X Total of Sub Head carried to Summary				**0.00**
	GRAND TOTAL ELECTRIC WORKS				**0.00**

Ref: ITI/NSU/CIVIL-DEL/2023/0106/01				Date 15-03-2023	
ITI LMITED NETWORK SYSTEM UNIT DOORVANINAGAR, BANGALORE 560 016.					
BILL OF QUANATITY : PLUMBING WORKS :- GROUP 2 (Uttarakhand), No. of Buildings are 8, Type-H.					
BIDDER'S NAME					
S.No.	**DESCRIPTION OF ITEM**	**UNIT**	**QTY**	**RATE (RS.)**	**TOTAL AMOUNT**
1.0	**SUBHEAD - I : Internal Drainage (Rainwater, Soil, Waste & Fittings)**				
1.1	Providing and fixing on wall face unplasticised rigid pvc rain water **pipes** conforming to IS 13592 type a including jointing with seal ring conforming to IS 5382 leaving 10mm gap for thermal expansion (i) single socketed pipes				
	110mm diameter	Metre	128.00		0.00
1.2	Providing and fixing on wall face unplasticised PVC moulded **fittings/ accessories** for unplasticised rigid PVC rain water pipes conforming to IS 13592 type A including jointing with seal ring conforming to IS 5382 leving 10mm gap for thermal expansion				
	Coupler				
	110mm	Each	40.00		0.00
1.3	Single tee without door				
	110x110x110 mm	Each	24.00		0.00
1.4	Bend 87.5o				
	110mm bend	Each	24.00		0.00
1.5	Shoe (plain)				
	110mm shoe	Each	16.00		0.00
1.6	Providing and fixing unplasticised PVC **pipe clips** of approved design to unplasticised PVC rain water pipes by means of 50x50x50mm hard wood plugs screws with MS screws of required length including cutting brick work and fixing in cement mortar 1:4(1cement 4 coarse sand) and making good the wall etc. complete				
	110mm	Each	40.00		0.00
1.7	Providing and fixing to the inlet mouth of rain water pipe cast iron **grating** 15cm dia meter and weighing not less than 440 grams	Each	40.00		0.00
1.8	Providing & fixing stainless steel A ISI 304(18/8) kitchen sink as per I.S 13983 with C.I. brackets and stainless steel plug 40 mm including painting of fittings and brackets, cutting and making good the walls wherever required: Kitchen sink with drain board.				
	510x1040mm bowl depth 250mm	Each	1.00		0.00

1.9	Providing & fixing C.P. brass (Long body) bib cock of approved quality conforming to IS standerd and weight not less then 690 gms.				
	15 mm nominal bore	Each	48.00		0.00
1.10	Providing and fixing grease trap of approved quality & make and as per the direction of Engineering-charge.				
	Grease trap (1.6 LPS) Sise: 600(L) X 450(W) X 415(H) For Stall	Each	8.00		0.00
1.11	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes having thermal stability for hot & cold water supply including all (CPVC) plain & brass threaded fittings including fixing the pipe with clamps at 1.00 m spacing. This includes jointing of pipes & fittings with one step CPVC solvent cement and testing of joints complete as per direction of engineer in charge.				
	Internal Work - Exposed on Wall				
	15 mm nominal outer dia Pipes	RM	32.00		0.00
1.12	20 mm nominal outer dia Pipes	RM	48.00		0.00
1.13	25 mm nominal outer dia Pipes	RM	16.00		0.00
1.14	32 mm nominal outer dia Pipes	RM	8.00		0.00
1.15	Providing and fixing Chlorinate Polyvinyl Chloride (CPVC) pipes having thermal stability for hot & cold water supply including all CPVC plain & brass threaded fittings i/c fixing the pipe with clamps at 1.00 m spacing. This including jointing of pipes & fittings with one step CPVC solvent cement and the cost of cutting chases and making good the the same including testing of joints complete as per direction of engineer in charge.				
	Concealed work including cutting chases and making good the walls etc.				
	15 mm nominal outer dia Pipes	RM	32.00		0.00
1.16	20 mm nominal outer dia Pipes	RM	144.00		0.00
1.17	25 mm nominal outer dia Pipes	RM	1.00		0.00
	TOTAL OF RAIN WATER PIPES AND FITTINGS CARRIED TO SUMMARY				**0.00**
2	**SUBHEAD- II MAN HOLE**				
2.1	Providing and laying non-pressure NP2 class (light duty) R.C.C. pipes with collars jointed with stiff mixture of cement mortar in the proportion of 1:2 (1 cement : 2 fine sand) including testing of joints etc. complete :				
	100 mm dia. R.C.C. pipe	RM	40.00		0.00
2.2	150 mm dia. R.C.C. pipe	RM	80.00		0.00
2.3	250 mm dia. R.C.C. pipe	RM	160.00		0.00
2.4	Providing, laying and jointing glazed stoneware pipes class SP-1 with stiff mixture of cement mortar in the proportion of 1:1 (1 cement : 1 fine sand) including testing of joints etc. complete :				
	100 mm diameter	RM	40.00		0.00

2.5	150 mm diameter	RM	160.00		0.00
2.6	Providing and laying cement concrete 1:5:10 (1 cement : 5 coarse sand : 10 graded stone aggregate 40 mm nominal size) up to haunches of S.W. pipes including bed concrete as per standard design :				
	100 mm diameter	RM	80.00		0.00
2.7	150 mm diameter	RM	160.00		0.00
2.8	250 mm diameter	RM	160.00		0.00
2.9	Constructing brick masonry manhole in cement mortar 1:4 (1 cement : 4 coarse sand) R.C.C. top slab with 1:2:4 mix (1 cement : 2 coarse sand : 4 graded stone aggregate 20mm nominal size), foundation concrete 1:4:8 mix (1 cement : 4 coarse sand : 8 graded stone aggregrate 40mm nominal size) inside plastering 12 mm thick with cement mortar 1:3 (1 Cement : 3 coarse sand) finished with floating coat of neat cement & making channels in cement concrete 1:2:4 mix (1 Cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) finished with a floating coat of neat cement complete as per standard design:				
	Inside size 90x80cm and 45cm deep including C.I. cover with frame (light duty) 455x610mm internal dimensions total weight of cover and frame to be not less than 38kg (weight of cover 23kg and weight of frame 15 kg)				
	With common burnt clay FPS (non modular)bricks of class designation 7.5	Each	32.00		0.00
2.10	Inside size 120x90cm and 90cm deep including C.I. cover with frame (medium duty) 500mm internal diameter, total weight of cover and frame to be not less than 116 kg (weight of cover 58 kg and weight of frame 58 kg)				
	With common burnt clay FPS (non modular)bricks of class designation 7.5.	Each	16.00		0.00
2.11	Extra for depth for manholes				
	Size 90x80 cm				
	With common burnt clay FPS (non modular)bricks of class designation 7.5	Metre	16.00		0.00
2.12	Size 120x90cm				
	With common burnt clay FPS (non modular)bricks of class designation 7.5	Metre	4.00		0.00
2.13	Providing and fixing square-mouth S.W. gully trap class SP1 complete with C.I. grating brick masonry chamber with water tight C.I. cover with frame of 300 x300 mm size (inside) the weight of cover to be not less than 4.50 kg and frame to be not less than 2.70 kg as per standard design :				
	With common burnt clay F.P.S.(non modular) bricks of class designation 7.5	Each	8.00		0.00

2.14	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 50m.				
	All kinds of soil	Cum	120.00		0.00
2.15	Excavating trenches of required width for pipes, cables, etc including excavation for sockets, and dressing of sides, ramming of bottoms, depth upto 1.5 m including getting out the excavated soil, and then returning the soil as required, in layers not exceeding 20cm in depth,including consolidating each deposited layer by ramming,watering,etc. and disposing of surplus excavated soil as directed ,within a lead of 50m.				
	Pipes. cables exceeding 80mm dia but not exceeding 300mm dia.	Metre	160.00		0.00
2.16	Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth: consolidating each deposited layer by ramming and watering, lead up to 50 m and lift upto 1.5 m	Cum	120.00		0.00
2.17	Providing orange colour safety foot rest of minimum 6mm thick plastic encapsulated as per IS : 10910 on 12mm dia steel bar conforming to IS : 1786 having minimum cross section as 23 mmx25mm and over all minimum length 263mm and width as 165mm with minimum 112 mm space between protruded legs having 2mm thread on top surface by ribbing or chequering besides necessary and adequate anchoring projections on tail length on 138mm as per standard drawing and suitable to with stand the bend test and chemical resistant test as per specification and having manufacture's permanent identification mark to be visible even after fixing, including fixing in manhole with 30x20x15 cm cement concrete block 1:3:6 (1cement : 3coarse sand : 6 graded stone aggregate 20 mm nominal size) complete as per design.	Each	160.00		0.00
	Constructing brick masonry road gully chamber 50x45x60 cm with bricks in cement mortar 1:4 (1 cement :4 coarse sand) including 500x450mm precast R.C.C. horizontal grating with frame complete as per standard design:				
	With common burnt clay F.P.S. bricks(non modular) of class designation 7.5	Each	16.00		0.00
2.18	Constructing brick masonry road gully chamber 45x45x77.5 cm with bricks in cement mortar 1:4 (1 cement :4 coarse sand) with precast R.C.C. vertical grating complete as per standard design:				
	With common burnt clay F.P.S. bricks(non modular) of class designation 7.5	Each	16.00		0.00

2.19	Providing, fixing, jointing and testing in position of ISI marked UV stabilized UPVC pipes for soil, waste and vent, Type-B as per IS : 13592 suitable for rubber ring joints, including all neccessary specials and fittings (confirming to IS:14735) i.e. bends, tees, junctions (with or without doors), reducers, WC connectors, couplers, cowels, clamps, rubber rings, clean outs etc. fixing at wall/ ceiling/ floor level supported by clamp & hangers etc. in concealed / inside duct / under floor & basement ceiling / external work etc. including chase cutting as required, excavation and back filling in all kind of soils, suspended from floor under false ceiling or embedding the pipes laid under floors / building in 75 mm. alround 1:2:4 cement concrete (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) including cost of shuttering for proper completion of the work, breaking and making good the walls and floors etc. after pipes have been duly laid and tested. The rubber ring shall confirm to IS:5382.				
	The Pipes will be supported with threaded G I rods & clamps on 50x50x5 mm slotted angle. The cost will include all support arrangements. The work includes commissioning of all pipes lines as per drawings and specifications and as directed by engg-in-charge at site.				
	75mm outer dia	Metre	24.00		0.00
	110mm outer dia	Metre	1.00		0.00
	160mm outer dia	Metre	32.00		0.00
2.20	Providing, fixing, jointing and testing in position ISI marked (IS:4985) UPVC pipes of min 6 Kg/ Sqcm rating with fitting for waste pipe from fixtures to floor trap including reduces, enlarger, socket, couplers, bends, tees etc including fixing at wall/ ceiling level supported by clamp & hangers etc. cutting holes in wall/ floors/ slabs and making good the same with cement concrete 1:2:4 complete as required.				
	40mm outer dia	Metre	24.00		0.00
	50mm outer dia	Metre	24.00		0.00
	63mm outer dia	Metre	1.00		0.00
2.21	Providing & fixing UPVC **Floor trap** of self cleansing design with CP Jali complete in all respects. (Make : Supreme / Finolex / Prince).				
	a) 100 mm inlet and 100 mm outlet.				
	(with 127dia Glossy CP Grating Jayna				
	model no.RRB 127)	Each	8.00		0.00

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	b) 100 mm inlet and 75 mm outlet.				
	(with 102 mm dia CP Glossy Grating Jayna				
	model no. RRB 102)	Each	1.00		0.00
2.22	Providing & fixing 110m x 50mm waste with PVC reducer including cutting chases in floor, cutting RCC slab complete as required.	Each	8.00		0.00
	TOTAL OF MAN HOLE CARRIED TO SUMMARY				**0.00**
3	**SUBHEAD -III PUMP**				
3.1	Providing & fixing fully submersible sump pumps for dewatering with C.I casing & shaft suitable for operation on 400 / 440 V,3 phase, pH 50 cycle A/C power supply.				
	Sump Pumps(For basement drainage)				
	Location - Inside Drainage sump with electrical panel & all controls,cyclic operation				
	2 pumps- both working during extra high level in sump.				
	Flow rate(each pump)=3 lps,head=12m.				
	Solid Handlling-15mm	Set	1.00		0.00
	Providing and fixing gun metal non- return valve of approved quality (screwed end) :				
	32 mm nominal bore	Each	8.00		0.00
3.2	Vertical				
	40 mm nominal bore	Each	8.00		0.00
3.3	Vertical				
	50 mm nominal bore	Each	8.00		0.00
	TOTAL OF PUMP CARRIED TO SUMMARY				**0.00**
4	**Subhead-IV: External Water Supply**				
4.1	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes having thermal stability for hot & cold water supply including all (CPVC) plain & brass threaded fittings. This includes jointing of pipes & fittings with one step CPVC solvent cement,trenching,refilling and testing of joints complete as per direction of engineer in charge. .				
	20 mm nominal outer dia Pipes	RM	80.00		0.00
4.2	25 mm nominal outer dia Pipes	RM	40.00		0.00
4.3	32 mm nominal outer dia Pipes	RM	40.00		0.00
4.4	40 mm nominal outer dia Pipes	RM	40.00		0.00
4.5	Providing and fixing gun metal gate valve with C.I. wheel of approved quality (screwed end) :				
	25 mm dia nominal bore	Each	8.00		0.00
4.6	20 mm dia nominal bore	Each	16.00		0.00
4.7	32 mm dia nominal bore	Each	16.00		0.00

4.8	40 mm dia nominal bore	Each	1.00		0.00
	TOTAL OF External Water Supply CARRIED TO SUMMARY				**0.00**
5	**Subhead-V: RAIN WATER HARVESTING PIT**				
5.1	Providing and constructing Rainwater harvesting pit of 2500 (Dia mm) X 2500mm (D) size (Internal) in overall size with inlet and outlet connection with upto 150mm from ground level 1st class brick 230mm thick in Cement mortar 1:4 (1 Cement : 4 Coarse sand) inside and outside 12mm thick plaster with Cement mortar 1:3 (1 Cement : 3 Coarse sand) with a floating coat of neat cement on inside surface. After 1500, depth 500mm thick border. C.I. (heavy duty) manhole cover 560mm (weight not less than 208 kg) including necessary excavation (all type SOIL hard-rock)backing filling, disposal of surplus earth, providing and fixing of C.I. manhole steps complete as per standard design.	Each	8.00		0.00
5.2	Boring/drilling bore well of required dia for casing / strainer pipe, by suitable method prescribed in IS:2800 (part-1) including collecting samples from different strata, preparing and submitting strata chart/bore log, including hire & running charges of all equipments, tools, plants & machineries required for the job, all complete as per direction of engineer-in-charge, upto 90 metre depth below ground level.				
	All type sof soil				
	350mm dia	Metre	96.00		0.00
5.3	Supplying, assembling, lowering and fixing in vertical position in bore well unplasticized PVC medium well screen (RMS) pipes with ribs, conforming to IS : 12818, including hire & labour charges, fittings & accessories etc, all complete, for all depths, as per direction of engineer-in-charge.				
	200 mm nominal dia	Metre	96.00		0.00
5.4	Supplying & filling, sepreading & leveling stone boulders of size range 5cm to 20cm, in the recharge pit, in the required thickness, for all leads & lifts, all complete, for all depths, as per direction of engineer-in-charge.	Cum	40.00		0.00
5.4	Supplying & filling, sepreading & leveling gravels of size range 5mm to 10mm, in the recharge pit, over the existing layer of boulders, in the required thickness, for all leads & lifts, all complete, as per direction of engineer-in-charge.	Cum	40.00		0.00
5.6	Supplying & filling, sepreading & leveling coarse sand of size range 1.5mm to 20mm, in the recharge pit, in the required thickness over gravel layer, for all leads & lifts, all complete, as per direction of engineer-in-charge.	Cum	40.00		0.00

5.7	Providing and fixing Bail plug / Bottom plub of required dia to the bottom of pipe assembly of tubewell as per IS : 2800 (part -1)				
	200 mm dia	Each	8.00		0.00
5.8	Providing and fixing in position pre-cast RCC manhole cover and frame of required shape & approved quality				
	EHD-35				
	Circular shape 560 mm internal diameter	Each	16.00		0.00
	TOTAL OF RAIN WATER HARVESTING CARRIED TO SUMMARY				**0.00**
6	**Subhead:- VI - Sanitary Fixtures**				
6.1	Providing & fixing of white vitreous china pedestal type water closet(European type) with seat and lid, 10 liter low level white viterous china flushing cistern C.P.flush bend with fittings & C.I.brackets ,40mm flush bend, overflow arrangment with specials of standard make and mosquito proof coupling of approved municipala design complete including painting of fittings and brackets, cutting and making good the wall and Floors wherever required:				
	W.C pan with ISI marked white solid plastic seat and lid.	Each	8.00		0.00
6.2	Providing & fixing wash basin with C.I. brackets, C.P brass pillar taps,32 mm C.P. brass waste of standard pattern, including painting of fittings and brackets,cutting and making good the walls wherever required:				
	White Vitreous China Wash basin size 550x400 mm with a pair of 15 mm C.P. brass pillar taps	Each	8.00		0.00
6.3	Providing and fixing PTMT towel ring trapezoidal shape 215 mm long, 200 mm wide with minimum distances of 37 mm from wall face with concealed fittings arrangement of approved quality and colour, weighing not less than 88 gms.	Each	8.00		0.00
6.4	Providing & fixing PTMT soap dish Holder having length of 138mm,breadth 102mm, height of 75mm with concealed fitting arrangements.Weighing not less than 106gms.	Each	8.00		0.00
6.5	Providing & fixing mirror of superior glass(of aproved quality) and of required shape and size with plastic moulded frame of approved make and shade with 6mm thick hard board backing:				
	Rectangular Shape 453x357mm	Each	8.00		0.00
6.6	Providing and fixing toilet paper holder :				
	C.P. brass	Each	8.00		0.00
6.7	Providing and fixing P.V.C waste pipe for sink or wash basin including P.V.C waste fitting complete .				
	Semi rigid pipe				
	a) 40 mm dia	Each	1.00		0.00

6.8	Providing and fixing C.P.brass bottle trap 32mm size bottle trap of approved quality & make as approved by Engineer-in-charge.	Each	8.00		0.00
6.9.	Providing and fixing P.V.C connection with brass union.				
	45cm length.				
	15mm nominal bore	Each	32.00		0.00
6.10	Providing and fixing C.P. bass angle valve for basin mixer and geyser points of approved quality conforming to I.S:8931.				
	15 mm nominal bore	Each	32.00		0.00
6.11	Providing & fixing C.P. hand spray with lever control (health faucet) and flexible hose 1 m long connection with C.P. holder for hand spray complete in all respects as per direction of Engineer-Incharge.	Each	8.00		0.00
6.12	Providing and placing on terrace (at all floor levels) polyethylene water storage tank, IS : 12701 marked, with cover and suitable locking arrangement and making necessary holes for inlet, outlet and overflow pipes but without fittings and the base support for tank.	per ltr	1000.00		0.00
6.13	Providing and fixing white vitreous china flat back half stall urinal of size 580x380x350 mm with white PVC automatic flushing cistern,with fittings, standard size C.P. brass flush pipe, spreaders with unions and clamps (all in C.P. brass) with waste fitting as per IS :2556, C.I. trap with outlet grating and other couplings in C.P. brass,including painting of fittings and cutting and making good the walls and floors wherever required :				
	Single half stall urinal with 5 litre P.V.C. automatic flushing cistern	Each	8.00		0.00
	TOTAL OF SANITARY FIXTURES CARRIED TO SUMMARY				**0.00**
7	**Subhead:- VII SEPTIC TANK FIXTURES**				
7.1	Supplying and fixing C.I. cover without frame for manholes :				
	455x610 mm rectangular C.I. cover (light duty) the weight of the cover to be not less than 23 kg	Each	16.00		0.00
7.2	Supplying and fixing CI vent pipe--80 mm dia	RM	40.00		0.00
7.3	Supplying and fixing CI cowl.	Each	8.00		0.00
7.4	Making soak pit 2.5 m diameter 3.0 metre deep with 45 x 45 cm dry brick honey comb shaft with bricks and S.W. drain pipe 100 mm diameter, 1.8 m long complete as per standard design.				
	With common burnt clay F.P.S. (non modular) bricks of class designation 7.5	Each	8.00		0.00
	TOTAL OF SEPTIC TANK CARRIED TO SUMMARY				**0.00**
	GRAND TOTAL OF PUMBING WORKS				**0.00**

Ref: ITI/NSU/CIVIL-DEL/2023/0106/01 **Date 15-03-2023**

ITI LMITED
NETWORK SYSTEM UNIT
DOORVANINAGAR, BANGALORE 560 016.

BILL OF QUANATITY : IT & FIRE FIGHTING WORKS :- GROUP 2 (Uttarakhand), No. of Buildings are 8, Type-H.

BIDDER'S NAME					
S. No.	**Description**	**Unit**	**QTY**	**RATE (Rs)**	**Total Amount**
1	**ACCESS CONTROL SYSTEM consisting of the following** (a) Supply, Installation, testing and commissioning of the access control system including the following equipments including necessary fitting, fixtures, cables, etc. (Model No./make RBH-Axiom) 1 nos per node. (b) 2-Door Control Panel with universal cabinet and power supply and required license.(Model No./make RBH-IRC-2000) 3 nos each per node. (c) Biometric reader. (Model No./make BFR-350) 5 nos each per node. (d) PROXIMITY CARD. (Model No./make PBH Smart Card) 20 nos each per node.	Set	8.00		0
	TOTAL FOR ACCESS CONTROL SYSTEMS WORKS				**0**
2	**VIDEO SURVEYLANCE SYSTEMS** Supply, installation, testing and commissioning of physical intrusion detection and prevention system including all necessary accessories, wires and fixtures. The system should be equipped with central monitoring software and server at NOC with complete necessary licenses (a) Indoor Dome Camera (Model No Mobotix m 26) 3 Nos per node (b) Out door type camera (Model No Mobotix m 26) 5 Nos per node (c) Network Vide Recorder system (Brand Mobotix) 1 Nos per node (d) 22" lcd display complete with all wiring and necessary fittings. (Make Samsung/LG) 1 Nos per node (e) 1 no PC loaded/ installed with necessary lisc. Software for video surveylance. (Make Software: Mobotix, PC Hardware: Dell/HP) 1 Nos per node	**Set**	8.00		0
	TOTAL FOR VIDEO SURVEYLANCE SYSTEMS				**0**
3	**PHYSICAL INTRUSION DETECTION AND PREVENTION SYSTEM consisting of the following:** (a) Supply, installation, testing and commissioning of physical intrusion detection and prevention system including all necessary accessories.(Model No Securico President) 1 nos each per node. B)Intrusion Controller panel(Make :Securico President). 1 no per node. C)Keypad - Alpha Addressable LCD Keypad (Model No Securico President). 1 per node. D) PIR Sensor (make: Optex). Qty: 8 nos per node. E) Beam Protector (Covering the entire parameter of the node) (make:Optex). Qty: 10 per node. F) Ground sensor (make: Optex). Qty: 8 nos per node. G) 130 db hooter (Make: Securico) Qty: 4 no per node. H) 2ft pole for beam detector (GI Pipe). Qty: 5 nos per node.	**Set**	8.00		0

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	TOTAL FOR PHYSICAL INTRUSION SYSTEM WORKS				**0**
4	**FIRE DETECTION AND SUPPRESSION SYSTEM consisting of the following:** **(**a) Supplying, installing, testing and commissioning of addressable Main control panel comprising of visual and audible fire and fault alarms and signals, indicators and all other accessories. Panel shall be IS Approved. The system shall be nstalled with complete necessary fittings and fixtures including 2C x 1.5 sqmm and 2C x 2.5 sqmm ISI marked cables and wires. All the conduits hall be as per NBC specifications. (Model No Kentek Syncro As) 1 nos each per node. (b) OTI-AX-200TE - Photoelectric Detector with Synchronized twin beam, 200ft outdoor all weather range, IP65 Lightning Protection Level 14kV, 99% beam blocking stability includes pole mounting kit (Model No OTI-AX-200TE) 5 nos each per node. (c) OTIBC3 - Back cover for OTIAX200TF (Model No OTIBC3) 5 nos each per node. (d) SOUNDER 12V - High power 130 db, Police Siren Sound, Suitable for Indoor and Outdoor application. Tamper Loop. (Model No Roshni red 32 tone) 4 nos each per node. (e) Smoke detectors(Model No Apollo Discover / 58000-600) 32 nos each per node. (f) Heat detectors(Model No Apollo Discover / 58000-400) 1 nos each per node. (g) Multi-Criteria detectors(Model No Apollo Discover) 3 nos each per node. (h) Manual Call Point (Breaking Glass type)(Model No Apollo Discover /55000-971) 5 nos each per node. (j) Sounder / Flasher with Control Module (Model No Apollo Discover) 8 nos each per node. (k) Short Circuit Isolator 1 nos each per node. (l) Control modules for AHU / FAN trappings(Model No/Make: SS) 2 nos each per node. (m) Fire Signages- photoluminescent Green or Red color safety signages in different sizes / graphics / colours /texts can be made according to the standards 2 nos each per node. **(a) GAS SUPPRESSION SYSTEM** FM 200 Gas based Fire Suppression System shall be considered for equipment storage room and server room. Qty 1 no system per node.	**Set**	8.00		0

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	FIRE EXTINGUISHER **(a)** CO2 type cylindrical shape fire extinguisher - 4.5 Kg Capacity with requisite fixing arrangement (Model No/make Ventex) 5 nos each per node. (b) ABC type fire extinguisher - 6 Kg capacity with requisite fixing arrrangement (Model No/make Ventex) 5 nos each per node. (c) Dry chemical powder type cylindrical shape fire extinguisher - 6 Kg Capacity with requisite fixing arrangement (Model No/make Ventex Dry powder 4308/14609) 5 nos each per node. (d) Mechanical foam type fire extinguishers with requisite fixing arrangement (Model No/make Ventex) 5 nos each per node. (e) Trolley mounted type - 9 litres capacity. 1 nos each per node. (f) Trolley mounted type -50 litres capacity. 1 nos each per node. (g) Supply and installation of Fire buckets of 9 litres capacity. Stand made of MS Channel and angle to accommodate 4 Nos. of buckets filled with cleaned soft sand. Rate shall be inclusive of red panit for buckets and MS Sand as per Fire Code. 5 nos each per node.				
	TOTAL FOR FIRE FIGHTING WORKS				**0**
	GRAND TOTAL OF IT & FIRE FIGHTING WORKS				**0**

Ref: ITI/NSU/CIVIL-DEL/2023/0106/01			Date 15-03-2023
ITI LMITED NETWORK SYSTEM UNIT DOORVANINAGAR, BANGALORE 560 016.			
SUMMARY SHEET :- GROUP 3, No. of Buildings are 11, Type-H			
BIDDER'S NAME			
Sl.No.	**DESCRIPTION**	**AMOUNT (Rs.)**	**AMOUNT IN WORDS (Rs.)**
I	**SECTION A**		
	CIVIL WORKS	0.00	
II	**SECTION B**		
	ELECTRICAL WORKS	0.00	
III	**SECTION C**		
	PLUMBING WORKS	0.00	
IV	**SECTION D**		
	IT AND FIRE FIGHTING WORKS	0.00	
	GRAND TOTAL FOR THE PROJECT	**0.00**	

ITI LIMITED

ANIL KUMAR SRIVASTAVA
Digitally signed by ANIL KUMAR SRIVASTAVA
Date: 2023.03.16 17:31:10 IST

Ref: ITI/NSU/CIVIL-DEL/2023/0106/01					Date 15-03-2023
ITI LMITED NETWORK SYSTEM UNIT DOORVANINAGAR, BANGALORE 560 016.					
BILL OF Quantity : CIVIL WORKS :- GROUP 3 (Kashmir), No. of Buildings are 11, Type-H.					
	BIDDER'S NAME				
S.No	**DESCRIPTION**	**UNIT**	**QTY**	**RATE**	**AMOUNT**
1	**SECTION-1: EARTHWORK**				
1.1	Earth work in excavation by mechanical means (Hydraulic excavator)/ manual means over areas (exceeding 30 cm in depth, 1.5 m in width as well as 10 sqm on plan) including getting out and disposal of excavated earth lead upto 50 m and lift upto 1.5 m, as directed by Engineer-in- charge.				
	All kinds of soil.:	Cum	208.96		0.00
1.2	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 kinds of soil.:	cum	417.92		0.00
1.3	Excavation work by mechanical means (Hydraulic excavator)/ manual means in foundation trenches or drains (not exceeding 1.5m 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 soils as directed, within a lead of 50 m.				
	Ordinary rock	cum	2089.61		0.00
1.4	Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift upto 1.5 m.	cum	6058.73		0.00
1.5	Extra for every additional lift of 1.5 m or part thereof in excavation / banking excavated or stacked materials. **: For Excavation beyond 1.5m depth**				
	All kinds of soil	cum	387.20		0.00
1.6	Supplying and filling in plinth with sand under floors, including watering, ramming, consolidating and dressing complete.	cum	273.62		0.00
	NOTE : Deduction shall be made of columns, brick walls etc. for calculation of quantity of sand filling for payment				
1.7	Surface dressing of the ground including removing vegetation and inequalities not exceeding 15 cm deep and disposal of rubbish, lead up to 50 m and lift up to 1.5 m.				
	All kinds of soil	sqm	8250.00		0.00
1.8	Supplying chemical emulsion in sealed containers including delivery as specified.				

	Chlorpyriphos/ Lindane emulsifiable concentrate of 20%	Litre	486.57		0.00
1.9	Diluting and injecting chemical emulsion for POST-CONSTRUCTIONAL anti-termite treatment (excluding the cost of chemical emulsion) :				
	Along external wall where the apron is not provided using chemical emulsion @ 7.5 litres / sqm of the vertical surface of the substructure to a depth of 300mm including excavation channel along the wall & rodding etc. complete:				
	With Chlorpyriphos/ Lindane E.C. 20% with 1% concentration	Metre	742.50		0.00
1.10	Along the external wall below concrete or masonry apron using chemical emulsion @ 2.25 litres per linear metre including drilling and plugging holes etc.:				
	With Chlorpyriphos/ Lindane E.C. 20% with 1% concentration	Metre	1485.00		0.00
1.11	Treatment of soil under existing floors using chemical emulsion @ one litre per hole, 300 mm apart including drilling 12 mm diameter holes and plugging with cement mortar 1 :2 (1 cement : 2 Coarse sand) to match the existing floor:				
	With Chlorpyriphos/Lindane E.C. 20% with 1% concentration	Sqm	1293.60		0.00
1.12	Treatment of existing masonry using chemical emulsion @ one litre per hole at 300 mm interval including drilling holes at 45 degree and plugging them with cement mortar 1:2 (1 cement : 2 coarse sand) to the full depth of the hole :				
	With Chlorpyriphos/Lindane E.C. 20% with 1% concentration	Metre	59.40		0.00
1.13	Treatment at points of contact of wood work by chemical emulsion Chlorpyriphos/ Lindane (in oil or kerosene based solution) @ 0.5 litres per hole by drilling 6 mm dia holes at downward angle of 45 degree at 150 mm centre to centre and sealing the same	Sqm	110.00		0.00
	Total for EarthWork				**0.00**
2	**SECTION-2: CONCRETE WORK**				
2.1	Providing and laying in position cement concrete of specified grade excluding the cost of centering and shttering - All work up to plinth level:				
	1:2:4 (1 cement : 2 coarse sand (zone-III) derived from natural sources : 4 graded stone aggregate 20 mm nominal size derived from natural sources)	cum	307.41		0.00
2.2	1:4:8 (1 Cement : 4 coarse sand : 8 graded stone aggregate 20 mm nominal size)	cum	545.28		0.00
2.3	Providing and laying damp-proof course 50mm thick with cement concrete 1:2:4 (1 cement : 2 coarse sand(zone-III) : 4 graded stone aggregate 20mm nominal size).	sqm	284.31		0.00

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2.4	Making plinth protection 50mm thick of cement concrete 1:3:6 (1 cement : 3 coarse sand (zone - III) : 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 necessary excavation, levelling & dressing & finishing the top smooth.	Sqm	197.34		0.00
	Total for Concrete Work				**0.00**
3	**SECTION-3: REINFORCED CEMENT CONCRETE**				
3.1	Providing and laying in position specified grade of reinforced cement concrete, excluding the cost of centering, shuttering, finishing and reinforcement - All work up to plinth level:				
	M 25 (1 cement : 1 coarse sand(zone-III) : 2 graded stone aggregate 20 mm nominal size)	cum	520.29		0.00
3.2	Reinforced cement concrete work in walls (any thickness), including attached pilasters, buttresses, plinth and string courses, fillets, columns, pillars, piers, abutments, posts and struts etc. above plinth level up to floor five level, excluding cost of centering, shuttering, finishing and reinforcement :				
	M 25 (1 cement : 1 coarse sand(zone-III) : 2 graded stone aggregate 20 mm nominal size)	cum	94.09		0.00
3.3	Reinforced cement concrete work in beams, suspended floors, roofs having slope up to 15° landings, balconies, shelves, chajjas, lintels, bands, plain window sills, staircases and spiral stair cases above plinth level up to floor five level, excluding the cost of centering, shuttering, finishing and reinforcement with M 25 (1 cement : 1 coarse sand(zone-III) : 2 graded stone aggregate 20 mm nominal size)	cum	50.00		0.00
	Centering & shuttering including strutting, propping etc. and removal of form work for:				
3.4	Foundations, footings, bases of columns etc. for mass concrete.	sqm	1209.03		0.00
3.5	Suspended floors, roofs, landings, balconies and access platform	sqm	110.00		0.00
3.6	Lintels, beams, plinth beams, girders, bressumers and cantilevers.	sqm	2856.41		0.00
3.7	Columns, Pillars, Piers, Abutments, Posts and Struts	sqm	1069.20		0.00
3.8	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 of grade Fe-500D or more.	kg	66000.00		0.00
	Total for RCC Work				**0.00**
4	**SECTION-4: BRICK WORK**				
4.1	Brick work with common burnt clay F.P.S. (non modular) bricks of class designation 7.5 in foundation and plinth in:				

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	Cement mortar 1:6 (1 cement : 6 coarse sand)	cum	351.28		0.00
4.2	**Brick work** with common burnt clay F.P.S. (non modular) bricks of class designation 7.5 in superstructure above plinth level up to floor V level in all shapes and sizes in :				
	Cement mortar 1:6 (1 cement : 6 coarse sand)	cum.	824.55		0.00
	HALF BRICK WORK				
4.3	Half brick masonry with common burnt clay F.P.S. (non modular) bricks of class designation 7.5 in superstructure above plinth level up to floor V level.				
	Cement mortar 1:4 (1 cement :4 coarse sand)	sqm	783.09		0.00
4.4	Extra for providing and placing in position 2 Nos 6mm dia. M.S. bars at every third course of half brick masonry. Quantities sames as DSR item no. 6.13.2	sqm	783.09		0.00
	Total for Brick Work				**0.00**
5	**SECTION-5: STONE WORK**				
5.1	Random rubble masonry with hard stone in foundation and plinth including levelling up with cement concrete 1:6:12 (1 cement : 6 coarse sand : 12 graded stone aggregate 20 mm nominal size) upto plinth level with :				
	Cement mortar 1:6 (1 cement : 6 coarse sand)	Cum	7.54		0.00
5.2	Coursed rubble masonry with hard stone (first or second sort) in superstructure above plinth level and upto floor five level.				
	Masonry work (first sort), in cement mortar 1:6 (1 cement : 6 coarse sand)	Cum	15.18		0.00
	Total for Stone Work				**0.00**
6	**SECTION-6:GRANITE WORK**				
6.1	Providing and fixing 18 mm thick gang saw cut, mirror polished, premoulded and prepolished, machine cut for kitchen platforms, vanity counters, window sills, facias and similar locations of required size, approved shade, colour and texture laid over 20 mm thick base cement mortar 1:4 (1 cement : 4 coarse sand), joints treated with white cement, mixed with matching pigment, epoxy touch ups, including rubbing, curing, moulding and polishing to edges to give high gloss finish etc. complete at all levels.				
	Granite of any colour and shade				
	Area of slab over 0.50 sqm	Sqm	4.95		0.00
6.2	Extra for providing opening of required size & shape for wash basin/ kitchen sink in kitchen platform, vanity counter and similar location in marble/ Granite/ stone work, including necessary holes for pillar taps etc. including moulding, rubbing and polishing of cut edges etc. complete.	Each	11.00		0.00

6.3	Providing and fixing Ist quality ceramic glazed wall tiles conforming to IS: 15622 (thickness to be specified by the manufacturer), of approved make, in all colours, shades except burgundy, bottle green, black of any size as approved by Engineer-in-Charge, in skirting, risers of steps and dados, over 12 mm thick bed of cement mortar 1:3 (1 cement : 3 coarse sand) and jointing with grey cement slurry @ 3.3kg per sqm, including pointing in white cement mixed with pigment of matching shade complete.	Sqm	173.53		0.00
	Total for Cladding Work				**0.00**
7	**SECTION-7:DOORS & WINDOWS WORKS**				
7.1	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).				
	Second class teak wood	cum	0.48		0.00
7.2	Providing and fixing panelling or panelling and glazing in panelled or panelled and glazed shutters for doors, windows and clerestory windows (Area of opening for panel inserts excluding portion inside grooves or rebates to be measured). Panelling for panelled or panelled and glazed shutters 25 mm to 40 mm thick :				
	Float glass panes				
	4 mm thick glass pane (weight not less than 10kg/sqm).	Sqm	672.56		0.00
7.3	5.0 mm thick glass panes (weight not less than 12.50 kg/sqm).	Sqm	90.75		0.00
7.4	Providing and fixing ISI marked flush door shutters conforming to IS : 2202 (Part I) decorative type, core of block board construction with frame of 1st class hard wood and well matched teak 3 ply veneering with vertical grains or cross bands and face veneers on both faces of shutters.				
	35 mm thick including ISI marked Stainless Steel butt hinges with necessary screws	Sqm	269.35		0.00
7.5	Extra for providing lipping with 2nd class teak wood battens 25 mm minimum depth on all edges of flush door shutters (over all area of door shutter to be measured).	Sqm	551.76		0.00
7.6	Extra for providing vision panel not exceeding 0.1 sqm in all type of flush doors (cost of glass excluded) (overall area of door shutter to be measured):				
	Rectangular or square	Sqm	269.35		0.00
7.7	Providing and fixing wire gauge shutters using galvanized M.S. wire gauge of average width of aperture 1.4 mm in both directions with wire of dia 0.63 mm, for doors, windows and clerestory windows with hinges and necessary screws :				
	30 mm thick shutters				
	With ISI marked stainless steel butt hinges of required size				

	Second class teak wood	Sqm	53.36		0.00
7.8	Providing and fixing wooden moulded beading to door and window frames with iron screws, plugs and priming coat on unexposed surface etc. complete :				
	2nd class teak wood				
	50x12 mm	meter	64.35		0.00
7.9	Providing and fixing nickel plated M.S. pipe curtain rods with nickel plated brackets :				
	20 mm dia (heavy type)	meter	272.25		0.00
7.10	Providing and fixing aluminium extruded section body tubular type universal hydraulic door closer (having brand logo with ISi, IS : 3564, embossed on the body, door weight upto 36 kg to 80 kg and door width from 701 mm to 1000 mm), with double speed adjustment with necessary accessories and screws etc. complete.	Each	11.00		0.00
7.11	Providing 40x5 mm flat iron hold fast 40 cm long including fixing to frame with 10 mm diameter bolts, nuts and wooden plugs and embedding in cement concrete block 30x10x15cm 1:3:6 mix (1 cement : 3 coarse sand : 6 graded stone aggregate 20mm nominal size).	Each	11.00		0.00
7.12	Providing and fixing ISI marked oxidised M.S. handles conforming to IS:4992 with necessary screws etc. complete :				
	100 mm	Each	110.00		0.00
7.13	Providing and fixing aluminium sliding door bolts, ISI marked anodised (anodic coating not less than grade AC 10 as per IS : 1868), transparent or dyed to required colour or shade, with nuts and screws etc. complete				
	250x16 mm	Each	121.00		0.00
7.14	Providing and fixing aluminium tower bolts, ISI marked, anodised (anodic coating not less than grade AC 10 as per IS : 1868) transparent or dyed to required colour or shade, with necessary screws etc. complete :				
	250x10 mm	Each	121.00		0.00
7.15	200x10 mm	Each	121.00		0.00
7.16	Providing and fixing aluminium handles, ISI marked, anodised (anodic coating not less than grade AC 10 as per IS : 1868) transparent or dyed to required colour or shade, with necessary screws etc. complete :				
	125 mm	Each	220.00		0.00
7.17	Providing and fixing aluminium hanging floor door stopper, ISI marked, anodised (anodic coating not less than grade AC 10 as per IS : 1868) transparent or dyed to required colour and shade, with necessary screws etc. complete.				
	Single rubber stopper	Each	110.00		0.00
7.18	Providing and fixing PTMT door catcher of length 72 mm and dia. of 42 mm with suitable washers weighing not less than 33 gms	Each	110.00		0.00

7.19	Providing and fixing factory made uPVC white colour sliding glazed window upto 1.50 m in height dimension comprising of uPVC multi-chambered frame with in-built roller track and sash extruded profiles duly reinforced with 1.60 ± 0.2 mm thick galvanized mild steel section made from roll forming process of required length (shape & size according to uPVC profile), appropriate dimension of uPVC extruded glazing beads and uPVC extruded interlocks, EPDM gasket, wool pile, zinc alloy (white powder coated) touch locks with hook, zinc alloy body with single nylon rollers (weight bearing capacity to be 40 kg), G.I fasteners 100 x 8 mm size for fixing frame to finished wall and necessary stainless steel screws etc. Profile of frame & sash shall be mitred cut and fusion welded at all corners, including drilling of holes for fixing hardware's and drainage of water etc. After fixing frame the gap between frame and adjacent finished wall shall be filled with weather proof silicon sealent over backer rod of required size and of approved quality, all complete as per approved drawing & direction of Engineer-in-Charge. (Single / double glass panes, wire mesh and silicon sealent shall be paid separately). Variation in profile dimension in higher side shall be accepted but no extra payment on this account shall be made.				
	Note: For uPVC frame and sash extruded profiles minus 5% tolerance in dimension i.e. in depth & width of profile shall be acceptable.				
	Two track two panels sliding window made of (small series) frame 52 x 44 mm &sash 32 x 60 mm both having wall thickness of 1.9 ± 0.2 mm and single glazing bead of appropriate dimension. (Area of window upto 1.75 sqm)	Sqm	14.70		0.00
7.20	Three track three panels sliding window with fly proof S.S wire mesh (Two nos. glazed & one no. wire mesh panels) madeof(bigseries)frame116x45mm&sash46x62mm both having wall thickness of 2.3 ± 0.2 mm and single glazing bead / double glazing bead of appropriate dimension. (Area of window above 1.75 sqm).	Sqm	174.24		0.00
7.21	Providing and fixing zinc alloyed (white powder coated) touch lock for uPVC sliding window with necessary screws etc. complete.	Each	96.80		0.00
	Total for Wood Work				**0.00**
8	**SECTION-8:STEEL WORK**				
8.1	Structural steel work riveted, bolted or welded in built up sections, trusses and framed work, including cutting, hoisting, fixing in position and applying a priming coat of approved steel primer with two coat of synthetic enamel paint all complete.	kg	61600.00		0.00

8.2	Providing and fixing 1mm thick M.S. sheet door with frame of 40x40x6 mm angle iron and 3 mm M.S. gusset plates at the junctions and corners, all necessary fittings complete, including applying a priming coat of approved steel primer.				
	Using M.S. angels 40x40x6 mm for diagonal braces	Sqm	253.44		0.00
8.3	Supplying and fixing rolling shutters of approved make, made of required size M.S. laths, interlocked together through their entire length and jointed together at the end by end locks, mounted on specially designed pipe shaft with brackets, side guides and arrangements for inside and outside locking with push and pull operation complete, including the cost of providing and fixing necessary 27.5 cm long wire springs manufactured from high tensile steel wire of adequate strength conforming to IS: 4454 - part 1 and M.S. top cover of required thickness for rolling shutters.				
	80x1.20 mm M.S. laths with 1.20 mm thick top cover	Sqm	132.00		0.00
8.4	Providing and fixing ball bearing for rolling shutters.	Each	22.00		0.00
8.5	Providing and fixing factory made ISI marked steel glazed doors, windows and ventilators, side /top /centre hung, with beading and all members such as F7D,F4B, K11 B and K12 B etc. complete of standard rolled steel sections, joints mitred and flash butt welded and sash bars tenoned and riveted, including providing and fixing of hinges, pivots, including priming coat of approved steel primer, but excluding the cost of other fittings, complete all as per approved design, (sectional weight of only steel members shall be measured for payment).				
	Fixing with 15x3 mm lugs 10 cm long embedded in cement concrete block 15x10x10 cm of C.C. 1:3:6 (1 Cement : 3 coarse sand : 6 graded stone aggregate 20 mm nominal size)	kg	1896.68		0.00
8.6	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.				
	Hot finished seamless type tubes	kg	26360.98		0.00
8.7	Providing and fixing mild steel round holding down bolts with nuts and washer plates complete.	kg	457.60		0.00
8.8	Providing and fixing bolts including nuts and washers complete.	kg	789.36		0.00
8.9	Steel work welded in built up sections/ framed work, including cutting, hoisting, fixing in position and applying a priming coat of approved steel primer using structural steel etc. as required.				
	In gratings, frames, guard bar, ladder, railings, brackets, gates and similar works	kg	1100.00		0.00
8.10	Providing & fixing glass panes with putty and glazing clips in steel doors, windows, clerestory windows, all complete with :				
	4.0 mm thick glass panes	Sqm	490.05		0.00
	Total for Steel Works				**0.00**

9	**SECTION-9:FLOORING WORK**				
9.1	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	592.90		0.00
9.2	Cement plaster skirting up to 30 cm height, with cement mortar 1:3 (1 cement : 3 coarse sand), finished with a floating coat of neat cement.				
	18 mm thick	sqm	31.13		0.00
9.3	Providing and fixing glass strips in joints of terrazo/ cement concrete floors.				
	40 mm wide and 4 mm thick	rmt	311.30		0.00
9.4	Marble stone flooring with 18 mm thick marble stone, as per sample of marble approved by Engineer-in-charge, over 20 mm (average) thick base of cement mortar 1:4 (1 cement : 4 coarse sand) laid and jointed with grey cement slurry, including rubbing and polishing complete with :				
	Udaipur green marble	Sqm	1.00		0.00
9.5	Extra for pre finished nosing to treads of steps of marble stone.	Metre	11.00		0.00
9.6	Providing and laying rectified Glazed Ceramic floor tiles of size 300x300 mm or more (thickness to be specified by the manufacturer), of 1st quality conforming to IS : 15622, of approved make, in colours White, Ivory, Grey, Fume Red Brown, laid on 20 mm thick cement mortar 1:4 (1 Cement: 4 Coarse sand), jointing with grey cement slurry @ 3.3 kg/ sqm including grouting the joints with white cement and matching pigments etc., complete.	Sqm	42.65		0.00
9.7	Providing and laying Vitrified tiles in floor in different sizes (thickness to be specified by the manufacturer) with water absorption less than 0.08% and conforming to IS:15622, of approved brand & manufacturer, in all colours and shade, laid on 20 mm thick cement mortar 1:4 (1 cement: 4 coarse sand) jointing with grey cement slurry @3.3 kg/sqm including grouting the joints with white cement and matching pigments etc. The tiles must be cut with the zero chipping diamond cutter only . Laying of tiles will be done with the notch trowel, plier, wedge, clips of required thickness, leveling system and rubber mallet for placing the tiles gently and easily.				
	Glazed vitrified floor tiles polished finish of size				
	Size of Tile 600x600 mm	sqm	1185.80		0.00
9.8	Glazed Vitrified tiles Matt/Antiskid finish of size				
	Size of Tile 600x600 mm	sqm	42.65		0.00

9.9	Providing and laying Vitrified tiles in different sizes (thickness to be specified by manufacturer), with water absorption less than 0.08 % and conforming to I.S. 15622, of approved make, in all colours & shade, in skirting, riser of steps, over 12 mm thick bed of cement mortar 1:3 (1 cement: 3 coarse sand), jointing with grey cement slurry @ 3.3 kg/ sqm including grouting the joint with white cement & matching pigments etc. complete.				
	Size of Tile 600x600 mm	sqm	76.23		0.00
9.10	Grouting the joints of flooring tiles having joints of 3 mm width, using epoxy grout mix of 0.70 kg of organic coated filler of desired shade (0.10 kg of hardener and 0.20 kg of resin per kg), including filling / grouting and finishing complete as per direction of Engineer-in-charge.				
	Size of Tile 600x600 mm	sqm	1239.70		0.00
	Total for Flooring				**0.00**
10	**SECTION-10:ROOFING**				
10.1	Providing gola 75x75 mm in cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 stone aggregate 10 mm and down gauge), including finishing with cement mortar 1:3 (1 cement : 3 fine sand) as per standard design :				
	In 75x75 mm deep chase	Metre	462.00		0.00
10.2	Making khurras 45x45 cm with average minimum thickness of 5 cm cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate of 20 mm nominal size) over P.V.C. sheet 1 m x1 m x 400 micron, finished with 12 mm cement plaster 1:3 (1 cement : 3 coarse sand) and a coat of neat cement, rounding the edges and making and finishing the outlet complete.	Each	44.00		0.00
10.3	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	2420.61		0.00

10.4	Providing and fixing false ceiling at all height including providing and fixing of frame work made of special sections, power pressed from M.S. sheets and galvanized with zinc coating of 120 gms/sqm (both side inclusive) as per IS : 277 and consisting of angle cleats of size 25 mm wide x 1.6 mm thick with flanges of 27 mm and 37mm, at 1200 mm centre to centre, one flange fixed to the ceiling with dash fastener 12.5 mm dia x 50mm long with 6mm dia bolts, other flange of cleat fixed to the angle hangers of 25x10x0.50 mm of required length with nuts & bolts of required size and other end of angle hanger fixed with intermediate G.I. channels 45x15x0.9 mm running at the spacing of 1200 mm centre to centre, to which the ceiling section 0.5 mm thick bottom wedge of 80 mm with tapered flanges of 26 mm each having lips of 10.5 mm, at 450 mm centre to centre, shall be fixed in a direction perpendicular to G.I. intermediate channel with connecting clips made out of 2.64 mm dia x 230 mm long G.I. wire at every junction, including fixing perimeter channels 0.5 mm thick 27 mm high having flanges of 20 mm and 30 mm long, the perimeter of ceiling fixed to wall/partition with the help of rawl plugs at 450 mm centre, with 25mm long dry wall screws @ 230 mm interval, including fixing of gypsum board to ceiling section and perimeter channel with the help of dry wall screws of size 3.5 x 25 mm at 230 mm c/c, including jointing and finishing to a flush finish of tapered and square edges of the board with recommended jointing compound , jointing tapes , finishing with jointing compound in 3 layers covering upto 150 mm on both sides of joint and two coats of primer suitable for board, all as per manufacturer's specification and also including the cost of making openings for light fittings, grills, diffusers, cutouts made with frame of perimeter channels suitably fixed, all complete as per drawings, specification and direction of the Engineer in Charge but excluding the cost of painting with :				
	12.5 mm thick tapered edge gypsum plain board conforming to IS: 2095- (Part I) : 2011 (Board with BIS certification marks)	sqm	1430.00		0.00
	Total for Roofing work				**0.00**
11	**SECTION-11:Finishing Work**				
11.1	12 mm cement plaster of mix :				
	1:6 (1 cement: 6 fine sand):	sqm	5141.66		0.00
11.2	20 mm cement plaster of mix :				
	1:6 (1 cement: 6 fine sand)	sqm	22.00		0.00
11.3	12 mm cement plaster finished with a floating coat of neat cement of mix :				
	1:3 (1 cement: 3 fine sand)	sqm	1293.60		0.00
11.4	6 mm cement plaster of mix :				
	1:3 (1 cement : 3 fine sand)	sqm	237.60		0.00

11.5	Providing and applying white cement based putty of average thickness 1 mm, of approved brand and manufacturer, over the plastered wall surface to prepare the surface even and smooth complete.	sqm	12601.60		0.00
11.6	18 mm cement plaster in two coats under layer 12 mm thick cement plaster 1:5 (1 cement : 5 coarse sand) and a top layer 6 mm thick cement plaster 1:3 (1 cement : 3 coarse sand) finished rough with sponge.	sqm	5906.74		0.00
11.7	Pointing on stone work with cement mortar 1:3 (1 cement : 3 fine sand) :				
	Flush/ Ruled pointing	sqm	22.00		0.00
11.8	Applying one coat of water thinnable cement primer of approved brand and manufacture on wall surface :				
	Water thinnable cement primer	sqm	15061.06		0.00
11.9	Finishing walls with textured exterior paint of required shade :				
	New work (Two or more coats applied @ 3.28 ltr/10 sqm) over and including priming coat of exterior primer applied @ 2.20kg/10 sqm	sqm	5906.74		0.00
11.10	Painting with synthetic enamel paint of approved brand and manufacture of required colour to give an even shade :				
	Two or more coats on new work over an under coat of suitable shade with ordinary paint of approved brand and manufacture	sqm	392.04		0.00
11.11	Wall painting with premium acrylic emulsion paint of interior grade, having VOC (Volatile Organic Compound) content less than 50 grams/ litre of approved brand and manufacture, including applying additional coats wherever required to achieve even shade and colour.				
	Two or more coats on new work	sqm	6694.86		0.00
	Total for Finishing Work				**0.00**
12	**SECTION-12:ALUMINIUM WORKS**				
12.1	Providing and fixing aluminium work for doors, windows, ventilators and partitions with extruded built up standard tubular sections/ appropriate Z sections and other sections of approved make conforming to IS: 733 and IS: 1285, fixing with dash fasteners of required dia and size, including necessary filling up the gaps at junctions, i.e. at top, bottom and sides with required EPDM rubber/ neoprene gasket etc. Aluminium sections shall be smooth, rust free, straight, mitred and jointed mechanically wherever required including cleat angle, Aluminium snap beading for glazing / paneling, C.P. brass / stainless steel screws, all complete as per architectural drawings and the directions of Engineer-in-charge. (Glazing, paneling and dash fasteners to be paid for separately) :				
	For Fixed portions				

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	Powder coated aluminium (minimum thickness of powder coating 50 micron)	Kg	1829.52		0.00
12.2	Providing and fixing double action hydraulic floor spring of approved brand and manufacture conforming to IS : 6315, having brand logo embossed on the body / plate with double spring mechanism and door weight upto 125 kg, for doors, including cost of cutting floors, embedding in floors as required and making good the same matching to the existing floor finishing and cover plates with brass pivot and single piece M.S. sheet outer box with slide plate etc. complete as per the direction of Engineer-in-charge.				
	With stainless steel cover plate minimum 1.25 mm thickness	each	96.80		0.00
12.3	Filling the gap in between aluminium frame & adjacent RCC/ Brick/ Stone work by providing weather silicon sealant over backer rod of approved quality as per architectural drawings and direction of Engineer-in-charge complete.				
	Upto 5mm depth and 5 mm width	Metre	194.21		0.00
	Total for Aluminium Works				**0.00**
13	**SECTION-13:WATER PROOFING**				
13.1	Providing and laying in situ seven course water proofing treatment with APP (Atactic Polypropylene) modified Polymeric memberane over roof consisting of first coat of bitumen primer @ 0.40 litre per sqm, 2nd, 4th & 6th courses of bonding material @ 1.20 kg/sqm, which shall consist of blown type bitumen of grade 85/25 conforming to IS : 702, 3rd and 5th layers of roofing membrane APP modified Polymeric membrane 2.0 mm thick of 3.00 Kg/sqm weight consisting of five layers prefabricated with centre core as 100 micron HMHDPE film sandwiched on both sides with polymeric mix and the polymeric mix is protected on both side with 20 micron HMHDPE film. 7th, the top most layer shall be finished with brick tiles of class designation 10 grouted with cement mortar 1:3 (1 cement : 3 fine sand) mixed with 2% integral water proofing compound by weight of cement over a 12 mm layer of cement mortar 1:3 (1 cement : 3 fine sand) and finished neat (item of laying brick tiles shall be paid for separately).	sqm	24.75		0.00
13.2	Providing and laying integral cement based water proofing treatment including preparation of surface as required for treatment of roofs, balconies, terraces etc consisting of following operations:				
	(a) Applying a slurry coat of neat cement using 2.75 kg/sqm of cement admixed with water proofing compound conforming to IS. 2645 and approved by Engineer-in-charge over the RCC slab including adjoining walls upto 300 mm height including cleaning the surface before treatment.				

	(b) Laying brick bats with mortar using broken bricks/brick bats 25 mm to 115 mm size with 50% of cement mortar 1:5 (1 cement : 5 coarse sand) admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge over 20 mm thick layer of cement mortar of mix 1:5 (1 cement :5 coarse sand) admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge to required slope and treating similarly the adjoining walls upto 300 mm height including rounding of junctions of walls and slabs.				
	(c) After two days of proper curing applying a second coat of cement slurry using 2.75 kg/ sqm of cement admixed with water proofing compound conforming to IS : 2645 and approved by Engineerin- charge				
	(d) Finishing the surface with 20 mm thick jointless cement mortar of mix 1:4 (1 cement :4 coarse sand) admixed with water proofing compound conforming to IS : 2645 and approved by Engineerin- charge including laying glass fibre cloth of approved quality in top layer of plaster and finally finishing the surface with trowel with neat cement slurry and making pattern of 300x300 mm square 3 mm deep.				
	e) The whole terrace so finished shall be flooded with water for a minimum period of two weeks for curing and for final test."All above operations to be done in order and as directed and specified by the Engineer-in-Charge :				
	With average thickness of 120 mm and minimum thickness at khurra as 65 mm.	sqm	100.00		0.00
	Total for waterproofing				**0.00**
14	**SECTION-14:ROAD WORKS**				
14.1	Preparation and consolidation of sub grade with power road roller of 8 to 12 tonne capacity after excavating earth to an average of 22.5 cm depth, dressing to camber and consolidating with road roller including making good the undulations etc. and re-rolling the sub grade and disposal of surplus earthwith lead upto 50 metres.	Sqm	1031.25		0.00
14.2	Supplying and stacking at site.				
	90 mm to 45 mm size stone aggregate	Cum	103.13		0.00
14.3	63 mm to 45 mm size stone aggregate	Cum	103.13		0.00
14.4	Over burnt (Jhama) brick aggregate 120 mm to 40 mm	Cum	51.56		0.00
14.5	Over burnt (Jhama) brick aggregate 90 mm to 45 mm	Cum	51.56		0.00
14.6	Stone screening 13.2 mm nominal size (Type A)	Cum	51.56		0.00
14.7	Red bajri	Cum	51.56		0.00
14.12	Dry stone pitching 22.5 cm thick including supply of stones and preparing surface complete.	Sqm	412.50		0.00

14.13	Fencing with angle iron post placed at required distance embedded in cement concrete blocks, every 15th post, last but one end post and corner post shall be strutted on both sides and end post on one side only and provided with horizontal lines and two diagonals interwoven with horizontal wires, of barbed wire weighing 9.38 kg per 100 m (minimum), between the two posts fitted and fixed with G.I. staples, turn buckles etc. complete. (Cost of posts, struts, earth work and concrete work to be paid for separately). Payment to be made per metre cost of total length of barbed wire used.				
	With G.I. barbed wire	Metre	24200.00		0.00
14.15	Supplying at site Angle iron post & strut of required size including bottom to be split and bent at right angle in opposite direction for 10 cm length and drilling holes upto 10 mm dia. etc. complete	Kg	4847.04		0.00
14.16	Providing and fixing concertina coil fencing with punched tape concertina coil 600 mm dia 10 metre openable length (total length 90 m), having 50 nos rounds per 6 metre length, upto 3 m height of wall with existing angle iron 'Y' shaped placed 2.4m or 3.00 m apart and with 9 horizontal R.B.T. reinforced barbed wire, stud tied with G.I. staples and G.I. clips to retain horizontal, including necessary bolts or G.I. barbed wire tied to angle iron, all complete as per direction of Engineer-in-charge, with reinforced barbed tape(R.B.T.) / Spring core (2.5mm thick) wire of high tensile strength of 165 kg/ sq.mm with tape (0.52 mm thick) and weight 43.478 gm/ metre (cost of M.S. angle, C.C. blocks shall be paid separately)	Metre	1210.00		0.00
	Total for ROAD WORK				**0.00**
15	**SECTION-15:HORTICULTURE WORKS**				
15.1	Supplying and stacking of good earth at site including royalty and carriage upto 5 km lead complete (earth measured in stacks will be reduced by 20% for payment).	Cum	330.00		0.00
15.2	Supplying and stacking at site dump manure from approved source, including carriage upto 5 km lead complete (manure measured in stacks will be reduced by 8% for payment) :				
	Screened through sieve of I.S. designation 20 mm	Cum	330.00		0.00
15.3	Fine dressing of the ground.	Sqm	1650.00		0.00
15.4	Spreading of sludge, dump manure and/or good earth in required thickness as per direction of officer-in-charge (cost of sludge, dump manure and/ or good earth to be paid separately).	Cum	660.00		0.00
15.5	Grassing with selection No. 1/ Doob grass including watering and maintenance of the lawn for 30 days or more till the grass forms a thick lawn, free from weeds and fit for mowing including supplying good earth, if needed (the grass and good earth shall be paid for separately).				
	With grass Turf	Sqm	1650.00		0.00
	Total for Horticulture				**0.00**

16	Glass & Furniture				
16.1	Providing and fixing 12 mm thick frameless toughened glass door shutter of approved brand and manufacture, including providing and fixing top & bottom pivot & double action hydraulic floor spring type fixing arrangement and making necessary holes etc. for fixing required door fittings, all complete as per direction of Engineer-incharge (Door handle, lock and stopper etc.to be paid separately).	Sqm	184.14		0.00
16.2	Providing and fixing 12 mm thick frameless toughened glass door shutter of approved brand and manufacture, including providing and fixing top & bottom pivot & double action hydraulic floor spring type fixing arrangement and making necessary holes etc. for fixing required door fittings, all complete as per direction of Engineer-incharge (Door handle, lock and stopper etc.to be paid separately).	Each	11.00		0.00
	TOTAL FOR ITEMS				**0.00**
	GRAND TOTAL OF CIVIL WORKS				**0.00**

Ref: ITI/NSU/CIVIL-DEL/2023/0106/01				**Date 15-03-2023**	
ITI LMITED NETWORK SYSTEM UNIT DOORVANINAGAR, BANGALORE 560 016.					
BILL OF Quantity : ELECTRIC WORKS :- GROUP 3 (Kashmir), No. of Buildings are 11, Type-H.					
	BIDDER'S NAME				
S. No.	**Description**	**Unit**	**Qty**	**RATE (RS.)**	**TOTAL AMOUNT**
1	**SUB-HEAD-I: CIRCUIT CUM POINT WIRING**				
1.1)	Wiring for light point/ fan point/ exhaust fan point/ call bell point with 1.5 sq.mm FRLS PVC insulated copper conductor single core cable in surface / recessed steel conduit, with modular switch, modular plate, suitable GI box and earthing the point with 1.5 sq.mm FRLS PVC insulated copper conductor single core cable etc. as required.				
a)	Group-C (Primary point)	Point	187		0.00
1.2)	Wiring for group controlled (looped) light point/fan point/exhaust fan point/ call bell point (without independent switch etc.) with 1.5 sq. mm FRLS PVC insulated copper conductor single core cable in surface/ recessed steel conduit, and earthing the point with 1.5 sq. mm FRLS PVC insulated copper conductor single core cable etc. as required				
a)	Group-C (looping point)	Point	132		0.00
1.30	Supplying and fixing modular blanking plate on the existing modular plate & switch box excluding modular plate as required.	Each	110		0.00
1.4)	Supplying and fixing two module stepped type electronic fan regulator on the existing modular plate switch box including connections but excluding modular plate etc. as required.	Each	132		0.00
1.5)	Supplying and fixing suitable size GI box with modular plate and cover in front on surface or in recess, including providing and fixing 3 pin 5/6 A modular socket outlet and 5/6 A modular switch, connections etc. as required.	Each	286		0.00
1.6)	Supplying and fixing suitable size GI box with modular plate and cover in front on surface or in recess, including providing and fixing 6 pin 5/6 A & 15/16 A modular socket outlet and 15/16 A modular switch, connections etc. as required.	Each	352		0.00

1.7)	Wiring for circuit/ submain wiring along with earth wire with the following sizes of FRLS PVC insulated copper conductor, single core cable in surface/ recessed medium class PVC conduit as required				
a)	2 X 1.5 sq. mm + 1 X 1.5 sq. mm earth wire For 6A Light Circuit Point	Metre	1100		0.00
b)	2 X 2.5 sq. mm + 1 X 2.5 sq. mm earth wire For Switch Board Circuit.	Metre	2062.5		0.00
c)	2 X 4 sq. mm + 1 X 4 sq. mm earth wire For 6A and 16A Power Circuit Point	Metre	12760		0.00
d)	4 X 10 sq. mm + 2 X 6 sq. mm earth wire For Light DB Submain wire	Metre	550		0.00
e)	4 X 16 sq. mm + 2 X 6 sq. mm earth wire For PDB Submain wire	Metre	1100		0.00
f)	2 X 10 sq. mm + 1 X 6 sq. mm earth wire For UPSDB/IDB/All SPN LPDB Submain wire	Metre	6380		0.00
1.80	Providing and fixing 6 SWG dia G.I. wire on surface or in recess for loop earthing along with existing surface/ recessed conduit/submain wiring/ cable as required.	Metre	1100		0.00
	SUB-HEAD-1 TOTAL CARRIED TO SUMMARY				**0.00**
2	**SUB-HEAD-II:- DISTRIBUTION BOARDS**				
2.1)	Supplying and fixing following way, single pole and neutral, sheet steel, MCB distribution board, 240 V, on surface/ recess, complete with tinned copper bus bar, neutral bus bar, earth bar, din bar, interconnections, powder painted including earthing etc. as required. (But without MCB/RCCB/Isolator)				
a)	8Way ,Double door	Each	88		0.00
b)	12Way ,Double door	Each	33		0.00
2.2)	Supplying and fixing following way, horizontal type three pole and neutral, sheet steel, MCB distribution board, 415 V, on surface/ recess, complete with tinned copper bus bar, neutral bus bar, earth bar, din bar, interconnections, powder painted including earthing etc. as required. (But without MCB/RCCB/Isolator)				
a)	4 way (4 + 12), Double door	Each	11		0.00
2.3)	Supplying and fixing following ways, surface/recess mounting ,Verticl type 415V ,TPN MCB distribution board of sheet steel,dust protected duly powder painted ,inclusive of 200A tinned copper bus bar ,common neutral link, earth bar, din bar, for mounting MCBs etc. as required. (But without MCB/Incomer) as required.(Note Vertical type MCB TPDB is normally used where 3phase outlets are required.)				
a)	12 way (4 + 36), Double door	Each	22		0.00

2.4)	Supplying and fixing 5 A to 32 A rating, 240/415 V, 10 kA, "C" curve, miniature circuit breaker suitable for inductive load of following poles in the existing MCB DB complete with connections, testing and commissioning etc. as required.				
a)	Single pole (6/32 Amps)	Each	1364		0.00
2.50	Supplying and fixing single pole blanking plate in the existing MCB DB complete etc. as required.	Each	110		0.00
2.60	Supplying and fixing following rating, double pole, 240 V, isolator in the existing MCB DB complete with connections, testing and commissioning etc. as required.				
a)	40A	Each	110		0.00
b)	63A	Each	22		0.00
2.70	Supplying and fixing following rating, four pole, 415 V, isolator in the existing MCB DB complete with connections, testing and commissioning etc. as required.				
a)	40A	Each	11		0.00
b)	63A	Each	22		0.00
2.80	Supplying and fixing following rating, double pole, (single phase and neutral),240 V, residual current circuit breaker (RCCB) having a sensitivity current 30mA in the existing MCB DB complete with connections, testing and commissioning etc. as required.				
a)	40A	Each	110		0.00
b)	63A	Each	22		0.00
2.90	Supplying and fixing following rating, four pole, (three phase and neutral),415 V, residual current circuit breaker (RCCB) having a sensitivity current 30mA in the existing MCB DB complete with connections, testing and commissioning etc. as required.				
a)	40A	Each	11		0.00
b)	63A	Each	22		0.00
2.10	Providing and fixing M.V. danger notice plate of 200 mm X 150 mm, made of mild steel, at least 2 mm thick, and vitreous enameled white on both sides, and with inscription in single red colour on front side as required.	Each	165		0.00
	SUB-HEAD-II TOTAL CARRIED TO SUMMARY				**0.00**
3	**SUB-HEAD - Ill :- CONDUITING WIRING AND CABLING FOR TELEPHONE / TV NETWORK SYSTEM**				
3.1)	Supplying and fixing of following sizes of medium class PVC conduit along with accessories in surface/recess including cutting the wall and making good the same in case of recessed conduit as required.				
a)	20mm	Meter	550		0.00
b)	25mm	Meter	550		0.00
c)	32mm	Meter	275		0.00

3.2)	Supplying and fixing following modular switch/ socket on the existing modular plate & switch box including connections but excluding modular plate etc. as required.				
a)	Telephone socket outlet	Each	11		0.00
b)	TV antenna socket outlet	Each	11		0.00
c)	RJ-45 face plate(computer line) with shutter DN-460	Each	11		0.00
3.3)	Supplying and fixing following size/ modules, GI box alongwith modular base & cover plate for modular switches in recess etc. as required.				
a)	1 or 2 Module (75mmX75mm)	Each	11		0.00
3.4)	Providing, fixing connecting and testing of solder less telephone Tag block of following capacity ties as required in suitable size of m.s. hinged lockable cover box duly painted etc. as required of Krone type.				
a)	10 pair Tele Tag Blk	Each	11		0.00
3.5)	Supplying drawing, connecting and testing of 0.61mm dia annealed copper conductor PVC insulated PVC sheathed telephone Wire/cables in Existing PVC conduit or a racks as required.				
a)	2 pair Telephone cable.	Meter	11		0.00
b)	4 pair Telephone cable	Meter	11		0.00
3.6)	Supplying and drawing co-axial TV cable RG-6 grade, 0.7 mm solid copper conductor PE insulated, shielded with fine tinned copper braid and protected with PVC sheath in the existing surface/ recessed steel/ PVC conduit as required.	Meter	11		0.00
3.7)	Providing, fixing connecting and testing of solder less Television Junction Box of following capacity ties as required in suitable size of m.s. hinged lockable cover box duly painted etc. as required of Krone type.				
a)	2 pair T.V Junction Box.	Each	11		0.00
3.8)	Supplying and drawing of UTP 4 pair CAT 6 LAN Cable in the existing surface/ recessed steel/ PVC conduit as required.				
a).	**1Run of cable**	Meter	11		0.00
3.9)	Supplying and fixing metal box of following sizes (nominal size) on surface or in reces with suitable size of phenolic laminated sheet cover in front including painting etc as required.				
a)	75 mm x 75 mm x 60 mm deep	Each	11		0.00
b)	100 mm x 100 mm x 60 mm deep	Each	11		0.00
	SUB-HEAD-Ill TOTAL CARRIED TO SUMMARY				**0.00**
4	**SUB-HEAD-IV:- SUPPLY OF LIGHTING FIXTURES.**				
4.1)	Supplying, installing, Fixing, testing and commissioning of **1 X 20W LED single tube Surface mounted fixture** & all accessories as required.	Each	44		0.00

4.2)	Supplying, installing, Fixing, testing and commissioning of **1 X 10W LED mirror light Surface mounted fixture** & all accessories as required.	Each	22		0.00
4.3)	Supplying, installing, Fixing, testing and commissioning of **1 X 10W LED Surface mounted fixture** & all accessories as required.	Each	22		0.00
4.4)	Supplying, installing, Fixing, testing and commissioning of 1**X 36W LED single tube** Surface mounted fixture & all accessories as required.	Each	231		0.00
4.5)	Supplying, installing, Fixing, testing and commissioning of **1200 mm Sweep Celling Fan** all accessories as required.	Each	132		0.00
4.6)	Supplying, installing, Fixing, testing and commissioning of **600 mm Sweep Celling Fan** all accessories as required.	Each	11		0.00
4.7)	Supplying, installing, Fixing, testing and commissioning of **Heavy Duty Exhaust fan 450 mm sweep** all accessories as required	Each	44		0.00
4.8)	Supplying, installing, Fixing, testing and commissioning of **Heavy Duty Exhaust fan 300/305 mm sweep** all accessories as required	Each	33		0.00
4.9)	Supplying, installing, Fixing, testing and commissioning of security light having 80 watt LED street light/road light luminaire type efficiency energy saving dia cast aluminium roadway luminaire with high power complete with connections fittings and including connecting with twin core 2.5 sqmm weather proof aluminium conductor cable complete set, street light brackets made out of GI tubing, light grade 40 mm bore 1200mm long bend to shape at 120 degree, fixed on pole by providing MS clamp made up of flat iron 50x6mm including bolts nuts ans washers of suitable size complete. Fixed upon steel tublar pole type 410 sp31 (9.00 mtr lng) with complete base plate, taper plug, bolts, nuts and screws etc duly painted internally and externally with metal oxide anti corrosive paint before erection and painting with two coats aluminium paint after erection complete all as confirming to IS 2713 (part-1 to 111) and complete.	Each	11		0.00
4.10)	Supplying, installing, Fixing, testing and commissioning of security light having 80 watt LED street light/road light luminaire type efficiency energy saving dia cast aluminium roadway luminaire with high power complete with connections fittings and including connecting with twin core 2.5 sqmm weather proof aluminium conductor cable complete set, street light brackets made out of GI tubing, light grade 40 mm bore 1200mm long bend to shape at 120 degree, fixed on pole by providing MS clamp made up of flat iron 50x6mm including bolts nuts ans washers of suitable size complete. Fixed upon steel tublar pole type 410 sp31 (9.00 mtr lng) with complete base plate, taper plug, bolts, nuts and screws etc duly painted internally and externally with metal oxide anti corrosive paint before erection and painting with two coats aluminium paint after erection complete all as confirming to IS 2713 (part-1 to 111) and complete.	Each	11		0.00

4.11)	Supplying, installing, Fixing, testing and commissioning of security light AIO is made with High Efficiency Mono Crystalline Solar PV Module, Lithium Ferro Phosphate battery with in-built BMS technology, High Efficacy LED, MPPT Solar Charge Controller and Aluminium Extruded body, specially designed Intelligent microwave sensor to control the dimming and brightness of light leads to extend working time. Multi-angle adjustable light module and Light Arm suitable for installation in different latitude regions. The Adjustable range of light source is -20º to +20º and the adjustable range for rotating the arm is -90º to +90º. wattage 60w having system lumen of 5000 lumen, Havells cat No: SOLAR AIO ALFA 60 W or Equivalent to Philips with connections fittings and including connecting with twin core 2.5 sqmm weather proof aluminium conductor cable complete set, street light brackets made out of GI tubing, light grade 40 mm bore 1200mm long bend to shape at 120 degree, fixed on pole by providing MS clamp made up of flat iron 50x6mm including bolts nuts ans washers of suitable size complete. Fixed upon steel tublar pole type 410 sp31 (9.00 mtr lng) with complete base plate, taper plug, bolts, nuts and screws etc duly painted internally and externally with metal oxide anti corrosive paint before erection and painting with two coats aluminium paint after erection complete all as confirming to IS 2713 (part-1 to 111) and complete.	Each	11		0.00
	SUB-HEAD - IV TOTAL CARRIED TO SUMMARY				**0.00**
5	**SUB-HEAD-V:- AIR CONDITIONING**				
5.10	Supply & Installation high wall split units indoor/outdoor complete with cordless remote control unit and within build air ionizer and plasma filter for better indoor air quality with minimum 5-star rating and EER 3.2 of capacity 2 TR with complete set, including Supply and fixing bracket and clamps heady duty for outdoor unit of split type AC complete all as specified and directed.Air conditioning units will be having heating facilities, which will be supplied to wherever temperature is below the normal temperature				
	2.0 TR Hi Wall Unit (Invertor Units with 5 Star Rating)	Each	44		0.00
5.2)	Supply and fixing voltage stabilizer for automatic operation, single phase, naturally air cooled indoor type and designed for input variation between 110V to 250V with output voltage stabilizer at 230 with accuracy of + 2.5 % and capacity of 5 KVA.	Each	44		0.00
	SUB-HEAD - V TOTAL CARRIED TO SUMMARY				**0.00**
6	**SUB HEAD- VI : EARTHING**				

6.10	Earthing with G.I. earth plate 600 mm X 600 mm X 6 mm thick including accessories, and providing masonry enclosure with cover plate having locking arrangement and watering pipe of 2.7 metre long etc. with charcoal/ coke and salt as required.	Set	33		0.00
6.20	Earthing with copper earth plate 600 mm X 600 mm X 3 mm thick including accessories, and providing masonry enclosure with cover plate having locking arrangement and watering pipe of 2.7 metre long etc. with charcoal /coke and salt as required.	set	33		0.00
6.30	Supplying and laying 6 SWG G.I. wire at 0.50 metre below ground level for conductor earth electrode, including connection/ termination with GI thimble etc. as required.	RM	330		0.00
6.40	Providing and fixing 25 mm X 5 mm G.I. strip in 40 mm dia G.I. pipe from earth electrode including connection with G.I. nut, bolt, spring, washer excavation and re-filling etc. as required.	RM	220		0.00
6.50	Providing and fixing 25 mm X 5 mm G.I. strip on surface or in recess for connections etc. as required.	RM	11		0.00
6.60	Providing and fixing 25 mm X 5 mm copper strip in 40 mm dia G.I. pipe from earth electrode including connection with brass nut, bolt, spring, washer excavation and re-filling etc. as required	RM	110		0.00
6.70	Supply, Installation, Testing and commissioningof maintenance free earthing system. The earthing set shall comprise of (i) 1 No of copper bonded rod of diameter 17.2mm and length of 10 feet UL approved with 25 KA current discharge test from CPRI. The material shall be low carbon high tensile copper bonded rods with 99.9% of copper on the surface. The UL approval certificate shall be provided. (ii) 30 kg of earth enhance compound as per IEC 62561-7. There should not be requirement of any salt and charcoal. The RoHS certificate shall be provided from any NABL accredited labs for earth enhancement material. (iii) 1 No of copper busbar of size 25x6x150mm should be exothermic welded with copper bounded rod 17.2 mm dia x 3 mtr length. (iv) 1 No of PVC pit cover for covering of earthing. (v) Exothermic connection of 25x6x150mm busbar to 35 Sqmm copper cable. (vi) 35Sqmm PVC insulated copper cable for interconnection of earthingand Equipment.	set	33		0.00
	SUB-HEAD - VI TOTAL CARRIED TO SUMMARY				**0.00**
7	**SUB HEAD- VII : EXTERNAL CABLING AND CABLE END TERMINATION**				
7.10	Supplying and laying of following size DWC HDPE pipe ISI marked along with all accessories like socket, bend, couplers etc. conforming to IS 14930, Part II complete with fitting and cutting, jointing etc..direct in ground (75 cm below ground level) including excavation and refilling the trench but excluding sand cushioning and protective covering Earthing etc., complete as required. (For External lighting)				
	63 mm dia (OD-63 mm & ID-51 mm nominal)	Metre	330		0.00

7.20	Supplying of following 1100 volt grade XLPE insulated PVC sheathed copper conductor armoured cables				
	3.5C X 120 sq. mm Al. Ar. Cable For Incoming Power Supply	Metre	220		0.00
	3.5 core 50 sq. mm Cu.Cond.Ar.Cable.	Metre	220		0.00
	3core 6 sq. mm	Metre	1100		0.00
7.30	Supplying and making end termination with brass compression gland and copper lugs for following size of PVC insulated and PVC sheathed / XLPE aluminium conductor cable of 1.1 KV grade as required.				
	3.5C X 120 sq. mm Al. Ar. Cable For Incoming Power Supply	Nos.	22		0.00
	3.5 core 50 sq. mm Cu.Cond.Ar.Cable.	Nos.	22		0.00
	3core 6 sq. mm	Nos.	374		0.00
7.4)	Laying of one number PVC inulated and PVC sheathed/XLPE power cable of 1.1KV grade of following size direct in ground including excavation,sand cushioning,protective covering and refilling the trench etc. as required. . (For External lighting/power cable)				
a)	Up to 35 sq. mm	Metre	550		0.00
b)	Above 35sqmm and up to 95sqmm	Metre	220		0.00
c)	Above 95sqmm and up to 185sqmm	Metre	220		0.00
	SUB-HEAD - VII Total of Sub Head carried to Summary				**0.00**
8	**SUB HEAD- VIII FEEDER PILLAR PANEL**				
8.10	SITC Of free standing suitable for out door installation dust & vermin proof feeder pillar made out of CRCA sheet ,required hard ware,duly painted by either two coats of zink /red oxide primer followwed by two coats of synthetic enmel paint for powder coating in grey or required shade . The feeder pillar having Neoprene rubber gasket of not less than 3mm thickness,hingled door with locking arrangement,gland plate.Thickness of sheet shall not be less than 2mm.Sheet metal works shall be processed with seven tank process,200A TPN 415V Electrolytic Cu Conductor bus bar with 100% Neutral (Fixed on 50x50x6mm thick MS Angle iron frame& covered with sheet metal from all sides)and having the following components.				
	Incoming :				
	One (1) No. 63A 4P MCCB (25KA)				
	3 Nos of LED type phase indicating lamps (RYB) with controlled by 2Amp MCB .				
	1 No.6A, 2 pole Auto/OFF/Manual (2 way with OFF) selector switch.				
	2 Nos. of push button actuator				
	Busbar :				

	Electrolytic high conductivity Copper three pole and 100%neutral bus bars rated at 200 amps having a maximum current density of 1 amp per sq mm insulated with heat shrinkable PVC sleeves & SMC/DMC supports.				
	Outgoings :				
	Three (3) Nos. 10 A-32A DP 10KA MCBs. with 10A-32A DP contactor (AC 1 Category with 230V Control Coil) using 1 No. 24 hour astronomical time switch on Auto/Manual arrangement with Auto/Manual selection switch, ON/OFF Push Buttons, Indication lamps & Control fuses etc .				
	Three (3) Nos. 32 A DP 10KA MCBs.				
	Full Set as above				
	Feedder pillar as described above	Set	11		0.00
8.20	**MAIN ELECTRICAL PANEL FOR BUILDING BLOCK**				
	Designing, fabrication, supply, installation, testing and commissionings of front operated cubicle type compartmentalised, front access, free standing on 75MM "[" MS channel, dust and vermin proof (IP 42 degree protection) panel suitable for use at 415V, 3 phase, 4-wire 50Hz system suitable for fault level of required value symmetrical at 415V fabricated from 2mm thick CRCA MS sheets with hinged, gaskettted (Metal based neoprene) locable doors having structural reinforcement including 3mm thick gland plates on top and bottom, lifting hooks, GI earth strip of required size with 2 nos earth terminals, 2 nos 230V AC operated 250mm X 250mm size axial fans for exhaust of heat with On-Off toggle switches including 2 coated primer and 2 powder coated paint fnish of approved shade over metal surface cleaned and treated with seven tank process complete with interconnections etc as per specifications as required.main panel board should be CPRI Approved.				
	Panel shall have provision for entry of cables from the top or bottom through Cable Alley. All live accessible parts shall be shrouded and all equipment shall be finger touch proof. The busbars insulation shall be with heat shrinkable sleeves SMC/DMC shrouds and busbar supports shall be used. Padlocking facility shall be provided on all outgoing feeders doors and switch handles shall be locable in OFF position.				
	Suitable arrangement shall be made for termination of multiple incoming cables.				
	INCOMER				
	1 No. 250 Amp four pole MCCB with microprocessor Release O/L,S/C,E/F protection+ Spreder+Extended rotary handle. Moulded Case Circuit Breaker (Ics =100% Icu,36 KA).				
	Enclosure				

	Fabrication 400 Amps, TPN Electrolytic grade Aluminium Bus Bar (Ambient temperature 45° C, temperature rise limited to 40° C above ambient), PVC sleeving, control wiring, necessary hardware. for LT Panel as well as for functioning of Single / multi functioning Energy Meters.capacitors (Each vertical bay shall be equipped with space heater + thermostat, door switch illumination lamp all duly wired) **Space to be provided for Harmonic Filters to be installed in Future if required.For selecting the bus bar size 0.7 derating factor to be considered.**				
	INSTRUMENTS & ACCESSORIES				
	1 No. 96x96 MFM with 3Nos 250/5A CTs for 3 phase, 4 wire operation with LED display and selector switch with controlled by 3 sets of 2Amp MCB				
	3 Nos of LED type phase indicating lamps (RYB) with controlled by 2Amp MCB .				
	1 No.6A, 2 pole Auto/OFF/Manual (2 way with OFF) selector switch.				
	2 Nos. of push button actuator				
	OUTGOING				
	1 Nos.40A FP MCB For 4Way TPN DB				
	2Nos.63A FP MCB For 12Way TPN DB				
	9 Nos.40A DP MCB For 8Way/12Way SPN DB				
	1 Nos.63A FP MCCB For External Lighting feeder pillar				
	SPARE				
	1 Nos.40A FP MCB For 4Way TPN DB				
	1Nos.63A FP MCB For 12Way TPN DB				
	1 Nos.40A DP MCB For 8Way/12Way SPN DB				
	MAIN ELECTRICAL PANEL FOR BUILDING BLOCK as described above	Set	11		0.00
	SUB-HEAD - VIII Total of Sub Head carried to Summary				**0.00**
9	**SUB HEAD- IX Lightning Protection & Earthing System(LIGHTNING PROTECTION AS PER IEC 62305 / IS IEC 62305 AT LVL -I)(5X5MTR)**				
9.10	Supplying, Installation, Testing and commissioning of Vertical Aluminium Lighting Arrester of 16MM dia, 1000 mm long with Gun Metal base plate . Model : APSAT116AL+APSTB16-253 Make : APS	Nos.	66		0.00
9.20	Supplying, Installation, Testing and commissioning 8 mm round aluminium conductor for horizontal lightning protection - run in roof. Model : AL8. Make :APS	Mtr.	2200		0.00
9.30	SITC of roof conductor holder for 8 mm round aluminium conductor made of Gun Metal for horizontal installation. The distance between each holder should be min of 1 mtr. Model : APSRCS50. Make : APS	Nos.	2200		0.00

9.40	Supplying, Installation, Testing and commissioning of **T connector** for connecting of 8 mm Al round conductor . The connector should be of Gun Metal with SS nuts and bolt. Model : APSTCRC50 , Make :APS	Nos.	187		0.00
9.50	Supplying, Installation, Testing and commissioning of **Cross connector** for connecting of 8 mm Al round conductor . The connector should be of Gun Metal with SS nuts and bolt. Model : APSCCRC50 , Make : APS	Nos.	33		0.00
9.60	Supplying, Installation, Testing and commissioning of Expansion piece along with connector to compensate the expansion of round 8 mm Al conductor when temperature variation . Connection should be in every 20 mtr. Model : APSEXP50 , Make : APS	Nos.	66		0.00
9.70	GLUE- Glue is used to fix roof conductor holder on roof.	Nos.	66		0.00
	DOWN CONDUCTOR & RING CONDUCTOR AS PER IEC 62305				
9.80	Supplying, Installation, Testing and commissioning of 8 mm round aluminium conductor as a down conductor mounted in the surface of wall which will carry the lightning current to earth pit. Model : AL8. Make : APS	Mtr.	330		0.00
9.90	SITC of Down conductor holder for 8 mm round aluminium conductor of min distance between the wall to the conductor will be of 50 mm. The distance between each holder should be min of 1 mtr. Model : APSRCS50 Make : APS	Nos.	330		0.00
9.10	Supplying, Installation, Testing and commissioning of straight connector for connecting of 8 mm Al round conductor . The connector should be of Aluminium with SS nuts and bolt. Model : APSPCRC50, Make : APS	Nos.	66		0.00
9.11	SITC of 7 digit lightning strike counter. Model - LSR2 Make - LPI	Nos.	66		0.00
9.12	Supplying, Installation, Testing and commissioning of Test Joint Point for 25X3MM CU STRIP , the size should be of 25 x 3 x 150 mm copper in ABS boxes. Model : APSTLBCU. Make : APS	Nos.	110		0.00
	EARTHING AS PER IEC 62561- 2 & 7				

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ANIL KUMAR SRIVASTAVA Digitally signed by ANIL KUMAR SRIVASTAVA Date: 2023.03.16 17:31:10 IST

9.13	Supplying, Installation, Testing and commissioning of advance chemical gel earthing system for the proper dissipation of fault / leakage current to the ground and ensure the continuous electrical connectivity and proper functioning to the electrical system. The earth rod shall be of UL listed & CPRI tested 3 meter long 17.2 mm dia 250 microns copper bonded steel rod with the connecting clamp (ss - rod to tape). The UL listed copper bonded rod also should be tested & ceritifed from CPRI for a short circuit current of 46 KA or more. The UL listing shall be punched / engraved on the rod for the physical verification at site. The engravings shall contain the following details - UL Control number, Dimension details of the rod, Product model number & UL certificate reference number as per detailed technical specification attached. To ensure the electrical conductivity, 50 Kgs (per pit) or more resistance grounding minerals per earth pit / earth rod shall be used along with the copper bonded rod. As per IEEE 80-2013 (Clause 14.5 d), the grounding minerals shall be tested & certified for the resistivity of less than 0.12 ohm-mtr. The grounding minerals should be ROHS certified to ensure it does not pollute the ground water as per technical specification attached.	Nos.	66		0.00
9.14	**GI STRIP(25X6 MM) :** FOR EARTHING INTERCONNECTION	Mtr.	1100		0.00
	SUB-HEAD - X Total of Sub Head carried to Summary				**0.00**
10	**SUB HEAD- XI: SOLAR SYSTEMS**				
10.10	Supply, installation, testing and comminsioning of 1 kw solar panel systems along with supplying, installaing, testing and comminsioning of 2 kw battery bank to store the energy generated from solar panels during the day and supplying the same to solar led lighting systems in the internal and external areas of the buildings and campus. The batteries shall be solar photo voltaic batteries of Tubular Gel type, low maintenance, lead Acid and made of hard rubber container. Storage batteries should conform IEC 61427 / IS 1651 / IS 133369 as per specifications. The batteries shall use 2 / 12V cells and battery capacity is to be designed at C10 rate with end cell cut off voltage of 1.85 V / cell.	Each	11		0.00
10.20	Supply, installation, testing and comminsioning of (Flute plate collector) based on direct transfer of heat of capacity 200 LPD. Including all accessories are nonreturn cast copper alloy screwed down high pressure with crutch or butterfly handle screwed both and for iron pipes or union of as require size 15mm/20mm dia and including all accessories etc.	Each	11		0.00
	SUB-HEAD - XI Total of Sub Head carried to Summary				**0.00**
	GRAND TOTAL ELECTRIC WORKS				**0.00**

Ref: ITI/NSU/CIVIL-DEL/2023/0106/01					Date 15-03-2023
ITI LMITED NETWORK SYSTEM UNIT DOORVANINAGAR, BANGALORE 560 016.					
BILL OF QUANTITY : PLUMBING WORKS :- GROUP 3 (Kashmir), No. of Buildings are 11 ,Type-H					
BIDDER'S NAME					
S.No.	**DESCRIPTION OF ITEM**	**UNIT**	**QTY**	**RATE (RS.)**	**TOTAL AMOUNT**
	PLUMBING WORKS				
1	**SUBHEAD - I : Internal Drainage (Rainwater, Soil, Waste & Fittings)**				
1.1	Providing and fixing on wall face unplasticised rigid pvc rain water **pipes** conforming to IS 13592 type a including jointing with seal ring conforming to IS 5382 leaving 10mm gap for thermal expansion (i) single socketed pipes				
	110mm diameter	Metre	176.00		0.00
1.2	Providing and fixing on wall face unplasticised PVC moulded **fittings/ accessories** for unplasticised rigid PVC rain water pipes conforming to IS 13592 type A including jointing with seal ring conforming to IS 5382 leving 10mm gap for thermal expansion				
	Coupler				
	110mm	Each	55.00		0.00
1.3	Single tee without door				
	110x110x110 mm	Each	33.00		0.00
1.4	Bend 87.5o				
	110mm bend	Each	33.00		0.00
1.5	Shoe (plain)				
	110mm shoe	Each	22.00		0.00
1.6	Providing and fixing unplasticised PVC **pipe clips** of approved design to unplasticised PVC rain water pipes by means of 50x50x50mm hard wood plugs screws with MS screws of required length including cutting brick work and fixing in cement mortar 1:4(1cement 4 coarse sand) and making good the wall etc. complete				
	110mm	Each	55.00		0.00
1.7	Providing and fixing to the inlet mouth of rain water pipe cast iron **grating** 15cm dia meter and weighing not less than 440 grams	Each	55.00		0.00

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1.8	Providing & fixing stainless steel A ISI 304(18/8) kitchen sink as per I.S 13983 with C.I. brackets and stainless steel plug 40 mm including painting of fittings and brackets, cutting and making good the walls wherever required: Kitchen sink with drain board.				
	510x1040mm bowl depth 250mm	Each	11.00		0.00
1.9	Providing & fixing C.P. brass (Long body) bib cock of approved quality conforming to IS standerd and weight not less then 690 gms.				
	15 mm nominal bore	Each	66.00		0.00
1.10	Providing and fixing grease trap of approved quality & make and as per the direction of Engineering-charge.				
	Grease trap (1.6 LPS) Sise: 600(L) X 450(W) X 415(H) For Stall	Each	11.00		0.00
1.11	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes having thermal stability for hot & cold water supply including all (CPVC) plain & brass threaded fittings including fixing the pipe with clamps at 1.00 m spacing. This includes jointing of pipes & fittings with one step CPVC solvent cement and testing of joints complete as per direction of engineer in charge.				
	Internal Work - Exposed on Wall				
	15 mm nominal outer dia Pipes	RM	44.00		0.00
1.12	20 mm nominal outer dia Pipes	RM	66.00		0.00
1.13	25 mm nominal outer dia Pipes	RM	22.00		0.00
1.14	32 mm nominal outer dia Pipes	RM	11.00		0.00
1.15	Providing and fixing Chlorinate Polyvinyl Chloride (CPVC) pipes having thermal stability for hot & cold water supply including all CPVC plain & brass threaded fittings i/c fixing the pipe with clamps at 1.00 m spacing. This including jointing of pipes & fittings with one step CPVC solvent cement and the cost of cutting chases and making good the the same including testing of joints complete as per direction of engineer in charge.				
	Concealed work including cutting chases and making good the walls etc.				
	15 mm nominal outer dia Pipes	RM	44.00		0.00
1.16	20 mm nominal outer dia Pipes	RM	198.00		0.00
1.17	25 mm nominal outer dia Pipes	RM	11.00		0.00
	TOTAL OF RAIN WATER PIPES AND FITTINGS CARRIED TO SUMMARY				**0.00**
2	**SUBHEAD- II MAN HOLE**				

2.1	Providing and laying non-pressure NP2 class (light duty) R.C.C. pipes with collars jointed with stiff mixture of cement mortar in the proportion of 1:2 (1 cement : 2 fine sand) including testing of joints etc. complete :				
	100 mm dia. R.C.C. pipe	RM	55.00		0.00
2.2	150 mm dia. R.C.C. pipe	RM	110.00		0.00
2.3	250 mm dia. R.C.C. pipe	RM	220.00		0.00
2.4	Providing, laying and jointing glazed stoneware pipes class SP-1 with stiff mixture of cement mortar in the proportion of 1:1 (1 cement : 1 fine sand) including testing of joints etc. complete :				
	100 mm diameter	RM	55.00		0.00
2.5	150 mm diameter	RM	220.00		0.00
2.6	Providing and laying cement concrete 1:5:10 (1 cement : 5 coarse sand : 10 graded stone aggregate 40 mm nominal size) up to haunches of S.W. pipes including bed concrete as per standard design :				
	100 mm diameter	RM	110.00		0.00
2.7	150 mm diameter	RM	220.00		0.00
2.8	250 mm diameter	RM	220.00		0.00
2.9	Constructing brick masonry manhole in cement mortar 1:4 (1 cement : 4 coarse sand) R.C.C. top slab with 1:2:4 mix (1 cement : 2 coarse sand : 4 graded stone aggregate 20mm nominal size), foundation concrete 1:4:8 mix (1 cement : 4 coarse sand : 8 graded stone aggregrate 40mm nominal size) inside plastering 12 mm thick with cement mortar 1:3 (1 Cement : 3 coarse sand) finished with floating coat of neat cement & making channels in cement concrete 1:2:4 mix (1 Cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) finished with a floating coat of neat cement complete as per standard design:				
	Inside size 90x80cm and 45cm deep including C.I. cover with frame (light duty) 455x610mm internal dimensions total weight of cover and frame to be not less than 38kg (weight of cover 23kg and weight of frame 15 kg)				
	With common burnt clay FPS (non modular)bricks of class designation 7.5	Each	44.00		0.00
2.10	Inside size 120x90cm and 90cm deep including C.I. cover with frame (medium duty) 500mm internal diameter, total weight of cover and frame to be not less than 116 kg (weight of cover 58 kg and weight of frame 58 kg)				
	With common burnt clay FPS (non modular)bricks of class designation 7.5.	Each	22.00		0.00
2.11	Extra for depth for manholes				
	Size 90x80 cm				

	With common burnt clay FPS (non modular)bricks of class designation 7.5	Metre	22.00		0.00
2.12	Size 120x90cm				
	With common burnt clay FPS (non modular)bricks of class designation 7.5	Metre	5.50		0.00
2.13	Providing and fixing square-mouth S.W. gully trap class SP1 complete with C.I. grating brick masonry chamber with water tight C.I. cover with frame of 300 x300 mm size (inside) the weight of cover to be not less than 4.50 kg and frame to be not less than 2.70 kg as per standard design :				
	With common burnt clay F.P.S.(non modular) bricks of class designation 7.5	Each	11.00		0.00
2.14	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 50m.				
	All kinds of soil	Cum	165.00		0.00
2.15	Excavating trenches of required width for pipes, cables, etc including excavation for sockets, and dressing of sides, ramming of bottoms, depth upto 1.5 m including getting out the excavated soil, and then returning the soil as required, in layers not exceeding 20cm in depth,including consolidating each deposited layer by ramming,watering,etc. and disposing of surplus excavated soil as directed ,within a lead of 50m.				
	Pipes. cables exceeding 80mm dia but not exceeding 300mm dia.	Metre	220.00		0.00
2.16	Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth: consolidating each deposited layer by ramming and watering, lead up to 50 m and lift upto 1.5 m	Cum	165.00		0.00

2.17	Providing orange colour safety foot rest of minimum 6mm thick plastic encapsulated as per IS : 10910 on 12mm dia steel bar conforming to IS : 1786 having minimum cross section as 23 mmx25mm and over all minimum length 263mm and width as 165mm with minimum 112 mm space between protruded legs having 2mm thread on top surface by ribbing or chequering besides necessary and adequate anchoring projections on tail length on 138mm as per standard drawing and suitable to with stand the bend test and chemical resistant test as per specification and having manufacture's permanent identification mark to be visible even after fixing, including fixing in manhole with 30x20x15 cm cement concrete block 1:3:6 (1cement : 3coarse sand : 6 graded stone aggregate 20 mm nominal size) complete as per design.	Each	220.00		0.00
	Constructing brick masonry road gully chamber 50x45x60 cm with bricks in cement mortar 1:4 (1 cement :4 coarse sand) including 500x450mm precast R.C.C. horizontal grating with frame complete as per standard design:				
	With common burnt clay F.P.S. bricks(non modular) of class designation 7.5	Each	22.00		0.00
2.18	Constructing brick masonry road gully chamber 45x45x77.5 cm with bricks in cement mortar 1:4 (1 cement :4 coarse sand) with precast R.C.C. vertical grating complete as per standard design:				
	With common burnt clay F.P.S. bricks(non modular) of class designation 7.5	Each	22.00		0.00
2.19	Providing, fixing, jointing and testing in position of ISI marked UV stabilized UPVC pipes for soil, waste and vent, Type-B as per IS : 13592 suitable for rubber ring joints, including all neccessary specials and fittings (confirming to IS:14735) i.e. bends, tees, junctions (with or without doors), reducers, WC connectors, couplers, cowels, clamps, rubber rings, clean outs etc. fixing at wall/ ceiling/ floor level supported by clamp & hangers etc. in concealed / inside duct / under floor & basement ceiling / external work etc. including chase cutting as required, excavation and back filling in all kind of soils, suspended from floor under false ceiling or embedding the pipes laid under floors / building in 75 mm. alround 1:2:4 cement concrete (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) including cost of shuttering for proper completion of the work, breaking and making good the walls and floors etc. after pipes have been duly laid and tested. The rubber ring shall confirm to IS:5382.				

	The Pipes will be supported with threaded G I rods & clamps on 50x50x5 mm slotted angle. The cost will include all support arrangements. The work includes commissioning of all pipes lines as per drawings and specifications and as directed by engg-in-charge at site.				
	75mm outer dia	Metre	33.00		0.00
	110mm outer dia	Metre	33.00		0.00
	160mm outer dia	Metre	44.00		0.00
2.20	Providing, fixing, jointing and testing in position ISI marked (IS:4985) UPVC pipes of min 6 Kg/ Sqcm rating with fitting for waste pipe from fixtures to floor trap including reduces, enlarger, socket, couplers, bends, tees etc including fixing at wall/ ceiling level supported by clamp & hangers etc. cutting holes in wall/ floors/ slabs and making good the same with cement concrete 1:2:4 complete as required.				
	40mm outer dia	Metre	33.00		0.00
	50mm outer dia	Metre	33.00		0.00
	63mm outer dia	Metre	11.00		0.00
2.21	Providing & fixing UPVC **Floor trap** of self cleansing design with CP Jali complete in all respects. (Make : Supreme / Finolex / Prince).				
	a) 100 mm inlet and 100 mm outlet.				
	(with 127dia Glossy CP Grating Jayna				
	model no.RRB 127)	Each	11.00		0.00
	b) 100 mm inlet and 75 mm outlet.				
	(with 102 mm dia CP Glossy Grating Jayna				
	model no. RRB 102)	Each	11.00		0.00
2.22	Providing & fixing 110m x 50mm waste with PVC reducer including cutting chases in floor, cutting RCC slab complete as required.	Each	11.00		0.00
	TOTAL OF MAN HOLE CARRIED TO SUMMARY				**0.00**
3	**SUBHEAD -III PUMP**				

3.1	Providing & fixing fully submersible sump pumps for dewatering with C.I casing & shaft suitable for operation on 400 / 440 V,3 phase, pH 50 cycle A/C power supply.				
	Sump Pumps(For basement drainage)				
	Location - Inside Drainage sump with electrical panel & all controls,cyclic operation				
	2 pumps- both working during extra high level in sump.				
	Flow rate(each pump)=3 lps,head=12m.				
	Solid Handlling-15mm	Set	11.00		0.00
	Providing and fixing gun metal non- return valve of approved quality (screwed end) :				
	32 mm nominal bore	Each	11.00		0.00
3.2	Vertical				
	40 mm nominal bore	Each	11.00		0.00
3.3	Vertical				
	50 mm nominal bore	Each	11.00		0.00
	TOTAL OF PUMP CARRIED TO SUMMARY				**0.00**
4	**Subhead-IV: External Water Supply**				
4.1	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes having thermal stability for hot & cold water supply including all (CPVC) plain & brass threaded fittings. This includes jointing of pipes & fittings with one step CPVC solvent cement,trenching,refilling and testing of joints complete as per direction of engineer in charge. .				
	20 mm nominal outer dia Pipes	RM	110.00		0.00
4.2	25 mm nominal outer dia Pipes	RM	55.00		0.00
4.3	32 mm nominal outer dia Pipes	RM	55.00		0.00
4.4	40 mm nominal outer dia Pipes	RM	55.00		0.00
4.5	Providing and fixing gun metal gate valve with C.I. wheel of approved quality (screwed end) :				
	25 mm dia nominal bore	Each	11.00		0.00
4.6	20 mm dia nominal bore	Each	22.00		0.00
4.7	32 mm dia nominal bore	Each	22.00		0.00
4.8	40 mm dia nominal bore	Each	11.00		0.00
	TOTAL OF External Water Supply CARRIED TO SUMMARY				**0.00**
5	**Subhead-V: RAIN WATER HARVESTING PIT**				

5.1	Providing and constructing Rainwater harvesting pit of 2500 (Dia mm) X 2500mm (D) size (Internal) in overall size with inlet and outlet connection with upto 150mm from ground level 1st class brick 230mm thick in Cement mortar 1:4 (1 Cement : 4 Coarse sand) inside and outside 12mm thick plaster with Cement mortar 1:3 (1 Cement : 3 Coarse sand) with a floating coat of neat cement on inside surface. After 1500, depth 500mm thick border. C.I. (heavy duty) manhole cover 560mm (weight not less than 208 kg) including necessary excavation (all type SOIL hard-rock)backing filling, disposal of surplus earth, providing and fixing of C.I. manhole steps complete as per standard design.	Each	11.00		0.00
5.2	Boring/drilling bore well of required dia for casing / strainer pipe, by suitable method prescribed in IS:2800 (part-1) including collecting samples from different strata, preparing and submitting strata chart/bore log, including hire & running charges of all equipments, tools, plants & machineries required for the job, all complete as per direction of engineer-in-charge, upto 90 metre depth below ground level.				
	All type sof soil				
	350mm dia	Metre	132.00		0.00
5.3	Supplying, assembling, lowering and fixing in vertical position in bore well unplasticized PVC medium well screen (RMS) pipes with ribs, conforming to IS : 12818, including hire & labour charges, fittings & accessories etc, all complete, for all depths, as per direction of engineer-in-charge.				
	200mm nominal dia	Metre	132.00		0.00
5.4	Supplying & filling, sepreading & leveling stone boulders of size range 5cm to 20cm, in the recharge pit, in the required thickness, for all leads & lifts, all complete, for all depths, as per direction of engineer-in-charge.	Cum	55.00		0.00
5.4	Supplying & filling, sepreading & leveling gravels of size range 5mm to 10mm, in the recharge pit, over the existing layer of boulders, in the required thickness, for all leads & lifts, all complete, as per direction of engineer-in-charge.	Cum	55.00		0.00
5.6	Supplying & filling, sepreading & leveling coarse sand of size range 1.5mm to 20mm, in the recharge pit, in the required thickness over gravel layer, for all leads & lifts, all complete, as per direction of engineer-in-charge.	Cum	55.00		0.00
5.7	Providing and fixing Bail plug / Bottom plub of required dia to the bottom of pipe assembly of tubewell as per IS : 2800 (part - 1)				
	200mm dia	Each	11.00		0.00
5.8	Providing and fixing in position pre-cast RCC manhole cover and frame of required shape & approved quality				
	EHD-35				

	Circular shape 560 mm internal diameter	Each	22.00		0.00
	TOTAL OF RAIN WATER HARVESTING CARRIED TO SUMMARY				**0.00**
6	**Subhead:- VI - Sanitary Fixtures**				
6.1	Providing & fixing of white vitreous china pedestal type water closet(European type) with seat and lid, 10 liter low level white viterous china flushing cistern C.P.flush bend with fittings & C.I.brackets ,40mm flush bend, overflow arrangment with specials of standard make and mosquito proof coupling of approved municipala design complete including painting of fittings and brackets, cutting and making good the wall and Floors wherever required:				
	W.C pan with ISI marked white solid plastic seat and lid.	Each	11.00		0.00
6.2	Providing & fixing wash basin with C.I. brackets, C.P brass pillar taps,32 mm C.P. brass waste of standard pattern, including painting of fittings and brackets,cutting and making good the walls wherever required:				
	White Vitreous China Wash basin size 550x400 mm with a pair of 15 mm C.P. brass pillar taps	Each	11.00		0.00
6.3	Providing and fixing PTMT towel ring trapezoidal shape 215 mm long, 200 mm wide with minimum distances of 37 mm from wall face with concealed fittings arrangement of approved quality and colour, weighing not less than 88 gms.	Each	11.00		0.00
6.4	Providing & fixing PTMT soap dish Holder having length of 138mm,breadth 102mm, height of 75mm with concealed fitting arrangements.Weighing not less than 106gms.	Each	11.00		0.00
6.5	Providing & fixing mirror of superior glass(of aproved quality) and of required shape and size with plastic moulded frame of approved make and shade with 6mm thick hard board backing:				
	Rectangular Shape 453x357mm	Each	11.00		0.00
6.6	Providing and fixing toilet paper holder :				
	C.P. brass	Each	11.00		0.00
6.7	Providing and fixing P.V.C waste pipe for sink or wash basin including P.V.C waste fitting complete .				
	Semi rigid pipe				
	a) 40 mm dia	Each	11.00		0.00
6.8	Providing and fixing C.P.brass bottle trap 32mm size bottle trap of approved quality & make as approved by Engineer-in-charge.	Each	11.00		0.00
6.9.	Providing and fixing P.V.C connection with brass union.				
	45cm length.				
	15mm nominal bore	Each	44.00		0.00
6.10	Providing and fixing C.P. bass angle valve for basin mixer and geyser points of approved quality conforming to I.S:8931.				

	15 mm nominal bore	Each	44.00		0.00
6.11	Providing & fixing C.P. hand spray with lever control (health faucet) and flexible hose 1 m long connection with C.P. holder for hand spray complete in all respects as per direction of Engineer-Incharge.	Each	11.00		0.00
6.12	Providing and placing on terrace (at all floor levels) polyethylene water storage tank, IS : 12701 marked, with cover and suitable locking arrangement and making necessary holes for inlet, outlet and overflow pipes but without fittings and the base support for tank.	per ltr	11000.00		0.00
6.13	Providing and fixing white vitreous china flat back half stall urinal of size 580x380x350 mm with white PVC automatic flushing cistern,with fittings, standard size C.P. brass flush pipe, spreaders with unions and clamps (all in C.P. brass) with waste fitting as per IS :2556, C.I. trap with outlet grating and other couplings in C.P. brass,including painting of fittings and cutting and making good the walls and floors wherever required :				
	Single half stall urinal with 5 litre P.V.C. automatic flushing cistern	Each	11.00		0.00
	TOTAL OF SANITARY FIXTURES CARRIED TO SUMMARY				**0.00**
7	**Subhead:- VII SEPTIC TANK FIXTURES**				
7.1	Supplying and fixing C.I. cover without frame for manholes :				
	455x610 mm rectangular C.I. cover (light duty) the weight of the cover to be not less than 23 kg	Each	22.00		0.00
7.2	Supplying and fixing CI vent pipe--80 mm dia	RM	55.00		0.00
7.3	Supplying and fixing CI cowl.	Each	11.00		0.00
7.4	Making soak pit 2.5 m diameter 3.0 metre deep with 45 x 45 cm dry brick honey comb shaft with bricks and S.W. drain pipe 100 mm diameter, 1.8 m long complete as per standard design.				
	With common burnt clay F.P.S. (non modular) bricks of class designation 7.5	Each	11.00		0.00
	TOTAL OF SEPTIC TANK CARRIED TO SUMMARY				**0.00**
	GRAND TOTAL OF PUMBING WORKS				**0.00**

Ref: ITI/NSU/CIVIL-DEL/2023/0106/01					Date 15-03-2023
ITI LMITED NETWORK SYSTEM UNIT DOORVANINAGAR, BANGALORE 560 016.					
BILL OF QUANTITY : IT & FIRE FIGHTING WORKS :- GROUP 3 (Kashmir), No. of Buildings are 11,Type-H					
BIDDER'S NAME					
S. No.	**Description**	**Unit**	**QTY**	**RATE (Rs)**	**Total Amount**
1	**ACCESS CONTROL SYSTEM consisting of the following** (a) Supply, Installation, testing and commissioning of the access control system including the following equipments including necessary fitting, fixtures, cables, etc. (Model No./make RBH-Axiom) 1 nos per node. (b) 2-Door Control Panel with universal cabinet and power supply and required license.(Model No./make RBH-IRC-2000) 3 nos each per node. (c) Biometric reader. (Model No./make BFR-350) 5 nos each per node. (d) PROXIMITY CARD. (Model No./make PBH Smart Card) 20 nos each per node.	Set	11.00		0
	TOTAL FOR ACCESS CONTROL SYSTEMS WORKS				**0**
2	**VIDEO SURVEYLANCE SYSTEMS** Supply, installation, testing and commissioning of physical intrusion detection and prevention system including all necessary accessories, wires and fixtures. The system should be equipped with central monitoring software and server at NOC with complete necessary licenses (a) Indoor Dome Camera (Model No Mobotix m 26) 3 Nos per node (b) Out door type camera (Model No Mobotix m 26) 5 Nos per node (c) Network Vide Recorder system (Brand Mobotix) 1 Nos per node (d) 22" lcd display complete with all wiring and necessary fittings. (Make Samsung/LG) 1 Nos per node (e) 1 no PC loaded/ installed with necessary lisc. Software for video surveylance. (Make Software: Mobotix, PC Hardware: Dell/HP) 1 Nos per node	**Set**	11.00		0
	TOTAL FOR VIDEO SURVEYLANCE SYSTEMS				**0**

3	**PHYSICAL INTRUSION DETECTION AND PREVENTION SYSTEM consisting of the following:** (a) Supply, installation, testing and commissioning of physical intrusion detection and prevention system including all necessary accessories.(Model No Securico President) 1 nos each per node. B)Intrusion Controller panel(Make :Securico President). 1 no per node. C)Keypad - Alpha Addressable LCD Keypad (Model No Securico President). 1 per node. D) PIR Sensor (make: Optex). Qty: 8 nos per node. E) Beam Protector (Covering the entire parameter of the node) (make:Optex). Qty: 10 per node. F) Ground sensor (make: Optex). Qty: 8 nos per node. G) 130 db hooter (Make: Securico) Qty: 4 no per node. H) 2ft pole for beam detector (GI Pipe). Qty: 5 nos per node.	**Set**	11.00		0
	TOTAL FOR PHYSICAL INTRUSION SYSTEM WORKS				**0**
4	**FIRE DETECTION AND SUPPRESSION SYSTEM consisting of the following:** **(**a) Supplying, installing, testing and commissioning of addressable Main control panel comprising of visual and audible fire and fault alarms and signals, indicators and all other accessories. Panel shall be IS Approved. The system shall be nstalled with complete necessary fittings and fixtures including 2C x 1.5 sqmm and 2C x 2.5 sqmm ISI marked cables and wires. All the conduits hall be as per NBC specifications. (Model No Kentek Syncro As) 1 nos each per node. (b) OTI-AX-200TE - Photoelectric Detector with Synchronized twin beam, 200ft outdoor all weather range, IP65 Lightning Protection Level 14kV, 99% beam blocking stability includes pole mounting kit (Model No OTI-AX-200TE) 5 nos each per node. (c) OTIBC3 - Back cover for OTIAX200TF (Model No OTIBC3) 5 nos each per node.	**Set**	11.00		0

	(d) SOUNDER 12V - High power 130 db, Police Siren Sound, Suitable for Indoor and Outdoor application. Tamper Loop. (Model No Roshni red 32 tone) 4 nos each per node. (e) Smoke detectors(Model No Apollo Discover / 58000-600) 32 nos each per node. (f) Heat detectors(Model No Apollo Discover / 58000-400) 1 nos each per node. (g) Multi-Criteria detectors(Model No Apollo Discover) 3 nos each per node. (h) Manual Call Point (Breaking Glass type)(Model No Apollo Discover /55000-971) 5 nos each per node. (j) Sounder / Flasher with Control Module (Model No Apollo Discover) 8 nos each per node. (k) Short Circuit Isolator 1 nos each per node. (l) Control modules for AHU / FAN trappings(Model No/Make: SS) 2 nos each per node. (m) Fire Signages- photoluminescent Green or Red color safety signages in different sizes / graphics / colours /texts can be made according to the standards 2 nos each per node.				
	(a) GAS SUPPRESSION SYSTEM FM 200 Gas based Fire Suppression System shall be considered for equipment storage room and server room. Qty 1 no system per node.				
	FIRE EXTINGUISHER **(a)** CO2 type cylindrical shape fire extinguisher - 4.5 Kg Capacity with requisite fixing arrangement (Model No/make Ventex) 5 nos each per node. (b) ABC type fire extinguisher - 6 Kg capacity with requisite fixing arrrangement (Model No/make Ventex) 5 nos each per node. (c) Dry chemical powder type cylindrical shape fire extinguisher - 6 Kg Capacity with requisite fixing arrangement (Model No/make Ventex Dry powder 4308/14609) 5 nos each per node. (d) Mechanical foam type fire extinguishers with requisite fixing arrangement (Model No/make Ventex) 5 nos each per node. (e) Trolley mounted type - 9 litres capacity. 1 nos each per node. (f) Trolley mounted type -50 litres capacity. 1 nos each per node. (g) Supply and installation of Fire buckets of 9 litres capacity. Stand made of MS Channel and angle to accommodate 4 Nos. of buckets filled with cleaned soft sand. Rate shall be inclusive of red panit for buckets and MS Sand as per Fire Code. 5 nos each per node.				
	TOTAL FOR FIRE FIGHTING WORKS				**0**
	GRAND TOTAL OF IT & FIRE FIGHTING WORKS				**0**

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Ref: ITI/NSU/CIVIL-DEL/2023/0106/01			Date 15-03-2023
ITI LMITED NETWORK SYSTEM UNIT DOORVANINAGAR, BANGALORE 560 016.			
SUMMARY SHEET :- GROUP 4 (Kashmir), No. of Buildings are 10, Type-H.			
BIDDER'S NAME			
Sl.No.	**DESCRIPTION**	**AMOUNT (Rs.)**	**AMOUNT IN WORDS (Rs.)**
I	**SECTION A**		
	CIVIL WORKS	0.00	
II	**SECTION B**		
	ELECTRICAL WORKS	0.00	
III	**SECTION C**		
	PLUMBING WORKS	0.00	
IV	**SECTION D**		
	IT AND FIRE FIGHTING WORKS	0.00	
	GRAND TOTAL FOR THE PROJECT	**0.00**	

Ref: ITI/NSU/CIVIL-DEL/2023/0106/01					Date 15-03-2023
ITI LMITED NETWORK SYSTEM UNIT DOORVANINAGAR, BANGALORE 560 016.					
BILL OF QUANTITY : CIVIL WORKS :- GROUP 4 (Kashmir), No. of Buildings are 10, Type-H.					
BIDDER'S NAME					
S. No	**DESCRIPTION**	**UNIT**	**QTY**	**RATE**	**AMOUNT**
1	**SECTION-1: EARTHWORK**				
1.1	Earth work in excavation by mechanical means (Hydraulic excavator)/ manual means over areas (exceeding 30 cm in depth, 1.5 m in width as well as 10 sqm on plan) including getting out and disposal of excavated earth lead upto 50 m and lift upto 1.5 m, as directed by Engineer-in- charge.				
	All kinds of soil.:	Cum	189.96		0.00
1.2	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 kinds of soil.:	cum	379.93		0.00
1.3	Excavation work by mechanical means (Hydraulic excavator)/ manual means in foundation trenches or drains (not exceeding 1.5m 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 soils as directed, within a lead of 50 m.				
	Ordinary rock	cum	1899.64		0.00
1.4	Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift upto 1.5 m.	cum	5507.93		0.00
1.5	Extra for every additional lift of 1.5 m or part thereof in excavation / banking excavated or stacked materials. **: For Excavation beyond 1.5m depth**				
	All kinds of soil	cum	352.00		0.00
1.6	Supplying and filling in plinth with sand under floors, including watering, ramming, consolidating and dressing complete.	cum	248.75		0.00
	NOTE : Deduction shall be made of columns, brick walls etc. for calculation of quantity of sand filling for payment				
1.7	Surface dressing of the ground including removing vegetation and inequalities not exceeding 15 cm deep and disposal of rubbish, lead up to 50 m and lift up to 1.5 m.				
	All kinds of soil	sqm	7500.00		0.00

1.8	Supplying chemical emulsion in sealed containers including delivery as specified.				
	Chlorpyriphos/ Lindane emulsifiable concentrate of 20%	Litre	442.33		0.00
1.9	Diluting and injecting chemical emulsion for POST-CONSTRUCTIONAL anti-termite treatment (excluding the cost of chemical emulsion) :				
	Along external wall where the apron is not provided using chemical emulsion @ 7.5 litres / sqm of the vertical surface of the substructure to a depth of 300mm including excavation channel along the wall & rodding etc. complete:				
	With Chlorpyriphos/ Lindane E.C. 20% with 1% concentration	Metre	675.00		0.00
1.10	Along the external wall below concrete or masonry apron using chemical emulsion @ 2.25 litres per linear metre including drilling and plugging holes etc.:				
	With Chlorpyriphos/ Lindane E.C. 20% with 1% concentration	Metre	1350.00		0.00
1.11	Treatment of soil under existing floors using chemical emulsion @ one litre per hole, 300 mm apart including drilling 12 mm diameter holes and plugging with cement mortar 1 :2 (1 cement : 2 Coarse sand) to match the existing floor:				
	With Chlorpyriphos/Lindane E.C. 20% with 1% concentration	Sqm	1176.00		0.00
1.12	Treatment of existing masonry using chemical emulsion @ one litre per hole at 300 mm interval including drilling holes at 45 degree and plugging them with cement mortar 1:2 (1 cement : 2 coarse sand) to the full depth of the hole :				
	With Chlorpyriphos/Lindane E.C. 20% with 1% concentration	Metre	54.00		0.00
1.13	Treatment at points of contact of wood work by chemical emulsion Chlorpyriphos/ Lindane (in oil or kerosene based solution) @ 0.5 litres per hole by drilling 6 mm dia holes at downward angle of 45 degree at 150 mm centre to centre and sealing the same	Sqm	100.00		0.00
	Total for EarthWork				**0.00**
2	**SECTION-2: CONCRETE WORK**				
2.1	Providing and laying in position cement concrete of specified grade excluding the cost of centering and shttering - All work up to plinth level:				
	1:2:4 (1 cement : 2 coarse sand (zone-III) derived from natural sources : 4 graded stone aggregate 20 mm nominal size derived from natural sources)	cum	279.47		0.00
2.2	1:4:8 (1 Cement : 4 coarse sand : 8 graded stone aggregate 20 mm nominal size)	cum	495.70		0.00
2.3	Providing and laying damp-proof course 50mm thick with cement concrete 1:2:4 (1 cement : 2 coarse sand(zone-III) : 4 graded stone aggregate 20mm nominal size).	sqm	258.46		0.00

2.4	Making plinth protection 50mm thick of cement concrete 1:3:6 (1 cement : 3 coarse sand (zone - III) : 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 necessary excavation, levelling & dressing & finishing the top smooth.	Sqm	179.40		0.00
	Total for Concrete Work				**0.00**
3	**SECTION-3: REINFORCED CEMENT CONCRETE**				
3.1	Providing and laying in position specified grade of reinforced cement concrete, excluding the cost of centering, shuttering, finishing and reinforcement - All work up to plinth level:				
	M 25 (1 cement : 1 coarse sand(zone-III) : 2 graded stone aggregate 20 mm nominal size)	cum	473.00		0.00
3.2	Reinforced cement concrete work in walls (any thickness), including attached pilasters, buttresses, plinth and string courses, fillets, columns, pillars, piers, abutments, posts and struts etc. above plinth level up to floor five level, excluding cost of centering, shuttering, finishing and reinforcement :				
	M 25 (1 cement : 1 coarse sand(zone-III) : 2 graded stone aggregate 20 mm nominal size)	cum	85.54		0.00
3.3	Reinforced cement concrete work in beams, suspended floors, roofs having slope up to 15° landings, balconies, shelves, chajjas, lintels, bands, plain window sills, staircases and spiral stair cases above plinth level up to floor five level, excluding the cost of centering, shuttering, finishing and reinforcement with M 25 (1 cement : 1 coarse sand(zone-III) : 2 graded stone aggregate 20 mm nominal size)	cum	30.00		0.00
	Centering & shuttering including strutting, propping etc. and removal of form work for:				
3.4	Foundations, footings, bases of columns etc. for mass concrete.	sqm	1099.12		0.00
3.5	Suspended floors, roofs, landings, balconies and access platform	sqm	100.00		0.00
3.6	Lintels, beams, plinth beams, girders, bressumers and cantilevers.	sqm	2596.74		0.00
3.7	Columns, Pillars, Piers, Abutments, Posts and Struts	sqm	972.00		0.00
3.8	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 of grade Fe-500D or more.	kg	60800.00		0.00
	Total for RCC Work				**0.00**
4	**SECTION-4: BRICK WORK**				
4.1	Brick work with common burnt clay F.P.S. (non modular) bricks of class designation 7.5 in foundation and plinth in:				

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	Cement mortar 1:6 (1 cement : 6 coarse sand)	cum	319.35		0.00
4.2	**Brick work** with common burnt clay F.P.S. (non modular) bricks of class designation 7.5 in superstructure above plinth level up to floor V level in all shapes and sizes in :				
	Cement mortar 1:6 (1 cement : 6 coarse sand)	cum.	749.59		0.00
	HALF BRICK WORK				
4.3	Half brick masonry with common burnt clay F.P.S. (non modular) bricks of class designation 7.5 in superstructure above plinth level up to floor V level.				
	Cement mortar 1:4 (1 cement :4 coarse sand)	sqm	711.90		0.00
4.4	Extra for providing and placing in position 2 Nos 6mm dia. M.S. bars at every third course of half brick masonry. Quantities sames as DSR item no. 6.13.2	sqm	711.90		0.00
	Total for Brick Work				**0.00**
5	**SECTION-5: STONE WORK**				
5.1	Random rubble masonry with hard stone in foundation and plinth including levelling up with cement concrete 1:6:12 (1 cement : 6 coarse sand : 12 graded stone aggregate 20 mm nominal size) upto plinth level with :				
	Cement mortar 1:6 (1 cement : 6 coarse sand)	Cum	6.86		0.00
5.2	Coursed rubble masonry with hard stone (first or second sort) in superstructure above plinth level and upto floor five level.				
	Masonry work (first sort), in cement mortar 1:6 (1 cement : 6 coarse sand)	Cum	13.80		0.00
	Total for Stone Work				**0.00**
6	**SECTION-6:GRANITE WORK**				
6.1	Providing and fixing 18 mm thick gang saw cut, mirror polished, premoulded and prepolished, machine cut for kitchen platforms, vanity counters, window sills, facias and similar locations of required size, approved shade, colour and texture laid over 20 mm thick base cement mortar 1:4 (1 cement : 4 coarse sand), joints treated with white cement, mixed with matching pigment, epoxy touch ups, including rubbing, curing, moulding and polishing to edges to give high gloss finish etc. complete at all levels.				
	Granite of any colour and shade				
	Area of slab over 0.50 sqm	Sqm	4.50		0.00
6.2	Extra for providing opening of required size & shape for wash basin/ kitchen sink in kitchen platform, vanity counter and similar location in marble/ Granite/ stone work, including necessary holes for pillar taps etc. including moulding, rubbing and polishing of cut edges etc. complete.	Each	10.00		0.00

6.3	Providing and fixing Ist quality ceramic glazed wall tiles conforming to IS: 15622 (thickness to be specified by the manufacturer), of approved make, in all colours, shades except burgundy, bottle green, black of any size as approved by Engineer-in-Charge, in skirting, risers of steps and dados, over 12 mm thick bed of cement mortar 1:3 (1 cement : 3 coarse sand) and jointing with grey cement slurry @ 3.3kg per sqm, including pointing in white cement mixed with pigment of matching shade complete.	Sqm	157.76		0.00
	Total for Cladding Work				**0.00**
7	**SECTION-7:DOORS & WINDOWS WORKS**				
7.1	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).				
	Second class teak wood	cum	0.44		0.00
7.2	Providing and fixing panelling or panelling and glazing in panelled or panelled and glazed shutters for doors, windows and clerestory windows (Area of opening for panel inserts excluding portion inside grooves or rebates to be measured). Panelling for panelled or panelled and glazed shutters 25 mm to 40 mm thick :				
	Float glass panes				
	4 mm thick glass pane (weight not less than 10kg/sqm).	Sqm	611.42		0.00
7.3	5.0 mm thick glass panes (weight not less than 12.50 kg/sqm).	Sqm	82.50		0.00
7.4	Providing and fixing ISI marked flush door shutters conforming to IS : 2202 (Part I) decorative type, core of block board construction with frame of 1st class hard wood and well matched teak 3 ply veneering with vertical grains or cross bands and face veneers on both faces of shutters.				
	35 mm thick including ISI marked Stainless Steel butt hinges with necessary screws	Sqm	244.86		0.00
7.5	Extra for providing lipping with 2nd class teak wood battens 25 mm minimum depth on all edges of flush door shutters (over all area of door shutter to be measured).	Sqm	501.60		0.00
7.6	Extra for providing vision panel not exceeding 0.1 sqm in all type of flush doors (cost of glass excluded) (overall area of door shutter to be measured):				
	Rectangular or square	Sqm	244.86		0.00
7.7	Providing and fixing wire gauge shutters using galvanized M.S. wire gauge of average width of aperture 1.4 mm in both directions with wire of dia 0.63 mm, for doors, windows and clerestory windows with hinges and necessary screws :				
	30 mm thick shutters				
	With ISI marked stainless steel butt hinges of required size				
	Second class teak wood	Sqm	48.51		0.00

7.8	Providing and fixing wooden moulded beading to door and window frames with iron screws, plugs and priming coat on unexposed surface etc. complete :				
	2nd class teak wood				
	50x12 mm	meter	58.50		0.00
7.9	Providing and fixing nickel plated M.S. pipe curtain rods with nickel plated brackets :				
	20 mm dia (heavy type)	meter	247.50		0.00
7.10	Providing and fixing aluminium extruded section body tubular type universal hydraulic door closer (having brand logo with ISi, IS : 3564, embossed on the body, door weight upto 36 kg to 80 kg and door width from 701 mm to 1000 mm), with double speed adjustment with necessary accessories and screws etc. complete.	Each	10.00		0.00
7.11	Providing 40x5 mm flat iron hold fast 40 cm long including fixing to frame with 10 mm diameter bolts, nuts and wooden plugs and embedding in cement concrete block 30x10x15cm 1:3:6 mix (1 cement : 3 coarse sand : 6 graded stone aggregate 20mm nominal size).	Each	10.00		0.00
7.12	Providing and fixing ISI marked oxidised M.S. handles conforming to IS:4992 with necessary screws etc. complete :				
	100 mm	Each	100.00		0.00
7.13	Providing and fixing aluminium sliding door bolts, ISI marked anodised (anodic coating not less than grade AC 10 as per IS : 1868), transparent or dyed to required colour or shade, with nuts and screws etc. complete				
	250x16 mm	Each	110.00		0.00
7.14	Providing and fixing aluminium tower bolts, ISI marked, anodised (anodic coating not less than grade AC 10 as per IS : 1868) transparent or dyed to required colour or shade, with necessary screws etc. complete :				
	250x10 mm	Each	110.00		0.00
7.15	200x10 mm	Each	110.00		0.00
7.16	Providing and fixing aluminium handles, ISI marked, anodised (anodic coating not less than grade AC 10 as per IS : 1868) transparent or dyed to required colour or shade, with necessary screws etc. complete :				
	125 mm	Each	200.00		0.00
7.17	Providing and fixing aluminium hanging floor door stopper, ISI marked, anodised (anodic coating not less than grade AC 10 as per IS : 1868) transparent or dyed to required colour and shade, with necessary screws etc. complete.				
	Single rubber stopper	Each	100.00		0.00
7.18	Providing and fixing PTMT door catcher of length 72 mm and dia. of 42 mm with suitable washers weighing not less than 33 gms	Each	100.00		0.00

7.19	Providing and fixing factory made uPVC white colour sliding glazed window upto 1.50 m in height dimension comprising of uPVC multi-chambered frame with in-built roller track and sash extruded profiles duly reinforced with 1.60 ± 0.2 mm thick galvanized mild steel section made from roll forming process of required length (shape & size according to uPVC profile), appropriate dimension of uPVC extruded glazing beads and uPVC extruded interlocks, EPDM gasket, wool pile, zinc alloy (white powder coated) touch locks with hook, zinc alloy body with single nylon rollers (weight bearing capacity to be 40 kg), G.I fasteners 100 x 8 mm size for fixing frame to finished wall and necessary stainless steel screws etc. Profile of frame & sash shall be mitred cut and fusion welded at all corners, including drilling of holes for fixing hardware's and drainage of water etc. After fixing frame the gap between frame and adjacent finished wall shall be filled with weather proof silicon sealent over backer rod of required size and of approved quality, all complete as per approved drawing & direction of Engineer-in-Charge. (Single / double glass panes, wire mesh and silicon sealent shall be paid separately). Variation in profile dimension in higher side shall be accepted but no extra payment on this account shall be made.				
	Note: For uPVC frame and sash extruded profiles minus 5% tolerance in dimension i.e. in depth & width of profile shall be acceptable.				
	Two track two panels sliding window made of (small series) frame 52 x 44 mm &sash 32 x 60 mm both having wall thickness of 1.9 ± 0.2 mm and single glazing bead of appropriate dimension. (Area of window upto 1.75 sqm)	Sqm	13.37		0.00
7.20	Three track three panels sliding window with fly proof S.S wire mesh (Two nos. glazed & one no. wire mesh panels) madeof(bigseries)frame116x45mm&sash46x62mm both having wall thickness of 2.3 ± 0.2 mm and single glazing bead / double glazing bead of appropriate dimension. (Area of window above 1.75 sqm).	Sqm	158.40		0.00
7.21	Providing and fixing zinc alloyed (white powder coated) touch lock for uPVC sliding window with necessary screws etc. complete.	Each	88.00		0.00
	Total for Wood Work				**0.00**
8	**SECTION-8:STEEL WORK**				
8.1	Structural steel work riveted, bolted or welded in built up sections, trusses and framed work, including cutting, hoisting, fixing in position and applying a priming coat of approved steel primer with two coat of synthetic enamel paint all complete.	kg	56000.00		0.00
8.2	Providing and fixing 1mm thick M.S. sheet door with frame of 40x40x6 mm angle iron and 3 mm M.S. gusset plates at the junctions and corners, all necessary fittings complete, including applying a priming coat of approved steel primer.				
	Using M.S. angels 40x40x6 mm for diagonal braces	Sqm	230.40		0.00

8.3	Supplying and fixing rolling shutters of approved make, made of required size M.S. laths, interlocked together through their entire length and jointed together at the end by end locks, mounted on specially designed pipe shaft with brackets, side guides and arrangements for inside and outside locking with push and pull operation complete, including the cost of providing and fixing necessary 27.5 cm long wire springs manufactured from high tensile steel wire of adequate strength conforming to IS: 4454 - part 1 and M.S. top cover of required thickness for rolling shutters.				
	80x1.20 mm M.S. laths with 1.20 mm thick top cover	Sqm	120.00		0.00
8.4	Providing and fixing ball bearing for rolling shutters.	Each	20.00		0.00
8.5	Providing and fixing factory made ISI marked steel glazed doors, windows and ventilators, side /top /centre hung, with beading and all members such as F7D,F4B, K11 B and K12 B etc. complete of standard rolled steel sections, joints mitred and flash butt welded and sash bars tenoned and riveted, including providing and fixing of hinges, pivots, including priming coat of approved steel primer, but excluding the cost of other fittings, complete all as per approved design, (sectional weight of only steel members shall be measured for payment).				
	Fixing with 15x3 mm lugs 10 cm long embedded in cement concrete block 15x10x10 cm of C.C. 1:3:6 (1 Cement : 3 coarse sand : 6 graded stone aggregate 20 mm nominal size)	kg	1724.25		0.00
8.6	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.				
	Hot finished seamless type tubes	kg	23964.53		0.00
8.7	Providing and fixing mild steel round holding down bolts with nuts and washer plates complete.	kg	416.00		0.00
8.8	Providing and fixing bolts including nuts and washers complete.	kg	717.60		0.00
8.9	Steel work welded in built up sections/ framed work, including cutting, hoisting, fixing in position and applying a priming coat of approved steel primer using structural steel etc. as required.				
	In gratings, frames, guard bar, ladder, railings, brackets, gates and similar works	kg	1000.00		0.00
8.10	Providing & fixing glass panes with putty and glazing clips in steel doors, windows, clerestory windows, all complete with :				
	4.0 mm thick glass panes	Sqm	445.50		0.00
	Total for Steel Works				**0.00**
9	**SECTION-9:FLOORING WORK**				
9.1	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	539.00		0.00

9.2	Cement plaster skirting up to 30 cm height, with cement mortar 1:3 (1 cement : 3 coarse sand), finished with a floating coat of neat cement.				
	18 mm thick	sqm	28.30		0.00
9.3	Providing and fixing glass strips in joints of terrazo/ cement concrete floors.				
	40 mm wide and 4 mm thick	rmt	283.00		0.00
9.4	Marble stone flooring with 18 mm thick marble stone, as per sample of marble approved by Engineer-in-charge, over 20 mm (average) thick base of cement mortar 1:4 (1 cement : 4 coarse sand) laid and jointed with grey cement slurry, including rubbing and polishing complete with :				
	Udaipur green marble	Sqm	1.00		0.00
9.5	Extra for pre finished nosing to treads of steps of marble stone.	Metre	10.00		0.00
9.6	Providing and laying rectified Glazed Ceramic floor tiles of size 300x300 mm or more (thickness to be specified by the manufacturer), of 1st quality conforming to IS : 15622, of approved make, in colours White, Ivory, Grey, Fume Red Brown, laid on 20 mm thick cement mortar 1:4 (1 Cement: 4 Coarse sand), jointing with grey cement slurry @ 3.3 kg/ sqm including grouting the joints with white cement and matching pigments etc., complete.	Sqm	38.78		0.00
9.7	Providing and laying Vitrified tiles in floor in different sizes (thickness to be specified by the manufacturer) with water absorption less than 0.08% and conforming to IS:15622, of approved brand & manufacturer, in all colours and shade, laid on 20 mm thick cement mortar 1:4 (1 cement: 4 coarse sand) jointing with grey cement slurry @3.3 kg/sqm including grouting the joints with white cement and matching pigments etc. The tiles must be cut with the zero chipping diamond cutter only . Laying of tiles will be done with the notch trowel, plier, wedge, clips of required thickness, leveling system and rubber mallet for placing the tiles gently and easily.				
	Glazed vitrified floor tiles polished finish of size				
	Size of Tile 600x600 mm	sqm	1078.00		0.00
9.8	Glazed Vitrified tiles Matt/Antiskid finish of size				
	Size of Tile 600x600 mm	sqm	38.78		0.00
9.9	Providing and laying Vitrified tiles in different sizes (thickness to be specified by manufacturer), with water absorption less than 0.08 % and conforming to I.S. 15622, of approved make, in all colours & shade, in skirting, riser of steps, over 12 mm thick bed of cement mortar 1:3 (1 cement: 3 coarse sand), jointing with grey cement slurry @ 3.3 kg/ sqm including grouting the joint with white cement & matching pigments etc. complete.				
	Size of Tile 600x600 mm	sqm	69.30		0.00
9.10	Grouting the joints of flooring tiles having joints of 3 mm width, using epoxy grout mix of 0.70 kg of organic coated filler of desired shade (0.10 kg of hardener and 0.20 kg of resin per kg), including filling / grouting and finishing complete as per direction of Engineer-in-charge.				
	Size of Tile 600x600 mm	sqm	1127.00		0.00

	Total for Flooring				**0.00**
10	**SECTION-10:ROOFING**				
10.1	Providing gola 75x75 mm in cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 stone aggregate 10 mm and down gauge), including finishing with cement mortar 1:3 (1 cement : 3 fine sand) as per standard design :				
	In 75x75 mm deep chase	Metre	420.00		0.00
10.2	Making khurras 45x45 cm with average minimum thickness of 5 cm cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate of 20 mm nominal size) over P.V.C. sheet 1 m x1 m x 400 micron, finished with 12 mm cement plaster 1:3 (1 cement : 3 coarse sand) and a coat of neat cement, rounding the edges and making and finishing the outlet complete.	Each	40.00		0.00
10.3	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	2200.55		0.00

10.4	Providing and fixing false ceiling at all height including providing and fixing of frame work made of special sections, power pressed from M.S. sheets and galvanized with zinc coating of 120 gms/sqm (both side inclusive) as per IS : 277 and consisting of angle cleats of size 25 mm wide x 1.6 mm thick with flanges of 27 mm and 37mm, at 1200 mm centre to centre, one flange fixed to the ceiling with dash fastener 12.5 mm dia x 50mm long with 6mm dia bolts, other flange of cleat fixed to the angle hangers of 25x10x0.50 mm of required length with nuts & bolts of required size and other end of angle hanger fixed with intermediate G.I. channels 45x15x0.9 mm running at the spacing of 1200 mm centre to centre, to which the ceiling section 0.5 mm thick bottom wedge of 80 mm with tapered flanges of 26 mm each having lips of 10.5 mm, at 450 mm centre to centre, shall be fixed in a direction perpendicular to G.I. intermediate channel with connecting clips made out of 2.64 mm dia x 230 mm long G.I. wire at every junction, including fixing perimeter channels 0.5 mm thick 27 mm high having flanges of 20 mm and 30 mm long, the perimeter of ceiling fixed to wall/partition with the help of rawl plugs at 450 mm centre, with 25mm long dry wall screws @ 230 mm interval, including fixing of gypsum board to ceiling section and perimeter channel with the help of dry wall screws of size 3.5 x 25 mm at 230 mm c/c, including jointing and finishing to a flush finish of tapered and square edges of the board with recommended jointing compound , jointing tapes , finishing with jointing compound in 3 layers covering upto 150 mm on both sides of joint and two coats of primer suitable for board, all as per manufacturer's specification and also including the cost of making openings for light fittings, grills, diffusers, cutouts made with frame of perimeter channels suitably fixed, all complete as per drawings, specification and direction of the Engineer in Charge but excluding the cost of painting with :				
	12.5 mm thick tapered edge gypsum plain board conforming to IS: 2095- (Part I) : 2011 (Board with BIS certification marks)	Sqm	1300.00		0.00
	Total for Roofing work				**0.00**
11	**SECTION-11:Finishing Work**				
11.1	12 mm cement plaster of mix :				
	1:6 (1 cement: 6 fine sand):	sqm	4674.24		0.00
11.2	20 mm cement plaster of mix :				
	1:6 (1 cement: 6 fine sand)	sqm	20.00		0.00
11.3	12 mm cement plaster finished with a floating coat of neat cement of mix :				
	1:3 (1 cement: 3 fine sand)	sqm	1176.00		0.00
11.4	6 mm cement plaster of mix :				
	1:3 (1 cement : 3 fine sand)	sqm	216.00		0.00
11.5	Providing and applying white cement based putty of average thickness 1 mm, of approved brand and manufacturer, over the	sqm	11456.00		0.00

	plastered wall surface to prepare the surface even and smooth complete.				
11.6	18 mm cement plaster in two coats under layer 12 mm thick cement plaster 1:5 (1 cement : 5 coarse sand) and a top layer 6 mm thick cement plaster 1:3 (1 cement : 3 coarse sand) finished rough with sponge.	sqm	5369.76		0.00
11.7	Pointing on stone work with cement mortar 1:3 (1 cement : 3 fine sand) :				
	Flush/ Ruled pointing	sqm	20.00		0.00
11.8	Applying one coat of water thinnable cement primer of approved brand and manufacture on wall surface :				
	Water thinnable cement primer	sqm	13691.87		0.00
11.9	Finishing walls with textured exterior paint of required shade :				
	New work (Two or more coats applied @ 3.28 ltr/10 sqm) over and including priming coat of exterior primer applied @ 2.20kg/10 sqm	sqm	5369.76		0.00
11.10	Painting with synthetic enamel paint of approved brand and manufacture of required colour to give an even shade :				
	Two or more coats on new work over an under coat of suitable shade with ordinary paint of approved brand and manufacture	sqm	356.40		0.00
11.11	Wall painting with premium acrylic emulsion paint of interior grade, having VOC (Volatile Organic Compound) content less than 50 grams/ litre of approved brand and manufacture, including applying additional coats wherever required to achieve even shade and colour.				
	Two or more coats on new work	sqm	6086.24		0.00
	Total for Finishing Work				**0.00**
12	**SECTION-12:ALUMINIUM WORKS**				
12.1	Providing and fixing aluminium work for doors, windows, ventilators and partitions with extruded built up standard tubular sections/ appropriate Z sections and other sections of approved make conforming to IS: 733 and IS: 1285, fixing with dash fasteners of required dia and size, including necessary filling up the gaps at junctions, i.e. at top, bottom and sides with required EPDM rubber/ neoprene gasket etc. Aluminium sections shall be smooth, rust free, straight, mitred and jointed mechanically wherever required including cleat angle, Aluminium snap beading for glazing / paneling, C.P. brass / stainless steel screws, all complete as per architectural drawings and the directions of Engineer-in-charge. (Glazing, paneling and dash fasteners to be paid for separately) :				
	For Fixed portions				
	Powder coated aluminium (minimum thickness of powder coating 50 micron)	Kg	1663.20		0.00

12.2	Providing and fixing double action hydraulic floor spring of approved brand and manufacture conforming to IS : 6315, having brand logo embossed on the body / plate with double spring mechanism and door weight upto 125 kg, for doors, including cost of cutting floors, embedding in floors as required and making good the same matching to the existing floor finishing and cover plates with brass pivot and single piece M.S. sheet outer box with slide plate etc. complete as per the direction of Engineer-in-charge.				
	With stainless steel cover plate minimum 1.25 mm thickness	each	88.00		0.00
12.3	Filling the gap in between aluminium frame & adjacent RCC/ Brick/ Stone work by providing weather silicon sealant over backer rod of approved quality as per architectural drawings and direction of Engineer-in-charge complete.				
	Upto 5mm depth and 5 mm width	Metre	176.55		0.00
	Total for Aluminium Works				**0.00**
13	**SECTION-13:WATER PROOFING**				
13.1	Providing and laying in situ seven course water proofing treatment with APP (Atactic Polypropylene) modified Polymeric memberane over roof consisting of first coat of bitumen primer @ 0.40 litre per sqm, 2nd, 4th & 6th courses of bonding material @ 1.20 kg/sqm, which shall consist of blown type bitumen of grade 85/25 conforming to IS : 702, 3rd and 5th layers of roofing membrane APP modified Polymeric membrane 2.0 mm thick of 3.00 Kg/sqm weight consisting of five layers prefabricated with centre core as 100 micron HMHDPE film sandwiched on both sides with polymeric mix and the polymeric mix is protected on both side with 20 micron HMHDPE film. 7th, the top most layer shall be finished with brick tiles of class designation 10 grouted with cement mortar 1:3 (1 cement : 3 fine sand) mixed with 2% integral water proofing compound by weight of cement over a 12 mm layer of cement mortar 1:3 (1 cement : 3 fine sand) and finished neat (item of laying brick tiles shall be paid for separately).	sqm	22.50		0.00
13.2	Providing and laying integral cement based water proofing treatment including preparation of surface as required for treatment of roofs, balconies, terraces etc consisting of following operations:				
	(a) Applying a slurry coat of neat cement using 2.75 kg/sqm of cement admixed with water proofing compound conforming to IS. 2645 and approved by Engineer-in-charge over the RCC slab including adjoining walls upto 300 mm height including cleaning the surface before treatment.				

	(b) Laying brick bats with mortar using broken bricks/brick bats 25 mm to 115 mm size with 50% of cement mortar 1:5 (1 cement : 5 coarse sand) admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge over 20 mm thick layer of cement mortar of mix 1:5 (1 cement :5 coarse sand) admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge to required slope and treating similarly the adjoining walls upto 300 mm height including rounding of junctions of walls and slabs.				
	(c) After two days of proper curing applying a second coat of cement slurry using 2.75 kg/ sqm of cement admixed with water proofing compound conforming to IS : 2645 and approved by Engineerin- charge				
	(d) Finishing the surface with 20 mm thick jointless cement mortar of mix 1:4 (1 cement :4 coarse sand) admixed with water proofing compound conforming to IS : 2645 and approved by Engineerin-charge including laying glass fibre cloth of approved quality in top layer of plaster and finally finishing the surface with trowel with neat cement slurry and making pattern of 300x300 mm square 3 mm deep.				
	e) The whole terrace so finished shall be flooded with water for a minimum period of two weeks for curing and for final test.“All above operations to be done in order and as directed and specified by the Engineer-in-Charge :				
	With average thickness of 120 mm and minimum thickness at khurra as 65 mm.	sqm	100.00		0.00
	Total for waterproofing				**0.00**
14	**SECTION-14:ROAD WORKS**				
14.1	Preparation and consolidation of sub grade with power road roller of 8 to 12 tonne capacity after excavating earth to an average of 22.5 cm depth, dressing to camber and consolidating with road roller including making good the undulations etc. and re-rolling the sub grade and disposal of surplus earthwith lead upto 50 metres.	Sqm	937.50		0.00
14.2	Supplying and stacking at site.				
	90 mm to 45 mm size stone aggregate	Cum	93.75		0.00
14.3	63 mm to 45 mm size stone aggregate	Cum	93.75		0.00
14.4	Over burnt (Jhama) brick aggregate 120 mm to 40 mm	Cum	46.88		0.00
14.5	Over burnt (Jhama) brick aggregate 90 mm to 45 mm	Cum	46.88		0.00
14.6	Stone screening 13.2 mm nominal size (Type A)	Cum	46.88		0.00
14.7	Red bajri	Cum	46.88		0.00
14.8	Dry stone pitching 22.5 cm thick including supply of stones and preparing surface complete.	Sqm	375.00		0.00

14.9	Fencing with angle iron post placed at required distance embedded in cement concrete blocks, every 15th post, last but one end post and corner post shall be strutted on both sides and end post on one side only and provided with horizontal lines and two diagonals interwoven with horizontal wires, of barbed wire weighing 9.38 kg per 100 m (minimum), between the two posts fitted and fixed with G.I. staples, turn buckles etc. complete. (Cost of posts, struts, earth work and concrete work to be paid for separately). Payment to be made per metre cost of total length of barbed wire used.				
	With G.I. barbed wire	Metre	22000.00		0.00
14.10	Supplying at site Angle iron post & strut of required size including bottom to be split and bent at right angle in opposite direction for 10 cm length and drilling holes upto 10 mm dia. etc. complete	Kg	4406.40		0.00
14.11	Providing and fixing concertina coil fencing with punched tape concertina coil 600 mm dia 10 metre openable length (total length 90 m), having 50 nos rounds per 6 metre length, upto 3 m height of wall with existing angle iron 'Y' shaped placed 2.4m or 3.00 m apart and with 9 horizontal R.B.T. reinforced barbed wire, stud tied with G.I. staples and G.I. clips to retain horizontal, including necessary bolts or G.I. barbed wire tied to angle iron, all complete as per direction of Engineer-in-charge, with reinforced barbed tape(R.B.T.) / Spring core (2.5mm thick) wire of high tensile strength of 165 kg/ sq.mm with tape (0.52 mm thick) and weight 43.478 gm/ metre (cost of M.S. angle, C.C. blocks shall be paid separately)	Metre	1100.00		0.00
	Total for ROAD WORK				**0.00**
15	**SECTION-15:HORTICULTURE WORKS**				
15.1	Supplying and stacking of good earth at site including royalty and carriage upto 5 km lead complete (earth measured in stacks will be reduced by 20% for payment).	Cum	300.00		0.00
15.2	Supplying and stacking at site dump manure from approved source, including carriage upto 5 km lead complete (manure measured in stacks will be reduced by 8% for payment) :				
	Screened through sieve of I.S. designation 20 mm	Cum	300.00		0.00
15.3	Fine dressing of the ground.	Sqm	1500.00		0.00
15.4	Spreading of sludge, dump manure and/or good earth in required thickness as per direction of officer-in-charge (cost of sludge, dump manure and/ or good earth to be paid separately).	Cum	600.00		0.00
15.5	Grassing with selection No. 1/ Doob grass including watering and maintenance of the lawn for 30 days or more till the grass forms a thick lawn, free from weeds and fit for mowing including supplying good earth, if needed (the grass and good earth shall be paid for separately).				
	With grass Turf	Sqm	1500.00		0.00
	Total for Horticulture				**0.00**

16	**SECTION-16: Glass & Furniture**				
16.1	Providing and fixing 12 mm thick frameless toughened glass door shutter of approved brand and manufacture, including providing and fixing top & bottom pivot & double action hydraulic floor spring type fixing arrangement and making necessary holes etc. for fixing required door fittings, all complete as per direction of Engineer-incharge (Door handle, lock and stopper etc.to be paid separately).	Sqm	167.40		0.00
16.2	Providing and fixing 12 mm thick frameless toughened glass door shutter of approved brand and manufacture, including providing and fixing top & bottom pivot & double action hydraulic floor spring type fixing arrangement and making necessary holes etc. for fixing required door fittings, all complete as per direction of Engineer-incharge (Door handle, lock and stopper etc.to be paid separately).	Each	10.00		0.00
	TOTAL FOR ITEMS				**0.00**
	GRAND TOTAL OF CIVIL WORKS				**0.00**

Ref: ITI/NSU/CIVIL-DEL/2023/0106/01					Date 15-03-2023
ITI LMITED **NETWORK SYSTEM UNIT** **DOORVANINAGAR, BANGALORE 560 016.**					
BILL OF QUANTITY : ELECTRIC WORKS :- GROUP 4 (Kashmir, No. of Buildings are 10, Type-H.					
	BIDDER'S NAME				
S. No.	**Description**	**Unit**	**Qty**	**RATE (RS.)**	**TOTAL AMOUNT**
1	**SUB-HEAD-I: CIRCUIT CUM POINT WIRING**				
1.1	Wiring for light point/ fan point/ exhaust fan point/ call bell point with 1.5 sq.mm FRLS PVC insulated copper conductor single core cable in surface / recessed steel conduit, with modular switch, modular plate, suitable GI box and earthing the point with 1.5 sq.mm FRLS PVC insulated copper conductor single core cable etc. as required.				
a	Group-C (Primary point	Point	170		0.00
1.2	Wiring for group controlled (looped light point/fan point/exhaust fan point/ call bell point (without independent switch etc. with 1.5 sq. mm FRLS PVC insulated copper conductor single core cable in surface/ recessed steel conduit, and earthing the point with 1.5 sq. mm FRLS PVC insulated copper conductor single core cable etc. as required				
a	Group-C (looping point	Point	120		0.00
1.3	Supplying and fixing modular blanking plate on the existing modular plate & switch box excluding modular plate as required.	Each	100		0.00
1.4	Supplying and fixing two module stepped type electronic fan regulator on the existing modular plate switch box including connections but excluding modular plate etc. as required.	Each	120		0.00
1.5	Supplying and fixing suitable size GI box with modular plate and cover in front on surface or in recess, including providing and fixing 3 pin 5/6 A modular socket outlet and 5/6 A modular switch, connections etc. as required.	Each	260		0.00
1.6	Supplying and fixing suitable size GI box with modular plate and cover in front on surface or in recess, including providing and fixing 6 pin 5/6 A & 15/16 A modular socket outlet and 15/16 A modular switch, connections etc. as required.	Each	320		0.00
1.7	Wiring for circuit/ submain wiring along with earth wire with the following sizes of FRLS PVC insulated copper conductor, single core cable in surface/ recessed medium class PVC conduit as required				
a	2 X 1.5 sq. mm + 1 X 1.5 sq. mm earth wire For 6A Light Circuit Point	Metre	1000		0.00
b	2 X 2.5 sq. mm + 1 X 2.5 sq. mm earth wire For Switch Board Circuit.	Metre	1875		0.00
c	2 X 4 sq. mm + 1 X 4 sq. mm earth wire For 6A and 16A Power Circuit Point	Metre	11600		0.00
d	4 X 10 sq. mm + 2 X 6 sq. mm earth wire For Light DB Submain wire	Metre	500		0.00
e	4 X 16 sq. mm + 2 X 6 sq. mm earth wire For PDB Submain wire	Metre	1000		0.00

f	2 X 10 sq. mm + 1 X 6 sq. mm earth wire For UPSDB/IDB/All SPN LPDB Submain wire	Metre	5800		0.00
1.8	Providing and fixing 6 SWG dia G.I. wire on surface or in recess for loop earthing along with existing surface/ recessed conduit/submain wiring/ cable as required.	Metre	1000		0.00
	SUB-HEAD-1 TOTAL CARRIED TO SUMMARY				**0.00**
2	**SUB-HEAD-II:- DISTRIBUTION BOARDS**				
2.1	Supplying and fixing following way, single pole and neutral, sheet steel, MCB distribution board, 240 V, on surface/ recess, complete with tinned copper bus bar, neutral bus bar, earth bar, din bar, interconnections, powder painted including earthing etc. as required. (But without MCB/RCCB/Isolator				
a	8Way ,Double door	Each	80		0.00
b	12Way ,Double door	Each	30		0.00
2.2	Supplying and fixing following way, horizontal type three pole and neutral, sheet steel, MCB distribution board, 415 V, on surface/ recess, complete with tinned copper bus bar, neutral bus bar, earth bar, din bar, interconnections, powder painted including earthing etc. as required. (But without MCB/RCCB/Isolator				
a	4 way (4 + 12, Double door	Each	10		0.00
2.3	Supplying and fixing following ways, surface/recess mounting, Verticl type 415V ,TPN MCB distribution board of sheet steel,dust protected duly powder painted ,inclusive of 200A tinned copper bus bar ,common neutral link, earth bar, din bar, for mounting MCBs etc. as required. (But without MCB/Incomer as required.(Note Vertical type MCB TPDB is normally used where 3phase outlets are required.				
a	12 way (4 + 36, Double door	Each	20		0.00
2.4	Supplying and fixing 5 A to 32 A rating, 240/415 V, 10 kA, “C” curve, miniature circuit breaker suitable for inductive load of following poles in the existing MCB DB complete with connections, testing and commissioning etc. as required.				
a	Single pole (6/32 Amps	Each	1240		0.00
2.5	Supplying and fixing single pole blanking plate in the existing MCB DB complete etc. as required.	Each	100		0.00
2.6	Supplying and fixing following rating, double pole, 240 V, isolator in the existing MCB DB complete with connections, testing and commissioning etc. as required.				
a	40A	Each	100		0.00
b	63A	Each	20		0.00
2.7	Supplying and fixing following rating, four pole, 415 V, isolator in the existing MCB DB complete with connections, testing and commissioning etc. as required.				
a	40A	Each	10		0.00

b	63A	Each	20		0.00
2.8	Supplying and fixing following rating, double pole, (single phase and neutral ,240 V, residual current circuit breaker (RCCB having a sensitivity current 30mA in the existing MCB DB complete with connections, testing and commissioning etc. as required.				
a	40A	Each	100		0.00
b	63A	Each	20		0.00
2.9	Supplying and fixing following rating, four pole, (three phase and neutral ,415 V, residual current circuit breaker (RCCB having a sensitivity current 30mA in the existing MCB DB complete with connections, testing and commissioning etc. as required.				
a	40A	Each	10		0.00
b	63A	Each	20		0.00
2.10	Providing and fixing M.V. danger notice plate of 200 mm X 150 mm, made of mild steel, at least 2 mm thick, and vitreous enameled white on both sides, and with inscription in single red colour on front side as required.	Each	150		0.00
	SUB-HEAD-II TOTAL CARRIED TO SUMMARY				**0.00**
3	**SUB-HEAD - Ill :- CONDUITING WIRING AND CABLING FOR TELEPHONE / TV NETWORK SYSTEM**				
3.1	Supplying and fixing of following sizes of medium class PVC conduit along with accessories in surface/recess including cutting the wall and making good the same in case of recessed conduit as required.				
a	20mm	Meter	500		0.00
b	25mm	Meter	500		0.00
c	32mm	Meter	250		0.00
3.2	Supplying and fixing following modular switch/ socket on the existing modular plate & switch box including connections but excluding modular plate etc. as required.				
a	Telephone socket outlet	Each	10		0.00
b	TV antenna socket outlet	Each	10		0.00
c	RJ-45 face plate(computer line with shutter DN-460	Each	10		0.00
3.3	Supplying and fixing following size/ modules, GI box alongwith modular base & cover plate for modular switches in recess etc. as required.				
a	1 or 2 Module (75mmX75mm	Each	10		0.00

3.4	Providing, fixing connecting and testing of solder less telephone Tag block of following capacity ties as required in suitable size of m.s. hinged lockable cover box duly painted etc. as required of Krone type.				
a	10 pair Tele Tag Blk	Each	10		0.00
3.5	Supplying drawing, connecting and testing of 0.61mm dia annealed copper conductor PVC insulated PVC sheathed telephone Wire/cables in Existing PVC conduit or a racks as required.				
a	2 pair Telephone cable.	Meter	10		0.00
b	4 pair Telephone cable	Meter	10		0.00
3.6	Supplying and drawing co-axial TV cable RG-6 grade, 0.7 mm solid copper conductor PE insulated, shielded with fine tinned copper braid and protected with PVC sheath in the existing surface/ recessed steel/ PVC conduit as required.	Meter	10		0.00
3.7	Providing, fixing connecting and testing of solder less Television Junction Box of following capacity ties as required in suitable size of m.s. hinged lockable cover box duly painted etc. as required of Krone type.				
a	2 pair T.V Junction Box.	Each	10		0.00
3.8	Supplying and drawing of UTP 4 pair CAT 6 LAN Cable in the existing surface/ recessed steel/ PVC conduit as required.				
a.	**1Run of cable**	Meter	10		0.00
3.9	Supplying and fixing metal box of following sizes (nominal size on surface or in reces with suitable size of phenolic laminated sheet cover in front including painting etc as required.				
a	75 mm x 75 mm x 60 mm deep	Each	10		0.00
b	100 mm x 100 mm x 60 mm deep	Each	10		0.00
	SUB-HEAD-Ill TOTAL CARRIED TO SUMMARY				**0.00**
4	**SUB-HEAD-IV:- SUPPLY OF LIGHTING FIXTURES.**				
4.1	Supplying, installing, Fixing, testing and commissioning of **1 X 20W LED single tube Surface mounted fixture** & all accessories as required.	Each	40		0.00
4.2	Supplying, installing, Fixing, testing and commissioning of **1 X 10W LED mirror light Surface mounted fixture** & all accessories as required.	Each	20		0.00
4.3	Supplying, installing, Fixing, testing and commissioning of **1 X 10W LED Surface mounted fixture** & all accessories as required.	Each	20		0.00

4.4	Supplying, installing, Fixing, testing and commissioning of 1**X 36W LED single tube** Surface mounted fixture & all accessories as required.	Each	210		0.00
4.5	Supplying, installing, Fixing, testing and commissioning of **1200 mm Sweep Celling Fan** all accessories as required.	Each	120		0.00
4.6	Supplying, installing, Fixing, testing and commissioning of **600 mm Sweep Celling Fan** all accessories as required.	Each	10		0.00
4.7	Supplying, installing, Fixing, testing and commissioning of **Heavy Duty Exhaust fan 450 mm sweep** all accessories as required	Each	40		0.00
4.8	Supplying, installing, Fixing, testing and commissioning of **Heavy Duty Exhaust fan 300/305 mm sweep** all accessories as required	Each	30		0.00
4.9	Supplying, installing, Fixing, testing and commissioning of security light having 80 watt LED street light/road light luminaire type efficiency energy saving dia cast aluminium roadway luminaire with high power complete with connections fittings and including connecting with twin core 2.5 sqmm weather proof aluminium conductor cable complete set, street light brackets made out of GI tubing, light grade 40 mm bore 1200mm long bend to shape at 120 degree, fixed on pole by providing MS clamp made up of flat iron 50x6mm including bolts nuts ans washers of suitable size complete. Fixed upon steel tublar pole type 410 sp31 (9.00 mtr lng with complete base plate, taper plug, bolts, nuts and screws etc duly painted internally and externally with metal oxide anti corrosive paint before erection and painting with two coats aluminium paint after erection complete all as confirming to IS 2713 (part-1 to 111 and complete.	Each	10		0.00
4.10	Supplying, installing, Fixing, testing and commissioning of security light having 80 watt LED street light/road light luminaire type efficiency energy saving dia cast aluminium roadway luminaire with high power complete with connections fittings and including connecting with twin core 2.5 sqmm weather proof aluminium conductor cable complete set, street light brackets made out of GI tubing, light grade 40 mm bore 1200mm long bend to shape at 120 degree, fixed on pole by providing MS clamp made up of flat iron 50x6mm including bolts nuts ans washers of suitable size complete. Fixed upon steel tublar pole type 410 sp31 (9.00 mtr lng with complete base plate, taper plug, bolts, nuts and screws etc duly painted internally and externally with metal oxide anti corrosive paint before erection and painting with two coats aluminium paint after erection complete all as confirming to IS 2713 (part-1 to 111 and complete.	Each	10		0.00

4.11	Supplying, installing, Fixing, testing and commissioning of security light AIO is made with High Efficiency Mono Crystalline Solar PV Module, Lithium Ferro Phosphate battery with in-built BMS technology, High Efficacy LED, MPPT Solar Charge Controller and Aluminium Extruded body, specially designed Intelligent microwave sensor to control the dimming and brightness of light leads to extend working time. Multi-angle adjustable light module and Light Arm suitable for installation in different latitude regions. The Adjustable range of light source is -20º to +20º and the adjustable range for rotating the arm is -90º to +90º. wattage 60w having system lumen of 5000 lumen, Havells cat No: SOLAR AIO ALFA 60 W or Equivalent to Philips with connections fittings and including connecting with twin core 2.5 sqmm weather proof aluminium conductor cable complete set, street light brackets made out of GI tubing, light grade 40 mm bore 1200mm long bend to shape at 120 degree, fixed on pole by providing MS clamp made up of flat iron 50x6mm including bolts nuts ans washers of suitable size complete. Fixed upon steel tublar pole type 410 sp31 (9.00 mtr lng with complete base plate, taper plug, bolts, nuts and screws etc duly painted internally and externally with metal oxide anti corrosive paint before erection and painting with two coats aluminium paint after erection complete all as confirming to IS 2713 (part-1 to 111 and complete.	Each	10		0.00
	SUB-HEAD - IV TOTAL CARRIED TO SUMMARY				**0.00**
5	**SUB-HEAD-V:- AIR CONDITIONING**				
5.1	Supply & Installation high wall split units indoor/outdoor complete with cordless remote control unit and within build air ionizer and plasma filter for better indoor air quality with minimum 5-star rating and EER 3.2 of capacity 2 TR with complete set, including Supply and fixing bracket and clamps heady duty for outdoor unit of split type AC complete all as specified and directed.Air conditioning units will be having heating facilities, which will be supplied to wherever temperature is below the normal temperature				
	2.0 TR Hi Wall Unit (Invertor Units with 5 Star Rating	Each	40		0.00
5.2	Supply and fixing voltage stabilizer for automatic operation, single phase, naturally air cooled indoor type and designed for input variation between 110V to 250V with output voltage stabilizer at 230 with accuracy of + 2.5 % and capacity of 5 KVA.	Each	40		0.00
	SUB-HEAD - V TOTAL CARRIED TO SUMMARY				**0.00**
6	**SUB HEAD- VI : EARTHING**				
6.1	Earthing with G.I. earth plate 600 mm X 600 mm X 6 mm thick including accessories, and providing masonry enclosure with cover plate having locking arrangement and watering pipe of 2.7 metre long etc. with charcoal/ coke and salt as required.	Set	30		0.00

6.2	Earthing with copper earth plate 600 mm X 600 mm X 3 mm thick including accessories, and providing masonry enclosure with cover plate having locking arrangement and watering pipe of 2.7 metre long etc. with charcoal /coke and salt as required.	set	30		0.00
6.3	Supplying and laying 6 SWG G.I. wire at 0.50 metre below ground level for conductor earth electrode, including connection/ termination with GI thimble etc. as required.	RM	300		0.00
6.4	Providing and fixing 25 mm X 5 mm G.I. strip in 40 mm dia G.I. pipe from earth electrode including connection with G.I. nut, bolt, spring, washer excavation and re-filling etc. as required.	RM	200		0.00
6.5	Providing and fixing 25 mm X 5 mm G.I. strip on surface or in recess for connections etc. as required.	RM	10		0.00
6.6	Providing and fixing 25 mm X 5 mm copper strip in 40 mm dia G.I. pipe from earth electrode including connection with brass nut, bolt, spring, washer excavation and re-filling etc. as required	RM	100		0.00
6.7	Supply, Installation, Testing and commissioningof maintenance free earthing system. The earthing set shall comprise of (i 1 No of copper bonded rod of diameter 17.2mm and length of 10 feet UL approved with 25 KA current discharge test from CPRI. The material shall be low carbon high tensile copper bonded rods with 99.9% of copper on the surface. The UL approval certificate shall be provided. (ii 30 kg of earth enhance compound as per IEC 62561-7. There should not be requirement of any salt and charcoal. The RoHS certificate shall be provided from any NABL accredited labs for earth enhancement material. (iii 1 No of copper busbar of size 25x6x150mm should be exothermic welded with copper bounded rod 17.2 mm dia x 3 mtr length. (iv 1 No of PVC pit cover for covering of earthing. (v Exothermic connection of 25x6x150mm busbar to 35 Sqmm copper cable. (vi 35Sqmm PVC insulated copper cable for interconnection of earthingand Equipment.	set	30		0.00
	SUB-HEAD - VI TOTAL CARRIED TO SUMMARY				**0.00**
7	**SUB HEAD- VII : EXTERNAL CABLING AND CABLE END TERMINATION**				
7.1	Supplying and laying of following size DWC HDPE pipe ISI marked along with all accessories like socket, bend, couplers etc. conforming to IS 14930, Part II complete with fitting and cutting, jointing etc..direct in ground (75 cm below ground level including excavation and refilling the trench but excluding sand cushioning and protective covering Earthing etc., complete as required. (For External lighting)				
	63 mm dia (OD-63 mm & ID-51 mm nominal	Metre	300		0.00
7.2	Supplying of following 1100 volt grade XLPE insulated PVC sheathed copper conductor armoured cables				
	3.5C X 120 sq. mm Al. Ar. Cable For Incoming Power Supply	Metre	200		0.00
	3.5 core 50 sq. mm Cu.Cond.Ar.Cable.	Metre	200		0.00
	3core 6 sq. mm	Metre	1000		0.00

7.3	Supplying and making end termination with brass compression gland and copper lugs for following size of PVC insulated and PVC sheathed / XLPE aluminium conductor cable of 1.1 KV grade as required.				
	3.5C X 120 sq. mm Al. Ar. Cable For Incoming Power Supply	Nos.	20		0.00
	3.5 core 50 sq. mm Cu.Cond.Ar.Cable.	Nos.	20		0.00
	3core 6 sq. mm	Nos.	340		0.00
7.4	Laying of one number PVC inulated and PVC sheathed/XLPE power cable of 1.1 KV grade of following size direct in ground including excavation,sand cushioning,protective covering and refilling the trench etc. as required. . (For External lighting/power cable				
a	Up to 35 sq. mm	Metre	500		0.00
b	Above 35sqmm and up to 95sqmm	Metre	200		0.00
c	Above 95sqmm and up to 185sqmm	Metre	200		0.00
	SUB-HEAD - VII Total of Sub Head carried to Summary				**0.00**
8	**SUB HEAD- VIII FEEDER PILLAR PANEL**				
8.1	SITC Of free standing suitable for out door installation dust & vermin proof feeder pillar made out of CRCA sheet ,required hard ware,duly painted by either two coats of zink /red oxide primer followwed by two coats of synthetic enmel paint for powder coating in grey or required shade . The feeder pillar having Neoprene rubber gasket of not less than 3mm thickness,hingled door with locking arrangement,gland plate.Thickness of sheet shall not be less than 2mm.Sheet metal works shall be processed with seven tank process,200A TPN 415V Electrolytic Cu Conductor bus bar with 100% Neutral (Fixed on 50x50x6mm thick MS Angle iron frame& covered with sheet metal from all sidesand having the following components.				
	Incoming :				
	One (1 No. 63A 4P MCCB (25KA				
	3 Nos of LED type phase indicating lamps (RYB with controlled by 2Amp MCB .				
	1 No.6A, 2 pole Auto/OFF/Manual (2 way with OFF selector switch.				
	2 Nos. of push button actuator				
	Busbar :				
	Electrolytic high conductivity Copper three pole and 100%neutral bus bars rated at 200 amps having a maximum current density of 1 amp per sq mm insulated with heat shrinkable PVC sleeves & SMC/DMC supports.				
	Outgoings :				

	Three (3 Nos. 10 A-32A DP 10KA MCBs. with 10A-32A DP contactor (AC 1 Category with 230V Control Coil using 1 No. 24 hour astronomical time switch on Auto/Manual arrangement with Auto/Manual selection switch, ON/OFF Push Buttons, Indication lamps & Control fuses etc .				
	Three (3 Nos. 32 A DP 10KA MCBs.				
	Full Set as above				
	Feedder pillar as described above	Set	10		0.00
8.2	**MAIN ELECTRICAL PANEL FOR BUILDING BLOCK**				
	Designing, fabrication, supply, installation, testing and commissionings of front operated cubicle type compartmentalised, front access, free standing on 75MM "[" MS channel, dust and vermin proof (IP 42 degree protection panel suitable for use at 415V, 3 phase, 4-wire 50Hz system suitable for fault level of required value symmetrical at 415V fabricated from 2mm thick CRCA MS sheets with hinged, gaskettted (Metal based neoprene locable doors having structural reinforcement including 3mm thick gland plates on top and bottom, lifting hooks, GI earth strip of required size with 2 nos earth terminals, 2 nos 230V AC operated 250mm X 250mm size axial fans for exhaust of heat with On-Off toggle switches including 2 coated primer and 2 powder coated paint fnish of approved shade over metal surface cleaned and treated with seven tank process complete with interconnections etc as per specifications as required.main panel board should be CPRI Approved.				
	Panel shall have provision for entry of cables from the top or bottom through Cable Alley. All live accessible parts shall be shrouded and all equipment shall be finger touch proof. The busbars insulation shall be with heat shrinkable sleeves SMC/DMC shrouds and busbar supports shall be used. Padlocking facility shall be provided on all outgoing feeders doors and switch handles shall be locable in OFF position.				
	Suitable arrangement shall be made for termination of multiple incoming cables.				
	INCOMER				
	1 No. 250 Amp four pole MCCB with microprocessor Release O/L,S/C,E/F protection+ Spreder+Extended rotary handle. Moulded Case Circuit Breaker (Ics =100% Icu,36 KA.				
	Enclosure				

	Fabrication 400 Amps, TPN Electrolytic grade Aluminium Bus Bar (Ambient temperature 45° C, temperature rise limited to 40° C above ambient, PVC sleeving, control wiring, necessary hardware. for LT Panel as well as for functioning of Single / multi functioning Energy Meters.capacitors (Each vertical bay shall be equipped with space heater + thermostat, door switch illumination lamp all duly wired Space to be provided for Harmonic Filters to be installed in Future if required.For selecting the bus bar size 0.7 derating factor to be considered.				
	INSTRUMENTS & ACCESSORIES				
	1 No. 96x96 MFM with 3Nos 250/5A CTs for 3 phase, 4 wire operation with LED display and selector switch with controlled by 3 sets of 2Amp MCB				
	3 Nos of LED type phase indicating lamps (RYB with controlled by 2Amp MCB .				
	1 No.6A, 2 pole Auto/OFF/Manual (2 way with OFF selector switch.				
	2 Nos. of push button actuator				
	OUTGOING				
	1 Nos.40A FP MCB For 4Way TPN DB				
	2Nos.63A FP MCB For 12Way TPN DB				
	9 Nos.40A DP MCB For 8Way/12Way SPN DB				
	1 Nos.63A FP MCCB For External Lighting feeder pillar				
	SPARE				
	1 Nos.40A FP MCB For 4Way TPN DB				
	1Nos.63A FP MCB For 12Way TPN DB				
	1 Nos.40A DP MCB For 8Way/12Way SPN DB				
	MAIN ELECTRICAL PANEL FOR BUILDING BLOCK as described above	Set	10		0.00
	SUB-HEAD - VIII Total of Sub Head carried to Summary				**0.00**
9	**SUB HEAD- IX Lightning Protection & Earthing System(LIGHTNING PROTECTION AS PER IEC 62305 / IS IEC 62305 AT LVL -I (5X5 MTR)**				
9.1	Supplying, Installation, Testing and commissioning of Vertical Aluminium Lighting Arrester of 16MM dia, 1000 mm long with Gun Metal base plate . Model : APSAT116AL+APSTB16-253 Make : APS	Nos.	60		0.00
9.2	Supplying, Installation, Testing and commissioning 8 mm round aluminium conductor for horizontal lightning protection - run in roof. Model : AL8. Make :APS	Mtr.	2000		0.00
9.3	SITC of roof conductor holder for 8 mm round aluminium conductor made of Gun Metal for horizontal installation. The distance between each holder should be min of 1 mtr. Model : APSRCS50. Make : APS	Nos.	2000		0.00

9.4	Supplying, Installation, Testing and commissioning of **T connector** for connecting of 8 mm Al round conductor . The connector should be of Gun Metal with SS nuts and bolt. Model : APSTCRC50 , Make :APS	Nos.	170		0.00
9.5	Supplying, Installation, Testing and commissioning of **Cross connector** for connecting of 8 mm Al round conductor . The connector should be of Gun Metal with SS nuts and bolt. Model : APSCCRC50 , Make : APS	Nos.	30		0.00
9.6	Supplying, Installation, Testing and commissioning of Expansion piece along with connector to compensate the expansion of round 8 mm Al conductor when temperature variation . Connection should be in every 20 mtr. Model : APSEXP50 , Make : APS	Nos.	60		0.00
9.7	GLUE- Glue is used to fix roof conductor holder on roof.	Nos.	60		0.00
	DOWN CONDUCTOR & RING CONDUCTOR AS PER IEC 62305				
9.8	Supplying, Installation, Testing and commissioning of 8 mm round aluminium conductor as a down conductor mounted in the surface of wall which will carry the lightning current to earth pit. Model : AL8. Make : APS	Mtr.	300		0.00
9.9	SITC of Down conductor holder for 8 mm round aluminium conductor of min distance between the wall to the conductor will be of 50 mm. The distance between each holder should be min of 1 mtr. Model : APSRCS50 Make : APS	Nos.	300		0.00
9.10	Supplying, Installation, Testing and commissioning of straight connector for connecting of 8 mm Al round conductor . The connector should be of Aluminium with SS nuts and bolt. Model : APSPCRC50, Make : APS	Nos.	60		0.00
9.11	SITC of 7 digit lightning strike counter. Model - LSR2 Make - LPI	Nos.	60		0.00
9.12	Supplying, Installation, Testing and commissioning of Test Joint Point for 25X3MM CU STRIP , the size should be of 25 x 3 x 150 mm copper in ABS boxes. Model : APSTLBCU. Make : APS	Nos.	100		0.00
	EARTHING AS PER IEC 62561- 2 & 7				

ITI LIMITED

ANIL KUMAR SRIVASTAVA Digitally signed by ANIL KUMAR SRIVASTAVA Date: 2023.03.16 17:31:10 IST

9.13	Supplying, Installation, Testing and commissioning of advance chemical gel earthing system for the proper dissipation of fault / leakage current to the ground and ensure the continuous electrical connectivity and proper functioning to the electrical system. The earth rod shall be of UL listed & CPRI tested 3 meter long 17.2 mm dia 250 microns copper bonded steel rod with the connecting clamp (ss - rod to tape. The UL listed copper bonded rod also should be tested & ceritifed from CPRI for a short circuit current of 46 KA or more. The UL listing shall be punched / engraved on the rod for the physical verification at site. The engravings shall contain the following details - UL Control number, Dimension details of the rod, Product model number & UL certificate reference number as per detailed technical specification attached. To ensure the electrical conductivity, 50 Kgs (per pit or more resistance grounding minerals per earth pit / earth rod shall be used along with the copper bonded rod. As per IEEE 80-2013 (Clause 14.5 d, the grounding minerals shall be tested & certified for the resistivity of less than 0.12 ohm-mtr. The grounding minerals should be ROHS certified to ensure it does not pollute the ground water as per technical specification attached.	Nos.	60		0.00
9.14	**GI STRIP(25X6 MM : FOR EARTHING INTERCONNECTION**	Mtr.	1000		0.00
	SUB-HEAD - IX Total of Sub Head carried to Summary				**0.00**
10	**SUB HEAD- X: SOLAR SYSTEMS**				
10.10	Supply, installation, testing and comminsioning of 1 kw solar panel systems along with supplyinh, installaing, testing and comminsioning of 2 kw battery bank to store the energy generated from solar panels during the day and supplying the same to solar led lighting systems in the internal and external areas of the buildings and campus. The batteries shall be solar photo voltaic batteries of Tubular Gel type, low maintenance, lead Acid and made of hard rubber container. Storage batteries should conform IEC 61427 / IS 1651 / IS 133369 as per specifications. The batteries shall use 2 / 12V cells and battery capacity is to be designed at C10 rate with end cell cut off voltage of 1.85 V / cell.	Each	10		0.00
10.20	Supply, installation, testing and comminsioning of (Flute plate collector based on direct transfer of heat of capacity 200 LPD. Including all accessories are nonreturn cast copper alloy screwed down high pressure with crutch or butterfly handle screwed both and for iron pipes or union of as require size 15mm/20mm dia and including all accessories etc.	Each	10		0.00
	SUB-HEAD - X Total of Sub Head carried to Summary				**0.00**
	GRAND TOTAL ELECTRIC WORKS				**0.00**

Ref: ITI/NSU/CIVIL-DEL/2023/0106/01					Date 15-03-2023
ITI LMITED NETWORK SYSTEM UNIT DOORVANINAGAR, BANGALORE 560 016.					
BILL OF QUANTITY : PLUMBING WORKS :- GROUP 4 (Kashmir), No. of Buildings are 10, Type-H.					
BIDDER'S NAME					
S.No.	**DESCRIPTION OF ITEM**	**UNIT**	**QTY**	**RATE (RS.)**	**TOTAL AMOUNT**
1.0	**SUBHEAD - I : Internal Drainage (Rainwater, Soil, Waste & Fittings)**				
1.1	Providing and fixing on wall face unplasticised rigid pvc rain water **pipes** conforming to IS 13592 type a including jointing with seal ring conforming to IS 5382 leaving 10mm gap for thermal expansion (i) single socketed pipes				
	110mm diameter	Metre	160.00		0.00
1.2	Providing and fixing on wall face unplasticised PVC moulded **fittings/ accessories** for unplasticised rigid PVC rain water pipes conforming to IS 13592 type A including jointing with seal ring conforming to IS 5382 leving 10mm gap for thermal expansion				
	Coupler				
	110mm	Each	50.00		0.00
1.3	Single tee without door				
	110x110x110 mm	Each	30.00		0.00
1.4	Bend 87.5o				
	110mm bend	Each	30.00		0.00
1.5	Shoe (plain)				
	110mm shoe	Each	20.00		0.00
1.6	Providing and fixing unplasticised PVC **pipe clips** of approved design to unplasticised PVC rain water pipes by means of 50x50x50mm hard wood plugs screws with MS screws of required length including cutting brick work and fixing in cement mortar 1:4(1cement 4 coarse sand) and making good the wall etc. complete				
	110mm	Each	50.00		0.00
1.7	Providing and fixing to the inlet mouth of rain water pipe cast iron **grating** 15cm dia meter and weighing not less than 440 grams	Each	50.00		0.00
1.8	Providing & fixing stainless steel A ISI 304(18/8) kitchen sink as per I.S 13983 with C.I. brackets and stainless steel plug 40 mm including painting of fittings and brackets, cutting and making good the walls wherever required: Kitchen sink with drain board.				
	510x1040mm bowl depth 250mm	Each	10.00		0.00

1.9	Providing & fixing C.P. brass (Long body) bib cock of approved quality conforming to IS standerd and weight not less then 690 gms.				
	15 mm nominal bore	Each	60.00		0.00
1.10	Providing and fixing grease trap of approved quality & make and as per the direction of Engineering-charge.				
	Grease trap (1.6 LPS) Sise: 600(L) X 450(W) X 415(H) For Stall **(Make: Ashirvad)**	Each	10.00		0.00
1.11	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes having thermal stability for hot & cold water supply including all (CPVC) plain & brass threaded fittings including fixing the pipe with clamps at 1.00 m spacing. This includes jointing of pipes & fittings with one step CPVC solvent cement and testing of joints complete as per direction of engineer in charge.				
	Internal Work - Exposed on Wall				
	15 mm nominal outer dia Pipes	RM	40.00		0.00
1.12	20 mm nominal outer dia Pipes	RM	60.00		0.00
1.13	25 mm nominal outer dia Pipes	RM	20.00		0.00
1.14	32 mm nominal outer dia Pipes	RM	10.00		0.00
1.15	Providing and fixing Chlorinate Polyvinyl Chloride (CPVC) pipes having thermal stability for hot & cold water supply including all CPVC plain & brass threaded fittings i/c fixing the pipe with clamps at 1.00 m spacing. This including jointing of pipes & fittings with one step CPVC solvent cement and the cost of cutting chases and making good the the same including testing of joints complete as per direction of engineer in charge.				
	Concealed work including cutting chases and making good the walls etc.				
	15 mm nominal outer dia Pipes	RM	40.00		0.00
1.16	20 mm nominal outer dia Pipes	RM	180.00		0.00
1.17	25 mm nominal outer dia Pipes	RM	10.00		0.00
	TOTAL OF RAIN WATER PIPES AND FITTINGS CARRIEDTO SUMMARY				**0.00**
2	**SUBHEAD- II MAN HOLE**				
2.1	Providing and laying non-pressure NP2 class (light duty) R.C.C. pipes with collars jointed with stiff mixture of cement mortar in the proportion of 1:2 (1 cement : 2 fine sand) including testing of joints etc. complete :				
	100 mm dia. R.C.C. pipe	RM	50.00		0.00
2.2	150 mm dia. R.C.C. pipe	RM	100.00		0.00
2.3	250 mm dia. R.C.C. pipe	RM	200.00		0.00
2.4	Providing, laying and jointing glazed stoneware pipes class SP-1 with stiff mixture of cement mortar in the proportion of 1:1 (1 cement : 1 fine sand) including testing of joints etc. complete :				
	100 mm diameter	RM	50.00		0.00

2.5	150 mm diameter	RM	200.00		0.00
2.6	Providing and laying cement concrete 1:5:10 (1 cement : 5 coarse sand : 10 graded stone aggregate 40 mm nominal size) up to haunches of S.W. pipes including bed concrete as per standard design :				
	100 mm diameter	RM	100.00		0.00
2.7	150 mm diameter	RM	200.00		0.00
2.8	250 mm diameter	RM	200.00		0.00
2.9	Constructing brick masonry manhole in cement mortar 1:4 (1 cement : 4 coarse sand) R.C.C. top slab with 1:2:4 mix (1 cement : 2 coarse sand : 4 graded stone aggregate 20mm nominal size), foundation concrete 1:4:8 mix (1 cement : 4 coarse sand : 8 graded stone aggregrate 40mm nominal size) inside plastering 12 mm thick with cement mortar 1:3 (1 Cement : 3 coarse sand) finished with floating coat of neat cement & making channels in cement concrete 1:2:4 mix (1 Cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) finished with a floating coat of neat cement complete as per standard design:				
	Inside size 90x80cm and 45cm deep including C.I. cover with frame (light duty) 455x610mm internal dimensions total weight of cover and frame to be not less than 38kg (weight of cover 23kg and weight of frame 15 kg)				
	With common burnt clay FPS (non modular)bricks of class designation 7.5	Each	40.00		0.00
2.10	Inside size 120x90cm and 90cm deep including C.I. cover with frame (medium duty) 500mm internal diameter, total weight of cover and frame to be not less than 116 kg (weight of cover 58 kg and weight of frame 58 kg)				
	With common burnt clay FPS (non modular)bricks of class designation 7.5.	Each	20.00		0.00
2.11	Extra for depth for manholes				
	Size 90x80 cm				
	With common burnt clay FPS (non modular)bricks of class designation 7.5	Metre	20.00		0.00
2.12	Size 120x90cm				
	With common burnt clay FPS (non modular)bricks of class designation 7.5	Metre	5.00		0.00
2.13	Providing and fixing square-mouth S.W. gully trap class SP1 complete with C.I. grating brick masonry chamber with water tight C.I. cover with frame of 300 x300 mm size (inside) the weight of cover to be not less than 4.50 kg and frame to be not less than 2.70 kg as per standard design :				
	With common burnt clay F.P.S.(non modular) bricks of class designation 7.5	Each	10.00		0.00

2.14	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 50m.				
	All kinds of soil	Cum	150.00		0.00
2.15	Excavating trenches of required width for pipes, cables, etc including excavation for sockets, and dressing of sides, ramming of bottoms, depth upto 1.5 m including getting out the excavated soil, and then returning the soil as required, in layers not exceeding 20cm in depth,including consolidating each deposited layer by ramming,watering,etc. and disposing of surplus excavated soil as directed ,within a lead of 50m.				
	Pipes. cables exceeding 80mm dia but not exceeding 300mm dia.	Metre	200.00		0.00
2.16	Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth: consolidating each deposited layer by ramming and watering, lead up to 50 m and lift upto 1.5 m	Cum	150.00		0.00
2.17	Providing orange colour safety foot rest of minimum 6mm thick plastic encapsulated as per IS : 10910 on 12mm dia steel bar conforming to IS : 1786 having minimum cross section as 23 mmx25mm and over all minimum length 263mm and width as 165mm with minimum 112 mm space between protruded legs having 2mm thread on top surface by ribbing or chequering besides necessary and adequate anchoring projections on tail length on 138mm as per standard drawing and suitable to with stand the bend test and chemical resistant test as per specification and having manufacture's permanent identification mark to be visible even after fixing, including fixing in manhole with 30x20x15 cm cement concrete block 1:3:6 (1cement : 3coarse sand : 6 graded stone aggregate 20 mm nominal size) complete as per design.	Each	200.00		0.00
	Constructing brick masonry road gully chamber 50x45x60 cm with bricks in cement mortar 1:4 (1 cement :4 coarse sand) including 500x450mm precast R.C.C. horizontal grating with frame complete as per standard design:				
	With common burnt clay F.P.S. bricks(non modular) of class designation 7.5	Each	20.00		0.00
2.18	Constructing brick masonry road gully chamber 45x45x77.5 cm with bricks in cement mortar 1:4 (1 cement :4 coarse sand) with precast R.C.C. vertical grating complete as per standard design:				
	With common burnt clay F.P.S. bricks(non modular) of class designation 7.5	Each	20.00		0.00

2.19	Providing, fixing, jointing and testing in position of ISI marked UV stabilized UPVC pipes for soil, waste and vent, Type-B as per IS : 13592 suitable for rubber ring joints, including all neccessary specials and fittings (confirming to IS:14735) i.e. bends, tees, junctions (with or without doors), reducers, WC connectors, couplers, cowels, clamps, rubber rings, clean outs etc. fixing at wall/ ceiling/ floor level supported by clamp & hangers etc. in concealed / inside duct / under floor & basement ceiling / external work etc. including chase cutting as required, excavation and back filling in all kind of soils, suspended from floor under false ceiling or embedding the pipes laid under floors / building in 75 mm. alround 1:2:4 cement concrete (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) including cost of shuttering for proper completion of the work, breaking and making good the walls and floors etc. after pipes have been duly laid and tested. The rubber ring shall confirm to IS:5382.				
	The Pipes will be supported with threaded G I rods & clamps on 50x50x5 mm slotted angle. The cost will include all support arrangements. The work includes commissioning of all pipes lines as per drawings and specifications and as directed by engg-in-charge at site.				
	75mm outer dia	Metre	30.00		0.00
	110mm outer dia	Metre	30.00		0.00
	160mm outer dia	Metre	40.00		0.00
2.20	Providing, fixing, jointing and testing in position ISI marked (IS:4985) UPVC pipes of min 6 Kg/ Sqcm rating with fitting for waste pipe from fixtures to floor trap including reduces, enlarger, socket, couplers, bends, tees etc including fixing at wall/ ceiling level supported by clamp & hangers etc. cutting holes in wall/ floors/ slabs and making good the same with cement concrete 1:2:4 complete as required.				
	40mm outer dia	Metre	30.00		0.00
	50mm outer dia	Metre	30.00		0.00
	63mm outer dia	Metre	10.00		0.00
2.21	Providing & fixing UPVC **Floor trap** of self cleansing design with CP Jali complete in all respects. (Make : Supreme / Finolex / Prince).				
	a) 100 mm inlet and 100 mm outlet.				
	(with 127dia Glossy CP Grating Jayna				
	model no.RRB 127)	Each	10.00		0.00

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	b) 100 mm inlet and 75 mm outlet.				
	(with 102 mm dia CP Glossy Grating Jayna				
	model no. RRB 102)	Each	10.00		0.00
2.22	Providing & fixing 110m x 50mm waste with PVC reducer including cutting chases in floor, cutting RCC slab complete as required.	Each	10.00		0.00
	TOTAL OF MAN HOLE CARRIED TO SUMMARY				**0.00**
3	**SUBHEAD -III PUMP**				
3.1	Providing & fixing fully submersible sump pumps for dewatering with C.I casing & shaft suitable for operation on 400 / 440 V,3 phase, pH 50 cycle A/C power supply.				
	Sump Pumps(For basement drainage)				
	Location - Inside Drainage sump with electrical panel & all controls,cyclic operation				
	2 pumps- both working during extra high level in sump.				
	Flow rate(each pump)=3 lps,head=12m.				
	Solid Handlling-15mm	Set	10.00		0.00
	Providing and fixing gun metal non- return valve of approved quality (screwed end) :				
	32 mm nominal bore	Each	10.00		0.00
3.2	Vertical				
	40 mm nominal bore	Each	10.00		0.00
3.3	Vertical				
	50 mm nominal bore	Each	10.00		0.00
	TOTAL OF PUMP CARRIED TO SUMMARY				**0.00**
4	**Subhead-IV: External Water Supply**				
4.1	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes having thermal stability for hot & cold water supply including all (CPVC) plain & brass threaded fittings. This includes jointing of pipes & fittings with one step CPVC solvent cement,trenching,refilling and testing of joints complete as per direction of engineer in charge. .				
	20 mm nominal outer dia Pipes	RM	100.00		0.00
4.2	25 mm nominal outer dia Pipes	RM	50.00		0.00
4.3	32 mm nominal outer dia Pipes	RM	50.00		0.00
4.4	40 mm nominal outer dia Pipes	RM	50.00		0.00
4.5	Providing and fixing gun metal gate valve with C.I. wheel of approved quality (screwed end) :				
	25 mm dia nominal bore	Each	10.00		0.00
4.6	20 mm dia nominal bore	Each	20.00		0.00

4.7	32 mm dia nominal bore	Each	20.00		0.00
4.8	40 mm dia nominal bore	Each	10.00		0.00
	TOTAL OF External Water Supply CARRIED TO SUMMARY				**0.00**
5	**Subhead-V: RAIN WATER HARVESTING PIT**				
5.1	Providing and constructing Rainwater harvesting pit of 2500 (Dia mm) X 2500mm (D) size (Internal) in overall size with inlet and outlet connection with upto 150mm from ground level 1st class brick 230mm thick in Cement mortar 1:4 (1 Cement : 4 Coarse sand) inside and outside 12mm thick plaster with Cement mortar 1:3 (1 Cement : 3 Coarse sand) with a floating coat of neat cement on inside surface. After 1500, depth 500mm thick border. C.I. (heavy duty) manhole cover 560mm (weight not less than 208 kg) including necessary excavation (all type SOIL hard-rock)backing filling, disposal of surplus earth, providing and fixing of C.I. manhole steps complete as per standard design.	Each	10.00		0.00
5.2	Boring/drilling bore well of required dia for casing / strainer pipe, by suitable method prescribed in IS:2800 (part-1) including collecting samples from different strata, preparing and submitting strata chart/bore log, including hire & running charges of all equipments, tools, plants & machineries required for the job, all complete as per direction of engineer-in-charge, upto 90 metre depth below ground level.				
	All type sof soil				
	350mm dia	Metre	120.00		0.00
5.3	Supplying, assembling, lowering and fixing in vertical position in bore well unplasticized PVC medium well screen (RMS) pipes with ribs, conforming to IS : 12818, including hire & labour charges, fittings & accessories etc, all complete, for all depths, as per direction of engineer-in-charge.				
	200mm nominal dia	Metre	120.00		0.00
5.4	Supplying & filling, sepreading & leveling stone boulders of size range 5cm to 20cm, in the recharge pit, in the required thickness, for all leads & lifts, all complete, for all depths, as per direction of engineer-in-charge.	Cum	50.00		0.00
5.4	Supplying & filling, sepreading & leveling gravels of size range 5mm to 10mm, in the recharge pit, over the existing layer of boulders, in the required thickness, for all leads & lifts, all complete, as per direction of engineer-in-charge.	Cum	50.00		0.00
5.6	Supplying & filling, sepreading & leveling coarse sand of size range 1.5mm to 20mm, in the recharge pit, in the required thickness over gravel layer, for all leads & lifts, all complete, as per direction of engineer-in-charge.	Cum	50.00		0.00
5.7	Providing and fixing Bail plug / Bottom plub of required dia to the bottom of pipe assembly of tubewell as per IS : 2800 (part - 1)				

	200mm dia	Each	10.00		0.00
5.8	Providing and fixing in position pre-cast RCC manhole cover and frame of required shape & approved quality				
	EHD-35				
	Circular shape 560 mm internal diameter	Each	20.00		0.00
	TOTAL OF RAIN WATER HARVESTING CARRIED TO SUMMARY				**0.00**
6	**Subhead:- VI - Sanitary Fixtures**				
6.1	Providing & fixing of white vitreous china pedestal type water closet(European type) with seat and lid, 10 liter low level white viterous china flushing cistern C.P.flush bend with fittings & C.I.brackets ,40mm flush bend, overflow arrangment with specials of standard make and mosquito proof coupling of approved municipala design complete including painting of fittings and brackets, cutting and making good the wall and Floors wherever required:				
	W.C pan with ISI marked white solid plastic seat and lid.	Each	10.00		0.00
6.2	Providing & fixing wash basin with C.I. brackets, C.P brass pillar taps,32 mm C.P. brass waste of standard pattern, including painting of fittings and brackets,cutting and making good the walls wherever required:				
	White Vitreous China Wash basin size 550x400 mm with a pair of 15 mm C.P. brass pillar taps	Each	10.00		0.00
6.3	Providing and fixing PTMT towel ring trapezoidal shape 215 mm long, 200 mm wide with minimum distances of 37 mm from wall face with concealed fittings arrangement of approved quality and colour, weighing not less than 88 gms.	Each	10.00		0.00
6.4	Providing & fixing PTMT soap dish Holder having length of 138mm,breadth 102mm, height of 75mm with concealed fitting arrangements.Weighing not less than 106gms.	Each	10.00		0.00
6.5	Providing & fixing mirror of superior glass(of aproved quality) and of required shape and size with plastic moulded frame of approved make and shade with 6mm thick hard board backing:				
	Rectangular Shape 453x357mm	Each	10.00		0.00
6.6	Providing and fixing toilet paper holder :				
	C.P. brass	Each	10.00		0.00
6.7	Providing and fixing P.V.C waste pipe for sink or wash basin including P.V.C waste fitting complete .				
	Semi rigid pipe				
	a) 40 mm dia	Each	10.00		0.00
6.8	Providing and fixing C.P.brass bottle trap 32mm size bottle trap of approved quality & make as approved by Engineer-in-charge.	Each	10.00		0.00
6.9.	Providing and fixing P.V.C connection with brass union.				

	45cm length.				
	15mm nominal bore	Each	40.00		0.00
6.10	Providing and fixing C.P. bass angle valve for basin mixer and geyser points of approved quality conforming to I.S:8931.				
	15 mm nominal bore	Each	40.00		0.00
6.11	Providing & fixing C.P. hand spray with lever control (health faucet) and flexible hose 1 m long connection with C.P. holder for hand spray complete in all respects as per direction of Engineer-Incharge.	Each	10.00		0.00
6.12	Providing and placing on terrace (at all floor levels) polyethylene water storage tank, IS : 12701 marked, with cover and suitable locking arrangement and making necessary holes for inlet, outlet and overflow pipes but without fittings and the base support for tank.	per ltr	10000.00		0.00
6.13	Providing and fixing white vitreous china flat back half stall urinal of size 580x380x350 mm with white PVC automatic flushing cistern,with fittings, standard size C.P. brass flush pipe, spreaders with unions and clamps (all in C.P. brass) with waste fitting as per IS :2556, C.I. trap with outlet grating and other couplings in C.P. brass,including painting of fittings and cutting and making good the walls and floors wherever required :				
	Single half stall urinal with 5 litre P.V.C. automatic flushing cistern	Each	10.00		0.00
	TOTAL OF SANITARY FIXTURES CARRIED TO SUMMARY				**0.00**
7	**Subhead:- VII SEPTIC TANK FIXTURES**				
7.1	Supplying and fixing C.I. cover without frame for manholes :				
	455x610 mm rectangular C.I. cover (light duty) the weight of the cover to be not less than 23 kg	Each	20.00		0.00
7.2	Supplying and fixing CI vent pipe--80 mm dia	RM	50.00		0.00
7.3	Supplying and fixing CI cowl.	Each	10.00		0.00
7.4	Making soak pit 2.5 m diameter 3.0 metre deep with 45 x 45 cm dry brick honey comb shaft with bricks and S.W. drain pipe 100 mm diameter, 1.8 m long complete as per standard design.				
	With common burnt clay F.P.S. (non modular) bricks of class designation 7.5	Each	10.00		0.00
	TOTAL OF SEPTIC TANK CARRIED TO SUMMARY				**0.00**
	GRAND TOTAL OF PUMBING WORKS				**0.00**

Ref: ITI/NSU/CIVIL-DEL/2023/0106/01					Date 15-03-2023
ITI LMITED NETWORK SYSTEM UNIT DOORVANINAGAR, BANGALORE 560 016.					
BILL OF QUANTITY : IT & FIRE FIGHTING WORKS :- GROUP 4 (Kashmir), No. of Buildings are 10, Type-H.					
BIDDER'S NAME					
S. No.	**Description**	**Unit**	**QTY**	**RATE (Rs)**	**Total Amount**
1	**ACCESS CONTROL SYSTEM consisting of the following** (a) Supply, Installation, testing and commissioning of the access control system including the following equipments including necessary fitting, fixtures, cables, etc. (Model No./make RBH-Axiom) 1 nos per node. (b) 2-Door Control Panel with universal cabinet and power supply and required license.(Model No./make RBH-IRC-2000) 3 nos each per node. (c) Biometric reader. (Model No./make BFR-350) 5 nos each per node. (d) PROXIMITY CARD. (Model No./make PBH Smart Card) 20 nos each per node.	Set	10.00		0
	TOTAL FOR ACCESS CONTROL SYSTEMS WORKS				**0**
2	**VIDEO SURVEYLANCE SYSTEMS** Supply, installation, testing and commissioning of physical intrusion detection and prevention system including all necessary accessories, wires and fixtures. The system should be equipped with central monitoring software and server at NOC with complete necessary licenses (a) Indoor Dome Camera (Model No Mobotix m 26) 3 Nos per node (b) Out door type camera (Model No Mobotix m 26) 5 Nos per node (c) Network Vide Recorder system (Brand Mobotix) 1 Nos per node (d) 22" lcd display complete with all wiring and necessary fittings. (Make Samsung/LG) 1 Nos per node (e) 1 no PC loaded/ installed with necessary lisc. Software for video surveylance. (Make Software: Mobotix, PC Hardware: Dell/HP) 1 Nos per node	**Set**	10.00		0
	TOTAL FOR VIDEO SURVEYLANCE SYSTEMS				**0**

3	**PHYSICAL INTRUSION DETECTION AND PREVENTION SYSTEM consisting of the following:** (a) Supply, installation, testing and commissioning of physical intrusion detection and prevention system including all necessary accessories.(Model No Securico President) 1 nos each per node. B)Intrusion Controller panel(Make :Securico President). 1 no per node. C)Keypad - Alpha Addressable LCD Keypad (Model No Securico President). 1 per node. D) PIR Sensor (make: Optex). Qty: 8 nos per node. E) Beam Protector (Covering the entire parameter of the node) (make:Optex). Qty: 10 per node. F) Ground sensor (make: Optex). Qty: 8 nos per node. G) 130 db hooter (Make: Securico) Qty: 4 no per node. H) 2ft pole for beam detector (GI Pipe). Qty: 5 nos per node.	**Set**	10.00		0
	TOTAL FOR PHYSICAL INTRUSION SYSTEM WORKS				**0**
4	**FIRE DETECTION AND SUPPRESSION SYSTEM consisting of the following:** **(**a) Supplying, installing, testing and commissioning of addressable Main control panel comprising of visual and audible fire and fault alarms and signals, indicators and all other accessories. Panel shall be IS Approved. The system shall be nstalled with complete necessary fittings and fixtures including 2C x 1.5 sqmm and 2C x 2.5 sqmm ISI marked cables and wires. All the conduits hall be as per NBC specifications. (Model No Kentek Syncro As) 1 nos each per node. (b) OTI-AX-200TE - Photoelectric Detector with Synchronized twin beam, 200ft outdoor all weather range, IP65 Lightning Protection Level 14kV, 99% beam blocking stability includes pole mounting kit (Model No OTI-AX-200TE) 5 nos each per node. (c) OTIBC3 - Back cover for OTIAX200TF (Model No OTIBC3) 5 nos each per node. (d) SOUNDER 12V - High power 130 db, Police Siren Sound, Suitable for Indoor and Outdoor application. Tamper Loop. (Model No Roshni red 32 tone) 4 nos each per node. (e) Smoke detectors(Model No Apollo Discover / 58000-600) 32 nos each per node. (f) Heat detectors(Model No Apollo Discover / 58000-400) 1 nos each per node. (g) Multi-Criteria detectors(Model No Apollo Discover) 3 nos each per node. (h) Manual Call Point (Breaking Glass type) (Model No Apollo Discover /55000-971) 5 nos each per node. (j) Sounder / Flasher with Control Module (Model No Apollo Discover) 8 nos each per node. (k) Short Circuit Isolator 1 nos each per node. (l) Control modules for AHU / FAN trappings(Model No/Make: SS) 2 nos each per node. (m) Fire Signages- photoluminescent Green or Red color safety signages in different sizes / graphics / colours /texts can be made according to the standards 2 nos each per node.	**Set**	10.00		0

	(a) GAS SUPPRESSION SYSTEM FM 200 Gas based Fire Suppression System shall be considered for equipment storage room and server room. Qty 1 no system per node.				
	FIRE EXTINGUISHER **(a)** CO2 type cylindrical shape fire extinguisher - 4.5 Kg Capacity with requisite fixing arrangement (Model No/make Ventex) 5 nos each per node. (b) ABC type fire extinguisher - 6 Kg capacity with requisite fixing arrrangement (Model No/make Ventex) 5 nos each per node. (c) Dry chemical powder type cylindrical shape fire extinguisher - 6 Kg Capacity with requisite fixing arrangement (Model No/make Ventex Dry powder 4308/14609) 5 nos each per node. (d) Mechanical foam type fire extinguishers with requisite fixing arrangement (Model No/make Ventex) 5 nos each per node. (e) Trolley mounted type - 9 litres capacity. 1 nos each per node. (f) Trolley mounted type -50 litres capacity. 1 nos each per node. (g) Supply and installation of Fire buckets of 9 litres capacity. Stand made of MS Channel and angle to accommodate 4 Nos. of buckets filled with cleaned soft sand. Rate shall be inclusive of red panit for buckets and MS Sand as per Fire Code. 5 nos each per node.				
	TOTAL FOR FIRE FIGHTING WORKS				**0**
	GRAND TOTAL OF IT & FIRE FIGHTING WORKS				**0**

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Ref: ITI/NSU/CIVIL-DEL/2023/0106/01			Date 15-03-2023
ITI LMITED NETWORK SYSTEM UNIT DOORVANINAGAR, BANGALORE 560 016.			
SUMMARY SHEET :- GROUP 5 (Kashmir), No. of Buildings are 9, Type-H.			
BIDDER'S NAME			
Sl.No.	**DESCRIPTION**	**AMOUNT (Rs.)**	**AMOUNT IN WORDS (Rs.)**
I	**SECTION A**		
	CIVIL WORKS	0.00	
II	**SECTION B**		
	ELECTRICAL WORKS	0.00	
III	**SECTION C**		
	PLUMBING WORKS	0.00	
IV	**SECTION D**		
	IT AND FIRE FIGHTING WORKS	0.00	
	GRAND TOTAL FOR THE PROJECT	**0.00**	

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Ref: ITI/NSU/CIVIL-DEL/2023/0106/01					Date 15-03-2023
ITI LMITED NETWORK SYSTEM UNIT DOORVANINAGAR, BANGALORE 560 016.					
BILL OF QUANATITY : CIVIL WORKS :- GROUP 5, No. of Buildings are 9, Type-H.					
BIDDER'S NAME					
S.No	**DESCRIPTION**	**UNIT**	**QTY**	**RATE**	**AMOUNT**
1	**SECTION-1: EARTHWORK**				
1.1	Earth work in excavation by mechanical means (Hydraulic excavator)/ manual means over areas (exceeding 30 cm in depth, 1.5 m in width as well as 10 sqm on plan) including getting out and disposal of excavated earth lead upto 50 m and lift upto 1.5 m, as directed by Engineer-in- charge.				
	All kinds of soil.:	Cum	170.97		0.00
1.2	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 kinds of soil.:	cum	341.94		0.00
1.3	Excavation work by mechanical means (Hydraulic excavator)/ manual means in foundation trenches or drains (not exceeding 1.5m 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 soils as directed, within a lead of 50 m.				
	Ordinary rock	cum	1709.68		0.00
1.4	Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift upto 1.5 m.	cum	4957.14		0.00
1.5	Extra for every additional lift of 1.5 m or part thereof in excavation / banking excavated or stacked materials. **: For Excavation beyond 1.5m depth**				
	All kinds of soil	cum	316.80		0.00
1.6	Supplying and filling in plinth with sand under floors, including watering, ramming, consolidating and dressing complete.	cum	223.87		0.00
	NOTE : Deduction shall be made of columns, brick walls etc. for calculation of quantity of sand filling for payment				

1.7	Surface dressing of the ground including removing vegetation and inequalities not exceeding 15 cm deep and disposal of rubbish, lead up to 50 m and lift up to 1.5 m.				
	All kinds of soil	sqm	6750.00		0.00
1.8	Supplying chemical emulsion in sealed containers including delivery as specified.				
	Chlorpyriphos/ Lindane emulsifiable concentrate of 20%	Litre	398.10		0.00
1.9	Diluting and injecting chemical emulsion for POST-CONSTRUCTIONAL anti-termite treatment (excluding the cost of chemical emulsion) :				
	Along external wall where the apron is not provided using chemical emulsion @ 7.5 litres / sqm of the vertical surface of the substructure to a depth of 300mm including excavation channel along the wall & rodding etc. complete:				
	With Chlorpyriphos/ Lindane E.C. 20% with 1% concentration	Metre	607.50		0.00
1.10	Along the external wall below concrete or masonry apron using chemical emulsion @ 2.25 litres per linear metre including drilling and plugging holes etc.:				
	With Chlorpyriphos/ Lindane E.C. 20% with 1% concentration	Metre	1215.00		0.00
1.11	Treatment of soil under existing floors using chemical emulsion @ one litre per hole, 300 mm apart including drilling 12 mm diameter holes and plugging with cement mortar 1 :2 (1 cement : 2 Coarse sand) to match the existing floor:				
	With Chlorpyriphos/Lindane E.C. 20% with 1% concentration	Sqm	1058.40		0.00
1.12	Treatment of existing masonry using chemical emulsion @ one litre per hole at 300 mm interval including drilling holes at 45 degree and plugging them with cement mortar 1:2 (1 cement : 2 coarse sand) to the full depth of the hole :				
	With Chlorpyriphos/Lindane E.C. 20% with 1% concentration	Metre	48.60		0.00
1.13	Treatment at points of contact of wood work by chemical emulsion Chlorpyriphos/ Lindane (in oil or kerosene based solution) @ 0.5 litres per hole by drilling 6 mm dia holes at downward angle of 45 degree at 150 mm centre to centre and sealing the same	Sqm	90.00		0.00
	Total for EarthWork				**0.00**
2	**SECTION-2: CONCRETE WORK**				
2.1	Providing and laying in position cement concrete of specified grade excluding the cost of centering and shttering - All work up to plinth level:				

	1:2:4 (1 cement : 2 coarse sand (zone-III) derived from natural sources : 4 graded stone aggregate 20 mm nominal size derived from natural sources)	cum	250.00		0.00
2.2	1:4:8 (1 Cement : 4 coarse sand : 8 graded stone aggregate 20 mm nominal size)	cum	440.00		0.00
2.3	Providing and laying damp-proof course 50mm thick with cement concrete 1:2:4 (1 cement : 2 coarse sand(zone-III) : 4 graded stone aggregate 20mm nominal size).	sqm	232.62		0.00
2.4	Making plinth protection 50mm thick of cement concrete 1:3:6 (1 cement : 3 coarse sand (zone - III) : 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 necessary excavation, levelling & dressing & finishing the top smooth.	Sqm	161.46		0.00
	Total for Concrete Work				**0.00**
3	**SECTION-3: REINFORCED CEMENT CONCRETE**				
3.1	Providing and laying in position specified grade of reinforced cement concrete, excluding the cost of centering, shuttering, finishing and reinforcement - All work up to plinth level:				
	M 25 (1 cement : 1 coarse sand(zone-III) : 2 graded stone aggregate 20 mm nominal size)	cum	425.70		0.00
3.2	Reinforced cement concrete work in walls (any thickness), including attached pilasters, buttresses, plinth and string courses, fillets, columns, pillars, piers, abutments, posts and struts etc. above plinth level up to floor five level, excluding cost of centering, shuttering, finishing and reinforcement :				
	M 25 (1 cement : 1 coarse sand(zone-III) : 2 graded stone aggregate 20 mm nominal size)	cum	76.98		0.00
3.3	Reinforced cement concrete work in beams, suspended floors, roofs having slope up to 15° landings, balconies, shelves, chajjas, lintels, bands, plain window sills, staircases and spiral stair cases above plinth level up to floor five level, excluding the cost of centering, shuttering, finishing and reinforcement with M 25 (1 cement : 1 coarse sand(zone-III) : 2 graded stone aggregate 20 mm nominal size)	cum	30.00		0.00
	Centering & shuttering including strutting, propping etc. and removal of form work for:				
3.4	Foundations, footings, bases of columns etc. for mass concrete.	sqm	989.21		0.00
3.5	Suspended floors, roofs, landings, balconies and access platform	sqm	90.00		0.00

3.6	Lintels, beams, plinth beams, girders, bressumers and cantilevers.	sqm	2337.07		0.00
3.7	Columns, Pillars, Piers, Abutments, Posts and Struts	sqm	874.80		0.00
3.8	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 of grade Fe-500D or more.	kg	53000.00		0.00
	Total for RCC Work				**0.00**
4	**SECTION-4: BRICK WORK**				
4.1	Brick work with common burnt clay F.P.S. (non modular) bricks of class designation 7.5 in foundation and plinth in:				
	Cement mortar 1:6 (1 cement : 6 coarse sand)	cum	287.41		0.00
4.2	**Brick work** with common burnt clay F.P.S. (non modular) bricks of class designation 7.5 in superstructure above plinth level up to floor V level in all shapes and sizes in :				
	Cement mortar 1:6 (1 cement : 6 coarse sand)	cum.	674.63		0.00
	HALF BRICK WORK				
4.3	Half brick masonry with common burnt clay F.P.S. (non modular) bricks of class designation 7.5 in superstructure above plinth level up to floor V level.				
	Cement mortar 1:4 (1 cement :4 coarse sand)	sqm	640.71		0.00
4.4	Extra for providing and placing in position 2 Nos 6mm dia. M.S. bars at every third course of half brick masonry. Quantities sames as DSR item no. 6.13.2	sqm	640.71		0.00
	Total for Brick Work				**0.00**
5	**SECTION-5: STONE WORK**				
5.1	Random rubble masonry with hard stone in foundation and plinth including levelling up with cement concrete 1:6:12 (1 cement : 6 coarse sand : 12 graded stone aggregate 20 mm nominal size) upto plinth level with :				
	Cement mortar 1:6 (1 cement : 6 coarse sand)	Cum	6.17		0.00
5.2	Coursed rubble masonry with hard stone (first or second sort) in superstructure above plinth level and upto floor five level.				
	Masonry work (first sort), in cement mortar 1:6 (1 cement : 6 coarse sand)	Cum	12.42		0.00
	Total for Stone Work				**0.00**
6	**SECTION-6:GRANITE WORK**				

6.1	Providing and fixing 18 mm thick gang saw cut, mirror polished, premoulded and prepolished, machine cut for kitchen platforms, vanity counters, window sills, facias and similar locations of required size, approved shade, colour and texture laid over 20 mm thick base cement mortar 1:4 (1 cement : 4 coarse sand), joints treated with white cement, mixed with matching pigment, epoxy touch ups, including rubbing, curing, moulding and polishing to edges to give high gloss finish etc. complete at all levels.				
	Granite of any colour and shade				
	Area of slab over 0.50 sqm	Sqm	4.05		0.00
6.2	Extra for providing opening of required size & shape for wash basin/ kitchen sink in kitchen platform, vanity counter and similar location in marble/ Granite/ stone work, including necessary holes for pillar taps etc. including moulding, rubbing and polishing of cut edges etc. complete.	Each	9.00		0.00
6.3	Providing and fixing Ist quality ceramic glazed wall tiles conforming to IS: 15622 (thickness to be specified by the manufacturer), of approved make, in all colours, shades except burgundy, bottle green, black of any size as approved by Engineer-in-Charge, in skirting, risers of steps and dados, over 12 mm thick bed of cement mortar 1:3 (1 cement : 3 coarse sand) and jointing with grey cement slurry @ 3.3kg per sqm, including pointing in white cement mixed with pigment of matching shade complete.	Sqm	141.98		0.00
	Total for Cladding Work				**0.00**
7	**SECTION-7:DOORS & WINDOWS WORKS**				
7.1	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).				
	Second class teak wood	cum	0.39		0.00
7.2	Providing and fixing panelling or panelling and glazing in panelled or panelled and glazed shutters for doors, windows and clerestory windows (Area of opening for panel inserts excluding portion inside grooves or rebates to be measured). Panelling for panelled or panelled and glazed shutters 25 mm to 40 mm thick :				
	Float glass panes				
	4 mm thick glass pane (weight not less than 10kg/sqm).	Sqm	550.27		0.00
7.3	5.0 mm thick glass panes (weight not less than 12.50 kg/sqm).	Sqm	74.25		0.00

7.4	Providing and fixing ISI marked flush door shutters conforming to IS : 2202 (Part I) decorative type, core of block board construction with frame of 1st class hard wood and well matched teak 3 ply veneering with vertical grains or cross bands and face veneers on both faces of shutters.				
	35 mm thick including ISI marked Stainless Steel butt hinges with necessary screws	Sqm	220.37		0.00
7.5	Extra for providing lipping with 2nd class teak wood battens 25 mm minimum depth on all edges of flush door shutters (over all area of door shutter to be measured).	Sqm	451.44		0.00
7.6	Extra for providing vision panel not exceeding 0.1 sqm in all type of flush doors (cost of glass excluded) (overall area of door shutter to be measured):				
	Rectangular or square	Sqm	220.37		0.00
7.7	Providing and fixing wire gauge shutters using galvanized M.S. wire gauge of average width of aperture 1.4 mm in both directions with wire of dia 0.63 mm, for doors, windows and clerestory windows with hinges and necessary screws :				
	30 mm thick shutters				
	With ISI marked stainless steel butt hinges of required size				
	Second class teak wood	Sqm	43.66		0.00
7.8	Providing and fixing wooden moulded beading to door and window frames with iron screws, plugs and priming coat on unexposed surface etc. complete :				
	2nd class teak wood				
	50x12 mm	meter	52.65		0.00
7.9	Providing and fixing nickel plated M.S. pipe curtain rods with nickel plated brackets :				
	20 mm dia (heavy type)	meter	222.75		0.00
7.10	Providing and fixing aluminium extruded section body tubular type universal hydraulic door closer (having brand logo with ISi, IS : 3564, embossed on the body, door weight upto 36 kg to 80 kg and door width from 701 mm to 1000 mm), with double speed adjustment with necessary accessories and screws etc. complete.	Each	9.00		0.00
7.11	Providing 40x5 mm flat iron hold fast 40 cm long including fixing to frame with 10 mm diameter bolts, nuts and wooden plugs and embedding in cement concrete block 30x10x15cm 1:3:6 mix (1 cement : 3 coarse sand : 6 graded stone aggregate 20mm nominal size).	Each	9.00		0.00
7.12	Providing and fixing ISI marked oxidised M.S. handles conforming to IS:4992 with necessary screws etc. complete :				
	100 mm	Each	90.00		0.00

7.13	Providing and fixing aluminium sliding door bolts, ISI marked anodised (anodic coating not less than grade AC 10 as per IS : 1868), transparent or dyed to required colour or shade, with nuts and screws etc. complete				
	250x16 mm	Each	99.00		0.00
7.14	Providing and fixing aluminium tower bolts, ISI marked, anodised (anodic coating not less than grade AC 10 as per IS : 1868) transparent or dyed to required colour or shade, with necessary screws etc. complete :				
	250x10 mm	Each	99.00		0.00
7.15	200x10 mm	Each	99.00		0.00
7.16	Providing and fixing aluminium handles, ISI marked, anodised (anodic coating not less than grade AC 10 as per IS : 1868) transparent or dyed to required colour or shade, with necessary screws etc. complete :				
	125 mm	Each	180.00		0.00
7.17	Providing and fixing aluminium hanging floor door stopper, ISI marked, anodised (anodic coating not less than grade AC 10 as per IS : 1868) transparent or dyed to required colour and shade, with necessary screws etc. complete.				
	Single rubber stopper	Each	90.00		0.00
7.18	Providing and fixing PTMT door catcher of length 72 mm and dia. of 42 mm with suitable washers weighing not less than 33 gms	Each	90.00		0.00

7.19	Providing and fixing factory made uPVC white colour sliding glazed window upto 1.50 m in height dimension comprising of uPVC multi-chambered frame with in-built roller track and sash extruded profiles duly reinforced with 1.60 ± 0.2 mm thick galvanized mild steel section made from roll forming process of required length (shape & size according to uPVC profile), appropriate dimension of uPVC extruded glazing beads and uPVC extruded interlocks, EPDM gasket, wool pile, zinc alloy (white powder coated) touch locks with hook, zinc alloy body with single nylon rollers (weight bearing capacity to be 40 kg), G.I fasteners 100 x 8 mm size for fixing frame to finished wall and necessary stainless steel screws etc. Profile of frame & sash shall be mitred cut and fusion welded at all corners, including drilling of holes for fixing hardware's and drainage of water etc. After fixing frame the gap between frame and adjacent finished wall shall be filled with weather proof silicon sealent over backer rod of required size and of approved quality, all complete as per approved drawing & direction of Engineer-in-Charge. (Single / double glass panes, wire mesh and silicon sealent shall be paid separately). Variation in profile dimension in higher side shall be accepted but no extra payment on this account shall be made.				
	Note: For uPVC frame and sash extruded profiles minus 5% tolerance in dimension i.e. in depth & width of profile shall be acceptable.				
	Two track two panels sliding window made of (small series) frame 52 x 44 mm &sash 32 x 60 mm both having wall thickness of 1.9 ± 0.2 mm and single glazing bead of appropriate dimension. (Area of window upto 1.75 sqm)	Sqm	12.03		0.00
7.20	Three track three panels sliding window with fly proof S.S wire mesh (Two nos. glazed & one no. wire mesh panels) madeof(bigseries)frame116x45mm&sash46x62mm both having wall thickness of 2.3 ± 0.2 mm and single glazing bead / double glazing bead of appropriate dimension. (Area of window above 1.75 sqm).	Sqm	142.56		0.00
7.21	Providing and fixing zinc alloyed (white powder coated) touch lock for uPVC sliding window with necessary screws etc. complete.	Each	79.20		0.00
	Total for Wood Work				**0.00**
8	**SECTION-8:STEEL WORK**				

8.1	Structural steel work riveted, bolted or welded in built up sections, trusses and framed work, including cutting, hoisting, fixing in position and applying a priming coat of approved steel primer with two coat of synthetic enamel paint all complete.	kg	50400.00		0.00
8.2	Providing and fixing 1mm thick M.S. sheet door with frame of 40x40x6 mm angle iron and 3 mm M.S. gusset plates at the junctions and corners, all necessary fittings complete, including applying a priming coat of approved steel primer.				
	Using M.S. angels 40x40x6 mm for diagonal braces	Sqm	207.36		0.00
8.3	Supplying and fixing rolling shutters of approved make, made of required size M.S. laths, interlocked together through their entire length and jointed together at the end by end locks, mounted on specially designed pipe shaft with brackets, side guides and arrangements for inside and outside locking with push and pull operation complete, including the cost of providing and fixing necessary 27.5 cm long wire springs manufactured from high tensile steel wire of adequate strength conforming to IS: 4454 - part 1 and M.S. top cover of required thickness for rolling shutters.				
	80x1.20 mm M.S. laths with 1.20 mm thick top cover	Sqm	108.00		0.00
8.4	Providing and fixing ball bearing for rolling shutters.	Each	18.00		0.00
8.5	Providing and fixing factory made ISI marked steel glazed doors, windows and ventilators, side /top /centre hung, with beading and all members such as F7D,F4B, K11 B and K12 B etc. complete of standard rolled steel sections, joints mitred and flash butt welded and sash bars tenoned and riveted, including providing and fixing of hinges, pivots, including priming coat of approved steel primer, but excluding the cost of other fittings, complete all as per approved design, (sectional weight of only steel members shall be measured for payment).				
	Fixing with 15x3 mm lugs 10 cm long embedded in cement concrete block 15x10x10 cm of C.C. 1:3:6 (1 Cement : 3 coarse sand : 6 graded stone aggregate 20 mm nominal size)	kg	1551.83		0.00
8.6	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.				
	Hot finished seamless type tubes	kg	21568.08		0.00
8.7	Providing and fixing mild steel round holding down bolts with nuts and washer plates complete.	kg	374.40		0.00
8.8	Providing and fixing bolts including nuts and washers complete.	kg	645.84		0.00

8.9	Steel work welded in built up sections/ framed work, including cutting, hoisting, fixing in position and applying a priming coat of approved steel primer using structural steel etc. as required.				
	In gratings, frames, guard bar, ladder, railings, brackets, gates and similar works	kg	900.00		0.00
8.10	Providing & fixing glass panes with putty and glazing clips in steel doors, windows, clerestory windows, all complete with :				
	4.0 mm thick glass panes	Sqm	400.95		0.00
	Total for Steel Works				**0.00**
9	**SECTION-9:FLOORING WORK**				
9.1	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	485.10		0.00
9.2	Cement plaster skirting up to 30 cm height, with cement mortar 1:3 (1 cement : 3 coarse sand), finished with a floating coat of neat cement.				
	18 mm thick	sqm	25.47		0.00
9.3	Providing and fixing glass strips in joints of terrazo/ cement concrete floors.				
	40 mm wide and 4 mm thick	rmt	254.70		0.00
9.4	Marble stone flooring with 18 mm thick marble stone, as per sample of marble approved by Engineer-in-charge, over 20 mm (average) thick base of cement mortar 1:4 (1 cement : 4 coarse sand) laid and jointed with grey cement slurry, including rubbing and polishing complete with :				
	Udaipur green marble	Sqm	1.00		0.00
9.5	Extra for pre finished nosing to treads of steps of marble stone.	Meter	9.00		0.00
9.6	Providing and laying rectified Glazed Ceramic floor tiles of size 300x300 mm or more (thickness to be specified by the manufacturer), of 1st quality conforming to IS : 15622, of approved make, in colours White, Ivory, Grey, Fume Red Brown, laid on 20 mm thick cement mortar 1:4 (1 Cement: 4 Coarse sand), jointing with grey cement slurry @ 3.3 kg/ sqm including grouting the joints with white cement and matching pigments etc., complete.	Sqm	34.90		0.00

9.7	Providing and laying Vitrified tiles in floor in different sizes (thickness to be specified by the manufacturer) with water absorption less than 0.08% and conforming to IS:15622, of approved brand & manufacturer, in all colours and shade, laid on 20 mm thick cement mortar 1:4 (1 cement: 4 coarse sand) jointing with grey cement slurry @3.3 kg/sqm including grouting the joints with white cement and matching pigments etc. The tiles must be cut with the zero chipping diamond cutter only . Laying of tiles will be done with the notch trowel, plier, wedge, clips of required thickness, leveling system and rubber mallet for placing the tiles gently and easily.				
	Glazed vitrified floor tiles polished finish of size				
	Size of Tile 600x600 mm	sqm	970.20		0.00
9.8	Glazed Vitrified tiles Matt/Antiskid finish of size				
	Size of Tile 600x600 mm	sqm	34.90		0.00
9.9	Providing and laying Vitrified tiles in different sizes (thickness to be specified by manufacturer), with water absorption less than 0.08 % and conforming to I.S. 15622, of approved make, in all colours & shade, in skirting, riser of steps, over 12 mm thick bed of cement mortar 1:3 (1 cement: 3 coarse sand), jointing with grey cement slurry @ 3.3 kg/ sqm including grouting the joint with white cement & matching pigments etc. complete.				
	Size of Tile 600x600 mm	sqm	62.37		0.00
9.10	Grouting the joints of flooring tiles having joints of 3 mm width, using epoxy grout mix of 0.70 kg of organic coated filler of desired shade (0.10 kg of hardener and 0.20 kg of resin per kg), including filling / grouting and finishing complete as per direction of Engineer-in-charge.				
	Size of Tile 600x600 mm	sqm	1014.30		0.00
	Total for Flooring				**0.00**
10	**SECTION-10:ROOFING**				
10.1	Providing gola 75x75 mm in cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 stone aggregate 10 mm and down gauge), including finishing with cement mortar 1:3 (1 cement : 3 fine sand) as per standard design :				
	In 75x75 mm deep chase	Metre	378.00		0.00
10.2	Making khurras 45x45 cm with average minimum thickness of 5 cm cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate of 20 mm nominal size) over P.V.C. sheet 1 m x1 m x 400 micron, finished with 12 mm cement plaster 1:3 (1 cement : 3 coarse sand) and a coat of neat cement, rounding the edges and making and finishing the outlet complete.	Each	36.00		0.00

10.3	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	1980.50		0.00
10.4	Providing and fixing false ceiling at all height including providing and fixing of frame work made of special sections, power pressed from M.S. sheets and galvanized with zinc coating of 120 gms/sqm (both side inclusive) as per IS : 277 and consisting of angle cleats of size 25 mm wide x 1.6 mm thick with flanges of 27 mm and 37mm, at 1200 mm centre to centre, one flange fixed to the ceiling with dash fastener 12.5 mm dia x 50mm long with 6mm dia bolts, other flange of cleat fixed to the angle hangers of 25x10x0.50 mm of required length with nuts & bolts of required size and other end of angle hanger fixed with intermediate G.I. channels 45x15x0.9 mm running at the spacing of 1200 mm centre to centre, to which the ceiling section 0.5 mm thick bottom wedge of 80 mm with tapered flanges of 26 mm each having lips of 10.5 mm, at 450 mm centre to centre, shall be fixed in a direction perpendicular to G.I. intermediate channel with connecting clips made out of 2.64 mm dia x 230 mm long G.I. wire at every junction, including fixing perimeter channels 0.5 mm thick 27 mm high having flanges of 20 mm and 30 mm long, the perimeter of ceiling fixed to wall/partition with the help of rawl plugs at 450 mm centre, with 25mm long dry wall screws @ 230 mm interval, including fixing of gypsum board to ceiling section and perimeter channel with the help of dry wall screws of size 3.5 x 25 mm at 230 mm c/c, including jointing and finishing to a flush finish of tapered and square edges of the board with recommended jointing compound , jointing tapes , finishing with jointing compound in 3 layers covering upto 150 mm on both sides of joint and two coats of primer suitable for board, all as per manufacturer's specification and also including the cost of making openings for light fittings, grills, diffusers, cutouts made with frame of perimeter channels suitably fixed, all complete as per drawings, specification and direction of the Engineer in Charge but excluding the cost of painting with :				

	12.5 mm thick tapered edge gypsum plain board conforming to IS: 2095- (Part I) : 2011 (Board with BIS certification marks)	Sqm	1170.00		0.00
	Total for Roofing work				**0.00**
11	**SECTION-11:Finishing Work**				
11.1	12 mm cement plaster of mix :				
	1:6 (1 cement: 6 fine sand):	sqm	4206.82		0.00
11.2	20 mm cement plaster of mix :				
	1:6 (1 cement: 6 fine sand)	sqm	18.00		0.00
11.3	12 mm cement plaster finished with a floating coat of neat cement of mix :				
	1:3 (1 cement: 3 fine sand)	sqm	1058.40		0.00
11.4	6 mm cement plaster of mix :				
	1:3 (1 cement : 3 fine sand)	sqm	194.40		0.00
11.5	Providing and applying white cement based putty of average thickness 1 mm, of approved brand and manufacturer, over the plastered wall surface to prepare the surface even and smooth complete.	sqm	10310.40		0.00
11.6	18 mm cement plaster in two coats under layer 12 mm thick cement plaster 1:5 (1 cement : 5 coarse sand) and a top layer 6 mm thick cement plaster 1:3 (1 cement : 3 coarse sand) finished rough with sponge.	sqm	4832.78		0.00
11.7	Pointing on stone work with cement mortar 1:3 (1 cement : 3 fine sand) :				
	Flush/ Ruled pointing	sqm	18.00		0.00
11.8	Applying one coat of water thinnable cement primer of approved brand and manufacture on wall surface :				
	Water thinnable cement primer	sqm	12322.68		0.00
11.9	Finishing walls with textured exterior paint of required shade :				
	New work (Two or more coats applied @ 3.28 ltr/10 sqm) over and including priming coat of exterior primer applied @ 2.20kg/10 sqm	sqm	4832.78		0.00
11.10	Painting with synthetic enamel paint of approved brand and manufacture of required colour to give an even shade :				
	Two or more coats on new work over an under coat of suitable shade with ordinary paint of approved brand and manufacture	sqm	320.76		0.00
11.11	Wall painting with premium acrylic emulsion paint of interior grade, having VOC (Volatile Organic Compound) content less than 50 grams/ litre of approved brand and manufacture, including applying additional coats wherever required to achieve even shade and colour.				

	Two or more coats on new work	sqm	5477.62		0.00
	Total for Finishing Work				**0.00**
12	**SECTION-12:ALUMINIUM WORKS**				
12.1	Providing and fixing aluminium work for doors, windows, ventilators and partitions with extruded built up standard tubular sections/ appropriate Z sections and other sections of approved make conforming to IS: 733 and IS: 1285, fixing with dash fasteners of required dia and size, including necessary filling up the gaps at junctions, i.e. at top, bottom and sides with required EPDM rubber/ neoprene gasket etc. Aluminium sections shall be smooth, rust free, straight, mitred and jointed mechanically wherever required including cleat angle, Aluminium snap beading for glazing / paneling, C.P. brass / stainless steel screws, all complete as per architectural drawings and the directions of Engineer-in-charge. (Glazing, paneling and dash fasteners to be paid for separately) :				
	For Fixed portions				
	Powder coated aluminium (minimum thickness of powder coating 50 micron)	Kg	1496.88		0.00
12.2	Providing and fixing double action hydraulic floor spring of approved brand and manufacture conforming to IS : 6315, having brand logo embossed on the body / plate with double spring mechanism and door weight upto 125 kg, for doors, including cost of cutting floors, embedding in floors as required and making good the same matching to the existing floor finishing and cover plates with brass pivot and single piece M.S. sheet outer box with slide plate etc. complete as per the direction of Engineer-in-charge.				
	With stainless steel cover plate minimum 1.25 mm thickness	each	79.20		0.00
12.3	Filling the gap in between aluminium frame & adjacent RCC/ Brick/ Stone work by providing weather silicon sealant over backer rod of approved quality as per architectural drawings and direction of Engineer-in-charge complete.				
	Upto 5mm depth and 5 mm width	Meter	158.90		0.00
	Total for Aluminium Works				**0.00**
13	**SECTION-13:WATER PROOFING**				

13.1	Providing and laying in situ seven course water proofing treatment with APP (Atactic Polypropylene) modified Polymeric memberane over roof consisting of first coat of bitumen primer @ 0.40 litre per sqm, 2nd, 4th & 6th courses of bonding material @ 1.20 kg/sqm, which shall consist of blown type bitumen of grade 85/25 conforming to IS : 702, 3rd and 5th layers of roofing membrane APP modified Polymeric membrane 2.0 mm thick of 3.00 Kg/sqm weight consisting of five layers prefabricated with centre core as 100 micron HMHDPE film sandwiched on both sides with polymeric mix and the polymeric mix is protected on both side with 20 micron HMHDPE film. 7th, the top most layer shall be finished with brick tiles of class designation 10 grouted with cement mortar 1:3 (1 cement : 3 fine sand) mixed with 2% integral water proofing compound by weight of cement over a 12 mm layer of cement mortar 1:3 (1 cement : 3 fine sand) and finished neat (item of laying brick tiles shall be paid for separately).	sqm	20.25		0.00
13.2	Providing and laying integral cement based water proofing treatment including preparation of surface as required for treatment of roofs, balconies, terraces etc consisting of following operations:				
	(a) Applying a slurry coat of neat cement using 2.75 kg/sqm of cement admixed with water proofing compound conforming to IS. 2645 and approved by Engineer-in-charge over the RCC slab including adjoining walls upto 300 mm height including cleaning the surface before treatment.				
	(b) Laying brick bats with mortar using broken bricks/brick bats 25 mm to 115 mm size with 50% of cement mortar 1:5 (1 cement: 5 coarse sand) admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge over 20 mm thick layer of cement mortar of mix 1:5 (1 cement :5 coarse sand) admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge to required slope and treating similarly the adjoining walls upto 300 mm height including rounding of junctions of walls and slabs.				
	(c) After two days of proper curing applying a second coat of cement slurry using 2.75 kg/ sqm of cement admixed with water proofing compound conforming to IS : 2645 and approved by Engineerin- charge				

	(d) Finishing the surface with 20 mm thick jointless cement mortar of mix 1:4 (1 cement :4 coarse sand) admixed with water proofing compound conforming to IS : 2645 and approved by Engineerin- charge including laying glass fibre cloth of approved quality in top layer of plaster and finally finishing the surface with trowel with neat cement slurry and making pattern of 300x300 mm square 3 mm deep.				
	e) The whole terrace so finished shall be flooded with water for a minimum period of two weeks for curing and for final test.“All above operations to be done in order and as directed and specified by the Engineer-in-Charge :				
	With average thickness of 120 mm and minimum thickness at khurra as 65 mm.	sqm	90.00		0.00
	Total for waterproofing				**0.00**
14	**SECTION-14:ROAD WORKS**				
14.1	Preparation and consolidation of sub grade with power road roller of 8 to 12 tonne capacity after excavating earth to an average of 22.5 cm depth, dressing to camber and consolidating with road roller including making good the undulations etc. and re-rolling the sub grade and disposal of surplus earthwith lead upto 50 metres.	Sqm	843.75		0.00
14.2	Supplying and stacking at site.				
	90 mm to 45 mm size stone aggregate	Cum	84.38		0.00
14.3	63 mm to 45 mm size stone aggregate	Cum	84.38		0.00
14.4	Over burnt (Jhama) brick aggregate 120 mm to 40 mm	Cum	42.19		0.00
14.5	Over burnt (Jhama) brick aggregate 90 mm to 45 mm	Cum	42.19		0.00
14.6	Stone screening 13.2 mm nominal size (Type A)	Cum	42.19		0.00
14.7	Red bajri	Cum	42.19		0.00
14.8	Dry stone pitching 22.5 cm thick including supply of stones and preparing surface complete.	Sqm	337.50		0.00
14.9	Fencing with angle iron post placed at required distance embedded in cement concrete blocks, every 15th post, last but one end post and corner post shall be strutted on both sides and end post on one side only and provided with horizontal lines and two diagonals interwoven with horizontal wires, of barbed wire weighing 9.38 kg per 100 m (minimum), between the two posts fitted and fixed with G.I. staples, turn buckles etc. complete. (Cost of posts, struts, earth work and concrete work to be paid for separately). Payment to be made per metre cost of total length of barbed wire used.				
	With G.I. barbed wire	Metre	19800.00		0.00

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14.10	Supplying at site Angle iron post & strut of required size including bottom to be split and bent at right angle in opposite direction for 10 cm length and drilling holes upto 10 mm dia. etc. complete	Kg	3965.76		0.00
14.11	Providing and fixing concertina coil fencing with punched tape concertina coil 600 mm dia 10 metre openable length (total length 90 m), having 50 nos rounds per 6 metre length, upto 3 m height of wall with existing angle iron 'Y' shaped placed 2.4m or 3.00 m apart and with 9 horizontal R.B.T. reinforced barbed wire, stud tied with G.I. staples and G.I. clips to retain horizontal, including necessary bolts or G.I. barbed wire tied to angle iron, all complete as per direction of Engineer-in-charge, with reinforced barbed tape(R.B.T.) / Spring core (2.5mm thick) wire of high tensile strength of 165 kg/ sq.mm with tape (0.52 mm thick) and weight 43.478 gm/ metre (cost of M.S. angle, C.C. blocks shall be paid separately)	Metre	990.00		0.00
	Total for ROAD WORK				**0.00**
15	**SECTION-15:HORTICULTURE WORKS**				
15.1	Supplying and stacking of good earth at site including royalty and carriage upto 5 km lead complete (earth measured in stacks will be reduced by 20% for payment).	Cum	270.00		0.00
15.2	Supplying and stacking at site dump manure from approved source, including carriage upto 5 km lead complete (manure measured in stacks will be reduced by 8% for payment) :				
	Screened through sieve of I.S. designation 20 mm	Cum	270.00		0.00
15.3	Fine dressing of the ground.	Sqm	1350.00		0.00
15.4	Spreading of sludge, dump manure and/or good earth in required thickness as per direction of officer-in-charge (cost of sludge, dump manure and/ or good earth to be paid separately).	Cum	540.00		0.00
15.5	Grassing with selection No. 1/ Doob grass including watering and maintenance of the lawn for 30 days or more till the grass forms a thick lawn, free from weeds and fit for mowing including supplying good earth, if needed (the grass and good earth shall be paid for separately).				
	With grass Turf	Sqm	1350.00		0.00
	Total for Horticulture				**0.00**
16	**Glass & Furniture**				

16.1	Providing and fixing 12 mm thick frameless toughened glass door shutter of approved brand and manufacture, including providing and fixing top & bottom pivot & double action hydraulic floor spring type fixing arrangement and making necessary holes etc. for fixing required door fittings, all complete as per direction of Engineer-incharge (Door handle, lock and stopper etc.to be paid separately).	Sqm	150.66		0.00
16.2	Providing and fixing 12 mm thick frameless toughened glass door shutter of approved brand and manufacture, including providing and fixing top & bottom pivot & double action hydraulic floor spring type fixing arrangement and making necessary holes etc. for fixing required door fittings, all complete as per direction of Engineer-incharge (Door handle, lock and stopper etc.to be paid separately).	Each	9.00		0.00
	TOTAL FOR ITEMS				**0.00**
	GRAND TOTAL OF CIVIL WORKS				**0.00**

Ref: ITI/NSU/CIVIL-DEL/2023/0106/01					**Date 15-03-2023**
ITI LMITED NETWORK SYSTEM UNIT DOORVANINAGAR, BANGALORE 560 016.					
BILL OF QUANATITY : ELECTRIC WORKS :- GROUP 5 (Kashmir), No. of Buildings are 9, Type-H.					
BIDDER'S NAME					
S. No.	**Description**	**Unit**	**Qty**	**RATE (RS.)**	**TOTAL AMOUNT**
1	**SUB-HEAD-I: CIRCUIT CUM POINT WIRING**				
1.1)	Wiring for light point/ fan point/ exhaust fan point/ call bell point with 1.5 sq.mm FRLS PVC insulated copper conductor single core cable in surface / recessed steel conduit, with modular switch, modular plate, suitable GI box and earthing the point with 1.5 sq.mm FRLS PVC insulated copper conductor single core cable etc. as required.				
a)	Group-C (Primary point)	Point	153		0.00
1.2)	Wiring for group controlled (looped) light point/fan point/exhaust fan point/ call bell point (without independent switch etc.) with 1.5 sq. mm FRLS PVC insulated copper conductor single core cable in surface/ recessed steel conduit, and earthing the point with 1.5 sq. mm FRLS PVC insulated copper conductor single core cable etc. as required				
a)	Group-C (looping point)	Point	108		0.00
1.3)	Supplying and fixing modular blanking plate on the existing modular plate & switch box excluding modular plate as required.	Each	90		0.00
1.4)	Supplying and fixing two module stepped type electronic fan regulator on the existing modular plate switch box including connections but excluding modular plate etc. as required.	Each	108		0.00
1.5)	Supplying and fixing suitable size GI box with modular plate and cover in front on surface or in recess, including providing and fixing 3 pin 5/6 A modular socket outlet and 5/6 A modular switch, connections etc. as required.	Each	234		0.00
1.6)	Supplying and fixing suitable size GI box with modular plate and cover in front on surface or in recess, including providing and fixing 6 pin 5/6 A & 15/16 A modular socket outlet and 15/16 A modular switch, connections etc. as required.	Each	288		0.00
1.7)	Wiring for circuit/ submain wiring along with earth wire with the following sizes of FRLS PVC insulated copper conductor, single core cable in surface/ recessed medium class PVC conduit as required				
a)	2 X 1.5 sq. mm + 1 X 1.5 sq. mm earth wire For 6A Light Circuit Point	Metre	900		0.00

b)	2 X 2.5 sq. mm + 1 X 2.5 sq. mm earth wire For Switch Board Circuit.	Metre	1687.5		0.00
c)	2 X 4 sq. mm + 1 X 4 sq. mm earth wire For 6A and 16A Power Circuit Point	Metre	10440		0.00
d)	4 X 10 sq. mm + 2 X 6 sq. mm earth wire For Light DB Submain wire	Metre	450		0.00
e)	4 X 16 sq. mm + 2 X 6 sq. mm earth wire For PDB Submain wire	Metre	900		0.00
f)	2 X 10 sq. mm + 1 X 6 sq. mm earth wire For UPSDB/IDB/All SPN LPDB Submain wire	Metre	5220		0.00
1.8)	Providing and fixing 6 SWG dia G.I. wire on surface or in recess for loop earthing along with existing surface/ recessed conduit/submain wiring/ cable as required.	Metre	900		0.00
	SUB-HEAD-1 TOTAL CARRIED TO SUMMARY				**0.00**
2	**SUB-HEAD-II:- DISTRIBUTION BOARDS**				
2.1)	Supplying and fixing following way, single pole and neutral, sheet steel, MCB distribution board, 240 V, on surface/ recess, complete with tinned copper bus bar, neutral bus bar, earth bar, din bar, interconnections, powder painted including earthing etc. as required. (But without MCB/RCCB/Isolator)				
a)	8Way ,Double door	Each	72		0.00
b)	12Way ,Double door	Each	27		0.00
2.2)	Supplying and fixing following way, horizontal type three pole and neutral, sheet steel, MCB distribution board, 415 V, on surface/ recess, complete with tinned copper bus bar, neutral bus bar, earth bar, din bar, interconnections, powder painted including earthing etc. as required. (But without MCB/RCCB/Isolator)				
a)	4 way (4 + 12), Double door	Each	9		0.00
2.3)	Supplying and fixing following ways, surface/recess mounting ,Verticl type 415V ,TPN MCB distribution board of sheet steel,dust protected duly powder painted ,inclusive of 200A tinned copper bus bar ,common neutral link, earth bar, din bar, for mounting MCBs etc. as required. (But without MCB/Incomer) as required.(Note Vertical type MCB TPDB is normally used where 3phase outlets are required.)				
a)	12 way (4 + 36), Double door	Each	18		0.00
2.4)	Supplying and fixing 5 A to 32 A rating, 240/415 V, 10 kA, “C” curve, miniature circuit breaker suitable for inductive load of following poles in the existing MCB DB complete with connections, testing and commissioning etc. as required.				
a)	Single pole (6/32 Amps)	Each	1116		0.00
2.5)	Supplying and fixing single pole blanking plate in the existing MCB DB complete etc. as required.	Each	90		0.00

2.6)	Supplying and fixing following rating, double pole, 240 V, isolator in the existing MCB DB complete with connections, testing and commissioning etc. as required.				
a)	40A	Each	90		0.00
b)	63A	Each	18		0.00
2.7)	Supplying and fixing following rating, four pole, 415 V, isolator in the existing MCB DB complete with connections, testing and commissioning etc. as required.				
a)	40A	Each	9		0.00
b)	63A	Each	18		0.00
2.8)	Supplying and fixing following rating, double pole, (single phase and neutral),240 V, residual current circuit breaker (RCCB) having a sensitivity current 30mA in the existing MCB DB complete with connections, testing and commissioning etc. as required.				
a)	40A	Each	90		0.00
b)	63A	Each	18		0.00
2.9)	Supplying and fixing following rating, four pole, (three phase and neutral),415 V, residual current circuit breaker (RCCB) having a sensitivity current 30mA in the existing MCB DB complete with connections, testing and commissioning etc. as required.				
a)	40A	Each	9		0.00
b)	63A	Each	18		0.00
2.10)	Providing and fixing M.V. danger notice plate of 200 mm X 150 mm, made of mild steel, at least 2 mm thick, and vitreous enameled white on both sides, and with inscription in single red colour on front side as required.	Each	135		0.00
	SUB-HEAD-II TOTAL CARRIED TO SUMMARY				**0.00**
3	**SUB-HEAD - Ill :- CONDUITING WIRING AND CABLING FOR TELEPHONE / TV NETWORK SYSTEM**				
3.1)	Supplying and fixing of following sizes of medium class PVC conduit along with accessories in surface/recess including cutting the wall and making good the same in case of recessed conduit as required.				
a)	20mm	Meter	450		0.00
b)	25mm	Meter	450		0.00
c)	32mm	Meter	225		0.00
3.2)	Supplying and fixing following modular switch/ socket on the existing modular plate & switch box including connections but excluding modular plate etc. as required.				

a)	Telephone socket outlet	Each	9		0.00
b)	TV antenna socket outlet	Each	9		0.00
c)	RJ-45 face plate(computer line) with shutter DN-460	Each	9		0.00
3.3)	Supplying and fixing following size/ modules, GI box alongwith modular base & cover plate for modular switches in recess etc. as required.				
a)	1 or 2 Module (75mmX75mm)	Each	9		0.00
3.4)	Providing, fixing connecting and testing of solder less telephone Tag block of following capacity ties as required in suitable size of m.s. hinged lockable cover box duly painted etc. as required of Krone type.				
a)	10 pair Tele Tag Blk	Each	9		0.00
3.5)	Supplying drawing, connecting and testing of 0.61mm dia annealed copper conductor PVC insulated PVC sheathed telephone Wire/cables in Existing PVC conduit or a racks as required.				
a)	2 pair Telephone cable.	Meter	9		0.00
b)	4 pair Telephone cable	Meter	9		0.00
3.6)	Supplying and drawing co-axial TV cable RG-6 grade, 0.7 mm solid copper conductor PE insulated, shielded with fine tinned copper braid and protected with PVC sheath in the existing surface/ recessed steel/ PVC conduit as required.	Meter	9		0.00
3.7)	Providing, fixing connecting and testing of solder less Television Junction Box of following capacity ties as required in suitable size of m.s. hinged lockable cover box duly painted etc. as required of Krone type.				
a)	2 pair T.V Junction Box.	Each	9		0.00
3.8)	Supplying and drawing of UTP 4 pair CAT 6 LAN Cable in the existing surface/ recessed steel/ PVC conduit as required.				
a).	**1Run of cable**	Meter	9		0.00
3.9)	Supplying and fixing metal box of following sizes (nominal size) on surface or in reces with suitable size of phenolic laminated sheet cover in front including painting etc as required.				
a)	75 mm x 75 mm x 60 mm deep	Each	9		0.00
b)	100 mm x 100 mm x 60 mm deep	Each	9		0.00
	SUB-HEAD-Ill TOTAL CARRIED TO SUMMARY				**0.00**
4	**SUB-HEAD-lV:- SUPPLY OF LIGHTING FIXTURES.**				

4.1)	Supplying, installing, Fixing, testing and commissioning of **1 X 20W LED single tube Surface mounted fixture** & all accessories as required.	Each	36		0.00
4.2)	Supplying, installing, Fixing, testing and commissioning of **1 X 10W LED mirror light Surface mounted fixture** & all accessories as required.	Each	18		0.00
4.3)	Supplying, installing, Fixing, testing and commissioning of **1 X 10W LED Surface mounted fixture** & all accessories as required.	Each	18		0.00
4.4)	Supplying, installing, Fixing, testing and commissioning of 1**X 36W LED single tube** Surface mounted fixture & all accessories as required.	Each	189		0.00
4.5)	Supplying, installing, Fixing, testing and commissioning of **1200 mm Sweep Celling Fan** all accessories as required.	Each	108		0.00
4.6)	Supplying, installing, Fixing, testing and commissioning of **600 mm Sweep Celling Fan** all accessories as required.	Each	9		0.00
4.7)	Supplying, installing, Fixing, testing and commissioning of **Heavy Duty Exhaust fan 450 mm sweep** all accessories as required	Each	36		0.00
4.8)	Supplying, installing, Fixing, testing and commissioning of **Heavy Duty Exhaust fan 300/305 mm sweep** all accessories as required	Each	27		0.00
4.9)	Supplying, installing, Fixing, testing and commissioning of security light having 80 watt LED street light/road light luminaire type efficiency energy saving dia cast aluminium roadway luminaire with high power complete with connections fittings and including connecting with twin core 2.5 sqmm weather proof aluminium conductor cable complete set, street light brackets made out of GI tubing, light grade 40 mm bore 1200mm long bend to shape at 120 degree, fixed on pole by providing MS clamp made up of flat iron 50x6mm including bolts nuts ans washers of suitable size complete. Fixed upon steel tublar pole type 410 sp31 (9.00 mtr lng) with complete base plate, taper plug, bolts, nuts and screws etc duly painted internally and externally with metal oxide anti corrosive paint before erection and painting with two coats aluminium paint after erection complete all as confirming to IS 2713 (part-1 to 111) and complete.	Each	9		0.00

4.10)	Supplying, installing, Fixing, testing and commissioning of security light having 80 watt LED street light/road light luminaire type efficiency energy saving dia cast aluminium roadway luminaire with high power complete with connections fittings and including connecting with twin core 2.5 sqmm weather proof aluminium conductor cable complete set, street light brackets made out of GI tubing, light grade 40 mm bore 1200mm long bend to shape at 120 degree, fixed on pole by providing MS clamp made up of flat iron 50x6mm including bolts nuts ans washers of suitable size complete. Fixed upon steel tublar pole type 410 sp31 (9.00 mtr lng) with complete base plate, taper plug, bolts, nuts and screws etc duly painted internally and externally with metal oxide anti corrosive paint before erection and painting with two coats aluminium paint after erection complete all as confirming to IS 2713 (part-1 to 111) and complete.	Each	9		0.00
4.11)	Supplying, installing, Fixing, testing and commissioning of security light AIO is made with High Efficiency Mono Crystalline Solar PV Module, Lithium Ferro Phosphate battery with in-built BMS technology, High Efficacy LED, MPPT Solar Charge Controller and Aluminium Extruded body, specially designed Intelligent microwave sensor to control the dimming and brightness of light leads to extend working time. Multi-angle adjustable light module and Light Arm suitable for installation in different latitude regions. The Adjustable range of light source is -20º to +20º and the adjustable range for rotating the arm is -90º to +90º. wattage 60w having system lumen of 5000 lumen, Havells cat No: SOLAR AIO ALFA 60 W or Equivalent to Philips with connections fittings and including connecting with twin core 2.5 sqmm weather proof aluminium conductor cable complete set, street light brackets made out of GI tubing, light grade 40 mm bore 1200mm long bend to shape at 120 degree, fixed on pole by providing MS clamp made up of flat iron 50x6mm including bolts nuts ans washers of suitable size complete. Fixed upon steel tublar pole type 410 sp31 (9.00 mtr lng) with complete base plate, taper plug, bolts, nuts and screws etc duly painted internally and externally with metal oxide anti corrosive paint before erection and painting with two coats aluminium paint after erection complete all as confirming to IS 2713 (part-1 to 111) and complete.	Each	9		0.00
	SUB-HEAD - IV TOTAL CARRIED TO SUMMARY				**0.00**
5	**SUB-HEAD-V:- AIR CONDITIONING**				

5.1)	Supply & Installation high wall split units indoor/outdoor complete with cordless remote control unit and within build air ionizer and plasma filter for better indoor air quality with minimum 5-star rating and EER 3.2 of capacity 2 TR with complete set, including Supply and fixing bracket and clamps heady duty for outdoor unit of split type AC complete all as specified and directed.Air conditioning units will be having heating facilities, which will be supplied to wherever temperature is below the normal temperature				
	2.0 TR Hi Wall Unit (Invertor Units with 5 Star Rating)	Each	36		0.00
5.2)	Supply and fixing voltage stabilizer for automatic operation, single phase, naturally air cooled indoor type and designed for input variation between 110V to 250V with output voltage stabilizer at 230 with accuracy of + 2.5 % and capacity of 5 KVA.	Each	36		0.00
	SUB-HEAD - IV TOTAL CARRIED TO SUMMARY				**0.00**
6	**SUB HEAD- VI : EARTHING**				
6.1)	Earthing with G.I. earth plate 600 mm X 600 mm X 6 mm thick including accessories, and providing masonry enclosure with cover plate having locking arrangement and watering pipe of 2.7 metre long etc. with charcoal/ coke and salt as required.	Set	27		0.00
6.2)	Earthing with copper earth plate 600 mm X 600 mm X 3 mm thick including accessories, and providing masonry enclosure with cover plate having locking arrangement and watering pipe of 2.7 metre long etc. with charcoal /coke and salt as required.	set	27		0.00
6.3)	Supplying and laying 6 SWG G.I. wire at 0.50 metre below ground level for conductor earth electrode, including connection/ termination with GI thimble etc. as required.	RM	270		0.00
6.4)	Providing and fixing 25 mm X 5 mm G.I. strip in 40 mm dia G.I. pipe from earth electrode including connection with G.I. nut, bolt, spring, washer excavation and re-filling etc. as required.	RM	180		0.00
6.5)	Providing and fixing 25 mm X 5 mm G.I. strip on surface or in recess for connections etc. as required.	RM	9		0.00
6.6)	Providing and fixing 25 mm X 5 mm copper strip in 40 mm dia G.I. pipe from earth electrode including connection with brass nut, bolt, spring, washer excavation and re-filling etc. as required	RM	90		0.00

6.7)	Supply, Installation, Testing and commissioningof maintenance free earthing system. The earthing set shall comprise of (i) 1 No of copper bonded rod of diameter 17.2mm and length of 10 feet UL approved with 25 KA current discharge test from CPRI. The material shall be low carbon high tensile copper bonded rods with 99.9% of copper on the surface. The UL approval certificate shall be provided. (ii) 30 kg of earth enhance compound as per IEC 62561-7. There should not be requirement of any salt and charcoal. The RoHS certificate shall be provided from any NABL accredited labs for earth enhancement material. (iii) 1 No of copper busbar of size 25x6x150mm should be exothermic welded with copper bounded rod 17.2 mm dia x 3 mtr length. (iv) 1 No of PVC pit cover for covering of earthing. (v) Exothermic connection of 25x6x150mm busbar to 35 Sqmm copper cable. (vi) 35Sqmm PVC insulated copper cable for interconnection of earthingand Equipment.	set	27		0.00
	SUB-HEAD - VI TOTAL CARRIED TO SUMMARY				**0.00**
7	**SUB HEAD- VIII : EXTERNAL CABLING AND CABLE END TERMINATION**				
7.1)	Supplying and laying of following size DWC HDPE pipe ISI marked along with all accessories like socket, bend, couplers etc. conforming to IS 14930, Part II complete with fitting and cutting, jointing etc..direct in ground (75 cm below ground level) including excavation and refilling the trench but excluding sand cushioning and protective covering Earthing etc., complete as required. (For External lighting)				
	63 mm dia (OD-63 mm & ID-51 mm nominal)	Metre	270		0.00
7.2)	Supplying of following 1100 volt grade XLPE insulated PVC sheathed copper conductor armoured cables				
	3.5C X 120 sq. mm Al. Ar. Cable For Incoming Power Supply	Metre	180		0.00
	3.5 core 50 sq. mm Cu.Cond.Ar.Cable.	Metre	180		0.00
	3core 6 sq. mm	Metre	900		0.00
7.3)	Supplying and making end termination with brass compression gland and copper lugs for following size of PVC insulated and PVC sheathed / XLPE aluminium conductor cable of 1.1 KV grade as required.				
	3.5C X 120 sq. mm Al. Ar. Cable For Incoming Power Supply	Nos.	18		0.00
	3.5 core 50 sq. mm Cu.Cond.Ar.Cable.	Nos.	18		0.00
	3core 6 sq. mm	Nos.	306		0.00
7.4)	Laying of one number PVC inulated and PVC sheathed/XLPE power cable of 1.1KV grade of following size direct in ground including excavation,sand cushioning,protective covering and refilling the trench etc. as required. . (For External lighting/power cable)				

a)	Up to 35 sq. mm	Metre	450		0.00
b)	Above 35sqmm and up to 95sqmm	Metre	180		0.00
c)	Above 95sqmm and up to 185sqmm	Metre	180		0.00
	SUB-HEAD - VII Total of Sub Head carried to Summary				**0.00**
8	**SUB HEAD- IX FEEDER PILLAR PANEL**				
8.1)	SITC Of free standing suitable for out door installation dust & vermin proof feeder pillar made out of CRCA sheet ,required hard ware,duly painted by either two coats of zink /red oxide primer followwed by two coats of synthetic enmel paint for powder coating in grey or required shade . The feeder pillar having Neoprene rubber gasket of not less than 3mm thickness,hingled door with locking arrangement,gland plate.Thickness of sheet shall not be less than 2mm.Sheet metal works shall be processed with seven tank process,200A TPN 415V Electrolytic Cu Conductor bus bar with 100% Neutral (Fixed on 50x50x6mm thick MS Angle iron frame& covered with sheet metal from all sides)and having the following components.				
	Incoming :				
	One (1) No. 63A 4P MCCB (25KA)				
	3 Nos of LED type phase indicating lamps (RYB) with controlled by 2Amp MCB .				
	1 No.6A, 2 pole Auto/OFF/Manual (2 way with OFF) selector switch.				
	2 Nos. of push button actuator				
	Busbar :				
	Electrolytic high conductivity Copper three pole and 100%neutral bus bars rated at 200 amps having a maximum current density of 1 amp per sq mm insulated with heat shrinkable PVC sleeves & SMC/DMC supports.				
	Outgoings :				
	Three (3) Nos. 10 A-32A DP 10KA MCBs. with 10A-32A DP contactor (AC 1 Category with 230V Control Coil) using 1 No. 24 hour astronomical time switch on Auto/Manual arrangement with Auto/Manual selection switch, ON/OFF Push Buttons, Indication lamps & Control fuses etc .				
	Three (3) Nos. 32 A DP 10KA MCBs.				
	Full Set as above				
	Feedder pillar as described above	Set	9		0.00
8.2)	**MAIN ELECTRICAL PANEL FOR BUILDING BLOCK**				

	Designing, fabrication, supply, installation, testing and commissionings of front operated cubicle type compartmentalised, front access, free standing on 75MM "[" MS channel, dust and vermin proof (IP 42 degree protection) panel suitable for use at 415V, 3 phase, 4-wire 50Hz system suitable for fault level of required value symmetrical at 415V fabricated from 2mm thick CRCA MS sheets with hinged, gaskettted (Metal based neoprene) locable doors having structural reinforcement including 3mm thick gland plates on top and bottom, lifting hooks, GI earth strip of required size with 2 nos earth terminals, 2 nos 230V AC operated 250mm X 250mm size axial fans for exhaust of heat with On-Off toggle switches including 2 coated primer and 2 powder coated paint fnish of approved shade over metal surface cleaned and treated with seven tank process complete with interconnections etc as per specifications as required.main panel board should be CPRI Approved.				
	Panel shall have provision for entry of cables from the top or bottom through Cable Alley. All live accessible parts shall be shrouded and all equipment shall be finger touch proof. The busbars insulation shall be with heat shrinkable sleeves SMC/DMC shrouds and busbar supports shall be used. Padlocking facility shall be provided on all outgoing feeders doors and switch handles shall be locable in OFF position.				
	Suitable arrangement shall be made for termination of multiple incoming cables.				
	INCOMER				
	1 No. 250 Amp four pole MCCB with microprocessor Release O/L,S/C,E/F protection+ Spreder+Extended rotary handle. Moulded Case Circuit Breaker (Ics =100% Icu,36 KA).				
	Enclosure				
	Fabrication 400 Amps, TPN Electrolytic grade Aluminium Bus Bar (Ambient temperature 45° C, temperature rise limited to 40° C above ambient), PVC sleeving, control wiring, necessary hardware. for LT Panel as well as for functioning of Single / multi functioning Energy Meters.capacitors (Each vertical bay shall be equipped with space heater + thermostat, door switch illumination lamp all duly wired) **Space to be provided for Harmonic Filters to be installed in Future if required.For selecting the bus bar size 0.7 derating factor to be considered.**				
	INSTRUMENTS & ACCESSORIES				
	1 No. 96x96 MFM with 3Nos 250/5A CTs for 3 phase, 4 wire operation with LED display and selector switch with controlled by 3 sets of 2Amp MCB				
	3 Nos of LED type phase indicating lamps (RYB) with controlled by 2Amp MCB .				
	1 No.6A, 2 pole Auto/OFF/Manual (2 way with OFF) selector switch.				
	2 Nos. of push button actuator				

	OUTGOING				
	1 Nos.40A FP MCB For 4Way TPN DB				
	2Nos.63A FP MCB For 12Way TPN DB				
	9 Nos.40A DP MCB For 8Way/12Way SPN DB				
	1 Nos.63A FP MCCB For External Lighting feeder pillar				
	SPARE				
	1 Nos.40A FP MCB For 4Way TPN DB				
	1Nos.63A FP MCB For 12Way TPN DB				
	1 Nos.40A DP MCB For 8Way/12Way SPN DB				
	MAIN ELECTRICAL PANEL FOR BUILDING BLOCK as described above	Set	9		0.00
	SUB-HEAD - IX Total of Sub Head carried to Summary				**0.00**
9	**SUB HEAD- X Lightning Protection & Earthing System(LIGHTNING PROTECTION AS PER IEC 62305 / IS IEC 62305 AT LVL -I)(5X5MTR)**				
9.1	Supplying, Installation, Testing and commissioning of Vertical Aluminium Lighting Arrester of 16MM dia, 1000 mm long with Gun Metal base plate . Model : APSAT116AL+APSTB16-253 Make : APS	Nos.	54		0.00
9.2	Supplying, Installation, Testing and commissioning 8 mm round aluminium conductor for horizontal lightning protection - run in roof. Model : AL8. Make :APS	Mtr.	1800		0.00
9.3	SITC of roof conductor holder for 8 mm round aluminium conductor made of Gun Metal for horizontal installation. The distance between each holder should be min of 1 mtr. Model : APSRCS50. Make : APS	Nos.	1800		0.00
9.4	Supplying, Installation, Testing and commissioning of **T connector** for connecting of 8 mm Al round conductor . The connector should be of Gun Metal with SS nuts and bolt. Model : APSTCRC50 , Make :APS	Nos.	153		0.00
9.5	Supplying, Installation, Testing and commissioning of **Cross connector** for connecting of 8 mm Al round conductor . The connector should be of Gun Metal with SS nuts and bolt. Model : APSCCRC50 , Make : APS	Nos.	27		0.00
9.6	Supplying, Installation, Testing and commissioning of Expansion piece along with connector to compensate the expansion of round 8 mm Al conductor when temperature variation . Connection should be in every 20 mtr. Model : APSEXP50 , Make : APS	Nos.	54		0.00
9.7	GLUE- Glue is used to fix roof conductor holder on roof.	Nos.	54		0.00
	DOWN CONDUCTOR & RING CONDUCTOR AS PER IEC 62305				

9.8	Supplying, Installation, Testing and commissioning of 8 mm round aluminium conductor as a down conductor mounted in the surface of wall which will carry the lightning current to earth pit. Model : AL8. Make : APS	Mtr.	270		0.00
9.9	SITC of Down conductor holder for 8 mm round aluminium conductor of min distance between the wall to the conductor will be of 50 mm. The distance between each holder should be min of 1 mtr. Model : APSRCS50 Make : APS	Nos.	270		0.00
9.10	Supplying, Installation, Testing and commissioning of straight connector for connecting of 8 mm Al round conductor . The connector should be of Aluminium with SS nuts and bolt. Model : APSPCRC50, Make : APS	Nos.	54		0.00
9.11	SITC of 7 digit lightning strike counter. Model - LSR2 Make - LPI	Nos.	54		0.00
9.12	Supplying, Installation, Testing and commissioning of Test Joint Point for 25X3MM CU STRIP , the size should be of 25 x 3 x 150 mm copper in ABS boxes. Model : APSTLBCU. Make : APS	Nos.	**90**		0.00
	EARTHING AS PER IEC 62561- 2 & 7				
9.13	Supplying, Installation, Testing and commissioning of advance chemical gel earthing system for the proper dissipation of fault / leakage current to the ground and ensure the continuous electrical connectivity and proper functioning to the electrical system. The earth rod shall be of UL listed & CPRI tested 3 meter long 17.2 mm dia 250 microns copper bonded steel rod with the connecting clamp (ss - rod to tape). The UL listed copper bonded rod also should be tested & ceritifed from CPRI for a short circuit current of 46 KA or more. The UL listing shall be punched / engraved on the rod for the physical verification at site. The engravings shall contain the following details - UL Control number, Dimension details of the rod, Product model number & UL certificate reference number as per detailed technical specification attached. To ensure the electrical conductivity, 50 Kgs (per pit) or more resistance grounding minerals per earth pit / earth rod shall be used along with the copper bonded rod. As per IEEE 80-2013 (Clause 14.5 d), the grounding minerals shall be tested & certified for the resistivity of less than 0.12 ohm-mtr. The grounding minerals should be ROHS certified to ensure it does not pollute the ground water as per technical specification attached.	Nos.	54		0.00
10.14	**GI STRIP(25X6 MM) :** FOR EARTHING INTERCONNECTION	Mtr.	900		0.00
	SUB-HEAD - X Total of Sub Head carried to Summary				**0.00**
10	**SUB HEAD- XI: SOLAR SYSTEMS**				

10.1)	Supply, installation, testing and comminsioning of 1 kw solar panel systems along with supplyinh, installaing, testing and comminsioning of 2 kw battery bank to store the energy generated from solar panels during the day and supplying the same to solar led lighting systems in the internal and external areas of the buildings and campus. The batteries shall be solar photo voltaic batteries of Tubular Gel type, low maintenance, lead Acid and made of hard rubber container. Storage batteries should conform IEC 61427 / IS 1651 / IS 133369 as per specifications. The batteries shall use 2 / 12V cells and battery capacity is to be designed at C10 rate with end cell cut off voltage of 1.85 V / cell.	Each	9		0.00
10.2)	Supply, installation, testing and comminsioning of (Flute plate collector) based on direct transfer of heat of capacity 200 LPD. Including all accessories are nonreturn cast copper alloy screwed down high pressure with crutch or butterfly handle screwed both and for iron pipes or union of as require size 15mm/20mm dia and including all accessories etc.	Each	9		0.00
	SUB-HEAD - XI Total of Sub Head carried to Summary				**0.00**
	GRAND TOTAL ELECTRIC WORKS				**0.00**

ITI LIMITED

ANIL KUMAR SRIVASTAVA
Digitally signed by ANIL KUMAR SRIVASTAVA
Date: 2023.03.16 17:31:10 IST

Ref: ITI/NSU/CIVIL-DEL/2023/0106/01			Date 15-03-2023		
ITI LMITED NETWORK SYSTEM UNIT DOORVANINAGAR, BANGALORE 560 016.					
BILL OF QUANATITY: PLUMBING WORKS :- GROUP 5 (Kashmir), No. of Buildings are 9, Type-H					
BIDDER'S NAME					
S.No.	**DESCRIPTION OF ITEM**	**UNIT**	**QTY**	**RATE**	**TOTAL AMOUNT**
1	**SUBHEAD - I : Internal Drainage (Rainwater, Soil, Waste & Fittings)**				
1.1	Providing and fixing on wall face unplasticised rigid pvc rain water **pipes** conforming to IS 13592 type a including jointing with seal ring conforming to IS 5382 leaving 10mm gap for thermal expansion (i) single socketed pipes				
	110mm diameter	Metre	144.00		0.00
1.2	Providing and fixing on wall face unplasticised PVC moulded **fittings/ accessories** for unplasticised rigid PVC rain water pipes conforming to IS 13592 type A including jointing with seal ring conforming to IS 5382 leving 10mm gap for thermal expansion				
	Coupler				
	110mm	Each	45.00		0.00
1.3	Single tee without door				
	110x110x110 mm	Each	27.00		0.00
1.4	Bend 87.5o				
	110mm bend	Each	27.00		0.00
1.5	Shoe (plain)				
	110mm shoe	Each	18.00		0.00
1.6	Providing and fixing unplasticised PVC **pipe clips** of approved design to unplasticised PVC rain water pipes by means of 50x50x50mm hard wood plugs screws with MS screws of required length including cutting brick work and fixing in cement mortar 1:4(1cement 4 coarse sand) and making good the wall etc. complete				
	110mm	Each	45.00		0.00
1.7	Providing and fixing to the inlet mouth of rain water pipe cast iron **grating** 15cm dia meter and weighing not less than 440 grams	Each	45.00		0.00
1.8	Providing & fixing stainless steel A ISI 304(18/8) kitchen sink as per I.S 13983 with C.I. brackets and stainless steel plug 40 mm including painting of fittings and brackets, cutting and making good the walls wherever required: Kitchen sink with drain board.				
	510x1040mm bowl depth 250mm	Each	9.00		0.00

1.9	Providing & fixing C.P. brass (Long body) bib cock of approved quality conforming to IS standerd and weight not less then 690 gms.				
	15 mm nominal bore	Each	54.00		0.00
1.10	Providing and fixing grease trap of approved quality & make and as per the direction of Engineering-charge.				
	Grease trap (1.6 LPS) Sise: 600(L) X 450(W) X 415(H) For Stall **(Make: Ashirvad)**	Each	9.00		0.00
1.11	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes having thermal stability for hot & cold water supply including all (CPVC) plain & brass threaded fittings including fixing the pipe with clamps at 1.00 m spacing. This includes jointing of pipes & fittings with one step CPVC solvent cement and testing of joints complete as per direction of engineer in charge.				
	Internal Work - Exposed on Wall				
	15 mm nominal outer dia Pipes	RM	36.00		0.00
1.12	20 mm nominal outer dia Pipes	RM	54.00		0.00
1.13	25 mm nominal outer dia Pipes	RM	18.00		0.00
1.14	32 mm nominal outer dia Pipes	RM	9.00		0.00
1.15	Providing and fixing Chlorinate Polyvinyl Chloride (CPVC) pipes having thermal stability for hot & cold water supply including all CPVC plain & brass threaded fittings i/c fixing the pipe with clamps at 1.00 m spacing. This including jointing of pipes & fittings with one step CPVC solvent cement and the cost of cutting chases and making good the the same including testing of joints complete as per direction of engineer in charge.				
	Concealed work including cutting chases and making good the walls etc.				
	15 mm nominal outer dia Pipes	RM	36.00		0.00
1.16	20 mm nominal outer dia Pipes	RM	162.00		0.00
1.17	25 mm nominal outer dia Pipes	RM	9.00		0.00
	TOTAL OF RAIN WATER PIPES AND FITTINGS CARRIED TO SUMMARY				**0.00**
2	**SUBHEAD- II MAN HOLE**				
2.1	Providing and laying non-pressure NP2 class (light duty) R.C.C. pipes with collars jointed with stiff mixture of cement mortar in the proportion of 1:2 (1 cement : 2 fine sand) including testing of joints etc. complete :				
	100 mm dia. R.C.C. pipe	RM	45.00		0.00
2.2	150 mm dia. R.C.C. pipe	RM	90.00		0.00

2.3	250 mm dia. R.C.C. pipe	RM	180.00		0.00
2.4	Providing, laying and jointing glazed stoneware pipes class SP-1 with stiff mixture of cement mortar in the proportion of 1:1 (1 cement : 1 fine sand) including testing of joints etc. complete :				
	100 mm diameter	RM	45.00		0.00
2.5	150 mm diameter	RM	180.00		0.00
2.6	Providing and laying cement concrete 1:5:10 (1 cement : 5 coarse sand : 10 graded stone aggregate 40 mm nominal size) up to haunches of S.W. pipes including bed concrete as per standard design :				
	100 mm diameter	RM	90.00		0.00
2.7	150 mm diameter	RM	180.00		0.00
2.8	250 mm diameter	RM	180.00		0.00
2.9	Constructing brick masonry manhole in cement mortar 1:4 (1 cement : 4 coarse sand) R.C.C. top slab with 1:2:4 mix (1 cement : 2 coarse sand : 4 graded stone aggregate 20mm nominal size), foundation concrete 1:4:8 mix (1 cement : 4 coarse sand : 8 graded stone aggregrate 40mm nominal size) inside plastering 12 mm thick with cement mortar 1:3 (1 Cement : 3 coarse sand) finished with floating coat of neat cement & making channels in cement concrete 1:2:4 mix (1 Cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) finished with a floating coat of neat cement complete as per standard design:				
	Inside size 90x80cm and 45cm deep including C.I. cover with frame (light duty) 455x610mm internal dimensions total weight of cover and frame to be not less than 38kg (weight of cover 23kg and weight of frame 15 kg)				
	With common burnt clay FPS (non modular) bricks of class designation 7.5	Each	36.00		0.00
2.10	Inside size 120x90cm and 90cm deep including C.I. cover with frame (medium duty) 500mm internal diameter, total weight of cover and frame to be not less than 116 kg (weight of cover 58 kg and weight of frame 58 kg)				
	With common burnt clay FPS (non modular) bricks of class designation 7.5.	Each	18.00		0.00
2.11	Extra for depth for manholes				
	Size 90x80 cm				
	With common burnt clay FPS (non modular) bricks of class designation 7.5	Metre	18.00		0.00
2.12	Size 120x90cm				
	With common burnt clay FPS (non modular) bricks of class designation 7.5	Metre	4.50		0.00
2.13	Providing and fixing square-mouth S.W. gully trap class SP1 complete with C.I. grating brick masonry chamber				

	with water tight C.I. cover with frame of 300 x300 mm size (inside) the weight of cover to be not less than 4.50 kg and frame to be not less than 2.70 kg as per standard design :				
	With common burnt clay F.P.S. (non modular) bricks of class designation 7.5	Each	9.00		0.00
2.14	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 50m.				
	All kinds of soil	Cum	135.00		0.00
2.15	Excavating trenches of required width for pipes, cables, etc including excavation for sockets, and dressing of sides, ramming of bottoms, depth upto 1.5 m including getting out the excavated soil, and then returning the soil as required, in layers not exceeding 20cm in depth, including consolidating each deposited layer by ramming, watering, etc. and disposing of surplus excavated soil as directed, within a lead of 50m.				
	Pipes. cables exceeding 80mm dia but not exceeding 300mm dia.	Metre	180.00		0.00
2.16	Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth: consolidating each deposited layer by ramming and watering, lead up to 50 m and lift upto 1.5 m	Cum	135.00		0.00
2.17	Providing orange colour safety foot rest of minimum 6mm thick plastic encapsulated as per IS : 10910 on 12mm dia steel bar conforming to IS : 1786 having minimum cross section as 23 mmx25mm and over all minimum length 263mm and width as 165mm with minimum 112 mm space between protruded legs having 2mm thread on top surface by ribbing or chequering besides necessary and adequate anchoring projections on tail length on 138mm as per standard drawing and suitable to with stand the bend test and chemical resistant test as per specification and having manufacture's permanent identification mark to be visible even after fixing, including fixing in manhole with 30x20x15 cm cement concrete block 1:3:6 (1cement : 3coarse sand : 6 graded stone aggregate 20 mm nominal size) complete as per design.	Each	180.00		0.00
	Constructing brick masonry road gully chamber 50x45x60 cm with bricks in cement mortar 1:4 (1 cement :4 coarse sand) including 500x450mm precast R.C.C. horizontal grating with frame complete as per standard design:				
	With common burnt clay F.P.S. bricks (non modular) of class designation 7.5	Each	18.00		0.00

2.18	Constructing brick masonry road gully chamber 45x45x77.5 cm with bricks in cement mortar 1:4 (1 cement :4 coarse sand) with precast R.C.C. vertical grating complete as per standard design:				
	With common burnt clay F.P.S. bricks (non modular) of class designation 7.5	Each	18.00		0.00
2.19	Providing, fixing, jointing and testing in position of ISI marked UV stabilized UPVC pipes for soil, waste and vent, Type-B as per IS : 13592 suitable for rubber ring joints, including all neccessary specials and fittings (confirming to IS:14735) i.e. bends, tees, junctions (with or without doors), reducers, WC connectors, couplers, cowels, clamps, rubber rings, clean outs etc. fixing at wall/ ceiling/ floor level supported by clamp & hangers etc. in concealed / inside duct / under floor & basement ceiling / external work etc. including chase cutting as required, excavation and back filling in all kind of soils, suspended from floor under false ceiling or embedding the pipes laid under floors / building in 75 mm. alround 1:2:4 cement concrete (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) including cost of shuttering for proper completion of the work, breaking and making good the walls and floors etc. after pipes have been duly laid and tested. The rubber ring shall confirm to IS:5382.				
	The Pipes will be supported with threaded G I rods & clamps on 50x50x5 mm slotted angle. The cost will include all support arrangements. The work includes commissioning of all pipes lines as per drawings and specifications and as directed by engg-in-charge at site.				
	75 mm outer dia	Metre	27.00		0.00
	110 mm outer dia	Metre	27.00		0.00
	160 mm outer dia	Metre	36.00		0.00
2.20	Providing, fixing, jointing and testing in position ISI marked (IS:4985) UPVC pipes of min 6 Kg/ Sqcm rating with fitting for waste pipe from fixtures to floor trap including reduces, enlarger, socket, couplers, bends, tees etc including fixing at wall/ ceiling level supported by clamp & hangers etc. cutting holes in wall/ floors/ slabs and making good the same with cement concrete 1:2:4 complete as required.				
	40mm outer dia	Metre	27.00		0.00
	50mm outer dia	Metre	27.00		0.00
	63mm outer dia	Metre	9.00		0.00
2.21	Providing & fixing UPVC **Floor trap** of self cleansing design with CP Jali complete in all respects. (Make : Supreme / Finolex / Prince).				
	a) 100 mm inlet and 100 mm outlet.				
	(with 127dia Glossy CP Grating Jayna				
	model no.RRB 127)	Each	9.00		0.00

	b) 100 mm inlet and 75 mm outlet.				
	(with 102 mm dia CP Glossy Grating Jayna				
	model no. RRB 102)	Each	9.00		0.00
2.22	Providing & fixing 110m x 50mm waste with PVC reducer including cutting chases in floor, cutting RCC slab complete as required.	Each	9.00		0.00
	TOTAL OF MAN HOLE CARRIED TO SUMMARY				**0.00**
3	**SUBHEAD -III PUMP**				
3.1	Providing & fixing fully submersible sump pumps for dewatering with C.I casing & shaft suitable for operation on 400 / 440 V,3 phase, pH 50 cycle A/C power supply.				
	Sump Pumps (For basement drainage)				
	Location - Inside Drainage sump with electrical panel & all controls, cyclic operation				
	2 pumps- both working during extra high level in sump.				
	Flow rate (each pump)=3 lps, head=12m.				
	Solid Handlling-15mm	Set	9.00		0.00
	Providing and fixing gun metal non- return valve of approved quality (screwed end) :				
	32 mm nominal bore	Each	9.00		0.00
3.2	Vertical				
	40 mm nominal bore	Each	9.00		0.00
3.3	Vertical				
	50 mm nominal bore	Each	9.00		0.00
	TOTAL OF PUMP CARRIED TO SUMMARY				**0.00**
4	**Subhead-IV: External Water Supply**				
4.1	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes having thermal stability for hot & cold water supply including all (CPVC) plain & brass threaded fittings. This includes jointing of pipes & fittings with one step CPVC solvent cement,trenching,refilling and testing of joints complete as per direction of engineer in charge. .				
	20 mm nominal outer dia Pipes	RM	90.00		0.00
4.2	25 mm nominal outer dia Pipes	RM	45.00		0.00
4.3	32 mm nominal outer dia Pipes	RM	45.00		0.00
4.4	40 mm nominal outer dia Pipes	RM	45.00		0.00
4.5	Providing and fixing gun metal gate valve with C.I. wheel of approved quality (screwed end) :				
	25 mm dia nominal bore	Each	9.00		0.00
4.6	20 mm dia nominal bore	Each	18.00		0.00
4.7	32 mm dia nominal bore	Each	18.00		0.00
4.8	40 mm dia nominal bore	Each	9.00		0.00
	TOTAL OF External Water Supply CARRIED TO SUMMARY				**0.00**

5	**Subhead-V: RAIN WATER HARVESTING PIT**				
5.1	Providing and constructing Rainwater harvesting pit of 2500 (Dia mm) X 2500mm (D) size (Internal) in overall size with inlet and outlet connection with upto 150mm from ground level 1st class brick 230mm thick in Cement mortar 1:4 (1 Cement : 4 Coarse sand) inside and outside 12mm thick plaster with Cement mortar 1:3 (1 Cement : 3 Coarse sand) with a floating coat of neat cement on inside surface. After 1500, depth 500mm thick border. C.I. (heavy duty) manhole cover 560mm (weight not less than 208 kg) including necessary excavation (all type SOIL hard-rock)backing filling, disposal of surplus earth, providing and fixing of C.I. manhole steps complete as per standard design.	Each	9.00		0.00
5.2	Boring/drilling bore well of required dia for casing / strainer pipe, by suitable method prescribed in IS:2800 (part-1) including collecting samples from different strata, preparing and submitting strata chart/bore log, including hire & running charges of all equipments, tools, plants & machineries required for the job, all complete as per direction of engineer-in-charge, upto 90 metre depth below ground level.				
	All type sof soil				
	350mm dia	Metre	108.00		0.00
5.3	Supplying, assembling, lowering and fixing in vertical position in bore well unplasticized PVC medium well screen (RMS) pipes with ribs, conforming to IS : 12818, including hire & labour charges, fittings & accessories etc, all complete, for all depths, as per direction of engineer-in-charge.				
	200mm nominal dia	Metre	108.00		0.00
5.4	Supplying & filling, sepreading & leveling stone boulders of size range 5cm to 20cm, in the recharge pit, in the required thickness, for all leads & lifts, all complete, for all depths, as per direction of engineer-in-charge.	Cum	45.00		0.00
5.4	Supplying & filling, sepreading & leveling gravels of size range 5mm to 10mm, in the recharge pit, over the existing layer of boulders, in the required thickness, for all leads & lifts, all complete, as per direction of engineer-in-charge.	Cum	45.00		0.00
5.6	Supplying & filling, sepreading & leveling coarse sand of size range 1.5mm to 20mm, in the recharge pit, in the required thickness over gravel layer, for all leads & lifts, all complete, as per direction of engineer-in-charge.	Cum	45.00		0.00
5.7	Providing and fixing Bail plug / Bottom plub of required dia to the bottom of pipe assembly of tubewell as per IS : 2800 (part -1)				
	200mm dia	Each	9.00		0.00

5.8	Providing and fixing in position pre-cast RCC manhole cover and frame of required shape & approved quality				
	EHD-35				
	Circular shape 560 mm internal diameter	Each	18.00		0.00
	TOTAL OF RAIN WATER HARVESTING CARRIED TO SUMMARY				**0.00**
6	**Subhead:- VI - Sanitary Fixtures**				
6.1	Providing & fixing of white vitreous china pedestal type water closet(European type) with seat and lid, 10 liter low level white viterous china flushing cistern C.P.flush bend with fittings & C.I.brackets ,40mm flush bend, overflow arrangment with specials of standard make and mosquito proof coupling of approved municipala design complete including painting of fittings and brackets, cutting and making good the wall and Floors wherever required:				
	W.C pan with ISI marked white solid plastic seat and lid.	Each	9.00		0.00
6.2	Providing & fixing wash basin with C.I. brackets, C.P brass pillar taps,32 mm C.P. brass waste of standard pattern, including painting of fittings and brackets,cutting and making good the walls wherever required:				
	White Vitreous China Wash basin size 550x400 mm with a pair of 15 mm C.P. brass pillar taps	Each	9.00		0.00
6.3	Providing and fixing PTMT towel ring trapezoidal shape 215 mm long, 200 mm wide with minimum distances of 37 mm from wall face with concealed fittings arrangement of approved quality and colour, weighing not less than 88 gms.	Each	9.00		0.00
6.4	Providing & fixing PTMT soap dish Holder having length of 138mm, breadth 102mm, height of 75mm with concealed fitting arrangements. Weighing not less than 106gms.	Each	9.00		0.00
6.5	Providing & fixing mirror of superior glass(of aproved quality) and of required shape and size with plastic moulded frame of approved make and shade with 6mm thick hard board backing:				
	Rectangular Shape 453x357mm	Each	9.00		0.00
6.6	Providing and fixing toilet paper holder :				
	C.P. brass	Each	9.00		0.00
6.7	Providing and fixing P.V.C waste pipe for sink or wash basin including P.V.C waste fitting complete .				
	Semi rigid pipe				
	a) 40 mm dia	Each	9.00		0.00
6.8	Providing and fixing C.P.brass bottle trap 32mm size bottle trap of approved quality & make as approved by Engineer-in-charge.	Each	9.00		0.00
6.9.	Providing and fixing P.V.C connection with brass union.				

	45cm length.				
	15mm nominal bore	Each	36.00		0.00
6.10	Providing and fixing C.P. bass angle valve for basin mixer and geyser points of approved quality conforming to I.S:8931.				
	15 mm nominal bore	Each	36.00		0.00
6.11	Providing & fixing C.P. hand spray with lever control (health faucet) and flexible hose 1 m long connection with C.P. holder for hand spray complete in all respects as per direction of Engineer-Incharge.	Each	9.00		0.00
6.12	Providing and placing on terrace (at all floor levels) polyethylene water storage tank, IS : 12701 marked, with cover and suitable locking arrangement and making necessary holes for inlet, outlet and overflow pipes but without fittings and the base support for tank.	per ltr	9000.00		0.00
6.13	Providing and fixing white vitreous china flat back half stall urinal of size 580x380x350 mm with white PVC automatic flushing cistern,with fittings, standard size C.P. brass flush pipe, spreaders with unions and clamps (all in C.P. brass) with waste fitting as per IS :2556, C.I. trap with outlet grating and other couplings in C.P. brass,including painting of fittings and cutting and making good the walls and floors wherever required :				
	Single half stall urinal with 5 litre P.V.C. automatic flushing cistern	Each	9.00		0.00
	TOTAL OF SANITARY FIXTURES CARRIED TO SUMMARY				**0.00**
7	**Subhead:- VII SEPTIC TANK FIXTURES**				
7.1	Supplying and fixing C.I. cover without frame for manholes :				
	455x610 mm rectangular C.I. cover (light duty) the weight of the cover to be not less than 23 kg	Each	18.00		0.00
7.2	Supplying and fixing CI vent pipe--80 mm dia	RM	45.00		0.00
7.3	Supplying and fixing CI cowl.	Each	9.00		0.00
7.4	Making soak pit 2.5 m diameter 3.0 metre deep with 45 x 45 cm dry brick honey comb shaft with bricks and S.W. drain pipe 100 mm diameter, 1.8 m long complete as per standard design.				
	With common burnt clay F.P.S. (non modular) bricks of class designation 7.5	Each	9.00		0.00
	TOTAL OF SEPTIC TANK CARRIED TO SUMMARY				**0.00**
	GRAND TOTAL OF PUMBING WORKS				**0.00**

Ref: ITI/NSU/CIVIL-DEL/2023/0106/01					Date 15-03-2023
ITI LMITED NETWORK SYSTEM UNIT DOORVANINAGAR, BANGALORE 560 016.					
BILL OF QUANTITY : IT & FIRE FIGHTING WORKS :- GROUP 5 (Kashmir), No. of Buildings are 9, Type-H.					
BIDDER'S NAME					
S. No.	**Description**	**Unit**	**QTY**	**RATE (Rs)**	**Total Amount**
1	**ACCESS CONTROL SYSTEM consisting of the following** (a) Supply, Installation, testing and commissioning of the access control system including the following equipments including necessary fitting, fixtures, cables, etc. (Model No./make RBH-Axiom) 1 nos per node. (b) 2-Door Control Panel with universal cabinet and power supply and required license.(Model No./make RBH-IRC-2000) 3 nos each per node. (c) Biometric reader. (Model No./make BFR-350) 5 nos each per node. (d) PROXIMITY CARD. (Model No./make PBH Smart Card) 20 nos each per node.	Set	9.00		0
	TOTAL FOR ACCESS CONTROL SYSTEMS WORKS				**0**
2	**VIDEO SURVEYLANCE SYSTEMS** Supply, installation, testing and commissioning of physical intrusion detection and prevention system including all necessary accessories, wires and fixtures. The system should be equipped with central monitoring software and server at NOC with complete necessary licenses (a) Indoor Dome Camera (Model No Mobotix m 26) 3 Nos per node (b) Out door type camera (Model No Mobotix m 26) 5 Nos per node (c) Network Vide Recorder system (Brand Mobotix) 1 Nos per node (d) 22" lcd display complete with all wiring and necessary fittings. (Make Samsung/LG) 1 Nos per node (e) 1 no PC loaded/ installed with necessary lisc. Software for video surveylance. (Make Software: Mobotix, PC Hardware: Dell/HP) 1 Nos per node	**Set**	9.00		0
	TOTAL FOR VIDEO SURVEYLANCE SYSTEMS				**0**

3	**PHYSICAL INTRUSION DETECTION AND PREVENTION SYSTEM consisting of the following:** (a) Supply, installation, testing and commissioning of physical intrusion detection and prevention system including all necessary accessories.(Model No Securico President) 1 nos each per node. B)Intrusion Controller panel(Make :Securico President). 1 no per node. C)Keypad - Alpha Addressable LCD Keypad (Model No Securico President). 1 per node. D) PIR Sensor (make: Optex). Qty: 8 nos per node. E) Beam Protector (Covering the entire parameter of the node) (make:Optex). Qty: 10 per node. F) Ground sensor (make: Optex). Qty: 8 nos per node. G) 130 db hooter (Make: Securico) Qty: 4 no per node. H) 2ft pole for beam detector (GI Pipe). Qty: 5 nos per node.	**Set**	9.00		0
	TOTAL FOR PHYSICAL INTRUSION SYSTEM WORKS				**0**
4	**FIRE DETECTION AND SUPPRESSION SYSTEM consisting of the following:** **(**a) Supplying, installing, testing and commissioning of addressable Main control panel comprising of visual and audible fire and fault alarms and signals, indicators and all other accessories. Panel shall be IS Approved. The system shall be nstalled with complete necessary fittings and fixtures including 2C x 1.5 sqmm and 2C x 2.5 sqmm ISI marked cables and wires. All the conduits hall be as per NBC specifications. (Model No Kentek Syncro As) 1 nos each per node. (b) OTI-AX-200TE - Photoelectric Detector with Synchronized twin beam, 200ft outdoor all weather range, IP65 Lightning Protection Level 14kV, 99% beam blocking stability includes pole mounting kit (Model No OTI-AX-200TE) 5 nos each per node. (c) OTIBC3 - Back cover for OTIAX200TF (Model No OTIBC3) 5 nos each per node. (d) SOUNDER 12V - High power 130 db, Police Siren Sound, Suitable for Indoor and Outdoor application. Tamper Loop. (Model No Roshni red 32 tone) 4 nos each per node. (e) Smoke detectors(Model No Apollo Discover / 58000-600) 32 nos each per node. (f) Heat detectors(Model No Apollo Discover / 58000-400) 1 nos each per node. (g) Multi-Criteria detectors(Model No Apollo Discover) 3 nos each per node. (h) Manual Call Point (Breaking Glass type)(Model No Apollo Discover /55000-971) 5 nos each per node. (j) Sounder / Flasher with Control Module (Model No Apollo Discover) 8 nos each per node. (k) Short Circuit Isolator 1 nos each per node. (l) Control modules for AHU / FAN trappings(Model No/Make: SS) 2 nos each per node. (m) Fire Signages- photoluminescent Green or Red color safety signages in different sizes / graphics / colours /texts can be made according to the standards 2 nos each per node.	**Set**	9.00		0

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	(a) GAS SUPPRESSION SYSTEM FM 200 Gas based Fire Suppression System shall be considered for equipment storage room and server room. Qty 1 no system per node.				
	FIRE EXTINGUISHER **(a)** CO2 type cylindrical shape fire extinguisher - 4.5 Kg Capacity with requisite fixing arrangement (Model No/make Ventex) 5 nos each per node. (b) ABC type fire extinguisher - 6 Kg capacity with requisite fixing arrrangement (Model No/make Ventex) 5 nos each per node. (c) Dry chemical powder type cylindrical shape fire extinguisher - 6 Kg Capacity with requisite fixing arrangement (Model No/make Ventex Dry powder 4308/14609) 5 nos each per node. (d) Mechanical foam type fire extinguishers with requisite fixing arrangement (Model No/make Ventex) 5 nos each per node. (e) Trolley mounted type - 9 litres capacity. 1 nos each per node. (f) Trolley mounted type -50 litres capacity. 1 nos each per node. (g) Supply and installation of Fire buckets of 9 litres capacity. Stand made of MS Channel and angle to accommodate 4 Nos. of buckets filled with cleaned soft sand. Rate shall be inclusive of red panit for buckets and MS Sand as per Fire Code. 5 nos each per node.				
	TOTAL FOR FIRE FIGHTING WORKS				**0**
	GRAND TOTAL OF IT & FIRE FIGHTING WORKS				**0**

Ref: ITI/NSU/CIVIL-DEL/2023/0106/01			Date 15-03-2023
ITI LMITED NETWORK SYSTEM UNIT DOORVANINAGAR, BANGALORE 560 016.			
SUMMARY SHEET :- GROUP 6 (Jammu), No. of Buildings are 6, Type-H.			
BIDDER'S NAME			
Sl.No.	**DESCRIPTION**	**AMOUNT (Rs.)**	**AMOUNT IN WORDS (Rs.)**
I	**SECTION A**		
	CIVIL WORKS	0.00	
II	**SECTION B**		
	ELECTRICAL WORKS	0.00	
III	**SECTION C**		
	PLUMBING WORKS	0.00	
IV	**SECTION D**		
	IT AND FIRE FIGHTING WORKS	0.00	
	GRAND TOTAL FOR THE PROJECT	**0.00**	

Ref: ITI/NSU/CIVIL-DEL/2023/0106/01					Date 15-03-2023
ITI LMITED **NETWORK SYSTEM UNIT** **DOORVANINAGAR, BANGALORE 560 016.**					
BILL OF QUANTITY : CIVIL WORKS :- GROUP 6 (Jammu), No. of Buildings are 6, Type-H.					
BIDDER'S NAME					
S.No	**DESCRIPTION**	**UNIT**	**QTY**	**RATE**	**AMOUNT**
1	**SECTION-1: EARTHWORK**				
1.1	Earth work in excavation by mechanical means (Hydraulic excavator)/ manual means over areas (exceeding 30 cm in depth, 1.5 m in width as well as 10 sqm on plan) including getting out and disposal of excavated earth lead upto 50 m and lift upto 1.5 m, as directed by Engineer-in- charge.				
	All kinds of soil.:	Cum	113.98		0.00
1.2	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 kinds of soil.:	cum	227.96		0.00
1.3	Excavation work by mechanical means (Hydraulic excavator)/ manual means in foundation trenches or drains (not exceeding 1.5m 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 soils as directed, within a lead of 50 m.				
	Ordinary rock	cum	1139.79		0.00
1.4	Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift upto 1.5 m.	cum	3304.76		0.00
1.5	Extra for every additional lift of 1.5 m or part thereof in excavation / banking excavated or stacked materials. **: For Excavation beyond 1.5m depth**				
	All kinds of soil	cum	211.20		0.00
1.6	Supplying and filling in plinth with sand under floors, including watering, ramming, consolidating and dressing complete.	cum	149.25		0.00
	NOTE : Deduction shall be made of columns, brick walls etc. for calculation of quantity of sand filling for payment				
1.7	Surface dressing of the ground including removing vegetation and inequalities not exceeding 15 cm deep and disposal of rubbish, lead up to 50 m and lift up to 1.5 m.				
	All kinds of soil	sqm	4500.00		0.00
1.8	Supplying chemical emulsion in sealed containers including delivery as specified.				

	Chlorpyriphos/ Lindane emulsifiable concentrate of 20%	Litre	265.40		0.00
1.9	Diluting and injecting chemical emulsion for POST-CONSTRUCTIONAL anti-termite treatment (excluding the cost of chemical emulsion) :				
	Along external wall where the apron is not provided using chemical emulsion @ 7.5 litres / sqm of the vertical surface of the substructure to a depth of 300mm including excavation channel along the wall & rodding etc. complete:				
	With Chlorpyriphos/ Lindane E.C. 20% with 1% concentration	Metre	405.00		0.00
1.10	Along the external wall below concrete or masonry apron using chemical emulsion @ 2.25 litres per linear metre including drilling and plugging holes etc.:				
	With Chlorpyriphos/ Lindane E.C. 20% with 1% concentration	Metre	810.00		0.00
1.11	Treatment of soil under existing floors using chemical emulsion @ one litre per hole, 300 mm apart including drilling 12 mm diameter holes and plugging with cement mortar 1 :2 (1 cement : 2 Coarse sand) to match the existing floor:				
	With Chlorpyriphos/Lindane E.C. 20% with 1% concentration	Sqm	705.60		0.00
1.12	Treatment of existing masonry using chemical emulsion @ one litre per hole at 300 mm interval including drilling holes at 45 degree and plugging them with cement mortar 1:2 (1 cement : 2 coarse sand) to the full depth of the hole :				
	With Chlorpyriphos/Lindane E.C. 20% with 1% concentration	Metre	32.40		0.00
1.13	Treatment at points of contact of wood work by chemical emulsion Chlorpyriphos/ Lindane (in oil or kerosene based solution) @ 0.5 litres per hole by drilling 6 mm dia holes at downward angle of 45 degree at 150 mm centre to centre and sealing the same	Sqm	60.00		0.00
	Total for EarthWork				**0.00**
2	**SECTION-2: CONCRETE WORK**				
2.1	Providing and laying in position cement concrete of specified grade excluding the cost of centering and shttering - All work up to plinth level:				
	1:2:4 (1 cement : 2 coarse sand (zone-III) derived from natural sources : 4 graded stone aggregate 20 mm nominal size derived from natural sources)	cum	170.00		0.00
2.2	1:4:8 (1 Cement : 4 coarse sand : 8 graded stone aggregate 20 mm nominal size)	cum	300.00		0.00
2.3	Providing and laying damp-proof course 50mm thick with cement concrete 1:2:4 (1 cement : 2 coarse sand(zone-III) : 4 graded stone aggregate 20mm nominal size).	sqm	155.08		0.00

2.4	Making plinth protection 50mm thick of cement concrete 1:3:6 (1 cement : 3 coarse sand (zone - III) : 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 necessary excavation, levelling & dressing & finishing the top smooth.	Sqm	107.64		0.00
	Total for Concrete Work				**0.00**
3	**SECTION-3: REINFORCED CEMENT CONCRETE**				
3.1	Providing and laying in position specified grade of reinforced cement concrete, excluding the cost of centering, shuttering, finishing and reinforcement - All work up to plinth level:				
	M 25 (1 cement : 1 coarse sand(zone-III) : 2 graded stone aggregate 20 mm nominal size)	cum	283.80		0.00
3.2	Reinforced cement concrete work in walls (any thickness), including attached pilasters, buttresses, plinth and string courses, fillets, columns, pillars, piers, abutments, posts and struts etc. above plinth level up to floor five level, excluding cost of centering, shuttering, finishing and reinforcement :				
	M 25 (1 cement : 1 coarse sand(zone-III) : 2 graded stone aggregate 20 mm nominal size)	cum	51.32		0.00
3.3	Reinforced cement concrete work in beams, suspended floors, roofs having slope up to 15° landings, balconies, shelves, chajjas, lintels, bands, plain window sills, staircases and spiral stair cases above plinth level up to floor five level, excluding the cost of centering, shuttering, finishing and reinforcement with M 25 (1 cement : 1 coarse sand(zone-III) : 2 graded stone aggregate 20 mm nominal size)	cum	30.00		0.00
	Centering & shuttering including strutting, propping etc. and removal of form work for:				
3.4	Foundations, footings, bases of columns etc. for mass concrete.	sqm	659.47		0.00
3.5	Suspended floors, roofs, landings, balconies and access platform	sqm	60.00		0.00
3.6	Lintels, beams, plinth beams, girders, bressumers and cantilevers.	sqm	1558.04		0.00
3.7	Columns, Pillars, Piers, Abutments, Posts and Struts	sqm	583.20		0.00
3.8	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 of grade Fe-500D or more.	kg	35600.00		0.00
	Total for RCC Work				**0.00**
4	**SECTION-4: BRICK WORK**				

4.1	Brick work with common burnt clay F.P.S. (non modular) bricks of class designation 7.5 in foundation and plinth in:				
	Cement mortar 1:6 (1 cement : 6 coarse sand)	cum	191.61		0.00
4.2	**Brick work** with common burnt clay F.P.S. (non modular) bricks of class designation 7.5 in superstructure above plinth level up to floor V level in all shapes and sizes in :				
	Cement mortar 1:6 (1 cement : 6 coarse sand)	cum.	449.75		0.00
	HALF BRICK WORK				
4.3	Half brick masonry with common burnt clay F.P.S. (non modular) bricks of class designation 7.5 in superstructure above plinth level up to floor V level.				
	Cement mortar 1:4 (1 cement :4 coarse sand)	sqm	427.14		0.00
4.4	Extra for providing and placing in position 2 Nos 6mm dia. M.S. bars at every third course of half brick masonry. Quantities sames as DSR item no. 6.13.2	sqm	427.14		0.00
	Total for Brick Work				**0.00**
5	**SECTION-5: STONE WORK**				
5.1	Random rubble masonry with hard stone in foundation and plinth including levelling up with cement concrete 1:6:12 (1 cement : 6 coarse sand : 12 graded stone aggregate 20 mm nominal size) upto plinth level with :				
	Cement mortar 1:6 (1 cement : 6 coarse sand)	Cum	4.11		0.00
5.2	Coursed rubble masonry with hard stone (first or second sort) in superstructure above plinth level and upto floor five level.				
	Masonry work (first sort), in cement mortar 1:6 (1 cement : 6 coarse sand)	Cum	8.28		0.00
	Total for Stone Work				**0.00**
6	**SECTION-6:GRANITE WORK**				
6.1	Providing and fixing 18 mm thick gang saw cut, mirror polished, premoulded and prepolished, machine cut for kitchen platforms, vanity counters, window sills, facias and similar locations of required size, approved shade, colour and texture laid over 20 mm thick base cement mortar 1:4 (1 cement : 4 coarse sand), joints treated with white cement, mixed with matching pigment, epoxy touch ups, including rubbing, curing, moulding and polishing to edges to give high gloss finish etc. complete at all levels.				
	Granite of any colour and shade				
	Area of slab over 0.50 sqm	Sqm	2.70		0.00
6.2	Extra for providing opening of required size & shape for wash basin/ kitchen sink in kitchen platform, vanity counter and similar location in marble/ Granite/ stone work, including	Each	6.00		0.00

	necessary holes for pillar taps etc. including moulding, rubbing and polishing of cut edges etc. complete.				
6.3	Providing and fixing Ist quality ceramic glazed wall tiles conforming to IS: 15622 (thickness to be specified by the manufacturer), of approved make, in all colours, shades except burgundy, bottle green, black of any size as approved by Engineer-in-Charge, in skirting, risers of steps and dados, over 12 mm thick bed of cement mortar 1:3 (1 cement : 3 coarse sand) and jointing with grey cement slurry @ 3.3kg per sqm, including pointing in white cement mixed with pigment of matching shade complete.	Sqm	94.65		0.00
	Total for Cladding Work				**0.00**
7	**SECTION-7:DOORS & WINDOWS WORKS**				
7.1	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).				
	Second class teak wood	cum	0.26		0.00
7.2	Providing and fixing panelling or panelling and glazing in panelled or panelled and glazed shutters for doors, windows and clerestory windows (Area of opening for panel inserts excluding portion inside grooves or rebates to be measured). Panelling for panelled or panelled and glazed shutters 25 mm to 40 mm thick :				
	Float glass panes				
	4 mm thick glass pane (weight not less than 10kg/sqm).	Sqm	366.85		0.00
7.3	5.0 mm thick glass panes (weight not less than 12.50 kg/sqm).	Sqm	49.50		0.00
7.4	Providing and fixing ISI marked flush door shutters conforming to IS : 2202 (Part I) decorative type, core of block board construction with frame of 1st class hard wood and well matched teak 3 ply veneering with vertical grains or cross bands and face veneers on both faces of shutters.				
	35 mm thick including ISI marked Stainless Steel butt hinges with necessary screws	Sqm	146.92		0.00
7.5	Extra for providing lipping with 2nd class teak wood battens 25 mm minimum depth on all edges of flush door shutters (over all area of door shutter to be measured).	Sqm	300.96		0.00
7.6	Extra for providing vision panel not exceeding 0.1 sqm in all type of flush doors (cost of glass excluded) (overall area of door shutter to be measured):				
	Rectangular or square	Sqm	146.92		0.00

7.7	Providing and fixing wire gauge shutters using galvanized M.S. wire gauge of average width of aperture 1.4 mm in both directions with wire of dia 0.63 mm, for doors, windows and clerestory windows with hinges and necessary screws :				
	30 mm thick shutters				
	With ISI marked stainless steel butt hinges of required size				
	Second class teak wood	Sqm	29.11		0.00
7.8	Providing and fixing wooden moulded beading to door and window frames with iron screws, plugs and priming coat on unexposed surface etc. complete :				
	2nd class teak wood				
	50x12 mm	meter	35.10		0.00
7.9	Providing and fixing nickel plated M.S. pipe curtain rods with nickel plated brackets :				
	20 mm dia (heavy type)	meter	148.50		0.00
7.10	Providing and fixing aluminium extruded section body tubular type universal hydraulic door closer (having brand logo with ISi, IS : 3564, embossed on the body, door weight upto 36 kg to 80 kg and door width from 701 mm to 1000 mm), with double speed adjustment with necessary accessories and screws etc. complete.	Each	6.00		0.00
7.11	Providing 40x5 mm flat iron hold fast 40 cm long including fixing to frame with 10 mm diameter bolts, nuts and wooden plugs and embedding in cement concrete block 30x10x15cm 1:3:6 mix (1 cement : 3 coarse sand : 6 graded stone aggregate 20mm nominal size).	Each	6.00		0.00
7.12	Providing and fixing ISI marked oxidised M.S. handles conforming to IS:4992 with necessary screws etc. complete :				
	100 mm	Each	60.00		0.00
7.13	Providing and fixing aluminium sliding door bolts, ISI marked anodised (anodic coating not less than grade AC 10 as per IS : 1868), transparent or dyed to required colour or shade, with nuts and screws etc. complete				
	250x16 mm	Each	66.00		0.00
7.14	Providing and fixing aluminium tower bolts, ISI marked, anodised (anodic coating not less than grade AC 10 as per IS : 1868) transparent or dyed to required colour or shade, with necessary screws etc. complete :				
	250x10 mm	Each	66.00		0.00
7.15	200x10 mm	Each	66.00		0.00
7.16	Providing and fixing aluminium handles, ISI marked, anodised (anodic coating not less than grade AC 10 as per IS : 1868) transparent or dyed to required colour or shade, with necessary screws etc. complete :				
	125 mm	Each	120.00		0.00

7.17	Providing and fixing aluminium hanging floor door stopper, ISI marked, anodised (anodic coating not less than grade AC 10 as per IS : 1868) transparent or dyed to required colour and shade, with necessary screws etc. complete.				
	Single rubber stopper	Each	60.00		0.00
7.18	Providing and fixing PTMT door catcher of length 72 mm and dia. of 42 mm with suitable washers weighing not less than 33 gms	Each	60.00		0.00
7.19	Providing and fixing factory made uPVC white colour sliding glazed window upto 1.50 m in height dimension comprising of uPVC multi-chambered frame with in-built roller track and sash extruded profiles duly reinforced with 1.60 ± 0.2 mm thick galvanized mild steel section made from roll forming process of required length (shape & size according to uPVC profile), appropriate dimension of uPVC extruded glazing beads and uPVC extruded interlocks, EPDM gasket, wool pile, zinc alloy (white powder coated) touch locks with hook, zinc alloy body with single nylon rollers (weight bearing capacity to be 40 kg), G.I fasteners 100 x 8 mm size for fixing frame to finished wall and necessary stainless steel screws etc. Profile of frame & sash shall be mitred cut and fusion welded at all corners, including drilling of holes for fixing hardware's and drainage of water etc. After fixing frame the gap between frame and adjacent finished wall shall be filled with weather proof silicon sealent over backer rod of required size and of approved quality, all complete as per approved drawing & direction of Engineer-in-Charge. (Single / double glass panes, wire mesh and silicon sealent shall be paid separately). Variation in profile dimension in higher side shall be accepted but no extra payment on this account shall be made.				
	Note: For uPVC frame and sash extruded profiles minus 5% tolerance in dimension i.e. in depth & width of profile shall be acceptable.				
	Two track two panels sliding window made of (small series) frame 52 x 44 mm &sash 32 x 60 mm both having wall thickness of 1.9 ± 0.2 mm and single glazing bead of appropriate dimension. (Area of window upto 1.75 sqm)	Sqm	8.02		0.00
7.20	Three track three panels sliding window with fly proof S.S wire mesh (Two nos. glazed & one no. wire mesh panels) madeof(bigseries)frame116x45mm&sash46x62mm both having wall thickness of 2.3 ± 0.2 mm and single glazing bead / double glazing bead of appropriate dimension. (Area of window above 1.75 sqm).	Sqm	95.04		0.00
7.21	Providing and fixing zinc alloyed (white powder coated) touch lock for uPVC sliding window with necessary screws etc. complete.	Each	52.80		0.00
	Total for Wood Work				**0.00**

8	**SECTION-8:STEEL WORK**				
8.1	Structural steel work riveted, bolted or welded in built up sections, trusses and framed work, including cutting, hoisting, fixing in position and applying a priming coat of approved steel primer with two coat of synthetic enamel paint all complete.	kg	33600.00		0.00
8.2	Providing and fixing 1mm thick M.S. sheet door with frame of 40x40x6 mm angle iron and 3 mm M.S. gusset plates at the junctions and corners, all necessary fittings complete, including applying a priming coat of approved steel primer.				
	Using M.S. angels 40x40x6 mm for diagonal braces	Sqm	138.24		0.00
8.3	Supplying and fixing rolling shutters of approved make, made of required size M.S. laths, interlocked together through their entire length and jointed together at the end by end locks, mounted on specially designed pipe shaft with brackets, side guides and arrangements for inside and outside locking with push and pull operation complete, including the cost of providing and fixing necessary 27.5 cm long wire springs manufactured from high tensile steel wire of adequate strength conforming to IS: 4454 - part 1 and M.S. top cover of required thickness for rolling shutters.				
	80x1.20 mm M.S. laths with 1.20 mm thick top cover	Sqm	72.00		0.00
8.4	Providing and fixing ball bearing for rolling shutters.	Each	12.00		0.00
8.5	Providing and fixing factory made ISI marked steel glazed doors, windows and ventilators, side /top /centre hung, with beading and all members such as F7D,F4B, K11 B and K12 B etc. complete of standard rolled steel sections, joints mitred and flash butt welded and sash bars tenoned and riveted, including providing and fixing of hinges, pivots, including priming coat of approved steel primer, but excluding the cost of other fittings, complete all as per approved design, (sectional weight of only steel members shall be measured for payment).				
	Fixing with 15x3 mm lugs 10 cm long embedded in cement concrete block 15x10x10 cm of C.C. 1:3:6 (1 Cement : 3 coarse sand : 6 graded stone aggregate 20 mm nominal size)	kg	1034.55		0.00
8.6	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.				
	Hot finished seamless type tubes	kg	14378.72		0.00
8.7	Providing and fixing mild steel round holding down bolts with nuts and washer plates complete.	kg	249.60		0.00
8.8	Providing and fixing bolts including nuts and washers complete.	kg	430.56		0.00
8.9	Steel work welded in built up sections/ framed work, including cutting, hoisting, fixing in position and applying a priming coat of approved steel primer using structural steel etc. as required.				
	In gratings, frames, guard bar, ladder, railings, brackets, gates and similar works	kg	600.00		0.00

8.10	Providing & fixing glass panes with putty and glazing clips in steel doors, windows, clerestory windows, all complete with :				
	4.0 mm thick glass panes	Sqm	267.30		0.00
	Total for Steel Works				**0.00**
9	**SECTION-9:FLOORING WORK**				
9.1	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	323.40		0.00
9.2	Cement plaster skirting up to 30 cm height, with cement mortar 1:3 (1 cement : 3 coarse sand), finished with a floating coat of neat cement.				
	18 mm thick	sqm	16.98		0.00
9.3	Providing and fixing glass strips in joints of terrazo/ cement concrete floors.				
	40 mm wide and 4 mm thick	rmt	169.80		0.00
9.4	Marble stone flooring with 18 mm thick marble stone, as per sample of marble approved by Engineer-in-charge, over 20 mm (average) thick base of cement mortar 1:4 (1 cement : 4 coarse sand) laid and jointed with grey cement slurry, including rubbing and polishing complete with :				
	Udaipur green marble	Sqm	1.00		0.00
9.5	Extra for pre finished nosing to treads of steps of marble stone.	Meter	6.00		0.00
9.6	Providing and laying rectified Glazed Ceramic floor tiles of size 300x300 mm or more (thickness to be specified by the manufacturer), of 1st quality conforming to IS : 15622, of approved make, in colours White, Ivory, Grey, Fume Red Brown, laid on 20 mm thick cement mortar 1:4 (1 Cement: 4 Coarse sand), jointing with grey cement slurry @ 3.3 kg/ sqm including grouting the joints with white cement and matching pigments etc., complete.	Sqm	23.27		0.00
9.7	Providing and laying Vitrified tiles in floor in different sizes (thickness to be specified by the manufacturer) with water absorption less than 0.08% and conforming to IS:15622, of approved brand & manufacturer, in all colours and shade, laid on 20 mm thick cement mortar 1:4 (1 cement: 4 coarse sand) jointing with grey cement slurry @3.3 kg/sqm including grouting the joints with white cement and matching pigments etc. The tiles must be cut with the zero chipping diamond cutter only . Laying of tiles will be done with the notch trowel, plier, wedge, clips of required thickness, leveling system and rubber mallet for placing the tiles gently and easily.				
	Glazed vitrified floor tiles polished finish of size				
	Size of Tile 600x600 mm	sqm	646.80		0.00
9.8	Glazed Vitrified tiles Matt/Antiskid finish of size				
	Size of Tile 600x600 mm	sqm	23.27		0.00

9.9	Providing and laying Vitrified tiles in different sizes (thickness to be specified by manufacturer), with water absorption less than 0.08 % and conforming to I.S. 15622, of approved make, in all colours & shade, in skirting, riser of steps, over 12 mm thick bed of cement mortar 1:3 (1 cement: 3 coarse sand), jointing with grey cement slurry @ 3.3 kg/ sqm including grouting the joint with white cement & matching pigments etc. complete.				
	Size of Tile 600x600 mm	sqm	41.58		0.00
9.10	Grouting the joints of flooring tiles having joints of 3 mm width, using epoxy grout mix of 0.70 kg of organic coated filler of desired shade (0.10 kg of hardener and 0.20 kg of resin per kg), including filling / grouting and finishing complete as per direction of Engineer-in-charge.				
	Size of Tile 600x600 mm	sqm	676.20		0.00
	Total for Flooring				**0.00**
10	**SECTION-10:ROOFING**				
10.1	Providing gola 75x75 mm in cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 stone aggregate 10 mm and down gauge), including finishing with cement mortar 1:3 (1 cement : 3 fine sand) as per standard design :				
	In 75x75 mm deep chase	Metre	252.00		0.00
10.2	Making khurras 45x45 cm with average minimum thickness of 5 cm cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate of 20 mm nominal size) over P.V.C. sheet 1 m x1 m x 400 micron, finished with 12 mm cement plaster 1:3 (1 cement : 3 coarse sand) and a coat of neat cement, rounding the edges and making and finishing the outlet complete.	Each	24.00		0.00
10.3	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	1320.33		0.00

10.4	Providing and fixing false ceiling at all height including providing and fixing of frame work made of special sections, power pressed from M.S. sheets and galvanized with zinc coating of 120 gms/sqm (both side inclusive) as per IS : 277 and consisting of angle cleats of size 25 mm wide x 1.6 mm thick with flanges of 27 mm and 37mm, at 1200 mm centre to centre, one flange fixed to the ceiling with dash fastener 12.5 mm dia x 50mm long with 6mm dia bolts, other flange of cleat fixed to the angle hangers of 25x10x0.50 mm of required length with nuts & bolts of required size and other end of angle hanger fixed with intermediate G.I. channels 45x15x0.9 mm running at the spacing of 1200 mm centre to centre, to which the ceiling section 0.5 mm thick bottom wedge of 80 mm with tapered flanges of 26 mm each having lips of 10.5 mm, at 450 mm centre to centre, shall be fixed in a direction perpendicular to G.I. intermediate channel with connecting clips made out of 2.64 mm dia x 230 mm long G.I. wire at every junction, including fixing perimeter channels 0.5 mm thick 27 mm high having flanges of 20 mm and 30 mm long, the perimeter of ceiling fixed to wall/partition with the help of rawl plugs at 450 mm centre, with 25mm long dry wall screws @ 230 mm interval, including fixing of gypsum board to ceiling section and perimeter channel with the help of dry wall screws of size 3.5 x 25 mm at 230 mm c/c, including jointing and finishing to a flush finish of tapered and square edges of the board with recommended jointing compound , jointing tapes , finishing with jointing compound in 3 layers covering upto 150 mm on both sides of joint and two coats of primer suitable for board, all as per manufacturer's specification and also including the cost of making openings for light fittings, grills, diffusers, cutouts made with frame of perimeter channels suitably fixed, all complete as per drawings, specification and direction of the Engineer in Charge but excluding the cost of painting with :				
	12.5 mm thick tapered edge gypsum plain board conforming to IS: 2095- (Part I) : 2011 (Board with BIS certification marks)	Sqm	780.00		0.00
	Total for Roofing work				**0.00**
11	**SECTION-11:Finishing Work**				
11.1	12 mm cement plaster of mix :				
	1:6 (1 cement: 6 fine sand):	sqm	2804.54		0.00
11.2	20 mm cement plaster of mix :				
	1:6 (1 cement: 6 fine sand)	sqm	12.00		0.00
11.3	12 mm cement plaster finished with a floating coat of neat cement of mix :				
	1:3 (1 cement: 3 fine sand)	sqm	705.60		0.00
11.4	6 mm cement plaster of mix :				
	1:3 (1 cement : 3 fine sand)	sqm	129.60		0.00

11.5	Providing and applying white cement based putty of average thickness 1 mm, of approved brand and manufacturer, over the plastered wall surface to prepare the surface even and smooth complete.	sqm	6873.60		0.00
11.6	18 mm cement plaster in two coats under layer 12 mm thick cement plaster 1:5 (1 cement : 5 coarse sand) and a top layer 6 mm thick cement plaster 1:3 (1 cement : 3 coarse sand) finished rough with sponge.	sqm	3221.86		0.00
11.7	Pointing on stone work with cement mortar 1:3 (1 cement : 3 fine sand) :				
	Flush/ Ruled pointing	sqm	12.00		0.00
11.8	Applying one coat of water thinnable cement primer of approved brand and manufacture on wall surface :				
	Water thinnable cement primer	sqm	8215.12		0.00
11.9	Finishing walls with textured exterior paint of required shade :				
	New work (Two or more coats applied @ 3.28 ltr/10 sqm) over and including priming coat of exterior primer applied @ 2.20kg/10 sqm	sqm	3221.86		0.00
11.10	Painting with synthetic enamel paint of approved brand and manufacture of required colour to give an even shade :				
	Two or more coats on new work over an under coat of suitable shade with ordinary paint of approved brand and manufacture	sqm	213.84		0.00
11.11	Wall painting with premium acrylic emulsion paint of interior grade, having VOC (Volatile Organic Compound) content less than 50 grams/ litre of approved brand and manufacture, including applying additional coats wherever required to achieve even shade and colour.				
	Two or more coats on new work	sqm	3651.74		0.00
	Total for Finishing Work				**0.00**
12	**SECTION-12:ALUMINIUM WORKS**				
12.1	Providing and fixing aluminium work for doors, windows, ventilators and partitions with extruded built up standard tubular sections/ appropriate Z sections and other sections of approved make conforming to IS: 733 and IS: 1285, fixing with dash fasteners of required dia and size, including necessary filling up the gaps at junctions, i.e. at top, bottom and sides with required EPDM rubber/ neoprene gasket etc. Aluminium sections shall be smooth, rust free, straight, mitred and jointed mechanically wherever required including cleat angle, Aluminium snap beading for glazing / paneling, C.P. brass / stainless steel screws, all complete as per architectural drawings and the directions of Engineer-in-charge. (Glazing, paneling and dash fasteners to be paid for separately) :				
	For Fixed portions				
	Powder coated aluminium (minimum thickness of powder coating 50 micron)	Kg	997.92		0.00

12.2	Providing and fixing double action hydraulic floor spring of approved brand and manufacture conforming to IS : 6315, having brand logo embossed on the body / plate with double spring mechanism and door weight upto 125 kg, for doors, including cost of cutting floors, embedding in floors as required and making good the same matching to the existing floor finishing and cover plates with brass pivot and single piece M.S. sheet outer box with slide plate etc. complete as per the direction of Engineer-in-charge.				
	With stainless steel cover plate minimum 1.25 mm thickness	each	52.80		0.00
12.3	Filling the gap in between aluminium frame & adjacent RCC/ Brick/ Stone work by providing weather silicon sealant over backer rod of approved quality as per architectural drawings and direction of Engineer-in-charge complete.				
	Upto 5mm depth and 5 mm width	Meter	105.93		0.00
	Total for Aluminium Works				**0.00**
13	**SECTION-13:WATER PROOFING**				
13.1	Providing and laying in situ seven course water proofing treatment with APP (Atactic Polypropylene) modified Polymeric memberane over roof consisting of first coat of bitumen primer @ 0.40 litre per sqm, 2nd, 4th & 6th courses of bonding material @ 1.20 kg/sqm, which shall consist of blown type bitumen of grade 85/25 conforming to IS : 702, 3rd and 5th layers of roofing membrane APP modified Polymeric membrane 2.0 mm thick of 3.00 Kg/sqm weight consisting of five layers prefabricated with centre core as 100 micron HMHDPE film sandwiched on both sides with polymeric mix and the polymeric mix is protected on both side with 20 micron HMHDPE film. 7th, the top most layer shall be finished with brick tiles of class designation 10 grouted with cement mortar 1:3 (1 cement : 3 fine sand) mixed with 2% integral water proofing compound by weight of cement over a 12 mm layer of cement mortar 1:3 (1 cement : 3 fine sand) and finished neat (item of laying brick tiles shall be paid for separately).	sqm	13.50		0.00
	Providing and laying integral cement based water proofing treatment including preparation of surface as required for treatment of roofs, balconies, terraces etc consisting of following operations:				
13.2	(a) Applying a slurry coat of neat cement using 2.75 kg/sqm of cement admixed with water proofing compound conforming to IS. 2645 and approved by Engineer-in-charge over the RCC slab including adjoining walls upto 300 mm height including cleaning the surface before treatment.				

	(b) Laying brick bats with mortar using broken bricks/brick bats 25 mm to 115 mm size with 50% of cement mortar 1:5 (1 cement : 5 coarse sand) admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge over 20 mm thick layer of cement mortar of mix 1:5 (1 cement :5 coarse sand) admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge to required slope and treating similarly the adjoining walls upto 300 mm height including rounding of junctions of walls and slabs.				
	(c) After two days of proper curing applying a second coat of cement slurry using 2.75 kg/ sqm of cement admixed with water proofing compound conforming to IS : 2645 and approved by Engineer in- charge				
	(d) Finishing the surface with 20 mm thick joint less cement mortar of mix 1:4 (1 cement :4 coarse sand) admixed with water proofing compound conforming to IS : 2645 and approved by Engineer in- charge including laying glass fibre cloth of approved quality in top layer of plaster and finally finishing the surface with trowel with neat cement slurry and making pattern of 300x300 mm square 3 mm deep.				
	e) The whole terrace so finished shall be flooded with water for a minimum period of two weeks for curing and for final test."All above operations to be done in order and as directed and specified by the Engineer-in-Charge :				
	With average thickness of 120 mm and minimum thickness at khurra as 65 mm.	sqm	60.00		0.00
	Total for waterproofing				**0.00**
14	**SECTION-14:ROAD WORKS**				
14.1	Preparation and consolidation of sub grade with power road roller of 8 to 12 tonne capacity after excavating earth to an average of 22.5 cm depth, dressing to camber and consolidating with road roller including making good the undulations etc. and re-rolling the sub grade and disposal of surplus earthwith lead upto 50 metres.	Sqm	562.50		0.00
14.2	Supplying and stacking at site.				
	90 mm to 45 mm size stone aggregate	Cum	56.25		0.00
14.3	63 mm to 45 mm size stone aggregate	Cum	56.25		0.00
14.4	Over burnt (Jhama) brick aggregate 120 mm to 40 mm	Cum	28.13		0.00
14.5	Over burnt (Jhama) brick aggregate 90 mm to 45 mm	Cum	28.13		0.00
14.6	Stone screening 13.2 mm nominal size (Type A)	Cum	28.13		0.00
14.7	Red bajri	Cum	28.13		0.00
14.8	Dry stone pitching 22.5 cm thick including supply of stones and preparing surface complete.	Sqm	225.00		0.00

14.9	Fencing with angle iron post placed at required distance embedded in cement concrete blocks, every 15th post, last but one end post and corner post shall be strutted on both sides and end post on one side only and provided with horizontal lines and two diagonals interwoven with horizontal wires, of barbed wire weighing 9.38 kg per 100 m (minimum), between the two posts fitted and fixed with G.I. staples, turn buckles etc. complete. (Cost of posts, struts, earth work and concrete work to be paid for separately). Payment to be made per metre cost of total length of barbed wire used.				
	With G.I. barbed wire	Metre	13200.00		0.00
14.10	Supplying at site Angle iron post & strut of required size including bottom to be split and bent at right angle in opposite direction for 10 cm length and drilling holes upto 10 mm dia. etc. complete	Kg	2643.84		0.00
14.11	Providing and fixing concertina coil fencing with punched tape concertina coil 600 mm dia 10 metre openable length (total length 90 m), having 50 nos rounds per 6 metre length, upto 3 m height of wall with existing angle iron 'Y' shaped placed 2.4m or 3.00 m apart and with 9 horizontal R.B.T. reinforced barbed wire, stud tied with G.I. staples and G.I. clips to retain horizontal, including necessary bolts or G.I. barbed wire tied to angle iron, all complete as per direction of Engineer-in-charge, with reinforced barbed tape(R.B.T.) / Spring core (2.5mm thick) wire of high tensile strength of 165 kg/ sq.mm with tape (0.52 mm thick) and weight 43.478 gm/ metre (cost of M.S. angle, C.C. blocks shall be paid separately)	Metre	660.00		0.00
	Total for ROAD WORK				**0.00**
15	**SECTION-15:HORTICULTURE WORKS**				
15.1	Supplying and stacking of good earth at site including royalty and carriage upto 5 km lead complete (earth measured in stacks will be reduced by 20% for payment).	Cum	180.00		0.00
15.2	Supplying and stacking at site dump manure from approved source, including carriage upto 5 km lead complete (manure measured in stacks will be reduced by 8% for payment) :				
	Screened through sieve of I.S. designation 20 mm	Cum	180.00		0.00
15.3	Fine dressing of the ground.	Sqm	900.00		0.00
15.4	Spreading of sludge, dump manure and/or good earth in required thickness as per direction of officer-in-charge (cost of sludge, dump manure and/ or good earth to be paid separately).	Cum	360.00		0.00
15.5	Grassing with selection No. 1/ Doob grass including watering and maintenance of the lawn for 30 days or more till the grass forms a thick lawn, free from weeds and fit for mowing including supplying good earth, if needed (the grass and good earth shall be paid for separately).				
	With grass Turf	Sqm	900.00		0.00
	Total for Horticulture				**0.00**

16	**Glass & Furniture**				
16.1	Providing and fixing 12 mm thick frameless toughened glass door shutter of approved brand and manufacture, including providing and fixing top & bottom pivot & double action hydraulic floor spring type fixing arrangement and making necessary holes etc. for fixing required door fittings, all complete as per direction of Engineer-incharge (Door handle, lock and stopper etc.to be paid separately).	Sqm	100.44		0.00
16.2	Providing and fixing 12 mm thick frameless toughened glass door shutter of approved brand and manufacture, including providing and fixing top & bottom pivot & double action hydraulic floor spring type fixing arrangement and making necessary holes etc. for fixing required door fittings, all complete as per direction of Engineer-incharge (Door handle, lock and stopper etc.to be paid separately).	Each	6.00		0.00
	TOTAL FOR ITEMS				**0.00**
	GRAND TOTAL OF CIVIL WORKS				**0.00**

Ref: ITI/NSU/CIVIL-DEL/2023/0106/01					**Date 15-03-2023**
ITI LMITED NETWORK SYSTEM UNIT DOORVANINAGAR, BANGALORE 560 016.					
BILL OF QUANTITY : ELECTRIC WORKS :- GROUP 6 (Jammu), No. of Buildings are 6, Type-H.					
	BIDDER'S NAME				
S. No.	**Description**	**Unit**	**Qty**	**RATE (RS.)**	**TOTAL AMOUNT**
1	**SUB-HEAD-I: CIRCUIT CUM POINT WIRING**				
1.1)	Wiring for light point/ fan point/ exhaust fan point/ call bell point with 1.5 sq.mm FRLS PVC insulated copper conductor single core cable in surface / recessed steel conduit, with modular switch, modular plate, suitable GI box and earthing the point with 1.5 sq.mm FRLS PVC insulated copper conductor single core cable etc. as required.				
a)	Group-C (Primary point)	Point	102		0.00
1.2)	Wiring for group controlled (looped) light point/fan point/exhaust fan point/ call bell point (without independent switch etc.) with 1.5 sq. mm FRLS PVC insulated copper conductor single core cable in surface/ recessed steel conduit, and earthing the point with 1.5 sq. mm FRLS PVC insulated copper conductor single core cable etc. as required				
a)	Group-C (looping point)	Point	72		0.00
1.3)	Supplying and fixing modular blanking plate on the existing modular plate & switch box excluding modular plate as required.	Each	60		0.00
1.4)	Supplying and fixing two module stepped type electronic fan regulator on the existing modular plate switch box including connections but excluding modular plate etc. as required.	Each	72		0.00
1.5)	Supplying and fixing suitable size GI box with modular plate and cover in front on surface or in recess, including providing and fixing 3 pin 5/6 A modular socket outlet and 5/6 A modular switch, connections etc. as required.	Each	156		0.00
1.6)	Supplying and fixing suitable size GI box with modular plate and cover in front on surface or in recess, including providing and fixing 6 pin 5/6 A & 15/16 A modular socket outlet and 15/16 A modular switch, connections etc. as required.	Each	192		0.00

1.7)	Wiring for circuit/ submain wiring along with earth wire with the following sizes of FRLS PVC insulated copper conductor, single core cable in surface/ recessed medium class PVC conduit as required				
a)	2 X 1.5 sq. mm + 1 X 1.5 sq. mm earth wire For 6A Light Circuit Point	Metre	600		0.00
b)	2 X 2.5 sq. mm + 1 X 2.5 sq. mm earth wire For Switch Board Circuit.	Metre	1125		0.00
c)	2 X 4 sq. mm + 1 X 4 sq. mm earth wire For 6A and 16A Power Circuit Point	Metre	6960		0.00
d)	4 X 10 sq. mm + 2 X 6 sq. mm earth wire For Light DB Submain wire	Metre	300		0.00
e)	4 X 16 sq. mm + 2 X 6 sq. mm earth wire For PDB Submain wire	Metre	600		0.00
f)	2 X 10 sq. mm + 1 X 6 sq. mm earth wire For UPSDB/IDB/All SPN LPDB Submain wire	Metre	3480		0.00
1.8)	Providing and fixing 6 SWG dia G.I. wire on surface or in recess for loop earthing along with existing surface/ recessed conduit/submain wiring/ cable as required.	Metre	600		0.00
	SUB-HEAD-1 TOTAL CARRIED TO SUMMARY				**0.00**
2	**SUB-HEAD-II:- DISTRIBUTION BOARDS**				
2.1)	Supplying and fixing following way, single pole and neutral, sheet steel, MCB distribution board, 240 V, on surface/ recess, complete with tinned copper bus bar, neutral bus bar, earth bar, din bar, interconnections, powder painted including earthing etc. as required. (But without MCB/RCCB/Isolator)				
a)	8Way ,Double door	Each	48		0.00
b)	12Way ,Double door	Each	18		0.00
2.2)	Supplying and fixing following way, horizontal type three pole and neutral, sheet steel, MCB distribution board, 415 V, on surface/ recess, complete with tinned copper bus bar, neutral bus bar, earth bar, din bar, interconnections, powder painted including earthing etc. as required. (But without MCB/RCCB/Isolator)				
a)	4 way (4 + 12), Double door	Each	6		0.00
2.3)	Supplying and fixing following ways, surface/recess mounting ,Verticl type 415V ,TPN MCB distribution board of sheet steel,dust protected duly powder painted ,inclusive of 200A tinned copper bus bar ,common neutral link, earth bar, din bar, for mounting MCBs etc. as required. (But without MCB/Incomer) as required.(Note Vertical type MCB TPDB is normally used where 3phase outlets are required.)				
a)	12 way (4 + 36), Double door	Each	12		0.00

2.4)	Supplying and fixing 5 A to 32 A rating, 240/415 V, 10 kA, "C" curve, miniature circuit breaker suitable for inductive load of following poles in the existing MCB DB complete with connections, testing and commissioning etc. as required.				
a)	Single pole (6/32 Amps)	Each	744		0.00
2.5)	Supplying and fixing single pole blanking plate in the existing MCB DB complete etc. as required.	Each	60		0.00
2.6)	Supplying and fixing following rating, double pole, 240 V, isolator in the existing MCB DB complete with connections, testing and commissioning etc. as required.				
a)	40A	Each	60		0.00
b)	63A	Each	12		0.00
2.7)	Supplying and fixing following rating, four pole, 415 V, isolator in the existing MCB DB complete with connections, testing and commissioning etc. as required.				
a)	40A	Each	6		0.00
b)	63A	Each	12		0.00
2.8)	Supplying and fixing following rating, double pole, (single phase and neutral),240 V, residual current circuit breaker (RCCB) having a sensitivity current 30mA in the existing MCB DB complete with connections, testing and commissioning etc. as required.				
a)	40A	Each	60		0.00
b)	63A	Each	12		0.00
2.9)	Supplying and fixing following rating, four pole, (three phase and neutral),415 V, residual current circuit breaker (RCCB) having a sensitivity current 30mA in the existing MCB DB complete with connections, testing and commissioning etc. as required.				
a)	40A	Each	6		0.00
b)	63A	Each	12		0.00
2.10)	Providing and fixing M.V. danger notice plate of 200 mm X 150 mm, made of mild steel, at least 2 mm thick, and vitreous enameled white on both sides, and with inscription in single red colour on front side as required.	Each	90		0.00
	SUB-HEAD-II TOTAL CARRIED TO SUMMARY				**0.00**
3	**SUB-HEAD - III :- CONDUITING WIRING AND CABLING FOR TELEPHONE / TV NETWORK SYSTEM**				
3.1)	Supplying and fixing of following sizes of medium class PVC conduit along with accessories in surface/recess including cutting the wall and making good the same in case of recessed conduit as required.				
a)	20mm	Meter	300		0.00
b)	25mm	Meter	300		0.00
c)	32mm	Meter	150		0.00

3.2)	Supplying and fixing following modular switch/ socket on the existing modular plate & switch box including connections but excluding modular plate etc. as required.				
a)	Telephone socket outlet	Each	6		0.00
b)	TV antenna socket outlet	Each	6		0.00
c)	RJ-45 face plate(computer line) with shutter DN-460	Each	6		0.00
3.3)	Supplying and fixing following size/ modules, GI box alongwith modular base & cover plate for modular switches in recess etc. as required.				
a)	1 or 2 Module (75mmX75mm)	Each	6		0.00
3.4)	Providing, fixing connecting and testing of solder less telephone Tag block of following capacity ties as required in suitable size of m.s. hinged lockable cover box duly painted etc. as required of Krone type.				
a)	10 pair Tele Tag Blk	Each	6		0.00
3.5)	Supplying drawing, connecting and testing of 0.61mm dia annealed copper conductor PVC insulated PVC sheathed telephone Wire/cables in Existing PVC conduit or a racks as required.				
a)	2 pair Telephone cable.	Meter	6		0.00
b)	4 pair Telephone cable	Meter	6		0.00
3.6)	Supplying and drawing co-axial TV cable RG-6 grade, 0.7 mm solid copper conductor PE insulated, shielded with fine tinned copper braid and protected with PVC sheath in the existing surface/ recessed steel/ PVC conduit as required.	Meter	6		0.00
3.7)	Providing, fixing connecting and testing of solder less Television Junction Box of following capacity ties as required in suitable size of m.s. hinged lockable cover box duly painted etc. as required of Krone type.				
a)	2 pair T.V Junction Box.	Each	6		0.00
3.8)	Supplying and drawing of UTP 4 pair CAT 6 LAN Cable in the existing surface/ recessed steel/ PVC conduit as required.				
a).	**1Run of cable**	Meter	6		0.00
3.9)	Supplying and fixing metal box of following sizes (nominal size) on surface or in reces with suitable size of phenolic laminated sheet cover in front including painting etc as required.				
a)	75 mm x 75 mm x 60 mm deep	Each	6		0.00
b)	100 mm x 100 mm x 60 mm deep	Each	6		0.00
	SUB-HEAD-Ill TOTAL CARRIED TO SUMMARY				**0.00**
4	**SUB-HEAD-lV:- SUPPLY OF LIGHTING FIXTURES.**				
4.1)	Supplying, installing, Fixing, testing and commissioning of **1 X 20W LED single tube Surface mounted fixture** & all accessories as required.	Each	24		0.00

4.2)	Supplying, installing, Fixing, testing and commissioning of **1 X 10W LED mirror light Surface mounted fixture** & all accessories as required.	Each	12		0.00
4.3)	Supplying, installing, Fixing, testing and commissioning of **1 X 10W LED Surface mounted fixture** & all accessories as required.	Each	12		0.00
4.4)	Supplying, installing, Fixing, testing and commissioning of 1**X 36W LED single tube** Surface mounted fixture & all accessories as required.	Each	126		0.00
4.5)	Supplying, installing, Fixing, testing and commissioning of **1200 mm Sweep Celling Fan** all accessories as required.	Each	72		0.00
4.6)	Supplying, installing, Fixing, testing and commissioning of **600 mm Sweep Celling Fan** all accessories as required.	Each	6		0.00
4.7)	Supplying, installing, Fixing, testing and commissioning of **Heavy Duty Exhaust fan 450 mm sweep** all accessories as required	Each	24		0.00
4.8)	Supplying, installing, Fixing, testing and commissioning of **Heavy Duty Exhaust fan 300/305 mm sweep** all accessories as required	Each	18		0.00
4.9)	Supplying, installing, Fixing, testing and commissioning of security light having 80 watt LED street light/road light luminaire type efficiency energy saving dia cast aluminium roadway luminaire with high power complete with connections fittings and including connecting with twin core 2.5 sqmm weather proof aluminium conductor cable complete set, street light brackets made out of GI tubing, light grade 40 mm bore 1200mm long bend to shape at 120 degree, fixed on pole by providing MS clamp made up of flat iron 50x6mm including bolts nuts ans washers of suitable size complete. Fixed upon steel tublar pole type 410 sp31 (9.00 mtr lng) with complete base plate, taper plug, bolts, nuts and screws etc duly painted internally and externally with metal oxide anti corrosive paint before erection and painting with two coats aluminium paint after erection complete all as confirming to IS 2713 (part-1 to 111) and complete.	Each	6		0.00
4.10)	Supplying, installing, Fixing, testing and commissioning of security light having 80 watt LED street light/road light luminaire type efficiency energy saving dia cast aluminium roadway luminaire with high power complete with connections fittings and including connecting with twin core 2.5 sqmm weather proof aluminium conductor cable complete set, street light brackets made out of GI tubing, light grade 40 mm bore 1200mm long bend to shape at 120 degree, fixed on pole by providing MS clamp made up of flat iron 50x6mm including bolts nuts ans washers of suitable size complete. Fixed upon steel tublar pole type 410 sp31 (9.00 mtr lng) with complete base plate, taper plug, bolts, nuts and screws etc duly painted internally and externally with metal oxide anti corrosive paint before erection and painting with two coats aluminium paint after erection complete all as confirming to IS 2713 (part-1 to 111) and complete.	Each	6		0.00

4.11)	Supplying, installing, Fixing, testing and commissioning of security light AIO is made with High Efficiency Mono Crystalline Solar PV Module, Lithium Ferro Phosphate battery with in-built BMS technology, High Efficacy LED, MPPT Solar Charge Controller and Aluminium Extruded body, specially designed Intelligent microwave sensor to control the dimming and brightness of light leads to extend working time. Multi-angle adjustable light module and Light Arm suitable for installation in different latitude regions. The Adjustable range of light source is -20º to +20º and the adjustable range for rotating the arm is -90º to +90º. wattage 60w having system lumen of 5000 lumen, Havells cat No: SOLAR AIO ALFA 60 W or Equivalent to Philips with connections fittings and including connecting with twin core 2.5 sqmm weather proof aluminium conductor cable complete set, street light brackets made out of GI tubing, light grade 40 mm bore 1200mm long bend to shape at 120 degree, fixed on pole by providing MS clamp made up of flat iron 50x6mm including bolts nuts ans washers of suitable size complete. Fixed upon steel tublar pole type 410 sp31 (9.00 mtr lng) with complete base plate, taper plug, bolts, nuts and screws etc duly painted internally and externally with metal oxide anti corrosive paint before erection and painting with two coats aluminium paint after erection complete all as confirming to IS 2713 (part-1 to 111) and complete.	Each	6		0.00
	SUB-HEAD - lV TOTAL CARRIED TO SUMMARY				**0.00**
5	**SUB-HEAD-V:- AIR CONDITIONING**				
5.1)	Supply & Installation high wall split units indoor/outdoor complete with cordless remote control unit and within build air ionizer and plasma filter for better indoor air quality with minimum 5-star rating and EER 3.2 of capacity 2 TR with complete set, including Supply and fixing bracket and clamps heady duty for outdoor unit of split type AC complete all as specified and directed.Air conditioning units will be having heating facilities, which will be supplied to wherever temperature is below the normal temperature				
	2.0 TR Hi Wall Unit (Invertor Units with 5 Star Rating)	Each	24		0.00
5.2)	Supply and fixing voltage stabilizer for automatic operation, single phase, naturally air cooled indoor type and designed for input variation between 110V to 250V with output voltage stabilizer at 230 with accuracy of + 2.5 % and capacity of 5 KVA.	Each	24		0.00
	SUB-HEAD - V TOTAL CARRIED TO SUMMARY				**0.00**
6	**SUB HEAD- VI : EARTHING**				
6.1)	Earthing with G.I. earth plate 600 mm X 600 mm X 6 mm thick including accessories, and providing masonry enclosure with cover plate having locking arrangement and watering pipe of 2.7 metre long etc. with charcoal/ coke and salt as required.	Set	18		0.00

ITI LIMITED

ANIL KUMAR SRIVASTAVA
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6.2)	Earthing with copper earth plate 600 mm X 600 mm X 3 mm thick including accessories, and providing masonry enclosure with cover plate having locking arrangement and watering pipe of 2.7 metre long etc. with charcoal /coke and salt as required.	set	18		0.00
6.3)	Supplying and laying 6 SWG G.I. wire at 0.50 metre below ground level for conductor earth electrode, including connection/ termination with GI thimble etc. as required.	RM	180		0.00
6.4)	Providing and fixing 25 mm X 5 mm G.I. strip in 40 mm dia G.I. pipe from earth electrode including connection with G.I. nut, bolt, spring, washer excavation and re-filling etc. as required.	RM	120		0.00
6.5)	Providing and fixing 25 mm X 5 mm G.I. strip on surface or in recess for connections etc. as required.	RM	6		0.00
6.6)	Providing and fixing 25 mm X 5 mm copper strip in 40 mm dia G.I. pipe from earth electrode including connection with brass nut, bolt, spring, washer excavation and re-filling etc. as required	RM	60		0.00
6.7)	Supply, Installation, Testing and commissioningof maintenance free earthing system. The earthing set shall comprise of (i) 1 No of copper bonded rod of diameter 17.2mm and length of 10 feet UL approved with 25 KA current discharge test from CPRI. The material shall be low carbon high tensile copper bonded rods with 99.9% of copper on the surface. The UL approval certificate shall be provided. (ii) 30 kg of earth enhance compound as per IEC 62561-7. There should not be requirement of any salt and charcoal. The RoHS certificate shall be provided from any NABL accredited labs for earth enhancement material. (iii) 1 No of copper busbar of size 25x6x150mm should be exothermic welded with copper bounded rod 17.2 mm dia x 3 mtr length. (iv) 1 No of PVC pit cover for covering of earthing. (v) Exothermic connection of 25x6x150mm busbar to 35 Sqmm copper cable. (vi) 35Sqmm PVC insulated copper cable for interconnection of earthingand Equipment.	set	18		0.00
	SUB-HEAD - VI TOTAL CARRIED TO SUMMARY				**0.00**
7	**SUB HEAD- VII : EXTERNAL CABLING AND CABLE END TERMINATION**				
7.1)	Supplying and laying of following size DWC HDPE pipe ISI marked along with all accessories like socket, bend, couplers etc. conforming to IS 14930, Part II complete with fitting and cutting, jointing etc..direct in ground (75 cm below ground level) including excavation and refilling the trench but excluding sand cushioning and protective covering Earthing etc., complete as required. (For External lighting)				
	63 mm dia (OD-63 mm & ID-51 mm nominal)	Metre	180		0.00
7.2)	Supplying of following 1100 volt grade XLPE insulated PVC sheathed copper conductor armoured cables				
	3.5C X 120 sq. mm Al. Ar. Cable For Incoming Power Supply	Metre	120		0.00
	3.5 core 50 sq. mm Cu.Cond.Ar.Cable.	Metre	120		0.00
	3core 6 sq. mm	Metre	600		0.00

7.3)	Supplying and making end termination with brass compression gland and copper lugs for following size of PVC insulated and PVC sheathed / XLPE aluminium conductor cable of 1.1 KV grade as required.				
	3.5C X 120 sq. mm Al. Ar. Cable For Incoming Power Supply	Nos.	12		0.00
	3.5 core 50 sq. mm Cu.Cond.Ar.Cable.	Nos.	12		0.00
	3core 6 sq. mm	Nos.	204		0.00
7.4)	Laying of one number PVC inulated and PVC sheathed/XLPE power cable of 1.1KV grade of following size direct in ground including excavation,sand cushioning,protective covering and refilling the trench etc. as required. . (For External lighting/power cable)				
a)	Up to 35 sq. mm	Metre	300		0.00
b)	Above 35sqmm and up to 95sqmm	Metre	120		0.00
c)	Above 95sqmm and up to 185sqmm	Metre	120		0.00
	SUB-HEAD - VII Total of Sub Head carried to Summary				**0.00**
8	**SUB HEAD- VIII FEEDER PILLAR PANEL**				
8.1)	SITC Of free standing suitable for out door installation dust & vermin proof feeder pillar made out of CRCA sheet ,required hard ware,duly painted by either two coats of zink /red oxide primer followwed by two coats of synthetic enmel paint for powder coating in grey or required shade . The feeder pillar having Neoprene rubber gasket of not less than 3mm thickness,hingled door with locking arrangement,gland plate.Thickness of sheet shall not be less than 2mm.Sheet metal works shall be processed with seven tank process,200A TPN 415V Electrolytic Cu Conductor bus bar with 100% Neutral (Fixed on 50x50x6mm thick MS Angle iron frame& covered with sheet metal from all sides)and having the following components.				
	Incoming :				
	One (1) No. 63A 4P MCCB (25KA)				
	3 Nos of LED type phase indicating lamps (RYB) with controlled by 2Amp MCB .				
	1 No.6A, 2 pole Auto/OFF/Manual (2 way with OFF) selector switch.				
	2 Nos. of push button actuator				
	Busbar :				
	Electrolytic high conductivity Copper three pole and 100%neutral bus bars rated at 200 amps having a maximum current density of 1 amp per sq mm insulated with heat shrinkable PVC sleeves & SMC/DMC supports.				
	Outgoings :				

	Three (3) Nos. 10 A-32A DP 10KA MCBs. with 10A-32A DP contactor (AC 1 Category with 230V Control Coil) using 1 No. 24 hour astronomical time switch on Auto/Manual arrangement with Auto/Manual selection switch, ON/OFF Push Buttons, Indication lamps & Control fuses etc .				
	Three (3) Nos. 32 A DP 10KA MCBs.				
	Full Set as above				
	Feedder pillar as described above	Set	6		0.00
8.2)	**MAIN ELECTRICAL PANEL FOR BUILDING BLOCK**				
	Designing, fabrication, supply, installation, testing and commissionings of front operated cubicle type compartmentalised, front access, free standing on 75MM "[" MS channel, dust and vermin proof (IP 42 degree protection) panel suitable for use at 415V, 3 phase, 4-wire 50Hz system suitable for fault level of required value symmetrical at 415V fabricated from 2mm thick CRCA MS sheets with hinged, gaskettted (Metal based neoprene) locable doors having structural reinforcement including 3mm thick gland plates on top and bottom, lifting hooks, GI earth strip of required size with 2 nos earth terminals, 2 nos 230V AC operated 250mm X 250mm size axial fans for exhaust of heat with On-Off toggle switches including 2 coated primer and 2 powder coated paint fnish of approved shade over metal surface cleaned and treated with seven tank process complete with interconnections etc as per specifications as required.main panel board should be CPRI Approved.				
	Panel shall have provision for entry of cables from the top or bottom through Cable Alley. All live accessible parts shall be shrouded and all equipment shall be finger touch proof. The busbars insulation shall be with heat shrinkable sleeves SMC/DMC shrouds and busbar supports shall be used. Padlocking facility shall be provided on all outgoing feeders doors and switch handles shall be locable in OFF position.				
	Suitable arrangement shall be made for termination of multiple incoming cables.				
	INCOMER				
	1 No. 250 Amp four pole MCCB with microprocessor Release O/L,S/C,E/F protection+ Spreder+Extended rotary handle. Moulded Case Circuit Breaker (Ics =100% Icu,36 KA).				
	Enclosure				
	Fabrication 400 Amps, TPN Electrolytic grade Aluminium Bus Bar (Ambient temperature 45° C, temperature rise limited to 40° C above ambient), PVC sleeving, control wiring, necessary hardware. for LT Panel as well as for functioning of Single / multi functioning Energy Meters.capacitors (Each vertical bay shall be equipped with space heater + thermostat, door switch illumination lamp all duly wired) **Space to be provided for Harmonic Filters to be installed in Future if required.For selecting the bus bar size 0.7 derating factor to be considered.**				
	INSTRUMENTS & ACCESSORIES				

	1 No. 96x96 MFM with 3Nos 250/5A CTs for 3 phase, 4 wire operation with LED display and selector switch with controlled by 3 sets of 2Amp MCB				
	3 Nos of LED type phase indicating lamps (RYB) with controlled by 2Amp MCB .				
	1 No.6A, 2 pole Auto/OFF/Manual (2 way with OFF) selector switch.				
	2 Nos. of push button actuator				
	OUTGOING				
	1 Nos.40A FP MCB For 4Way TPN DB				
	2Nos.63A FP MCB For 12Way TPN DB				
	9 Nos.40A DP MCB For 8Way/12Way SPN DB				
	1 Nos.63A FP MCCB For External Lighting feeder pillar				
	SPARE				
	1 Nos.40A FP MCB For 4Way TPN DB				
	1Nos.63A FP MCB For 12Way TPN DB				
	1 Nos.40A DP MCB For 8Way/12Way SPN DB				
	MAIN ELECTRICAL PANEL FOR BUILDING BLOCK as described above	Set	6		0.00
	SUB-HEAD - VIII Total of Sub Head carried to Summary				**0.00**
9	**SUB HEAD- IX Lightning Protection & Earthing System(LIGHTNING PROTECTION AS PER IEC 62305 / IS IEC 62305 AT LVL -I)(5X5MTR)**				
9.1	Supplying, Installation, Testing and commissioning of Vertical Aluminium Lighting Arrester of 16MM dia, 1000 mm long with Gun Metal base plate . Model : APSAT116AL+APSTB16-253 Make : APS	Nos.	36		0.00
9.2	Supplying, Installation, Testing and commissioning 8 mm round aluminium conductor for horizontal lightning protection - run in roof. Model : AL8. Make :APS	Mtr.	1200		0.00
9.3	SITC of roof conductor holder for 8 mm round aluminium conductor made of Gun Metal for horizontal installation. The distance between each holder should be min of 1 mtr. Model : APSRCS50. Make : APS	Nos.	1200		0.00
9.4	Supplying, Installation, Testing and commissioning of **T connector** for connecting of 8 mm Al round conductor . The connector should be of Gun Metal with SS nuts and bolt. Model : APSTCRC50 , Make :APS	Nos.	102		0.00

9.5	Supplying, Installation, Testing and commissioning of **Cross connector** for connecting of 8 mm Al round conductor . The connector should be of Gun Metal with SS nuts and bolt. Model : APSCCRC50 , Make : APS	Nos.	18		0.00
9.6	Supplying, Installation, Testing and commissioning of Expansion piece along with connector to compensate the expansion of round 8 mm Al conductor when temperature variation . Connection should be in every 20 mtr. Model : APSEXP50 , Make : APS	Nos.	36		0.00
9.7	GLUE- Glue is used to fix roof conductor holder on roof.	Nos.	36		0.00
	DOWN CONDUCTOR & RING CONDUCTOR AS PER IEC 62305				
9.8	Supplying, Installation, Testing and commissioning of 8 mm round aluminium conductor as a down conductor mounted in the surface of wall which will carry the lightning current to earth pit. Model : AL8. Make : APS	Mtr.	180		0.00
9.9	SITC of Down conductor holder for 8 mm round aluminium conductor of min distance between the wall to the conductor will be of 50 mm. The distance between each holder should be min of 1 mtr. Model : APSRCS50 Make : APS	Nos.	180		0.00
9.10	Supplying, Installation, Testing and commissioning of straight connector for connecting of 8 mm Al round conductor . The connector should be of Aluminium with SS nuts and bolt. Model : APSPCRC50, Make : APS	Nos.	36		0.00
9.11	SITC of 7 digit lightning strike counter. Model - LSR2 Make - LPI	Nos.	36		0.00
9.12	Supplying, Installation, Testing and commissioning of Test Joint Point for 25X3MM CU STRIP , the size should be of 25 x 3 x 150 mm copper in ABS boxes. Model : APSTLBCU. Make : APS	Nos.	**60**		0.00
	EARTHING AS PER IEC 62561- 2 & 7				

9.13	Supplying, Installation, Testing and commissioning of advance chemical gel earthing system for the proper dissipation of fault / leakage current to the ground and ensure the continuous electrical connectivity and proper functioning to the electrical system. The earth rod shall be of UL listed & CPRI tested 3 meter long 17.2 mm dia 250 microns copper bonded steel rod with the connecting clamp (ss - rod to tape). The UL listed copper bonded rod also should be tested & ceritifed from CPRI for a short circuit current of 46 KA or more. The UL listing shall be punched / engraved on the rod for the physical verification at site. The engravings shall contain the following details - UL Control number, Dimension details of the rod, Product model number & UL certificate reference number as per detailed technical specification attached. To ensure the electrical conductivity, 50 Kgs (per pit) or more resistance grounding minerals per earth pit / earth rod shall be used along with the copper bonded rod. As per IEEE 80-2013 (Clause 14.5 d), the grounding minerals shall be tested & certified for the resistivity of less than 0.12 ohm-mtr. The grounding minerals should be ROHS certified to ensure it does not pollute the ground water as per technical specification attached.	Nos.	36		0.00
9.14	**GI STRIP(25X6 MM) :** FOR EARTHING INTERCONNECTION	Mtr.	600		0.00
	SUB-HEAD - IX Total of Sub Head carried to Summary				**0.00**
10	**SUB HEAD- X: SOLAR SYSTEMS**				
11.1)	Supply, installation, testing and comminsioning of 1 kw solar panel systems along with supplyinh, installaing, testing and comminsioning of 2 kw battery bank to store the energy generated from solar panels during the day and supplying the same to solar led lighting systems in the internal and external areas of the buildings and campus. The batteries shall be solar photo voltaic batteries of Tubular Gel type, low maintenance, lead Acid and made of hard rubber container. Storage batteries should conform IEC 61427 / IS 1651 / IS 133369 as per specifications. The batteries shall use 2 / 12V cells and battery capacity is to be designed at C10 rate with end cell cut off voltage of 1.85 V / cell.	Each	6		0.00
11.2)	Supply, installation, testing and comminsioning of (Flute plate collector) based on direct transfer of heat of capacity 200 LPD. Including all accessories are nonreturn cast copper alloy screwed down high pressure with crutch or butterfly handle screwed both and for iron pipes or union of as require size 15mm/20mm dia and including all accessories etc.	Each	6		0.00
	SUB-HEAD - X Total of Sub Head carried to Summary				**0.00**
	GRAND TOTAL ELECTRIC WORKS				**0.00**

Ref: ITI/NSU/CIVIL-DEL/2023/0106/01					Date 15-03-2023
ITI LMITED NETWORK SYSTEM UNIT DOORVANINAGAR, BANGALORE 560 016.					
BILL OF QUANTITY : PLUMBING WORKS :- GROUP 6 (Jammu), No. of Buildings are 6, Type-H.					
BIDDER'S NAME					
S.No.	**DESCRIPTION OF ITEM**	**UNIT**	**QTY**	**RATE (RS.)**	**TOTAL AMOUNT**
	PLUMBING WORKS				
1.0	**SUBHEAD - I : Internal Drainage (Rainwater, Soil, Waste & Fittings)**				
1.1	Providing and fixing on wall face unplasticised rigid pvc rain water **pipes** conforming to IS 13592 type a including jointing with seal ring conforming to IS 5382 leaving 10mm gap for thermal expansion (i) single socketed pipes				
	110mm diameter	Metre	96.00		0.00
1.2	Providing and fixing on wall face unplasticised PVC moulded **fittings/ accessories** for unplasticised rigid PVC rain water pipes conforming to IS 13592 type A including jointing with seal ring conforming to IS 5382 leving 10mm gap for thermal expansion				
	Coupler				
	110mm	Each	30.00		0.00
1.3	Single tee without door				
	110x110x110 mm	Each	18.00		0.00
1.4	Bend 87.5o				
	110mm bend	Each	18.00		0.00
1.5	Shoe (plain)				
	110mm shoe	Each	12.00		0.00
1.6	Providing and fixing unplasticised PVC **pipe clips** of approved design to unplasticised PVC rain water pipes by means of 50x50x50mm hard wood plugs screws with MS screws of required length including cutting brick work and fixing in cement mortar 1:4(1cement 4 coarse sand) and making good the wall etc. complete				
	110mm	Each	30.00		0.00
1.7	Providing and fixing to the inlet mouth of rain water pipe cast iron **grating** 15cm dia meter and weighing not less than 440 grams	Each	30.00		0.00

1.8	Providing & fixing stainless steel A ISI 304(18/8) kitchen sink as per I.S 13983 with C.I. brackets and stainless steel plug 40 mm including painting of fittings and brackets, cutting and making good the walls wherever required: Kitchen sink with drain board.				
	510x1040mm bowl depth 250mm	Each	6.00		0.00
1.9	Providing & fixing C.P. brass (Long body) bib cock of approved quality conforming to IS standerd and weight not less then 690 gms.				
	15 mm nominal bore	Each	36.00		0.00
1.10	Providing and fixing grease trap of approved quality & make and as per the direction of Engineering-charge.				
	Grease trap (1.6 LPS) Sise: 600(L) X 450(W) X 415(H) For Stall **(Make: Ashirvad)**	Each	6.00		0.00
1.11	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes having thermal stability for hot & cold water supply including all (CPVC) plain & brass threaded fittings including fixing the pipe with clamps at 1.00 m spacing. This includes jointing of pipes & fittings with one step CPVC solvent cement and testing of joints complete as per direction of engineer in charge.				
	Internal Work - Exposed on Wall				
	15 mm nominal outer dia Pipes	RM	24.00		0.00
1.12	20 mm nominal outer dia Pipes	RM	36.00		0.00
1.13	25 mm nominal outer dia Pipes	RM	12.00		0.00
1.14	32 mm nominal outer dia Pipes	RM	6.00		0.00
1.15	Providing and fixing Chlorinate Polyvinyl Chloride (CPVC) pipes having thermal stability for hot & cold water supply including all CPVC plain & brass threaded fittings i/c fixing the pipe with clamps at 1.00 m spacing. This including jointing of pipes & fittings with one step CPVC solvent cement and the cost of cutting chases and making good the the same including testing of joints complete as per direction of engineer in charge.				
	Concealed work including cutting chases and making good the walls etc.				
	15 mm nominal outer dia Pipes	RM	24.00		0.00
1.16	20 mm nominal outer dia Pipes	RM	108.00		0.00
1.17	25 mm nominal outer dia Pipes	RM	6.00		0.00
	TOTAL OF RAIN WATER PIPES AND FITTINGS CARRIEDTO SUMMARY				**0.00**
2	**SUBHEAD- II MAN HOLE**				

2.1	Providing and laying non-pressure NP2 class (light duty) R.C.C. pipes with collars jointed with stiff mixture of cement mortar in the proportion of 1:2 (1 cement : 2 fine sand) including testing of joints etc. complete :				
	100 mm dia. R.C.C. pipe	RM	30.00		0.00
2.2	150 mm dia. R.C.C. pipe	RM	60.00		0.00
2.3	250 mm dia. R.C.C. pipe	RM	120.00		0.00
2.4	Providing, laying and jointing glazed stoneware pipes class SP-1 with stiff mixture of cement mortar in the proportion of 1:1 (1 cement : 1 fine sand) including testing of joints etc. complete :				
	100 mm diameter	RM	30.00		0.00
2.5	150 mm diameter	RM	120.00		0.00
2.6	Providing and laying cement concrete 1:5:10 (1 cement : 5 coarse sand : 10 graded stone aggregate 40 mm nominal size) up to haunches of S.W. pipes including bed concrete as per standard design :				
	100 mm diameter	RM	60.00		0.00
2.7	150 mm diameter	RM	120.00		0.00
2.8	250 mm diameter	RM	120.00		0.00
2.9	Constructing brick masonry manhole in cement mortar 1:4 (1 cement : 4 coarse sand) R.C.C. top slab with 1:2:4 mix (1 cement : 2 coarse sand : 4 graded stone aggregate 20mm nominal size), foundation concrete 1:4:8 mix (1 cement : 4 coarse sand : 8 graded stone aggregrate 40mm nominal size) inside plastering 12 mm thick with cement mortar 1:3 (1 Cement : 3 coarse sand) finished with floating coat of neat cement & making channels in cement concrete 1:2:4 mix (1 Cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) finished with a floating coat of neat cement complete as per standard design:				
	Inside size 90x80cm and 45cm deep including C.I. cover with frame (light duty) 455x610mm internal dimensions total weight of cover and frame to be not less than 38kg (weight of cover 23kg and weight of frame 15 kg)				
	With common burnt clay FPS (non modular)bricks of class designation 7.5	Each	24.00		0.00
2.10	Inside size 120x90cm and 90cm deep including C.I. cover with frame (medium duty) 500mm internal diameter, total weight of cover and frame to be not less than 116 kg (weight of cover 58 kg and weight of frame 58 kg)				
	With common burnt clay FPS (non modular)bricks of class designation 7.5.	Each	12.00		0.00
2.11	Extra for depth for manholes				
	Size 90x80 cm				

	With common burnt clay FPS (non modular)bricks of class designation 7.5	Metre	12.00		0.00
	Size 120x90cm				
2.12	With common burnt clay FPS (non modular)bricks of class designation 7.5	Metre	3.00		0.00
2.13	Providing and fixing square-mouth S.W. gully trap class SP1 complete with C.I. grating brick masonry chamber with water tight C.I. cover with frame of 300 x300 mm size (inside) the weight of cover to be not less than 4.50 kg and frame to be not less than 2.70 kg as per standard design :				
	With common burnt clay F.P.S.(non modular) bricks of class designation 7.5	Each	6.00		0.00
2.14	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 50m.				
	All kinds of soil	Cum	90.00		0.00
2.15	Excavating trenches of required width for pipes, cables, etc including excavation for sockets, and dressing of sides, ramming of bottoms, depth upto 1.5 m including getting out the excavated soil, and then returning the soil as required, in layers not exceeding 20cm in depth,including consolidating each deposited layer by ramming,watering,etc. and disposing of surplus excavated soil as directed ,within a lead of 50m.				
	Pipes. cables exceeding 80mm dia but not exceeding 300mm dia.	Metre	120.00		0.00
2.16	Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth: consolidating each deposited layer by ramming and watering, lead up to 50 m and lift upto 1.5 m	Cum	90.00		0.00
2.17	Providing orange colour safety foot rest of minimum 6mm thick plastic encapsulated as per IS : 10910 on 12mm dia steel bar conforming to IS : 1786 having minimum cross section as 23 mmx25mm and over all minimum length 263mm and width as 165mm with minimum 112 mm space between protruded legs having 2mm thread on top surface by ribbing or chequering besides necessary and adequate anchoring projections on tail length on 138mm as per standard drawing and suitable to with stand the bend test and chemical resistant test as per specification and having manufacture's permanent identification mark to be visible even after fixing, including fixing in manhole with 30x20x15 cm cement concrete block 1:3:6 (1cement : 3coarse sand : 6 graded stone aggregate 20 mm nominal size) complete as per design.	Each	120.00		0.00

	Constructing brick masonry road gully chamber 50x45x60 cm with bricks in cement mortar 1:4 (1 cement :4 coarse sand) including 500x450mm precast R.C.C. horizontal grating with frame complete as per standard design:				
	With common burnt clay F.P.S. bricks(non modular) of class designation 7.5	Each	12.00		0.00
2.18	Constructing brick masonry road gully chamber 45x45x77.5 cm with bricks in cement mortar 1:4 (1 cement :4 coarse sand) with precast R.C.C. vertical grating complete as per standard design:				
	With common burnt clay F.P.S. bricks(non modular) of class designation 7.5	Each	12.00		0.00
2.19	Providing, fixing, jointing and testing in position of ISI marked UV stabilized UPVC pipes for soil, waste and vent, Type-B as per IS : 13592 suitable for rubber ring joints, including all neccessary specials and fittings (confirming to IS:14735) i.e. bends, tees, junctions (with or without doors), reducers, WC connectors, couplers, cowels, clamps, rubber rings, clean outs etc. fixing at wall/ ceiling/ floor level supported by clamp & hangers etc. in concealed / inside duct / under floor & basement ceiling / external work etc. including chase cutting as required, excavation and back filling in all kind of soils, suspended from floor under false ceiling or embedding the pipes laid under floors / building in 75 mm. alround 1:2:4 cement concrete (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) including cost of shuttering for proper completion of the work, breaking and making good the walls and floors etc. after pipes have been duly laid and tested. The rubber ring shall confirm to IS:5382.				
	The Pipes will be supported with threaded G I rods & clamps on 50x50x5 mm slotted angle. The cost will include all support arrangements. The work includes commissioning of all pipes lines as per drawings and specifications and as directed by engg-in-charge at site.				
	75mm outer dia	Metre	18.00		0.00
	110mm outer dia	Metre	18.00		0.00
	160mm outer dia	Metre	24.00		0.00
2.20	Providing, fixing, jointing and testing in position ISI marked (IS:4985) UPVC pipes of min 6 Kg/ Sqcm rating with fitting for waste pipe from fixtures to floor trap including reduces, enlarger, socket, couplers, bends, tees etc including fixing at wall/ ceiling level supported by clamp & hangers etc. cutting holes in wall/ floors/ slabs and making good the same with cement concrete 1:2:4 complete as required.				
	40mm outer dia	Metre	18.00		0.00
	50mm outer dia	Metre	18.00		0.00
	63mm outer dia	Metre	6.00		0.00

2.21	Providing & fixing UPVC **Floor trap** of self cleansing design with CP Jali complete in all respects. (Make : Supreme / Finolex / Prince).				
	a) 100 mm inlet and 100 mm outlet.				
	(with 127dia Glossy CP Grating Jayna				
	model no.RRB 127)	Each	6.00		0.00
	b) 100 mm inlet and 75 mm outlet.				
	(with 102 mm dia CP Glossy Grating Jayna				
	model no. RRB 102)	Each	6.00		0.00
2.22	Providing & fixing 110m x 50mm waste with PVC reducer including cutting chases in floor, cutting RCC slab complete as required.	Each	6.00		0.00
	TOTAL OF MAN HOLE CARRIED TO SUMMARY				**0.00**
3	**SUBHEAD -III PUMP**				
3.1	Providing & fixing fully submersible sump pumps for dewatering with C.I casing & shaft suitable for operation on 400 / 440 V,3 phase, pH 50 cycle A/C power supply.				
	Sump Pumps(For basement drainage)				
	Location - Inside Drainage sump with electrical panel & all controls,cyclic operation				
	2 pumps- both working during extra high level in sump.				
	Flow rate(each pump)=3 lps,head=12m.				
	Solid Handlling-15mm	Set	6.00		0.00
	Providing and fixing gun metal non- return valve of approved quality (screwed end) :				
	32 mm nominal bore	Each	6.00		0.00
3.2	Vertical				
	40 mm nominal bore	Each	6.00		0.00
3.3	Vertical				
	50 mm nominal bore	Each	6.00		0.00
	TOTAL OF PUMP CARRIED TO SUMMARY				**0.00**
4	**Subhead-IV: External Water Supply**				

4.1	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes having thermal stability for hot & cold water supply including all (CPVC) plain & brass threaded fittings. This includes jointing of pipes & fittings with one step CPVC solvent cement,trenching,refilling and testing of joints complete as per direction of engineer in charge. .				
	20 mm nominal outer dia Pipes	RM	60.00		0.00
4.2	25 mm nominal outer dia Pipes	RM	30.00		0.00
4.3	32 mm nominal outer dia Pipes	RM	30.00		0.00
4.4	40 mm nominal outer dia Pipes	RM	30.00		0.00
4.5	Providing and fixing gun metal gate valve with C.I. wheel of approved quality (screwed end) :				
	25 mm dia nominal bore	Each	6.00		0.00
4.6	20 mm dia nominal bore	Each	12.00		0.00
4.7	32 mm dia nominal bore	Each	12.00		0.00
4.8	40 mm dia nominal bore	Each	6.00		0.00
	TOTAL OF External Water Supply CARRIED TO SUMMARY				**0.00**
5	**Subhead-V: RAIN WATER HARVESTING PIT**				
5.1	Providing and constructing Rainwater harvesting pit of 2500 (Dia mm) X 2500mm (D) size (Internal) in overall size with inlet and outlet connection with upto 150mm from ground level 1st class brick 230mm thick in Cement mortar 1:4 (1 Cement : 4 Coarse sand) inside and outside 12mm thick plaster with Cement mortar 1:3 (1 Cement : 3 Coarse sand) with a floating coat of neat cement on inside surface. After 1500, depth 500mm thick border. C.I. (heavy duty) manhole cover 560mm (weight not less than 208 kg) including necessary excavation (all type SOIL hard-rock)backing filling, disposal of surplus earth, providing and fixing of C.I. manhole steps complete as per standard design.	Each	6.00		0.00
5.2	Boring/drilling bore well of required dia for casing / strainer pipe, by suitable method prescribed in IS:2800 (part-1) including collecting samples from different strata, preparing and submitting strata chart/bore log, including hire & running charges of all equipments, tools, plants & machineries required for the job, all complete as per direction of engineer-in-charge, upto 90 metre depth below ground level.				
	All type sof soil				
	350mm dia	Metre	72.00		0.00

5.3	Supplying, assembling, lowering and fixing in vertical position in bore well unplasticized PVC medium well screen (RMS) pipes with ribs, conforming to IS : 12818, including hire & labour charges, fittings & accessories etc, all complete, for all depths, as per direction of engineer-in-charge.				
	200mm nominal dia	Metre	72.00		0.00
5.4	Supplying & filling, sepreading & leveling stone boulders of size range 5cm to 20cm, in the recharge pit, in the required thickness, for all leads & lifts, all complete, for all depths, as per direction of engineer-in-charge.	Cum	30.00		0.00
5.4	Supplying & filling, sepreading & leveling gravels of size range 5mm to 10mm, in the recharge pit, over the existing layer of boulders, in the required thickness, for all leads & lifts, all complete, as per direction of engineer-in-charge.	Cum	30.00		0.00
5.6	Supplying & filling, sepreading & leveling coarse sand of size range 1.5mm to 20mm, in the recharge pit, in the required thickness over gravel layer, for all leads & lifts, all complete, as per direction of engineer-in-charge.	Cum	30.00		0.00
5.7	Providing and fixing Bail plug / Bottom plub of required dia to the bottom of pipe assembly of tubewell as per IS : 2800 (part - 1)				
	200mm dia	Each	6.00		0.00
5.8	Providing and fixing in position pre-cast RCC manhole cover and frame of required shape & approved quality				
	EHD-35				
	Circular shape 560 mm internal diameter	Each	12.00		0.00
	TOTAL OF RAIN WATER HARVESTING CARRIED TO SUMMARY				**0.00**
6	**Subhead:- VI - Sanitary Fixtures**				
6.1	Providing & fixing of white vitreous china pedestal type water closet(European type) with seat and lid, 10 liter low level white viterous china flushing cistern C.P.flush bend with fittings & C.I.brackets ,40mm flush bend, overflow arrangment with specials of standard make and mosquito proof coupling of approved municipala design complete including painting of fittings and brackets, cutting and making good the wall and Floors wherever required:				
	W.C pan with ISI marked white solid plastic seat and lid.	Each	6.00		0.00
6.2	Providing & fixing wash basin with C.I. brackets, C.P brass pillar taps,32 mm C.P. brass waste of standard pattern, including painting of fittings and brackets,cutting and making good the walls wherever required:				
	White Vitreous China Wash basin size 550x400 mm with a pair of 15 mm C.P. brass pillar taps	Each	6.00		0.00

6.3	Providing and fixing PTMT towel ring trapezoidal shape 215 mm long, 200 mm wide with minimum distances of 37 mm from wall face with concealed fittings arrangement of approved quality and colour, weighing not less than 88 gms.	Each	6.00		0.00
6.4	Providing & fixing PTMT soap dish Holder having length of 138mm,breadth 102mm, height of 75mm with concealed fitting arrangements.Weighing not less than 106gms.	Each	6.00		0.00
6.5	Providing & fixing mirror of superior glass(of aproved quality) and of required shape and size with plastic moulded frame of approved make and shade with 6mm thick hard board backing:				
	Rectangular Shape 453x357mm	Each	6.00		0.00
6.6	Providing and fixing toilet paper holder :				
	C.P. brass	Each	6.00		0.00
6.7	Providing and fixing P.V.C waste pipe for sink or wash basin including P.V.C waste fitting complete .				
	Semi rigid pipe				
	a) 40 mm dia	Each	6.00		0.00
6.8	Providing and fixing C.P.brass bottle trap 32mm size bottle trap of approved quality & make as approved by Engineer-in-charge.	Each	6.00		0.00
6.9.	Providing and fixing P.V.C connection with brass union.				
	45cm length.				
	15mm nominal bore	Each	24.00		0.00
6.10	Providing and fixing C.P. bass angle valve for basin mixer and geyser points of approved quality conforming to I.S:8931.				
	15 mm nominal bore	Each	24.00		0.00
6.11	Providing & fixing C.P. hand spray with lever control (health faucet) and flexible hose 1 m long connection with C.P. holder for hand spray complete in all respects as per direction of Engineer-Incharge.	Each	6.00		0.00
6.12	Providing and placing on terrace (at all floor levels) polyethylene water storage tank, IS : 12701 marked, with cover and suitable locking arrangement and making necessary holes for inlet, outlet and overflow pipes but without fittings and the base support for tank.	per ltr	6000.00		0.00
6.13	Providing and fixing white vitreous china flat back half stall urinal of size 580x380x350 mm with white PVC automatic flushing cistern,with fittings, standard size C.P. brass flush pipe, spreaders with unions and clamps (all in C.P. brass) with waste fitting as per IS :2556, C.I. trap with outlet grating and other couplings in C.P. brass,including painting of fittings and cutting and making good the walls and floors wherever required :				
	Single half stall urinal with 5 litre P.V.C. automatic flushing cistern	Each	6.00		0.00

	TOTAL OF SANITARY FIXTURES CARRIED TO SUMMARY				**0.00**
7	**Subhead:- VII SEPTIC TANK FIXTURES**				
	Supplying and fixing C.I. cover without frame for manholes :				
7.1	455x610 mm rectangular C.I. cover (light duty) the weight of the cover to be not less than 23 kg	Each	12.00		0.00
7.2	Supplying and fixing CI vent pipe--80 mm dia	RM	30.00		0.00
7.3	Supplying and fixing CI cowl.	Each	6.00		0.00
7.4	Making soak pit 2.5 m diameter 3.0 metre deep with 45 x 45 cm dry brick honey comb shaft with bricks and S.W. drain pipe 100 mm diameter, 1.8 m long complete as per standard design.				
	With common burnt clay F.P.S. (non modular) bricks of class designation 7.5	Each	6.00		0.00
	TOTAL OF SEPTIC TANK CARRIED TO SUMMARY				**0.00**
	GRAND TOTAL OF PUMBING WORKS				**0.00**

ITI LIMITED

Ref: ITI/NSU/CIVIL-DEL/2023/0106/01 **Date 15-03-2023**

ITI LMITED
NETWORK SYSTEM UNIT
DOORVANINAGAR, BANGALORE 560 016.

BILL OF QUANTITY : IT & FIRE FIGHTING WORKS :- GROUP 6 (Jammu), No. of Buildings are 6, Type-H.

BIDDER'S NAME					
S. No.	**Description**	**Unit**	**QTY**	**RATE (Rs)**	**Total Amount**
1	**ACCESS CONTROL SYSTEM consisting of the following** (a) Supply, Installation, testing and commissioning of the access control system including the following equipments including necessary fitting, fixtures, cables, etc. (Model No./make RBH-Axiom) 1 nos per node. (b) 2-Door Control Panel with universal cabinet and power supply and required license.(Model No./make RBH-IRC-2000) 3 nos each per node. (c) Biometric reader. (Model No./make BFR-350) 5 nos each per node. (d) PROXIMITY CARD. (Model No./make PBH Smart Card) 20 nos each per node.	Set	6.00		0
	TOTAL FOR ACCESS CONTROL SYSTEMS WORKS				**0**
2	**VIDEO SURVEYLANCE SYSTEMS** Supply, installation, testing and commissioning of physical intrusion detection and prevention system including all necessary accessories, wires and fixtures. The system should be equipped with central monitoring software and server at NOC with complete necessary licenses (a) Indoor Dome Camera (Model No Mobotix m 26) 3 Nos per node (b) Out door type camera (Model No Mobotix m 26) 5 Nos per node (c) Network Vide Recorder system (Brand Mobotix) 1 Nos per node (d) 22" lcd display complete with all wiring and necessary fittings. (Make Samsung/LG) 1 Nos per node (e) 1 no PC loaded/ installed with necessary lisc. Software for video surveylance. (Make Software: Mobotix, PC Hardware: Dell/HP) 1 Nos per node	**Set**	6.00		0
	TOTAL FOR VIDEO SURVEYLANCE SYSTEMS				**0**

3	**PHYSICAL INTRUSION DETECTION AND PREVENTION SYSTEM consisting of the following:** (a) Supply, installation, testing and commissioning of physical intrusion detection and prevention system including all necessary accessories.(Model No Securico President) 1 nos each per node. B)Intrusion Controller panel(Make :Securico President). 1 no per node. C)Keypad - Alpha Addressable LCD Keypad (Model No Securico President). 1 per node. D) PIR Sensor (make: Optex). Qty: 8 nos per node. E) Beam Protector (Covering the entire parameter of the node) (make:Optex). Qty: 10 per node. F) Ground sensor (make: Optex). Qty: 8 nos per node. G) 130 db hooter (Make: Securico) Qty: 4 no per node. H) 2ft pole for beam detector (GI Pipe). Qty: 5 nos per node.	**Set**	6.00		0
	TOTAL FOR PHYSICAL INTRUSION SYSTEM WORKS				**0**
4	**FIRE DETECTION AND SUPPRESSION SYSTEM consisting of the following:** **(**a) Supplying, installing, testing and commissioning ofaddressable Main control panel comprising of visual and audible fire and fault alarms and signals, indicators and all other accessories. Panel shall be IS Approved. The system shall be nstalled with complete necessary fittings and fixtures including 2C x 1.5 sqmm and 2C x 2.5 sqmm ISI marked cables and wires. All the conduits hall be as per NBC specifications. (Model No Kentek Syncro As) 1 nos each per node. (b) OTI-AX-200TE - Photoelectric Detector with Synchronized twin beam, 200ft outdoor all weather range, IP65 Lightning Protection Level 14kV, 99% beam blocking stability includes pole mounting kit (Model No OTI-AX-200TE) 5 nos each per node. (c) OTIBC3 - Back cover for OTIAX200TF (Model No OTIBC3) 5 nos each per node. (d) SOUNDER 12V - High power 130 db, Police Siren Sound, Suitable for Indoor and Outdoor application. Tamper Loop. (Model No Roshni red 32 tone) 4 nos each per node. (e) Smoke detectors(Model No Apollo Discover / 58000-600) 32 nos each per node. (f) Heat detectors(Model No Apollo Discover / 58000-400) 1 nos each per node. (g) Multi-Criteria detectors(Model No Apollo Discover) 3 nos each per node. (h) Manual Call Point (Breaking Glass type)(Model No Apollo Discover /55000-971) 5 nos each per node. (j) Sounder / Flasher with Control Module (Model No Apollo Discover) 8 nos each per node. (k) Short Circuit Isolator 1 nos each per node. (l) Control modules for AHU / FAN trappings(Model No/Make: SS) 2 nos each per node. (m) Fire Signages- photoluminescent Green or Red color safety signages in different sizes / graphics / colours /texts can be made according to the standards 2 nos each per node.	**Set**	6.00		0

	(a) GAS SUPPRESSION SYSTEM FM 200 Gas based Fire Suppression System shall be considered for equipment storage room and server room. Qty 1 no system per node.				
	FIRE EXTINGUISHER (a) CO2 type cylindrical shape fire extinguisher - 4.5 Kg Capacity with requisite fixing arrangement (Model No/make Ventex) 5 nos each per node. (b) ABC type fire extinguisher - 6 Kg capacity with requisite fixing arrrangement (Model No/make Ventex) 5 nos each per node. (c) Dry chemical powder type cylindrical shape fire extinguisher - 6 Kg Capacity with requisite fixing arrangement (Model No/make Ventex Dry powder 4308/14609) 5 nos each per node. (d) Mechanical foam type fire extinguishers with requisite fixing arrangement (Model No/make Ventex) 5 nos each per node. (e) Trolley mounted type - 9 litres capacity. 1 nos each per node. (f) Trolley mounted type -50 litres capacity. 1 nos each per node. (g) Supply and installation of Fire buckets of 9 litres capacity. Stand made of MS Channel and angle to accommodate 4 Nos. of buckets filled with cleaned soft sand. Rate shall be inclusive of red panit for buckets and MS Sand as per Fire Code. 5 nos each per node.				
	TOTAL FOR FIRE FIGHTING WORKS				**0**
	GRAND TOTAL OF IT & FIRE FIGHTING WORKS				**0**

Ref: ITI/NSU/CIVIL-DEL/2023/0106/01			Date 15-03-2023
ITI LMITED NETWORK SYSTEM UNIT DOORVANINAGAR, BANGALORE 560 016.			
SUMMARY SHEET:- GROUP 7 (Himachal Pradesh), No. of Buildings are 2, Type-H.			
BIDDER'S NAME			
Sl.No.	**DESCRIPTION**	**AMOUNT (Rs.)**	**AMOUNT IN WORDS (Rs.)**
I	**SECTION A**		
	CIVIL WORKS	0.00	
II	**SECTION B**		
	ELECTRICAL WORKS	0.00	
III	**SECTION C**		
	PLUMBING WORKS	0.00	
IV	**SECTION D**		
	IT AND FIRE FIGHTING WORKS	0.00	
	GRAND TOTAL FOR THE PROJECT	**0.00**	

Ref: ITI/NSU/CIVIL-DEL/2023/0106/01					Date 15-03-2023
ITI LMITED NETWORK SYSTEM UNIT DOORVANINAGAR, BANGALORE 560 016.					
BILL OF QUANTITY: CIVIL WORKS :- GROUP 7 (Himachal Pradesh), No. of Buildings are 2, Type-H.					
BIDDER'S NAME					
S.No	**DESCRIPTION**	**UNIT**	**QTY**	**RATE**	**AMOUNT**
1	**SECTION-1: EARTHWORK**				
1.1	Earth work in excavation by mechanical means (Hydraulic excavator)/ manual means over areas (exceeding 30 cm in depth, 1.5 m in width as well as 10 sqm on plan) including getting out and disposal of excavated earth lead upto 50 m and lift upto 1.5 m, as directed by Engineer-in- charge.				
	All kinds of soil.:	Cum	37.99		0.00
1.2	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 kinds of soil.:	cum	75.99		0.00
1.3	Excavation work by mechanical means (Hydraulic excavator)/ manual means in foundation trenches or drains (not exceeding 1.5m 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 soils as directed, within a lead of 50 m.				
	Ordinary rock	cum	379.93		0.00
1.4	Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift upto 1.5 m.	cum	1101.59		0.00
1.5	Extra for every additional lift of 1.5 m or part thereof in excavation / banking excavated or stacked materials. **: For Excavation beyond 1.5m depth**				
	All kinds of soil	cum	70.40		0.00
1.6	Supplying and filling in plinth with sand under floors, including watering, ramming, consolidating and dressing complete.	cum	49.75		0.00

	NOTE : Deduction shall be made of columns, brick walls etc. for calculation of quantity of sand filling for payment				
1.7	Surface dressing of the ground including removing vegetation and inequalities not exceeding 15 cm deep and disposal of rubbish, lead up to 50 m and lift up to 1.5 m.				
	All kinds of soil	sqm	1500.00		0.00
1.8	Supplying chemical emulsion in sealed containers including delivery as specified.				
	Chlorpyriphos/ Lindane emulsifiable concentrate of 20%	Litre	88.47		0.00
1.9	Diluting and injecting chemical emulsion for POST-CONSTRUCTIONAL anti-termite treatment (excluding the cost of chemical emulsion) :				
	Along external wall where the apron is not provided using chemical emulsion @ 7.5 litres / sqm of the vertical surface of the substructure to a depth of 300mm including excavation channel along the wall & rodding etc. complete:				
	With Chlorpyriphos/ Lindane E.C. 20% with 1% concentration	Metre	135.00		0.00
1.10	Along the external wall below concrete or masonry apron using chemical emulsion @ 2.25 litres per linear metre including drilling and plugging holes etc.:				
	With Chlorpyriphos/ Lindane E.C. 20% with 1% concentration	Metre	270.00		0.00
1.11	Treatment of soil under existing floors using chemical emulsion @ one litre per hole, 300 mm apart including drilling 12 mm diameter holes and plugging with cement mortar 1 :2 (1 cement : 2 Coarse sand) to match the existing floor:				
	With Chlorpyriphos/Lindane E.C. 20% with 1% concentration	Sqm	235.20		0.00
1.12	Treatment of existing masonry using chemical emulsion @ one litre per hole at 300 mm interval including drilling holes at 45 degree and plugging them with cement mortar 1:2 (1 cement : 2 coarse sand) to the full depth of the hole :				
	With Chlorpyriphos/Lindane E.C. 20% with 1% concentration	Metre	10.80		0.00
1.13	Treatment at points of contact of wood work by chemical emulsion Chlorpyriphos/ Lindane (in oil or kerosene based solution) @ 0.5 litres per hole by drilling 6 mm dia holes at downward angle of 45 degree at 150 mm centre to centre and sealing the same	Sqm	20.00		0.00
	Total for EarthWork				**0.00**
2	**SECTION-2: CONCRETE WORK**				
2.1	Providing and laying in position cement concrete of specified grade excluding the cost of centering and shttering - All work up to plinth level:				

	1:2:4 (1 cement : 2 coarse sand (zone-III) derived from natural sources : 4 graded stone aggregate 20 mm nominal size derived from natural sources)	cum	45.00		0.00
2.2	1:4:8 (1 Cement : 4 coarse sand : 8 graded stone aggregate 20 mm nominal size)	cum	100.00		0.00
2.3	Providing and laying damp-proof course 50mm thick with cement concrete 1:2:4 (1 cement : 2 coarse sand(zone-III) : 4 graded stone aggregate 20mm nominal size).	sqm	51.69		0.00
2.4	Making plinth protection 50mm thick of cement concrete 1:3:6 (1 cement : 3 coarse sand (zone - III) : 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 necessary excavation, levelling & dressing & finishing the top smooth.	Sqm	35.88		0.00
	Total for Concrete Work				**0.00**
3	**SECTION-3: REINFORCED CEMENT CONCRETE**				
3.1	Providing and laying in position specified grade of reinforced cement concrete, excluding the cost of centering, shuttering, finishing and reinforcement - All work up to plinth level:				
	M 25 (1 cement : 1 coarse sand(zone-III) : 2 graded stone aggregate 20 mm nominal size)	cum	94.60		0.00
3.2	Reinforced cement concrete work in walls (any thickness), including attached pilasters, buttresses, plinth and string courses, fillets, columns, pillars, piers, abutments, posts and struts etc. above plinth level up to floor five level, excluding cost of centering, shuttering, finishing and reinforcement :				
	M 25 (1 cement : 1 coarse sand(zone-III) : 2 graded stone aggregate 20 mm nominal size)	cum	17.11		0.00
3.3	Reinforced cement concrete work in beams, suspended floors, roofs having slope up to 15° landings, balconies, shelves, chajjas, lintels, bands, plain window sills, staircases and spiral stair cases above plinth level up to floor five level, excluding the cost of centering, shuttering, finishing and reinforcement with M 25 (1 cement : 1 coarse sand(zone-III) : 2 graded stone aggregate 20 mm nominal size)	cum	10.00		0.00
	Centering & shuttering including strutting, propping etc. and removal of form work for:				
3.4	Foundations, footings, bases of columns etc. for mass concrete.	sqm	219.82		0.00
3.5	Suspended floors, roofs, landings, balconies and access platform	sqm	20.00		0.00
3.6	Lintels, beams, plinth beams, girders, bressumers and cantilevers.	sqm	519.35		0.00

3.7	Columns, Pillars, Piers, Abutments, Posts and Struts	sqm	194.40		0.00
3.8	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 of grade Fe-500D or more.	kg	12100.00		0.00
	Total for RCC Work				**0.00**
4	**SECTION-4: BRICK WORK**				
4.1	Brick work with common burnt clay F.P.S. (non modular) bricks of class designation 7.5 in foundation and plinth in:				
	Cement mortar 1:6 (1 cement : 6 coarse sand)	cum	63.87		0.00
4.2	**Brick work** with common burnt clay F.P.S. (non modular) bricks of class designation 7.5 in superstructure above plinth level up to floor V level in all shapes and sizes in :				
	Cement mortar 1:6 (1 cement : 6 coarse sand)	cum.	149.92		0.00
	HALF BRICK WORK				
4.3	Half brick masonry with common burnt clay F.P.S. (non modular) bricks of class designation 7.5 in superstructure above plinth level up to floor V level.				
	Cement mortar 1:4 (1 cement :4 coarse sand)	sqm	142.38		0.00
4.4	Extra for providing and placing in position 2 Nos 6mm dia. M.S. bars at every third course of half brick masonry. Quantities sames as DSR item no. 6.13.2	sqm	142.38		0.00
	Total for Brick Work				**0.00**
5	**SECTION-5: STONE WORK**				
5.1	Random rubble masonry with hard stone in foundation and plinth including levelling up with cement concrete 1:6:12 (1 cement : 6 coarse sand : 12 graded stone aggregate 20 mm nominal size) upto plinth level with :				
	Cement mortar 1:6 (1 cement : 6 coarse sand)	Cum	1.37		0.00
5.2	Coursed rubble masonry with hard stone (first or second sort) in superstructure above plinth level and upto floor five level.				
	Masonry work (first sort), in cement mortar 1:6 (1 cement : 6 coarse sand)	Cum	2.76		0.00
	Total for Stone Work				**0.00**
6	**SECTION-6:GRANITE WORK**				

6.1	Providing and fixing 18 mm thick gang saw cut, mirror polished, premoulded and prepolished, machine cut for kitchen platforms, vanity counters, window sills, facias and similar locations of required size, approved shade, colour and texture laid over 20 mm thick base cement mortar 1:4 (1 cement : 4 coarse sand), joints treated with white cement, mixed with matching pigment, epoxy touch ups, including rubbing, curing, moulding and polishing to edges to give high gloss finish etc. complete at all levels.				
	Granite of any colour and shade				
	Area of slab over 0.50 sqm	Sqm	0.90		0.00
6.2	Extra for providing opening of required size & shape for wash basin/ kitchen sink in kitchen platform, vanity counter and similar location in marble/ Granite/ stone work, including necessary holes for pillar taps etc. including moulding, rubbing and polishing of cut edges etc. complete.	Each	2.00		0.00
6.3	Providing and fixing Ist quality ceramic glazed wall tiles conforming to IS: 15622 (thickness to be specified by the manufacturer), of approved make, in all colours, shades except burgundy, bottle green, black of any size as approved by Engineer-in-Charge, in skirting, risers of steps and dados, over 12 mm thick bed of cement mortar 1:3 (1 cement : 3 coarse sand) and jointing with grey cement slurry @ 3.3kg per sqm, including pointing in white cement mixed with pigment of matching shade complete.	Sqm	31.55		0.00
	Total for Cladding Work				**0.00**
7	**SECTION-7:DOORS & WINDOWS WORKS**				
7.1	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).				
	Second class teak wood	cum	0.09		0.00
7.2	Providing and fixing panelling or panelling and glazing in panelled or panelled and glazed shutters for doors, windows and clerestory windows (Area of opening for panel inserts excluding portion inside grooves or rebates to be measured). Panelling for panelled or panelled and glazed shutters 25 mm to 40 mm thick :				
	Float glass panes				
	4 mm thick glass pane (weight not less than 10kg/sqm).	Sqm	122.28		0.00
7.3	5.0 mm thick glass panes (weight not less than 12.50 kg/sqm).	Sqm	16.50		0.00

7.4	Providing and fixing ISI marked flush door shutters conforming to IS : 2202 (Part I) decorative type, core of block board construction with frame of 1st class hard wood and well matched teak 3 ply veneering with vertical grains or cross bands and face veneers on both faces of shutters.				
	35 mm thick including ISI marked Stainless Steel butt hinges with necessary screws	Sqm	48.97		0.00
7.5	Extra for providing lipping with 2nd class teak wood battens 25 mm minimum depth on all edges of flush door shutters (over all area of door shutter to be measured).	Sqm	100.32		0.00
7.6	Extra for providing vision panel not exceeding 0.1 sqm in all type of flush doors (cost of glass excluded) (overall area of door shutter to be measured):				
	Rectangular or square	Sqm	48.97		0.00
7.7	Providing and fixing wire gauge shutters using galvanized M.S. wire gauge of average width of aperture 1.4 mm in both directions with wire of dia 0.63 mm, for doors, windows and clerestory windows with hinges and necessary screws :				
	30 mm thick shutters				
	With ISI marked stainless steel butt hinges of required size				
	Second class teak wood	Sqm	9.70		0.00
7.8	Providing and fixing wooden moulded beading to door and window frames with iron screws, plugs and priming coat on unexposed surface etc. complete :				
	2nd class teak wood				
	50x12 mm	meter	11.70		0.00
7.9	Providing and fixing nickel plated M.S. pipe curtain rods with nickel plated brackets :				
	20 mm dia (heavy type)	meter	49.50		0.00
7.10	Providing and fixing aluminium extruded section body tubular type universal hydraulic door closer (having brand logo with ISi, IS : 3564, embossed on the body, door weight upto 36 kg to 80 kg and door width from 701 mm to 1000 mm), with double speed adjustment with necessary accessories and screws etc. complete.	Each	2.00		0.00
7.11	Providing 40x5 mm flat iron hold fast 40 cm long including fixing to frame with 10 mm diameter bolts, nuts and wooden plugs and embedding in cement concrete block 30x10x15cm 1:3:6 mix (1 cement : 3 coarse sand : 6 graded stone aggregate 20mm nominal size).	Each	2.00		0.00
7.12	Providing and fixing ISI marked oxidised M.S. handles conforming to IS:4992 with necessary screws etc. complete :				
	100 mm	Each	20.00		0.00

7.13	Providing and fixing aluminium sliding door bolts, ISI marked anodised (anodic coating not less than grade AC 10 as per IS : 1868), transparent or dyed to required colour or shade, with nuts and screws etc. complete				
	250x16 mm	Each	22.00		0.00
7.14	Providing and fixing aluminium tower bolts, ISI marked, anodised (anodic coating not less than grade AC 10 as per IS : 1868) transparent or dyed to required colour or shade, with necessary screws etc. complete :				
	250x10 mm	Each	22.00		0.00
7.15	200x10 mm	Each	22.00		0.00
7.16	Providing and fixing aluminium handles, ISI marked, anodised (anodic coating not less than grade AC 10 as per IS : 1868) transparent or dyed to required colour or shade, with necessary screws etc. complete :				
	125 mm	Each	40.00		0.00
7.17	Providing and fixing aluminium hanging floor door stopper, ISI marked, anodised (anodic coating not less than grade AC 10 as per IS : 1868) transparent or dyed to required colour and shade, with necessary screws etc. complete.				
	Single rubber stopper	Each	20.00		0.00
7.18	Providing and fixing PTMT door catcher of length 72 mm and dia. of 42 mm with suitable washers weighing not less than 33 gms	Each	20.00		0.00

7.19	Providing and fixing factory made uPVC white colour sliding glazed window upto 1.50 m in height dimension comprising of uPVC multi-chambered frame with in-built roller track and sash extruded profiles duly reinforced with 1.60 ± 0.2 mm thick galvanized mild steel section made from roll forming process of required length (shape & size according to uPVC profile), appropriate dimension of uPVC extruded glazing beads and uPVC extruded interlocks, EPDM gasket, wool pile, zinc alloy (white powder coated) touch locks with hook, zinc alloy body with single nylon rollers (weight bearing capacity to be 40 kg), G.I fasteners 100 x 8 mm size for fixing frame to finished wall and necessary stainless steel screws etc. Profile of frame & sash shall be mitred cut and fusion welded at all corners, including drilling of holes for fixing hardware's and drainage of water etc. After fixing frame the gap between frame and adjacent finished wall shall be filled with weather proof silicon sealent over backer rod of required size and of approved quality, all complete as per approved drawing & direction of Engineer-in-Charge. (Single / double glass panes, wire mesh and silicon sealent shall be paid separately). Variation in profile dimension in higher side shall be accepted but no extra payment on this account shall be made.				
	Note: For uPVC frame and sash extruded profiles minus 5% tolerance in dimension i.e. in depth & width of profile shall be acceptable.				
	Two track two panels sliding window made of (small series) frame 52 x 44 mm &sash 32 x 60 mm both having wall thickness of 1.9 ± 0.2 mm and single glazing bead of appropriate dimension. (Area of window upto 1.75 sqm)	Sqm	2.67		0.00
7.20	Three track three panels sliding window with fly proof S.S wire mesh (Two nos. glazed & one no. wire mesh panels) madeof(bigseries) frame116x45mm & sash4 6x62mm both having wall thickness of 2.3 ± 0.2 mm and single glazing bead / double glazing bead of appropriate dimension. (Area of window above 1.75 sqm).	Sqm	31.68		0.00
7.21	Providing and fixing zinc alloyed (white powder coated) touch lock for uPVC sliding window with necessary screws etc. complete.	Each	17.60		0.00
	Total for Wood Work				**0.00**
8	**SECTION-8:STEEL WORK**				

8.1	Structural steel work riveted, bolted or welded in built up sections, trusses and framed work, including cutting, hoisting, fixing in position and applying a priming coat of approved steel primer with two coat of synthetic enamel paint all complete.	kg	11200.00		0.00
8.2	Providing and fixing 1mm thick M.S. sheet door with frame of 40x40x6 mm angle iron and 3 mm M.S. gusset plates at the junctions and corners, all necessary fittings complete, including applying a priming coat of approved steel primer.				
	Using M.S. angels 40x40x6 mm for diagonal braces	Sqm	46.08		0.00
8.3	Supplying and fixing rolling shutters of approved make, made of required size M.S. laths, interlocked together through their entire length and jointed together at the end by end locks, mounted on specially designed pipe shaft with brackets, side guides and arrangements for inside and outside locking with push and pull operation complete, including the cost of providing and fixing necessary 27.5 cm long wire springs manufactured from high tensile steel wire of adequate strength conforming to IS: 4454 - part 1 and M.S. top cover of required thickness for rolling shutters.				
	80x1.20 mm M.S. laths with 1.20 mm thick top cover	Sqm	24.00		0.00
8.4	Providing and fixing ball bearing for rolling shutters.	Each	4.00		0.00
8.5	Providing and fixing factory made ISI marked steel glazed doors, windows and ventilators, side /top /centre hung, with beading and all members such as F7D,F4B, K11 B and K12 B etc. complete of standard rolled steel sections, joints mitred and flash butt welded and sash bars tenoned and riveted, including providing and fixing of hinges, pivots, including priming coat of approved steel primer, but excluding the cost of other fittings, complete all as per approved design, (sectional weight of only steel members shall be measured for payment).				
	Fixing with 15x3 mm lugs 10 cm long embedded in cement concrete block 15x10x10 cm of C.C. 1:3:6 (1 Cement : 3 coarse sand : 6 graded stone aggregate 20 mm nominal size)	kg	344.85		0.00
8.6	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.				
	Hot finished seamless type tubes	kg	4792.91		0.00
8.7	Providing and fixing mild steel round holding down bolts with nuts and washer plates complete.	kg	83.20		0.00
8.8	Providing and fixing bolts including nuts and washers complete.	kg	143.52		0.00

8.9	Steel work welded in built up sections/ framed work, including cutting, hoisting, fixing in position and applying a priming coat of approved steel primer using structural steel etc. as required.				
	In gratings, frames, guard bar, ladder, railings, brackets, gates and similar works	kg	200.00		0.00
8.10	Providing & fixing glass panes with putty and glazing clips in steel doors, windows, clerestory windows, all complete with :				
	4.0 mm thick glass panes	Sqm	89.10		0.00
	Total for Steel Works				**0.00**
9	**SECTION-9:FLOORING WORK**				
9.1	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	107.80		0.00
9.2	Cement plaster skirting up to 30 cm height, with cement mortar 1:3 (1 cement : 3 coarse sand), finished with a floating coat of neat cement.				
	18 mm thick	sqm	5.66		0.00
9.3	Providing and fixing glass strips in joints of terrazo/ cement concrete floors.				
	40 mm wide and 4 mm thick	rmt	56.60		0.00
9.4	Marble stone flooring with 18 mm thick marble stone, as per sample of marble approved by Engineer-in-charge, over 20 mm (average) thick base of cement mortar 1:4 (1 cement : 4 coarse sand) laid and jointed with grey cement slurry, including rubbing and polishing complete with :				
	Udaipur green marble	Sqm	1.00		0.00
9.5	Extra for pre finished nosing to treads of steps of marble stone.	Meter	2.00		0.00
9.6	Providing and laying rectified Glazed Ceramic floor tiles of size 300x300 mm or more (thickness to be specified by the manufacturer), of 1st quality conforming to IS : 15622, of approved make, in colours White, Ivory, Grey, Fume Red Brown, laid on 20 mm thick cement mortar 1:4 (1 Cement: 4 Coarse sand), jointing with grey cement slurry @ 3.3 kg/ sqm including grouting the joints with white cement and matching pigments etc., complete.	Sqm	7.76		0.00

9.7	Providing and laying Vitrified tiles in floor in different sizes (thickness to be specified by the manufacturer) with water absorption less than 0.08% and conforming to IS:15622, of approved brand & manufacturer, in all colours and shade, laid on 20 mm thick cement mortar 1:4 (1 cement: 4 coarse sand) jointing with grey cement slurry @3.3 kg/sqm including grouting the joints with white cement and matching pigments etc. The tiles must be cut with the zero chipping diamond cutter only . Laying of tiles will be done with the notch trowel, plier, wedge, clips of required thickness, leveling system and rubber mallet for placing the tiles gently and easily.				
	Glazed vitrified floor tiles polished finish of size				
	Size of Tile 600x600 mm	sqm	215.60		0.00
9.8	Glazed Vitrified tiles Matt/Antiskid finish of size				
	Size of Tile 600x600 mm	sqm	7.76		0.00
9.9	Providing and laying Vitrified tiles in different sizes (thickness to be specified by manufacturer), with water absorption less than 0.08 % and conforming to I.S. 15622, of approved make, in all colours & shade, in skirting, riser of steps, over 12 mm thick bed of cement mortar 1:3 (1 cement: 3 coarse sand), jointing with grey cement slurry @ 3.3 kg/ sqm including grouting the joint with white cement & matching pigments etc. complete.				
	Size of Tile 600x600 mm	sqm	13.86		0.00
9.10	Grouting the joints of flooring tiles having joints of 3 mm width, using epoxy grout mix of 0.70 kg of organic coated filler of desired shade (0.10 kg of hardener and 0.20 kg of resin per kg), including filling / grouting and finishing complete as per direction of Engineer-in-charge.				
	Size of Tile 600x600 mm	sqm	225.40		0.00
	Total for Flooring				**0.00**
10	**SECTION-10:ROOFING**				
10.1	Providing gola 75x75 mm in cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 stone aggregate 10 mm and down gauge), including finishing with cement mortar 1:3 (1 cement : 3 fine sand) as per standard design :				
	In 75x75 mm deep chase	Metre	84.00		0.00

10.2	Making khurras 45x45 cm with average minimum thickness of 5 cm cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate of 20 mm nominal size) over P.V.C. sheet 1 m x1 m x 400 micron, finished with 12 mm cement plaster 1:3 (1 cement : 3 coarse sand) and a coat of neat cement, rounding the edges and making and finishing the outlet complete.	Each	8.00		0.00
10.3	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	440.11		0.00

10.4	Providing and fixing false ceiling at all height including providing and fixing of frame work made of special sections, power pressed from M.S. sheets and galvanized with zinc coating of 120 gms/sqm (both side inclusive) as per IS : 277 and consisting of angle cleats of size 25 mm wide x 1.6 mm thick with flanges of 27 mm and 37mm, at 1200 mm centre to centre, one flange fixed to the ceiling with dash fastener 12.5 mm dia x 50mm long with 6mm dia bolts, other flange of cleat fixed to the angle hangers of 25x10x0.50 mm of required length with nuts & bolts of required size and other end of angle hanger fixed with intermediate G.I. channels 45x15x0.9 mm running at the spacing of 1200 mm centre to centre, to which the ceiling section 0.5 mm thick bottom wedge of 80 mm with tapered flanges of 26 mm each having lips of 10.5 mm, at 450 mm centre to centre, shall be fixed in a direction perpendicular to G.I. intermediate channel with connecting clips made out of 2.64 mm dia x 230 mm long G.I. wire at every junction, including fixing perimeter channels 0.5 mm thick 27 mm high having flanges of 20 mm and 30 mm long, the perimeter of ceiling fixed to wall/partition with the help of rawl plugs at 450 mm centre, with 25mm long dry wall screws @ 230 mm interval, including fixing of gypsum board to ceiling section and perimeter channel with the help of dry wall screws of size 3.5 x 25 mm at 230 mm c/c, including jointing and finishing to a flush finish of tapered and square edges of the board with recommended jointing compound , jointing tapes , finishing with jointing compound in 3 layers covering upto 150 mm on both sides of joint and two coats of primer suitable for board, all as per manufacturer's specification and also including the cost of making openings for light fittings, grills, diffusers, cutouts made with frame of perimeter channels suitably fixed, all complete as per drawings, specification and direction of the Engineer in Charge but excluding the cost of painting with :				
	12.5 mm thick tapered edge gypsum plain board conforming to IS: 2095- (Part I) : 2011 (Board with BIS certification marks)	Sqm	260.00		0.00
	Total for Roofing work				**0.00**
11	**SECTION-11:Finishing Work**				
11.1	12 mm cement plaster of mix :				
	1:6 (1 cement: 6 fine sand):	sqm	934.85		0.00
11.2	20 mm cement plaster of mix :				
	1:6 (1 cement: 6 fine sand)	sqm	4.00		0.00
11.3	12 mm cement plaster finished with a floating coat of neat cement of mix :				
	1:3 (1 cement: 3 fine sand)	sqm	235.20		0.00
11.4	6 mm cement plaster of mix :				
	1:3 (1 cement : 3 fine sand)	sqm	43.20		0.00

11.5	Providing and applying white cement based putty of average thickness 1 mm, of approved brand and manufacturer, over the plastered wall surface to prepare the surface even and smooth complete.	sqm	2291.20		0.00
11.6	18 mm cement plaster in two coats under layer 12 mm thick cement plaster 1:5 (1 cement : 5 coarse sand) and a top layer 6 mm thick cement plaster 1:3 (1 cement : 3 coarse sand) finished rough with sponge.	sqm	1073.95		0.00
11.7	Pointing on stone work with cement mortar 1:3 (1 cement : 3 fine sand) :				
	Flush/ Ruled pointing	sqm	4.00		0.00
11.8	Applying one coat of water thinnable cement primer of approved brand and manufacture on wall surface :				
	Water thinnable cement primer	sqm	2738.37		0.00
11.9	Finishing walls with textured exterior paint of required shade :				
	New work (Two or more coats applied @ 3.28 ltr/10 sqm) over and including priming coat of exterior primer applied @ 2.20kg/10 sqm	sqm	1073.95		0.00
11.10	Painting with synthetic enamel paint of approved brand and manufacture of required colour to give an even shade :				
	Two or more coats on new work over an under coat of suitable shade with ordinary paint of approved brand and manufacture	sqm	71.28		0.00
11.11	Wall painting with premium acrylic emulsion paint of interior grade, having VOC (Volatile Organic Compound) content less than 50 grams/ litre of approved brand and manufacture, including applying additional coats wherever required to achieve even shade and colour.				
	Two or more coats on new work	sqm	1217.25		0.00
	Total for Finishing Work				**0.00**
12	**SECTION-12: ALUMINIUM WORKS**				
12.1	Providing and fixing aluminium work for doors, windows, ventilators and partitions with extruded built up standard tubular sections/ appropriate Z sections and other sections of approved make conforming to IS: 733 and IS: 1285, fixing with dash fasteners of required dia and size, including necessary filling up the gaps at junctions, i.e. at top, bottom and sides with required EPDM rubber/ neoprene gasket etc. Aluminium sections shall be smooth, rust free, straight, mitred and jointed mechanically wherever required including cleat angle, Aluminium snap beading for glazing / paneling, C.P. brass / stainless steel screws, all complete as per architectural drawings and the directions of Engineer-in-				

	charge. (Glazing, paneling and dash fasteners to be paid for separately) :				
	For Fixed portions				
	Powder coated aluminium (minimum thickness of powder coating 50 micron)	Kg	332.64		0.00
12.2	Providing and fixing double action hydraulic floor spring of approved brand and manufacture conforming to IS : 6315, having brand logo embossed on the body / plate with double spring mechanism and door weight upto 125 kg, for doors, including cost of cutting floors, embedding in floors as required and making good the same matching to the existing floor finishing and cover plates with brass pivot and single piece M.S. sheet outer box with slide plate etc. complete as per the direction of Engineer-in-charge.				
	With stainless steel cover plate minimum 1.25 mm thickness	each	17.60		0.00
12.3	Filling the gap in between aluminium frame & adjacent RCC/ Brick/ Stone work by providing weather silicon sealant over backer rod of approved quality as per architectural drawings and direction of Engineer-in-charge complete.				
	Upto 5mm depth and 5 mm width	Meter	35.31		0.00
	Total for Aluminium Works				**0.00**
13	**SECTION-13:WATER PROOFING**				
13.1	Providing and laying in situ seven course water proofing treatment with APP (Atactic Polypropylene) modified Polymeric memberane over roof consisting of first coat of bitumen primer @ 0.40 litre per sqm, 2nd, 4th & 6th courses of bonding material @ 1.20 kg/sqm, which shall consist of blown type bitumen of grade 85/25 conforming to IS : 702, 3rd and 5th layers of roofing membrane APP modified Polymeric membrane 2.0 mm thick of 3.00 Kg/sqm weight consisting of five layers prefabricated with centre core as 100 micron HMHDPE film sandwiched on both sides with polymeric mix and the polymeric mix is protected on both side with 20 micron HMHDPE film. 7th, the top most layer shall be finished with brick tiles of class designation 10 grouted with cement mortar 1:3 (1 cement : 3 fine sand) mixed with 2% integral water proofing compound by weight of cement over a 12 mm layer of cement mortar 1:3 (1 cement : 3 fine sand) and finished neat (item of laying brick tiles shall be paid for separately).	sqm	4.50		0.00
13.2	Providing and laying integral cement based water proofing treatment including preparation of surface as required for treatment of roofs, balconies, terraces etc consisting of following operations:				

	(a) Applying a slurry coat of neat cement using 2.75 kg/sqm of cement admixed with water proofing compound conforming to IS. 2645 and approved by Engineer-in-charge over the RCC slab including adjoining walls upto 300 mm height including cleaning the surface before treatment.				
	(b) Laying brick bats with mortar using broken bricks/brick bats 25 mm to 115 mm size with 50% of cement mortar 1:5 (1 cement : 5 coarse sand) admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge over 20 mm thick layer of cement mortar of mix 1:5 (1 cement :5 coarse sand) admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge to required slope and treating similarly the adjoining walls upto 300 mm height including rounding of junctions of walls and slabs.				
	(c) After two days of proper curing applying a second coat of cement slurry using 2.75 kg/ sqm of cement admixed with water proofing compound conforming to IS : 2645 and approved by Engineerin- charge				
	(d) Finishing the surface with 20 mm thick jointless cement mortar of mix 1:4 (1 cement :4 coarse sand) admixed with water proofing compound conforming to IS : 2645 and approved by Engineerin- charge including laying glass fibre cloth of approved quality in top layer of plaster and finally finishing the surface with trowel with neat cement slurry and making pattern of 300x300 mm square 3 mm deep.				
	e) The whole terrace so finished shall be flooded with water for a minimum period of two weeks for curing and for final test.“All above operations to be done in order and as directed and specified by the Engineer-in-Charge :				
	With average thickness of 120 mm and minimum thickness at khurra as 65 mm.	sqm	100.00		0.00
	Total for waterproofing				**0.00**
14	**SECTION-14:ROAD WORKS**				
14.1	Preparation and consolidation of sub grade with power road roller of 8 to 12 tonne capacity after excavating earth to an average of 22.5 cm depth, dressing to camber and consolidating with road roller including making good the undulations etc. and re-rolling the sub grade and disposal of surplus earthwith lead upto 50 metres.	Sqm	187.50		0.00
14.2	Supplying and stacking at site.				
	90 mm to 45 mm size stone aggregate	Cum	18.75		0.00
14.3	63 mm to 45 mm size stone aggregate	Cum	18.75		0.00

14.4	Over burnt (Jhama) brick aggregate 120 mm to 40 mm	Cum	9.38		0.00
14.5	Over burnt (Jhama) brick aggregate 90 mm to 45 mm	Cum	9.38		0.00
14.6	Stone screening 13.2 mm nominal size (Type A)	Cum	9.38		0.00
14.7	Red bajri	Cum	9.38		0.00
14.8	Dry stone pitching 22.5 cm thick including supply of stones and preparing surface complete.	Sqm	75.00		0.00
14.9	Fencing with angle iron post placed at required distance embedded in cement concrete blocks, every 15th post, last but one end post and corner post shall be strutted on both sides and end post on one side only and provided with horizontal lines and two diagonals interwoven with horizontal wires, of barbed wire weighing 9.38 kg per 100 m (minimum), between the two posts fitted and fixed with G.I. staples, turn buckles etc. complete. (Cost of posts, struts, earth work and concrete work to be paid for separately). Payment to be made per metre cost of total length of barbed wire used.				
	With G.I. barbed wire	Metre	4400.00		0.00
14.10	Supplying at site Angle iron post & strut of required size including bottom to be split and bent at right angle in opposite direction for 10 cm length and drilling holes upto 10 mm dia. etc. complete	Kg	881.28		0.00
14.11	Providing and fixing concertina coil fencing with punched tape concertina coil 600 mm dia 10 metre openable length (total length 90 m), having 50 nos rounds per 6 metre length, upto 3 m height of wall with existing angle iron 'Y' shaped placed 2.4m or 3.00 m apart and with 9 horizontal R.B.T. reinforced barbed wire, stud tied with G.I. staples and G.I. clips to retain horizontal, including necessary bolts or G.I. barbed wire tied to angle iron, all complete as per direction of Engineer-in-charge, with reinforced barbed tape(R.B.T.) / Spring core (2.5mm thick) wire of high tensile strength of 165 kg/ sq.mm with tape (0.52 mm thick) and weight 43.478 gm/ metre (cost of M.S. angle, C.C. blocks shall be paid separately)	Metre	220.00		0.00
	Total for ROAD WORK				**0.00**
15	**SECTION-15:HORTICULTURE WORKS**				
15.1	Supplying and stacking of good earth at site including royalty and carriage upto 5 km lead complete (earth measured in stacks will be reduced by 20% for payment).	Cum	60.00		0.00
15.2	Supplying and stacking at site dump manure from approved source, including carriage upto 5 km lead complete (manure measured in stacks will be reduced by 8% for payment) :				
	Screened through sieve of I.S. designation 20 mm	Cum	60.00		0.00

15.3	Fine dressing of the ground.	Sqm	300.00		0.00
15.4	Spreading of sludge, dump manure and/or good earth in required thickness as per direction of officer-in-charge (cost of sludge, dump manure and/ or good earth to be paid separately).	Cum	120.00		0.00
15.5	Grassing with selection No. 1/ Doob grass including watering and maintenance of the lawn for 30 days or more till the grass forms a thick lawn, free from weeds and fit for mowing including supplying good earth, if needed (the grass and good earth shall be paid for separately).				
	With grass Turf	Sqm	300.00		0.00
	Total for Horticulture				**0.00**
16	**Glass & Furniture**				
16.1	Providing and fixing 12 mm thick frameless toughened glass door shutter of approved brand and manufacture, including providing and fixing top & bottom pivot & double action hydraulic floor spring type fixing arrangement and making necessary holes etc. for fixing required door fittings, all complete as per direction of Engineer-incharge (Door handle, lock and stopper etc.to be paid separately).	Sqm	33.48		0.00
16.2	Providing and fixing 12 mm thick frameless toughened glass door shutter of approved brand and manufacture, including providing and fixing top & bottom pivot & double action hydraulic floor spring type fixing arrangement and making necessary holes etc. for fixing required door fittings, all complete as per direction of Engineer-incharge (Door handle, lock and stopper etc.to be paid separately).	Each	2.00		0.00
	TOTAL FOR ITEMS				**0.00**
	GRAND TOTAL OF CIVIL WORKS				**0.00**

Ref: ITI/NSU/CIVIL-DEL/2023/0106/01 **Date 15-03-2023**

ITI LMITED
NETWORK SYSTEM UNIT
DOORVANINAGAR, BANGALORE 560 016.

BILL OF QUANTITY: ELECTRIC WORKS :- GROUP 7 (Himachal Pradesh), No. of Buildings are 2, Type-H.

BIDDER'S NAME	

S. No.	Description	Unit	Qty	RATE (RS.)	TOTAL AMOUNT
1	**SUB-HEAD-I: CIRCUIT CUM POINT WIRING**				
1.1)	Wiring for light point/ fan point/ exhaust fan point/ call bell point with 1.5 sq.mm FRLS PVC insulated copper conductor single core cable in surface / recessed steel conduit, with modular switch, modular plate, suitable GI box and earthing the point with 1.5 sq.mm FRLS PVC insulated copper conductor single core cable etc. as required.				
a)	Group-C (Primary point)	Point	34		0.00
1.2)	Wiring for group controlled (looped) light point/fan point/exhaust fan point/ call bell point (without independent switch etc.) with 1.5 sq. mm FRLS PVC insulated copper conductor single core cable in surface/ recessed steel conduit, and earthing the point with 1.5 sq. mm FRLS PVC insulated copper conductor single core cable etc. as required				
a)	Group-C (looping point)	Point	24		0.00
1.3)	Supplying and fixing modular blanking plate on the existing modular plate & switch box excluding modular plate as required.	Each	20		0.00
1.4)	Supplying and fixing two module stepped type electronic fan regulator on the existing modular plate switch box including connections but excluding modular plate etc. as required.	Each	24		0.00
1.5)	Supplying and fixing suitable size GI box with modular plate and cover in front on surface or in recess, including providing and fixing 3 pin 5/6 A modular socket outlet and 5/6 A modular switch, connections etc. as required.	Each	52		0.00

1.6)	Supplying and fixing suitable size GI box with modular plate and cover in front on surface or in recess, including providing and fixing 6 pin 5/6 A & 15/16 A modular socket outlet and 15/16 A modular switch, connections etc. as required.	Each	64		0.00
1.7)	Wiring for circuit/ submain wiring along with earth wire with the following sizes of FRLS PVC insulated copper conductor, single core cable in surface/ recessed medium class PVC conduit as required				
a)	2 X 1.5 sq. mm + 1 X 1.5 sq. mm earth wire For 6A Light Circuit Point	Metre	200		0.00
b)	2 X 2.5 sq. mm + 1 X 2.5 sq. mm earth wire For Switch Board Circuit.	Metre	375		0.00
c)	2 X 4 sq. mm + 1 X 4 sq. mm earth wire For 6A and 16A Power Circuit Point	Metre	2320		0.00
d)	4 X 10 sq. mm + 2 X 6 sq. mm earth wire For Light DB Submain wire	Metre	100		0.00
e)	4 X 16 sq. mm + 2 X 6 sq. mm earth wire For PDB Submain wire	Metre	200		0.00
f)	2 X 10 sq. mm + 1 X 6 sq. mm earth wire For UPSDB/IDB/All SPN LPDB Submain wire	Metre	1160		0.00
1.8)	Providing and fixing 6 SWG dia G.I. wire on surface or in recess for loop earthing along with existing surface/ recessed conduit/submain wiring/ cable as required.	Metre	200		0.00
	SUB-HEAD-1 TOTAL CARRIED TO SUMMARY				**0.00**
2	**SUB-HEAD-II:- DISTRIBUTION BOARDS**				
2.1)	Supplying and fixing following way, single pole and neutral, sheet steel, MCB distribution board, 240 V, on surface/ recess, complete with tinned copper bus bar, neutral bus bar, earth bar, din bar, interconnections, powder painted including earthing etc. as required. (But without MCB/RCCB/Isolator)				
a)	8Way ,Double door	Each	16		0.00
b)	12Way ,Double door	Each	6		0.00
2.2)	Supplying and fixing following way, horizontal type three pole and neutral, sheet steel, MCB distribution board, 415 V, on surface/ recess, complete with tinned copper bus bar, neutral bus bar, earth bar, din bar, interconnections, powder painted including earthing etc. as required. (But without MCB/RCCB/Isolator)				
a)	4 way (4 + 12), Double door	Each	2		0.00

2.3)	Supplying and fixing following ways, surface/recess mounting ,Verticl type 415V ,TPN MCB distribution board of sheet steel,dust protected duly powder painted ,inclusive of 200A tinned copper bus bar ,common neutral link, earth bar, din bar, for mounting MCBs etc. as required. (But without MCB/Incomer) as required.(Note Vertical type MCB TPDB is normally used where 3phase outlets are required.)				
a)	12 way (4 + 36), Double door	Each	4		0.00
2.4)	Supplying and fixing 5 A to 32 A rating, 240/415 V, 10 kA, "C" curve, miniature circuit breaker suitable for inductive load of following poles in the existing MCB DB complete with connections, testing and commissioning etc. as required.				
a)	Single pole (6/32 Amps)	Each	248		0.00
2.5)	Supplying and fixing single pole blanking plate in the existing MCB DB complete etc. as required.	Each	20		0.00
2.6)	Supplying and fixing following rating, double pole, 240 V, isolator in the existing MCB DB complete with connections, testing and commissioning etc. as required.				
a)	40A	Each	20		0.00
b)	63A	Each	4		0.00
2.7)	Supplying and fixing following rating, four pole, 415 V, isolator in the existing MCB DB complete with connections, testing and commissioning etc. as required.				
a)	40A	Each	2		0.00
b)	63A	Each	4		0.00
2.8)	Supplying and fixing following rating, double pole, (single phase and neutral),240 V, residual current circuit breaker (RCCB) having a sensitivity current 30mA in the existing MCB DB complete with connections, testing and commissioning etc. as required.				
a)	40A	Each	20		0.00
b)	63A	Each	4		0.00
2.9)	Supplying and fixing following rating, four pole, (three phase and neutral),415 V, residual current circuit breaker (RCCB) having a sensitivity current 30mA in the existing MCB DB complete with connections, testing and commissioning etc. as required.				
a)	40A	Each	2		0.00
b)	63A	Each	4		0.00

2.10)	Providing and fixing M.V. danger notice plate of 200 mm X 150 mm, made of mild steel, at least 2 mm thick, and vitreous enameled white on both sides, and with inscription in single red colour on front side as required.	Each	30		0.00
	SUB-HEAD-II TOTAL CARRIED TO SUMMARY				**0.00**
3	**SUB-HEAD - Ill :- CONDUITING WIRING AND CABLING FOR TELEPHONE / TV NETWORK SYSTEM**				
3.1)	Supplying and fixing of following sizes of medium class PVC conduit along with accessories in surface/recess including cutting the wall and making good the same in case of recessed conduit as required.				
a)	20mm	Meter	100		0.00
b)	25mm	Meter	100		0.00
c)	32mm	Meter	50		0.00
3.2)	Supplying and fixing following modular switch/ socket on the existing modular plate & switch box including connections but excluding modular plate etc. as required.				
a)	Telephone socket outlet	Each	2		0.00
b)	TV antenna socket outlet	Each	2		0.00
c)	RJ-45 face plate(computer line) with shutter DN-460	Each	2		0.00
3.3)	Supplying and fixing following size/ modules, GI box alongwith modular base & cover plate for modular switches in recess etc. as required.				
a)	1 or 2 Module (75mmX75mm)	Each	2		0.00
3.4)	Providing, fixing connecting and testing of solder less telephone Tag block of following capacity ties as required in suitable size of m.s. hinged lockable cover box duly painted etc. as required of Krone type.				
a)	10 pair Tele Tag Blk	Each	2		0.00
3.5)	Supplying drawing, connecting and testing of 0.61mm dia annealed copper conductor PVC insulated PVC sheathed telephone Wire/cables in Existing PVC conduit or a racks as required.				
a)	2 pair Telephone cable.	Meter	2		0.00
b)	4 pair Telephone cable	Meter	2		0.00

3.6)	Supplying and drawing co-axial TV cable RG-6 grade, 0.7 mm solid copper conductor PE insulated, shielded with fine tinned copper braid and protected with PVC sheath in the existing surface/ recessed steel/ PVC conduit as required.	Meter	2		0.00
3.7)	Providing, fixing connecting and testing of solder less Television Junction Box of following capacity ties as required in suitable size of m.s. hinged lockable cover box duly painted etc. as required of Krone type.				
a)	2 pair T.V Junction Box.	Each	2		0.00
3.8)	Supplying and drawing of UTP 4 pair CAT 6 LAN Cable in the existing surface/ recessed steel/ PVC conduit as required.				
a).	**1Run of cable**	Meter	2		0.00
3.9)	Supplying and fixing metal box of following sizes (nominal size) on surface or in reces with suitable size of phenolic laminated sheet cover in front including painting etc as required.				
a)	75 mm x 75 mm x 60 mm deep	Each	2		0.00
b)	100 mm x 100 mm x 60 mm deep	Each	2		0.00
	SUB-HEAD-lll TOTAL CARRIED TO SUMMARY				**0.00**
4	**SUB-HEAD-lV:- SUPPLY OF LIGHTING FIXTURES.**				
4.1)	Supplying, installing, Fixing, testing and commissioning of **1 X 20W LED single tube Surface mounted fixture** & all accessories as required.	Each	8		0.00
4.2)	Supplying, installing, Fixing, testing and commissioning of **1 X 10W LED mirror light Surface mounted fixture** & all accessories as required.	Each	4		0.00
4.3)	Supplying, installing, Fixing, testing and commissioning of **1 X 10W LED Surface mounted fixture** & all accessories as required.	Each	4		0.00
4.4)	Supplying, installing, Fixing, testing and commissioning of 1**X 36W LED single tube** Surface mounted fixture & all accessories as required.	Each	42		0.00
4.5)	Supplying, installing, Fixing, testing and commissioning of **1200 mm Sweep Celling Fan** all accessories as required.	Each	24		0.00
4.6)	Supplying, installing, Fixing, testing and commissioning of **600 mm Sweep Celling Fan** all accessories as required.	Each	2		0.00
4.7)	Supplying, installing, Fixing, testing and commissioning of **Heavy Duty Exhaust fan 450 mm sweep** all accessories as required	Each	8		0.00
4.8)	Supplying, installing, Fixing, testing and commissioning of **Heavy Duty Exhaust fan 300/305 mm sweep** all accessories as required	Each	6		0.00

4.9)	Supplying, installing, Fixing, testing and commissioning of security light having 80 watt LED street light/road light luminaire type efficiency energy saving dia cast aluminium roadway luminaire with high power complete with connections fittings and including connecting with twin core 2.5 sqmm weather proof aluminium conductor cable complete set, street light brackets made out of GI tubing, light grade 40 mm bore 1200mm long bend to shape at 120 degree, fixed on pole by providing MS clamp made up of flat iron 50x6mm including bolts nuts ans washers of suitable size complete. Fixed upon steel tublar pole type 410 sp31 (9.00 mtr lng) with complete base plate, taper plug, bolts, nuts and screws etc duly painted internally and externally with metal oxide anti corrosive paint before erection and painting with two coats aluminium paint after erection complete all as confirming to IS 2713 (part-1 to 111) and complete.	Each	2		0.00
4.10)	Supplying, installing, Fixing, testing and commissioning of security light having 80 watt LED street light/road light luminaire type efficiency energy saving dia cast aluminium roadway luminaire with high power complete with connections fittings and including connecting with twin core 2.5 sqmm weather proof aluminium conductor cable complete set, street light brackets made out of GI tubing, light grade 40 mm bore 1200mm long bend to shape at 120 degree, fixed on pole by providing MS clamp made up of flat iron 50x6mm including bolts nuts ans washers of suitable size complete. Fixed upon steel tublar pole type 410 sp31 (9.00 mtr lng) with complete base plate, taper plug, bolts, nuts and screws etc duly painted internally and externally with metal oxide anti corrosive paint before erection and painting with two coats aluminium paint after erection complete all as confirming to IS 2713 (part-1 to 111) and complete.	Each	2		0.00

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4.11)	Supplying, installing, Fixing, testing and commissioning of security light AIO is made with High Efficiency Mono Crystalline Solar PV Module, Lithium Ferro Phosphate battery with in-built BMS technology, High Efficacy LED, MPPT Solar Charge Controller and Aluminium Extruded body, specially designed Intelligent microwave sensor to control the dimming and brightness of light leads to extend working time. Multi-angle adjustable light module and Light Arm suitable for installation in different latitude regions. The Adjustable range of light source is -20º to +20º and the adjustable range for rotating the arm is -90º to +90º. wattage 60w having system lumen of 5000 lumen, Havells cat No: SOLAR AIO ALFA 60 W or Equivalent to Philips with connections fittings and including connecting with twin core 2.5 sqmm weather proof aluminium conductor cable complete set, street light brackets made out of GI tubing, light grade 40 mm bore 1200mm long bend to shape at 120 degree, fixed on pole by providing MS clamp made up of flat iron 50x6mm including bolts nuts ans washers of suitable size complete. Fixed upon steel tublar pole type 410 sp31 (9.00 mtr lng) with complete base plate, taper plug, bolts, nuts and screws etc duly painted internally and externally with metal oxide anti corrosive paint before erection and painting with two coats aluminium paint after erection complete all as confirming to IS 2713 (part-1 to 111) and complete.	Each	2		0.00
	SUB-HEAD - IV TOTAL CARRIED TO SUMMARY				**0.00**
5)	**SUB-HEAD-V:- AIR CONDITIONING**				
5.1)	Supply & Installation high wall split units indoor/outdoor complete with cordless remote control unit and within build air ionizer and plasma filter for better indoor air quality with minimum 5-star rating and EER 3.2 of capacity 2 TR with complete set, including Supply and fixing bracket and clamps heady duty for outdoor unit of split type AC complete all as specified and directed.Air conditioning units will be having heating facilities, which will be supplied to wherever temperature is below the normal temperature				
	2.0 TR Hi Wall Unit (Invertor Units with 5 Star Rating)	Each	8		0.00
5.2)	Supply and fixing voltage stabilizer for automatic operation, single phase, naturally air cooled indoor type and designed for input variation between 110V to 250V with output voltage stabilizer at 230 with accuracy of + 2.5 % and capacity of 5 KVA.	Each	8		0.00
	SUB-HEAD - V TOTAL CARRIED TO SUMMARY				**0.00**
6	**SUB HEAD- VI : EARTHING**				

6.1)	Earthing with G.I. earth plate 600 mm X 600 mm X 6 mm thick including accessories, and providing masonry enclosure with cover plate having locking arrangement and watering pipe of 2.7 metre long etc. with charcoal/ coke and salt as required.	Set	6		0.00
6.2)	Earthing with copper earth plate 600 mm X 600 mm X 3 mm thick including accessories, and providing masonry enclosure with cover plate having locking arrangement and watering pipe of 2.7 metre long etc. with charcoal /coke and salt as required.	set	6		0.00
6.3)	Supplying and laying 6 SWG G.I. wire at 0.50 metre below ground level for conductor earth electrode, including connection/ termination with GI thimble etc. as required.	RM	60		0.00
6.4)	Providing and fixing 25 mm X 5 mm G.I. strip in 40 mm dia G.I. pipe from earth electrode including connection with G.I. nut, bolt, spring, washer excavation and re-filling etc. as required.	RM	40		0.00
6.5)	Providing and fixing 25 mm X 5 mm G.I. strip on surface or in recess for connections etc. as required.	RM	2		0.00
6.6)	Providing and fixing 25 mm X 5 mm copper strip in 40 mm dia G.I. pipe from earth electrode including connection with brass nut, bolt, spring, washer excavation and re-filling etc. as required	RM	20		0.00
6.7)	Supply, Installation, Testing and commissioningof maintenance free earthing system. The earthing set shall comprise of (i) 1 No of copper bonded rod of diameter 17.2mm and length of 10 feet UL approved with 25 KA current discharge test from CPRI. The material shall be low carbon high tensile copper bonded rods with 99.9% of copper on the surface. The UL approval certificate shall be provided. (ii) 30 kg of earth enhance compound as per IEC 62561-7. There should not be requirement of any salt and charcoal. The RoHS certificate shall be provided from any NABL accredited labs for earth enhancement material. (iii) 1 No of copper busbar of size 25x6x150mm should be exothermic welded with copper bounded rod 17.2 mm dia x 3 mtr length. (iv) 1 No of PVC pit cover for covering of earthing. (v) Exothermic connection of 25x6x150mm busbar to 35 Sqmm copper cable. (vi) 35Sqmm PVC insulated copper cable for interconnection of earthingand Equipment.	set	6		0.00
	SUB-HEAD - VI TOTAL CARRIED TO SUMMARY				**0.00**
7	**SUB HEAD- VII : EXTERNAL CABLING AND CABLE END TERMINATION**				

7.1)	Supplying and laying of following size DWC HDPE pipe ISI marked along with all accessories like socket, bend, couplers etc. conforming to IS 14930, Part II complete with fitting and cutting, jointing etc..direct in ground (75 cm below ground level) including excavation and refilling the trench but excluding sand cushioning and protective covering Earthing etc., complete as required. (For External lighting)				
	63 mm dia (OD-63 mm & ID-51 mm nominal)	Metre	60		0.00
7.2)	Supplying of following 1100 volt grade XLPE insulated PVC sheathed copper conductor armoured cables				
	3.5C X 120 sq. mm Al. Ar. Cable For Incoming Power Supply	Metre	40		0.00
	3.5 core 50 sq. mm Cu.Cond.Ar.Cable.	Metre	40		0.00
	3core 6 sq. mm	Metre	200		0.00
7.3)	Supplying and making end termination with brass compression gland and copper lugs for following size of PVC insulated and PVC sheathed / XLPE aluminium conductor cable of 1.1 KV grade as required.				
	3.5C X 120 sq. mm Al. Ar. Cable For Incoming Power Supply	Nos.	4		0.00
	3.5 core 50 sq. mm Cu.Cond.Ar.Cable.	Nos.	4		0.00
	3core 6 sq. mm	Nos.	68		0.00
7.4)	Laying of one number PVC inulated and PVC sheathed/XLPE power cable of 1.1KV grade of following size direct in ground including excavation,sand cushioning,protective covering and refilling the trench etc. as required. . (For External lighting/power cable)				
a)	Up to 35 sq. mm	Metre	100		0.00
b)	Above 35sqmm and up to 95sqmm	Metre	40		0.00
c)	Above 95sqmm and up to 185sqmm	Metre	40		0.00
	SUB-HEAD - VII Total of Sub Head carried to Summary				**0.00**
8	**SUB HEAD- VIII FEEDER PILLAR PANEL**				
8.1)	SITC Of free standing suitable for out door installation dust & vermin proof feeder pillar made out of CRCA sheet ,required hard ware,duly painted by either two coats of zink /red oxide primer followwed by two coats of synthetic enmel paint for powder coating in grey or required shade . The feeder pillar having Neoprene rubber gasket of not less than 3mm thickness,hingled door with locking arrangement,gland plate.Thickness of sheet shall not be less than 2mm.Sheet metal works shall be processed with seven tank process,200A TPN 415V Electrolytic Cu Conductor bus bar with 100% Neutral (Fixed on 50x50x6mm thick MS Angle iron frame&				

	covered with sheet metal from all sides)and having the following components.				
	Incoming :				
	One (1) No. 63A 4P MCCB (25KA)				
	3 Nos of LED type phase indicating lamps (RYB) with controlled by 2Amp MCB .				
	1 No.6A, 2 pole Auto/OFF/Manual (2 way with OFF) selector switch.				
	2 Nos. of push button actuator				
	Busbar :				
	Electrolytic high conductivity Copper three pole and 100%neutral bus bars rated at 200 amps having a maximum current density of 1 amp per sq mm insulated with heat shrinkable PVC sleeves & SMC/DMC supports.				
	Outgoings :				
	Three (3) Nos. 10 A-32A DP 10KA MCBs. with 10A-32A DP contactor (AC 1 Category with 230V Control Coil) using 1 No. 24 hour astronomical time switch on Auto/Manual arrangement with Auto/Manual selection switch, ON/OFF Push Buttons, Indication lamps & Control fuses etc .				
	Three (3) Nos. 32 A DP 10KA MCBs.				
	Full Set as above				
	Feedder pillar as described above	Set	2		0.00
8.2)	**MAIN ELECTRICAL PANEL FOR BUILDING BLOCK**				
	Designing, fabrication, supply, installation, testing and commissionings of front operated cubicle type compartmentalised, front access, free standing on 75MM "[" MS channel, dust and vermin proof (IP 42 degree protection) panel suitable for use at 415V, 3 phase, 4-wire 50Hz system suitable for fault level of required value symmetrical at 415V fabricated from 2mm thick CRCA MS sheets with hinged, gaskettted (Metal based neoprene) locable doors having structural reinforcement including 3mm thick gland plates on top and bottom, lifting hooks, GI earth strip of required size with 2 nos earth terminals, 2 nos 230V AC operated 250mm X 250mm size axial fans for exhaust of heat with On-Off toggle switches including 2 coated primer and 2 powder coated paint fnish of approved shade over metal surface cleaned and treated with seven tank process complete with interconnections etc as per specifications as required.main panel board should be CPRI Approved.				

	Panel shall have provision for entry of cables from the top or bottom through Cable Alley. All live accessible parts shall be shrouded and all equipment shall be finger touch proof. The busbars insulation shall be with heat shrinkable sleeves SMC/DMC shrouds and busbar supports shall be used. Padlocking facility shall be provided on all outgoing feeders doors and switch handles shall be locable in OFF position.				
	Suitable arrangement shall be made for termination of multiple incoming cables.				
	INCOMER				
	1 No. 250 Amp four pole MCCB with microprocessor Release O/L,S/C,E/F protection+ Spreder+Extended rotary handle. Moulded Case Circuit Breaker (Ics =100% Icu,36 KA).				
	Enclosure				
	Fabrication 400 Amps, TPN Electrolytic grade Aluminium Bus Bar (Ambient temperature 45° C, temperature rise limited to 40° C above ambient), PVC sleeving, control wiring, necessary hardware. for LT Panel as well as for functioning of Single / multi functioning Energy Meters.capacitors (Each vertical bay shall be equipped with space heater + thermostat, door switch illumination lamp all duly wired) **Space to be provided for Harmonic Filters to be installed in Future if required.For selecting the bus bar size 0.7 derating factor to be considered.**				
	INSTRUMENTS & ACCESSORIES				
	1 No. 96x96 MFM with 3Nos 250/5A CTs for 3 phase, 4 wire operation with LED display and selector switch with controlled by 3 sets of 2Amp MCB				
	3 Nos of LED type phase indicating lamps (RYB) with controlled by 2Amp MCB .				
	1 No.6A, 2 pole Auto/OFF/Manual (2 way with OFF) selector switch.				
	2 Nos. of push button actuator				
	OUTGOING				
	1 Nos.40A FP MCB For 4Way TPN DB				
	2Nos.63A FP MCB For 12Way TPN DB				
	9 Nos.40A DP MCB For 8Way/12Way SPN DB				
	1 Nos.63A FP MCCB For External Lighting feeder pillar				
	SPARE				
	1 Nos.40A FP MCB For 4Way TPN DB				
	1Nos.63A FP MCB For 12Way TPN DB				
	1 Nos.40A DP MCB For 8Way/12Way SPN DB				
	MAIN ELECTRICAL PANEL FOR BUILDING BLOCK as described above	Set	2		0.00
	SUB-HEAD - VIII Total of Sub Head carried to Summary				**0.00**

9	**SUB HEAD- IX Lightning Protection & Earthing System(LIGHTNING PROTECTION AS PER IEC 62305 / IS IEC 62305 AT LVL -I) (5X5 MTR)**				
9.1	Supplying, Installation, Testing and commissioning of Vertical Aluminium Lighting Arrester of 16MM dia, 1000 mm long with Gun Metal base plate . Model : APSAT116AL+APSTB16-253 Make : APS	Nos.	12		0.00
9.2	Supplying, Installation, Testing and commissioning 8 mm round aluminium conductor for horizontal lightning protection - run in roof. Model : AL8. Make :APS	Mtr.	400		0.00
9.3	SITC of roof conductor holder for 8 mm round aluminium conductor made of Gun Metal for horizontal installation. The distance between each holder should be min of 1 mtr. Model : APSRCS50. Make : APS	Nos.	400		0.00
9.4	Supplying, Installation, Testing and commissioning of **T connector** for connecting of 8 mm Al round conductor . The connector should be of Gun Metal with SS nuts and bolt. Model : APSTCRC50 , Make :APS	Nos.	34		0.00
9.5	Supplying, Installation, Testing and commissioning of **Cross connector** for connecting of 8 mm Al round conductor . The connector should be of Gun Metal with SS nuts and bolt. Model : APSCCRC50 , Make : APS	Nos.	6		0.00
9.6	Supplying, Installation, Testing and commissioning of Expansion piece along with connector to compensate the expansion of round 8 mm Al conductor when temperature variation . Connection should be in every 20 mtr. Model : APSEXP50 , Make : APS	Nos.	12		0.00
9.7	GLUE- Glue is used to fix roof conductor holder on roof.	Nos.	12		0.00
	DOWN CONDUCTOR & RING CONDUCTOR AS PER IEC 62305				
9.8	Supplying, Installation, Testing and commissioning of 8 mm round aluminium conductor as a down conductor mounted in the surface of wall which will carry the lightning current to earth pit. Model : AL8. Make : APS	Mtr.	60		0.00
9.9	SITC of Down conductor holder for 8 mm round aluminium conductor of min distance between the wall to the conductor will be of 50 mm. The distance between each holder should be min of 1 mtr. Model : APSRCS50 Make : APS	Nos.	60		0.00
9.10	Supplying, Installation, Testing and commissioning of straight connector for connecting of 8 mm Al round conductor . The connector should be of Aluminium with SS	Nos.	12		0.00

	nuts and bolt. Model : APSPCRC50, Make : APS				
9.11	SITC of 7 digit lightning strike counter. Model - LSR2 Make - LPI	Nos.	12		0.00
9.12	Supplying, Installation, Testing and commissioning of Test Joint Point for 25X3MM CU STRIP , the size should be of 25 x 3 x 150 mm copper in ABS boxes. Model : APSTLBCU. Make : APS	Nos.	**20**		0.00
	EARTHING AS PER IEC 62561- 2 & 7				
9.13	Supplying, Installation, Testing and commissioning of advance chemical gel earthing system for the proper dissipation of fault / leakage current to the ground and ensure the continuous electrical connectivity and proper functioning to the electrical system. The earth rod shall be of UL listed & CPRI tested 3 meter long 17.2 mm dia 250 microns copper bonded steel rod with the connecting clamp (ss - rod to tape). The UL listed copper bonded rod also should be tested & ceritifed from CPRI for a short circuit current of 46 KA or more. The UL listing shall be punched / engraved on the rod for the physical verification at site. The engravings shall contain the following details - UL Control number, Dimension details of the rod, Product model number & UL certificate reference number as per detailed technical specification attached. To ensure the electrical conductivity, 50 Kgs (per pit) or more resistance grounding minerals per earth pit / earth rod shall be used along with the copper bonded rod. As per IEEE 80-2013 (Clause 14.5 d), the grounding minerals shall be tested & certified for the resistivity of less than 0.12 ohm-mtr. The grounding minerals should be ROHS certified to ensure it does not pollute the ground water as per technical specification attached.	Nos.	12		0.00
9.14	**GI STRIP(25X6 MM) :** FOR EARTHING INTERCONNECTION	Mtr.	200		0.00
	SUB-HEAD - X Total of Sub Head carried to Summary				**0.00**
10	**SUB HEAD- XI: SOLAR SYSTEMS**				
10.1)	Supply, installation, testing and comminsioning of 1 kw solar panel systems along with supplyinh, installaing, testing and comminsioning of 2 kw battery bank to store the energy generated from solar panels during the day and supplying the same to solar led lighting systems in the internal and external areas of the buildings and campus. The batteries shall be solar photo voltaic batteries of Tubular Gel type, low maintenance, lead Acid and made of hard rubber container. Storage batteries should conform IEC 61427 / IS 1651 / IS 133369 as per specifications. The batteries shall use 2 / 12V cells and battery capacity is to be designed at C10 rate with end cell cut off voltage of 1.85 V / cell.	Each	2		0.00

10.2)	Supply, installation, testing and comminsioning of (Flute plate collector) based on direct transfer of heat of capacity 200 LPD. Including all accessories are nonreturn cast copper alloy screwed down high pressure with crutch or butterfly handle screwed both and for iron pipes or union of as require size 15mm/20mm dia and including all accessories etc.	Each	2		0.00
	SUB-HEAD - XI Total of Sub Head carried to Summary				**0.00**
	GRAND TOTAL ELECTRIC WORKS				**0.00**

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Ref: ITI/NSU/CIVIL-DEL/2023/0106/01 **Date 15-03-2023**

ITI LMITED
NETWORK SYSTEM UNIT
DOORVANINAGAR, BANGALORE 560 016.

BILL OF QUANTITY : PLUMBING WORKS :- GROUP 7 (Himachal Pradesh), No. of Buildings are 2, Type-H

BIDDER'S NAME					
S.No.	**DESCRIPTION OF ITEM**	**UNIT**	**QTY**	**RATE (RS.)**	**TOTAL AMOUNT**
1.0	**SUBHEAD - I : Internal Drainage (Rainwater, Soil, Waste & Fittings)**				
1.1	Providing and fixing on wall face unplasticised rigid pvc rain water **pipes** conforming to IS 13592 type a including jointing with seal ring conforming to IS 5382 leaving 10mm gap for thermal expansion (i) single socketed pipes				
	110mm diameter	Metre	32.00		0.00
1.2	Providing and fixing on wall face unplasticised PVC moulded **fittings/ accessories** for unplasticised rigid PVC rain water pipes conforming to IS 13592 type A including jointing with seal ring conforming to IS 5382 leving 10mm gap for thermal expansion				
	Coupler				
	110mm	Each	10.00		0.00
1.3	Single tee without door				
	110x110x110 mm	Each	6.00		0.00
1.4	Bend 87.5o				
	110mm bend	Each	6.00		0.00
1.5	Shoe (plain)				
	110mm shoe	Each	4.00		0.00
1.6	Providing and fixing unplasticised PVC **pipe clips** of approved design to unplasticised PVC rain water pipes by means of 50x50x50mm hard wood plugs screws with MS screws of required length including cutting brick work and fixing in cement mortar 1:4(1cement 4 coarse sand) and making good the wall etc. complete				
	110mm	Each	10.00		0.00
1.7	Providing and fixing to the inlet mouth of rain water pipe cast iron **grating** 15cm dia meter and weighing not less than 440 grams	Each	10.00		0.00
1.8	Providing & fixing stainless steel A ISI 304(18/8) kitchen sink as per I.S 13983 with C.I. brackets and stainless steel plug 40 mm including painting of fittings and brackets, cutting and making good the walls wherever required: Kitchen sink with drain board.				

	510x1040mm bowl depth 250mm	Each	2.00		0.00
1.9	Providing & fixing C.P. brass (Long body) bib cock of approved quality conforming to IS standerd and weight not less then 690 gms.				
	15 mm nominal bore	Each	12.00		0.00
1.10	Providing and fixing grease trap of approved quality & make and as per the direction of Engineering-charge.				
	Grease trap (1.6 LPS) Sise: 600(L) X 450(W) X 415(H) For Stall	Each	2.00		0.00
1.11	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes having thermal stability for hot & cold water supply including all (CPVC) plain & brass threaded fittings including fixing the pipe with clamps at 1.00 m spacing. This includes jointing of pipes & fittings with one step CPVC solvent cement and testing of joints complete as per direction of engineer in charge.				
	Internal Work - Exposed on Wall				
	15 mm nominal outer dia Pipes	RM	8.00		0.00
1.12	20 mm nominal outer dia Pipes	RM	12.00		0.00
1.13	25 mm nominal outer dia Pipes	RM	4.00		0.00
1.14	32 mm nominal outer dia Pipes	RM	2.00		0.00
1.15	Providing and fixing Chlorinate Polyvinyl Chloride (CPVC) pipes having thermal stability for hot & cold water supply including all CPVC plain & brass threaded fittings i/c fixing the pipe with clamps at 1.00 m spacing. This including jointing of pipes & fittings with one step CPVC solvent cement and the cost of cutting chases and making good the the same including testing of joints complete as per direction of engineer in charge.				
	Concealed work including cutting chases and making good the walls etc.				
	15 mm nominal outer dia Pipes	RM	8.00		0.00
1.16	20 mm nominal outer dia Pipes	RM	36.00		0.00
1.17	25 mm nominal outer dia Pipes	RM	2.00		0.00
	TOTAL OF RAIN WATER PIPES AND FITTINGS CARRIEDTO SUMMARY				**0.00**
2	**SUBHEAD- II MAN HOLE**				
2.1	Providing and laying non-pressure NP2 class (light duty) R.C.C. pipes with collars jointed with stiff mixture of cement mortar in the proportion of 1:2 (1 cement : 2 fine sand) including testing of joints etc. complete :				
	100 mm dia. R.C.C. pipe	RM	10.00		0.00
2.2	150 mm dia. R.C.C. pipe	RM	20.00		0.00
2.3	250 mm dia. R.C.C. pipe	RM	40.00		0.00

2.4	Providing, laying and jointing glazed stoneware pipes class SP-1 with stiff mixture of cement mortar in the proportion of 1:1 (1 cement : 1 fine sand) including testing of joints etc. complete :				
	100 mm diameter	RM	10.00		0.00
2.5	150 mm diameter	RM	40.00		0.00
2.6	Providing and laying cement concrete 1:5:10 (1 cement : 5 coarse sand : 10 graded stone aggregate 40 mm nominal size) up to haunches of S.W. pipes including bed concrete as per standard design :				
	100 mm diameter	RM	20.00		0.00
2.7	150 mm diameter	RM	40.00		0.00
2.8	250 mm diameter	RM	40.00		0.00
2.9	Constructing brick masonry manhole in cement mortar 1:4 (1 cement : 4 coarse sand) R.C.C. top slab with 1:2:4 mix (1 cement : 2 coarse sand : 4 graded stone aggregate 20mm nominal size), foundation concrete 1:4:8 mix (1 cement : 4 coarse sand : 8 graded stone aggregrate 40mm nominal size) inside plastering 12 mm thick with cement mortar 1:3 (1 Cement : 3 coarse sand) finished with floating coat of neat cement & making channels in cement concrete 1:2:4 mix (1 Cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) finished with a floating coat of neat cement complete as per standard design:				
	Inside size 90x80cm and 45cm deep including C.I. cover with frame (light duty) 455x610mm internal dimensions total weight of cover and frame to be not less than 38kg (weight of cover 23kg and weight of frame 15 kg)				
	With common burnt clay FPS (non modular)bricks of class designation 7.5	Each	8.00		0.00
2.10	Inside size 120x90cm and 90cm deep including C.I. cover with frame (medium duty) 500mm internal diameter, total weight of cover and frame to be not less than 116 kg (weight of cover 58 kg and weight of frame 58 kg)				
	With common burnt clay FPS (non modular)bricks of class designation 7.5.	Each	4.00		0.00
2.11	Extra for depth for manholes				
	Size 90x80 cm				
	With common burnt clay FPS (non modular)bricks of class designation 7.5	Metre	4.00		0.00
2.12	Size 120x90cm				
	With common burnt clay FPS (non modular)bricks of class designation 7.5	Metre	1.00		0.00

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2.13	Providing and fixing square-mouth S.W. gully trap class SP1 complete with C.I. grating brick masonry chamber with water tight C.I. cover with frame of 300 x300 mm size (inside) the weight of cover to be not less than 4.50 kg and frame to be not less than 2.70 kg as per standard design :				
	With common burnt clay F.P.S.(non modular) bricks of class designation 7.5	Each	2.00		0.00
2.14	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 50m.				
	All kinds of soil	Cum	30.00		0.00
2.15	Excavating trenches of required width for pipes, cables, etc including excavation for sockets, and dressing of sides, ramming of bottoms, depth upto 1.5 m including getting out the excavated soil, and then returning the soil as required, in layers not exceeding 20cm in depth,including consolidating each deposited layer by ramming,watering,etc. and disposing of surplus excavated soil as directed ,within a lead of 50m.				
	Pipes. cables exceeding 80mm dia but not exceeding 300mm dia.	Metre	40.00		0.00
2.16	Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth: consolidating each deposited layer by ramming and watering, lead up to 50 m and lift upto 1.5 m	Cum	30.00		0.00
2.17	Providing orange colour safety foot rest of minimum 6mm thick plastic encapsulated as per IS : 10910 on 12mm dia steel bar conforming to IS : 1786 having minimum cross section as 23 mmx25mm and over all minimum length 263mm and width as 165mm with minimum 112 mm space between protruded legs having 2mm thread on top surface by ribbing or chequering besides necessary and adequate anchoring projections on tail length on 138mm as per standard drawing and suitable to with stand the bend test and chemical resistant test as per specification and having manufacture's permanent identification mark to be visible even after fixing, including fixing in manhole with 30x20x15 cm cement concrete block 1:3:6 (1cement : 3coarse sand : 6 graded stone aggregate 20 mm nominal size) complete as per design.	Each	40.00		0.00
	Constructing brick masonry road gully chamber 50x45x60 cm with bricks in cement mortar 1:4 (1 cement :4 coarse sand) including 500x450mm precast R.C.C. horizontal grating with frame complete as per standard design:				

	With common burnt clay F.P.S. bricks(non modular) of class designation 7.5	Each	4.00		0.00
2.18	Constructing brick masonry road gully chamber 45x45x77.5 cm with bricks in cement mortar 1:4 (1 cement :4 coarse sand) with precast R.C.C. vertical grating complete as per standard design:				
	With common burnt clay F.P.S. bricks(non modular) of class designation 7.5	Each	4.00		0.00
2.19	Providing, fixing, jointing and testing in position of ISI marked UV stabilized UPVC pipes for soil, waste and vent, Type-B as per IS : 13592 suitable for rubber ring joints, including all neccessary specials and fittings (confirming to IS:14735) i.e. bends, tees, junctions (with or without doors), reducers, WC connectors, couplers, cowels, clamps, rubber rings, clean outs etc. fixing at wall/ ceiling/ floor level supported by clamp & hangers etc. in concealed / inside duct / under floor & basement ceiling / external work etc. including chase cutting as required, excavation and back filling in all kind of soils, suspended from floor under false ceiling or embedding the pipes laid under floors / building in 75 mm. alround 1:2:4 cement concrete (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) including cost of shuttering for proper completion of the work, breaking and making good the walls and floors etc. after pipes have been duly laid and tested. The rubber ring shall confirm to IS:5382.				
	The Pipes will be supported with threaded G I rods & clamps on 50x50x5 mm slotted angle. The cost will include all support arrangements. The work includes commissioning of all pipes lines as per drawings and specifications and as directed by engg-in-charge at site.				
	75mm outer dia	Metre	6.00		0.00
	110mm outer dia	Metre	6.00		0.00
	160mm outer dia	Metre	8.00		0.00
2.20	Providing, fixing, jointing and testing in position ISI marked (IS:4985) UPVC pipes of min 6 Kg/ Sqcm rating with fitting for waste pipe from fixtures to floor trap including reduces, enlarger, socket, couplers, bends, tees etc including fixing at wall/ ceiling level supported by clamp & hangers etc. cutting holes in wall/ floors/ slabs and making good the same with cement concrete 1:2:4 complete as required.				
	40mm outer dia	Metre	6.00		0.00
	50mm outer dia	Metre	6.00		0.00
	63mm outer dia	Metre			0.00

			2.00		
2.21	Providing & fixing UPVC **Floor trap** of self cleansing design with CP Jali complete in all respects. (Make : Supreme / Finolex / Prince).				
	a) 100 mm inlet and 100 mm outlet.				
	(with 127dia Glossy CP Grating Jayna				
	model no.RRB 127)	Each	2.00		0.00
	b) 100 mm inlet and 75 mm outlet.				
	(with 102 mm dia CP Glossy Grating Jayna				
	model no. RRB 102)	Each	2.00		0.00
2.22	Providing & fixing 110m x 50mm waste with PVC reducer including cutting chases in floor, cutting RCC slab complete as required.	Each	2.00		0.00
	TOTAL OF MAN HOLE CARRIED TO SUMMARY				**0.00**
3	**SUBHEAD -III PUMP**				
3.1	Providing & fixing fully submersible sump pumps for dewatering with C.I casing & shaft suitable for operation on 400 / 440 V,3 phase, pH 50 cycle A/C power supply.				
	Sump Pumps(For basement drainage)				
	Location - Inside Drainage sump with electrical panel & all controls,cyclic operation				
	2 pumps- both working during extra high level in sump.				
	Flow rate(each pump)=3 lps,head=12m.				
	Solid Handlling-15mm	Set	2.00		0.00
	Providing and fixing gun metal non- return valve of approved quality (screwed end) :				
	32 mm nominal bore	Each	2.00		0.00
3.2	Vertical				
	40 mm nominal bore	Each	2.00		0.00
3.3	Vertical				
	50 mm nominal bore	Each	2.00		0.00
	TOTAL OF PUMP CARRIED TO SUMMARY				**0.00**
4	**Subhead-IV: External Water Supply**				

4.1	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes having thermal stability for hot & cold water supply including all (CPVC) plain & brass threaded fittings. This includes jointing of pipes & fittings with one step CPVC solvent cement,trenching,refilling and testing of joints complete as per direction of engineer in charge. .				
	20 mm nominal outer dia Pipes	RM	20.00		0.00
4.2	25 mm nominal outer dia Pipes	RM	10.00		0.00
4.3	32 mm nominal outer dia Pipes	RM	10.00		0.00
4.4	40 mm nominal outer dia Pipes	RM	10.00		0.00
4.5	Providing and fixing gun metal gate valve with C.I. wheel of approved quality (screwed end) :				
	25 mm dia nominal bore	Each	2.00		0.00
4.6	20 mm dia nominal bore	Each	4.00		0.00
4.7	32 mm dia nominal bore	Each	4.00		0.00
4.8	40 mm dia nominal bore	Each	2.00		0.00
	TOTAL OF External Water Supply CARRIED TO SUMMARY				**0.00**
5	**Subhead-V: RAIN WATER HARVESTING PIT**				
5.1	Providing and constructing Rainwater harvesting pit of 2500 (Dia mm) X 2500mm (D) size (Internal) in overall size with inlet and outlet connection with upto 150mm from ground level 1st class brick 230mm thick in Cement mortar 1:4 (1 Cement : 4 Coarse sand) inside and outside 12mm thick plaster with Cement mortar 1:3 (1 Cement : 3 Coarse sand) with a floating coat of neat cement on inside surface. After 1500, depth 500mm thick border. C.I. (heavy duty) manhole cover 560mm (weight not less than 208 kg) including necessary excavation (all type SOIL hard-rock)backing filling, disposal of surplus earth, providing and fixing of C.I. manhole steps complete as per standard design.	Each	2.00		0.00
5.2	Boring/drilling bore well of required dia for casing / strainer pipe, by suitable method prescribed in IS:2800 (part-1) including collecting samples from different strata, preparing and submitting strata chart/bore log, including hire & running charges of all equipments, tools, plants & machineries required for the job, all complete as per direction of engineer-in-charge, upto 90 metre depth below ground level.				
	All type sof soil				
	350mm dia	Metre	24.00		0.00

5.3	Supplying, assembling, lowering and fixing in vertical position in bore well unplasticized PVC medium well screen (RMS) pipes with ribs, conforming to IS : 12818, including hire & labour charges, fittings & accessories etc, all complete, for all depths, as per direction of engineer-in-charge.				
	200mm nominal dia	Metre	24.00		0.00
5.4	Supplying & filling, sepreading & leveling stone boulders of size range 5cm to 20cm, in the recharge pit, in the required thickness, for all leads & lifts, all complete, for all depths, as per direction of engineer-in-charge.	Cum	10.00		0.00
5.4	Supplying & filling, sepreading & leveling gravels of size range 5mm to 10mm, in the recharge pit, over the existing layer of boulders, in the required thickness, for all leads & lifts, all complete, as per direction of engineer-in-charge.	Cum	10.00		0.00
5.6	Supplying & filling, sepreading & leveling coarse sand of size range 1.5mm to 20mm, in the recharge pit, in the required thickness over gravel layer, for all leads & lifts, all complete, as per direction of engineer-in-charge.	Cum	10.00		0.00
5.7	Providing and fixing Bail plug / Bottom plub of required dia to the bottom of pipe assembly of tubewell as per IS : 2800 (part - 1)				
	200mm dia	Each	2.00		0.00
5.8	Providing and fixing in position pre-cast RCC manhole cover and frame of required shape & approved quality				
	EHD-35				
	Circular shape 560 mm internal diameter	Each	4.00		0.00
	TOTAL OF RAIN WATER HARVESTING CARRIED TO SUMMARY				**0.00**
6	**Subhead:- VI - Sanitary Fixtures**				
6.1	Providing & fixing of white vitreous china pedestal type water closet(European type) with seat and lid, 10 liter low level white viterous china flushing cistern C.P.flush bend with fittings & C.I.brackets ,40mm flush bend, overflow arrangment with specials of standard make and mosquito proof coupling of approved municipala design complete including painting of fittings and brackets, cutting and making good the wall and Floors wherever required:				
	W.C pan with ISI marked white solid plastic seat and lid.	Each	2.00		0.00
6.2	Providing & fixing wash basin with C.I. brackets, C.P brass pillar taps,32 mm C.P. brass waste of standard pattern, including painting of fittings and brackets,cutting and making good the walls wherever required:				
	White Vitreous China Wash basin size 550x400 mm with a pair of 15 mm C.P. brass pillar taps	Each	2.00		0.00

6.3	Providing and fixing PTMT towel ring trapezoidal shape 215 mm long, 200 mm wide with minimum distances of 37 mm from wall face with concealed fittings arrangement of approved quality and colour, weighing not less than 88 gms.	Each	2.00		0.00
6.4	Providing & fixing PTMT soap dish Holder having length of 138mm,breadth 102mm, height of 75mm with concealed fitting arrangements.Weighing not less than 106gms.	Each	2.00		0.00
6.5	Providing & fixing mirror of superior glass(of aproved quality) and of required shape and size with plastic moulded frame of approved make and shade with 6mm thick hard board backing:				
	Rectangular Shape 453x357mm	Each	2.00		0.00
6.6	Providing and fixing toilet paper holder :				
	C.P. brass	Each	2.00		0.00
6.7	Providing and fixing P.V.C waste pipe for sink or wash basin including P.V.C waste fitting complete .				
	Semi rigid pipe				
	a) 40 mm dia	Each	2.00		0.00
6.8	Providing and fixing C.P.brass bottle trap 32mm size bottle trap of approved quality & make as approved by Engineer-in-charge.	Each	2.00		0.00
6.9.	Providing and fixing P.V.C connection with brass union.				
	45cm length.				
	15mm nominal bore	Each	8.00		0.00
6.10	Providing and fixing C.P. bass angle valve for basin mixer and geyser points of approved quality conforming to I.S:8931.				
	15 mm nominal bore	Each	8.00		0.00
6.11	Providing & fixing C.P. hand spray with lever control (health faucet) and flexible hose 1 m long connection with C.P. holder for hand spray complete in all respects as per direction of Engineer-Incharge.	Each	2.00		0.00
6.12	Providing and placing on terrace (at all floor levels) polyethylene water storage tank, IS : 12701 marked, with cover and suitable locking arrangement and making necessary holes for inlet, outlet and overflow pipes but without fittings and the base support for tank.	per ltr	2000.00		0.00
6.13	Providing and fixing white vitreous china flat back half stall urinal of size 580x380x350 mm with white PVC automatic flushing cistern,with fittings, standard size C.P. brass flush pipe, spreaders with unions and clamps (all in C.P. brass) with waste fitting as per IS :2556, C.I. trap with outlet grating and other couplings in C.P. brass,including painting of fittings and cutting and making good the walls and floors wherever required :				
	Single half stall urinal with 5 litre P.V.C. automatic flushing cistern	Each	2.00		0.00

	TOTAL OF SANITARY FIXTURES CARRIED TO SUMMARY				**0.00**
7	**Subhead:- VII SEPTIC TANK FIXTURES**				
7.1	Supplying and fixing C.I. cover without frame for manholes :				
	455x610 mm rectangular C.I. cover (light duty) the weight of the cover to be not less than 23 kg	Each	4.00		0.00
7.2	Supplying and fixing CI vent pipe--80 mm dia	RM	10.00		0.00
7.3	Supplying and fixing CI cowl.	Each	2.00		0.00
7.4	Making soak pit 2.5 m diameter 3.0 metre deep with 45 x 45 cm dry brick honey comb shaft with bricks and S.W. drain pipe 100 mm diameter, 1.8 m long complete as per standard design.				
	With common burnt clay F.P.S. (non modular) bricks of class designation 7.5	Each	2.00		0.00
	TOTAL OF SEPTIC TANK CARRIED TO SUMMARY				**0.00**
	GRAND TOTAL OF PUMBING WORKS				**0.00**

Ref: ITI/NSU/CIVIL-DEL/2023/0106/01					Date 15-03-2023
ITI LMITED NETWORK SYSTEM UNIT DOORVANINAGAR, BANGALORE 560 016.					
BILL OF QUANATITY : IT & FIRE FIGHTING WORKS :- GROUP 7 (Himachal Pradesh), No. of Buildings are 2, Type-H.					
BIDDER'S NAME					
S. No.	**Description**	**Unit**	**QTY**	**RATE (Rs)**	**Total Amount**
1	**ACCESS CONTROL SYSTEM consisting of the following** (a) Supply, Installation, testing and commissioning of the access control system including the following equipments including necessary fitting, fixtures, cables, etc. (Model No./make RBH-Axiom) 1 nos per node. (b) 2-Door Control Panel with universal cabinet and power supply and required license.(Model No./make RBH-IRC-2000) 3 nos each per node. (c) Biometric reader. (Model No./make BFR-350) 5 nos each per node. (d) PROXIMITY CARD. (Model No./make PBH Smart Card) 20 nos each per node.	Set	2.00		0
	TOTAL FOR ACCESS CONTROL SYSTEMS WORKS				**0**
2	**VIDEO SURVEYLANCE SYSTEMS** Supply, installation, testing and commissioning of physical intrusion detection and prevention system including all necessary accessories, wires and fixtures. The system should be equipped with central monitoring software and server at NOC with complete necessary licenses (a) Indoor Dome Camera (Model No Mobotix m 26) 3 Nos per node (b) Out door type camera (Model No Mobotix m 26) 5 Nos per node (c) Network Vide Recorder system (Brand Mobotix) 1 Nos per node (d) 22" lcd display complete with all wiring and necessary fittings. (Make Samsung/LG) 1 Nos per node (e) 1 no PC loaded/ installed with necessary lisc. Software for video surveylance. (Make Software: Mobotix, PC Hardware: Dell/HP) 1 Nos per node	**Set**	2.00		0
	TOTAL FOR VIDEO SURVEYLANCE SYSTEMS				**0**

3	**PHYSICAL INTRUSION DETECTION AND PREVENTION SYSTEM consisting of the following:** (a) Supply, installation, testing and commissioning of physical intrusion detection and prevention system including all necessary accessories.(Model No Securico President) 1 nos each per node. B)Intrusion Controller panel(Make :Securico President). 1 no per node. C)Keypad - Alpha Addressable LCD Keypad (Model No Securico President). 1 per node. D) PIR Sensor (make: Optex). Qty: 8 nos per node. E) Beam Protector (Covering the entire parameter of the node) (make:Optex). Qty: 10 per node. F) Ground sensor (make: Optex). Qty: 8 nos per node. G) 130 db hooter (Make: Securico) Qty: 4 no per node. H) 2ft pole for beam detector (GI Pipe). Qty: 5 nos per node.	**Set**	2.00		0
	TOTAL FOR PHYSICAL INTRUSION SYSTEM WORKS				**0**
4	**FIRE DETECTION AND SUPPRESSION SYSTEM consisting of the following:** **(**a) Supplying, installing, testing and commissioning of addressable Main control panel comprising of visual and audible fire and fault alarms and signals, indicators and all other accessories. Panel shall be IS Approved. The system shall be nstalled with complete necessary fittings and fixtures including 2C x 1.5 sqmm and 2C x 2.5 sqmm ISI marked cables and wires. All the conduits hall be as per NBC specifications. (Model No Kentek Syncro As) 1 nos each per node. (b) OTI-AX-200TE - Photoelectric Detector with Synchronized twin beam, 200ft outdoor all weather range, IP65 Lightning Protection Level 14kV, 99% beam blocking stability includes pole mounting kit (Model No OTI-AX-200TE) 5 nos each per node. (c) OTIBC3 - Back cover for OTIAX200TF (Model No OTIBC3) 5 nos each per node.	**Set**	2.00		0

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	(d) SOUNDER 12V - High power 130 db, Police Siren Sound, Suitable for Indoor and Outdoor application. Tamper Loop. (Model No Roshni red 32 tone) 4 nos each per node. (e) Smoke detectors(Model No Apollo Discover / 58000-600) 32 nos each per node. (f) Heat detectors(Model No Apollo Discover / 58000-400) 1 nos each per node. (g) Multi-Criteria detectors(Model No Apollo Discover) 3 nos each per node. (h) Manual Call Point (Breaking Glass type)(Model No Apollo Discover /55000-971) 5 nos each per node. (j) Sounder / Flasher with Control Module (Model No Apollo Discover) 8 nos each per node. (k) Short Circuit Isolator 1 nos each per node. (l) Control modules for AHU / FAN trappings(Model No/Make: SS) 2 nos each per node. (m) Fire Signages- photoluminescent Green or Red color safety signages in different sizes / graphics / colours /texts can be made according to the standards 2 nos each per node.				
	(a) GAS SUPPRESSION SYSTEM FM 200 Gas based Fire Suppression System shall be considered for equipment storage room and server room. Qty 1 no system per node.				
	FIRE EXTINGUISHER **(a)** CO2 type cylindrical shape fire extinguisher - 4.5 Kg Capacity with requisite fixing arrangement (Model No/make Ventex) 5 nos each per node. (b) ABC type fire extinguisher - 6 Kg capacity with requisite fixing arrrangement (Model No/make Ventex) 5 nos each per node. (c) Dry chemical powder type cylindrical shape fire extinguisher - 6 Kg Capacity with requisite fixing arrangement (Model No/make Ventex Dry powder 4308/14609) 5 nos each per node. (d) Mechanical foam type fire extinguishers with requisite fixing arrangement (Model No/make Ventex) 5 nos each per node. (e) Trolley mounted type - 9 litres capacity. 1 nos each per node. (f) Trolley mounted type -50 litres capacity. 1 nos each per node. (g) Supply and installation of Fire buckets of 9 litres capacity. Stand made of MS Channel and angle to accommodate 4 Nos. of buckets filled with cleaned soft sand. Rate shall be inclusive of red panit for buckets and MS Sand as per Fire Code. 5 nos each per node.				
	TOTAL FOR FIRE FIGHTING WORKS				**0**
	GRAND TOTAL OF IT & FIRE FIGHTING WORKS				**0**

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