



ITI LIMITED

(A Govt. of India Undertaking)

Network Systems Unit

ESG (ASCON)
C/O. HQ 5 Signal Group
Delhi Cantt. 110010.

www.itiltld.in

civil_nsu@itiltld.co.in

CIVIL ENGINEERING DEPARTMENT

Tender for Construction of LGSF Building [Sample Room]

Sl. No.	ITEM	DESCRIPTION
1	Tender No.	ITI/ESG/CIVIL/ASC-4/LGSF/01/717 dated 07-05-2022
2.	Sale of Tender document	Available on ITI e-Tendering portal www.itiltld.in or https://www.tenderwizard.in/ITILIMITED
3.	Bid Submission Start Date	07/05/2022.
4.	Bid Submission Last Date	14/05/2022 Up to 11: 00 A.M.
5.	Bid Opening Date	14/05/2022 Up to 11:30 A.M.
6.	Tender Fee	Rs. 5,000/- [Exclusive of GST @ 18%, i.e., Rs. 5900/-]
7.	Tender Opening Address	Addl. General Manager-(ASCON) 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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NOTE: COUNTER OFFERS/CONDITIONAL OFFERS IF MADE WILL NOT BE ACCEPTED AND SUMMARILY REJECTED

Tenderer:

Shri/ M/s
.....

Addl. General Manager-(ASCON)

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 LGSF Building [Sample Room]

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 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,

(CONTRACTORS)

Address:

Dated:

Signed in the presence of

1. Witness.....

Address.....

Date:.....

2. Witness.....

Address.....

Date:.....

IMPORTANT PARTICULARS: BUILDING WORKS [CIVIL]

SL NO.	DESCRIPTION	INFORMATION
1	REFERENCE NO. OF TENDER DOCUMENT	NSU/CIVIL/ASC-4/ LGSF/001/717 dated 07/05/2022
2	DATE OF ISSUE OF NOTICE INVITING TENDER	07-05-2022
3	MODE OF SUBMISSION OF TENDER	E-TENDER
4	LAST DATE & TIME FOR SUBMISSION OF BIDS	14-05-2022 AT 11 AM
5	DATE & TIME OF OPENING OF TECHNICAL BIDS	14-05-2022 AT 11 AM AT 11.30 AM
7	OPENING OF FINANCIAL BIDS	WILL BE INTIMATED LATER
8	COST OF TENDER DOCUMENT	Rs. 5,000 plus GST @18% i.e., Total Rs. 5,900
9	EARNEST MONEY DEPOSIT (EMD) IN THE FORM OF DEMAND DRAFT/ BANKERS CHEQUE.	Rs. 1.6 lakhs
10	AVERAGE FINANCIAL TURNOVER ON CONSTRUCTION [LAST THREE YEARS]	Rs. 40 lakhs
11	SOLVENCY CERTIFICATE VALUE	Rs. 32 lakhs, [Issued within six month from the original last date of submission of tender.
12	ADDRESS FOR BID SUBMISSION	Addl. General Manager-(ASCON) ITI Limited ESG (ASCON), C/o. HQ 5 Sig Group, Opp. HQ Western Air Command, NH-8, Asmara Lines, Delhi Cantt. 110010.
13	SECURITY DEPOSIT	Ten percent of contract value.
14	VALIDITY	120 days from the last date of submission opening of financial bid
15	PRICE ESCALATION	NIL
16	PERFORMANCE GUARANTEE	3% OF CONTRACT VALUE.
17	TIME ALLOWED FOR COMPLETION OF WORKS	45 Days
18	ESTIMATED COST	Rs. 77 lakhs [Excluding GST]

Note: The tender documents can be downloaded from the Company website [www. itiltd. in](http://www.itiltd.in) or <https://www.tenderwizard.in/ITILIMITED> and from Government portal eprocure.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://www.tenderwizard.in/ITILIMITED> 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

1. ITI Ltd invites item rate offers to contractors who has successfully executed LGSF Building and have worked with/under MES, State PWDs, or Central/State PSUs/ ITI Ltd/ Corps of Engineers/ reputed private firm, for the Tender of Construction of LGSF Building [Sample Room].
2. The purpose of the sample room establishment is to demonstrate LGSF Technology, show the various samples of Electrical, sanitary, carpentry fittings, tiles, fire protection product/equipment and functional demonstration/showcase of IT related items like camera, biometric reader, control panels etc. which will be used in ASCON PH-IV.

3. ELIGIBILITY CONDITIONS FOR THE BIDDERS

I. MINIMUM ELIGIBILITY CRITERIA FOR PARTICIPATION IN THE TENDER.

- Should have Class **I/Class-II** contractor in CPWD or equivalent registration under MES or Corps of Engineers, State PWDs, or Central / State PSUs/ITI Ltd to execute works of civil works/prefab works/PEB/LGSF buildings works, Class II contractors as registered in above departments may also be considered.
- Should have undertaking from OEMs of IT related works as per annexure 15A/B/C.
- Should have own manufacturing capacity or undertaking from manufacturer for supply of LGSF structure/members.

II. WORK EXPERIENCE for Eligibility.

Experience of having completed similar works during the last 7 years ending --01-04-2022.

1. Three similar works each costing not less than 40% of the estimated cost put to tender.
2. Two similar works each costing not less than 60% of the estimated cost put to tender.
3. One similar work costing not less than 80% of the estimated cost put to tender.

Similar works means Residential/Non-Residential LGSF buildings/Prefab building of any no. of stories.

- A. The past experience in similar nature of work should be supported by certificates issued by the client's organization [Work order and completion certificate]. In case the work experience is of other than Govt. /Semi Govt./PSU's/autonomous bodies, the completion certificates shall be supported with copies of the letter of work order/ Completion certificate and copies of Corresponding TDS certificate [Form 26AS]. The value of work will be considered equivalent to the amount of TDS certificates.
- B. 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.
- C. 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 NIT [Refer - Important information]. The requisite Turnover shall be duly certified by a Chartered Accountant with his seal/Signatures and registration number. **[Annexure-7]**
- b. Bank Solvency Certificate issued from nationalized or any schedule Bank should be at least value specified in the NIT [Refer: important Information to bidder]. **[Annexure-14]**
- 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.

4. TENDER DOCUMENTS SHALL BE FILLED, SIGNED, AND SUBMITTED IN ORIGINAL

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/digitallysigned by the tenderer as prescribed in the different places of the tender document.
- iii. Information regarding the tenderer [organisatation set up] as in the proforma enclosed at **Annexure- 8.**
- iv. Declaration regarding the Tenderers work of comparable nature and constructions organization in the proforma enclosed in **Annexure --9.**
- v. Cost of tender documents, and EMD.
- vi. Income Tax Return for the last three finacial year.
- vii. PAN Number and GST Registration certificate
- viii. Earnest Money Deposit (EMD) as specified in the tender and Tender document fee of Rs. 5,000 (Rupees Five Thousand Only) plus GST @18% i.e. Total Rs. 5,900 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 authorised representative who has signed the tender.
- x. Solvency Certificate of value as specified in NIT---[Annexure-14]
- xi. An integrity pact duly signed by the tenderer shall be submitted. Any bid without a signed Integrity pact shall be rejected. [Annexure-3]

MANDATORY DOCUMENTS FOR ELIGIBILITY CRITERIA.

Registration certificate	Class 1/Class-II registered contractors in CPWD or equivalent registration under MES or Corps of Engineers, State PWDs, or Central / State PSUs/ ITI Ltd.
Average Financial Turnover certificate of last three financial year from CA	Rs. 40 lakhs
Solvency certificate	Rs. 32 lakhs, [Issued within six month from the original last date of submission of tender].
EMD	Rs. 1.6 lakhs
Work Experience certificate [Completion] (Similar type of works, LGSF Building/Prefab buildings)	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	Have own manufacturing capacity or undertaking from manufacturer for supply of LGSF structure/members.
	Litigation History
	Annexure 15A – From M/s. RBH Access Technologies
	Annexure 15B – From M/s. MOBITIX
Other Documents	Annexure 15C – From M/s. OPTEX
	As per Tender Document

e-Envelope 2 [Financial BID]

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

5. CLARIFICATIONS:

Bidders desirous of seeking clarifications on the Tender, may send their queries through email to: civil_nsu@itilttd.co.in also on <https://www.tenderwizard.com/ITILIMITED>.

- 1 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).
- 2 Bids without authenticated proof of Bid document fee, EMD and other technical compliances as required and prescribed in this Tender, will be rejected.
- 3 The date for opening the financial bids will be communicated to all technically qualified and eligible bidders separately, through registered email.
- 4 The address for all correspondences regarding this Tender shall be marked to AGM (CIVIL-ASCON), ESG - Office, ITI Limited through E-mail: civil_nsu@itilttd.co.in

- 5.1 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.
- 5.2 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.
- 5.3 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 bidding.
- 5.4 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.
- 5.5 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.
- 5.6 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.
- 5.7 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

- 6.1** The bidder shall prepare, as a part of his bid, the bid documents duly signed/digitally signed on each and every page 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.
- 6.2** 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:

- 7.1** 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.
- 7.2** 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.
- 7.3** 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.
- 7.4** 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. GENERAL INFORMATION TO THE BIDDER ON EMD, SECURITY DEPOSIT, AND REFUND OF SECURITY DEPOSIT.

- 8.1** 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.
- 8.2** The EMD shall be payable to the ITI without any conditions, recourse, or reservations.
- 8.3** 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.
- 8.4** **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.
- 8.5** 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.

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.

8.6 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

8.7 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]

8.8 The EMD 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.

8.9 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.
- b. Corrigendum Addendum, Clarifications, etc.,
- c. Special conditions of Contract
- d. Descriptions of the bill of quantities /Schedule of quantities.
- e. Relevant IS codes/National building code-2015.
- f. General Conditions of Contract
- g. Drawings.
- h. CPWD specifications [as specified in Technical specification of the tender] updated with correction slips issued up to the last date of receipt of tenders.
- i.

9. 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
1 st stage	From Ground level to plinth level	Payment will be made for 90% of the work done up to plinth level as per BoQ based on actual measurement.
2 nd stage	Supply of Stores	50% payment will be made for the item supplied as stores at site which is mentioned under New Technology and materials [LGSF] section of BoQ based on actual measurement.
3 rd Stage	After completion of Erection works	40 % payment will be made for the item supplied as stores after erection, which is mentioned under New Technology and materials [LGSF] section of BoQ based on actual measurement.
4 th stage	Finishing Works [plastering/ painting/ flooring/ plumbing /electrical / wooden & steel works/ and water proofing works.] etc.	Payment will be made for 90% of the work done of in 4 th stage as per BoQ based on actual measurement.
5 th Stage	Handing over and acceptance of the building by the USER	Balance 10% Payment of (section 1 , 2 & 3) entire work will be made after completion of 5 th stage.

- **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].

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.

10. 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.

11. 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 authorised representative, 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.

12. When the tenderer signs a tender in a language other than English, the total amount of tendered should also be written in the English language only. The signature should be attested by at least one witness.
13. Witnesses and sureties shall be persons of status and property and the names, occupations, and addresses shall be stated below the signature. 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 authorised representatives.
14. 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.

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 date.

15. 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.
16. 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.
17. **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.

18. 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.
19. The successful tenderer shall be required to execute an agreement in duplicate in the proforma 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.
20. **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. **[As per Annexure]**
 - 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.
21. **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.

22. 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 MSSED 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 case or the Scheduled tribe enterprises.
- 23.** Consortium/Joint ventures companies shall not be permitted. No single firm shall be permitted to submit two separate applications.
- 24.** 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:
- Forfeit the entire amount of EMD submitted by the firm.
 - The bidder/Firm shall be liable for debarment from tendering in the Company apart from any other appropriate contractual legal action.
- 25** 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.
- 26 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, application of taxes, duties, and levies as applicable and any other relevant information required by them to execute the complete scope of work.
- 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.

27 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.

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

29 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.

30 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.

31 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.

32 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 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.

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

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

35 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.

36 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.

**For and on behalf of the
Accepting authority**

Addl. General Manager-(ASCON)

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

---- END OF SECTION –I ----

SECTION -II

INFORMATION AND INSTRUCTIONS TO TENDERERS

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 three 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 3 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.italtd.in, or <https://www.tenderwizard.in/ITILIMITED> 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.

6. 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.
7. Integrity pact duly signed by the tenderer shall be submitted. Any bid without a signed integrity pact shall be rejected. [Annexure]

8.0 TIME SCHEDULE FOR COMPLETION OF WORK

1. LGSF Buildings. – 45 days from the date of handing over of site.

The date of commencement will be reckoned from 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 [Sample Room]
- B. PHE Service (Internal and External)
- C. Electrical Services (Internal and External)
- D. AC installation

The schedule contains different subheads as indicated below:

- a. Civil works/LGSF Works for buildings including pathways, Water Proofing Treatment works
- b. Water supply and sanitary works
- c. Electrical works, including AC installation
- d. IT Related Works

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

9.0 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.

10.0 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.

11.0 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.

12.0 Bidder has to commence the work immediately from the issue of work order.

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

14.0 The contractor has to take up the work on priority.

15.0 The project engineer should have past experience of working with Army project.

16.0 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.

----- END OF SECTION –II -----

SECTION -III

INSTRUCTIONS FOR ONLINE BID SUBMISSION TO BIDDERS

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	<p>Digital Certificates:</p> <p>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].</p>
1.5	<p>Registration in e-procurement portal:</p> <p>Bidder has to Register first in https://www.tenderwizard.in/ITILIMITED.and then Tender document can be downloaded from the web site: https://www.tenderwizard.com/ITILIMITED and bid has to be submitted in the e-format.</p>
1.6	<p>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.</p>
1.7	<p>Special Note on Security of Bids:</p> <p>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.</p> <p>Specifically, for Bid Submission, some security related aspects are outlined below: -</p> <p>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.</p>
1.8	<p>Public Online Tender Opening Event (TOE):</p> <p>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.</p> <p>Every legal requirement for a transparent and secure 'Public Online Tender Opening Event (TOE)' has been implemented on ETS.</p> <p>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)'.</p> <p>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</p>

	<p>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.</p> <p>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'.</p>
1.9	<p>Other Instructions: For further instructions, the vendor should visit the home page of the portal i.e. https://www.tenderwizard.in/ITILIMITED.</p> <p>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.</p>
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	<p>Minimum Requirements at Bidders end:</p> <p>Computer System with good configuration and OS preferably supporting Windows, Word, Excel & PDF, High Speed Broadband connectivity, Internet Browser and Digital Certificate(s).</p>

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 ascertain that the bidders who have not made payment of bid cost and EMD online then the Physical Envelopes of Bid Security and Bid cost should be submitted to AGM (CIVIL) ITI Ltd, ESG-Office, HQ 5 Signal Group, Delhi Cantt. 110010 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 outrightly 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 such 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 CONTRACT 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 or 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 thereof or allow any person to become interested therein in 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 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 within 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 date 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 date 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 or unusual delay in transportation or unavoidable casualties of any cause beyond the contractor's control, or by delays authorized by the Engineer 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 or 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 respective 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 or 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 within 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 contractor's 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.

3.4.1.1 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.

3.4.1.2 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.

3.4.1.3 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.

- 3.4.1.4** 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.
- 3.4.1.5** 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 set forth and describe on the drawings. In case of conflict between the specifications and the drawings, the specification shall govern.
- 3.4.1.6** 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.
- 3.4.1.7** 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.
- 3.4.2 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.
- 3.4.3 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 or 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:

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.

3.9.1 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.

3.9.2 REMOVAL OF IMPROPER WORK AND MATERIAL:

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

- 3.9.2.1** 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.
- 3.9.2.2** The substitution of proper and suitable materials.
- 3.9.2.3** 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 conditions.**

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 3.9.2.3** 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 in 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 to 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 100% [Hundred percent] of the accepted contract sum. The said percentage of 100% 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 100% specified, the quantity of items beyond 100% 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 Paise 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 paise shall be omitted and sums of 50 paise 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 his 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 from 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 therefor 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 contract 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 contractor's 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 of 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 Addl. General Manager and if the Addl. General Manager is unable or unwilling to act, to the sole arbitration of some other person appointed by the Addl. 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 Addl. 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 –V -----

SECTION –V

ANNEXURES

Sl. Nos.	ANNEXURES	Descriptions
1	ANNEXURE - 1	Proforma of Agreement
2	ANNEXURE - 2	Non-Disclosure of Agreement with Appendix-A
3	ANNEXURE - 3	Integrity Pact
4	ANNEXURE - 4	Proforma of Bank guarantee in lieu of EMD
5	ANNEXURE - 5	Declaration of Tenderer
6	ANNEXURE - 6	Proforma 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	Proforma 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 pf 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 - 16	CHECK LIST
19	ANNEXURE - 17	PRICE BID [BOQ]

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 offor 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 noDated

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 Addl. General Manager (ASCON) 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 losses and expenses incurred by the COMPANY. The decision of the Addl. General Manager (ASCON) 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 nodated..... 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

ITI 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 LGSF Building [Sample Room]**, 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 LGSF Building [Sample Room]

Confidential Information of ITI Limited.

- 1.1 Tender document for Construction of LGSF Buildings [Sample Room]
- 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 Ref: ITI /ESG/ CIVIL / ASC - 4 / LGSF/ 01/-717 dtd. 07.05.2022

THIS Integrity Pact is made on.....day of20

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 Act or 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 Pact at 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/shaving 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 ofby 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	2018-19		
2	2019-20		
3	2020-21		
		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 5 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.
- Copy of Award letter.
 - 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,

Addl. General Manager-(ASCON)

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 atthis.....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/ESG/CIVIL/ASC-IV/LGSF/01/717 dated 07/05/2022 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/ESG/CIVIL/ASC-IV/LGSF/01/717 dated 07/05/2022 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/ESG/CIVIL/ASC-IV/LGSF/01/717 dated 07/05/2022 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- 16

CHECK LIST FOR THE SUBMISSION OF TENDER:

Whether the following documents are enclosed:

Sl. Nos.	Discription	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			
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	Annexure 15 A			
14	Annexure 15 B			
15	Annexure 15 C			
16	All the pages of tender documents signed			
17	Signed non-disclosure agreement			
18	CHECKLIST			
19	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 –VI -----

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 Being sample construction, for new technology LGSF buildings and other samples in building construction, the quantities taken in the BoQ are tentative or assessment basis. Quantities of BoQ are prone to vary up to 100 percent on either side.
- 4 Outside support system related to plumbing and electrical re not taken into consideration in the tender scope and existing outside resources will be utilized for plumbing and electrical.
- 5 Since all the future construction of buildings are to be done on the basis of sample requirements in the sample room, the days taken for the construction of sample room has to be early and it has been taken as 45 days only.
- 6
- 7 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.
- 8 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.
- 9 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.
- 10 **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.**

- 11** 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.
- 12** 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.
- 12.1 The contractor will be held to have visited the site 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.
- 12.2 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.
- 12.3 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.
- 13** 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.
- 13.1 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) Indian Standard Specifications of BIS
 - e) CPWD specifications,
- 13.2 In the case of conflict amongst the various drawings, the decisions of the Engineer-In-Charge shall be final and binding.
- 13.3 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.

14 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.

14.1 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.

15 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.

16. MATERIAL TESTING –APPROVAL OF SAMPLES

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

16.2 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.

16.3. 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.

16.4 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 Fe.500D.**

- 16.5 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.
- 16.6 Proprietary materials brought at the site shall be stored as directed by ITI Ltd and those already recorded shall be suitably marked for identification.
- 16.7 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.
- 16.8 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.
- 16.9 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.
- 16.10 **Reinforcement steel bars shall be of grade fe-500D & cement (excluding white cement) shall be of OPC 43 grade only.**

17 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.

18 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.

19 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.

20 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.

21 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.

22 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.

23 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 INCHARGE 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]

24 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 only. Prior approval of ITI shall be taken in this regard.

- 24.1** 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.
- 24.2** 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.
- 24.3** 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.
- 24.4** Waterproofing and anti-termite treatment shall be got done through approved/specialized agencies only with the prior approval of the Engineer-in-charge.
- 24.5** 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.
- 24.6** The contractor shall make his arrangement for all equipment required for the execution of the job.
- 24.7** The contractor whose tender is accepted shall execute a guarantee bond in the prescribed form for guaranteeing the anti-termite treatment and waterproof treatment.
- 24.8** 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.

25.0 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.

26.0 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

TECHNICAL SPECIFICATIONS OF LGSF BUILDING

Scope of Work

Pre-Engineer Building using LGSF Technology.

1 Design criteria.

- a) Seismic Co-efficient – As per Seismic Zone V as per IS-1893.
- b) Snow load - 0.5 meter standing on roof.
- c) Wind load - Equivalent to wind speed of 55 mtrs/sec as per IS-875.
- d) Roof slope - Sloping roof varies as per site condition
- e) External temperature – (-) 30C to + 60C.
- f) Water absorption/Penetration – Nil
- g) Termite proofing – Termite proof.
- h) Fire resistant – Fire retardant and should not emit toxic fumes.
- i) Ease of construction – Shelter should be modular in design.
- j) Design load, Design combination and construction – As per latest IS 875, IS 1893, IS 13920 and IS 456.
- k) 'U' value of external walls will not exceed 0.36 (+) 5% W/m²K.

Note: All the structural design of LGSF and foundation design should be vetted by IITs. and will be responsible for correctness, strength and stability of the structure. If any changes it will be timely intimated to the Department.

2 Design data: -

- a) Sample room Building
- b) Length - As per layout (Out to out measurement of external wall).
- c) Width - As per layout (Out to out measurement of external wall).
- d) Height - 3.05 mtr (Clear headroom upto false ceiling).

3 Structural Members: -

- a) Structural Frame, Trusses and Purlins. Structural frame for wall studs, bracings, runners, platforms, roof truss and purlins etc shall be made of cold rolled light gauge steel (LGS) of thickness minimum 1.2 mm and above as per design requirements with 350 MPa of yield strength.

The steel shall be galvanized with minimum 275 gsm coating of zinc or AZ150 Galvalume / Zinalume (55% Al and 45% Zn Alloy coating) as per applicable Indian or international standards.

The structure shall have pre-punched service holes, dimple holes, web notches, lip cuts etc for trusses and wall frames and purlins.

All joints of profiles struts and purlins shall be joined properly. All connecting angles, plates, bracings etc will be in galvanized steel made out of 0.75/0.9/1.0/1.5/3/4 mm sheets depending on the design.

All bolts and screws shall be galvanized. Minimum bolt size shall be 8 mm and self-drilling screws 4 mm / as per design.

Wall panels shall be made of standard "C" and "U" sections of 140 mm web sizes. However higher sizes shall be used as per design requirement.

- b) Sections made of Light Gauge Steel are to be designed to withstand all loads and load combinations such as dead load, live load, wind load as per IS 875 and seismic load as per IS 1893, IS 456 for all possible load combinations.

The item includes usage of connection accessories like heavy duty tension ties, light duty holdons, twist straps etc for better structural stability.

Sufficient provisions should be made in the structure for fixing door-windows, sunshades, sanitary installations, electrical fittings and fixtures, geysers etc.

The sections should be with dimples for flush screw fixing to assemble the section at site and should be suitable for concealed wiring/ plumbing system. The structural framing system to be securely fixed to the civil structural foundation system.

Structural Columns and Beams (Portal) – ISMB / boxed ISMC/rolled tube sections shall be used with appropriate base plate and foundation bolts using 1:1, 5:3 concrete (volumetric proportion).

Beams and all structural members shall be in MS/ Built up sections.

- c) Rain water drainage: Pressed formed profile of appropriate geometry made of 0.5 mm thick PPGI sheet for rain water drainage along with suitable drain pipe.
- d) Fasteners. All steel bolts, nuts, washers complying relevant IS code. Self- drilling screws complying with relevant IS code shall be used
- e) Foundation. It is to be designed based on the wt of the structure and prevailing soil conditions. The vendor will verify the soil conditions and carry out necessary tests at own level to confirm the soil strata and other details required for foundation design. The design will be submitted for approval of Accepting Officer/Engineer-in- Charge.
- f) The foundation drawings will be approved from IITs.
- g) Main Design Codes. Steel Structures are designed according to following codes: -
- i. Whole structure will be designed as light gauge steel structure and mild steel as per the design. The buildings will be design in accordance with the relevant Indian Code of Practice for civil works i.e. IS: 456, IS: 800, IS 801, IS: 875, IS: 1893- 2002, IS:

4326-1976, IS-811 and IS -13920-1993, The structure will be designed for all possible combinations of gravity loads (dead and live loads), and lateral loads (earthquake load and wind loads) as per relevant IS codes – design criteria.

- ii. Frame members are designed in accordance with relevant IS code.
- iii. Cold Formed members are designed in accordance with the 1996 edition of the American Iron and Steel Institute (AISI):” Cold Formed Steel Design Manual”.
- iv. All welding is done in accordance with the Structural Welding Code-Steel.
- v. Manufacturing dimensional tolerances are in accordance with the relevant IS code. In case of absence of relevant code, higher international codes will be applicable.
- vi. Design Environment Condition: -
 - Wind Speed - As per IS 875
 - Seismic Load As per IS 1893

h) Fasteners.

Steel bolts, nuts and washers complying with relevant IS code or higher standards / international codes as applicable shall be used.

- i) Structural columns and beams. ISMB/boxed ISMC/built up sections/rolled tube sections shall be used with appropriate base plate and foundation bolts using where ever required as per loads. Beams and all structural members shall be in MS/built up sections. (Relevant details shall be submitted as per design).

j) Hot rolled steel

Hot rolled steel sections complying to IS: 2062 with minimum yield strength of 250 MPa shall be used in the areas where use of LGS is not sufficient from the loading criteria with the prior intimation and approval of Engineer-in- Charge.

- k) Base Plate at Foundation. Size and thickness of base plate shall be as per design requirement.
- l) Foundation Bolts. Size, length and numbers for foundation bolts shall be as per design requirement. The bolts must be made from 4.6 grade steel and minimum length of threads should be 100 mm. Each foundation bolt will be provided with MS anchor plate of size 50 mm x 50 mm x 6 mm welded at bottom of foundation bolts.
- m) Each bolt will be provided with two Nos of suitable washers and nuts made of high tensile steel. Steel shall be used of make SAIL / TATA / JSPL / JSW / ESSAR / ISPAT / Bhushan confirming to given IS specification. All standard Expandable mechanical fasteners shall be confirming to given IS specification.

4 Foundation of Column

The vendor will provide foundation drawings as per the design and will get it approved from IITs.

- 5** Plinth, Plinth Protection and Floors. Supply scope shall include complete construction material (less cement) as per foundation and floor drawings submitted as well as construction material (less cement) required for plinths, roof slabs, skirting, dado's and plinth protections etc. The Plinth protection will be constructed 600 mm wide, 75 mm thick PCC 1:3:6 over 100 mm thick stone aggregate of size 63-100 mm over rammed earth. 12 mm wide expansion joint shall be factored in the drawings and layout. The floors will be constructed as per standard designs which will include compaction and filling of Plinths.

6 Wall (Internal/External).

- a) The exterior and interior walls of the building shall be provided with min 9 mm thick heavy duty fibre cement boards (confirming to IS-14862) Above of 9 mm boards FCB 7.5 mm Fibre cement planks to be fixed and duly finished by paint. External projections shall be 500 mm towards slope shall be provided and shall be covered from bottom with 6 mm cement board and given two coat of weather shield paint.
- b) All boards shall be fixed to structural frame with 3.5 mm x 35 mm self-drilling self- tapping high tensile zinc plated screws at the maximum spacing of 300 mm along vertical member and 610 on horizontally.
- c) All wet areas (where there are tiles in wall cladding) shall be plastered with 18 mm thick in 1:4 cement sand mortar for base of tiling / tile fixing compounds. In case plaster need to be done, then plaster shall be done over EPS sheet of 25 mm thick fixed between the wall channels and a wire mesh of 1.5 mm dia @ 40c/c tied together with 1.22 mm GI wire.
- d) All wet areas: 12 mm heavy duty fiber cement boards will be used for all wet area cladding-internal. Finishing with wall putty preparing the surface with one coat of suitable primer and applying 2 coats of acrylic emulsion paint of approved colour and shade.

Wall Insulations

- e) Rockwool insulation of density 48kg/m³ shall be used as filler between the outer and inner skin.

Properties	Description	Units	Values
Board	Thickness	MM	Min 9-12 mm
Density	Nominal Dry Density	Kg/m ³	1000-1500
Fire	Non- combustible A Class rated for fire resistance		>180 minutes at 1200°C
Durability	Life Expectancy	Years	>30 years
Thermal			0.12 W/m.k

Bending Strength			12 N/ mm ² (±5)
Compressive			27 N/ mm ² (±5)
Sound Resistance			40db
Impact Resistance		Hurricane and impact tested and Approved.	
Asbestos free			Pass
Eco-Friendly			Pass
Non-Hazardous to Health			Pass

- f) Exposed MS section, if any, shall also be covered with boards as per exterior and interior surfaces as given above. For the toilet pipes necessary arrangements shall be done to conceal them with cement fiber boards and make openable arrangements for maintenance.
- g) All sunshades, soffits and underside of exposed roofs (such as roof projections/ balconies) shall be finished with heavy duty cement fiber board as per exterior and interior surfaces. Sunshades to be provided over all external openings (minimum 300 mm wider than the width of opening), with 600 mm projection or as per tender drawings or as approved.
- h) The purchaser can get quality testing of any panel from the lot supplied to ensure quality control as per given specifications. Cost of quality testing will be borne by the supplier.
- i) **Toilet and Bathroom Walls**

All wet areas (where there are tiles in wall cladding) shall be plastered with 18 mm thick in 1:4 cement sand mortar for base of tiling. Plaster shall be done over EPS sheet of 25 mm thick fixed between the wall channels and a wire mesh of 1.5 mm dia @ 40c/c tied together with 1.22 mm GI wire. All walls for toilet and bathrooms shall be finished with 8 mm thick ceramic wall tiles fixed with 10 mm thick cement sand mortar / jointing compounds joints of tiles shall be finished with same colour of jointing compound or by mixing of same color pigment.

7 Roof

- a) The roof slope shall be designed for min 0.5 mtr of snow load with adequate slope 1:3. The roof shall be done using pre-painted galvalume/ galvanized profile sheets (size, shape pitch of corrugation and colour as approved by engineer in charge) 0.5 mm +/- 5% total coated thickness (TCT) thick in 240 MPa steel grade with zinc coating @120 gsm as per IS: 277 and, 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 while transportation and should be supplied as desired by engineer in charge. The sheet shall be fixed using self-drilling self-tapping screws with EDPM seal. Wind ties will be provided min two on one side of slope or as directed by the Engineer-in charge onsite.

b) Roof Frame Work

Light gauge steel framework conforming to IS-811, Trusses shall be made using 89 mm/150 mm lipped C or Z section of 275 GSM zinc or AZ 150 Gaulvalume/Zincalume coated, 345 - 550 MPA YST, GI steel having min thickness of 0.95 mm for trusses and 0.5 mm Top hat profile/0.75 mm C-channel as purling. Trusses shall be spaced at maximum dist of 4' (1220 mm) or less and connected with top at profile purling of galvanized steel shall be used as per design.

c) Ridge Cover

0.50+/- 5% mm thick pre-coated plain sheet of same colour matching with the roof sheet shall be provided of size 3.0m long and 0.45m wide each side, lap of two ridge sheet shall be 300 mm, it shall be fixed with SDST screws with EPDM seal.

d) The roofing and ridge cover sheets will be of base material make - TATA / SAIL / JINDAL / JSW / ESSAR / ISPAT / LLYOD / BHUSAN having ISI Mark, ISO approved.

e) Roof Projections

The roof will have minimum projection of 300 mm.

f) Overlapping

Roofing sheets shall have minimum side overlap of one full corrugation and end overlap of minimum 150 mm.

g) Under roof insulation shall be of minimum 50 mm thick fiber mineral wool conforming to IS: 8193 density 48 kg/m³ with aluminum foil backing and held in position by criss-crossing GI wire. The roof insulation will be designed to provide U-value as per design criteria. The acceptance of roof insulation is subject to the U-values actually obtained on site below the false ceiling inside the room. In case of failure, the vendor will redesign the roof insulation and no additional cost will be claimed for the same thereafter.

8 Flat Roof/ Intermediate (mezzanine) Floors.

a) Flat roof/ intermediate (mezzanine) floors (deck slab) shall be provided at locations as per drawings and to be designed for all loads and load combinations of IS: 875, IS 456 & IS 1893. Deck slab shall be of composite structure in GI profiled sheets of required size and thickness as per IS: 277 having minimum yield strength of 340 m / mm² with 240 GSM galvanization, which shall be fixed to the floor joists minimum 1.2 mm thick sheet and 150 mm web fixed to frame structure with the help of self-drilling self-tapping screws and finally laying 75 mm thick RCC either volumetric mix (1:1.5:3) or M25 batch mixed with 12 mm to 20 mm size crusher broken hard granite chips and adding admixture of required proportion to accelerate/ retard setting of concrete, improve workability, without impairing strength and durability with minimum 6 mm dia pre-welded wire mesh @ 150 mm c/c / nominal reinforcement as per design.

- b) Proper curing and watering to be done for the strength of concrete as per IS specifications.
- c) Flat roofs and intermediate (mezzanine) floors deck slab concrete on toilet portions shall be mixed with water proofing compound of approved make in proportion as per manufacturer's specifications. The finished floor of all the toilets shall be 10 mm lower than the finished floor level. Provision of openings of required size is to be made in the deck slab for passing the sanitary and plumbing pipes as per drawings and as directed by Engineer-in-Charge.

9 False Ceiling

Min of 6 mm thick fiber cement tiles ceiling shall be used for false ceiling of the rooms in grids of size 60x60 cm and made out of Powder coated G.I/ M.S T-sections of size 25 mm x 32 mm x 0.3 mm thick and cross section of size 25 mm x 25 mm x 0.3 mm thick ceiling at same level with all required framing and accessories. All joints shall be sealed and finished with wall putty and two coats of smooth surface acrylic emulsion paint of approved colour and shade. External projections shall be 500 mm towards slope shall be provided and shall be covered from bottom with 6 mm cement board and given two coat of weather shield paint on flat area projections.

10 Doors, Windows and Ventilators

- a) Doors. All doors for general area will be 35 mm thick flush doors and for toilet areas shall be 35 mm thick fiber glass doors. Door frames shall be of aluminium powder coated sections of make - Jindal / Hindalco / ISI marked. Main door shall be with extruded built-up standards tubular section appropriate Z sections and other sections of approved make confirming to IS: 733 and IS: 1285 fixed to Pre-engineered structure including necessary filling up of gaps at junctions with required PVC / Neoprin felt etc, including hinges/pivots and double action hydraulic floor spring, lock, handle and all necessary fittings all complete. Any Glazing used shall be float glass of min 5.5 mm thickness. The color of powder coating will be approved by Engineer-in-Charge.
- b) 30 mm thick factory made panel PVC door shutter consisting of frame made out of M.S. tubes of 19 gauge thickness and size of 19 mm x 19 mm for styles and 15 x 15 mm for top and bottom rails. MS frame shall have a coat of steel primers of approved make and manufacture. MS frame covered with 5 mm thick heat moulded PVC 'C' channel of size 30 mm thickness, 70 mm width out of which 50 mm shall be flat and 20 mm shall be tapered in 45-degree angle on either side forming styles; and 5 mm thick, 95 mm wide PVC sheet out of which 75 mm shall be flat and 20 mm shall be tapered in 45 degrees on the inner side to form top and bottom rail and 115 mm wide PVC sheet out of which 75 mm shall be flat and 20 mm shall be tapered on both sides to form lock rail. Top, bottom and lock rails shall be provided either side of the panel. 10mm (5 mm x 2) thick, 20 mm wide cross PVC sheet be provided as gap insert for top rail and bottom rail. paneling of 5 mm thick both side PVC sheet to be fitted in the MS frame welded/ sealed to the styles and rails with 7 mm (5 mm+2 mm) thick x 15 mm wide PVC sheet beading on inner side, and joined together with solvent cement adhesive. An additional 5 mm thick PVC strip of 20 mm width is to be stuck on the interior side of the 'C' Channel using

PVC solvent adhesive etc. complete as per direction of Engineer-in-Charge. Manufacturer's specification and drawing (for WC and bathroom door shutter).

- c) Windows and Ventilators. Providing and fixing powder coated aluminium work for windows with 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, mitered and jointed mechanically wherever required including cleat angle, aluminium snap beading for glazing / paneling, CP brass/stainless steel screws, all complete.
- d) Quality of Aluminium Used. All the aluminum frame work material should conform to IS-513, 1996; 2 mm thick with sections of suitable dimension and of make - Jindal / NALCO / HINDALCO / ISI Marked.

11 Water Supply System

It will be design for provisioning of running water 24x7 for complete season all throughout the year irrespective of extreme climatic conditions of minus 35 Degrees. Sufficient water storage in the form of insulated tanks will be catered.

The water supply will include supplying, installing, testing and commissioning of approved make PPR pipes of diameters 15 mm, 20 mm, 25 mm, 32 mm, 40 mm etc of minimum 6 bar of standard make as per design and requirements with fittings and specials such as tees, elbows, couplers, bends, etc, with PVC brass threaded combination / Transition specials such as male adapters, brass threaded female adapters, brass fitted FPT Tee, Brass FPT elbow etc., where connection with metal is to be done and joints to be made with PVC solvent cement etc complete.

Over Head Water Tank - Readymade storage tanks of Sintex or approved manufacturer and required size connecting necessary supply lines, delivery lines, wash water line, float valve, overflow pipe, vent pipe and with cover at top of not less than 450 mm clear dia, with locking arrangement complete as per drawing and as directed and instructed by engineer. Capacity of tank will be as per design and data received.

Water Pump - Single phase centrifugal pump having capacity suction lift of 10 mtr and head 20 mtr of approved make - KSB / Crompton. Pump to be installed on concrete platform and canopy to be provided to protect pump from rains.

12 Plumbing and Sanitary

All sanitary plumbing will be designed such that they remain fully functional at extreme temperature temperatures of minus 35 Degrees in winters. All material for the same will be supplied and shall be deemed to include necessary expertise and technical assistance for installation onsite as per drawing details provided. Polypropylene Random co-polymer pipes will be used for all plumbing and ISI marked pipes for sanitary fittings.

The sanitary will include: -

- a) Supply and assistance for installing European water closet of approved sample complete with flush valve, necessary bend, check nut etc, CP flanges, CP bolts and nuts, a pair of CI chair bracket with nuts and bolts etc. complete will be provided. Wash basin of approved sample with extension pipe, pair of stainless steel bolts, with bracket (MS / CI) to support the basin, inlet connecting pipe, CP wall flanges, CP brass bottle trap, grating and PVC connecting pipe etc. complete (Make – Cera, Parryware, Somany, Jaguar, Hindustan Vitreous).
- b) Supply and assistance for installing CP pillar cock, bib cock, angle cock, stop cock, concealed and ball valves of suitable diameters of approved make as required etc complete (Make - Cera, Parryware, Somany, Jaguar, Hindustan Vitreous).
- c) Supply and assistance for fixing of CP overhead shower etc complete of makes mentioned in Para 13(b) above.
- d) Supply and assistance for PVC Nahani traps with stainless steel jali etc complete all ISI marked as per design.
- e) Supply and assistance for Pressure reducing valve as per the requirement shall be provided.
- f) Catalogue and data sheet of respective fitting shall be provided for approval before dispatch.
- g) Electrically operated water heating device vertical type capacity 25 Ltr with electric connection cable (One No per bathroom) and warranty of 12 months shall be provided as per ISI specifications of make- Havells / Usha / Bajaj / Crompton Greaves. Same shall be approved during pilot sample Inspection.

13 Drainage System

Drainage system will be designed to be fully operational at extreme climate of minus 35 degrees upto first manhole at sufficient distance and at sufficient depth below frost line. Drawings for the same will be provided and vetted for compliance. The drainage system designed shall be deemed to include supply of all materials with necessary expertise and technical assistance for installation: -

- a) Supply and assistance for fixing and testing PVC Waste and Ventilating pipes and fittings of diameters – 50 mm, 75 mm, 110 mm of minimum 6 bar pressure as required, laid under floor / fixed on walls, and in pipe shafts with sufficient cement solvents joints etc complete including the necessary specials like bends, tees, offsets, door bends, junction, cowls of standard make etc complete.
- b) Supply and assistance for fixing and testing PVC pipes of diameters 40 mm/ 50 mm/ 75 mm as required for internal drainage lines – waste connections from wash basin, to floor trap, laid under floor / concealing in the wall with proper cement solvent joints of standard makes etc, complete.

- c) Supply and assistance for fixing and testing PVC rain water pipes of diameters 110 mm as required with half round pipe of diameter 110 mm as required and as per design with all fittings like shoes, bends fixed with suitable supports, of standard make etc, complete.
- d) Design of manholes, soak pit, septic tank for sewage disposal for users will be approved by Engineer-in-Charge. The construction of soak pit and septic tank is beyond the scope of the work. However, complete technical assistance will be provided for the same.
- e) Plan for plumbing and sewage disposal will be adhering to best engineering practices, relevant IS Codes and NBC- 2005 (as amended).

14 Electrical Networking and Fittings

Electrical diagrams will be provided by the vendor. All point wiring will be concealed with casing. The electrical network will be designed such that it will cater for all electrical loads to include gysers, washing machines, heating appliances, Iron's, motors and other household equipment. The final layout of all wiring will be as directed and approved by Engineer- in-Charge. The electrical network will include: -

- a) Supply and assistance for fixing Concealed point wiring in PVC conduit, with modular type switch for light point /fan point/exhaust fan point/ socket point with 1.5 sq. mm FRLS PVC insulated copper conductor single core cable in surface / recessed PVC 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 shall be used.
- b) Supply and assistance for fixing Light plug point wiring in PVC conduit, with modular type switch and socket 1.5 sq mm FRLS PVC insulated copper conductor single core cable in surface / recessed PVC conduit, along with 1.5 sq mm FRLS PVC insulated copper conductor single core cable for earthing etc including providing and fixing 3 pin, 6 amps modular socket outlet and 5/6 amps modular switch, connection, painting etc. as required shall be used.
- c) Supply and assistance for fixing Wiring for light/power plug with suitable capacity of FRLS PVC insulated copper conductor single core cable (minimum 1.5 sq mm) in surface/recessed PVC conduit along with 1 No 4 Sq mm FRLS PVC insulated copper conductor single core cable for loop earthing including providing and fixing 6 pin 6/16 amps modular socket outlet and 6/16 amps modular switch, connection, painting etc as required.
- d) Supply and assistance for fixing Wiring for circuit/sub main wiring along with the earth wire FRLS PVC conduit as required shall be used.
- e) Supply and assistance for fixing suitable size with cover (on surface/in recess) including supplying and fixing screw less tag block complete with back mount frame gromith mets, disconnection module inside the box, including fixing the box making termination of pairs shall be used.
- f) Supplying and drawing CAT 5 solid twisted pair cable contains four pairs of copper wire in the existing surface /recessed PVC conduit as required.

- g) Supply and assistance for fixing LED lighting will be provided in each room with 2 x 18/20 watts 1200 mm tube light and 2 x 13 watt LED bulbs or as directed by Engineer in charge on site. Bathrooms will be provided with mirror lights 12 watt and additional LED bulb 13 Watt or 15/18 watt LED down lighters - 04 Nos each bed room, 2 x 2 LED ceiling panels 36 / 40 watts 02 Nos in living rooms and 15 / 18 watt LED down lighters - 1 / 2 Nos each stores, toilets / pantry etc.
- h) Electrical plan and drawings will strictly adhere to best engineering practices, relevant IS Codes and NBC-2005 (as amended).

15 Flooring

Providing and fixing GI decking sheet minimum 0.6 mm thick in trapezoidal profile having profile depth of 44 mm with cement concrete of 1:2:4 grade concrete. The total thickness of the flooring substrate shall be 100 mm (Make – Somany / Kajaria / Johnson / Bell).

a) Floor Tiles for Rooms

Anti-skid vitrified floor tiles in 600 x 600 mm size of approved colour and design are to be laid over the above floor finish with water absorption less than 0.08% and conforming to IS: 15622 with 4" skirting of approved make, colours and shades, laid on 20 mm thick cement mortar 1:4 (1 cement: 4 coarse and), including grouting the joints with joint fillers of matching colour etc., complete.

b) Floor Tiles for Toilet

Anti-skid Vitrified floor tiles of 300x300 mm size of approved colour and design are to be laid over the above floor finish with water absorption less than 0.08% and conforming to IS: 15622 of approved make, colours and shades, laid on 20 mm thick cement mortar 1:4 (1 cement: 4 coarse and), including grouting the joints with joint fillers of matching colour etc., complete. Before laying the flooring, concealed water and sewerage lines are to be laid with proper gradient with water traps.

c) Dado tiles for Bathroom (Up to 7' Height)

Vitrified wall tiles of 300x450 mm size of approved colour and design are to be laid over 12 mm thick cement mortar 1:4 (1 cement: 4 coarse and), including grouting the joints with joint fillers of matching colour etc, complete. Or UPVC wall Panels waterproof duly fitted on cement board.

16 Fire Extinguisher

Supply of the following capacity of fire extinguishers dry powder type conforming to IS 13849 along with its accessories. and of make Cease fire (with ISI marks) and having shelf life of minimum one year for each block: -

- a) 1 Kg - 06 Nos.

17 Curtain Rods

All openings of doors / windows of shelter excluding verandah openings will be provided with decorated drapery rods made of 25 mm dia, pre coated MS pipe of 1.5 mm thickness. A pair of suitable fixing brackets of curtain rod with wall panels and 10 Nos plastic rings of matching shade with each curtain rods of suitable size will be provided. The curtain rods shall be fixed such that the rod is minimum 75 mm away from the wall panels and overhang (projection) – 200 mm each on both sides. Brackets will be fixed with nut and bolt with washers out to out of panels.

18 Finishes

All external finishes will be all weather proof anti-fungal paints of make – Asian / Berger / Nerolac (brand Apex or equivalent) with wall putty and warranty for min five yrs. All internal finishes will be emulsion paints over adequate coat of wall putty to make wall completely smooth. The color scheme will be approved by the Engineer-in-Charge / Accepting officer.

19 Iron/Aluminum Anodized Mongery

The quality of the various types of iron/aluminum anodized mongery shall be of BIS specifications with ISI marking and of best quality. The holes for mongery shall be made at the time of fabrication.

20 Screws, Nuts and Bolts

All screws, nuts and bolts used for joining the structural members shall be of high quality and varieties of bolts shall be kept to a minimum. 20% extra nuts and bolts will be provided.

Details missing, if any, will be assumed to be provided by the supplier as per good engineering practice and will be approved by inspection team of consignee. Whenever there is variation between drawing and technical specification, decision of the Accepting Officer will be final and binding.

21 IT related works

During the establishment of sample room, the contractor will also be required to showcase equipment related to access control system, video surveillance system, fire detection and suppression system, fire extinguisher and physical intrusion detection and prevention system as suggested by Engineer-In charge.

The item and make details are as below:

Access control system

(a) Integra 32 (Model No./make RBH-Integra32) 01 no.

(b) 2-Door Control Panel with universal cabinet and power supply and required license. (Model No./make RBH-IRC-2000) 01 nos.

(c) Biometric reader. (Model No./make BFR-300-S)01 no.

(d) PROXIMITY CARD 05 nos. (Model No./make SR-2400).

Video surveillance systems

(a) Indoor Dome Camera (Model No Mobotix m 25) 1 No

(b) Out door type camera (Model No Mobotix m 25) 1 No.

(c) Network Vide Recorder system (Brand Mobotix) 1 No.

(d) 22" lcd display complete with all wiring and necessary fittings. (Make Samsung/LG) 1 No.

(e) 1 no PC loaded/ installed with necessary lisc. Software for video surveillance. (Make Software: Mobotix, PC Hardware: Dell/HP) 1 No.

22 Sealing Material

Sealing material as per std IS specification which is capable of withstanding temperature varying from -30 degree centigrade to +40 degree centigrade be provided to seal all joints between walls.

23 Quality of Steel

Steel used for fabrication of LGS and HRS will be YST 350 grade conforming to IS 4923-1997 and for other steel members confirming to IS 2062. No rerolled steel will be used. Base material make of steel will be SAIL / JSPL / TATA / JSW / ESSAR / ISPAT / subject to conforming to given IS specifications.

24 Flashing

Flashings will be provided where ever necessary and to avoid any gaps.

25 Weight - Weight recorded at bidder's factory scale will be final or buyer can adopt another medium/ method like by using steel table as per IS code to verify/cross check, payment and arrangement for the same will be made by the seller.

26 Inspection & Rejection - Inspection, if any, should be carried out at our works prior/after to dispatch of material. Rejection, if any, will be intimated in writing within 10 days from the date of receipt of material at the site premises or within 30 days from the date of dispatch whichever is earlier.

27 Transit Insurance - Seller will be sole responsible for any transit damages or seller may insure himself for the same.

28 Transportation – Seller has to arrange the transportation for all the material used for this project. No cost will be charged by the seller for bringing or removing/dispatching the materials. Seller have to dispatch the materials through any reputed bank approved road transporter or by rail.

29 Quality Control

Accepting officer is free to get all parts/any part checked for quality confirmation as given in the technical specification. Cost of testing will be borne by the supplier. Pre dispatch inspection shall be carried out by the user.

30 User Hand Book and Drawings

31 Architectural drawing of each block and floor shall be provided as annexure along with tender document along with wall cladding details, sanitary fittings, and electrical fittings etc.

Catalogue and data sheet of pipe, wiring will be provided along with MTC. GA and single line diagram of main distribution board, TPN board along with earthing details of block and boards shall be annexed along with the Tender documents. It will be supplied at the scale of two per shelter.

The user hand book will be complete with drawings, all details of all parts of the shelter, fittings and fixtures and instructions for erection with detailed drawings.

The users hand book will be supplied well in advance and got verified from this department that the parts mentioned in the hand book, their specifications and quantity are strictly and correctly as per technical specifications and the supplier has not changed the specifications. Based on the checked hand book the store will be supplied and received.

MATERIALS AND JOB SPECIFICATIONS

1 GENERAL

The scope of the works includes all civil works connected with the construction LGSF Buildings, Paths, drains, fencing, foundations etc. The specifications include civil works, Electrical works, pathways, 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. 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 up to 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/cm² 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 $\pm 3\%$

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 modulus of coarse sand shall not be less than 2.5.

Fine sand, if instructed to be used shall have fineness modulus not less than 2.5 and 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 to IS-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 test 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

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.

4.1 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

4.2 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 sides and 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.

4.3 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 spoils of water formed due to rain. The height of filling in the section shall be uniform as far 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 be 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.

4.4 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.

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 I to 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 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.

6.2.3 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/mm²

6.3.1 Type of concrete mix:

This concrete shall be either Nominal Mix Concrete or Design Mix Concrete as defined in IS: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.

6.2 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 trial 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 trial 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.

6.6.1.2 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 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.

6.7 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.

6.8 Treatment of Resumption of Work:

- 6.8.1** 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.

6.8.2 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

6.9 Wash Water:

6.9.1 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.

6.10 Curing and Protection:

6.10.1 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 contact 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.

6.11 Field Tests:

6.11.1 Grading Test:

Grading tests on coarse and fine aggregate shall be carried out at intervals specified by the Engineer-in-Charge.

6.11.2 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.

6.11.3 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 modulus 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 additional 50 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.

$$S = \text{Estimate standard deviations} = \frac{\sqrt{\sum \Delta^2}}{n-1}$$

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
- b) Average strength of all the samples is not less than the characteristic strength plus

$$\left[1.65 - \frac{1.65}{\sqrt{\text{number of samples}}} \right] \text{ Times the standard deviation}$$

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

$$\left[1.65 - \frac{1.65}{\sqrt{\text{number of samples}}} \right] \text{ Times the standard deviation}$$

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 stripping 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 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.

6.13.3 Load Test on parts of structures:

6.13.3.1 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.

6.13.3.2 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.: ± 25 mm
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: ± 15 mm.
Precast concrete: ± 3 mm.
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 ± 20 mm 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 ± 3 mm.

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 out 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 be 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 contact 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.

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 M² For openings 0.5 M² to 3.0 M² 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 M² 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 $\pm 3\text{mm}$.

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 Painting

- 13.1 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.

14. Hydraulic Door Closer.

14.1 Hydraulically regulated door closer shall be Everite model viscount G 1109 or approved equivalent make conforming to IS:3564. The door should open tight upto 90°.

14.2 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.

15 Sanitary Fittings:

- 15.1.0 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.

16 European type water closet:

- 16.1.0 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.

17 Urinals:

- 17.1.0 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.

18 Wash Basins:

18.1.0 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.

19 Beveled Edge Mirror:

19.1 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.

20 Bib and stop cocks:

20.1.0 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.

21 G.I. Pipe and fittings:

21.1.0 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.

21.2.0 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.

21.3.0 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.

22 H.C.I Pipes and C.I. Spun pipes:

22.1.0 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).

- 22.2.0** 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 same 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	Quantity of lead in kg. per joint
300mm	8.16
200mm	5.44
150mm	4.08
100mm	2.72

- 22.3.0** All pipes shall be fixed 25mm clear off the wall with M.S. holder bat clamps. All pipes and holder bat clamps shall 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.

- 22.4.0** 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.

- 22.5.0** 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.

23 C.I. Water Pipes:

- 23.1.0** 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.

- 23.2.0** 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.

- 23.3.0** 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.

23.4.0 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.

24 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.

24.1 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.

25 Acid Proof Tiles:

25.1 Acid resistant tiles in general shall conform to IS:4556. The concrete or plastered 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.

25.2 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.

26 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.

27 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.

28 Preparations of Sub-Grade:

28.1 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.

29 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.

30 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.

31 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.**

32 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.

33 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.

34 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.

35 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.

36 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.

37 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.

38 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.

39 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**.

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 within 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.
- a) Workers employed on mixing asphalted materials, cement and lime mortars concrete shall be provided with protective footwear and protective goggles.
 - b) Those engaged in handling any material which is injurious to eyes shall be provided with protective goggles.
 - c) Those engaged in welding works shall be provided with welder's protective eye-shields.
 - d) 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.
- e) 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 shall confirm 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 load 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 mats, 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.

MATERIALS USED IN CIVIL CONSTRUCTION

COMPOSITE LIST OF MAKES				
SNO.	DESCRIPTION	BRAND NAMES: OR EQUIVALENT		
CIVIL				
1.	Textured Exterior Paint	Akzonobel (Dulux)	Asian (Apex Ultima)	Nerolac Kansai (Excel)
			Spectrum	Berger
2.	Synthetic Enamel Paint	Akzonobel (Dulux)	Asian (Apolite)	Kansai Nerolac (Synthetic Enamel)
		Berger		
FLOORINGS				
3.	Ceramic Tiles / Glazed Tiles	Kajaria	Somany	NITCO
		Qutone	H&R Johnson	Vermora
4.	Vitrified Tiles (Antiskid / Matt / Glazed)	Somany	Kajaria	NITCO
		Qutone	H&R Johnson	Vermora
HARDWARE				
5.	Door Closer	Everite	Godrej	Hettich
		Hardwyn		
6.	Al. handles, tower bolts, aldrops			
		HINDALCO	JINDAL	
		Everite	OZONE	HARDIMA
PLUMBING & SANITARY				
7.	Sanitary Fittings & Accessories	Hindware	Kohler	Cera
			Somany	Kerovit
		Duravit		
8.	CP Brass Fittings	L&K	Kohler	Parryware
		Hindware		
9.	G.I. / M.S. Pipe	Tata	Jindal (Hissar)	Surya Prakash
		SAIL		
10.	G.I. Fittings	Unik	KS	Zoloto
		R-Brand	Surya	New
11.	HDPE Pipes	Reliance	Jain Irrigation	Oriplast
		Vertex	West Well	Supreme
		Vectus	APL Apollo	

12.	Float Valve	IVC	Leader	Zoloto
		KSB		
13.	CPVC Pipes & Fittings	AKG	Astral	Supreme
		Finolex	Surya Prakash	APL Apollo
		SFMC		
14.	Centrifugally Cast (Spun) Iron Pipes & Fittings	NECO	SKF	Electrosteel
		RPMF		
15.	Gun Metal Valves, Globes	Kartar	Castle	Zoloto
		Sant	L&K	
16.	Floor Traps-SCI	Jayana	Chilly	Nirali
17.	Brass Stop & Bib Cock	Zoloto	Sant	L&K
		Leader	Astral	
18.	Gully Traps-SCI	Perfect	Hind	RK
19.	RCC Pipes (NP-2)	Lakshmi	Sood & Sood	Jain & Co.
		Pragati Concrete		
20.	Water Heater (Geyser)	Venus	Bajaj Spherhot	Photon
		Racold	Havells	Jaquar
ELECTRICAL				
21.	MCB	Siemens	Legrand	Schneider
		ABB	Havells	L&T
		GE	IndoAsian	Control & Switchgear
22.	MCB / MPCB	Siemens	Legrand	Schneider (Acti 9)
		ABB	Havells	IndoAsian
		L&T (AU)	Control & Switchgear	
23.	Modular Type light & power Accessories (Switches, socket etc.) G.I. Switch Boxes	Legrand	Schneider	Havells
		Honeywell	L&T	MK
24.	Capacitor	Neputne-Ducati	L&T	Siemens
		Crompton Greaves	ABB	Schneider
25.	Lugs / Gland	Dowel	Comet	Braco
26.	PVC Conduit	AKG	BEC	Polypack
		Prince ISI Marked	Nor pack	PKS Export
		JPC		
27.	MS Conduit ISI Marked	BEC	AKG	NIC
		JPC	RMCON	
28.	Solar Street Light Fitting with pole	Philips	Bajaj	Aviation Power System
		Wipro		
29.	Ceiling Fan / Exhaust Fan	Crompton Greaves	Havells	Usha

		Orient	Panasonic	Finolex
30.	Internal Lighting LED	Philips	Osram	Havells
		Wipro	Panasonic	Jaquar
31.	or equivalent	KeselecSchreder	Philips	Wipro
		Osram		
CEMENT & STEEL				
	CEMENT	Specification of Grade of cement [OPC, 43/53 grade]	ACC, Ultratech, J. K Cement, Nuvoco, Ambuja Cement, Vikram or equivalent brand	
	STEEL	Fe 500 TMT bar	SAIL, Tata Steel, RINL, JSW Steel Ltd, Electrosteel, Jindal Steel, Power Ltd or equivalent brand	

----- END OF SECTION –VII -----

SECTION –VIII

[PART-II]

PRICE BID

Bidders are requested to quote their price bid in excel file.

ITI LIMITED
NETWORK SYSTEM UNIT
DOORVANINAGAR, BANGALORE 560 016.

BILL OF QUANTITY : Tender for Construction of LGSF Building [Sample Room]

BIDDER'S NAME

SECTION 1 - CIVIL WORKS

PART A - Rate for Earth Works

Sl. No.	DESCRIPTION	UNIT	QTY.	RATE	RATE IN FIGURES	AMOUNT
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.					
i	All kinds of soils	Cum	78.00			
2	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-incharge.					
i	Ordinary rock	Cum	4.00			
3	Extra for every additional lift of 1.5 m or part thereof in excavation / banking excavated or stacked materials.					
i	All kinds of soil	Cum	6.00			
4	Excavating trenches of required width for pipes, cables, etc. including excavation for sockets, and dressing of sides, ramming of bottoms, depth upto 1.5m including getting out the excavated soil, and then returning the soil as required, in layers not exc					
a	All kinds of soil.					
i	Pipes, cables, etc. exceeding 80mm dia but not exceeding 300mm dia.	Metre	65.76			
5	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	78.00			

6	Disposal of excavated excess earth/rock away from the site including conveyance of materials up to an average lead of 5KM away from the site, and correspondiong required lift, loading, unloading etc complete as directed by the Engineer-in-charge. (The quantity is net quantity of capacity of truck after deduction of 20% for looseness)(considering the maximum disposal location at 5 KM distance)					
i	Disposal of Earth By mechanical transport including loading, unloading and stacking. (Lead upto 5KM away from the site)	Cum	15.00			
ii	Disposal of ordinary rock By mechanical transport including loading, unloading and stacking. (Lead upto 5KM away from the site)	Cum	1.00			
7	Supplying and filling in plinth with sand under floors, including watering, ramming, consolidating and dressing complete.	Cum	20.84			
8	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.					
i	All kinds of soil	Sqm	258.44			
9	Supplying chemical emulsion in sealed containers including delivery as specified					
i	Chlorpyriphos/ Lindane emulsifiable concentrate of 20%	Litre	101.91			
10	Anti termite treatment					
	Diluting and injecting chemical emulsion for POST-CONSTRUCTIONAL anti-termite treatment (excluding the cost of chemical emulsion) :					
i	Along external wall where the apron is not prov 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	53.76			
a)	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:					
i	With Chlorpyriphos/Lindane E.C. 20% with 1% concentration	Sqm	168.80			
TOTAL RATE FOR EARTHWORKS - (A)						0.00
PART B - Rate for Concrete Works						

Sl. No.	DESCRIPTION	UNIT	QTY.	RATE	RATE IN FIGURES	AMOUNT
1	Providing and laying in position cement concrete of specified grade excluding the cost of centering and shuttering - All work up to plinth level :					
a	1:4:8 (1 cement : 4 coarse sand : 8 graded stone aggregate 40 mm nominal size)	Cum	22.98			0.00
2	Centering and shuttering including strutting, propping etc. and removal of form work for :					
i	Foundations, footings, bases for columns.	Sqm	29.23			0.00
3	Providing and laying damp-proof course 40mm thick with cement concrete 1:2:4 (1 cement : 2 coarse sand (zone-III): 4 graded stone aggregate 12.5mm nominal size)	Sqm	28.55			0.00
4	Extra for providing and mixing water proofing material in cement concrete work in doses by weight of cement as per manufacturer's specification.	Per 50 kg cement	7.00			0.00
5	Providing & applying a coat of residual petroleum bitumen of grade of VG-10 of approved quality using 1.7kg per square metre on damp proof course after cleaning the surface with brushes and finally with a piece of cloth lightly soaked in kerosene oil.	Sqm	21.89			0.00
6	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	36.95			0.00
TOTAL RATE FOR CONCRETE WOKS - (B)						0.00

PART C - Rate for Reinforced Cement Concrete Works

Sl. No.	DESCRIPTION	UNIT	QTY.	RATE	RATE IN FIGURES	AMOUNT
1	Centering and shuttering including strutting, propping etc. and removal of form for :					
a	Foundations, footings, bases of columns, etc. for mass concrete.	Sqm	40.50			0.00
b	Lintels, beams, plinth beams, girders, bressumers and cantilevers	Sqm	85.64			0.00
c	Columns, Pillars, Piers, Abutments, Posts and Struts.	Sqm	27.00			0.00
2	Reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete upto plinth & above plinth level.					

i	Thermo-Mechanically Treated bars of grade Fe-500D or more.	Kg	3800.12			0.00
3	Providing and laying in position ready mixed or site batched design mix cement concrete for reinforced cement concrete work; using coarse aggregate and fine aggregate derived from natural sources, Portland Pozzolana / Ordinary Portland /Portland Slag cement, admixtures in recommended proportions as per IS: 9103 to accelerate / retard setting of concrete, to improve durability and workability without impairing strength; including pumping of concrete to site of laying, curing, carriage for all leads; but excluding the cost of centering, shuttering, finishing and reinforcement as per direction of the engineer-in-charge; for the following grades of concrete. Note: Extra cement up to 10% of the minimum specified cement content in design mix shall be payable separately. In case the cement content in design mix is more than 110% of the specified minimum cement content, the contractor shall have discretion to either re-design the mix or bear the cost of extra cement.					
a)	All works upto plinth level.					
i	Concrete of M25 grade with minimum cement content of 330 kg /cum	Cum	30.06			0.00
b)	All works above plinth level upto floor V level.					
i	Concrete of M25 grade with minimum cement content of 330 kg /cum	Cum	30.00			0.00
4	Add for using extra cement in the items of design mix over and above the specified cement content therein.	Qtl.	6.00			0.00
TOTAL FOR REINFORCED CEMENT CONCRETE WORKS - (C)						0.00
PART D - Rate for Brick Works						
Sl. No.	DESCRIPTION	UNIT	QTY.	RATE	RATE IN FIGURES	AMOUNT
1	Brick work with common burnt clay F.P.S. (non modular) bricks of class designation 7.5 in foundation and plinth in:					
i	Cement mortar 1:6 (1 cement : 6 coarse sand)	Cum	1.32			0.00
2	Brick edging 7cm wide 11.4 cm deep to plinth protection with common burnt clay F.P.S. (non modular) bricks of class designation 7.5 including grouting with cement mortar 1:4 (1 cement : 4 fine sand).	rmt	49.26			0.00
TOTAL RATE FOR BRICK WORKS - (D)						0.00
PART E - Rate for Marble & Granite Works						

Sl. No.	DESCRIPTION	UNIT	QTY.	RATE	RATE IN FIGURES	AMOUNT
1	Providing and fixing 18mm thick gang saw cut (premoulded and prepolished) machine cut for kitchen platforms, vanity counters, window sills , facias and similar locations of required size of approved shade, colour and texture laid over 20mm thick base cement mortar 1:4 (1 cement : 4 coarse sand) with joints treated with white cement, mixed with matching pigment, epoxy touch ups, including rubbing, curing, moulding and polishing to edge to give high gloss finish etc. complete at all levels.					
a)	Granite of any colour and shade					
i	Area of slab upto 0.50 sqm	Sqm	1.48			0.00
ii	Area of slab over 0.50 sqm	Sqm	3.51			0.00
2	Extra for fixing marble / granite stone over and above corresponding basic item, in facia and drops of width upto 150mm with epoxy resin baesd adhesive including cleaning etc. complete.	metre	7.05			0.00
3	Extra for providing opening of required size & shape for wash basins/ kitchen sink in kitchen platform, vanity counters and similar location in marble/Granite/Stone work including necessary holes for pillar taps etc. including rubbing and polishing of cut edge etc. complete.	each	3			0.00
4	Providing and fixing 1st 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	40.26			0.00
TOTAL RATE FOR MARBLE & GRANITE WORKS - (E)						0.00
PART F - Rate for Wood & PVC Work						
Sl. No.	DESCRIPTION	UNIT	QTY.	RATE	RATE IN FIGURES	AMOUNT
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).					
i	Second class teak wood.	Cum	0.27			0.00

2	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.					
i	35 mm thick including ISI marked Stainless Steel butt hinges with necessary screws	Sqm	15.96			0.00
3	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	15.96			0.00
4	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.	metre	37.00			0.00
5	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	28.00			0.00
6	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			0.00
7	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 :					
i	300x16 mm	Each	1			0.00
8	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 :					
i	300x10 mm	Each	16			0.00
ii	150x10 mm	Each	6			0.00
9	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 :					
i	125 mm	Each	16			0.00
ii	100 mm	Each	6			0.00

10	Providing and fixing bright finished 100 mm mortice lock with 6 levers without pair of handles of approved quality for aluminium door, with necessary screws etc complete as per direction of Engineer- in-charge.	Each	7.00			0.00
11	Providing & Fixing decorative high pressure laminated sheet of plain / wood grain in gloss / matt / suede finish with high density protective surface layer and reverse side of adhesive bonding quality conforming to IS : 2046 Type S, including cost of adhesive of approved quality.					
i	1.0 mm thick	Sqm	31.92			0.00
12	Providing and fixing factory made uPVC white colour fixed glazed windows/ ventilators comprising of uPVC multi-chambered frame and mullion (where ever required) 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), , uPVC extruded glazing beads of appropriate dimension, EPDM gasket, G.I fasteners 100 x 8 mm size for fixing frame to finished wall, plastic packers, plastic caps and necessary stainless steel screws etc. Profile of frame shall be mitred cut and fusion welded at all corners, mullion (if required) shall be also fusion welded 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 sealant 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 and silicon sealant shall be paid separately). Note: For uPVC frame, sash and mullion extruded profiles minus 5% tolerance in dimension i.e. in depth & width of profile shall be acceptable. Variation in profile dimension in higher side shall be accepted but no extra payment on this account shall be made.					
i	Fixed window / ventilator made of (small series) frame 47 x 50 mm & mullion 47 x 68 mm both having wall thickness of 1.9 ± 0.2 mm and single glazing bead of appropriate dimension. (Area upto 0.75 sqm.)	Sqm	0.61			0.00

13	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 sealant 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 sealant shall be paid separately). Note: For uPVC frame and sash extruded profiles minus 5% tolerance in dimension i.e. in depth & width of profile shall be acceptable. Variation in profile dimension in higher side shall be accepted but no extra payment on this account shall be made.					
i	Three track three panels sliding window with fly proof SS wire mesh (Two nos. glazed & one no. wire mesh panels) made of (small series) frame 92 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	12.13			0.00
14	Providing and fixing fly proof stainless steel grade 304 wire gauge, to windows, Doors and clerestory windows using wire gauge with average width of aperture 1.4 mm in both directions with wire of dia. 0.50 mm all complete. With Upvc Snap beading.	Sqm	4.04			0.00
15	Providing and fixing zinc alloyed (white powder coated) touch lock for uPVC sliding window with necessary screws etc. complete.	Each	8.00			0.00
16	Providing and fixing steel roller for uPVC sliding window with necessary screws etc. complete.	Each	16.00			0.00

17	Providing and fixing glazing in aluminium door, window, ventilator shutters and partitions etc. with EPDM rubber / neoprene gasket etc. complete as per the architectural drawings and the directions of engineer-in-charge . (Cost of aluminium snap beading shall be paid in basic item):					
i	With float glass panes of 5 mm thickness (weight not less than 12.50 kg/sqm)	Sqm	8.69			0.00
TOTAL FOR WOOD & PVC WORKS - (F)						0.00
PART G- Rate for Steel Works						
Sl. No.	DESCRIPTION	UNIT	QTY.	RATE	RATE IN FIGURES	AMOUNT
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 all complete.	kg	8199.41			0.00
2	Providing and fixing mild steel round holding down bolts with nuts and washer plates complete.	kg	163.99			0.00
3	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					
a	In stringers, treads, landings etc. of stair cases including use of chequered plate wherever required, all complete.	KG	75.00			0.00
b	In gratings, frames, guard bar, ladder, railings, brackets, gates and similar works.	KG	50.00			0.00
4	Providing and fixing carbon steel galvanised (minimum coating 5 micron) dash fastener of 10 mm dia double threaded 6.8 grade (yield strength 480 N/mm ²), counter sunk head, comprising of 10 m dia polyamide PA 6 grade sleeve, including drilling of hole in frame , concrete/ masonry, etc. as per direction of Engineer-in-charge.					
i	10 x 60 mm	each	9.00			0.00

5	Providing and fixing stainless steel (Grade 304) railing made of Hollow tubes, channels, plates etc., including welding, grinding, buffing, polishing and making curvature (wherever required) and fitting the same with necessary stainless steel nuts and bolts complete, i/c fixing the railing with necessary accessories & stainless steel dash fasteners , stainless steel bolts etc., of required size, on the top of the floor or the side of waist slab with suitable arrangement as per approval of Engineer-in-charge, (for payment purpose only weight of stainless steel members shall be considered excluding fixing accessories such as nuts, bolts, fasteners etc.)	KG	97.20			0.00
TOTAL RATE FOR STEEL WORKS - (G)						0.00
PART H - Rate for Flooring Works						
Sl. No.	DESCRIPTION	UNIT	QTY.	RATE	RATE IN FIGURES	AMOUNT
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.					
i	40mm thick with 20mm nominal size stone aggregate.	Sqm	10.00			0.00
2	Extra for pre finished nosing to treads of steps of marble stone.	rmt	9.00			0.00
3	Extra for marble stone flooring in treads of steps and risers using single length up to 2.00 metre.	sqm	4.73			0.00
4	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.					
a)	Double charge vitrified tile polished finish of size					
i	Size of Tile 600 x 1200 mm	Sqm	155.62			0.00
b)	Glazed Vitrified tiles Matt/Antiskid finish of size					
i	Size of Tile 600 x 600 mm	Sqm	7.28			0.00

5	Providing and laying Polished Granite stone flooring in required design and patterns, in linear as well as curvilinear portions of the building all complete as per the architectural drawings with 18 mm thick stone slab over 20 mm (average) thick base of cement mortar 1:4 (1 cement : 4 coarse sand) laid and jointed with cement slurry and pointing with white cement slurry admixed with pigment of matching shade including rubbing, curing and polishing etc. all complete as specified and as directed by the Engineer-in-Charge. Polished Granite stone slab colour of Black, Cherry/Ruby Red or equivalent.	Cum	10.15			0.00
TOTAL RATE FOR FLOORING WORKS - (H)						0.00
PART I - Rate for Roofing Works						
Sl. No.	DESCRIPTION	UNIT	QTY.	RATE	RATE IN FIGURES	AMOUNT
1	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 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 : at 230 mm c/c, including jointing and finishing to a flush finish of tapered and square					
i	12.5 mm thick tapered edge gypsum moisture resistant board.	sqm	168.80			0.00
2	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	100.00			0.00

3	Providing and fixing precoated galvanised steel sheet roofing accessories 0.50 mm (+ 0.05 %) total coated thickness, Zinc coating 120 grams per sqm as per IS: 277, in 240 mpa steel grade, 5-7 microns epoxy primer on both side of the sheet and polyester top coat 15- 18 microns using self drilling/ self tapping screws complete :					
i	Ridges plain (500 - 600mm)	Rmt	10.00			0.00
II	Barge board (Upto 300 mm)	Rmt	10.00			0.00
III	Gutter (600 mm over all girth)	Rmt	10.00			0.00
TOTAL RATE FOR ROOFING WORKS (I)						0.00
PART J - Rate for Finishing Works						
Sl. No.	DESCRIPTION	UNIT	QTY.	RATE	RATE IN FIGURES	AMOUNT
1	12 mm cement plaster of mix :					
i	1:6 (1 cement: 6 coarse sand)	Sqm.	5.00			0.00
2	20 mm cement plaster of mix :					
i	1:4 (1 cement: 4 coarse sand)	Sqm.	5.00			0.00
3	Add or deduct for plaster drip course/ groove in or moulding to R.C.C. projections.plastered surface	metre	5.00			0.00
4	6 mm cement plaster of mix :					
i	1:3 (1 cement: 3 fine sand)	SQM	5.00			0.00
5	Extra for providing and mixing water proofing material in cement plaster work in proportion recommended by the manufacturers.	per bag of 50KG Cement Used in Mix	2.65			0.00
6	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 coats.	SQM	310.90			0.00
7	Applying priming coats with primer of approved brand and manufacture, having low VOC (Volatile Organic Compound) content. With water thinnable cement primer on wall surface having VOC content less than 50 grams/litre	Sqm	310.90			0.00
8	Finishing walls with textured exterior paint of required shade :					
i	New work (Two or more coats applied @ 3.28 ltr/10 sqm) over and including base coat of water proofing cement paint applied @ 2.20kg/10 sqm.	SQM	148.73			0.00

9	Finishing walls with Deluxe Multi surface paint system for interiors and exteriors using Primer as per manufacturers specifications :					
i	Painting wood work with Deluxe Multi Surface Paint of required shade. Two or more coat applied @0.90 ltr/10 sqm over an under coat of primer applied @0.75 ltr/ 10 sqm of approved brand or manufacture	Sqm	8.88			0.00
10	Applying priming coat :					
i	With ready mixed pink or Grey primer of approved brand and manufacture on wood work (hard and soft wood)	Sqm	8.88			0.00
ii	With ready mixed red oxide zinc chromate primer of approved brand and manufacture on steel galvanised iron/ steel works	Sqm	50.00			0.00
11	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	459.63			0.00
12	Finishing with Epoxy paint (two or more coats) at all locations prepared and applied as per manufacturer's specifications including appropriate priming coat, preparation of surface, etc. complete. On steel work.	Sqm	101.31			0.00
TOTAL RATE FOR FINISHING WORKS - (J)						0.00
PART K - Rate for Aluminium Works						
Sl. No.	DESCRIPTION	UNIT	QTY.	RATE	RATE IN FIGURES	AMOUNT
	Frameless Fix Glazing					

1	Providing and fixing of fixed frameless glazing including providing 12mm thick clear float toughened glass as manufactured by Asahi / Modi Guard / Saint Gobain or approved equivalent make . The perimeter of Frameless Fix glazing shall be grouted in the Masonry / RCC / Stone as per respective location, by using a channel of 19mm X 25mm height X 2.0 mm thick. The fixing channel shall be done by drilling holes with an electrical drill, inserting PVC sleeves and fixing with 10 X 50mm long (or as per requirement) stain less steel wooden screw at a spacing of 25mm from the edges and 100mm centre to centre. EPDM flat profile (12mm wide X 20mm height) as manufactured by the Bohra Rubbers / Hanu Industries or approved equivalent make should be provided under the glass at the bottom channel all along the length of the glass (at Floor Level) The glass should be fixed in line and plumb with a minimum gap of 8mm between glass to glass and filled with clear Weather Sealant of Dow Corning or GE Silicones or approved equivalent make , The gaps between both side of the channel and the glass should be inserted with bond breaking backer rod of 6mm Dia as manufactured by Supreme Industries, shall be applied with clear weather sealant of Dow Corning Or GE Silicones. All the perimeter gaps between the channel and Masonry / RCC / Stone shall also be sealed with clear Weather Sealant of Dow Corning OR GE Silicone.	Sqm	5.25			0.00
2	Providing and fixing frameless Doors, cut and fixed in openings of desired shape as per drawing. The door shall comprised of 12mm thick clear toughened glass held in place with necessary SS fittings. The patch fitting would be of stainless steel SS – 304 Grade and of OZONE / Hafele or approved make. The fitting should comprise of top patch; Bottom Patch; Corner Lock; Floor Machine; Over and Side Panel patch – fin type; and “D” shape Pull Handle of 32mm Dia and 2000mm length. The contractor shall work out the exact quantities required based on fitting selected and the elevation applicable for each shop front location and no extra amount shall be payable on this amount.	Sqm	3.78			0.00
TOTAL RATE FOR ALUMINUM WORKS - (K)						0.00
PART L - Rate for New Technologies and Materials (LGSF)						
Sl. No.	DESCRIPTION	UNIT	QTY.	RATE	RATE IN FIGURES	AMOUNT

1	<p>Designing, providing, installing and fixing factory finished custom designed cold form Light Gauge Steel Framed super structure comprising of steel wall panel, trusses, purlins etc manufactured out of minimum 0.75 mm thick steel sheet as per design requirements. The steel sheet shall be galvanized (AZ-150 gms Aluminium Zinc Alloy coated steel having minimum yield strength 300- 550 Mpa) conforming to AISI specifications and IBC 2009 for cold formed steel framing and onstruction and also as per IS: 875- 1987, ISO 800-1984 and IS: 801- 1975. The wind load shall be as per provisions of IS 875 (part -III). LGSFS frame shall be designed as per IS: 801 using commercially available software such as FrameCAD Pro-11.7/ STAAD PRO-V8i/ArchitekV2.5.16/ Revit architecture- 2011 or equivalent. Proper usage of Connection Accessories like Heavy Duty Tension Ties, Light Duty Hold-ons, Twist Straps (to connect truss with wall frames), Strong Tie, Tie Rod, H- Brackets, Boxing Sections, L-Shaped Angles for better structural stability. The framing section shall be cold form C-type having minimum web depth 89 mm x 39mm flange x 11mm lip in required length as per structural design requirement duly punched with dimple/slot at required locations as per approved drawings. The slots will be along centre line of webs and shall be spaced minimum 250mm away from both ends of the member. The frame can be supplied in panelized or knock down condition in specific imensions and fastened with screws extending through the steel beyond by inimum of three exposed threads. All self drilling tapping screws for joining the members shall have a Type II coating in accordance with ASTM B633(13) or equivalent corrosion protection of gauge 10 & 12, TPI 16 & 8 of length 20mm. The frames shall be fixed to RCC slab or Tie beam over Neoprene rubber using self expanding carbon steel anchor bolt of dia as per approved drawings. design subject to minimum 12mm diameter and 121mm length conforming to AISI 304 and 316 at 500mm c/c with minimum embedment of 100mm in RCC (RCC to be paid separately) and located not more than 300mm from corners or termination of bottom tracks complete in all respects. The item also includes the submission of stability reports duly examined and issued by any NIT/IIT.The rate</p>	Kg	9230.00			0.00
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	includes the concept design, detailed design, fabrication of sections, transportation, installation and all required fixing arrangement at site as described above.					
2	Providing and fixing of external wall system on Light gauge steel frame work with outer face cement boards as per standard sizes fixed with self- drilling / tapping screws / fasteners @ 60cm c/c of approved make. A groove of 2 mm to 3mm shall be maintained and grooves shall be sealed with silicon based sealant. The board shall be fixed in a staggered pattern. Screws shall be of counter sunk rib head of 1.60mm to 4 mm thick or 8 to 10 gauge of length varying from 25 to 45 mm and. Internal face 12.5 mm thick gypsum plaster board fixed on cement board as per standard sizes fixed with selfdrilling / tapping screws / fasteners @ 60cm c/c of approved make, proper taping and jointing to be done using fiber mesh tape and epoxy and acrylic based jointing compound for seamless finish.(cost of frame work to be paid for separately)					

i	Outer face: Outer face having 6mm thick fiber cement board fixed on 9mm thick fiber cement board, Type A, as per IS:14862:2000 (high pressure steam cured) Inner Face :- 12.5 mm thick gypsum plaster board conforming to IS 2095:2011 fixed on 8 mm thick fibre cement board confirming to IS:14862:2000 of type B (High pressure steam cured)	Sqm	162.00			0.00
3	Providing and fixing internal wall panels on Light gauge steel frame work with 12.5mm thick gypsum plaster board conforming IS 2095:2011 fixed on cement board as per standard sizes fixed with self-drilling / taping screws / fasteners @ 60cm c/c of approved make, Screws shall be of counter sunk rib head of 1.60mm to 4 mm thick or 8 to 10 gauge of length varying from 25 to 45 mm. Proper taping and jointing to be done using fiber mesh tape and epoxy and acrylic based jointing compound for seamless finish.(cost of frame work to be paid for separately					
i	Cement Fiber Board 8 mm thick as per IS 14862:2000 of type B (High pressure Steam Cured)	Sqm	130.00			0.00
4	Providing and fixing in all exterior face panels breathable vapour barrier underneath the cement fiber board as per National Building Code 2009 complete as per direction of Engineer-in-charge.	Sqm	162.00			0.00
5	Providing and fixing thermal insulation with Resin Bonded rock wool conforming to IS: 8183, having density 48 kg/m 3,50 mm thick,wrapped in 200 G Virgin Polythene Bags fixed to wall with screw, rawel plug & washers and held and in position by criss crossing GI wire etc. complete as per directions of Engineer-in- Charge.	Sqm	269.00			0.00
6	Supplying and installation of moisture resistant/fire resistant cement board as per standard sizes fixed with self-drilling / taping screws. Screws shall be of counter sunk rib head of 1.60mm to 4 mm thick or 8 to 10 gauge of length varying from 25 to 45 mm.					
i	Cement Fiber Board 6 mm thick as per IS 14862:2000 of type B (High pressure Steam Cured)	Sqm	50.00			0.00

7	Providing and fixing in position factory made non asbestos fibre reinforced aerated cement sandwich wall/roof/floor light weight solid core panels made of light weight cement concrete core composed of OPC cement, pulverized flyash, quick lime, cotton pulp & Gypsum in mortar state mixed with aeration agent in a preset mould. The outer face on both sides of the panels will be non asbestos fibre cement board confirming to IS 14862:2000. These solid wall panels are installed using Galvanized iron steel tracks/C channel of 1mm thick of required sizes as recommended by manufacturer's and fixed to floor and RCC soffit in plumb to each other with steel screw/ fasteners. The panel shall be fixed vertically with tongue & groove joint with cement based polymer modified jointing compound. The exposed surface finished with fibre mesh/glass fibre tape with polymer based jointing compound having superior flexibility. Panels should be used as floor & roofing with additional structural support, steel or RCC depending upon the design. All the operation shall be completed in all respect as per drawings, Manufacturers specifications and under the overall direction of Engineer-in-Charge (Cost of all the material is included except "tracks/C channel" which will be paid separately).					
i	Non load bearing panels 75mm thick of required size (minimum 5mm thick fibre cement board)	Sqm	202.50			0.00
TOTAL RATE FOR NEW TECHNOLOGIES AND MATERIALS (LGSF) - (L)						0.00
GRAND TOTAL FOR CIVIL WORKS - A+B+C+D+E+F+G+H+I+J+K+L						0.00
SECTION 2 - INTERNAL ELECTRICAL WORKS						
PART A - Distribution Board						
Sl. No.	DESCRIPTION	UNIT	QTY.	RATE	RATE IN FIGURES	AMOUNT
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)	8 way, Double door	Nos	1.00			0.00
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)					

b)	8 way Double door	Nos.	1.00			0.00
3	Supplying and fixing following rating, double pole, 240 volts, isolator in the existing MCB DB complete with connections, testing and commissioning etc. as required.					
a)	40 amps	Nos	1.00			0.00
4	Supplying and fixing following rating, four pole, 415 volts, isolator in the existing MCB DB complete with connections, testing and commissioning etc. as required.					
a)	63 amps	Nos.	1.00			0.00
5	Supplying and fixing 5 amps to 32 amps rating, 240/415 volts, "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	Nos.	32.00			0.00
6	Supplying and fixing following rating, double pole, single phase and neutral, 240 volts, residual current circuit breaker (RCCB), having a sensitivity current upto 30 milliamperes in the existing MCB DB complete with connections, testing and commissioning etc as required.					
a)	63 amps	Nos.	3.00			0.00
TOTAL RATE FOR DISTRIBUTION BOARDS - (A)						0.00
PART B - Internal Wiring						
Sl. No.	DESCRIPTION	UNIT	QTY.	RATE	RATE IN FIGURES	AMOUNT
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 medium class PVC conduit, with modular switch, modular plate, suitable GI box and earthing the point with 1.5 sq.mm. FR PVC insulated copper conductor single core cable etc as required.					
i	Group – C	Point	60.00			0.00
2	Wiring for circuit/ submain wiring alongwith earth wire with the following sizes of FRLS PVC insulated copper conductor, single core cable in surface/ recessed medium class PVC conduit as required					
i	2 X 2.5 sq. mm + 1 X 2.5 sq. mm earth wire	Metre	380.00			0.00
ii	2 X 6 sq. mm + 1 X 6 sq. mm earth wire	Metre	150.00			0.00
iii	2 X 10 sq. mm + 1 X 6 sq. mm earth wire	Metre	50.00			0.00
iv	4 x 10 sq.mm + 2 x 6 sq.mm. earth wire	Metre	50.00			0.00

3	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 amps modular socket outlet and 5/6 amps modular switch, connection etc. as required. (For light plugs to be used in residential buildings).	Each	22.00			0.00
4	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 & 15/16 amps modular socket outlet and 15/16 amps modular switch, connection etc. as required.	Each	8.00			0.00
5	Supplying and fixing 20 amps, 240 volts, SPN industrial type, socket outlet, with 2 pole and earth, metal enclosed plug top along with 20 amps "C" curve, SP, MCB, in sheet steel enclosure, on surface or in recess, with chained metal cover for the socket out let and complete with connections, testing and commissioning etc. as required.	Each	4.00			0.00
6	Wiring for light/ power plug with 2X4 sq. mm FRLS PVC insulated copper conductor single core cable in surface/ recessed medium class PVC conduit alongwith 1 No 4 sq. mm FRLS PVC insulated copper conductor single core cable for loop earthing as required. Make:KEI,Worldcab,RR Kable,Bonton	Metre	100			0.00
7	Wiring for light/ power plug with 4X4 sq. mm FRLS PVC insulated copper conductor single core cable in surface/ recessed medium class PVC conduit alongwith 2 Nos 4 sq. mm FRLS PVC insulated copper conductor single core cable for loop earthing as required. Make:KEI,Worldcab,RR Kable,Bonton	Metre	120			0.00
8	Supplying and fixing of call bell / buzzer suitable for single phase,230 volt complete as required.	Each	2.00			0.00
TOTAL RATE FOR INTERNAL WIRING - (B)						0.00
PART C - Fans & Light Fixtures						
Sl. No.	DESCRIPTION	UNIT	QTY.	RATE	RATE IN FIGURES	AMOUNT

1	Supply, installation, testing & commissioning of 4ft Linear LED luminaire delivering an initial system lumen of 2800 lumens & the luminaire shall be with system efficacy ≥ 100 lm / W. The luminaire Housing shall be made of PC & the diffuser shall be of polycarbonate/PMMA. The operating CCT shall be 6500K with CRI of ≥ 80 . The luminaire shall be with BIS Registered electronic driver with input voltage range of 150 to 270V , THD $\leq 20\%$ & PF ≥ 0.95 , 50,000 Hrs LED Life with L70 Criteria, IP20. The LED Driver shall be easily available in India for repair and service. The LED shall be SMD type. Luminaire shall have minimum surge protection of 2KV.The luminaire shall be with following certifications: LM79 & LM80 issued by LED manufacture along with Photo Biological Safety Standard. Wipro Cat No.: LL20-221-XXX-65-NE1	Each	13.00			0.00
2	Supply, installation, testing & commissioning of 12W Recessed mounted Round Led Downlighter & the luminaire shall be with system efficacy ≥ 95 lm / W. IP20 , Optics: PMMA LGP/Polystyrene Diffuser. The operating CCT shall be 6000K with CRI of ≥ 80 . The luminaire shall be with BIS Registered electronic driver with input voltage range of 150 to 270V & PF ≥ 0.9 ,The LED Driver shall be easily available in India for repair and service. The LED shall be SMD type. Luminaire shall have minimum surge protection of 2KV.The luminaire shall be with following certifications: LM79 & LM80 issued by LED manufacturer along with Photo Biological Safety Standard. Wipro Cat No.: LD95-141-XXX-60-XXX	Each	12.00			0.00
3	Supply, Installation, Testing & Commissioning of 10W surface mounted Bulkhead light with 5700K ANSI BIN, made of PDC aluminium housing having powder coating with high efficiency PC diffuser for homogeneous light distribution. Fixture should have minimum efficacy at System level (Not Chip Level) ≥ 85 lumens/watt and a minimum system lumen output of >850 lumens. Luminaire should have 70% of luminous flux after 50,000 operating hours (L70), CCT of 5700 ANSI BIN (SDCM ≤ 5), CRI > 80 , PF > 0.95 , THD $< 10\%$, IP-65, Operating working temp range - 0°C to 50°C and an operating Voltage Range of 150 - 270V. Internal Surge Protection ≥ 2.5 KV. LED Make- Cree/Nichia/Lumileds/Osram/seoul Makes Crompton Model No. LBHE-10-CDL or equivalent in Philips or Trilux.	Each	1.00			0.00

4	SITC of recess mounted LED luminaire (2X2) min 30W made CRCA housing having powder coating with high efficiency PET/Prismatic diffuser for homogeneous light distribution. Fixture should have minimum efficacy at System level (Not Chip Level) ≥ 125 lumens/watt and a minimum system lumen output of >3750 lumens. Luminaire should have 70% of luminous flux after 50,000 operating hours (L70), CCT of 5700 ANSI BIN, CRI >80 , PF >0.95 , THD $<10\%$, IP20, LED Driver: Constant Current Type withstand capacity of 48 Hrs in case of 100Vac, Operating working temp range - 0°C to 50°C and an operating Voltage Range of 140 - 270V. Surge Protection $\geq 4\text{KV}$. Fixture comply to IS /IEC Standrads, Cut out of 575mm x 575mm. LED Make- Cree/Nichia/Lumileds/Osram/Seoul. Luminaries Makes Crompton Model No. LCTLRP-30-FO-CDL or equivalent in Philips or Trilux.	Each	18.00			
5	SITC of pre-wired 600mm, 10Watt LED Light fitting (Application as Mirror Light) complete with all accessories, housing made of Extruded Aluminium, System Efficacy $\rightarrow 100$ LPW or above and a minimum system lumen output of >1000 lumens with CRI >80 , 6500K ANSI BIN. suitable for 220 V, 50 Hz, The luminare rated life (L70) >50000 Hours with High efficiency driver with Surge Protection $\geq 2.5\text{KV}$, over voltage protection, short circuit protection and operating at Power Factor >0.95 , THD $<10\%$ including connection with 1.5 sq. mm PVC insulated, copper conductor, single core cable and earthing etc as required. Submission of LED Photo biological safety report confirming to 62471, LED Make- Cree/Nichia/Lumileds/Osram/Seoul Makes Crompton Model No. CCS-103-10-65-SL-DP-NWH or equivalent in Philips or Trilux.	Each	2.00			0.00
6	Supply, Installation, Testing & Commissioning of 15W Decorative WALL BRACKET LIGHT, Housing Material Cast Aluminium with B22 Holder Tye, Diffuser Material PPR with TIN Coated Powder Coated Finish, Suitable of used with 15W LED Lamp Crompton Model No. WMAFBULB or equivalent in Philips or Trilux.	Each	2			0.00
7	SITC of Ceiling Fan of 1200mm sweep complete erected in position with all accessories.	Each	8			0.00
8	SITC Fresh air fan 250 mm	Each	2			0.00
TOTAL RATE FOR FANS & LIGHT FIXTURES - (C)						0.00
PART D - Server, Data & Networking						
Sl. No.	DESCRIPTION	UNIT	QTY.	RATE	RATE IN FIGURES	AMOUNT

1	Supplying and fixing following modular switch/socket on the existing modular plate & switch box including connections but excluding modular plate etc. as required.					
i	Telephone socket outlet	Each	5.00			0.00
ii	TV antenna socket outlet	Each	1.00			0.00
2	Supplying and fixing of RJ-11/RJ 45 (Both Twin socket)/O Telephone outlet with shutters along with suitable base plate, key stone and surface/concealed back boxes of adequate module size, etc complete in all respect.	Each	8.00			0.00
3	Supplying & Fixing of Single Faceplate Shall be Duplex Port (RJ45) square plate, dimension as per commercially available modular office furniture. Shall have spring shuttered front access for preventing ingress of dust, Shall be supplied with Gang Box of the same size by System Integrator complete in all respect. . Make-Siemon/Panduit/Legrand	Each	8.00			0.00
4	Supplying and fixing following size/ modules, GI box alongwith modular base & cover plate for modular switches in recess etc as required.					
i	1 or 2 Module (75mmX75mm)	Each	14.00			0.00
5	Supplying, laying, testing and commissioning of following size annealed tinned copper conductor PVC insulated and sheathed armoured copper telephone cables with suitable clamps, saddles and including making terminal joints complete as required.					
i	10 pair	Mtrs	20.00			0.00
	CABLING AND CONDUITING					
6	Supplying and drawing of UTP 4 pair CAT 6 LAN Cable in the existing surface/ recessed steel/ PVC conduit as required.					
i	1 run of cable	Metre	290.00			0.00
7	Supplying, fixing, connecting & testing of Telephone Tag Block krone type in a suitable size 1.6 mm thick dust and vermin proof Sheet steel enclosure duly painted by synthetic enamel over anti corrosive primer, lockable and hinged cover with provision for cable through glands complete in all respects.					
i	10 pair Krone	Each	1.00			0.00
8	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.	Metre	60.00			0.00

9	Supplying and fixing of following sizes of steel conduit along with accessories in surface/recess including painting in case of surface conduit, or cutting the wall and making good the same in case of recessed conduit as required.					
i	25 mm	Metre	250.00			0.00
10	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					
i	25 mm	Metre	20.00			0.00

TOTAL RATE FOR SERVER, DATA & NETWORKING - (D)

0.00

GRAND TOTAL FOR INTERNAL ELECTRICAL WORKS - (A+B+C+D)

0.00

SECTION 3 - PLUMBING WORKS

PART A - Sanitary Installations

Sl. No.	DESCRIPTION	UNIT	QTY.	RATE	RATE IN FIGURES	AMOUNT
1	Providing and fixing white vitreous china extended wall mounting water closet of size 780x370x690 mm of approved shape including providing & fixing white vitreous china cistern with dual flush fitting, of flushing capacity 3 litre/ 6 litre (adjustable to 4 litre/ 8 litres), including seat cover, and cistern fittings, nuts, bolts and gasket etc complete.	Each	2			0.00
2	Providing and fixing wash basin with C.I. brackets, 15 mm dia CP Brass single hole basin mixer of approved quality and make, including painting of fittings and brackets, cutting and making good the walls wherever required:-					
i	(a) White Vitreous China Wash basin size 550x400 mm with a 15 mm CP Brass single hole basin mixer	Each	2			0.00
3	Providing and fixing Stainless Steel A ISi 304 (18/8) kitchen sink as per IS: 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 :					
i	Kitchen sink with drain board 510x1040 mm bowl depth 250 mm	Each	1			0.00

4	Providing and fixing C.P. brass long body bib cock of approved quality conforming to IS standards and weighing not less than 690 gms.					
i	15 mm nominal bore	Each	4			0.00
5	Providing and fixing C.P. brass angle valve for basin mixer and geyser points of approved quality conforming to IS:8931					
i	15 mm nominal bore	Each	15			0.00
6	Providing and fixing 600x450 mm beveled edge mirror of superior glass (of approved quality) complete with 6 mm thick hard board ground fixed to wooden cleats with C.P. brass screws and washers complete.	Each	2			0.00
7	Providing and fixing unplasticised P.V.C. connection pipe with PTMT Nuts, collar and bush of approved quality and colour.					
i	15 mm nominal bore with 45 cm length	Each	15			0.00
8	Providing and fixing CP Brass 32mm size Bottle Trap of approved quality & make and as per the direction of Engineer-in-charge.	Each	4			0.00
9	Providing and fixing CP Brass Single lever telephonic wall mixer of quality & make as approved by Engineer in charge.					
i	a) 15 mm nominal dia	Each	2			0.00
10	Providing and fixing white vitreous china battery based infrared sensor operated urinal of approx. size 610 x 390 x 370 mm having pre & post flushing with water (250 ml & 500 ml consumption), having water inlet from back side, including fixing to wall with suitable brackets all as per manufacturers specification and direction of Engineer-in-charge	Each	2			0.00
11	Providing and fixing toilet paper holder :					
i	C.P. brass	Each	2			0.00
12	Providing and fixing P.V.C. waste pipe for sink or wash basin including P.V.C. waste fittings complete.					
i	Flexible pipe	Each	2			0.00
13	Providing and fixing Solid state, no touch operating, fully hygienic hand drier of approved shade with single blower, with time delay, summer & winter control, music	Each	2			0.00

	while drying, volume ON/OFF controls complete. Make:- Euronics					
14	Providing and fixing CP Brass Health faucet with regulator with flexible pipe 1.0 m long, wall hooked complete with flow rate of 3 LPM or less complying with Green Building requirements. Make:- Euronics	Each	2			0.00
15	Providing and Fixing CP Brass twin coat hook with PVC rawl plug & C.P. brass screw complete as required. Make:Jaquar	Each	2			0.00
16	SS 304 body automatic sensor based liquid soap dispenser with 700ml capacity and battery operated complete. Make:- Euronics	Each	2			0.00
17	Providing and fixing C.P. brass soap dish with CP wall flange, Nut and Washer etc. complete.	Each	5			0.00
18	Providing and Fixing tissue paper dispenser of approved quality C/M fold tissue type of cap. 450 tissue. Complete including fixing and making goods to the wall	Each	2			0.00
i	32 mm dia	Each	1			0.00
TOTAL RATE FOR SANITARY INSTALLATIONS - (A)						0.00
PART B- Soil, Waste, Rain & Vent Pipes						
Sl. No.	DESCRIPTION	UNIT	QTY.	RATE	RATE IN FIGURES	AMOUNT
1	Providing and fixing soil, waste and vent pipes :					
i	100 mm dia					
a	Hubless centrifugally cast (spun) iron pipes epoxy coated inside & outside IS:15905	metre	50			0.00
ii	75 mm diameter :					
a	Hubless centrifugally cast (spun) iron pipes epoxy coated inside & outside IS:15905	metre	6			0.00
2	Providing and fixing plain bend of required degree.					
i	100 mm dia					
a	Hubless centrifugally cast (spun) iron pipes epoxy coated inside & outside IS:15905	Each	15			0.00
ii	75 mm dia					

a	Hubless centrifugally cast (spun) iron pipes epoxy coated inside & outside IS:15905	Each	6			0.00
3	Providing and fixing shielded coupling for Hubless centrifugally cast iron pipe					
i	100 mm dia					
a	SS 304 grade coupling with EPDM rubber gasket	Each	17			0.00
ii	75 mm dia					
a	SS 304 grade coupling with EPDM rubber gasket	Each	3			0.00
4	Providing and fixing trap of self cleansing design with screwed down or hinged grating with or without vent arm complete, including cost of cutting and making good the walls and floors :					
i	100 mm inlet and 100 mm outlet					
a	Hubless centrifugally cast (spun) iron epoxy coated inside & outside as per IS:15905	Each	4			0.00
5	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 10 mm gap for thermal expansion, (i) Single socketed pipes.					
i	110 mm diameter	Each	10			0.00
6	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, leaving 10 mm gap for thermal expansion.					
i	Coupler					
a	110 mm	Each	2			0.00
ii	Single tee with door					
a	110x110x110 mm	Each	2			0.00
iii	Bend 87.5°					
a	110 mm bend	Each	2			0.00
iv	Shoe (Plain)					
a	110mm Shoe	Each	2			0.00

7	Providing and fixing unplasticised -PVC pipe clips of approved design to unplasticised - PVC rain water pipes by means of 50x50x50 mm hard wood plugs, screwed with M.S. screws of required length, including cutting brick work and fixing in cement mortar 1:4 (1 cement : 4 coarse sand) and making good the wall etc. complete.					
i	110mm	Each	6			0.00
8	Providing and fixing to the inlet mouth of rain water pipe cast iron grating 15 cm diameter and weighing not less than 440 grams.	Each	2			0.00
9	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	2			0.00
10	Providing and fixing 100% stainless steel grating with frame of approved make and quality grade 304 on top of floor trap. The rate includes the cost of all ancillary works and material as required to complete the works.					
i	125 x 125 x 1mm	Each	4			0.00
ii	75x75 x1 mm	Each	2			0.00
11	Providing and fixing 100mm Dia Hubless Cast Iron with epoxy coated inside & outside as per IS:15905 inlet fitting approximately 450/600 mm long with one or more 32/40/75mm dia. Hubless CI sockets complete in all respects	Each	4			0.00
12	Providing and fixing 100mm dia Hubless Cast Iron with epoxy coated inside & outside as per IS:15905 approximately 450 mm long with one reducer elbow 100x75 mm complete in all respects.	Each	2			0.00
13	Providing and fixing SS Floor clean out/clean out plug with SS cover and EPDM seal complete in all respects including fixing of SS cleanout plug with CP brass screws. (Make:Chilly)					
i	100mm dia	Each	3			0.00

14	Providing and fixing G.I. Pipes complete (IS:1239 Heavy class) with all G.I. Fittings (bends, tees, reducers, plugs, union, flange etc) and clamps as required at site and jointing with loctite tape or hold tite including painting with two coats of synthetic enamel paint of approved shade , make & quality, chase cutting and making good the walls, floors etc. wherever required.					
i	32mm dia nominal bore	metre	10			0.00
ii	40mm dia nominal bore	metre	10			0.00
TOTAL RATE FOR SOIL WASTE & VENT PIPES - (B)						0.00
PART C - Internal Water Supply						
Sl. No.	DESCRIPTION	UNIT	QTY.	RATE	RATE IN FIGURES	AMOUNT
1.	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					
i	20 mm nominal outer dia Pipes	metre	60			0.00
ii	25 mm nominal outer dia Pipes	metre	12			0.00
2	Providing and fixing Chlorinated 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 includes jointing of pipes & fittings with one step CPVC solvent cement and the cost of cutting chases and making good 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.					
i	20 mm nominal outer dia Pipes	metre	50			0.00
3	Providing and fixing G.I. pipes complete with G.I. fittings and clamps, i/c cutting and making good the walls etc. Internal work - Exposed on wall					
i	20 mm dia nominal bore	metre	10			0.00

4	Providing and fixing gun metal gate valve with C.I. wheel of approved quality (screwed end) :					
i	20 mm dia nominal bore	metre	6			0.00
ii	25 mm dia nominal bore	metre	1			0.00
5	Providing and fixing ball valve (brass) of approved quality, High or low pressure, with plastic floats complete :					
i	25 mm nominal bore	each	1			0.00
6	Providing and fixing brass ferrule with C.I. mouth cover including boring and tapping the main :					
i	25 mm nominal bore	each	1			0.00
7	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.					
i	Circular tank	PER LITRE	5000			0.00
TOTAL RATE FOR INTERNAL WATER SUPPLY - (C)						0.00

PART D - External Water Supply

Sl. No.	DESCRIPTION	UNIT	QTY.	RATE	RATE IN FIGURES	AMOUNT
1	Providing and fixing square-mouth S.W. gully trap class SP-1 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 :					
i	150 x 100 mm size P type					
ii	With common burnt clay F.P.S. (non modular) bricks of class designation 7.5	Each	3			0.00
2	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 :					
i	150 mm dia. R.C.C. pipe	metre	60			0.00

3	Constructing brick masonry manhole in cement mortar 1:4 (1 cement : 4 coarse sand) with R.C.C. top slab with 1:1.5:3 mix (1 cement : 1.5 coarse sand (zone-III) : 3 graded stone aggregate 20 mm nominal size), foundation concrete 1:4:8 mix (1 cement : 4 coarse sand (zone-III) : 8 graded stone aggregate 40 mm nominal size), inside plastering 12 mm thick with cement mortar 1:3 (1 cement : 3 coarse sand) finished with floating coat of neat cement and making channels in cement concrete 1:2:4 (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 :					
i	Inside size 90x80 cm and 45 cm deep including C.I. cover with frame (light duty) 455x610 mm internal dimensions, total weight of cover and frame to be not less than 38 kg (weight of cover 23 kg and weight of frame 15 kg) :					
a)	With common burnt clay F.P.S. (non modular) bricks of class designation 7.5	Each	6			0.00
4	Constructing masonry Chamber 30x30x50 cm inside, in brick work in cement mortar 1:4 (1 cement :4 coarse sand) for stop cock, with C. I. surface box 100x100 x75 mm (inside) with hinged cover fixed in cement concrete slab 1:2:4 mix (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size), i/c necessary excavation, foundation concrete 1:5:10 (1 cement : 5 fine sand : 10 graded stone aggregate 40mm nominal size) and inside plastering with cement mortar 1:3 (1 cement : 3 coarse sand) 12mm thick, finished with a floating coat of neat cement complete as per standard design :					
i	With common burnt clay F.P.S.(non modular) bricks of class designation 7.5	Each	1			0.00
5	Providing and fixing G.I. pipes complete with G.I. fittings including trenching and refilling etc.					
i	External work					
a	20 mm dia nominal bore	Each	10			0.00

6	Constructing brick masonry road gully chamber 50x45x60 cm with bricks in cement mortar 1:4 (1 cement : 4 coarse sand) including 500x450 mm pre-cast R.C.C. horizontal grating with frame complete as per standard design :					
i	With common burnt clay F.P.S. (non modular) bricks of class designation 7.5	Each	2			0.00
7	Making connection of G.I. distribution branch with G.I. main of following sizes by providing and fixing tee, including cutting and threading the pipe etc. complete :					
i	20 to 40 mm nominal bore	Each	1			0.00
8	Making connection of drain or sewer line with existing manhole including breaking into and making good the walls, floors with cement concrete 1:2:4 mix (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) cement plastered on both sides with cement mortar 1:3 (1 cement : 3 coarse sand), finished with a floating coat of neat cement and making necessary channels for the drain etc. complete :					
i	For pipes 100 to 250 mm diameter	Each	2			0.00
9	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.					
i	All kinds of soil	cum	15			0.00
10	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 20 cm in depth, including consolidating each deposited layer by ramming, watering, etc. and disposing of surplus excavated soil as directed, within a lead of 50 m :					
i	All kinds of soil					
a	Pipes, cables etc. exceeding 80 mm dia. but not exceeding 300 mm dia	metre	60			0.00

11	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 :					
i	150 mm diameter S.W. pipe	metre	60			0.00
TOTAL RATE FOR EXTERNAL WATER SUPPLY - (D)						0.00
GRAND TOTAL FOR PLUMBING WORKS						0.00
SECTION 3 - IT AND ACCESS CONTROL SYSTEMS						
Sl. No.	DESCRIPTION	UNIT	QTY.	RATE	RATE IN FIGURES	AMOUNT
	Access control system					
1	Integra 32 (Model No./make RBH-Integra32) 01 no.	EACH	1.00			0.00
2	2-Door Control Panel with universal cabinet and power supply and required license. (Model No./make RBH-IRC-2000) 01 nos.		1.00			0.00
3	Biometric reader. (Model No./make BFR-300-S) 01 no.		1.00			0.00
4	PROXIMITY CARD 05 nos. (Model No./make SR-2400).		1.00			0.00
	Video surveillance systems	EACH	1.00			
1	Indoor Dome Camera (Model No Mobotix m 25 or latest) 1 No		1.00			0.00
2	Out door type camera (Model No Mobotix m 25 or latest) 1 No.		1.00			0.00
3	Network Vide Recorder system (Brand Mobotix) 1 No.		1.00			0.00
4	22" lcd display complete with all wiring and necessary fittings. (Make Samsung/LG) 1 No. (e) 1 no PC loaded/ installed with necessary lisc. Software for video surveillance. (Make Software: Mobotix, PC Hardware: Dell/HP) 1 No.		1.00			0.00
	Physical intrusion detection and prevention system	Each	1.00			
1	(a) PIR Sensor (make: Optex). Qty: 1 no.		1.00			0.00
2	(b) Beam Protector (Covering the entire parameter of the node) (make: Optex). Qty: 1 no.		1.00			0.00
3	(c) Ground sensor (make: Optex). Qty: 1 no.		1.00			0.00
4	(d) 130 db hooter (make: Optex) Qty: 1 no.		1.00			0.00
GRAND TOTAL FOR IT AND ACCESS CONTROL SYSTEMS						0.00
GRAND TOTAL FOR ALL THE WORKS						0.00

SECTION IX

LAYOUT OF SAMPLE ROOM

