

Client ID	02
Tender No.	1643
Page No.	1/126

Issued to M/s. _____

UTI INFRASTRUCTURE TECHNOLOGY AND SERVICES LTD. MUMBAI

Address: UTI Tower, 'Gn' Block, Bandra Kurla Complex, Bandra (E), Mumbai – 400 051

Tel No: 022 26547615 / 7616

Fax: 022 26547626 / 7627

CIN- U65991MH1993GOI072051

FINANCIAL BID

Name of work:

Structural Repairing, External Plastering work, Plumbing works and External Painting work at the Resident Premises of Specified Undertaking of Unit Trust Of India at Bandra Reclamation, Building No 16, Mumbai

Estimated Cost	:	Rs.29.39,800.00 Plus GST
Pre Bid Meeting	:	On10/02/ 2020, at 11.00 AM at UTIITSL , UTI Tower, Gn Block Ground Floor , BKC, Mumbai 400 051
Last date of submission of e-tender	:	By 03.00 p.m. on 18/02/2020.
Date of opening of the e-Tender (Financial Bid)	:	Will be communicated at a later stage
Venue of the submission of Envelope I and II	:	The Deputy Vice President, UTI Infrastructure Technology And Services Ltd. UTI Tower, 'Gn' Block, Bandra Kurla Complex, Bandra (E), Mumbai – 400 051
Validity of Tender from the date of opening	:	60 days
Time of commencement	:	7 days from the date of work order
Stipulated period of Completion	:	Within 45 days from the date of work order.
Documents to be provided	:	i)CAR Policy and Workmen Compensation policy during the contract Period from approved Insurance Co within 5 days from the date of work order & Fire Policy for the period of one year from the date of completion of the Works ii) Indemnity regarding Central Excise Payments Plus Agreement within 7 days from the Date of work order
Earnest Money Deposit	:	Rs.60,000.00 (Rupees Sixty Thousand only) in the form of DD in favour of "UTI Infrastructure Technology And Services Limited" Payable at Mumbai

Contractor's Signature

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Client ID	02
Tender No.	1643
Page No.	2/126

UTI Infrastructure Technology And Services Ltd.

INDEX

Sr. No.	Details	Page Nos.
1.	Tender Notice	3
2.	Instructions regarding submission, opening & Acceptance of Tender	4 - 8
3.	Conditions of Contract	9 - 24
4.	Appendix to conditions of Contract	25 - 26
5.	Format of indemnity for Statutory taxes etc. –Annexure I	27
6.	Articles of Agreement	28– 39
7.	Special Conditions of the Contract	40
8.	Materials , Specifications and Workmanship	41 - 43
9.	General Preamble to Schedule of Quantities	44 - 46
10.	List of materials (Approved makes)	47 - 51
11.	Specification (Furnishing)	52 - 82
12.	Specification (Electrical)	83 - 105
13.	Bill of Quantities	106
14.	Summary of Bill of Quantities	107
15.	Bill of Quantity	108 – 122
16.	Declaration	123
17.	Weekly Progress Report	124 – 125
18.	Drawing	126

Contractor's Signature

Seal

Client ID	02
Tender No.	1643
Page No.	3/126

UTI Infrastructure Technology And Services Ltd.

TENDER NOTICE

- 1.0 On Behalf Our client Specified Undertaking of Unit Trust of India(hereinafter referred to as SUUTI) , UTIITSL invites E- tender in Two Bid System (**Technical Bid and Financial Bid**) for the work as indicated in the title page 1, as per the enclosed schedule of quantities, specification, list of materials and as per the terms and conditions stipulated herein
- 1.1 Interested eligible candidates may obtain further information and inspect the web site www.tenderwizard.com/UTIITSL/ UTI Infrastructure Technology and Services Limited , Gn Block , Bandra Kurla Complex , Bandra East , Mumbai 400 051 .
- 1.2 Prices quoted should be net, inclusive of all taxes, cost of material, labour, loading, unloading, transport & scaffolding etc., complete but excluding GST under GST LAW and shall remain valid for the period as mentioned on cover page no.1.
- 1.4 Tender documents EMD and Technical Bid are to be enclosed in plain envelopes, sealed, marked with Tender name and reference number as described in detail under 'Instructions' and deposited in the Tender Box at the specified location on or before the last date, and time as mentioned on title page no. 1
- 1.5 Tenders will be opened at the stipulated time as mentioned on title page no. 1 in the presence of the tenderers or their representatives who choose to attend.

For and on behalf of UTIITSL

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Seal

Client ID	02
Tender No.	1643
Page No.	4/126

INSTRUCTIONS REGARDING SUBMISSION, OPENING AND ACCEPTANCE OF TENDER

2. Submission of Tender :

2.1 **Envelope No. 1 (EMD) and Envelope No. 2 (Technical Bid) should be put in Envelope No. 3 and submit the same to office address as mentioned on page No.1 superscribing the name of work. The financial bid strictly to be uploaded through E –Tender only. Physical Financial Bid will not be accepted.**

2.2 All entries in Tender document must be made in ENGLISH. It must be hand written in INK and must NOT be typed. The rate column to be filled in both figures and words against each item. Amount column to be filled for each item and the total amount for each trade / part to be given.

2.3 Only the Tender form issued by UTIITSL should be used. The tender document should not be changed or altered in any way and the original tenders as issued by UTIITSL would form the reference in all cases.

2.4 Earnest Money Deposit (EMD) accompanying the tender will be accepted only in the form of Demand Draft/Pay Order/Banker's Cheque of any Nationalized Bank/Approved Scheduled Bank drawn in favour of "**UTI INFRASTRUCTURE TECHNOLOGY AND SERVICES LIMITED**" payable at "**Mumbai**". Any tender, which is not accompanied by Earnest Money Deposit, shall be summarily rejected. No interest will be paid for the period during which the earnest money lies in deposit with the UTI ITSL. **Those who are submitting MSME / NSIC certificate, rules of MSME / NSIC is applicable.**

For successful bidder who has submitted the MSME/ NSIC Certificate, a Bank guarantee of 2% of the of contract value for the period of one year have to be submitted within 7 days from the date of work order

The successful bidder also has to submit Performance Bank Guarantee of 5 % of the Estimated value for the period of One Year within 7 days from the date of the work order.

2.5 The Tender should be forwarded on the official letterhead of the tenderer.

2.6 Envelope No. 1 marked as a (EMD) and Envelope No. 2 marked as a (Technical Bid) should be put in Envelope No. 3 superscribing the name of work of Structural Repairing , external plaster work Plumbing work and external painting work at the Resident Premises of Specified Undertaking of the Unit Trust Of India , Building No. 16, Bandra Reclamation, Bandra West, Mumbai and submit on the following address :

The Deputy Vice President,

Contractor's Signature

Seal

Client ID	02
Tender No.	1643
Page No.	5/126

UTI Infrastructure Technology And Services Limited
UTITower, 'Gn'Block
Bandra Kurla Complex, Bandra East
Mumbai- 400 051

- 2.7 Tenders will not be received/accepted after the due date and the time fixed. However, if the UTIITSL desires to extend the time limit, it will do so by informing through e tender portal /electronic media.
- 2.8 In case the due date for submission / opening of the tender is declared as a public holiday in the place where the tender is to be submitted the time limit will be automatically extended to the next working day at the same time unless otherwise specified.
- 2.9 UTIITSL will take no responsibility for delay or loss or non-receipt of tenders after dispatch, by the tenderer
- 2.10 The tenderers are advised to drop the tender in tender box kept in the office of UTIITSL as mentioned on cover page 1 or ensure that the tender reaches the office before the due date and before Time.
- 2.11 The tenderers are requested to inspect the site of work and acquaint about the site conditions and rules and regulations before quoting the rates. For this, the officials of UTIITSL may be contacted to make the arrangements.
- 2.12 **The rate quoted should be inclusive of all taxes, the cost of materials, labour, transportation, loading, un loading, scaffolding etc., but excluding GST. The contractor should submit the invoice showing taxes under GST Law separately on the invoice. However, the amount of GST shown on the invoice will be released only after GST credit is received by UTIITSL in Electronic Ledger maintained on the GSTN Portal**
- 2.13 The tender should be submitted strictly as per the terms & conditions spelt out in the tender. The tenderer should not make any alteration in the terms & conditions, drawings, specifications etc. In case of any alteration the tender shall be considered as invalid/void. Incomplete tenders are liable to be rejected.

3 Opening of Tenders:

- 3.1 The sealed tenders of EMD and Technical Bid will be opened by the designated Tender Opening Committee at the specified time and place in the presence of the contractors or their representatives who are present.

Client ID	02
Tender No.	1643
Page No.	6/126

- 3.2 Intending tenderers who wish to be present at the time of opening of tenders may be present at the office address as mentioned on title page 1 on the date and time fixed for opening of the tender.
- 3.3 The tender of EMD and Technical Bid shall also be opened through On Line , as per the E- Tender procedure by the tender opening committee.
- 3.4 The tenderers who are not qualified in the Technical bid would be summarily rejected.
- 3.5 The financial bids for only those tenderers, who qualify in the pre-qualification, would be opened **by a Committee constituted by** UTI ITSL. The date for opening of the financial bid will be intimated to the bidder at the address given by him through letter **or email only**.

4 **ACCEPTANCE OF TENDER:**

- 4.1. UTIITSL/Client reserves the right to accept or reject any tender in whole or part and to cancel the tendering process and reject all tenders, at any time prior to the award of Contract/ Work Order, without incurring any liability to the affected tenderer or tenderers or any obligation to inform the affected tenderer or tenderers of the grounds for the action
- 4.2 Tender shall remain valid for acceptance for a period of 60 days from the date of opening the tender. This period may be extended by mutual agreement and the tenderers shall not cancel / withdraw the tenders during that period.

5. **EARNEST MONEY DEPOSIT (EMD) :**

The original instrument (without depositing) submitted as EMD by the unsuccessful tenderers will be returned after placing the work order on L1 vendor.

The Earnest Money Deposit of the successful tenderer will be retained and will be refunded without any interest after completion of the work.

Earnest Money Deposit will be forfeited, if the contractor:

- a. Revokes the tender or stipulates any condition/s.
- b. Refuses /delays to sign and execute the agreement/ contract after the tender is accepted.
- c. Does not commence the work within the time specified in the work order.

Client ID	02
Tender No.	1643
Page No.	7/126

- d. Does not submit the Articles of Agreement, Indemnity for payment of taxes, Contractors all risk Policy and Workmen Compensation Policy within 7 days as stipulated in the tender.

6. **REJECTION OF TENDERS:**

The tenders will be liable to be rejected:

1. If the tenderer does not quote for any item/sub-item in the tender.
2. If the tenderer fails to countersign each and every correction in the rate(s).
3. If the tenderer is not empanelled with (UTIITSL)
4. If the tenderer does not meet the eligibility criteria or is barred from participation.
5. If the tenderer proposes any alterations to any of the conditions laid down or proposes any other conditions of any description whatsoever.

7. **DOCUMENTS TO BE SUBMITTED ON ISSUE OF WORK ORDER**

7.1 The tenderer whose tender has been accepted will be issued a Work Order. This "Work Order" will state the "Contract Price" that the **Client** will pay to the Contractor in consideration of the execution, completion, and maintenance of the Works by the Contractor as prescribed in the Contract.

7.2 Within 7 days of receipt of Work Order the successful tenderer will sign the Articles of Agreement and Indemnity for payment of taxes and duties and return the same to the Consultant /Client.

7.3 Within 7 days after receipt of the Work Order, the successful tenderer shall deliver to the Consultant/Client , Contractor's All risk policy and Workmen's compensation policy as stipulated in the Appendix to Conditions of Contract and Tender documents.

8. **CANCELLATION OF TENDER**

8.1 Canvassing in connection with the tender is strictly prohibited. Failure of the successful tenderer to comply with the requirements of Clauses 7.2 and 7.3 shall constitute sufficient grounds for cancellation of the contract and forfeiture of the EMD.

82 A tenderer who gives false information in the tender document about qualification and experience or who refuses to enter into a contract after notification of contract

Client ID	02
Tender No.	1643
Page No.	8/126

award shall be debarred from participating in future tenders apart from other actions as per Contract and as per law.

9 CORRUPT AND FRAUDULENT PRACTICES

Client/Consultant requires that tenderers to observe the highest standards of ethics during procurement process and execution of contracts.

Contractor's Signature

Seal

Client ID	02
Tender No.	1643
Page No.	9/126

CONDITIONS OF CONTRACT

10. DEFINITIONS

In this Contract, except where context otherwise requires, the following terms shall be interpreted as indicated;

- **“Client”** means Specified Undertaking of the Unit Trust Of India having their Corporate Office at UTI Tower , “Gn” Block , Bandra Kurla Complex , Bandra East Mumbai – 400 051
- **“Consultant”** means UTI Infrastructure Technology And Services Ltd. (UTIITSL) having their Corporate Office at Plot no. 3, Sector 11, CBD Belapur, Navi Mumbai 400 614
- **“Bill of Quantities”** means the price and completed Bill of Quantities forming part of the tender.
- **“The Contract”** means the Articles of Agreement/ Work Order/ Tender Documents/ All correspondence/ Specifications and any other correspondence from issue of tender to award of work, entered into between the Employer/UTIITSL and Contractor,
- **“The Contractor”** refers to the person or corporate body including, Successors, Heirs and Assignee of the firm whose tender to carry out the Works has been accepted.
- **“The Contract Price”** is the price stated in the Work Order and thereafter as adjusted in accordance with the provisions of the Contract.
- **“Days”** are calendar days, “Weeks” are of seven days, **“Months”** are calendar months.
- **“A Defect”** is any part of the Works not completed in accordance with the Contract.
- **“The Defects Liability Period”** is the period named in the Contract and as defined in Clause 29 of the tender conditions..

Client ID	02
Tender No.	1643
Page No.	10/126

- **“Detailed Drawings”** include calculation and other information as approved by the Client/Consultant for the execution of the Contract.
- **“The Completion Date”** is the date on which it is stipulated that the Contractor shall complete the Works.
- **“Materials”** are all supplies, including consumables, used by the Contractor for incorporation in the Works.
- **“Project Manager”** is the person named in the work order who is responsible for supervising and execution of the Works at site.
- **“Site”** is the premises defined in Page No. 1
- **“Specifications”** means the Specifications of the Works included in the Contract. Any modification or additions to the said specification would be as approved by the Client/Consultant.
- **“Start Date”** is the date as brought out in the Work Order.
- **“A Subcontractor”** is a person or corporate body who has a Contract with the Contractor only to carry out a part of the Work in the Contract, which includes Work on the Site.
- **“Temporary works”** are works designed, constructed, installed, and removed by the Contractor which are needed for carrying out the Works.
- **“A Variation”** is an instruction given by the Project Manager under prior intimation and approval of Consultant/Client for variation in the work.
- **“The Works” to be carried out by the Contractor as specified in the BOQ and detailed drawings.**

11. INTERPRETATION

- 11.1 In interpreting these conditions of contract, words have their normal meaning in English Language unless specifically designed.

The following documents shall constitute the Contract documents:

Contractor's Signature

Seal

Client ID	02
Tender No.	1643
Page No.	11/126

1. Articles of Agreement
2. Indemnity
3. Work Order
4. Tender Document
5. All correspondence/ Specifications& Drawings
6. Any other correspondence from issue of tender to award of work,

11.2 Contractor's Tender, including priced Bill of Quantities, conditions of Contract (CC), Appendix to CC, Special Conditions, Specifications, Drawings and all correspondence from opening of Tender till Issue of Work Order and any other document listed in the tender and in case of any ambiguity or contradiction between the different parts, shall be interpreted in the following order of precedence;

1. Articles of Agreement
2. Indemnity regarding payment of statutory deduction
3. Work Order
4. Special Conditions
5. Conditions of Contract
6. Bill of Quantities
7. Specifications
8. Detailed Drawings
9. Other drawings

12. **LANGUAGE**

Language of the Contract shall be English.

13. **COMMUNICATIONS**

Communication between parties shall be effective only when in writing. A notice shall be effective only when it is delivered.

14. **SUB-CONTRACTING**

Sub-contracting or subletting of the work is strictly prohibited. However wherever the contract specifies certain works to be carried out by specialized agencies, the Contractor may sub-contract with the prior approval of the Consultant/Client, but

Client ID	02
Tender No.	1643
Page No.	12/126

may not assign the Contract. Sub-contracting shall not alter the Contractor's obligations.

15. **OTHER CONTRACTORS**

The Contractor shall cooperate and share the Site with other contractors, public authorities, utilities etc. under intimation to the Consultant or Client.

16. **THE WORKS**

The Contractor shall construct and install the Works in accordance with the Specifications and Drawings. The Work commencement date will be considered as per the date mentioned in the Work Order only.

17. **SAFETY AND TEMPORARY WORKS**

17.1 The Contractor shall be responsible for the design of temporary works. However before erecting the same, he shall submit his designs including specifications and drawings to the Project Manager and to any other relevant third parties for their approval. No erection of temporary works shall be done until such approvals are obtained.

17.2 All drawings prepared by the Contractor for the execution of the temporary works, shall be subject to prior approval by the Consultant/Client before they can be used.

17.3 The Contractor shall be responsible for the safety of all activities and resources deployed on the Site.

17.4 The contractor shall submit the BAR CHART & MATERIAL PROCUREMENT CHART within 7 days of the date of work order.

18. **WORK PROGRAM**

The Contractor shall submit to the Project Manager, Weekly Progress Report as per the prescribed format.

Client ID	02
Tender No.	1643
Page No.	13/126

19 **VIRTUAL COMPLETION OF WORK;**

The work will be considered as virtually completed only when the Contractor completes the entire work in accordance with the drawings and specifications and after joint inspection of work by the Project Manager and Contractor. The Project Manager after satisfying himself shall thereupon approve the virtual completion date and handover the completed site to the Consultantor Client/ such other communication whichever is later.

20. **ACCESS TO SITE**

20.1 The Project Manager / any official of Consultant will have access to the site at all times.

20.2 The contractor will not restrict other agencies from accessing the site for related works under intimation to UTIITSL.

21 **INSTRUCTIONS**

21.1 The Contractor shall carry out all instructions of the Project Manager which are in accordance with the Contract.

21.2 The contractor has to maintain a site order book for instructions from the inspecting officer.

22 **EXTENSION OR ACCELERATION OF COMPLETION DATE**

22.1 At every stage Contractor shall make all attempts to achieve the desired progress and complete the work on time. When events occur which are beyond the control of the contractor, on a request received from the Contractor regarding extension of time to the extent justified should be taken from the Project Manager. In such cases liquidated damages will be levied on the Contractor for the balance period, if any.

23 **QUALITY**

23.1 The contractor should carry out the work strictly as per the tender specification.

23.2 All the materials and workmanship shall be of the kind described in the schedule of quantities / specifications and in accordance with relevant BIS codes..

Client ID	02
Tender No.	1643
Page No.	14/126

- 23.3 The materials required for the work should be purchased only from the manufacturers directly or from the approved dealers. Confirmation for the same will be required to be submitted to the Project Manager on demand.
- 23.4 The contractor shall submit original vouchers / challans etc. alongwith photocopies for verification of actual purchases of all important material at site to Project Manager. The original will be returned to the contractor after due verification.
- 23.5 The contractor must submit **manufacturers test certificate** of important materials, and if so desired by the Project Manager / Consultant/client shall have to carry out testing of any materials brought on site at their own cost in accredited laboratory / site of works. No extra claim will be entertained for such testing of materials.
- 23.6 The contractor should protect the work till its completion and handing over against any possible damage, theft, etc.
- 23.7 The contractor has to make arrangements for cleaning the work site every day and on completion of the work from the work area at his cost.
- 23.8 The contractor should provide samples of the materials for approval and the samples will be kept in the custody of the Project Manager / Consultant/Client.
- 23.9 The Project Manager shall inspect the Contractor's work from time to time and notify the Contractor of any defects that are found. The Project Manager may instruct the Contractor to uncover and test any Work that the Project Manager considers may have a defect. Should the defect be found, the cost of uncovering and making good shall be borne by the Contractor.
- 23.10 Every time notice of a defect is given, the Contractor shall correct the notified defect within the length of time specified by the Project Manager. If the Contractor has not corrected a defect within the time specified in the Project Manager's notice, the Consultant/Client reserves the right to get the rectifications carried out by other agency and recover the cost of such rectification from the contractor from any money lying to his credit with Consultant/Client under the present or any other contract .
- 23.11 The contractor should arrange a qualified Civil Engineer at Site to supervisor at site during the course of the entire work. The contractor should not change the Engineer

Client ID	02
Tender No.	1643
Page No.	15/126

till completion of the work. The Engineer should be available at site when the work is in progress.

23.12 The workmanship should be of high quality / standard and the decision of the Project Manager/Consultant shall be final in this regard.

24 **WORKING CONDITIONS:**

24.1 The contractor should abide by the rules and regulations for the premises especially on the working hours, entry to the workers to the premises, interpersonal relation with the staff members and other agencies engaged at the site.

24.2 The contractor shall not at any time do, cause or permit any nuisance on the site / do anything which shall cause unnecessary disturbances or inconvenience to the occupants / visitors at site or near the site of work

24.3 The contractor's workers will not be allowed to stay at the work site.

24.4 The contractor or his workers can use the common facilities such as drinking water, toilet etc., if made available at the premises. However, it should be ensured that the same should be kept in clean and hygienic condition.

24.5 Water and Electricity as per the availability at site can be made use of by the Contractor. The charges for actual consumption for water and electricity are to be paid by the Contractor. If not available, the contractor has to arrange it on his own.

24.6 The dismantled material / debris should be removed from the site daily and be transported out to the place as designated by the Municipal Corporation at contractor's own cost.

24.7 The contractor should make his own arrangement for storage of materials. Consultant (UTIITSL) may provide some space subject to availability (uncovered) within the premises for storage purpose. Materials only as per requirement are to be stored at site. Consultant /Client will not take any responsibility for the safety and / or security of any material lying at site.

24.8 Contractor needs to protect all furniture and other assets belonging to Client.

24.9 The contractor should not engage any person prohibited by law for execution of the job.

Client ID	02
Tender No.	1643
Page No.	16/126

24.10 The contractor should make necessary arrangement for covering all the furniture, records, and other assets of the Consultant /Client with fabric/plastic sheets during the course of work.

25. **GENERAL**

25.1 In case of any damage to the existing structure, the contractor should make good the same at his cost to the satisfaction of the Project Manager.

25.2 Consultant /Client will have the liberty to modify the design to a reasonable limit. No extra charges will be paid for execution after such modification

25.3 The quantities indicated in the bill of quantities are approximate and the quantities may vary as per the site conditions / requirements. However, for any additional quantity / extra items approval is to be taken from the Consultant /Client before execution of the work. The rate quoted should be firm for the total quantities of work executed to complete the work.

26. **PAYMENTS :**

26.1 No advance payment will be made.

26.2 The bills are to be raised in the name of Client "Specified Undertaking of the Unit Trust Of India".

26.3 The Contractor has to submit the bill strictly as per the nomenclature mentioned in the bill of quantities in the tender document alongwith detailed rate analysis of extra / deviated items, if any, executed after due approval of Consultant/Client, failing which the bill will be returned.

26.4 The running bills may be submitted, for the completed items of work and for the partly completed items based on the percentage of the work executed. The payment will be released on proper submission of the bill together with the measurements of the work carried out. The Security Deposit, other statutory deductions and any other amounts as may be deductible / recoverable as per the terms and conditions of contract will be deducted from the running bills. The minimum Bill value should be at 20 % of the work order value.

26.5 The final bill will be settled by Client on satisfactory completion of the entire work and on completion of all the terms and conditions / obligations spelt out and on proper submission of the bill together with the measurements.

Contractor's Signature

Seal

Client ID	02
Tender No.	1643
Page No.	17/126

26.6 The payment towards the settlement of running bills will be treated as the advance till the settlement of final bill.

26.7 10% of the value from each running bill will be deducted as Security Deposit. Out of total Security Deposit deducted 50% will be released at the time of settlement of final bill. Balance 50% will be released after satisfactory completion of Defect Liability Period/ extended Defect Liability Period.

26.8 The contractor should submit the No Claim Certificate and joint measurements along with the Final Bill.

26.9 The contractor should approach the concerned officials of UTIITSL one month before the completion of the 'Defect liability Period' and attend to any rectifications / replacements and obtain certificate from concerned official of UTIITSL for release of Security Deposit.

26.10 Income Tax or any other Statutory deductions as per the prevailing rules at the time of execution will be deducted from the payable amount for which certificate will be issued in favour of the contractor.

26.11 Taxes under GST Law shall be applicable to this contract. The contractor shall strictly comply with the provision of GST Law. All the duties / taxes with respect to the work should be borne and paid by the contractor. Consultant/Client shall not be responsible for any payment/ penalty on this account at any stage. GST will be reimbursed to the contractor on demand supported by verifiable proof of payment. No request for reimbursement will be accepted after submission of final bill.

26.12 No interest is payable to the contractor on any amount due to him on any account.

26.13 The contractor shall be paid on the basis of the actual quantity of completed work as per the provisions of the contract and as per the specifications.

27. DEVIATION, VARIATION, EXTRA / DEVIATED ITEMS AND PRICING :

27.1 The rates of altered, additional or substituted works shall be determined in accordance with the following:

Client ID	02
Tender No.	1643
Page No.	18/126

- 27.2. The net rates or prices in the original tender shall determine the valuation of the extra work where such extra work is of similar character and executed under similar conditions as the work priced therein.
- 27.3 If the rate for any altered, additional, or substituted item of work is not specified in the schedule of quantities, the rate for that item shall be derived from the rate for the nearest similar item specified therein.
- 27.4 If the rate for altered, additional or substituted item of work cannot be determined in the manner specified above, then such items of work shall be priced on the basis of rates for labour and materials as per the market rate prevailing at the time of execution.
- 27.5 While fixing rates of extra items 15% (Fifteen percent only) shall be allowed on the cost of material and labour to cover all supervision, overheads, statutory Taxes and Levies and profits except GST.
- 27.6 Before execution of any extra items, the Project Manager should get the written approval of the Consultant/Client. The Contractor should submit to the concerned Project Manager the necessary particulars along with his analysis and the rate he proposes to claim, for approval from Consultant/Client before execution of the said work. **No claims of extra items/ additional work will be settled without the written approval of the Consultant/Client**
- 27.7 The Contractor shall note that Extra/Deviated items claim and/or any other claim whatsoever if submitted after submission of his Final Bill, will not be entertained and considered. The Contractor shall not be allowed to make any Additions/ Alterations/ Revisions / Changes/ Modifications/ Variations in the final bill, after the final bill is submitted by him.
- 27.8 The Tax invoice and the abstract of the bill should be submitted strictly as per the approved format of the Consultant/Client.
- 27.9 The bill should be attached with all measurement sheets, sketches as applicable.
28. **Escalation :**
- 28.1 No escalation shall be paid on the accepted tender rates.

Client ID	02
Tender No.	1643
Page No.	19/126

28.2 No claim on account of fluctuation of rates of material and labour during the course of work will be entertained (from the date of acceptance of the Tender till completion of the work).

29. **Defect Liability Period :**

29.1 Defect Liability Period is **12 months** from the date of virtual completion of the work.

29.2 During the course of Defect Liability Period the tenderer has to rectify all the defects noticed free of charge.

29.3 In case the contractor fails to attend the rectification work within 7 days of reporting the same in writing, Consultant/Client will have the liberty to carry out the said work through any other means at the cost & risk of the contractor. Such expenditure shall be recovered from the Security Deposit or any other amount due to the Contractor in this or any other contract. The Defects Liability Period shall be extended for as long as defects remain to be corrected.

29.4 While carrying out the rectification work, contractor should ensure that the surroundings should be protected against any possible damage. In case of any damage, the same should be made good by the contractor at his cost.

30. **STATUTORY OBLIGATIONS TO BE FOLLOWED:**

30.1 The contractor should ensure adherence of all statutory requirements under the State and Central Rules in force and other local bodies for smooth and timely completion. All such costs are deemed to be included in the quoted rates.

30.2 The contractor shall comply with the provisions of all the rules and regulation in respect of labour engaged at site such as Contract Labour {Regulation & Abolition} Act, 1970, Minimum Wages Act, Apprentice Act and all other labour laws as may be enforced from time to time by the Government Authorities for execution of work, procurement of material for completion of the entire project and shall indemnify the Employer against any penalties/claims arising from any default on their part. Employer shall not be held responsible for any penalty on failure of any of the labour regulations or on failure of any compliance of any rule in force

30.3 Taxes under GST Law shall be applicable to this contract. The contractor shall strictly comply with the provision of GST Law. All the duties / taxes with respect to the work

Contractor's Signature

Seal

Client ID	02
Tender No.	1643
Page No.	20/126

should be borne and paid by the contractor. Employer shall not be responsible for any payment/ penalty on this account at any stage.

- 30.4 If the goods are manufactured at the contractor office / site, the contractor has to pay GST under GSTN Laws.
- 30.5 The contractor should submit a statement confirming that all duties / taxes of every nature covered under the contract have been paid and the contractor shall indemnify the Consultant/Client against all claims in that behalf.
- 30.6 The contractor should ensure adherence of all the requirements under the State and Central Rules in force.
- 30.7 The contractor should submit an affidavit / Declaration on payment of Taxes / duties under GST Laws as per the format given on page no. 115.
- 30.8 The Contractor has to submit Insurance policy from IRDA approved Insurance company, against fire for value of the final bill which is valid till Defect Liability Period(DLP).
- 30.9 The contractors are required to take **Contractor's All risk Insurance Policy(CAR Policy) and Workmen Compensation Policy** with respect to the work and the workmen within 7 days from the receipt of work order from IRDA approved Insurance Company in the **joint name of the Client and the Contractor** till the completion of work and handing over of the premises. The value of the work to be insured would be 125% of the contract value for CAR Policy.
- 30.10 The CAR policy should have additional coverage under 3rd party liabilities. The liabilities should be minimum One lakh rupees per accident or 10% of the work order value whichever is higher. The Original of the premium receipt and the policies should be submitted to Consultant/Client. The contractor shall fully indemnify the Consultant/Client against all claims which may be made against the Consultant/Client by any member of the public or other third party in respect of anything which may arise in respect of the works or in consequence thereof. The contractor shall also fully indemnify the Consultant/Client against all claims which may be made upon the Consultant/Client, whether under the WORKMENS' COMPENSATION ACT or any STATUTE in force during the currency of this contract or at common law in respect of any employee of the contractor or any sub-contractor.

Client ID	02
Tender No.	1643
Page No.	21/126

The contractor shall be responsible for anything which may be excluded from the insurance policies above referred to.

- 30.11 The contractor shall also fully indemnify the Consultant/Client in respect of any costs, charges or expenses arising out of any claim or proceedings at law and also in respect of any compensation of damages arising there from.
- 30.12 The Consultant/Client shall be at liberty and is hereby empowered to deduct fully the amount of any damages, compensation costs, charges and expenses arising or accruing any such claim or damage from any sum or sums due or to become due to the contractor.
- 30.13 The contractor shall take Fire Policy and/or such other risk(s) for the completion cost of work to cover the defect liability period from an IRDA insurance company and submit along with final bill.
- 30.14 Consultant/Client will have the right to protect its interest either by taking insurance directly or by any action that it may deem fit on account of the contractor and recover the same from the contractor in case the contractor fails to do so.

31. **LIQUIDATED DAMAGES**

- 31.1 Breach of any of the conditions set forth in the contract would levy on the contractor a penalty of 2% of the total contract value per week subject to the maximum of 10% of the contract value, whichever is higher.
- 31.2 The Contractor shall pay liquidated damages to the Consultant/Client for each day that the actual Completion Date is later than the specified Completion Date. The Consultant/Client may deduct liquidated damages from payments due to the Contractor in this contract or from any other contract. Payment of liquidated damages shall not alter the Contractor's liabilities.
- 31.3 If the Intended Completion Date is extended after liquidated damages have been paid, the Project Manager shall correct any overpayment of liquidated damages by the Contractor by adjusting the next payment certificate.

Client ID	02
Tender No.	1643
Page No.	22/126

32. **TERMINATION, DETERMINATION**

- 32.1 If the contractor commits default in commencing the work, as required by the work order and found that the date stipulated cannot be adhered to, Consultant/Client shall be entitled without prejudice to any other rights or remedies available to terminate / rescind the contract
- 32.2 The contract shall be terminated if the Contractor is declared bankrupt or goes into liquidation
- 32.3 In case the contractor fails to show adequate progress in execution of work and Consultant/Client feels the work cannot be completed within the stipulated time, Consultant/Client will have the right to terminate the contract after intimating to the Consultant/Client by giving three notices to the contractor within a period of 10 days. The Consultant/Client has the full discretion to do so and the decision of the Consultant/Client shall be final and binding in this regard. It will be at the full discretion of the Consultant/Client to carry out the balance work through any agency at any rate as per the specifications. The additional amount that may be spent for completion of the balance work will be recovered from any amount due to the Contractor on account of this contract or any other contract. In case of termination of the contract, the payment if any, due to the contractor will be released only on completion of the entire project and finalization of accounts and liabilities.
- 32.4 If at any time after the acceptance of the tender, the Consultant/Client shall for any reasons whatsoever not require the whole or any part of the works to be carried out, the Project Manager after approval of Consultant/Client shall give notice in writing to the Contractor who shall have no claim to any payment of compensation or otherwise whatsoever on account of any profit or advantage which he might have derived from the Execution of the whole of the works.
- 32.5 The Contractor shall be paid at contract rates for the full amount of work executed and All surplus materials collected for incorporation in the work, which the Contractor has procured will be taken back by the contractor.
- 32.6 If the Contract is terminated, the Contractor shall stop work immediately, make the Site safe and secure, and leave the Site immediately. The Contractor & Project Manager shall immediately thereafter arrange for a meeting for the purpose of taking record of the Works executed and materials, goods, equipment and temporary works on Site

Client ID	02
Tender No.	1643
Page No.	23/126

33. **CONTRACTOR'S OTHER RESPONSIBILITIES**

- 33.1 The contractor should co-ordinate with all the other agencies for smooth and timely execution of the project.
- 33.2 The contractor should set out the layout at site before commencement of work and obtain approval of the same from Project Manager who in turn will take the Consultant/Client approval.
- 33.3 The contractor should make arrangement for extension of temporary electrical work to provide sufficient light and power as required for the work at his cost.
- 33.4 The contractor should clear the site within 7 days of completion of work of all surplus material.
- 33.5 The contractor should take adequate precaution against fire hazard at site. The contractor should ensure that all fire safety measures are taken during execution and that the work carried out is as per the fire safety norms of the local Fire office.
- 33.6 The contractor should arrange scaffoldings / ladders for proper execution of work, also to ensure safety of the workers as per the relevant provisions of the law.
- 33.7 The contractor should prepare mock-up of the items for the approval of the Project Manager / Employer and shall modify the mock-up till it meets with the approval of the Project Manager/ Employer. The expenditure that may be incurred for making the mock-up samples should be included in the respective items of work in BOQ.
- 33.8 In case of any change in the constitution of the firm during the contract period, this shall be intimated to Project Manager/ Consultant/Client without delay.
- 33.9 The contractor should submit shop drawings for the relevant items for the approval of Project Manager / Consultant/Client before execution of work.
- 33.10 The contractor has to ensure safety of the premises and the work till handing over of the same to user.

Client ID	02
Tender No.	1643
Page No.	24/126

33.11 The contractor should submit the As-built drawings of the entire work together with the Final bill. The contractor should also take photographs & video of the entire completed work and submit 2 CDs along with the final bill.

34. RESOLUTION OF DISPUTES

34.1 Except where otherwise specifically stated, the Consultant/Client will settle the contractual matters amicably between the Consultant/Client and the Contractor.

34.2 Should the Contractor be not satisfied by the decision or interpretation conveyed by the Project Manager, he may then submit his appeal with full facts for review to the MD & CEO, UTIITSL. The MD & CEO may review the appeal himself or appoint a committee to review the appeal. After the review the MD & CEO will convey his decision to the contractor and such decision will be final and binding on the contractor and without further appeal.

34.3 No such appeal for review which is submitted after the submission of final bill by the contractor is tenable and will not be entertained.

The tenderer cannot move directly to the court unless until the dispute not been sorted out by the Consultant/Client and Contractor/tenderer.

Contractor's Signature

Seal

Client ID	02
Tender No.	1643
Page No.	25/126

UTI Infrastructure Technology And Services Ltd.

APPENDIX TO CONDITIONS OF CONTRACT		
1.	Time of Completion	45 days as per schedule in Work Order.
2.	Date of Commencement of work	Within 7 days from the Date of the Work Order
3.	Liquidated damages	2% of the total contract value per week subject to the maximum of 10 % of the contract value
4.	Validity of the offer	60 days from the date of opening the tender.
5.	Bank Guarantee	<p>For successful bidder who has submitted the MSME/ NSIC Certificate, a Bank guarantee of 2% of the estimated value have to be submitted within 7 days from the date of work order.</p> <p>For Successful bidder, also have to submit the performance Bank Guarantee of 5% of the estimated value for the period of One year within 7 days from the date of the work order.</p>
6.	Security Deposit	10% of total value of work done, out of which 50% will be released at the time of settlement of final bill. Balance 50% will be released after satisfactory completion of Defect Liability Period/ extended Defect Liability Period.
7.	Taxes under GST Law	<p>The rate quoted should be inclusive of the cost of materials, labour, transportation but excluding GST. The contractor should submit the invoice showing taxes under GST Law separately on the invoice. The amount of GST shown on the invoice will be released only after GST credit is received by Client in Electronic Ledger maintained on the GSTN Portal.</p> <p>The contractor who wishes to quote for the tender should have GST registration and should mention the registration number.</p>
8.	Insurance policy To be submitted within 5 days of the date of work order	<ol style="list-style-type: none"> 1. CAR policy with value of 125% of the contract value in the joint name of the Client and the Contractor. 2. Third Party Insurance – The liabilities should be minimum One lakh rupees per accident or 10% of the work order value whichever is higher. Workmen Compensation Policy 3. Insurance policy against fire and/or such other risk(s) of completion cost along with final bill

Contractor's Signature

Seal

Client ID	02
Tender No.	1643
Page No.	26/126

		from IRDA approved insurance company.
9.	Defects Liability Period	Twelve months (12 months) from the date of virtual completion of work. The Defects Liability Period shall be extended for as long as defects remain to be corrected.
10.	Terms of Payment	<ol style="list-style-type: none"> 1. No advance payment will be made 2. Minimum value of Running bill should be not less than 20% of the Work Order value. 3. Final Bill settlement within 45 days from the date of proper submission of bill
11.	Deductions	<p>Tax will be deducted at source as per Income Tax Rules and as per Income Tax directives.</p> <p>Cess applicable as per the local rules</p> <p>Any other Statutory Deductions if applicable will be deducted as per law.</p>
12.	Extra / Additional work	15% of the cost of material and labour towards overheads and profit

I / We hereby agree and accept the above terms and conditions.

(Seal)
For (Name and address of the Contractor)

Signature of the Tenderer
For (Name of the Contractor and Designation)

Contractor's Signature

Seal

Client ID	02
Tender No.	1643
Page No.	27/126

Annexure-I

(On Rs.100/- non-judicial stamp paper by the successful bidder)

From: **Contractor**

To : UTI Infrastructure Technology And Services Limited,
Plot No.3, Sector 11, CBD Belapur, Navi Mumbai – 400614

Dear Sirs,

SUBJECT: Indemnity for payment of Taxes, duties etc.

We _____ refer to the tender no. _____ dated _____ for _____ (herein referred as 'Contract') and hereby confirm that we have complied with all formalities relevant to the performance of our Contract for the supply of goods and services under all the Central, State and Local statutes governing the same.

We further confirm that, we undertake to pay GST under GST law, or such other applicable taxes in respect of the goods and services supplied / to be supplied under this Contract.

We further undertake that, if any taxes and duties in respect of goods and services supplied to you by us is payable, the responsibility of paying the same shall be on _____.

We hereby agree to indemnify and keep you indemnified against any claim or demand and all loss/es, cost/s, charge/s and expense/es incurred or suffered by you as a result of any claim being made by any person in respect of our obligations under the said Tender for payment of taxes, duties or otherwise.

Yours truly,

Signature

M/s _____

Seal,

Date :

Place :

Contractor's Signature

Seal

Client ID	02
Tender No.	1643
Page No.	28/126

AGREEMENT FOR FURNISHING, CIVIL AND PLUMBING WORKS
(On Rs.600/- non-judicial stamp paper by the successful bidder)

THIS AGREEMENT is made at Mumbai this ____ day of _____, 2019 by and between

UTI Infrastructure Technology And Services Limited, a Government Company U/S 2(45) of the Companies Act, 2013 having CIN No. U65991MH1993GOI072051 and PAN AAACU4411C registered under Companies Act, 1956 having its Registered Office at Plot No. 3, Sector 11, CBD Belapur, Navi Mumbai – 400614 (hereinafter called the ‘Consultant’ which term unless repugnant to the context and meaning thereof, shall mean and include its successors and permitted assigns) of the FIRST part acting through its authorized representative -----
-----designated as ----- in UTI ITSL

and

M/s. _____, having his/its office/registered office at _____ (hereinafter called ‘Contractor’ which term shall, unless repugnant to the context and meaning thereof , would be deemed to mean and include its successors and permitted assigns) of the SECOND part) represented by -----having PAN Card No---
-----.

WHEREAS

Consultant on Behalf the client, Specified Undertaking of Unit Trust of India (hereinafter referred to as SUUTI) has floated a tender no. _____ dated ____ for Structural Repairing , external plaster work, Plumbing work and external painting work at the Resident Premises of Specified Undertaking of the Unit Trust Of India , Building No. 16, Bandra Reclamation, Mumbai (hereinafter called ‘the works’) as per the drawings/specifications, the Schedule of quantities, which have been seen and understood by the contractor as per the terms and conditions set forth in the tender.

On -----, the quotation of M/s. ----- was accepted and work order dated----- has been awarded for Structural Repairing , External Plaster work , Plumbing and External painting works at the Residents Premises of _____.

AND WHEREAS the contractor has agreed to execute upon and subject to the conditions and instructions set forth herein and tender document (hereinafter referred to as the ‘the said conditions’) the works shown upon the said drawings and/or described in the said specifications and included in the said Abstract Schedule of Quantities at the item rates set forth in the tender document and amounting to the contract sum of **Rs. _____ only)** hereinafter referred to as ‘the said contract / tender amount’.

Contractor’s Signature

Seal

Client ID	02
Tender No.	1643
Page No.	29/126

NOW IT IS HEREBY AGREED AS FOLLOWS:

1. In consideration of the said Contract amount to be paid at the times and in the manner set forth in the said conditions, the Contractor shall upon and subject to the said conditions execute and complete the works shown upon the said drawings or described in the Specifications and/or the priced schedule of quantities within the time period stipulated in the tender.
2. The Client (SUUTI) shall pay the Contractor the said contract amount or such other sum as shall become payable at the times and in the manner hereinafter specified in the said conditions.
3. The said conditions and appendices along with the tender document and work order thereto shall be read and construed as forming part of this Agreement, and the parties hereto shall respectively abide by and submit themselves to the conditions and perform the agreement on their part respectively in such conditions contained. In case of any ambiguity between the provisions, the agreement will supersede the provisions of the other two.
4. This Contract comprises:
 - i) Articles of Agreement.
 - ii) Indemnity regarding payment of statutory deductions
 - iii) Tender documents serial pages _____ to _____ dated _____.
 - iv) All correspondences / letters, electronic communications from the date of issue of tender till the award of work.
 - v) Work order no. _____ dated _____
 - vi) Specifications and Drawings

I: **Term :**

The contractor shall complete the work within the time period stipulated in the work order no. _____ dated _____.

II: **Scope of Work**

The Contractor shall provide services ('Services') to the Consultant/Client as specified in the work order and tender document.

Contractor's Signature

Seal

Client ID	02
Tender No.	1643
Page No.	30/126

III. Covenants By Contractor

- a) Contractor shall perform its duties and obligations with highest standards of integrity and fairness and shall act in an ethical manner in all its dealings with Consultant/Client, their associates, vendors and all concerned, and it will not take up any activities which are likely to be in conflict with its own interests and the interests of the Employer.
- b) Contractor shall carry out its duties, responsibilities and services covered within the ambit and scope of this Agreement / work order and complete all the formalities within the specified time limits as per the Consultant/Client's guidelines, rules, regulations and operative instructions stipulated or informed from time to time.
- c) Contractor shall provide all such records for inspection at all times during business hours on business days to the employees and auditors of the Consultant/Client for the purpose of verification and carrying out audit.
- d) Contractor shall take all the required measures / steps to prevent loss of records and data concerning the arrangement contemplated pursuant to this agreement.
- e) The contractor shall at all times conduct itself within the parameters of law in the event of any offence being committed by its employees, the Consultant/Client shall not be directly or vicariously liable.
- f) The contractor shall at all times maintain all such security precautions, checks, balances and controls as may be necessary for or in connection with the discharges of its respective duties and obligations under this agreement.

IV. Payments :

- a. No advance payment will be done.
- b. The bills are to be raised in the name of the Client "Specified Undertaking of the Unit Trust Of India, Mumbai".
- c. The Contractor has to submit the bill strictly as per the nomenclature mentioned in the bill of quantities in the tender document alongwith detailed rate analysis of extra / deviated items, if any, executed after due approval of Consultant/Client, failing which the bill will be returned.
- d. The running bills may be submitted, for the completed items of work and for the partly completed items based on the percentage of the work executed. The payment will be released on proper submission of the bill together with the measurements of the work carried out. The Security Deposit, other statutory deductions and any

Client ID	02
Tender No.	1643
Page No.	31/126

other amounts as may be deductible / recoverable as per the terms and conditions of contract will be deducted from the running bills.

- e. The final bill will be settled by Client on satisfactory completion of the entire work and on completion of all the terms and conditions / obligations spelt out and on proper submission of the bill together with the measurements.
- f. The payment towards the settlement of running bills will be treated as the advance till the settlement of final bill.
- g. 10% of the value from each running bill will be deducted as Security Deposit. Out of total Security Deposit deducted 50% will be released at the time of settlement of final bill. Balance 50% will be released after satisfactory completion of Defect Liability Period/ extended Defect Liability Period.
- h. **The contractor should submit the No Claim Certificate and joint measurements along with the Final Bill.**
- i. The contractor should approach the concerned Consultant (UTIITSL) officials one month before the completion of the 'Defect liability Period' and attend to any rectifications / replacements and obtain certificate from concerned official for release of Security Deposit.
- j. Income Tax or any other Statutory deductions as per the prevailing rules at the time of execution will be deducted from the payable amount for which tax deduction certificate will be issued in favour of the contractor.
- k. Taxes under GST Law shall be applicable to this contract. The contractor shall strictly comply with the provision of GST Law. All the duties / taxes with respect to the work should be borne and paid by the contractor. Consultant/Client shall not be responsible for any payment/ penalty on this account at any stage. GST will be reimbursed to the contractor on demand supported by verifiable proof of payment. No request for reimbursement will be accepted after submission of final bill.
- l. No interest is payable to the contractor on any amount due to him on any account.
- m. The contractor shall be paid on the basis of the actual quantity of completed work as per the provisions of the contract and as per the specifications.

Client ID	02
Tender No.	1643
Page No.	32/126

V. **Rules & Regulations:**

The contractor shall comply with the provisions of all the rules and regulation in respect of labour engaged at site such as Contract Labour {Regulation & Abolition} Act, 1970, Minimum Wages Act, Apprentice Act, Industrial Disputes Act, and all other labour laws as may be enforced from time to time by the Government Authorities for execution of work, procurement of material for completion of the entire project and shall indemnify the Consultant/Client against any penalties/claims arising from any default on their part. Consultant/Client shall not be held responsible for any penalty on failure of any of the labour regulations or on failure of any compliance of any rule in force

VI. **Liability :**

The Contractor shall be responsible for providing the services as mentioned in Work Order/ Tender Document or for providing any other services as may be agreed by the parties from time to time in writing, which shall form integral part of this agreement. The Contractor shall carryout the services and execute the works with utmost efficiency, with required due diligence, due care and caution.

VII. **Limitation Of Liability:**

Notwithstanding anything contained herein, Consultant/Client shall not be liable to the for any indirect, exemplary, special, consequential or incidental loss, damage, claims, liabilities, charges, costs, expense or injury (including, without limitation, loss of use, data, revenue, profits, business and for any claims of the contractor) that may arise out of or result from this Agreement.

VIII. Bank Guarantee:

The Contractor has to submit Bank Guarantee of 5 % of the Estimated value for the period of One Year within 7 days from the date of the work order.

For successful bidder who has submitted the MSME/ NSIC Certificate, a Bank guarantee of 2% of the estimated value have to be submitted within 7 days from the date of work order

IX. **Indemnity**

- a) The Contractor shall indemnify, defend and hold harmless Consultant/Client from and against any and all losses, which may be occurred or suffered by it in connection with the services provided and which may arise out of or result from any breach of

Contractor's Signature

Seal

Client ID	02
Tender No.	1643
Page No.	33/126

any Warranty, willful default or omission or any obligation or covenant by Contractor contained in this agreement.

- b) Contractor shall indemnify and undertakes to fully compensate Consultant/Client in case of any prejudice, claim or any loss arising or accruing to Consultant/Client on account of any act, commission or omission attributable to the improper handling or to the negligence or delay on the part of the Contractor or of any person of Contractor, which has resulted whether on account of breach of any of the conditions / clauses of this AGREEMENT by Contractor and/or its employees; or on account of any disclosure of the confidential information or otherwise howsoever.
- c) The Contractor shall fully indemnify the Consultant/Client against all claims which may be made against the Consultant/Client, its officers, directors and employees and hold harmless from any member of the public or other third party in respect of anything which may arise in respect of the works or in consequence thereof. The contractor shall also fully indemnify the Consultant/Client against all claims which may be made upon the Consultant/Client, whether under the WORKMEN COMPENSATION ACT or any STATUTE in force during the currency of this contract or at common law in respect of any employee of the contractor or any sub-contractor.
- d) The contractor shall also fully indemnify the Consultant/Client in respect of any costs, charges or expenses arising out of any claim or proceedings at law and also in respect of any award of compensation of damages arising there from.

X. Time is the essence of the contract:

If the work is not started satisfactorily by the contractor or if it is felt by the Consultant/Client that the pace of work is slow and is likely to affect or delay the work/ service / supply, Consultant/Client reserves the right to terminate the contract, levy penalty and also reserves the right apart from legal remedies available, to carry out such work / service / supply from other contractor at the risk and cost of the contractor. Consultant/Client reserves the right to levy penalty 2% of the total contract value per week subject to the maximum of 10 % of the contract value, as mentioned in the Appendix to Conditions of Contract, at its discretion for the delay in execution of the work/ delay in supply/ delay in service.

XI. Relationship between the Parties:

The parties hereto agree that the parties have entered into this Agreement on Principal to Contractor basis and nothing contained in this agreement shall be construed or deemed to

Contractor's Signature

Seal

Client ID	02
Tender No.	1643
Page No.	34/126

create any association, partnership or joint venture or employer-employee relationship or principal-agent relationship in any manner whatsoever between the Parties. The Contractor acknowledges that its rendering of Services is solely within its own control, subject to the terms and conditions agreed upon in this Agreement and agrees not to hold itself out to be an employee, Agent or servant of the Consultant (UTIITSL) or any subsidiary or affiliate thereof.

XII. Termination:

- a. If the contractor commits default in commencing the work, as required by the work order and found that the date stipulated cannot be adhered to, Consultant/Client shall be entitled without prejudice to any other rights or remedies available to terminate / rescind the contract.
- b. The contract shall be terminated if the Contractor is declared bankrupt or goes into liquidation.
- c. In case the contractor fails to show adequate progress in execution of work and Consultant/Client feels the work cannot be completed within the stipulated time, the Consultant/Client will have the right to terminate the contract by giving three notices to the contractor within a period of 10 days to the contractor, at Consultant/Client's full discretion and the decision of the Consultant/Client shall be final and binding. It will be the full discretion of Consultant/Client to carry out the balance work through any agency/other contractor at any rate as per the specification. The additional amount that may be spent for completion of the balance work will be recovered from any amount due to the contractor on account of this contract or any other contract. In case of termination of the contract, the payment if any, due to the contractor will be released only on completion of the entire project and finalization of accounts and liabilities.
- d. If at any time after the acceptance of the tender/work order, the Consultant/Client shall for any reasons whatsoever not require the whole or any part of the works to be carried out, the Project Manager of the Consultant shall give notice in writing to the Contractor who shall have no claim to any payment of compensation or otherwise whatsoever on account of any profit or advantage which he might have derived from the Execution of the whole of the works.
- e. The Contractor shall be paid at contract rates for the full amount of work executed and all surplus materials collected for incorporation in the work, which the Contractor has procured shall be taken back by the contractor.
- f. If the Contract is terminated, the Contractor shall stop work immediately, make the Site safe and secure, and leave the Site as soon as reasonably possible. The Project Manager of the Consultant shall immediately thereafter arrange for a meeting for

Client ID	02
Tender No.	1643
Page No.	35/126

the purpose of taking record of the Works executed and materials, goods, equipment and temporary works on Site.

- g. Upon the termination of this Agreement in accordance with the terms hereof, no party will have any further rights or obligations under this Agreement including any claim for compensation for such termination. Nothing contained herein will, however, relieve any party with respect to the provisions relating to confidentiality, or of liability for any breach of any provisions of this agreement including misrepresentation or breach of any Warranty which occur prior to the termination of this Agreement.
- h. The clauses pertaining to covenants, notices, governing law and jurisdiction, resolutions of dispute, miscellaneous provisions and other provisions which by nature are intended to survive shall survive till six months beyond the expiry of the agreement for all transactions handled prior to and during the notice period. All materials in whatever form of the respective parties shall be returned to the other party without any payments and in good order and condition.

XIII. **Liquidated damages :**

- a) Breach of any of the conditions set forth in the contract would levy on the contractor a penalty of 2% of the total contract value per week subject to the maximum of 10% of the contract value, whichever is higher.
- b) The Contractor shall pay liquidated damages to the Consultant/Client for each day that the actual Completion Date is later than the specified Completion Date. The Consultant/Client may deduct liquidated damages from payments due to the Contractor in this contract or from any other contract.
- c) Payment of liquidated damages shall not alter the Contractor's liabilities. If the Intended Completion Date is extended after liquidated damages have been paid, the Project Manager shall correct any overpayment of liquidated damages by the Contractor by adjusting the next payment certificate

XIV. **Sub- Contracting :**

Subcontracting or subletting of the work is strictly prohibited. However wherever the contract specifies certain works to be carried out by specialized agencies, the Contractor may subcontract with the prior approval of the Project Manager, but may not assign the whole Contract. Subcontracting shall not alter the Contractor's obligations.

Client ID	02
Tender No.	1643
Page No.	36/126

XV. **Variation Of Terms**

The parties, by mutual consent, may vary the terms and conditions contained in this agreement for the effective implementation of the provisions of this Agreement by exchange of letters or by execution of deed / documents, as may be required. The variation in the terms and conditions shall form an integral part of this Agreement.

XVI. **Force Majeure**

Neither party shall be liable for any failure or delay in performance resulting directly from causes beyond its reasonable control due to act of God, war declared, negligence by customer, civil or political disturbance, lock-outs, shortage of labour, drought, floods, fire, theft, accidents and any other exceptional or related circumstances. Where such exceptional circumstances continue unabated for more than 30 days, the Parties shall meet in good faith to discuss the course of action to be taken to address the exceptional circumstances.

Due care and diligence shall be taken by the contractor in order to avoid all such circumstantial damage in case of occurrence of abovementioned events and reasonable measures are to be taken to minimize the consequences of the same.

In furtherance to the above, any prior knowledge acquired by the contractor in regard to happening/ occurrence of the above events shall immediately be communicated to Consultant/Client in order to take all corrective and remedial measures to minimize the consequences of the same.

XVII. **Resolution of Disputes**

- a. Except where otherwise specifically stated, the Client (SUUTI)/ will settle the contractual matters amicably between the Client(SUUTI)and the Contractor.
- b. Should the Contractor be not satisfied by the decision or interpretation conveyed by the Project Manager, he may then submit his appeal with full facts for review to the MD & CEO, UTIITSL. The MD & CEO may review the appeal himself or appoint a committee to review the appeal. After the review the MD & CEO will convey his decision to the contractor and such decision will be final and binding on the contractor and without further appeal
- c. No such appeal for review which is submitted after the submission of final bill by the contractor is tenable and will not be entertained.

Contractor's Signature

Seal

Client ID	02
Tender No.	1643
Page No.	37/126

XVIII. **Jurisdiction** :

The provisions of this Agreement shall be governed by and construed in accordance with Indian law. The Courts in Mumbai, India shall have exclusive jurisdiction in relation to this Agreement.

XIX. **Notices**:

Any notice or other communication provided for in this agreement shall be in writing and shall be transmitted or sent by recognized courier service, or by facsimile transmission, confirmation copies to be sent by mail, to the Parties at their address as specified herein below:

UTIITSL

Contractor

The Senior Vice President,
UTI Infrastructure Technology And Services Ltd.
UTI Tower, Gn Block,
Bandra Kurla Complex,
Bandra (East), Mumbai-400 051

Either Party may, from time to time, change its address or representative for receipt of notices or other communications provided for in this agreement by giving to the other Party not less than 15 (fifteen) days prior written notice.

XX. **Waiver**:

No failure by a Party to take any action with respect to a breach of this Agreement or a default by any other Party shall constitute a waiver of the former Party's right to enforce any provision of this Agreement or to take action with respect to such breach or default or any subsequent breach or default. Waiver by any Party of any breach or failure to comply with any provision of this Agreement by a Party shall not be construed as, or constitute, a continuing waiver of such provision, or a waiver of any other breach of or failure to comply with any other provision of this Agreement, unless any such waiver has been consented to by the other Party in writing.

Contractor's Signature

Seal

Client ID	02
Tender No.	1643
Page No.	38/126

XXI. Severability:

If any Clause or part thereof, of this Agreement or any agreement or document appended hereto or a part hereof is rendered invalid, ruled illegal by any court of competent jurisdiction, or is unenforceable under present or future Laws effective during the term of this Agreement, then it is the intention of the Parties that the remainder of the Agreement, or any agreement or document appended hereto or made a part hereof, shall not be affected thereby unless the deletion of such provision shall cause this Agreement to become materially adverse to any Party in which case the Parties shall negotiate in good faith such changes to the Agreement, or enter into suitable amendatory or supplementary agreements, as will best preserve for the Parties benefits and obligations under such provision

XXII. Amendment

This Agreement may not be amended or modified except by an instrument in writing signed by the parties hereto.

XXIII. Language:

All notices required to be given under this Agreement and all communications, documentation and proceedings which are in any way relevant to this Agreement shall be in writing and in English language.

XXIV. VIRTUAL COMPLETION OF WORK;

The work will be considered as virtually completed only when the Contractor completes the entire work in accordance with the drawings and specifications and after joint inspection of work by the Project Manager and Contractor. The Project Manager after satisfying himself shall thereupon approve the virtual completion date and handover the completed site to the Consultant /Client

XXV. Counterparts:

This Agreement may be executed in more than one counterparts, each of which when so executed and delivered, shall be an original, but all the counterparts shall together constitute one and the same instrument.

Contractor's Signature

Seal

Client ID	02
Tender No.	1643
Page No.	39/126

IN WITNESS WHEREOF THE official seals of the Consultant/Client and the Contractor have been affixed and both parties have signed this Agreement on the dates respectively mentioned against their signatures in the presence of the witnesses.

**UTI Infrastructure
Technology And
Services Limited**

Signature and Seal : _____
Name _____
Designation _____
Date _____

Signature and Seal : _____
Name _____
Designation _____
Date _____

In the presence of :

Signature _____
Name _____
Address _____
Date _____

In the presence of :

Signature _____
Name _____
Address _____
Date _____

Contractor's Signature

Seal

Client ID	02
Tender No.	1643
Page No.	40/126

UTI Infrastructure Technology And Services Ltd.

Special conditions of the contract

1. Tenders if submitted by tenderers who have been disqualified, blacklisted, debarred, or who otherwise do not qualify, will not be considered and all such tenders shall be rejected.
2. The work need to be carried out strictly as per the relevant rules and regulation governing the work, wherever applicable.
3. The contractor needs to take necessary permission from the relevant authorities including the payment of security deposit on refundable basis, if required.
4. It is the responsibility of the contractor to get the confirmation certificate from the UTIITSL/Client after virtual completion of the work.
5. Necessary Permission required for execution of the work shall have to be obtained by the Contractor at the quoted rates from the Concern Local authority.
6. **The contractor should submit the No Claim Certificate and joint measurements along with the Final Bill..**
7. *The work need to be carried as per the Decision of the Consultant/client.*
8. *The contractor ensure that while carrying work at the site, he/they should do not disturb the occupants*
9. *The contractor need to work as per the Consultant/Client Time Schedule.*
10. *Testing of materials shall be done at the time of approval and as required during the progress of the work.*

Contractor's Signature

Seal

Client ID	02
Tender No.	1643
Page No.	41/126

MATERIALS, SPECIFICATIONS & WORKMANSHIP

General:

1. The measurements indicated in the drawings are approximate and may vary as per the site conditions. Consultant/Client's interpretation of the design and the specifications mentioned in the entire document shall be final and without appeal. In case of Errors or inconsistency, if any discovered in the drawing and specifications, UTITSL / Employer's interpretation shall be final and without appeal.
2. The contractor shall submit the Bar Chart along with Material Procurement Schedule before commencement of work and the progress chart during the course of work. The Bar chart and Material procurement chart is incorporated in the Tender document for guidance. The contractor shall submit his version of Bar Chart & Material procurement schedule (fitted within the overall period of completion), along with his acceptance of work order.
3. The contractor shall submit manufacturer's Test certificate for all important materials. cement, sand and if any required by the Consultant/Client.
4. For the design and other details mentioned in the entire document, Consultant/Client alone has the copyright.
5. The contractor shall take the prior approval from Consultant/Client for sub-contracting the job even if the same is to a specialised agency.
6. The whole of the work included in the contract shall be executed by the contractor and the contractor shall not directly or indirectly transfer, assign, or sublet the contract or any part, share of interest therein nor shall he take a new partner without the prior written consent of the Consultant/Client and no subletting shall relieve the Contractor from the full and entire responsibility of the contract or from the active superintendence of the work during its progress.
7. In case Consultant/Client rejects a particular work the tenderer shall remove the same within two days and no payment shall be made for such work. In case not removed, the same shall be got removed and redone at the risk and cost of the contractor.

Client ID	02
Tender No.	1643
Page No.	42/126

8. The Contractor has to take all safety measures with regard to the workmen employed as per relevant laws and good engineering practices at site and safety measures against the fire hazard.
9. The contractor has to make necessary arrangement for internal lighting at the site.
10. The contractor has to carry out the job strictly as per specification spelt out in the bill of quantities, the drawings, instructions that may be issued by the Engineer-in-charge/ Project Manager and the specification of the Bureau of Indian Standards, National Building Code.
11. In case of any discrepancies between the Schedule of Quantities, the specifications and/or the drawings, the following order of precedence shall be observed.
 - a. Description in Schedule of Quantities
 - b. Specifications in relevant Trades
 - c. Standard Specifications as per B.I.S
 - d. Drawings : detailed drawings shall be followed in preference to small scale drawings and figured dimensions in preference to scale.
12. The electrical installation works to be carried out by engaging licensed electrical contractor. The contractor shall submit the Electrical Contractor's license at the time of execution of work. The copy of license of Electrical Supervisor and electricians also are to be submitted.
13. The contractor shall submit the single line drawing of electrical installations/ wiring of completed work along with the final bill.
14. The contractor shall submit the Test Certificate of the Electrical installations carried out by him as per requirement of local Electrical supply Authority, Indian Electricity Rules, and Indian Electricity Act.
15. The work may be required to be carried out on holidays, Sundays, night hours, for which necessary permission shall be obtained from the Consultant/Client. The contractor shall not at any time do, cause or permit any nuisance on the site/ do anything which shall cause unnecessary disturbances or inconvenience to the occupants / visitors at site or near the site of work.
16. The contractor shall depute one electrician / Plumber at site and one helper during working hours to attend to any electrical breakdown and Plumbing pipe line .

Contractor's Signature

Seal

Client ID	02
Tender No.	1643
Page No.	43/126

17. The tenderer is strictly advised to adhere to all the safety norms and precautions as stipulated in the BIS / NBC standards. The tenderer should follow all the relevant direction on safety and the directions related to safety as given in the tender. Please note that no work is to be carried out without following safety norms. Any instructions from any one against these norms are not to be followed and reported to the Consultant/Client in writing. UTI ITSL will not be responsible for any work or any consequences or any damages arising out of action taken by the contractor which is in violation of this clause.
18. The wood to be used should have similar / uniform grains and should be well seasoned, have uniform colour totally free from cracks, white portions, decay, knots etc. Anti -termite treatment shall be carried out to the wood work and the quoted rates shall include for the same.
19. All the edges of the plywood should be finished with teak wood beadings. The beading to be fixed with adhesive / screw/ nails.
20. Wood work, steel fabrication and other fitted out items should be manufactured at the factory / work place of the contractor. Such items will be transported to the site at the cost of the contractor only.
21. The contractor should not apply primer / putty work / paint or any other finishing material before inspection and certification of the wood work by the Project Manager.
22. The contractor should strictly follow the approved colour scheme. The colour scheme will be intimated to the contractor within a week from the date of issue of the work order. However Consultant/Client may make modifications as per requirements.

Contractor's Signature

Seal

Client ID	02
Tender No.	1643
Page No.	44/126

GENERAL PREAMBLES TO SCHEDULE OF QUANTITIES

These preambles apply to all the sections of the "Schedule of Quantities".

RATE TO COVER:

- 1.1 The rates quoted by the Contractor shall be held to include for providing and fixing, all conveyance and delivery, loading & unloading, carrying in, storing, hoisting, all labour, setting, fitting and fixing in position, making straight, cutting, waste, return of packing and all materials and labour and everything else necessary for the proper completion of each item of work to the approval of UTI ITSL's Engineer and for Establishment Charges, overheads and profits. The Contractor shall provide at his expense all labour, materials and things required by the UTI ITSL's Engineer for testing and measuring the work, for weighing, testing the efficiency of any portion of the work, all planking, gangways etc. necessary for affording access to every part of the work except where specifically stated otherwise.
- 1.2 The Contractor should also cover in his rates for the method of work, cost of materials, labour etc., to comply with the "Trade Specifications", "General Instructions to Contractor", "Conditions of Contract", "Special Conditions", (if any), and all documents of this contract.
- 1.3 All the materials or procedure or Specifications for work, unless otherwise stated, shall conform to the current Indian Standard whether or not specific mention is made thereof. The Contractor shall be responsible for and shall replace or make good at his own expense, any materials lost or damaged, or of quality not approved.
- 1.4 All rates quoted shall include for Supplying and fixing although the same may not have been mentioned in the item of the Schedule of Quantities. Words "Providing and Fixing" where used shall have same meaning as "Supplying and Fixing".
- 1.5 Rates quoted shall include for hoisting to any height and the work at all levels and lift of materials shall not form any criterion for any extra claims, except where otherwise specified.

ANCILLARY WORKS:

- 2.1 The Contractor shall have to carry out all ancillary and connected work within boundary of the plot of the proposed work and inside the Building if ordered to do

Contractor's Signature

Seal

Client ID	02
Tender No.	1643
Page No.	45/126

so by Consultant/Client at the rates quoted in the Schedule of Quantities, at any time during the currency of this Contract including extension of time, if any granted.

PRICE FLUCTUATION / VARIATION:

- 3.1 Rates quoted by the Contractor shall be firm throughout the currency of the Contract including extensions of time, if any granted. No price adjustment due to variation in cost of materials or labour or any variation under any State or Central Legislation or any other reason whatsoever shall be allowed.

TESTING OF MATERIALS INCLUDING CEMENT AND STEEL :

- 4.1 Testing of materials shall be done at the time of approval and as required during the progress of the work.
- 4.2 Testing of all materials including cement & steel during the progress of work shall be as instructed by Consultant/Client.
- 4.3 For all materials expense towards testing shall be borne by the contractor and his quoted rates shall include for the same and no claim on the account shall be entertained.
- 4.4 For all tests all incidental charges such as cutting, loading, unloading, transporting, casting etc shall be at contractor's cost and shall be borne by him.
- 5 "PRINCIPAL MAKE/S OR OTHER EQUAL AND APPROVED" FOR MATERIALS/PRODUCTS:
- 5.1 The Contractor shall note that materials having "ISI" monogram shall primarily be used in the work. If in the tender "Certain Principal Make/ Makes or other equal and approved of any material/Product is mentioned in any item or Trade Preambles relating to the particular items in its respective Trade Schedule, the Contractor shall have to use the Principal Make/Makes specified in the relevant item or the trade Preambles. In case the specified particular Principal make/makes of the materials product is/are not readily available, the Contractor shall take prior permission and approval of the Consultant/Client in writing before use of the alternative equivalent make of the Material / Product.
- 5.2 All principal makes specified for any item shall be treated at par as per the accepted quoted rate.

Client ID	02
Tender No.	1643
Page No.	46/126

5.3 Use of the make other than the Principal Make/Makes which shall be treated as an Equivalent make) shall be at the discretion of the Consultant/Client and such Make/Makes shall be used after the approval of the Consultant/Client.

In such cases the Contractor will not be paid any extra payment over the accepted quoted rate in any case. However if it is ascertained that the price of approved Equivalent Make or the Material/product is lower than or the Principal Make/Makes of the same material / product the difference of the price shall be payable by the contractor to Consultant/Client. Such difference of price shall be suitably decided by the Consultant/Client whose decision shall be final and binding to the Contractor in this regard.

Contractor's Signature

Seal

Client ID	02
Tender No.	1643
Page No.	47/126

LIST OF MATERIALS OF APPROVED BRAND AND/OR MANUFACTURE – FURNISHING

1.	Commercial plywood as per IS-303.	Samrat /Garnet / Kenwood / Donear / Mayur / Century /Mars / Archid Ply /Green /
2.	Marine/ water proof plywood as per BIS	Samrat / Garnet /Kenwood/ Century/ Deonear/ Mayur / Mars / archid ply / green
3.	Flush Door as per IS-303.	Kutty / Garnet / Century /Greenply/Anchor
4.	Block Board as per IS-303.	Garnet /ken wood / Donear /Mayur /century /samra/mars/ Archid Ply /Green
5.	One side Laminated sheet (1.5 mm thick)	Samrat / Decolum/ National / Green / Euro/ Merino / AICA Laminate Pvt Limited (AICA Sunmica)
6.	One side Laminated sheet (1 mm thick)	Signature /Royal /International / Euro / Merino/ AICA Laminate Pvt Ltd (AICA Sun mica
7.	pre-laminated Particle board (on both sides) particle board	NOVAPAN (India) Ltd., / Green Lam / Archid lam/ kitlam
8.	Aluminium Composite Panel (ACP)	Alstone, Superbond, Euro Bond
9.	Soft Board	Jolly Board or equivalent.
10.	Veneer	Composed veneer / Donear / Garnet
11.	Melamine Finish	Wood coat pigmented manufactured by M/s. MRF Ltd. / Asian Paints
12.	Glazing	Tata Float / Modi / Saint Gobain
13.	Glazing (Clear)	Modi / Hindustan / Tata/
14.	Mirror	Modi
15.	Tower bolt	Jyoti / Flora
16.	Ball catch ordinary	Brass Heavy Duty
17.	Vitrified Tile	H.R.Johnson, / Marbitto / Kajaria
18.	Handle	Brass lacquire quoted / brush finish
19.	Hinges for cupboards – with stainless steel rod	Heavy-duty brass 4” for the cupboard shutters.
20.	Hinges for cupboards – with stainless steel rod	Heavy duty
21.	Box Hinges	Hettich / EBCO / HAFELE
22.	Drawer Guide – Telescopic	Efficient / Earl Bihari or equivalent.
23.	Drawer Guide – Regular	Earl Bihari Pvt. Ltd. or equivalent.
24.	Keyboard – Indian	Earl Bihari Pvt. Ltd. or equivalent.

Contractor's Signature

Seal

Client ID	02
Tender No.	1643
Page No.	48/126

25.	Keyboard – Imported with HDP	BTC – first quality
26.	Screws	GKW or equivalent
27.	Lock for drawers – multi lock	Efficient
28.	Lock – for cupboards	Godrej
29.	Door Lock – Cylindrical lock	YELE / Union / Godrej
30.	Door Lock – Mortise	Godrej
31.	Night latch	Godrej / Yale
32.	Door Closure	Garnish / Hyper / Everlite
33.	Floor Spring	Everite/ Garnish/Hardwin
34.	Door stopper	Earl Bihari Pvt. Ltd. or equivalent.
35.	Aluminum Section	NALCO / HINDALCO / JINDAL
36.	Adhesive for wood	Fevicol / Vamicol/ araldite/ cibagegy
37.	Rubberised adhesive	SR 998 or SR Express of M/s. Pidilite Industries.
38.	Acrylic sheet	Imported
39.	Asbestos cement sheet	Everest
40.	False Ceiling Sections	Saint Gopin
41.	Plaster of Paris	Approved quality
42.	Marble	First quality with uniform texture without any crack.
43.	Cement	Larsen & Tubro / ACC - 53 grade or high.
44.	Cement for fixing tiles as dado	Larsen & Tubro / ACC -
45.	White cement	Travancore cement/ Birla white
46.	Steel for reinforcement	TATA/SAIL conforming
47.	Water proofing compounds	Roof/ Cica / Krishna Chemicals / Perma quick/Sika/Fosroc/Pidilite.
48.	Granamite Tiles	Bell Granito / Johnson
49.	Ceramic tiles	Kajaria/ NITCO/Johnson/Somani.
50.	Sanitary fittings	Hindustan Sanitary ware / Perry ware/Cera /Neycer
51.	Water supply fixtures	Jaguar & Co./ Essco? MARE /ark /Gem
52.	CI Pipe & fittings – LA Class	Bangal iron Corporation/SKF/ NECO / RAJCO
53.	GI Pipe – C Class	TATA/ zenrth / APOLLO/GST
54.	Stoneware pipe – Grade A	Dalmia/Hind/perfect/Burns
55.	Cement pipe	Everest
56.	PVC Pipe & fittings	Prince/ Tribore/Chemplast/Supreme/Finolex/
57.	Gate valve	Leader/Kirloskar/Zoloto
58.	Pipe fittings	R Brand /KS Brand/Zolloto

Contractor's Signature

Seal

Client ID	02
Tender No.	1643
Page No.	49/126

59.	Colour pigment	Rofee Compound
60.	Toilet Seat cover	Commander / Patel/Parryware/bestolite
61.	Toilet – Accessories	Jaguar & Co.
62.	Liquid Soap Container	ASCON Engineers
63.	Hand dryer	ASCON Engineers
64.	Paint	Nerolac/ Asian/ Berger / ICI/Snowcem
65.	Sealant	Silicon – Dow Corning 995 Polysulphide – Pedilite Industries
66.	Keyboard	Ebco
67	Decorative Laminates	Greenlam,/Marino/Sunmica/Formica/century /Durion/anchor/Decolam.
68	MDF Board	Duratuff/Nuwood/Century/Novapan/Kitply/G reenply
69	Woodpreservative	Bison/ Godrej/Kot
70	O.B.D	Asian/Berger/ Nerolac
71	HDPE/LDPE/LLDPE Water storage tank	Sintex/Polycon/
72	Wall Putty	Birla wall care/ Snowcempaint/Asian paint
73	Adhesive for tile fixing	Roff/Fosroc/Dr Fixit/Sika/Sunanda
74	Mirror	Atul/Commander/Modigaurd/Saint Gobain
75	Upvc pipes&fittings	Prince/supreme /paras
76	Footvalves, checkvalves	Kirloskar/Leader/ashoka
77	SS kitchen Sink	Nirali/jayna/Diamond/Neelkanth
78	PVC Doors & frame	Rajshri/Sintex/ Supreme
79	Sensor door Mechanism	Godrej, Ozone,Dorma

Contractor's Signature

Seal

Client ID	02
Tender No.	1643
Page No.	50/126

<u>LIST OF ELECTRICAL MATERIALS OF APPROVED BRAND</u>		
1.	Rigid PVC Conduit	: Medium Gauge wall 1.5mm thickness ISI manufactured from virgin material Precision, BEC, AKG and Polypack
1a.	Accessories for PVC conduit	: Same make as sr. no. 1 above.
2	M.S.Conduit 16 gauge	: BEC / AKG / Precision
2a.	Accessories for MS conduit	: Same make as sr. no. 2 above.
3.	Copper Conductor PVC insulated wire (Flexible) (FRLS)	: As per IS:694-1977 of Finolex / Havells / Polycab / RR Wires
4.	Modular Switches / sockets	: Anchor Roma / MK India / Crabtree
5.	Main Switch fuse upto 63 Amps - A.C. 23 duty	: L&T / Havells / HPL
6.	Above 63 Amps-A.C. 23 duty	: L&T / Siemens / Havells / HPL
7.	HRC Fuses	: L&T / English Electric / HPL
8.	MCBs	: Legrand /HPL / Havells / Schnider
9.	Distribution boards	: Legrand /HPL / Havells / Schnider
10.	Rewirable Porcelain Fuse	: CPL / KEW / Havells
11.	Telephone wires	: Delton / Finolex / Havells / Polycab
12.	PVC tape	: Steel grip.
13.	Compound	: Shalimar No. 6
14.	Main Cables Aluminium / Copper	: PVC armoured / unarmoured cable For 1.1 KV as per ISI 1554. CCI / Asian / National/Polycab
15	PVC XLPE Cable Aluminium 1.1 KV	: Havells/ Polycab / RR Kable / Gloster
16	Glands	: Double compression type, siemens type with rubber ring and double washers (Sample to be approved) Comet/ Comex
17	Cable Lugs	: Dowells, 3-D.
18	Metal Clad Plugs	: Legrand /Crompton/ Havells
19	Switch Plate	: Decolam Hylam sheet 3.0 mm thick. OR Sintex SMC Sheets
20	Connectors/ Indicator	: Technic, Mimic (Static LED type), Technoplast, Porcelain
21	Button holder, Angle holder, ceiling rose	: Anchor, Precision
23	M.S. Boxes for Modular Switch	: Anchor Roma / MK India / Crabtree

Contractor's Signature

Seal

Client ID	02
Tender No.	1643
Page No.	51/126

	Board		
24	ELCB	:	Legrand /HPL / Havells / Schnider
25	A.C.B. Drawout type (LT)	:	L&T / Siemens / Schnider
26	Telephone tag block	:	Krone India Ltd.
27	Capacitor	:	L&T / Crompton Greaves./ Datar /Siemens
28	Relay	:	L&T / Siemens / Schnider
29	MCCB	:	L&T./ Legrand / Siemens / Havells
30	KWH Meter	:	L&T / Siemens / Schnider
31	Lights Fixture	:	Phillips/Crompton Greaves / / wipro /
32	Ceiling Fans / Wall Fan	:	Crompton / Orient / Havells
33	Exhaust Fan MS / PVC	:	Crompton./ Havells
34	Electronic call bell / timer	:	Anchor / Precision
35	TV Cable	:	Finolex / Polycab
36	Volt meter & Ammeter (Digital)	:	Meco, AE
37	Current Transformer	:	AE, Kappa
38	L. T. Panel	:	L&T or fabricated by CPRI approved fabricator
39	Data cabling & its Components Cat – 6 and Cat - 5	:	Molex / Systemax / Avaya / Tyco / DG Link
40	Change over switch	:	Havells / HPL / GE
41	24 port jack Panel	:	Molex / Systemax / DG Link / Havells
42	4U/9U / 12U / 15U Rack for jack panel	:	Systemax / Valrack / AMP
43.	RJ 45	:	Molex /Systemax / AMPS / DG Link
44.	RJ 11	:	Molex /Systemax / AMPS / DG Link

NOTE :-

Whether a product is equivalent or not, will be decided by the Engineer-in-Charge/ Project Manager only.

In case the specified particular make / makes of the material product is / are not readily available, the contractor shall take prior permission and approval of the Project Manager /Engineer / Client in writing before use of the alternative equivalent make of the material / product. It is to note that materials having ISI monogram shall primarily be used. In such cases, the contractor will not be paid any extra payment over the accepted quoted rate in any case. However, if it is ascertained that the price of approved equivalent make of the material / product is lower than that of the make / makes mentioned above in the list of the same material / product the difference of the price shall be payable recoverable from by the contractor to Consultant/Client. Such difference of price shall be suitably decided by the Project Manager /Engineer / Client whose decision shall be final and binding to contractor in this regard.

Contractor's Signature

Seal

Client ID	02
Tender No.	1643
Page No.	52/126

UTI Infrastructure Technology And Services Ltd.

SPECIFICATIONS

General

A: **MATERIALS**

Materials shall be of the best-approved quality obtainable / available and they shall comply to the respective Bureau of Indian Standard Specifications.

Samples of all materials shall be got approved before placing order and the approved sample shall be deposited with Consultant/Client.

In case of non-availability of materials in metric sizes, the nearest higher size in FPS units shall be provided with the prior approval of Consultant/Client for which neither extra will be paid nor any rebate shall be recovered.

If directed, materials shall be tested in any approved Testing Laboratory and the Test certificate in original shall be submitted to Consultant/Client and the entire charges of testing including charges for repeated tests if ordered shall be borne by the Tenderer.

It shall be obligatory for the tenderer to furnish Certificate, if demanded by Consultant/Client from the manufacturer or the material supplier that, the work has been carried out using their material and as per their recommendation.

All materials supplied by or through Consultant/Client OR other specialized firms if any, shall be properly stored and the tenderer shall be responsible for its safe custody until they are required on the works/until the completion of work.

Unless otherwise shown on the drawings or mentioned in the Schedule of Quantities or Specification the quality of materials, workmanship, dimensions etc., shall be as specified here-in-under.

All equipment and facilities for carrying out field tests on materials shall be provided by the tenderer without any extra cost.

S.1. WOOD

A. **Teak means** : Superior quality, Dandeli, Bellarsha, Chandrapur, Gana, Malabar Teak seasoned, uniform colour, straight grain and shall be free from large, loose, dead knots,

Contractor's Signature

Seal

Client ID	02
Tender No.	1643
Page No.	53/126

cracks, warps, twists, bends, borer holes, shakes, sap wood or any other defect. No individual knot shall be more than 1 cm in dia. The annual growth rings shall be 6 Nos. per 2.5 cm. The moisture content shall not exceed 12%.

B. **White Cedar means** : First class well seasoned Indian White cedar wood uniform in colour, straight grains, with out any knots. It shall be free from large loose dead knots, cracks, shakes, warps, twists, bends, sapwood or defects of any kind. No individual hard and sound knot shall be more that 2.5 cm. in diameter and aggregate area of all knots shall not exceed 1% of the area of the piece. There shall not be less than 6 growth rings per 2.5 cm width. The moisture content does not exceed 12%.

C. The wood should be seasoned as per BIS 1141- 1958 or its latest edition.

D. TIMBER :

The moisture content does not exceed the following limits :

Timber for frames : 14%

ii) Timber for planking shutters : 12%

In measuring cross sectional dimensions of the Frame pieces tolerances upto 1.5 mm shall be followed for each planed surface.

E. FIRST CLASS INDIAN TEAK :

First class Indian Teak means best quality Burma Teak and well seasoned. It shall be of uniform colour, **straight grains** and shall be free from large loose dead knots, cracks, shakes, warps, twists, bends, sapwood or defects of any kind. No individual hard and sound knot shall be more that 2.5 cm. in diameter and aggregate area of all knots shall not exceed 1% of the area of the piece. There shall not be less than 2-3 growth rings per 2.5 cm width.

S.2. PLYWOOD:

Strictly in accordance with IS 303 : 1989

i) Grades : Plywood for general purposes shall be of the following two grades, depending upon the bond strength developed by the adhesive used for bonding the veneers:

Boiling water resistant or BWR Grade and

Moisture resistant of MR Grade

These shall be manufactured in accordance with relevant IS codes i.e. IS 303 : 1989. The grades shall conform to the general requirements given as per relevant IS codes i.e. IS 303 : 1989 (Third Revision)

Contractor's Signature

Seal

Client ID	02
Tender No.	1643
Page No.	54/126

Plywood for general purposes shall be classified into three types, namely, AA,AB and BB based on the quality of the two surfaces, namely, A and B in terms of general permissible defects. The type of plywood shall, therefore, be designated by the kind of surfaces of the panels. The better quality surface shall be called 'face', and the opposite side shall be called 'back'. If the face and the back are of the same quality, they are not distinguished. This type of plywood shall denote first the quality of face followed by the quality of back. For example, Type AA shall have both surfaces of quality of A. TypeAB shall have face of quality A and the back of quality B and Type BB shall have both the surfaces of quality B.

The quality requirement of each of the surfaces mentioned should be as per IS 303 : 1989, However, the maximum number of categories of defects, permitted on any one surface of the panel shall be restricted in accordance with the requirements.

MATERIALS:

Timber: Any species of timber may be used for plywood manufacture as per IS 303 : 1989 (Third Revision).

Adhesive: The adhesive used for bonding the veneers in different grades of plywood shall be the corresponding type of adhesive as specified in IS 848 : 1974.

Extenders conforming to IS 1508 : 1972 may be used with the synthetic resin adhesive (aminoresins). However, synthetic resin adhesives (aminoresin) when extended by more than 25 percent shall contain suitable preservative, chemicals in sufficient concentration to satisfy the mycological test.

MANUFACTURE:

The veneers for all the grades shall be either rotary cut or sliced. The veneers shall be sufficiently smooth to permit an even spread of adhesive. Treatment as specified below shall be given to the plywood either at the veneer stage or after converting the veneers into boards.

Treatment:

Veneers from non-durable species and sapwood of all species when used for plywood manufacture shall be soaked in 1.25 percent solution of boric acid or 1.9 percent solution of borax at a temperature of 85-90 degree centigrade for a period of 10-40 minutes depending upon the thickness of the veneers or the veneers may be dipped in 2 percent solution of boric acid or 3 percent borax solution for 2 minutes and block stacked at least for two hours.

Client ID	02
Tender No.	1643
Page No.	55/126

Alternatively, the veneers may be soaked at an ambient temperature in a mixture of 0.5 percent solution.

For BWR grade of plywood bonded with synthetic resin adhesive, the preservative may be given conveniently after boards come out of the press, while still hot or the treatment given to the veneers before bonding.

For BWR grade, fixed type of preservative may be used according to relevant IS code i.e. IS 5539 : 1966.

Assembly:

The thickness of all veneers shall be uniform within a tolerance of ± 5 percent. Corresponding veneers on either side of the central ply and those of face and back veneers shall be of species having similar physical and mechanical properties, such as, density, modulus of elasticity, shrinkage, etc. to ensure balanced construction.

Joints in Veneers:

Veneers that require to be joined to form a ply shall be spliced (edge jointed) before assembly. All joints shall be cut square. They may be taped on the face of the outer veneers in which case the tape shall be removed at a later stage, and metal clips or staples, if used, shall be removed. Perforated tapes may be used on the glue side of the veneers. In assembly, joints in veneers running in the same direction shall be staggered. End joints and butt joints shall not be permitted for any of the surfaces.

Grain Directions

Unless otherwise specified, and except in boards comprising an even number of plies, the direction of grain of the veneer in adjacent plies shall be at right angles to each other, and that of the outer plies shall run parallel to the longer side of the board. In boards comprising even number of plies, the grain of the centre pair shall follow the same direction. In adjacent plies, the grain should be at right angles to each other. However, a deviation not exceeding 10 degree may be permitted. In all cases, the grain on both faces of the assembly boards shall run in the same direction.

Scarf Joints:

When sizes larger than the available press sizes are required, scarf joints through the thickness of the board are permitted. All scarf joints shall be bonded with the same or a better adhesive than the one used for the manufacture of plywood, and shall be made with an inclination not greater than 1 in 12.

Client ID	02
Tender No.	1643
Page No.	56/126

Permissible Defects:

Gaps in cores and cross-bands may be permitted except for 3 ply plywood provided the width of the gap does not exceed 1 mm in case of and 2 mm in case of plywood of more than 5 ply and provided such gaps, if more than one, shall be spaced not less than 80 mm away from each other and are staggered not less than 50 mm away as between ply, the next ply having the same grain direction.

Splits in cores and cross-bands may be permitted to an extent of 2 per core or cross band.

Overlap shall not be permitted.

DIMENSIONS AND TOLERANCES :

The dimensions of plywood boards shall be as given in IS 12049 : 1987.

Thickness: Unless otherwise specified, thickness of plywood boards shall be as specified in Table. The thickness shall be measured up to one place of decimal.

Tolerances :

The following tolerances on the nominal sizes of finished boards shall be permissible:

	<u>Dimension</u>	<u>Tolerance</u>
a)	Length	+ 6mm 0mm
b)	Width	+ 3mm 0mm
	Thickness	
	1) Less than 6 mm	+/- 10%
	2) 6 mm and above	+/- 5%
d)	Squareness	0.2%
e)	Edge straightness	0.2%

Thickness of Plywood Boards as per IS 303 : 1989 (Third Revision)

WORKMANSHIP AND FINISH :

The plywood boards shall be of uniform thickness within the tolerance limits as per IS 303: 1989 (Third Revision).

The faces of plywood boards shall be reasonably smooth and face veneers shall be of reasonably uniform thickness. Slight sanding may be given to rough boards in order to make them reasonably smooth. The squareness and edge straightness of the board when measured according to the procedure given as per IS 303: 1989 (Third Revision).

Contractor's Signature

Seal

Client ID	02
Tender No.	1643
Page No.	57/126

S.3. BUILDERS HARDWARE

All hardware fittings and fixtures shall be made with structural properties to sustain safety and withstand strains and stresses to which they are normally subjected to such as opening and closing, wind pressure etc. The fittings shall generally confirm to relevant specifications.

They shall be made true, clear, straight with sharply defined profiles and unless otherwise shown or specified with true smooth surfaces and edges, free from defects.

The metal shall be treated with finish as specified in the schedule of quantities.

S.4 GLASS

Glass shall be of specified thickness Indian plain glass of approved manufacturer without any waves, air holes etc.

S.5. BUTT HINGES

Hinges should be of any manufacturers with 14 gauge Brass body with stainless steel rod to be fitted with the shutter etc. with G.I. standard screws.

Brass hinges shall be manufactured by casting, unless it is specifically mentioned that the same shall be extruded type in which case these shall be manufactured from extruded sections. The size of butt hinges shall be taken as length of the hinge. The central pins/rod should be of stainless steel only.

S.6. TOWER BOLT

Tower bolts to be of anodized Aluminum powder coated heavy duty and are to be fitted with the shutter with powder coated screws and to be of M/s Jyothi make or equivalent.

S.7. LOCK

Cupboard lock should be M/s Godrej make.

Door lock should be cylindrical of M/s Godrej / YELE make with approved handles. The same lock as existing, wherever specified should be used.

S.8. PAINTING

SCOPE OF WORK : The work covered under these specifications consists furnishing the various types of paints and also the workmanship for these items, in strict compliance with

Contractor's Signature

Seal

Client ID	02
Tender No.	1643
Page No.	58/126

these specifications, which are given in detail hereinafter with the item of schedule of quantities.

MATERIALS : Paints, oils, varnishes etc. of approved brand and manufacture shall be used. Ready mixed paints as received from the manufacture without any admixture shall be used. If by any reason, thinning is necessary in case of ready mixed paint, the brand of thinner recommended by the manufacturer or as instructed by the Engineer-in-charge/ Project Manager/Client shall be used.

Approved paints, oils or varnishes shall be brought to the site of work by the contractor in their original containers in sealed condition. The material shall be brought in at a time in adequate quantities to suffice for the whole work or at least a fortnight's work. The materials shall be kept in the joint custody of the contractor and the Engineer-in-charge/ Project Manager. The empties shall not be removed from the site of work, till the relevant item of work has been completed and permission obtained from the Engineer-in-charge/ Project Manager.

COMMENCING WORK :Painting shall not be started until and unless the Engineer-in-charge/ Project Manager has inspected the items of work to be painted, satisfied himself about their proper quality and given his approval to commence the painting work.

Painting, except the priming coat, shall generally be taken in hand after all other builder's work is practically finished.

The rooms should be thoroughly swept out and the entire building cleaned up, at least one day in advance before the paintwork is started.

PREPARATION OF SURFACE :The surface shall be thoroughly cleaned and dusted. All dirt, rust, scales, smoke and grease shall be thoroughly removed before painting is started. The prepared surface shall have received the approval of the Engineer-in-charge/ Project Manager after inspection, before painting is commenced.

APPLICATION : Before pouring into smaller containers for use, the paint shall be stirred thoroughly in its containers. When applying also, the paint shall be continuously stirred in the smaller containers so that consistency is kept uniform.

The painting shall be laid on evenly and smoothly by means of crossing and laying off, the latter in the direction of the grain of wood. The crossing laying off, consists of covering the area with paint, brushing the surface hard for the first time and then brushing alternately in

Client ID	02
Tender No.	1643
Page No.	59/126

opposite directions two or three times and then finally brushing lightly in direction at right angles to the same. In this process, no brush marks shall be left after the laying off is finished. The full process of crossing and laying off, will constitute one coat.

Where so stipulated, the painting shall be done with spray, spray machine used may be (a) a high pressure (small air aperture) type of (b) a low pressure (large air gap) type, depending on the nature and location of work to be carried out. Skilled and experienced workmen shall be employed for this class of work. Paints used shall be brought to the requisite consistency by adding a suitable thinner.

Spraying should be done only when dry condition prevails.

Each coat shall be allowed to dry out thoroughly and rubbed smooth before the next coat is applied. This should be facilitated by thorough ventilation.

Each coat except the last coat, shall be lightly rubbed down with sand paper or fine pumice stone and cleaned of dust before the next coat is laid.

No left over paint shall be put back into the stock tins, when not in use, containers shall be kept properly closed.

No hair marks from the brush or clogging of paint puddles in the corners of panels, angles of mouldings etc. shall be left on the work.

In painting doors and windows, the putty round the glass panes must also be painted, but care must be taken to see that no paint stains etc. are left on the glass. Tops of shutters and surfaces in similar hidden locations shall not be left out while painting. Perspect covers of electrical switch boxes have to be painted from inside by removing them. Care shall be taken while removing them in position after painting with respective approved paints. In painting steel work, special care shall be taken while painting over bolts, nuts, rivets, overlaps etc.

The additional specifications for primer and other coats of paints shall be as accordance to the detailed specifications under the respective headings of IS codes.

BRUSHES AND CONTAINERS : After work, the brushes shall be completely cleaned of paint and linseed oil by rinsing with turpentine. A brush in which paint has dried up is ruined and shall on no account be used for painting work. The containers, when not in use, shall be closed, kept air tight and shall be kept at a place free from dust. When the paint has been used, the containers shall be washed with turpentine and wiped dry with soft clean cloth, so that they are clean, and can be used again.

Client ID	02
Tender No.	1643
Page No.	60/126

MEASUREMENTS :

Painting, unless other wise stated shall be measured by area in Sq.m. length and breath shall be measured correct upto two places of decimal of a metre.

No deductions shall be made for opening not exceeding 0.05 Sq.m. and no addition shall be made for painting to the beading, moulding edges, jambs, soffits, sills architraves, etc. of such small openings.

In measuring painting, varnishing, oiling etc. of joining and steel work etc. the co-efficients as in the following table shall be used to obtain the areas payable. The co-efficients shall be applied to the areas measured flat and not girthed in all cases.

In case of painting of door shutter with push plate in plastic/ laminate, deduction will be made for area of such laminates.

Table of Co-efficients to be applied over areas of different surfaces to get equivalent plain areas

Sr. No.	Description of work	Multiplying Co-efficients	Remarks
	<u>WOOD WORK – DOORS, WINDOWS ETC.</u>		
1.	Pannelled or framed and braced doors, windows etc.	} }	
2.	Ledged and battened or ledged, battened and braced, doors, windows etc.	}1 1/8 (for or 1.125 each side) }	
3.	Flush doors etc.	}	
4.	Part pannelled and part glazed or gauzed doors, windows etc.	} 1 (for each side)	
5.	Fully glazed or gazed doors, windows etc.	½ (for each or 0.50 side)	
6.	Fully venetioned or louvered doors, windows etc.	1 ½ (for each or 1.50 side)	
7.	Trellis (or Jaffri) work one way or two way.	2 (for painting all over)	
8.	Carved or enriched work	2 (for each side)	
9.	Weather boarding	1 1/8 (for each or 1.125 side)	
10.	Wood shingle roofing	1 1/8 (for each or 1.125 side)	
11.	Boarding with cover fillets and match boarding	11/20 (for each or 0.55 side)	

Contractor's Signature

Seal

Client ID	02
Tender No.	1643
Page No.	61/126

12.	Tile and slate battening	$\frac{3}{4}$ (for painting or 0.75 overall)	
	STEEL WORK – DOORS, WINDOWS ETC.		
13.	Plain sheeted steel doors or windows	1 1/8 (for each or 1.125 side)	
14.	Fully glazed or gauzed steel doors steel doors & windows	$\frac{1}{2}$ (for each side) or 0.50	
15.	Part panelled and part glazed or gauzed doors and windows	1 (for each side)	
16.	Corrugate sheeted steel doors or windows.	1 $\frac{1}{4}$ (for each side) or 1.25	
17.	Collapsible gates	1 $\frac{1}{2}$ (for painting or 1.50 all over)	
18.	Rolling shutters of inter locked laths	1 $\frac{1}{4}$ (for each side) or 1.25	
	<u>GENERAL WORK :</u>		
19.	Expanded metal, hard drawn steel wire fabric of approved quality grill work and gratings in Guard Bars, balustrades, railings & partitions.	1 (for painting all over)	
20.	Open palisade fencing and gates including standards, braces, rails stays etc. in timber or steel. Note: The height shall be taken from the bottom of the lowest rail, if the palisades do not go below it (or from the lower end of palisades, if they project below the lowest rail) upto the top of palisades but not upto the top of standards, if they are higher than the palisades.	1 (for painting all over)	
21.	Corrugated iron sheeting in roofs, side cladding etc.	1.14 (for each side)	
22.	A.C. corrugated sheeting in roofs, side cladding etc.	1.20 (for each side)	
23.	A.C. semi-corrugated sheeting in roofs, side cladding etc. or Nainital pattern using plain sheets.	1.10 (for each side)	
24.	Wire gauge shutters including painting of wire gauge	1 (for each side)	

Contractor's Signature

Seal

Client ID	02
Tender No.	1643
Page No.	62/126

Explanatory notes on the table of co-efficient.

1. Where doors, windows etc. are of composite types other than those stated, different portion shall be measured separately with their appropriate co-efficient, the centre line of the common rail being taken as the dividing line between the two portions.
2. Measurements for doors, windows etc. shall be taken for flat (and not girthed) over all including chowkats or frames, where provided. Where chowkats or frames are not provided, the shutter measurements shall be taken.
3. Collapsible gates shall be measured for width from outside of gate in its expanded position and for height from bottom to top of channel verticals. No separate measurements shall be taken for the top and bottom guide rails, rollers, fittings etc.
4. Rolling shutters of interlocked laths if provided shall be measured for the actual shutter width and the height from bottom of the opening to the centre of the shaft. No separate measurements shall be taken for painting guides and other exposed features within or outside the shutters area. The painting of top cover or hood shall however be measured separately.
5. Co-efficients for sliding doors shall be the same as for normal types of doors in the table. Measurements shall be taken outside of shutters, and no separate measurements shall be taken for painting guides, rollers fittings etc.
6. Measurements of painting of doors, windows, collapsible gates, rolling shutters etc. as above shall be deemed to include painting all iron fittings in the same or different shade for which no extra will be paid.
7. The measurements as above shall be deemed to include also the painting of edges, blocks, cleats etc. for which no extra will be paid.
8. The co-efficients for doors and windows shall apply irrespective of the size of frames and shutters members.
9. When the two faces of a door, window etc. are to be treated with different specified finishes, measurable under separate items, the edges of frames and shutters shall be treated with the one or the other type offinish as ordered by the Engineer-in-charge/ Project Manager, and measurement of this will be deemed to be included in the agreement of the face treated with that finish.

Contractor's Signature

Seal

Client ID	02
Tender No.	1643
Page No.	63/126

10. In the case where shutters are fixed on both faces of the frames, the measurement for the door frame and shutter on one face shall be taken in the manner already described, while the additional shutter on the other face will be measured for the shutter area only excluding the frame.
11. Where shutters are provided with clearance at top or/and bottom such openings shall be deducted from the overall measurements and relevant co-efficients shall be applied to obtain the area payable.
12. In case of trellis (or jaffri) work, the measurements shall include the painting of the frame member for which no separate measurements shall be taken. Trellis door or window shutters shall also be measured under trellis work.
13. Wherever air conditioning grill, lighting, fixtures etc., in false ceiling are painted along with measurements shall be taken overall without deductions for opening in grills and no extra shall be paid for the grills. If grills fixtures etc. are not painted, area of fixtures or grill as measured flat (not girthed) shall be deducted when it exceeds 0.05 Sq.m. (individuals) where walls and ceiling are painted in separate colours, the junctions of two paints shall be brought down on the walls in a straight line by about 6 mm to 12 mm if so desired, if the junctions of walls and ceilings are not even. No extra shall be paid to the contractor on this account. Beading wherever provided shall not be measured separately but shall be deemed to be included in the area of false ceiling etc. measured flat (not girthed).
14. For painting open palisade fencing and gates etc. the height shall be measured from the bottom of the lowest rail, if the palisades do not go below it, (or from the lower end of the palisades, if they project below the lowest rail), upto the top of rails or palisades whichever are higher, but not upto the top of standards when the later are higher than the top rails or the palisades.
15. In the case of asbestos cement corrugated or semi-corrugated sheeting and iron corrugated sheeting in roofs, side cladding etc. the work shall be measured flat (not girthed) as fixed.
16. For trusses, compound girders, stachions, lattice girders, and similar work, actual area will be measured in Sq.m. and no extra shall be paid for painting on bolt heads, nuts, washers etc. even when they are picked out in a different tint to the adjacent work.
17. Painting of rain water, soil, waste, vent and water pipes, etc. **where the peripheral length is more than 10 cm.** shall be measured in running metres and multiply the same

Client ID	02
Tender No.	1643
Page No.	64/126

with the perimeter of the particular diameter of the pipe concerned. Painting of specials such as bends, heads, branches, junctions shoes, etc. shall be included in the length and no separate measurements shall be taken for these or for painting brackets clamps etc.

18. Measurements of wall surfaces and wood and other works not referred to already shall be recorded as per actuals and opening exceeding 0.05 Sq.m. shall be deducted to get the net payable area length and breadth shall be measured correct upto two places of decimal of a metre and are so worked out shall be correct upto a two decimal of Sq.m.
19. In case the items of work requiring painting are inclusive of cost of painting the painting carried out shall not be measured separately.

Precautions : All furnitures, lightings, fixtures sanitary fittings, glazing, floors etc. shall be protected by covering and stains, smears, splashings, if any shall be removed and any damage done shall be made good by the contractor at his cost.

Rates : Rates shall include cost of all labour and materials involved on all the operations described above and in the particular specifications given under the several items.

General

A: MATERIALS

1. The priming coat for wood work, iron work or plastered surface shall be as specified in the description of the item.
2. The priming coat shall be prepared at the site of work or readymade primer of approved brand and manufacture shall be used.
3. Where primer for wood work is to be mixed at site, it shall be prepared from a mixture of red lead, white lead and double boiled linseed oil in the ratio of 0.7 Kg: 0.7 Kg : 1 Litre.
4. Where primer for steel work is to be mixed at site, it shall be prepared from a mixture of red lead, raw linseed oil and turpentine in the ratio of 2.8 Kg: 1 Litre: 1 Litre.
5. The specifications for the base vehicle and thinner for mixed on site, primers shall be as follows:-
 - a) **White Lead:** The White lead shall be pure and free from adulterants like barium sulphate and whiting. It shall conform to IS: 103-1950 as amended from time to time.
 - b) **Red lead :** This shall be in powder form and shall be pure and free from adulterants like brick dust etc. It shall conform to 102-1950 as amended from time to time.

Contractor's Signature

Seal

Client ID	02
Tender No.	1643
Page No.	65/126

- c) **Raw linseed oil:** Raw linseed oil shall be lightly viscous but clear and of yellowish colour with light brown tinge. Its specific gravity at a temperature of 30 degree C shall be between 0.923 and 0.928. The oil shall be of sufficiently matured quality, oil, turbid or thick, with acid and bitter taste and rancid odour and which remains sticky for a considerable time shall be rejected. The oil shall conform in all respects to IS :75-1950 as amended from time to time. The oil shall be of approved brand and manufacture.
- d) **Double boiled linseed oil :** This shall be more viscous than the raw oil, have a deeper colour and specific gravity between 0.931 and 0.945 at a temperature of 30 degree C. It shall dry with a glossy surface. It shall conform in all respect to IS: 77-1950 as amended from time to time. The oil shall be approved brand and manufacture.
- e) **Turpentine :** Mineral turpentine i.e. petroleum distillate which has the same rate of evaporation as vegetable turpentine (distillate product of Oleoresin of Conigers) shall be used. It shall have no grease or other residue when allowed to evaporate. It shall conform in all respect to IS: 83-1950 as amended from time to time.
6. All the above materials shall be of approved manufacture and brought to site in their original packings in sealed condition.
7. Primer containing lead shall not be used for painting iron/steel /wood work in the residential area.

Preparation of surface:

8. **Wood work :** The wood work to be painted shall be dry and free from moisture. The surface shall be thoroughly cleaned. All unevenness shall be rubbed down smooth with sand paper and shall be well dusted. Knots, if any shall be covered with preparation of red lead made by grinding red lead in water and mixing with strong glue size and used hot.

The surface treated for knotting shall be dry before painting is applied. After the priming coat is applied, the holes and indentation on the surface shall be stopped with glazier's putty or wood putty (for specifications for glaziers putty and wood putty refer as mentioned here-in-before). Stopping shall be not be done before the priming coat is applied as the wood will absorb the oil in the stopping and the later is therefore to crack.

Client ID	02
Tender No.	1643
Page No.	66/126

9. **Iron and steel work** : All rust and scales shall be removed by scraping or by brushing with steel wire brushes. Hard skin of oxide formed on the surface of wrought iron during rolling which becomes loose by rusting, shall be removed.
All dust and dirt shall be thoroughly wiped away from the surface. If the surface is wet, it shall be dried before priming coat is undertaken.
10. **Plastered Surface** : The surface shall ordinarily not be painted until it has dried completely. Trial patches of primer shall be laid at intervals and where drying is satisfactory, painting shall be taken in hand. Before primer is applied, holes and undulations, shall be filled up with plaster of paris and rubbed smooth.

Application : The primer shall be applied with brushes worked well into the surface and spread even and smooth. The painting shall be done by crossing and laying off as described here-in-before.

Other details : The specifications for "Painting (General)" shall hold good so far as they are applicable.

B. PAINTING WITH ORDINARY OR SUPERIOR QUALITY READY MIXED PAINT.

Painting with ordinary or superior quality ready mixed paint on new work :

1. **Paint**: Ordinary quality or superior quality ready mixed paints shall be of approved brand and manufacture and of the required shades. They shall conform in all respects to the relevant I.S. specifications.
2. **Preparation of surface** :
- (a) **Wood Work** : The surface shall be cleaned and all unevenness removed as in para knots if visible, shall be covered with a preparation of red lead as stated in earlier paragraph. Holes and indentations on the surfaces shall be filled in with glazier's putty or wood putty and rubbed smooth before painting is done. The surface should be thoroughly dry before painting.
- b) **Iron and steel work** : The priming coat shall have dried up completely before painting is started. Rust and scaling shall be carefully removed by scraping or by brushing with steel wire brushes. All dust and dirt shall be carefully and thoroughly wiped away.
- c) **Plastered Surface** : The priming coat shall have dried up completely before painting is started. All dust or dirt that has settled on the priming coat shall be thoroughly wiped away before painting is started.

Client ID	02
Tender No.	1643
Page No.	67/126

Application :The specifications mentioned here-in-before shall hold good as far as applicable.

The number of coats to be applied will be as stipulated in the item. The painted surface shall present a uniform appearance and glossy finish, free from streaks, blisters etc.

Other details : The specifications for “Painting (General)” shall hold good so far as they are applicable.

C.PAINTING WITH SUPERIOR QUALITY FLAT OIL READY MIXED PAINT :

1. **Paint** : Ordinary quality or superior quality ready mixed paint shall be of approved brand and manufacture and of the required shades. They shall conform in all respects to the relevant I.S. specifications.
2. **Preparation of surfaces** : This shall be as for painting mentioned here-in-before or as the case may be.
3. **Wood work** : The surface shall be cleaned and all unevenness removed as mentioned here-in-before. Knots if visible, shall be covered with a preparation of red lead as mentioned before. Holes and indentations of the surface shall be filled in with glazier’s putty or approved wood putty and rubbed smooth before painting is done. The surface should be thoroughly dry before painting.
4. **Iron and steel work** : The priming coat shall have dried up completely before painting is started. Rust and scaling shall be carefully removed by scrapping or by brushing with steel wire brushes. All dust and dirt shall be carefully and thoroughly wiped away.
5. **Plastered surface** : The priming coat shall have dried up completely before painting is started. All dust and dirt that has settled on the priming coat shall be carefully and thoroughly wiped away before painting is started.

Application :The specifications specified here-in-before shall hold good as far as possible.

Client ID	02
Tender No.	1643
Page No.	68/126

The number of coats to be applied will be as stipulated in the item. The painted surface shall present a uniform appearance and glossy/semi glossy finish, as the case may be and free from streaks, blisters etc.

Other Details :The specifications for “Painting (General)” as mentioned before shall hold good in so far as they are applicable.

D. PAINTING WITH SYNTHETIC ENAMEL PAINT/SEMI GLOSS PAINTING WITH SYNTHETIC ENAMEL PAINT ON NEW WORK

1 **Paint** :Synthetic enamel/semi gloss paint of approved brand and manufacture and the required shade shall be used for the top coat and an undercoat of shade to match the top coat as recommended by the manufacturer shall be used.

2 **Preparation of surface** : This shall be as for painting with ordinary or superior quality ready mixed paint as mentioned here-in-before as the case may be.

3 **Application** : The number of coats including the under coat shall be as stipulated in the item.

4 **Under Coat** :One coat of the specified paint of shade suited to the shade of the top coat shall be applied and allowed to dry overnight. It shall be rubbed next day with the finest grade of wet abrasive paper to ensure a smooth and even surface free from brush marks and all loose particles dusted off. All the cracks, crevices, roughness etc. will be filled with approved putty as per manufacturer’s recommendations.

5 **Top Coat** :Finishing coats of specified paint of the desired shade shall be applied after the under coat is thoroughly dry. Additional finishing coats shall be applied if found necessary to ensure a properly uniform semi glossy surface.

Other Details :The specifications for “Painting (General)” mentioned here-in before shall hold good as far as they are applicable.

E PAINTING WITH ACRYLIC EMULSION PAINT/PLASTIC EMULSION PAINT

This shall be polyvinyl-based Acrylic emulsion paint manufactured by one on the reputed paint manufacturers and dispatched to the site in sealed containers.

Client ID	02
Tender No.	1643
Page No.	69/126

1. **Primer** : A primer to be used for the painting with acrylic emulsion on cement concrete and plaster and plastered surfaces, A.C. sheets as also timber and metal surfaces (if necessary) shall be of approved base and as per recommendations of the manufacturers.
2. **Putty** : Plaster filler to be used for filling up (puttying) uneven surfaces, small cracks and holes etc. shall be of approved compound and as per recommendations of the manufacturers. No oil-based putty shall be used. The putty should be made from a mixture of whiting and plastic emulsion paint or as per manufacturer's recommendations.
3. **Finishing Coats** :All the finishing coats shall be of mat finish or any other finish as required by the Engineer-in-charge/ Project Manager. Number of finishing coats shall be as specified in the item.

F: MODE OF MEASUREMENTS:

All the measurements for payment shall be taken on net surface areas actually painted, unless otherwise specified. Deduction will be made from the areas for fixtures, grills, ventilation outlets, electrical boxes and such obstruction not painted, if they are individually more than 0.05 Sq.mtr.

G: JOB REQUIREMENTS :

Note :

1) **PAINTING OF PLASTERED SURFACE.**

Acrylic emulsion paint is required to be provided on plastered and concrete surfaces in portions of the building. It may please be noted that Employer shall reserve the option to delete or increase quantities in full or part from the scope of contract during progress of work.

All wood surfaces are to be painted with semi glossy synthetic enamel paint with an approved primer. Primer of zinc chromate primer.

Zinc chromate primer supersedes wood primer mentioned earlier in the specifications.

All colours of paints shall be subjected to review and prior approval of Engineer-in-charge/ Project Manager shall be taken before the application.

Contractor's Signature

Seal

Client ID	02
Tender No.	1643
Page No.	70/126

2) WHITE WASHING WITH LIME.

Scaffolding :Wherever scaffolding is necessary, it shall be erected on double supports tied together by horizontal pieces, over which scaffolding planks shall be fixed. No ballies, bamboos or planks shall rest on or through the surface which is being white washed.

Where ladders are used, pieces of old gunny bags shall be tied on their tops to avoid damage or scratches to walls.

For white washing the ceiling, proper stage scaffolding shall be erected.

Preparation of surface : Before new work is white washed the surface shall be thoroughly brushed free from mortar dropping and foreign matter.

In the case of old work, all loose pieces and scales shall be scrapped off and holes in plaster as well as patches of less than 50 sq.m. area shall be filled up with mortar of the same mix. Where so specifically ordered by the Engineer-in-charge/Project Manager, the entire surface of old white wash shall be thoroughly removed by scrapping and this shall be paid for separately.

Preparation of lime wash :The wash shall be prepared from fresh stone white lime”Katani or equivalent”. The lime shall be thoroughly slaked on the spot, mixed and stirred with sufficient water to make a thin cream. This shall be allowed to stand for period of 24 hrs. and then shall be screened through a clean coarse cloth. 40 gm. of gum dissolved in hot water, shall be added to each 10 cubic decimetre of the cream. The approximate quantity of water to be added in making the cream will be 5 litres of water to one kg. of lime.

Indigo (Neel) up to 3 gm per kg of lime dissolved in water, shall then be added and wash stirred well. Water shall then be added at the rate of about 5 litre per kg. of lime to produce a milky solution.

Lime obtained as a by-product in the manufacture of acetylene may also be used for white washing purposes instead of white lime of katani quality. When such lime is used it shall be ensured that it is procured fresh in the form of a paste and used before it dries up. The lime shall be mixed with sufficient water to make it thin cream. The cream shall be screened through a clean coarse cloth and 40 gm. Gum dissolved in hot water added for each 10 cubic decimetre of the cream. More water shall be added at the rate of 5 litres per kg. of lime to produce a milky solution. When by product lime is used it is not necessary to add indigo (neel).

Client ID	02
Tender No.	1643
Page No.	71/126

White Washing : The white wash shall be applied with brushes or by spray in the specified number of coats. The operation for each coat in case of brush application shall consist of a stroke of the brush given from the top down wards, another from the bottom upwards over the first stroke, and similarly one stroke horizontally from the right and another from the left before it dries.

Each coat shall be allowed to dry before the next one is applied. Further each coat shall be inspected and approved by the Engineer-in-charge/ Project Manager before the subsequent coat is applied. No portion of the surface shall be left out initially to be patched up later on.

For new work, three or more coats shall be applied till the surface present a smooth and uniform finish through which the plaster does not show. The finished dry surface shall not show any signs of cracking and peeling nor shall it come off readily on the hand when rubbed.

For old work, after the surface has been prepared as described here in before a coat of white wash shall be applied over the patches and repairs. Then a single coat or two or more coats of white wash as stipulated in the description of the item shall be applied over the entire surface. The white washed surface should present a uniform finish through which the plaster patched do not appear.

Protective Measure :Door windows, floors, articles of furniture etc. and such other parts of the building not to be white washed shall be protected from being splashed upon. Splashings and droppings, if any, shall be removed by the contractor at his own cost and the surfaces cleaned. Damages if any to painted surfaces, furnitures, or fittings and fixtures etc. shall be recoverable from the contractor.

Measurements :White washing shall be measured in sq.m. length and breadth shall be measured correct to a cm.. All measurements for payment shall be taken on neat surface areas actually white washed, unless otherwise specified. Deduction will be made from the areas for fixtures, grills, ventilation outlets electrical boxes and such obstruction not painted if they are individually more than 0.05 Sq.m. Length and breadth shall be taken correct upto two places of decimal of a metre and areas so worked out shall be correct upto two places of decimals of a Sq.metre.

Corrugated surfaces shall be measured flat as fixed and the area so measured shall be increased by the following percentages to allow for the girthed area.

Corrugated asbestos cement sheets 20%

Contractor's Signature

Seal

Client ID	02
Tender No.	1643
Page No.	72/126

Semi-corrugated asbestos cement sheets 10%

The number of coats of each treatment shall be stated. The item shall include removing nails, making good holes, cracks, patches etc. not exceeding 0.1 Sq.m. each with materials similar in composition to the surface to be prepared.

Rate :The rate shall include the cost of all materials and labour involved in all the operations described above, i.e. all inclusive.

Colour Washing :In the case of colour washing materials colours, not affected by lime, shall be added to white wash with proper glue. No colour wash shall be done until a sample of the colour wash to the required tint or shade has been got approved from the Engineer-in-charge/ Project Manager. The colour shall be of even tint or shade over the whole surface. If it is patchy or otherwise badly applied, it shall be redone by the contractor, at no extra cost to Consultant/Client.

For new work, the priming coat shall be of white wash lime or with whitening as specified in the description of the item. Three coats, shall then be applied on the entire surface till it represents a smooth and uniform finish. Each coat after applying shall be got approved from the Engineer-in-charge/ Project Manager.

Other specifications as detailed for "White washing with lime" shall be applicable. Indigo (neel) shall however, not be added.

Dry Distemping :

Distemper :Dry distemper of approved brand/manufacture and colour and required shade shall be used. The dry distemper shall be stirred slowly in clean water using 0.6 litres of water per kg. of distemper or as specified by manufacturers. Warm water shall preferably be used. It shall be allowed to stand for at least 30 minutes before use. The mixture shall be invariably well stirred before and during use to maintain an even consistency.

Preparation of surface : This shall be as for painting mentioned here-in-before or as the case may be.

Application :In case of new work, the treatment shall consist of a priming coat followed by the application of two or more coats of distemper till the surface shows an even colour.

Client ID	02
Tender No.	1643
Page No.	73/126

Priming coat :Priming coat of whitening shall be applied over the prepared surfaces. Priming coat shall be applied with whitening which shall be dissolved in sufficient quantity of warm water and thoroughly stirred to form a thin slurry which shall then be screened through a clean coarse cloth. Two kg. of gum and 0.4 kg. of copper sulphate dissolved separately in hot water shall be added for every cu.m. of the slurry which shall then be diluted with water to the consistency of milk so as to make wash ready for use. No white washing coat shall be used as a priming coat for distemper.

The application of each coat shall be as mentioned in the specifications for painting (General) mentioned here-in-before shall hold good and as far as they are applicable.

Oil Bound Distemper :a) Oil bound distemper of approved brand/manufacture and colour and required shade shall be used. The primer where used as on new work shall be cement primer or distemper primer as specified in the item. These shall be of the same manufacture as oil bound distemper.

Preparation of surfaces :Priming coat with cement primer or distemper primer shall only be applied.

Application :The cement primer or distemper primer shall be applied by brushing and not by spraying. Hurried priming of shall avoided. Particularly on absorbent surfaces. New plaster patches in old work before applying oil bound distemper shall be treated with cement primer/distemper primer. The surfaces shall be finished as uniformly as possible leaving no brush marks. It shall be allowed to dry for at least 48 hours before oil bound distemper is applied. Before applying distemper the surface shall be lightly sand papered to make it smooth for receiving the oil bound distemper, taking care not to rub out the priming cost. A time interval of at least 24 hours shall be allowed between consecutive coats to permit the proper drying of the preceeding coat. Two or more coats of distempers as are found necessary shall be applied over the priming coat to obtain an even shade.

Other Details : The specifications for "Painting (General)" mentioned here-in-before shall hold good as far as they are applicable.

Waterproofing Cement Paint :

Cement Based Paint :Cement based paints of approved manufacture, quality, shade and colour only shall be used.

Preparation of surface :The surface shall be thoroughly cleaned all mortar dropping, dirt, dust, algae, grease and other foreign matter by brushing and washing the surface shall be thoroughly wetted with clean water before the water proof cement paint is applied.

Client ID	02
Tender No.	1643
Page No.	74/126

Water proof cement shall be mixed in such quantities as can be used up with in an hour of its mixing or otherwise the mixture will set and thicken affecting flow and finish. Water proof cement paint shall be mixed with water in two stages.

The first stage shall comprise of 2 parts of water proof cement paint and one part of water stirred thoroughly and allowed to stand for 5 minutes. Care shall be taken to add the water proof cement paint gradually to the water and not vice versa. The second stage shall comprise of adding further the part of water to the mix and stirring thoroughly to obtain liquid of workable and uniform consistency. In all cases manufacturer's instructions shall be followed meticulously.

Application :The solution shall be applied on the clean and wetted surface with brushed or spraying machine. The solution shall be kept well stirred during the period of application. To avoid direct heat of the sun, during painting the cement based paint shall be applied on the surface which is on the shady side. Cement based paints shall not be applied on the surfaces already treated with white wash, colour wash, distemper dry or oil bound etc.

Other Details :The specifications for "Painting (General)" mentioned here-in-before shall hold good as far as they are applicable.

Bees Waxing or Polishing with Ready made Wax Polish :

- 1) Bees waxing or polishing with ready made wax polish on new work :

Materials :The polishing shall be done with bees waxing prepared locally or with ready made wax polish of approved brand and manufacture, as stipulated in the description of item.

Where bees waxing is to be prepared locally, the following specifications for the same shall apply

Pure bees wax free from paraffin or stearine adulterants shall be used. Its specific gravity shall be 0.965 to 0.969 and melting point shall be 63 °C.

The polish shall be prepared from a mixture of bees wax, linseed oil, turpentine and varnish in the ration of 2:1 1/2:1 1/2 by weight.

The bees wax and boiled linseed oil shall be heated over a slow fire. When the wax is completely dissolved the mixture shall be cooled till it is just warm and turpentine and varnish added to it in the required proportions and the entire mixture shall be well stirred.

- 2) **Preparation of surface** :Preparation of surface will be as mentioned here-in-under 1:13:b with the exception that knotting, holes and cracks shall be stopped with a

Client ID	02
Tender No.	1643
Page No.	75/126

mixture of fine saw dust formed of the wood being treated, beaten up with sufficient bees wax to give to cohesion.

- 3) **Application** :The polish shall be applied evenly with a clean soft pad of cotton cloth in such a way that the surface is completely and fully covered. The surface is then rubbed continuously for half an hour.

When the surface is quite dry, a second coat shall be applied in the same manner and rubbed continuously for one hour or until the surface is dry.

The final coat shall then be applied and rubbed for two hours (more if necessary) until the surface has assumed a uniform gloss and is dry, showing no sign of stickiness.

The final polish depends largely on the amount of rubbing which should be continuous and with uniform pressure, with frequent changes in the direction.

- 4) **Other Details** : The specifications for "Painting (General)" as mentioned here-in-before shall hold good as far as they are applicable.

1.13 **French Spirit Polishing** :

French spirit polishing including a coat of wood filler on new work:

- 1) **Polish** :Pure shellac varying from pale orange to lemon yellow colour, free from resin or dirt shall be dissolved in methylated spirit at the rate of 150 gm of shellac to 1 litre of spirit. Suitable pigment shall be added to get the required shade.
- 2) **Preparation of surface** :The surface shall be cleaned. All unevenness shall be rubbed down smooth with sand paper and well dusted. Knots if visible shall be covered with a preparation of red lead and glue size laid on, while hot. Holes and indentations on the surface shall be stopped with glazier's putty. The surface shall then be given a coat of wood filler made by mixing whiting (ground chalk) in methylated spirit at the rate of 1.5 kg. of whiting per litre of spirit. The surface shall again be rubbed down perfectly smooth with glass paper and wiped clean.
- 3) **Application** :The number of coats of polish to be applied shall be as described in the item.

Client ID	02
Tender No.	1643
Page No.	76/126

A pad woolen cloth covered by a fine cloth shall be used to apply the polish. The pad shall be moistened with the polish and rubbed hard on the wood, in a series of overlapping circles applying the mixture sparingly but uniformly over the entire area to give an even level surface. A trace of linseed oil on the face of the pad facilitates this operation. The surface shall be allowed to dry and the remaining coats applied in the same way. To finish off, the pad shall be covered with a fresh piece of clean fine cotton cloth, slightly dampened with methylated spirit and rubbed lightly and quickly with circular motions. The finished surface shall have a uniform texture and high gloss.

- 4) **Measurements, Rate and other details** :These shall be as for “Painting (General)” mentioned here-in-before as far as they are applicable.

H : ANTI-TERMITE TREATMENT :

The anti-termite treatment should be carried out as per BIS 6313 (part II) 1971 or relevant latest revision and should be carried out through a member of Indian Pest Control Association having sufficient experience for carrying out similar job of magnitude proposed.

I: CEMENT :

The cement proposed to be used to be ordinary Portland Pezzolena cement confirming to BIS269 1976 manufactured by an Indian manufacturing Company such as L&T, ACC, Gujarat Ambuja or equivalent. The cement should be stored strictly as per the BIS specification.

J: WATER :

The water to be used should be portable water free from injurious amount of oil, acid, alkalies, salt, sugar organic materials or any other substances that may be deleterious to concrete or steel. The recommended chemical ingredients should not be more than the relevant BIS specification (3025-1964).

K: BRICK WORK :

Scope of work : The work covered under this specification pertains to procurement of best quality locally available bricks and workmanship in building walls of various thickness, in strict compliance with the applicable specifications and applicable drawings.

Materials : Bricks shall be best quality locally available brick and should be approved by the Engineer-in-charge/ Project Manager before incorporation in the work. Brick shall generally conform to I.S.1077-1957. In any case minimum-crushing strength shall not be less than 35 kg/cm² and water absorption shall not be more than 25%. The Engineer-in-charge/ Project Contractor's Signature

Seal

Client ID	02
Tender No.	1643
Page No.	77/126

Manager shall have the right to reject bricks obtained from any field where the soil does not have an appreciable quantity of sulphates and chlorides. The specifications for cement, sand and water shall be same as laid out in BIS codes hereinafter. Bricks shall be thoroughly soaked in water before using till the bubbles cease to come up. No half or quarter brick shall be used except as closers. The closers shall be horizontal and the walls shall be raised to plumb. The type of bond to be adopted will be decided by the Engineer-in-charge/ Project Manager, but vertical joints shall be laid staggered.

Bricks to be laid with the "Frogs up side".

Workmanship : Four courses of brick work with four joints should not exceed by more than 40 mm the same bricks piled one over the other without mortar.

Brick work shall not be raised more than 10 courses a day unless otherwise approved by the Engineer-in-charge/ Project Manager. The brick work shall be kept wet for at least 7 days. Brick work shall be uniformly raised all round and no part shall be raised more than 1.0 metre above another at any time.

All joints shall be thoroughly flushed with mortar of mix as specified in the schedule of quantities, at every course. Care shall be taken to see that the bricks are bedded effectively and all joints completely filled to the full depth.

The joints of brick work to be plastered shall be raked out to a depth not less than 10 mm as the work proceeds. The surface of brick work shall be cleaned down and watered properly before the mortar sets.

No brick work shall be carried on during frosty weather except with the written permission of the Engineer-in-charge/ Project Manager, who will give special direction as to the manner in which the work is to be performed. All brick work laid during the day, shall in seasons liable to frost, be properly covered up at night as directed by the Engineer-in-charge/ Project Manager. Should any brickwork be damaged by frost the brick work shall, at the discretion of the Engineer-in-charge/ Project Manager, be pulled down and made good, at the cost of the contractor.

Brick work shall be well watered three times a day for a week from the date of building and the work shall be protected from sun and rain.

Materials and workmanship for a half brick or brick on edge portion wall shall be as specified above. The wall shall be stiffened by R.C.C. stiffeners of size 115mm wide x 80 mm thickness to the full length of wall and shall be provided with 2 Nos. 6mm Φ M.S. bars as bottom reinforcement (only the M.S. reinforcement will be paid separately under relevant item).

Contractor's Signature

Seal

Client ID	02
Tender No.	1643
Page No.	78/126

The rates for brickwork shall include the cost of the following :-

Providing and fixing necessary single or double scaffolding and removing the same after the work is completed.

- i) Watering, curing, lifting of materials to any height.
- ii) Raking out of joints to receive plaster.
- iii) Forming slab seatings, cutting or leaving holes for lugs of windows, doors, sills, switch and plug boxes etc.
- iv) Making good all holes, chases, etc. to any depths due to conduit pipes, holdfasts, bolts, switch and plug boxes etc.
- v) Bedding and pointing precast lintels, sills, etc. in or on walls.

For purposes of measurements the thickness of one brick wall and over shall be taken in terms of multiples of half brick, or as stipulated in BOQ/herein below.

Mode of measurements :

- a) For brick work measured in cubic metres : The contract rate shall be for a unit of one cubic metre of brick masonry as actually done. 230 mm brick walls shall be taken as one brick thick. All openings in brick work for doors and windows and ventilators shall be deducted to get the net quantity of actual brick work done. Openings or chases required for PH or electrical insert less than 0.1 sq.mtr. and bearing of precast concrete members shall not be deducted. No separate payment shall be made for any extra work involved in making the above openings.
- b) For brick work measured in Sq. metres : Half brick thick masonry walls shall be measured sq. metres. All openings in brick work for doors and windows and ventilators shall be deducted to get the net quantity of actual brick work done. Openings or chases required for PH or Electric inserts less than 0.1 sq. mtr. and bearings of precast concrete members shall not be deducted. No separate payment shall be made for extra work involved in making the above openings or placement.

L: CONCRETE :

Strictly confirming to BIS 456 – 2000 for materials and workmanship.

NOTE : This specification is of the general type only and must be used in conjunction with the drawing of the particular item being made. Anything shown on the drawing and not in the specification must be compiled with, and vice versa and clarification on

Client ID	02
Tender No.	1643
Page No.	79/126

this should be sought from. The Engineer-in-Charge/ Project Manager to remove doubts if any.

M: POLYMER MODIFIED CEMENT MORTAR TREATMENT FOR R.C.C. MEMBERS:

- Open the damaged portion of the R.C.C. slab, beam, column etc. and remove all the **loose concrete**, plastering etc. Clean the surface thoroughly with air blower followed by water jet. Expose the rusted reinforcement.
- Clean the rusted reinforcement thoroughly with wire brush and remove all the scales.
- Apply RUSTICIDE (or equivalent approved by the Engineer-in-Charge/ Project Manager) to the reinforcement by a cotton swab. Allow to remain for 24 hours and then brush off any loose particles by dry paint brush.
- Apply two Protective coats made out of POLYALK FIXOPRIME or equivalent approved by the Engineer-in-Charge/ Project Manager : CEMENT (1:1.5 by weight) to the concrete by brush.
- Apply a bond coat of POLYALK EP or equivalent approved by the Engineer-in-Charge/ Project Manager: CEMENT (1: 1) by weight to the surface.
- Place polymer mortar by mixing:
 - 1 kg Polyalk EP
 - 5 kg Cement
 - 15 kg Quartz sand (10 kg passing 2mm and 5kg passing 1.5mm)
 - Water: 1 to 1.5 litres depending upon the consistency required.
- Place in thickness of 10-15 mm for one layer. Allow layer to set initially before applying next layer.
- In case the required thickness is more than 15mm, the mortar should be applied in 2 or more coats at an interval of 8 hours after application of bonding coat of POLYALK EP:CEMENT (1:1 by weight) by brush.
- Finish surface with trowel.
- Place polymer mortar as above depending on the thickness.
- Allow to air cure for 48 hours followed by water sprinkling for 3 days or curing by wet squeezed gunny bags.

NOTES

Cement : 53 grade

Sand : Quartz sand.

Mode of measurement: in sq. mtrs depending on the thickness (25mm 50mm).

Client ID	02
Tender No.	1643
Page No.	80/126

N: CEMENT GROUTING FOR R.C.C. MEMBERS

- Drill holes atleast 12 mm in diameter inside the concrete surface. In case of columns of 9” thickness the holes should be atleast 4” in depth.
- Insert P.V.C.nozzles in the holes and fix the nozzles using POLYPLUG for immediate fixing. Grouting shall be done with a grout pump at a pressure of 2 kg/cm² with the following proportions:

Cement : 1 kg.

Monobond : 200 ml.

Water : 6 litres.

Microsilica : 200gms.

Entosh : 200 ml.

The holes which are made should be then sealed with polymer mortar.

NOTES:

Cement : 53 grade

Mode of measurement: per no.

O. WATERPROOFING OF TOILETS

- Cleaning the existing RCC slab with water jet,
- Exposing the cracks in “V” grooves by carefully chipping along with the grooves by about 30 mm without damaging the slab,
- Filling the grooves with non shrinkable cement polymer mixture, detecting the honey comb areas, fixing nozzles at a centre to centre distance of 300 mm for grouting, grouting non shrinkable grout made out of cement, air entering agents and clear water at a pressure of 2 Kg/cm² – 3Kg/ cm², cutting the nozzles at the finished RCC level,
- The above should be air cured for 48 hrs and water cured for 3 days by water sprinkling or by wet gunny bags.
- The surface should be dampened and a slurry containing POLYALK WP: CEMENT (1:1. 25 by weight) should be applied to damp surface by brush. Care should be taken to prepare so much slurry, which can be used within 30 minutes.
- After 24 hrs apply two more brush coats of slurry at intervals of 4 hrs.
- The coating thus formed should be air cured for 48 hours and then water cured for 3 days by sprinkling or wet gunny bags.
- Providing and applying water proof plaster 25mm thick, 1:4 mixed with liquid integral water proofing compound manufactured by Roff/Cica or as approved by the Engineer-in-

Client ID	02
Tender No.	1643
Page No.	81/126

Charge/ Project Manager in proportion 150 to 250 ml/50kg of cement finished with neat cement slurry.

- Stocking water in the water proofed surface for 24 hrs all complete as per manufacturers specifications, standard practice and as directed by the Engineer-in-Charge/ Project Manager.
- Curing is done for 14 days by making a pond.

NOTES:

Cement : 43 grade.

Sand : Washed River sand except for polymer mortar where quartz sand has to be used.

Mode of measurement: per sq.mtr.

Machine mixing for mortar.

Washed River shall used.

P. EXTERNAL PLASTER :

- Providing and applying water proof plaster 25mm thick, 1:4 for the 1st coat and 1:3 for the 2nd coat mixed with liquid integral water proofing compound in proportion of 100 ml of supercon or equivalent approved by Engineer-in-Charge/ Project Manager 100 with 50 kg of cement.
- Before carrying out the plastering work the joint shall be racked, pointed with the cement mortar 1:4.
- The bonding coat made out of POLYALK EP: CEMENT (1:1. 25 by weight) should be applied to damp surface by brush. Care should be taken to prepare so much slurry, which can be used within 30 minutes.
- The base coat 12 – 18 mm thick to be made out of river sand (single screened passing through 5 mm) mixed with 100 ml supercon 100 for a bag of cement finished rough (roughened with wire brushes or by scratching diagonal lines 1.5 mm deep at 75 mm. centre both ways as directed)
- The finishing coat 8-12 mm thick to be made out of river sand and cement in proportion of 1:3 (double screened sand passing through 3 mm sieve) mixed with 100 ml supercon 100 for a bag of cement finished in smooth / rough / Sand face in line, level and in plumb.
- All complete including surface preparations scaffolding, curing, etc as per standard specification and as per directed by the Engineer in-Charge.
- Curing shall be done thoroughly for atleast 7 days.

Client ID	02
Tender No.	1643
Page No.	82/126

NOTES:

Cement : 43 grade

Sand : Washed River sand

Mode of measurement: per sq.mtr.

MACHINE MIXING FOR MORTAR

All Sand to be washed

INTERNAL PLASTER

- Providing and applying plaster 12 mm thick, 1:4 mixed with liquid integral water proofing compound in proportion of 100 ml of supercon 100 with 50 kg of cement.
- Before carrying out the plastering work the joint shall be raked, pointed with the cement mortar 1:4.
- The bonding coat made out of POLYALK EP or equivalent as approved by the Engineer-in-Charge/ Project Manager: CEMENT (1:1. 25 by weight) should be applied to damp surface by brush. Care should be taken to prepare so much slurry, which can be used within 30 minutes.
- The plaster shall be in proper line, plumb level etc.
- All complete including surface preparations scaffolding, curing, etc as per standard specification and as per directed by the Engineer in-Charge.
- Curing shall be done thoroughly for atleast 7 days.

NOTES:

Cement : 43 grade

Sand : River sand thoroughly washed

Mode of measurement : per sq.mtr.

MACHINE MIXING FOR MORTAR

(THE ABOVE ARE THE GENERAL SPECIFICATION SHOULD BE READ IN CONJUNCTION WITH BILL OF QUANTITIES. THE BILL OF QUANTITIES MAY BE TAKEN AS THE BASIS FOR THE WORK TO BE EXECUTED. IN CASE OF ANY DISCREPANCY IN THE SPECIFICATION AND THE BILL OF QUANTITIES, THE BILL OF QUANTITIES MAY BE TAKEN AS FINAL IN CASE THE CONTRACTOR SHOULD CHECK UP WITH THE ENGINEER IN CHARGE/PROJECT MANAGER WHO'S DECISION WILL BE FINAL.)

Contractor's Signature

Seal

Client ID	02
Tender No.	1643
Page No.	83/126

TECHNICAL SPECIFICATIONS – (ELECTRICAL)

1.0 SCOPE :

- 1.1 The scope of work shall cover the installation, testing and commissioning of all power panels, incorporating circuit breakers, fuse units, busbars, interconnections, earthing etc., meeting the requirements shown in equipment schedule and the drawings, with good engineering practices.

2.0 CIRCUIT BREAKERS :

Circuit breakers shall be air relevant break horizontal draw out type fully interlocked and meeting the requirements of relevant IS:2516 or BS:3659. Breakers shall be rated for a medium voltage of 600 V and rated full load amperes as indicated on drawings. Breaker shall be capable of making and breaking system short circuits specified.

- 3.0 Breakers shall be, unless specified otherwise, manually operated, complete with front-of the panel operating handle, isolating plug with safety shutters, mechanical ON/OFF indicator, silver plated arching and main contacts, arc chutes, trip free operation. Breakers shall be capable of being raked out into 'Testing', 'Isolator' and 'Maintenance' positions and kept locked in any position. Breakers for remote operation shall be motor operated spring charged.

4.0 SWITCH FUSE UNITS & DISCONNECTS:

- 4.1 Switch fuse units shall have quick-make, quick-break silver-plated preferably double break contacts with operating mechanism suitable for rotary operation in the case of cubicle mounting. All switches shall be rated according to the equipment schedule or drawings and shall withstand the system prospective fault current let through. Cam operated rotary switches with adequate terminal adapters upto 25 A are acceptable but for all higher rating switch fuse units shall be heavy duty type conforming to IS 4047. All switches should be suitable for AC 23 duty.

- 4.2 Fuses shall be HRC cartridge type conforming to IS:2208 with a breaking capacity corresponding to system fault level. Fuses shall be link type with visible indication. Screw type diazed fuses are not acceptable for any ratings.

5.0 INSTRUMENT TRANSFORMERS, METERS & RELAYS :

Contractor's Signature

Seal

Client ID	02
Tender No.	1643
Page No.	84/126

- 5.1 Ammeters and Voltmeters shall have moving iron spring controlled dead-beat elements in square bezel flush type cases 144 mm. in size and suitable for switch board mounting. Meters shall conform to BS:89 and have grade `A' accuracy. Scale ranges shall meet with the requirements or as indicated on the drawing or in the Schedule of quantities.
- 5.2 Energy meters shall be two-element switch board mounting type suitable for unbalanced loads. In case of two incoming feeders, a summing C.T shall be provided with the meter. Meters shall conform to BS:37. The energy meters for DG Set & Transformers shall be calibrated and got certified by the respective State Electricity Board. All tripping may be through combination thermal and magnetic releases or IDMT releases as specified.

6.0 CUBICLE BOARDS :

- 6.1 All boards shall be combination of 14 & 16 SWG sheet steel, free standing, extensible, totally enclosed, dust tight, vermin-proof cubicle, flush dead front and modular construction suitable for 3 phase 415 V, 4 wire 50 Hertz system. All boards shall be accessible from the front for the maintenance of switch fuses, bus bars, cable termination, meters etc. Cables shall be capable of entering the board both from top as well as bottom. All panels shall be machine pressed with punched openings for meters etc. All sheet steel shall be rust inhibited through a process of de-greasing, acid pickling, phosphating etc. The panels shall be finished with powder coating of appropriate micron rating and of colour approved by the Engineer-in-charge/ Project Manager. Engraved plastic labels shall be provided indicating the feeder details, and capacity and danger signs.
- 6.2 The boards shall accommodate air insulated bus bars, air circuit breakers, switch fuse units with HRC fuses, starters, necessary meters, relays, contactors etc. as required and arranged in suitable tiers.
- 6.3 The switchboard shall be fully compartmentalized in vertical tiers housing the feeder switches in totally enclosed department. Each compartment shall be self sufficient with switch unit, fuses, contactors, relays, indicating lamps and an interlocked door with facility for pad-locking. Each feeder must terminate in an independent labeled terminal block. Strip type terminal block accommodating several feeders together is not acceptable.

Client ID	02
Tender No.	1643
Page No.	85/126

Pressure clamp type terminals suitable for relevant aluminum wires may be used upto switches of 25 A and cable lugs for higher ratings. All termination shall be shrouded in an approved manner. The entire enclosure shall meet with relevant IS:2147/1962. Feeder connections shall be of solid insulated copper/aluminum wires or strips with bimetallic clamps wherever required. Internal wiring, bus bar markings etc. shall conform to IS:375/1963. Internal wiring shall have terminal ferrules. Main switch should be at an easily accessible height and the highest switch operating handle should not be over 1.75 m. from floor level. Cable glands need not form part of the switch board as the cost of glands will form part of the cable termination.

- 6.4 The panel shall be fabricated in enclosure of not more than 1 mt. The panel shall be assembled at site.

7.0 BUSBARS :

- 7.1 Bus bars shall be three phase and neutral and of Tinned Electrolytic copper/ aluminum or aluminum as described in the Schedule of work. Alloy rated for a temperature rise of 30°C over the ambient temperature specified, based on insulated conductor rating (IS:8084-1976). Neutral bars may be of one half the size of the phase bars. The main horizontal bus bars shall be of uniform cross section and rated in accordance with the incoming switch. The vertical bus bars for the feeder columns may be rated at 75% of aggregate feeder capacity and shall be uniform in size. Bus bars and interconnections shall be taped with PVC colour coded tape to prevent bar-to-bar accidental shorts. Each bus bar shall be directly and easily accessible on removal of the front cover. Bus bars shall be totally enclosed, shrouded and supported on non-hygroscopic insulator blocks to withstand thermal and dynamic overloads during system short circuits. An earth bus of size 50% of the phase subject to the following maximum and minimum shall be provided. Individual switch components shall be connected with the earth bus through copper strip size of connecting wire being as above. All wire connections to bars shall be through lugs, bolts and nuts and spring washers.

Copper Aluminum Galvanized Steel

Minimum	6.5 Sq.mm.	10 Sq.mm	20 Sq.mm
Maximum	65 sq. mm.	120 sq.mm.	200 sq mm.

The minimum size of earth bar in a board shall however be 25 x 3 Al. or equivalent.

8.0 ISOLATORS :

Contractor's Signature

Seal

Client ID	02
Tender No.	1643
Page No.	86/126

- 8.1 Isolators shall be fixed on wall on self-supported angle iron framework as required and mounted as near to the motor as possible. Where several motors are installed, isolators if required shall be provided at a central location on a common framework.
- 8.2 Painting, earthing and labels shall be provided, as generally, indicating for MV Switch gear and as shown on drawings.

9.0 EARTHING:

- 9.1 All switch panels shall be provided with an earth bar as specified. Earthing of the switch boards shall be through the equipment earthing system provided in the building. All meters shall be calibrated and tested through secondary injection tests. All field tests shall be witnessed by Engineer-in-charge/ Project Manager and recorded.

10.0 INSTALLATION:

- 10.1 All panels shall be supported on MS channels incorporated in the panel during the fabrication. All such supports shall be prime coated with two finish coats. After completion of the work all panels shall be touched up for the painting, if damaged.
- 10.2 All panels shall be megged phase and to neutral using a 1000 V. meggar with all outgoing feeders in closed position. The meggar value should not be less than 2.5 megohms between phases and 1.5 megohms between phases and neutral.
- 10.3 Fabrication drawings of all panels shall be approved by the Engineer-in-charge/ Project Manager before fabrication.

11.0 TESTING & INSPECTION:

- 11.1 All switchboards shall be factory inspected before finishing and dispatch.
- 11.2 Certificate for all routine and type tests for circuit breakers in accordance with the IS:2516- 1963 shall be furnished. In addition, all panels shall be megged, phase to phase, and phase to neutral, using a 1000 V meggar with all switch gear in closed position. The meggar value should not be less than 2.5 megohms between phases and 1.5 megohms between phase and neutral.
- 11.3 Earthing of the panels from the equipment earthing system will be paid for unit rates separately as specified under earthing or as specified in BOQ.

Client ID	02
Tender No.	1643
Page No.	87/126

12.0 MODE OF MEASUREMENT :

12.1 Panels, isolators will each be considered as one unit for the purposed of measurement and shall include the following :

- i) Incoming and Outgoing feeder terminals.
- ii) Interconnections and controls and instrument wiring with necessary protective fuses.
- iii) Meters, Relays, Indicating lamps, CT's control fuses etc.
- iv) Supporting structure, sheet steel enclosure.
- v) Installation and testing.

Earthing of the Panel/Isolator from the equipment earthing system will be measured separately at the said unit rates.

DISTRIBUTION BOARDS

1.0 SCOPE :

1.1 The scope of work shall cover the supply, installation, testing and commissioning of lighting and power distribution boards. Associated minor civil work required for the erection of the DB's are also included in the scope of this contract.

2.0 DISTRIBUTION BOARDS:

Distribution boards along with the controlling MCB's/Fuse or Isolator as shown shall be fixed in an M.S. Box with hinged lockable door suitable for recessed mounting in wall. Distribution boards shall be made of 14 SWG steel sheet duly rust inhibited through a process of de-greasing, acid pickling, phosphating and powder coated to an approved colour of adequate micron rating duly approved by the Engineer-in-charge/ Project Manager.

Three phase boards shall have phase barriers and a wire channel on three sides generally as shown on drawings. Neutral bars shall be solid tinned copper bars with tapped holes and chase headed screws. For 3 phase DB's, 3 mm. independent neutral bars shall be provided. All DB's shall be internally pre-wired using copper insulated PVC wires brought to a terminal strip of appropriate rating for outgoing feeders.

Client ID	02
Tender No.	1643
Page No.	88/126

3.0 Conduit knockouts shall be provided as required/shown on drawings and the entire board shall be rendered dust and vermin proof with necessary sealing gaskets. The top and bottom side of DB should be detachable.

3.1 MCB's shall have quick make and break non-welding self-wiping silver alloy contacts for 9 KA/3 KA short circuit both on the manual and automatic operation. Each pole of the breaker shall be provided with inverse time thermal over load and instantaneous over current tripping elements, with trip-free mechanism. In case of multi-pole breakers, the tripping must be on all the poles and operating handle shall be common. Breakers must conform to BS 3871 with facility for locking in OFF position. Pressure clamp terminals for stranded/solid conductor insertion are acceptable upto 4 sq.mm. aluminum or 2.5 sq.mm. copper and for higher ratings, the terminals shall be suitably shrouded. Wherever MCB isolators are specified they are without the tripping elements.

3.2 Fuses shall be HRC link type re-wireable with necessary fuse carriers and with rating of not less than 25 MVA. Bottle type fuses are not acceptable. Fuse carrier terminals shall be suitably shrouded. Re-wireable fuse carriers shall be porcelain. HRC fuses for motor duty should be time lag type.

3.3 Distribution boards shall have HRC/re-wireable fuses as shown on the schedule and drawings. Board shall meet with the requirements of IS 2675 and marking arrangement of busbars shall be in accordance with I.S. standards.

Bus bars shall be suitable for the incoming switch rating and sized for a temperature rise of 35° C over the ambient. Each board shall have two separate earthing terminals. Circuit diagram indicating the load distribution shall be pasted on the inside of the DB. One earthing terminal for single phase and two terminals for 3 phase DB's shall be provided with an earth strip connecting the studs and the outgoing ECU earth bar.

3.4 In the case of MCB distribution boards, the backup fuses wherever shown shall be not less than 63 A with a delayed characteristic and a minimum pre-arcing time of 0.5 sec. at 9 KA/3 KA fault current.

3.5 All outgoing feeders shall terminate on a terminal strip which in turn is interconnected to the MCB/Fuse base by means of insulated single conductor copper wires as follows :

Upto 15 A	2.5 sq.mm.	40 A	10 sq.mm.
25 A	4.0 sq.mm.	63 A	16 sq.mm.
32 A	6.0 sq.mm.		

Contractor's Signature

Seal

Client ID	02
Tender No.	1643
Page No.	89/126

3.6 Each DB shall have indicating lamps preferably neon type denoting power availability in the board after the switch indicating lamps shall be complete with fuses.

4.0 RCA/ MCB :

4.1 The RCA should suffices all the requirements of IS as per code IS - 12640 - 1988. The RCA should be current operated and not on line voltage.

The RCA should ensure mainly the following functions.

- a) Measurement of the fault current value.
- b) Comparison of the fault current with a reference value.

4.2 The RCA should have a torroidal transformer witch has the main conductors of primary (P - N) which check the sum of the current close to zero.

4.3 All metal parts should be inherently resistant to corrosion and treated to make them corrosion resistant.

4.4 It should be truly current operated.

4.5 It should operate on core balance torroidal transformer.

4.6 It's accuracy should be $\pm 5\%$.

4.7 It should operate even in case of neutral failure.

4.8 It should trip at a present leakage current within 30 M.S.

4.9 It's enclosure should be as per IP 30.

4.10 It's mechanical operation life should be more than 20,000 operations.

4.11 It should provide full protection as envisaged by IE rules - 61-A, 71 - ee, 73 - ee, 1985 and also rule 50 of IE rule 1956.

4.12 It should conform to all national and international standards like IS 8828 : 1993, IS 12640 - 1988, BS 4293 - 1983, CEE 27 (International commission Rules for the approved of electrical equipment).

Client ID	02
Tender No.	1643
Page No.	90/126

5.0 LIGHT CONTROL DIMMERS :

- 5.1 Dimmers shall be solid state semiconductor devices silicon controlled rectifiers or Thyristers in modular construction. Input and output switches shall be as specified. Stability shall be maintained and lamps shall not flicker due to aging of the dimmer.
- 5.2 Dimmers shall be conservatively rated for continuous trouble free operation and shall be suitable for system voltage of 230 to 280 V single phase and a momentary surge voltage of 440 V. Each dimmer shall have a rotary 3 position switch for OFF, BYPASS and through connection.
- 5.3 Each Dimmer shall be protected for overload and short circuit through suitable MCB's. Each Dimmer shall have individual sliding type control together with a master controller for 3 phase Dimmers.
- 5.4 Wherever Dimmers are specified, the size of the DB/switch board shall be suitably enhanced.

6.0 INSTALLATION & TESTING :

- 6.1 All distribution boards shall be mounted on wall or recessed with necessary angle iron frame work. All mounting frames shall be prime coated with two finish coats after the completion of the work. All distribution boards shall be touched up for damaged painting.
- 6.2 All boards shall be tested with megger phase to phase and to neutral using 1000 V megger with all switchgear in closed position. The megger value should not be less than 2.5 megohms between phases and 1.5 megohms between phase and neutral.
- 6.3 Fabrication drawings of all boards shall be approved by the Engineer-in-charge / Project Manager before fabrication and the boards inspected before despatch. The contractor to ensure this for release of payments.

7.0 MODE OF MEASUREMENT :

- 7.1 The distribution board complete with the various components specified, erection etc., will be treated as one unit for the purpose of measurement and payment.
- 7.2 DB's with dimmers shall be separately counted.

Contractor's Signature

Seal

Client ID	02
Tender No.	1643
Page No.	91/126

MEDIUM VOLTAGE CABLING

1.0 SCOPE :

- 1.1 The scope of work shall cover supply, laying, connecting, testing and commissioning of low and medium voltage power and control cabling.

2.0 CABLES :

All cables shall be 1100 Volt grade PVC insulated, sheathed with or without steel armoring as specified and with an outer PVC protective sheath. Cables shall have high conductivity stranded aluminum or copper conductors and cores colour coded to the Indian Standards.

- 3.0 All cables shall be new without any kind or visible damage. The manufacturers name, insulating material, conductor size and voltage class shall be marked on the surface of the cable at every 600 mm centers.

4.0 INSTALLATION

- 4.1 Cables shall be laid in the routes marked in the drawings. Where the route is not marked, the contractor shall mark it out on the drawings and also on the site and obtain the approval of the Engineer-in-Charge/ Project Manager before laying the cable. Procurement of cables shall be on the basis of actual site measurements and the quantities shown in the schedule of work shall be regarded as a guide only.
- 4.2 Cables, running indoors shall be laid on walls, ceiling, inside shafts or trenches. Single cables laid shall be fixed directly to walls or ceiling and supported at not more than 500 mm. Where number of cables are run, necessary perforated cable trays shall be provided wherever shown. Perforated trays shall be mild steel or Aluminum as specified in the schedule of work and supported on mild steel frame work as shown on drawings or as approved. Cables laid in built-up trenches shall be on steel supports. Plastic identification tags shall be provided at every 30 m.
- 4.3 Cables shall be bent to a radius not less than 12 (twelve) times the overall diameter of the cable or in accordance with the manufacturer's recommendations whichever is higher.

Client ID	02
Tender No.	1643
Page No.	92/126

- 4.4 In the case of cables buried directly in ground, the cable route shall be parallel or perpendicular to roadways, walls etc. Cables shall be laid on an excavated, graded trench, over a sand or soft earth cushion to provide protection against abrasion. Cables shall be protected with brick or cement tiles on all the three sides as shown on drawings. Width of excavated trenches shall be as per drawings. Back fill over buried cables shall be with a minimum earth cover of 750 mm to 1000 mm. The cables shall be provided with cables markers at every 20 meters and at all loop points.
- 4.5 The general arrangement of cable laying is shown on drawings or may be obtained from Engineer-in-Charge/ Project Manager. All cables shall be full runs from panel to panel without any joints or splices. Cables shall be identified at end termination indicating the feeder number and the Panel/Distribution board from where it is being laid. Cable termination for conductors upto 4 sq.mm. may be insertion type and all higher sizes shall have tinned copper compression lugs. Cable termination shall have necessary brass glands. The end termination shall be insulated with a minimum of six half-lapped layers of PVC tape. Cable armoring shall be earthed at both ends.
- 4.6 In case of cables entering the buildings. It would be done duly only through pipes. The pipes shall be laid in slant position. So, that no rain water may enter the building. After the cables are tested. The pipes shall be sealed with M. seal & then tarpaulin shall be wrapped around the cable for making the entry of water light.
- 4.7 All cables shall be provided with stainless steel/Aluminum cable identification tags at a maximum distance of 10 m.

5.0 TESTING:

- 5.1 MV cables shall be tested upon installation with a 500 V Meggar and the following readings established:

- 1) Continuity on all phases.
- 2) Insulation Resistance.
 - (a) between conductors.
 - (b) all conductors and ground.

All test readings shall be recorded and shall form part of the completion documentation.

6.0 MODE OF MEASUREMENT :

- 6.1 Cables will be measured on the basis of a common rate per unit length indoor or

Client ID	02
Tender No.	1643
Page No.	93/126

outdoor and shall include the following :

For cables laid indoors :

- i) Cables and clamps.
- ii) Installation, commissioning and testing.
- iii) Cable marking.

OR

For cable buried underground :

- i) Cables and protective bricks & tiles.
- ii) Installation, commissioning & testing.
- iii) Cable markers.

6.2 Cable trays/racks will be measured on the basis of unit length for individual sizes and shall include :

- i) Perforated trays on M.S framing ladder wall support or ceiling suspenders.
- ii) Installation and painting in 2 coats of black bituminous paint.

6.3 Each cable termination will be measured as one unit for payment. Certain cable sizes are grouped together and rates shall be furnished against each group. The item shall include the following :

- i) Cable glands, lugs, bolts, nuts.
- ii) All jointing materials.
- iii) Installations, testing and commissioning.
- iv) Earthing the glands.

6.4 For cables buried under ground excavation shall be paid for, in addition, for the following per unit volume:

- i) Excavation and back filling.
- ii) 6" Soft Earth Cushioning below and above cable.
- iii) Bricks on all the three sides of cable as shown in drawing/instructed by the Engineer-in-Charge/ Project Manager.

CONDUIT WIRING

1.0 SCOPE :

Contractor's Signature

Seal

Client ID	02
Tender No.	1643
Page No.	94/126

The scope of work shall cover supply, installation testing and commissioning of all PVC conduit wiring

2.0 RIGID AND FLEXIBLE CONDUITS :

All conduits shall be done in concealed manner with rigid PVC pipe having minimum wall thickness of medium gauge 1.6 to 1.8 approved by F.I.A. & I.S.I. 25 mm. diameter for circuit mains with 2.5 sq. mm. EC grade.

- a) Upto 38 mm. diameter - minimum 1.8 mm. wall thickness.
- b) Above 40 mm. diameter - minimum 2.2 mm. wall thickness.

3.0 Flexible conduits shall be formed from a continuous length of spirally wound interlocked steel strip with a fused zinc coating on both sides. The conduit shall be terminated in brass adapters.

4.0 ACCESSORIES :

PVC conduit fittings such as bends, elbows, reducers, chase nipples, split couplings, plugs etc. shall be specifically designed and manufactured for their particular application. All conduit fittings shall conform to IS:2667-1964 and IS:3887-1966. All fitting associated with galvanized conduit shall also be galvanized.

5.0 WIRES :

5.1 All wires shall be single core multi-strand/ flexible copper or single strand Aluminium/Copper, PVC insulated as per IS:694 and shall be 660 V\1100 V grade.

5.2 All wires shall be colour coded as follows :

<u>Phase</u>	<u>Colour of wire</u>
R	Red
Y	Yellow
B	Blue
N	Black
Earth	Green (insulated)
Control (If any)	Grey
All off wires	Same as Phase wire

5.3 Colour code should be strictly used for all wiring.

Contractor's Signature

Seal

Client ID	02
Tender No.	1643
Page No.	95/126

6.0 SWITCHES & SOCKETS :

- 6.1 Switches shall be moulded plate type flush piano type with silver-coated contacts. Sockets shall be 3 pin with switch and plate type cover. Combination of multiple switch units and sockets should be used to minimize the switch boxes.
- 6.2 For heavy duty, metal clad sockets with M.C.B/ Isolator mounted in a galvanized steel box shall be provided.

7.0 INSTALLATION :

- 7.1 The size of conduit shall be selected in accordance with the number of wires permitted under table given below. The minimum size of the conduit shall be 25 mm. diameter unless otherwise indicated or approved. Size of wires shall not be less than 1.0 sq.mm. copper or 2.5 sq.mm. aluminium.

Nominal dia. of wires (mm.)	Nominal Cross sec. area (mm ²)	20 mm		25 mm		32 mm		38 mm		
		S	B	S	B	S	B	S	B	
1/2.40	1.50	4		3	8	6	15	9	-	-
1/1.80	2.50	4		2	6	4	10	8	-	-
1/2.24	4.00	2		2	4	3	8	6	-	-
1/2.80	6.00	1		-	4	3	6	6	-	-
1/3.55	10.00	1		-	3	2	5	4	6	5

S - runs of conduits which have distance not exceeding 4.25 m. between draw boxes & which do not deflect from the straight by an angle more than 15 degree.

B -runs of conduits which deflect from the straight by more than 15°.

- 7.2 Conduits shall be kept at a minimum distance of 100 mm. from the pipes of other non-electrical services. And maintain minimum 300 mm distance between telephone, TV & Computer piping.

Contractor's Signature

Seal

Client ID	02
Tender No.	1643
Page No.	96/126

7.3 Separate conduits/raceways shall be used for :

1. Normal lights and 5 A 3 pin sockets on lighting circuit.
2. Separate conduit shall be laid from D.B. to switch board or point.
3. Power outlets - 15 A 3 pin 20 A/30 A, 2 pin scraping earth metal clad sockets.
4. Emergency lighting.
5. Telephones.
6. Fire alarm system.
7. Public address system & Music system.
8. For all other voltages higher or lower than 230 V.
9. T.V. Antenna.
10. Water level guard.
11. Computer Wiring

7.4 Call bell wiring layout of conduits shall be generally as indicated on drawings and the layout shall be supplemented and complemented by contractor on site with the approval of the Engineer/ Project Manager.

7.5 Wiring for short extensions to outlets in hung ceiling or to vibrating equipment's, motors etc., shall be installed in flexible conduits. Otherwise rigid conduits shall be used. No flexible extension shall exceed 1.25 m.

7.6 Conduits run on surfaces shall be supported on metal 12 mm. thick saddles which in turn are properly screwed to the wall or ceiling. Saddles shall be at intervals of not more than 500 mm. Fixing screws shall be with round or cheese head and of rust-proof materials. Exposed conduits shall be neatly run parallel or at right angles to the walls of the building. Unseemly conduit bends and offsets shall be avoided by using fabricated mild steel junction/pull through boxes for better appearances. No cross-over of conduits shall be allowed unless it is necessary and entire conduit installation shall be clean and neat in appearance.

7.7 Conduits embedded into the walls shall be fixed by means of staples at not more than 500 mm. intervals. Chases in the walls shall be neatly made and refilled after laying the conduit and brought to the finish of the wall.

7.8 Conduits buried in concrete structure shall be put in position and securely fastened to the reinforcement and got approved by the Engineer/ Project Manager, before the concrete is poured. Proper care shall be taken to ensure that the conduits are neither dislocated nor choked at the time of pouring the concrete suitable fish wires shall be

Client ID	02
Tender No.	1643
Page No.	97/126

drawn in all conduits before they are embedded. Where conduit passes through expansion joints in the building, adequate expansion fittings shall be used to take care of any relative movement.

- 7.9 Inspection boxes shall be provided for periodical inspection to facilitate withdrawal and removal of wires. Such inspection boxes shall be flush with the wall or ceiling in the case of concealed conduits. Inspection boxes shall be spaced at not more than 12 meters apart or two 90° solid bends or equal. All junction and switch boxes shall be covered by 6 mm. clear perspex plate truly cut and fixed with cadmium plated brass screws. These junction boxes shall form part of point wiring or conduit wiring as the case may be including the cost of removing the perspex cover for painting and re-fixing. No separate charges shall be allowed except where specially mentioned.
- 7.10 Conduits shall be free from sharp edges and burrs and the threading free from grease or oil. The entire system of conduits must be completely installed and rendered electrically continuous before the conductors are pulled in. Conduits should terminate in junction boxes of not less than 32 mm. deep.
- 7.11 An insulated earth wire of copper rated capacity shall be run in each conduit.

8.0 LIGHTING & POWER WIRING:

- 8.1 All final branch circuits for lighting and appliances shall be single conductor cables run inside conduits. The conduit shall be properly connected or jointed into sockets, bends, junction boxes.
- 8.2 Branch circuit conductor sizes shall be as shown in the schedule of quantities and or drawings.
- 8.3 All circuits shall preferably be kept in a separate conduit upto the Distribution Board. No other wiring shall be bunched in the same conduit except those belonging to the same phase. Each lighting branch circuit shall not have more than ten outlets or 800 watts whichever is lower. Each conduit shall not hold more than three branch circuits.
- 8.4 Flexible cords for connection to appliances, fans and pendants shall be 650/1100 V grade (three or four cores i.e with insulated neutral wire of same size) with tinned stranded copper wires, insulated, twisted and sheathed with strengthening cord. Colour of sheath shall be subject to the Engineer-in-charge's / Project Manager's approval.

Client ID	02
Tender No.	1643
Page No.	98/126

- 8.5 Looping system of wiring shall be used. Wires shall not be jointed. Where joints are unavoidable, they shall be made through approved mechanical connectors. No such joints shall be made unless the length of the sub-circuit, sub-main or main is more than the length of the standard coil.
- 8.6 Control switches shall be connected in the phase conductors only and shall be 'ON' when knob is down. Switches shall be fixed in 3 mm. thick painted or galvanized steel boxes with cover plates as specified. Cadmium plated brass screws shall be used.
- 8.7 Power wiring shall be distinctly separate from lighting wiring. Conduits not less than 25 mm. and wires not less than 2.5 sq.mm. copper shall be used.
- 8.8 Every conductor shall be provided with identification ferrules at both ends matching the drawings.
- 8.9 All light fittings should be supported from the R.C.C ceiling with the help of chains or downrods.**

9.0 TESTING :

- 9.1 The entire installation shall be tested and a test certificate submitted for :
- Insulation resistance.
 - Earth continuity.
 - Polarity of single pole switches.

10.0 Mode of measurement :

- 10.1 The definition of point wiring shall be in accordance with sketch drawing and should include wiring from D.B. onwards together with all junction boxes, connectors, earth wire, fixing accessories, connection to all light fittings switches etc. as specified and shown on drawings. The point rate shall include circuit wiring from distribution board to switch board and/or directly to the point.
- 10.2 All switches sockets with boxes, earthing interconnection and plate type silver contact switch shall be inclusive in point wiring.
- 10.3 All empty conduit runs, including junction boxes fish wires etc. shall be paid on the basis of unit length. Measurements shall be along the conduit and concurrent length of sub-circuit wiring.

Client ID	02
Tender No.	1643
Page No.	99/126

10.4 Buzzer indicator of the ways specified shall consist of indicating lamps, reset button, electromagnet, perspex cover plate, chromium plated brass screws etc. shall be considered as one unit for measurement and payment.

10.5 Two way light points shall be classified according to and consist of 2 Nos. 2 way plate type switches, wiring from the 1st 2 way switch to the 2nd 2 way switch to the first light controlled. Subsequent lights, if any, shall be measured as ordinary secondary point.

TELEPHONE DISTRIBUTION

1.0 SCOPE :

1.1 The scope of work shall cover supply, installation, commissioning and testing of :

- i) Telephone cables
- ii) Telephone Tag Blocks
- iii) Telephone wiring in conduits

1.2 The telephone exchange and the hand sets shall be supplied separately.

2.0 CONDUITS :

2.1 Conduits shall be as given below :

Indoor : medium gauge Rigid PVC conduit.

The conduit shall generally be as specified under section 'CONDUIT WIRING'.

3.0 CABLES AND WIRES :

3.1 The type of cables and the services shall be as follows :

- i) Indoor Multi pair, PVC insulated sheathed armored and sheathed.
- ii) Inside Twin core PVC insulated with conduit twisted cores.

3.2 All multi core cables and wires shall be of tinned copper conductor of not less than 0.5 mm dia and shall be colour coded twisted pairs with rip cord.

Client ID	02
Tender No.	1643
Page No.	100/126

- 3.3 The conductor resistance shall be less than 150 ohms per KM and the insulation resistance between the conductors not less than 50 megohms and the nominal capacitance of about 0.1 micro farad per kilometer.
- 3.4 Cables laid under ground or locations subject to dampness and flooding shall be filled with polyethylene compound and shall have sufficient protection against moisture and water ingress.
- 3.5 All armoring shall be of galvanized steel wires and protected against corrosion by an outer sheath of PVC in the case of indoor cables and polyethylene in the case of outdoor cables. Outer sheathing must be fire retarding and anti-termite.
- 3.6 All unarmoured single core cables and inner sheath of armored cables shall be provided with ripcord.
- 3.7 All single pair cables for final extension to the telephone outlet box shall be unarmoured tinned copper conductors of not less than 0.6 mm. diameter and shall be drawn in conduits. All telephone outlets shall consist of 2 A 2 pair polythene connector in G.I box with 6 mm perspex cover with beveled edges and chromium plated brass hardware.

4.0 TAG BLOCKS:

- 4.1 The telephone tag blocks shall be suitable for the multi core telephone cables and shall have two terminal blocks, cross connect type. All incoming and outgoing cables shall be terminated on separate terminal blocks and termination shall be silver soldered. The cross connecting jumpers shall be insulated wires of same diameter and screw connected.
- 4.2 The tag blocks shall be mounted inside fabricated sheet steel boxes with removable hinged covers and shall be fully accessible. The enclosure shall be painted with 2 coats of red oxide and stove enameled.

5.0 INSTALLATION:

- 5.1 The installation of conduits shall generally be as specified under section 'CONDUIT WIRING'.
- 5.2 All cables shall be on cable racks and neatly stitched together.

Client ID	02
Tender No.	1643
Page No.	101/126

- 5.3 The connection at the tag blocks shall be silver soldered so as to achieve minimum contact resistance.
- 5.4 The final branch connections with single pair cables in conduits and the maximum number of cables in each conduit shall be as follows :

Conduit diameter inch mm.	Max. No. of cables
3/4" 20	2 Nos. single pair
1" 25	6 Nos. single pair
1¼" 32	12 Nos. single pair
1½" 40	18 Nos. single pair

6.0 MODE OF MEASUREMENT :

- 6.1 The main telephone cables shall include supply and laying of multi pair cables on ceiling/wall/on cable trays/racks including all supports and shall be measured and paid on running length basis. Cable trays/racks shall be paid for separately.
- 6.2 The multi pair tag blocks shall consist of two-telephone connector's strips, jumpered interconnections silver soldered enclosure etc. and shall be measured and paid as one unit.
- 6.3 The conduit wiring for telephone shall include single pair 0.6 diameter cable in heavy duty rigid, PVC conduits and shall include junction boxes, pull boxes, 2 pair 2 A connector in GI box, perspex cover etc. and shall from one point.

ADDITIONAL SPECIFICATIONS

Electrical Works

- A) The scope includes supply, installation, testing and commissioning of the following complete in all respects:
1. Point Wiring (UPS point & Raw point)
 2. Telephone Wiring
 3. Sub-main Cables

Contractor's Signature

Seal

Client ID	02
Tender No.	1643
Page No.	102/126

4. Data Cabling

1.1 Conduit System

- a) All conduit shall be heavy duty PVC conduits. The conduit fittings shall be of the same material as conduits.
- b) No conduit shall be less than 19 mm dia.
- c) All unarmoured cables and wires shall run within the conduits from lighting distribution board to lighting fixtures, receptacles, etc. in concealed manner in the wall/above false ceiling/floor.
- d) Conduit support shall be provided at an interval of 750 mm for horizontal runs and 1000 mm for vertical runs.
- e) Conduits shall be clamped on to approved type spacer plates or brackets or saddles or U-belts. The spacer plates or brackets in turn shall be securely fixed.
- f) Embedded conduits shall be securely fixed in position to preclude any movement.
- g) Conduits shall be installed in such a way as to ensure against trapped condensation.
- h) For long conduit run, junction/pull boxes shall be provided at suitable intervals to facilitate wiring.
- i) Conduits shall be securely fastened to junction boxes.
- j) Conduit lengths shall be joined by couplers.
- k) Bends shall have a minimum radius of four (4) times the conduit diameter. All bends shall be free of kinks, indentation or flattened surfaces. Heat shall not be applied in making any conduit bend. Separate bends may be used for this purpose.
- l) Conduits and fittings shall be properly protected during construction period against mechanical injury. Conduit ends shall be plugged or capped to prevent entry of foreign materials.
- m) After installation, the conduit shall be thoroughly cleaned before pulling in any wire.

1.2 Wiring

- a) Wiring shall be generally carried out by PVC insulated FRLS wires in conduits. All wires in a conduit shall be drawn simultaneously. No subsequent drawing is permissible.
- b) Wires shall not be pulled through more than two equivalent 90 deg. Bends in a single conduit run. Where required, suitable junction boxes shall be used.
- c) Wiring shall be spliced only at junction boxes with approved type terminal.

Contractor's Signature

Seal

Client ID	02
Tender No.	1643
Page No.	103/126

- d) For lighting fixtures, connection shall be teed off through junction box, so that the connection can be attended to without taking down the fixture.
- e) Maximum two wires can be terminated to each way of terminal connectors.
- f) Separate neutral wires shall be provided for each circuit.
- g) Wiring for lighting and power circuits (15A plugs) shall be carried out in separate conduits.
- h) The following size of wires shall be used for circuit wiring
- Lighting ckts : 2.5 sq.mm. copper wires
 - Power ckts. : 6.0 sq.mm. copper wires
 - Sub main : 10.0 sq.mm. copper wires (4 Nos.)
- i) Each lighting circuit shall not possess more than 10 points or 800 watt whichever is more.
- j) Not more than two power points shall be looped in one power circuit.
- k) Colour coding to be followed as follows:

Phase : Red, yellow, blue

Neutral : Black

Earth : Green

Separate colour coding to be used for convenience power and UPS power outlets.

- l) For telephone wiring – brown colour
- Data cabling -- Grey colour
 - Music system -- white colour
 - Fire alarm -- Orange

1.3 Switches and Sockets

All switches and sockets shall be modular type, recessed in wall in matching boxes (same manufacture).

1.4 Wires

All wires shall be 1100 Volts grade, copper conductor, multistrand (preferably in unitary construction) PVC insulated conforming to IS 694. The wires shall possess manufacturers trade mark and meter mark at every meter for convenience and control of usage. Colour coding for phase and neutral wire shall be observed.

Makes

Contractor's Signature

Seal

Client ID	02
Tender No.	1643
Page No.	104/126

Conduits : Precision
Wires (FRLS) : Finolex/National
Switches/Sockets: MK

+

2.0 Communication System

A) Telephone Sockets

Sockets to plug in telephone cables shall be of 2 pin/Telephone RJ11 type.

B) Telephone Cable

The telephone cable shall be 2 pair 0.6 mm dia tinned, high conductivity bunched copper conductor, twisted, PVC insulated, colour coded, PVC sheathed and unarmoured.

C) Telephone Wiring

Telephone wiring shall be carried out in separate heavy duty rigid PVC conduit for each socket concealed in wall/above false ceiling upto tag block located in server room. Colour coding for the telephone cable shall be brown.

D) Makes

Telephone Cable : Delton/NICCO.

3.0 Distribution Boards

Distribution board shall feed power to lighting and power circuits.

The units shall be wall recessed, powder coated type. MCB's shall only be visible on opening the door. The unit shall possess TPN MCB as incomer and each phase shall be provided with DP, 100 mA sensitivity earth leakage circuit breaker to ensure that due to tripping of any one ELCB the other phases remain healthy.

Outgoing MCB's shall possess 9 kA Interrupting capacity. Earthing studs shall be provided on either side of the board.

Make : MDS (Lexic).

4.0 Cables

Cables shall be 1100 Volts grade, copper/aluminium conductor, PVC insulated, PVC sheathed unarmoured conforming to IS 1554. The cables

Contractor's Signature

Seal

Client ID	02
Tender No.	1643
Page No.	105/126

shall be installed in PVC pipe of adequate size.

Makes

Cable : National/Finolex/Asian.

5.0 Earthing System

Earthing Conductors

- Generator : 25 x 3 mm GI strip
- Main Distribution Board : 8 SWG GI wire
- Servo Stabiliser : 25 x 3 mm GI strip
- Lighting Fixtures : 16 SWG copper wire
- 15 A Socket Outlets : 14 SWG copper wire

Earth pit shall be made embedding 38 mm dia GI pipe, 4.5 m long using alternate layer of salt and charcoal, masonry enclosure on top and funnel arrangement as per IS:3043.

6.0 Data Cabling

Data cabling shall comprise IO sockets, CAT 6 cabling, jackpanel, and communication rack of 9U capacity.

All data cabling sockets shall be connected to switch/hub using CAT6 cable of AVAYA – AT&T make.

Grey colour wire shall be used for data cabling.

All LAN sockets shall be connected to server using cat 6 cable.

Client ID	02
Tender No.	1643
Page No.	106/126

UTI INFRASTRUCTURE TECHNOLOGY AND SERVICES LTD.

BILL OF QUANTITIES:

Note :

1. Rates to be quoted by the tenderers in the item rate tender in figures and words shall be accurately filled in, so that there is no discrepancy in the rates written in figure and in words. However, if a discrepancy is found between the rate written in figures and rate written in words then the rate which correspond with the amount worked out by the contractor shall be taken as correct.
2. If the amount of an item is not worked out by the tendered, or it does not correspond with the rate written either figures or in words, then the rate quoted by the tenderer in words shall be taken as correct.
3. Where the rate quoted by the tenderer in figures and in words tally but the amount is not worked out correctly, the rate quoted by the contractor will be taken as correct, not the amount.
4. The work needs to be carried out as per the direction of the Branch Manager / UTIITSL Engineer and The Contractor need to keep one Electrician at site Day and night time. In case any Problem in the Electrical / Server, the electrician need to attend the Complaints immediately. If the Contractor fails to attend the work, the work will be carried through other Agencies and the expenditure will be deducted from the Contractors Bill.
5. **ALL Block boards shall be commercial type of interior grade as per IS 1659 And Plywood shall be MR grade as per IS 303 unless otherwise mentioned. All the wooden members should be treated for anti-termites and the surface of the wood touching the wall should be treated with bituminous chemical**
6. **All the block board and flush door edges should be covered with teakwood beading.**
7. **Necessary Permission required for execution of the work shall have to be obtained by the Contractor at the quoted rates from the Concern Local authority.**

Contractor's Signature

Seal

Client ID	02
Tender No.	1643
Page No.	107/126

SUMMARY

ALL THE SAND TO BE USED - PRE WASHED RIVER SAND / PRE PACKED SAND

The vendor who wishes to quote for the tender should have GST registration and should mention the registration number.

The rate quoted should be inclusive of the cost of materials, labour, transportation, loading, unloading etc. complete but excluding GST. The contractor should submit the invoice showing taxes under GST Law separately on the invoice. However, the amount of GST shown on the invoice will be released only after GST credit is received by UTIITSL / CLIENT in Electronic Ledger maintained on the GSTN Portal.

The tender amount should be quoted as prescribed below:

The rates should inclusive of installation and commissioning of the work and free delivery of the material at the site unless otherwise specified.

The Sand to be used in the work shall be Silpoz Sand .

PART	DESCRIPTION	AMOUNT IN FIGURES
A	ENABLING & GENERAL WORKS	Rs.
B	STRUCTURAL REPAIRS	Rs.
C	EXTERNAL PAINTING	Rs.
D	PUBLIC HEALTH WORK	Rs.
E	WATER SUPPLY	Rs.
	TOTAL	Rs.
	Less : DISCOUNT, IF ANY (-) _____ %	Rs.
	TOTAL : AFTER DISCOUNT	Rs.
	ADD: CGST @ %	Rs.
	ADD: SGST / UTGST @ %	Rs.
	OR ADD: IGST @%	Rs.
	GRAND TOTAL	Rs.
Rs.(In Words)		
.....		
.....only)		

Contractor's Signature

Seal

Client ID	02
Tender No.	1643
Page No.	108/126

PART "A" ENABLING & GENERAL WORKS

ALL THE SAND TO BE USED - PRE WASHED RIVER SAND / PRE PACKED SAND

Sr. No.	Description	Qty	Unit	Rate	Amount
1	Providing and erecting safe, secure and rigid tubular Steel "H" Frame scaffolding by using H frames including all accessories e.g. ropes, bracings, couplers, working platform etc. complete to reach any place of work on external façade of building for safe execution of work including removing the same after completion of work and taking away all material to contractor's own dump.	100.00	Sq.M.		
Mode of measurements: Length x Height to nearest c.m. Units : Square Meter (Rupees.....only per Sq.M.)					
2	Providing securing and fixing the continuous vertical curtain / covering on the outer periphery of the scaffolding with thick gunny cloth / fine HDPE mesh or with other approved material for complete prevention from dust / mortar / damages etc, taking all measures for prevention of scattering of the falling debris, construction materials, mortars etc, including continuous repairs & maintenance of screening / curtain for keeping it in good condition till removal of the scaffolding.	100.00	Sq.M.		
Mode of measurements: Length x Breadth or Height to nearest c.m. Units : Square Meter (Rupees.....only per Sq.M.)					
3	Providing & erecting safe secure and Rigid single scaffolding by using bamboos including all accessories e.g ropes ,working platform etc., complete for safe execution of work Including removing the same after completion of work and taking away all material to contractors own dump & making good damages.	3250.00	Sq.M.		

Contractor's Signature

Seal

Client ID	02
Tender No.	1643
Page No.	109/126

<p>Mode of measurements: Length x Breadth or Height to nearest c.m. Units : Square Meter</p> <p>(Rupees.....only per Sq.M.)</p>					
4	Dismantling & demolishing of Brick Wall/ concrete of any thickness including plaster carefully for isolating the columns, beam, slab for its repairing, at any height including taking away debris to contractor's own dump outside the compound and carting away the debris from the site the place approved by the local municipal authority.	3.00	Cu.M.		
<p>Mode of measurements: Length x Breadth x Height / Thickness to nearest c.m. Units : Cubic Meter</p> <p>(Rupees.....only per Cu.M.)</p>					
5	Breaking /chipping out cement plaster of any thickness /external / internal carefully by mechanical chipper to avoid any damage to brick wall/RCC including cleaning the surface with wire brush & washing the surface & disposing of debris to contractors own dump outside the compound and carting away the debris from the site the place approved by the local municipal authority.	1000.00	Sq.M.		
<p>Mode of measurements: Length x Breadth x Height / Thickness to nearest c.m. Units : Cubic Meter</p> <p>(Rupees.....only per Cu.M.)</p>					
6	Construction of New Single brick 110 mm thick. Or any thickness, brick wall of any thickness & at any height in c.m 1:4 including curing, scaffolding etc., complete.	5.00	Cu.M.		
<p>Mode of measurements: Length x Breadth x Height / Thickness to nearest c.m. Units : Cubic Meter</p> <p>(Rupees.....only per Cu.M.)</p>					
7	P C C 1:2:4, wherever required like under floors, on the terrace / pedestal, Including centering, shuttering curing etc., complete	1.00	Cu.M.		

Contractor's Signature

Seal

Client ID	02
Tender No.	1643
Page No.	110/126

Mode of measurements: Length x Breadth x Height / Thickness to nearest c.m. Units : Cubic Meter (Rupees.....only per Cu.M.)					
8.	Removing the existing sun shed sheet and providing and fixing new aluminum 3 mm thick sheet on above sun shed with require hardware on existing frame and repairing of MS frame if require completed as per Engineering in charge	30.00	Sq.M.		
Mode of measurements: Length x Breadth or Height to nearest c.m. Units : Square Meter (Rupees.....only per Sq.M.)					
TOTAL AMOUNT OF (A) to Summery Rs.					

PART “ B” : STRUCTURAL REPAIRS

Sr. No.	Description	Qty	Unit	Rate	Amount
1	STRUCTURAL POLYMER REPAIRS TO RCC MEMBERS CONSISTING OF FOLLOWING STAGES AT ANY HEIGHT:				
1	Carefully chiseling RCC members, by low impact high frequency hammer or manual chipping, without damaging the existing concrete e.g columns, beam, slab etc., to remove Loose & damaged concrete including plaster And exposing steel reinforcement including cleaning the surface, washing etc., complete. Including carting away debris to contractors own dump	75.00	Sq.M.		
Mode of measurements: Length x Breadth or Height to nearest c.m. Units : Square Meter (Rupees.....only per Sq.M.)					

Contractor's Signature

Seal

Client ID	02
Tender No.	1643
Page No.	111/126

2	Applying Rust Converter: Cleaning existing reinforcement free of loose material, dirt etc., with wire/rotary wire brush, Applying two coats of alkaline rust converting primer – FEOVERT on the rebars including cleaning the reinforcement, wire brushing to remove all loose rust spalls/scales with time interval of one hour between the coats.	75.00	Sq.M.		
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Mode of measurements: Length x Breadth or Height to nearest c.m.
Units : Square Meter
(Rupees.....only per Sq.M.)

3	Anticorrosive Treatment to reinforcement; Application of two coats of IPNET RB (CBRI Know how) on exposed reinforcement by brush with time interval of minimum 4 hours between each coat.	400.00	Sq.M.		
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Mode of measurements: Length x Breadth or Height to nearest c.m.
Units : Square Meter
(Rupees.....only per Sq.M.)

4	Rust Inhabitation coat : Providing and applying 2 coats of concrete penetrating hi-tech corrosion inhibitor system that works on the Bipolar Inhibition Mechanism (B. I. M.)	400.00	Sq.M.		
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Mode of measurements: Length x Breadth or Height to nearest c.m.
Units : Square Meter
(Rupees.....only per Sq.M.)

5	Bonding coat Applying structural grade epoxy bond coat with brush prior to building up of section with any type of mortar/ concrete to ensure bond between old concrete & new concrete as per the manufacturer’s specifications.	400.00	Sq.M.		
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Mode of measurements: Length x Breadth or Height to nearest c.m.
Units : Square Meter
(Rupees.....only per Sq.M.)

Contractor’s Signature

Seal

Client ID	02
Tender No.	1643
Page No.	112/126

<p>6</p>	<p><u>MICRO CONCRETE :</u></p> <p>Jacketing heavily damaged columns, beams, slabs, chajjas, etc., this item includes shuttering and centering etc and by using super fluid Micro concrete thickness 25 mm up to 75 mm thickness of approved make as per manufacturer's specifications including mixing 10 mm down gauge coarse graded aggregate , curing etc. complete as directed. consisting of following . This item including making necessary shuttering , centering all complete . all as per the direction of the Engineer In-charge</p> <p>(i) Pouring super fluid MICRO CONCRETE of approved make as per manufacturer's specifications including mixing 10 mm down gauge coarse graded aggregate if required for larger depth of concrete members, curing etc. complete as directed in RCC members e.g. beams, columns, slabs, Chajja etc.,</p>	<p>Kg</p>	<p>2000.00</p>		
	<p>(i) Pouring super fluid MICRO CONCRETE of approved make as per manufacturer's specifications including mixing 10 mm down gauge coarse graded aggregate if required for larger depth of concrete members, curing etc. complete as directed in RCC members e.g. beams, columns, slabs, Chajja etc.,</p>				
<p>Mode of measurements: Kg Units : Kg (Rupees.....only per Kg.)</p>					

Contractor's Signature

Seal

Client ID	02
Tender No.	1643
Page No.	113/126

7	<p>Drilling and fixing Teflon nozzles in RC members, including, Drilling Holes: Drilling 12 mm dia., 50 to 75 mm deep holes in structural members at the intervals of 350 mm in staggered manner or as directed by the consultants in RC structural element. Cleaning of holes: Clean the holes by air blower prior to fixing nozzles. Fixing of Nozzles: Insert 12 mm dia. Teflon nozzles in cleaned holes. External end of nozzles to be machined to receive outlet of grouting gun. Fix it inside the holes by applying thyrrotrophic epoxy putty to ensure complete sealing. Cure the system for min. 12 hrs. Cutting of Nozzles: Cut the nozzles by chisel after completion of grouting without damaging structural elements.</p>	150.00	nos		
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Mode of measurements: Counts
Units : Number
(Rupees.....only per no.)

8	<p>Grouting/ Flooding Injecting low viscosity high molecular weight thermosett polymer Monopol by pressure and using injector with accessories till nozzles refuse to accept the grout, Including, Mixing of materials: Mixing material components part a and part b in required quantities as per mfg instruction by weigh batching Grouting: Fill the grouting gun with monopol .Maintain desired pressure in the gun by air compressor maintain the pressure at exit (3 to 4 kg/Cm2) by monitoring pressure gauge at exit. Grout the material through prefixed nozzles in the structural elements still its refusal. Seal the nozzles with EPCO 1010 putty after the refusal. Monitor Leakages through other nozzles while grouting and sealing them as required</p>	40.00	kg		
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Mode of measurements: Wt. in kilogram
Units : Kg
(Rupees.....only per kg..)

Contractor's Signature

Seal

Client ID	02
Tender No.	1643
Page No.	114/126

9	Providing and applying single coat internal cement plaster for staircase (1:4) up to 12 mm thickness full or in patches as per instructions of Engineer in charge over Brick work removed for repairs with a bond coat of Epibond. Tools & tackles, curing etc complete.	50.00	Sq.M.		
<p>Mode of measurements: Length x Breadth or Height to nearest c.m. Units : Square Meter</p> <p>(Rupees.....only per Sq.M.)</p>					
10	<p>EXTERNAL PLASTER : Removing the existing external cement plaster carefully without damaging the structure Cleaning the existing surface with wire brush blower and remove the dust, clean it with water jet, rack the joint and Providing and applying 25 mm thick plaster to concrete members- brick work etc. of External wall facades using approved screened and Pre washed River sand / Prepacked sand including base coat of 12-18mm thick in C.M. 1:4 and curing the same for not less than three days and keeping the surface of basecoat rough to receive the sand face treatment 6 to 8 mm thick of C. M 1:3 finishing the surface to Match the existing plaster surface by taking out grains and curing for 7- 10 days, providing and mixing approved waterproofing compound @160ml per bag of cement and Poly Proylene fibre @ 125 gms per bag of cement in the second coat of plaster etc. complete but excluding scaffolding.</p>	750.00	Sq.M.		
<p>Mode of measurements: Length x Breadth or Height to nearest c.m. Units : Square Meter</p> <p>(Rupees.....only per Sq.M.)</p>					
11	Makeup lost steel area due to corrosion by providing additional steel reinforcement. The steel shall confirm to IS 1786 grade Fe 415/ Fe 500.Anchor the steel rebar in sound				

Contractor's Signature

Seal

Client ID	02
Tender No.	1643
Page No.	115/126

	concrete body up to desired depth by structural GRADE adhesive. Fixing of re bars is to be with pre left binding wires with existing steel at regular grid after aligning concrete profile with new mortar up to existing steel face	100.00	kg		
<p>Mode of measurements: Wt. to nearest kg Units : Kilogram</p> <p>(Rupees.....only per Kg.)</p>					
12	<p><u>CEMENT MORTAR WITH POLYMER FOR THE SUN SHADE :</u></p> <p>Providing, mixing, transporting, placing in pointing with cement mortar 1:4 with polymer treatment and applying cement slurry to receive the cement plaster The item including the necessary form Work shuttering. All complete as directed by Engineer in-charge Charge. This item includes preparation of the surface to receive the concrete</p>	150.00	Rmt		
<p>Mode of measurements: RMT Units : RMT</p> <p>(Rupees.....only per RMT .)</p>					
13	<p><u>CONCRETING FOR THE COLUMN AND BEAM :</u></p> <p>Providing, mixing, transporting, placing in position, compacting, curing the concrete M20 1:1.5:3 grade, confirming to BIS. The cement should be ordinary Portland cement confirming to BIS 269 1978 and aggregate to confirming to BIS 383 1970. The item including the necessary form Work shuttering. All complete as directed by Engineer in-charge Charge. This item includes preparation of the Surface to receive the concrete.</p>	1.00	Cum		

Contractor's Signature

Seal

Client ID	02
Tender No.	1643
Page No.	116/126

<p>Mode of measurements: Length x Breadth x Height / Thickness to nearest c.m. Units : Cubic Meter</p> <p>(Rupees.....only per Cu.M.)</p>					
14	Centering & shuttering including strutting, propping etc., and removal of formwork for columns, beams, slabs etc., or any other place by using plywood with shuttering oil etc ., complete	100.00	Sq.M.		
<p>Mode of measurements: Length x Breadth or Height to nearest c.m. Units : Square Meter</p> <p>(Rupees.....only per Sq.M.)</p>					
15	Covering the existing window / AC / by fixing 4mm thick ply wood with necessary wooden frame work as per the site condition all complete	50.00	Sq.M.		
<p>Mode of measurements: Length x Breadth or Height to nearest c.m. Units : Square Meter</p> <p>(Rupees.....only per Sq.M.)</p>					
16	<p>WATER PROOFING ON EXTERNAL SIDE WALL : Make :- 1) M/s Pidlite Industries Limited , Mumbai, 2) M/s Asian Paints the works to be carried through authorized applicator of above the original manufacturer.</p> <p>Cleaning the wall surface with mechanical means and make it free from dirt, dust and loose materials including removal & repair of damaged wall with approved ready to use ready mix crack filler.</p> <p>Providing and applying tile primer & fixing fabrics of approx 100 mm wide over cracks. Applying 03 coats of Damp proof (1st coat with dilution & 02 coats vertical/horizontal without dilution. The above work must be done up to watta level. All as per the Technical specification and detail Approved by the client .</p> <p>The coating to be carried out over the well</p>	450.00	Sq.M.		

Contractor's Signature

Seal

Client ID	02
Tender No.	1643
Page No.	117/126

	<p>the stub columns etc . (The contractor need to submit the minimum Seven years performance guarantee on stamp paper as per prescribed format attached from the authorized water proofing manufacture of M/s Pidlite Industries Limited , and M/s Asian Paints.</p> <p>This item includes carrying the water proofing coating work on the Over head tank as per the technical specification of the water proofing original manufacturer of 1) M/s Pidlite Industries Limited , amd 2) M/s Asian Paints.</p> <p>Other propitiatory chemical required may be included in the this items</p> <p>All the works to be carried as per the manufacturer detail and Technical Specifications.</p>				
<p>Mode of measurements: Length x Breadth or Height to nearest c.m. Units : Square Meter</p> <p>(Rupees.....only per Sq.M.)</p>					
TOTAL AMOUNT OF (B) C/F to Summery Rs.					

PART " C " : EXTERNAL PAINTING

Sr. No.	Description	Qty	Unit	Rate	Amount
1	Providing and applying External Acrylic Paint (First Quality) on the external wall, of approved make such as Asian Paints (Apex Ultima) OR Deluxe (Whether shield max.) OR Nerolac (Impression Excel Total) as approved by the Engineer - in - charge, of approved colour shade and confirming to IS standard including one coat of primer paint (1 liter primer should cover 8.00 Sqmt) and 2 or more coats of Acrylic paint to the satisfaction of the UTIITSL as per the Manufacturer's detail and Technical Specifications. The acrylic paint should be mix with water maximum of 30 % with paint. All as per the manufacturer				

Contractor's Signature

Seal

Client ID	02
Tender No.	1643
Page No.	118/126

	<p>detail and technical specifications. Rate shall be inclusive of filling the cracks with necessary sealer polymer and chemicals as per the manufacturer detail and also including, curing, etc. complete or as directed by the Engineer – In-Charge.</p> <p>The works to be carried out directly by the manufacturer Or authorized dealer of the paint. Manufacturers recommended along with the dealer need to Submit the Dealer’s certificate duly attested.</p>	4000.00	Sq.M.		
<p>Mode of measurements: Length x Breadth or Height to nearest c.m. Units : Square Meter</p> <p>(Rupees.....only per Sq.M.)</p>					
2	<p>Providing & Applying FIRST Quality Synthetic Enamel Paint on railing, pipes, grills etc. of approved make such as Asian Paints (Apolite Premium) OR Deluxe (Premium Synthetic) OR Nerolac (Premium Synthetic), over a coat of primer, as approved by the client. All work as per the detail and manufacturer Technical specifications. Rate shall be inclusive of scaffolding, preparation of surface etc. complete.</p>	700.00	Sq.M.		
<p>Mode of measurements: Length x Breadth or Height to nearest c.m. Units : Square Meter</p> <p>(Rupees.....only per Sq.M.)</p>					
3	<p><u>PAINTING – PLASTC EMULSION PAINT ON WALL/ CEILING :</u></p> <p>Erecting, Scaffolding, preparing the surface by rubbing the surface by sand papers of differnt grade, removing all dirt, smoke, grease, lose plaster etc., if any, from the existing surface cleaning the surface thoroughly and removing all dirt from the surface. Providing and applying three coats of approved quality plastic paints over required number of coats approved cement primer in all ceilings, internal walls and internal surface of the external walls, false ceiling etc., all complete</p>	800.00	SQMT		

Contractor’s Signature

Seal

Client ID	02
Tender No.	1643
Page No.	119/126

	including necessary lambi work and finished in plain, clear and finished in plain, clear and smooth or rough surface as per the site condition etc., standard specifications and as directed by the Engineer-in-Charge with 1st grade Acrylic Emulsion paint (vinyl base) of approved manufacturer like Asian , Nerolac, ICI , Berger of approved colour, shade and pattern and design.				
<p>Mode of measurements: Length x Breadth or Height to nearest c.m. Units : Square Meter</p> <p>(Rupees.....only per Sq.M.)</p>					
TOTAL AMOUNT OF (C) C/F to Summery Rs.					

PART D – PUBLIC HEALTH WORK

Sr. No.	Description	Unit	Qty	Rate	Amount
1	<p><u>PVC – PIPELINE – EXTERNAL SIDE OF THE BUILDING (excluding Scaffolding)</u></p> <p>The rate includes all accessories such as tees, bends, elbows, reducers, unions, nipples etc. no more payment to be made for fitting/accessories.</p> <p>Supplying and fixing approved quality of rigid PVC pipes of TRIBORE / PRINCE make or equivalent jointing the pipe and fittings with suitable solvent as per manufacturers specifications, laying the pipes on the external side of the wall / Duct the wall as per the required gradient including providing necessary support, GI clamps, etc. conveying the materials to all floors making holes in masonry or concrete cutting the pipes to required length, testing to a head of 1.8 m for horizontal pipes and for vertical pipes by filling with water etc. complete at all levels as required all as per specifications</p>				

Contractor's Signature

Seal

Client ID	02
Tender No.	1643
Page No.	120/126

A	75mm dia 6kg / Sqcm .class	RMT	50.00		
B	100 mm dia 6 kg / sq. cm. class	Rmt	50.00		
Mode of measurements : Area in length to the nearest Cm.					
Units in Running meter					
a. Rate in words : Rupees.....only per RMT					
b. Rate in words : Rupees.....only per RMT					
Total – PART D					

PART E– WATER SUPPLY

Sr. No.	Description	Unit	Qty	Rate	Amount
1.	<p><u>UPVC PIPE ON THE TERRACE AND PLUMBING SHAFT.</u></p> <p>Providing and fixing UPVC pipes of Supreme Aquagold make brand and accessories / fittings such as tees, bends, elbows, reducers, unions, nipples etc. including chiseling of wall for concealed manner and specials. Laying pipes in trenches or fixing in walls, ducts, floors as directed by the Engineer-in-charge, providing clamps and supports wherever necessary, chiseling in walls, floors and restoring damaged portion to original condition and testing the pipes and fittings to hydraulic test pressure as per manufacturer specification and manual etc. complete.</p> <p>The rate includes all accessories such as tees, bends, elbows, reducers, unions, nipples etc. no more payment to be made for fitting/accessories.</p> <p>The works to be carried as per the manufacturer detail and Technical specifications.</p>				
A	15 mm dia	Rmt	50.00		
B	20 mm dia	Rmt	50.00		
C	25 mm dia	Rmt	50.00		
D	32 mm dia	Rmt	50.00		

Contractor's Signature

Seal

Client ID	02
Tender No.	1643
Page No.	121/126

E	50 mm dia	Rmt	50.00		
<p>Mode of measurements : Area in length to the nearest Cm. Units in Running meter</p> <p>a. Rate in words : Rupees.....only per RMT</p> <p>b. Rate in words : Rupees.....only per RMT</p> <p>c. Rate in words : Rupees.....only per RMT</p> <p>D Rate in words RupeesOnly per RMT</p> <p>E) Rate in words Rupeesonly per RMT</p>					
2	<p><u>GI PIPE ON THE TERRACE AND PLUMBING SHAFT .</u></p> <p>Providing and fixing GI pipes of C Grade ,TATA / Zindal make brand and accessories / fittings such as tees, bends, elbows, reducers, unions, nipples etc. including chiseling of wall for concealed manner and specials. Laying pipes in trenches or fixing in walls, ducts, floors as directed by the Engineer-in-charge, providing metal GI clamps and supports wherever necessary, chiseling in walls, floors and restoring damaged portion to original condition and testing the pipes and fittings to hydraulic test pressure as per manufacturer specification and manual etc. complete.</p> <p>The rate includes all accessories such as tees, bends, elbows, reducers, unions, nipples etc. no more payment to be made for fitting/accessories.</p> <p>The works to be carried as per the manufacturer detail and Technical specifications.</p>				
A	15 mm dia	Rmt	10.00		
B	20 mm dia	Rmt	10.00		
C	25 mm dia	Rmt	10.00		
D	32 mm dia	Rmt	20.00		
E	40 mm dia	Rmt	20.00		
F	50 mm dia	Rmt	20.00		
<p>Mode of measurements : Area in length to the nearest Cm.</p>					

Contractor's Signature

Seal

Units in Running meter

a. Rate in words : Rupees.....only per RMT

b. Rate in words : Rupees.....only per RMT

c. Rate in words : Rupees.....only per RMT

D Rate in words RupeesOnly per RMT

E) Rate in worss Rupeesonly per RMT

F) Rate in worss Rupeesonly per RMT

3.	Gate VALVE : Providing and fixing in position 25 mm dia gate valve confirming to relevant BIS specifications of M/s. Leader or approved make. All complete as directed. <ul style="list-style-type: none"> • A) 15 mm Dia • B) 20MM dia • c) 25MM dia • D)32Mm dia • E) 40MM Dia • F) 50mm dia 				
A	Approximate Quantity	Nos.	5.00		
B	Approximate Quantity	Nos.	5.00		
C	Approximate Quantity	nos	5.00		
D	Approximate Quantity	Nos	5.00		
E	Approximate Quantity	Nos	5.00		
F	Approximate Quantity	Nos	5.00		

Mode of measurements : Counts

Units in per no

A) Rate in words : Rupeesonly per No.

B) Rate in words : Rupeesonly per No.

C) Rate in words : Rupeesonly per No.

D) Rate in words : Rupeesonly per No.

E) Rate in words : Rupeesonly per No.

F) Rate in words : Rupeesonly per No.

Total – PART E

Client ID	02
Tender No.	1643
Page No.	123/126

DECLARATION

I / We hereby declare that I / We have read and understood the Terms and Conditions of the contract, Specifications, Drawings, Schedule of Quantities etc. and hereby agree to abide by them. In token thereof, I / We have signed below and at the end of the Schedule of Quantities.

I / We hereby confirm that only the relevant entries asked for, have been made within the Tender documents issued to us. I / We also confirm that in the event of any entry in this Tender document other than the relevant entry or condition shall make this Tender invalid.

I/We understand that the GST shall be reimbursed on production of proof of payment to the concerned authority.

The rates are inclusive of installation and commissioning of the work and delivery of the material at the site.

Date : _____

SIGNATURE OF TENDERER
WITH RUBBER STAMP

Contractor's Signature

Seal

Client ID	02
Tender No.	1643
Page No.	126/126

DRAWINGS

Contractor's Signature

Seal