TENDER COPY

PART-I

इंडियन बैंक Indian Bank

इलाहाबाद ALLAHABAD

INDIAN BANK

TENDER FOR TECHNICAL BID

Construction of RSETI Building at Midnapur, WB

DUE ON :31.05.2025 UPTO 15:00 HRS.

COPY ISSUED TO : M/s. _____

_____

CLIENT :

INDIAN BANK
Zonal Office: Midnapur
1st Floor, Bidhan Nagar
Near Old Water Tank
Midnapur, WB

Architect & Consultants

M/S. Dhar& Associates Pvt Ltd
7, Red Cross Place, 4th Floor, Kolkata-700001
Ph .No. 033-22131496

This Tender Documents Contain 127 nos. Pages.

INDEX

NOTE: The Tenderers shall satisfy themselves before submitting that no page of document listed is missing from their tender and each page has been initialed by them

NOTICE INVITING TENDER

Sealed tenders on item rate basis are invited from ~~Prequalified~~reputedContractors for civil, sanitary, plumbing and electric works for proposed INDSETI Building at Midnapur. Tender document to be issued 'free of cost and can only be downloaded from Bank's website www.indianbank.in .

Issue of Tender Documents Date Time- Monday to Friday Saturday	From: 03.05.2025to 31.05.2025 (Except holidays) From 10 am to 5 pm From 10 am to 2 pm
Estimated cost of work (approx.)	**Rs 269.34 lacs Plus GST**
Earnest money	Rs. 2.69 Lacs (Rupees Two Lacs and Sixty nine Thousands Only lac) by crossed demand draft/ Banker's Chequefavouring INDIAN BANK payable at Midnapur
Site Visit	Intended participators are requested to visit site from 08.05.2025 to 09.05.2025 in office hours.
Pre-Bid Meeting	At 11:00 A.M. on 10.05.2025 at Indian Bank, Zonal office, 1st Floor, Bidhan Nagar Near Old Water Tank, Midnapur, WB
Time of Completion	12 (Twelve) calendar months from the date of commencement including rainy season.
Submission of Tender	Before 15:00 Hrs. on 31.05.2025.
Opening of Part I (TD) of tender	At 15:30 Hrs on 31.05.2025
Opening of Part II (PS) of tender	Date and Time of opening of Price –Bid will be inform to the bidders who are qualified in the Technical Bid.
Performance Bank Guarantee	10% of Waterproofing works done at terrace, chajjas, overhead water tank, toilets, kitchen. Performance Guarantee to be submitted in form of DD of Bank Guarantee (all nationalized bank other than Indian Bank) and shall be valid upto 10 years from the completion of work extended period thereof.
Defect Liability Period	12 months from the date of handing over of project as certified by Engineer in Charge.
Taxes	TDS for work contract tax etc. shall be deducted as applicable from all bills / payments made in connection with this work.
GST	Percentage of GST is to be mentioned in the Financial Bid.
Bank Account Details for the purpose of preparation of Bank Guarantee/EMD	Account Name: Routing Account Bank A/c No. : 98741097239 Bank Name : Indian Bank IFSC Code: IDIB0009723 Branch Name: ZO MIDNAPORE

The Bank will not be bound to accept the lowest tender and reserves the right to accept or reject any or all the tenders without assigning any reason whatsoever.

Asst General Manager
Zonal Office, Midnapur

ELIGIBILITY CRITERIA OF THE TENDER

1. The bidder should have established his firm and should have experience inexecution of similar works in the line of industry for the last 07 years working in theconstruction industry.

2. The bidder should have successfully completed one work of similar nature in anycentral / state/ PSU / PSB / Corporates whose annual turnover is more than Rs.50Crore.

3. The following are the eligibility criteria for the contractors to participate in thetender process:

A. The bidder should have experience of having successfully completed similarworks of value as indicated below during the last 7 years ending 31.03.2025:

Details of work	Value of work
Three similar completed works OR	Rs.108.00 lakh each (40% of estimate)
Two similar completed works OR	Rs.135.00 lakh each (50% of estimate)
One similar completed works OR	Rs.216.00 lakh each (80% of estimate

B. Similar work means construction of RCC framed buildings including Civil, Electrical,Plumbing, Sanitary works and Site Development in a single Contract of at least G+1 floor.

C. The contractor\firms should submit completion certificate from the employer clearly indicating the nature, magnitude, date of starting and date of completion, indicating whether the works are completed within the stipulated time in respect of qualifying works.

4. Turnover: Average annual financial turnover should be at least Rs.1.0 Crore during the immediate last three consecutive financial year ending 31st March, 2024. The turnover should be of the Bidding Company and not for Group Company or subsidiary company etc. ITRs for the last three years including the Net profit figures to be submitted.

5. CA certified Balance sheets of last five years need to be submitted.

6. PROFIT / LOSS: - Tenderer should be a Net Profit making firm and should not have made losses in the last three continuous financial years out of past 5 years. Certificate(s) from Chartered Accountant / Statutory auditors specifying the net worth of the Applicants, as at the close of the preceding financial year

7. SOLVENCY CERTIFICATE: - The contractor should have a solvency of the amount of 40% of estimated cost, duly certified by any Scheduled Bank obtained on or after 01.10.2024.

INSTRUCTIONS TO TENDERERS

Sealed tenders on item rate basis are invited in two bid system from eligible reputed and quality conscious civil contractors as per eligibility criteria for the**Construction of Proposed RSETI Building at Midnapore, West Bengal**.

1. Contractors are advised to attend the pre-bid meeting online / offline on the date indicated in the tender notice for seeking any clarifications. Any discrepanciesshould be brought to the notice of the Bank. Further, it is also advised to furnish theenquiries in advance to enable the Bank to clarify the same.
2. The Tenderer is required to check the numbers of the pages and should not be found missing, or the figure or writing indistinct, he must inform the Architect/Bank at once and have the same rectified. Should the Contractor be in doubt aboutthe precise meaning of any item or any provision or if he wants any clarification,he must inform the Bank in writing before the Pre-Bid meeting. No claim will be allowed in respect of errors in the Contractors tender due to any mistake in the Schedule of Quantities, which should have beenbut was not rectified in the manner described above.
3. Tenderers are requested to put their firm's endorsement on each page of thetender documents as a token of acceptance.
4. Tenderers should fill in all the relevant blanks and put their signature in the relevant places indicated in the documents.
5. No alterations or additions are to be made by the Tenderers to the tender document. Violation of this instruction will attract rejection of the tender at thediscretion of Bank.
6. Earnest money of Rs. 2.69 Lakh accompanying the tender will be accepted only in the form of Crossed Demand Draft on any of the nationalized Banks in Midnaporedrawn in favour of Indian Bank Zonal Office Midnapore and payableat Midnapore& not in favour of any other authority. Any tender, which is notaccompanied by Earnest Money Deposit in the form of DD, shall be summarilyrejected. EMD of unsuccessful tenderers will be refunded without any interest.
7. The contract agreement should not be filled. This will be done at the time the contract is awarded, in the case of the successful tenderer only. Contractors are forewarned that no errors whatsoever arithmetical or otherwise will be permitted in their tenders. Tenders containing many errors are liable to be considered as Nonbonafide at the discretion of Bank. Tenderers should note that their tendersshould remain open for consideration for a minimum period of 90 days from the dateof the opening of tenders.
8. The technical bid volume 1 duly filled in, signed in all the pages and stamped bythe tenderer to be submitted giving the details of company profile, audited Balance Sheet for last 5 financial years, Proof of submission of Income Tax returns,PAN No., GST No., Work experience of similar works during the last 7 years may be submitted in a separate sealed COVER1 with the EMD DD super scribing as"Technical Bid & Name of the work". The Volume2 –Price bid duly filled and signed to be placed in a separate sealed COVER2 super scribing as "Price Bid & Name ofthe work". Both the technical and Price bid to be enclosed within another

coverand the same may be super scribed as "Tender for CONSTRUCTION OF THEPROPOSED BUILDING FOR INDIAN BANK RSETI AT MIDNAPORE." and shall besubmitted to, INDIAN BANK, ZONAL OFFICE, 1st FLOOR, BIDHANNAGAR (NEAR OLD WATER TANK) STATION ROAD, MIDNAPORE on or before the date specified in the Tender notice.

9. The Sealed Envelopes shall be opened at the specified time in the presence of the tenderers accredited representatives if they desire to attend.
10. The Price bid of tenderers who satisfies the eligibility criteria prescribed only will be opened. The date of opening of Price bid of qualified contractors will be decidedafter scrutiny of technical bid/or as may be decided by the competent authority. The date and time of opening of Price bid will be intimated to the qualified bidders.
11. The Bank reserves the right to accept any tender or accept tenders in part or toreject any or all tenders without assigning any reasons thereof and will not be liable to offer any explanation whatsoever.

12.Noncompliance of the above instructions is liable to render the Tender non Bonafide.

Zonal Manager
INDIAN BANK
Zonal Office: Midnapur
1st Floor, Bidhan Nagar
Near Old Water Tank
Midnapur, WB

Indian Bank ZO Midnapore Allahabad

Date: 03.05.2025

1. Add "Detail of Firm" table as below :

A. GENERAL INFORMATION:

1. Name and address of the Firm	
2. Contact Person :	
3. (a) Telephone :	(b) Mobile :
(c) Email:	
4. Place of incorporation/registration	
5. Year of Incorporation/registration	
6. Main Lines of business :	

B. FINANCIAL STATEMENT:

ANNUAL TURN OVER (CIVIL ENGINEERING PROJECTS) DATA FOR LAST THREE YEARS	
YEAR	TURNOVER IN Rs LAKH

Indian Bank ZO Midnapore Allahabad

2021 – 2022	
2022 – 2023	
2023 – 2024	
AVERAGE ANNUAL TURNOVER	

Note: 1. All individual firms must complete the information in this form. The information supplied should be the annual construction turnover in terms of the amount billed to clients for each year in progress or completed during the last three years.

2. Attested Copy of the audited balance sheets and profit & loss account for the last 3 years shall be enclosed.

C. CERTIFICATES

CERTIFICATES	Yes	No
Income Tax returns filed Certificate		
GST/ Sales Tax registration Certificate		
Provident Fund registration Certificate		
Work completion certificates		
PAN Card		

Note: Attach attested copies of Items Answered Yes above

D. KEY PERSONNEL OF THE ORGANISATION

S.No	Name	Designation	Qualification	Professional Experience	No. of years working with the organization.

E. PLANT & EQUIPMENT OWNED BY THE ORGANISATION AND AVAILABLE FOR THIS WORK

S.N.	Equipment	Year of Manufacture	Capacity	Number / Quantity

Note: 1. Give details of all the key equipment's for construction, such as concrete mixers, weigh batchers, vibrators, Trucks, Tippers, Hoists, Rammers, Steel shuttering plates, Steel Scaffolding materials, polishing machines, that the firm proposes to use for the proposed works at the site.

2. The applicant should clearly demonstrate that he has access to all key equipment which will be required for the successful completion of the works.

F: EXPERIENCE RECORD.

1. DETAILS OF "BUILDING WORKS" COMPLETED DURING LAST SEVEN YEARS, COSTING MORE THAN Rs 100 LAKH EACH.

S.N.	Name of work and Name & Address of the owner	Total Cost (in Rs Lakh)	Date of Commencement	Date of Completion	Built up Area	No. of floors and special features.

Note: In the above table, list only those works, which have similar nature & complexity. Provide copies of Work Orders and Completion Certificates for each project. Work orders and Completion Certificates will be verified if required.

2. Add "DETAILS OF WORKS IN HAND COSTING MORE THAN Rs 140 LAKH EACH" table.

S.N.	Name of work and Name & Address of the owner	Total Cost (in Rs Lakh)	Dateof Commencement	Stipulated Date of Completion	Built up Area	No. of floors and special features.

TENDER ISSUE LETTER

TO,

M/s. ----------

Dear Sirs,

Civil, Sanitary,Plumbing, Electrical Works for Construction of Proposed INDSETI Building at Midnapur, WB

Tender document in two Bid (I- Technical & II-Commercial) along with drawings for the captioned project is hereby issued which is to be submitted as advised below-

1. Both parts of the tender are to be submitted in separate sealed envelopes marked as-
   i) Envelope containing forwarding letter, part-I of tender and earnest money shall be marked "Part-I" and the envelope containing price schedule shall be marked as "Part-II".
   ii) Name of the project as **"TENDER FOR CIVIL, SANITAR,PLUMBING, ELECTRICAL WORKS FOR CONSTRUCTION OF PROPOSED BANK'S INDSETI BUILDING AT Midnapur"** Opening scheduled at 15.30 hrs as mentioned in NIT. The name of tender submitting firm shall be marked clearly on both the envelopes.
2. Tenderers are advised not to give any clues regarding their tendered rates/amount or financial stipulations in Part-I. However, conditions, if any, may be mentioned in a SEPARATE SHEET attached to part-I only. If any condition found attached with part-II of Tender (Price Bid) the condition will be treated as null & void.
3. Earnest money of Rs. 2.69 Lacs. (Rupees Two Lakhs and Sixty Nine Thousands only) should be in the form of crossed Demand Draft/ Banker's Cheque from any Nationalized Bank (other than Indian Bank) favouring INDIAN BANK and payable at Midnapur.
4. This letter shall become part of the contract. Hence; it shall be signed and submitted along with the tender.
5. Tenders are to be submitted and will be opened as per schedule given in NIT.

The Bank will not be bound to accept the lowest tender and reserves the right to accept or reject any or all the tenders without assigning any reason whatsoever.

Yours faithfully,

Asst. General Manager

Indian Bank, Zonal Office
Midnapur

Letter for submission of Tender

To,
The Asst. General Manager
Indian Bank, Zonal Office
1st Floor, Bidhan Nagar
Near Old Water Tank,
Midnapur, WB

Dear Sir,

SUB: **Civil, Sanitary, Plumbing, Electrical Works for Proposed Construction of INDSETI Building at Midnapur, W.B.**

I / We hereby submit our tender for the captioned work having inspected the site, read & Examined the following documents related to the work.

a. Notice Inviting Tender.
b. General rules and instructions for the guidance of the Tenderers.
c. Articles of agreement.
d. General conditions of contract including contract labour regulations model rules for labour welfare and safety code appended to these conditions.
e. Special conditions of contract.
f. Particulars, specifications and special clauses forming part of schedule of quantities.
g. List of approved materials for Civil / Sanitary & Plumbing / Finishing/ landscaping / Electrical Works
h. Drawings as per the list of drawings.
i. Modifications / Amendments to the tender documents, if any.

I/We hereby tender for execution of the works referred to in the aforesaid document upon the terms and conditions contained or referred to therein and in accordance in all respects with the specifications, designs, drawings and other relevant details at the rates quoted in Part –II and within the period of completion as stipulated in schedule.

In consideration of I/We being invited to tender, I/We agree to keep the tender open for acceptance for 120 (one hundred and twenty) days from the date of opening of part-I of tenders and not to make any modifications in its terms and conditions which are not acceptable to Indian Bank. A sum of Rs. 2.69 Lacs. (Rupees Two Lakhs and Sixty Nine Thousands only)is hereby tendered in the form of demand draft/Banker's Cheque No._____ dated. _____issued by _____ bank as earnest money in favour of INDIAN BANK payable at **Midnapur** which amount will not bear any interest. If I/We fail to keep the tender open as aforesaid or make any modifications in the terms and conditions of the tender which are not acceptable to INDIAN BANK, I/We agree that INDIAN BANK shall without prejudice to any other right or remedy be at liberty to forfeit the said earnest money absolutely. Should this tender be accepted, I/We hereby agree to abide by and fulfill all the terms and conditions and provisions of the aforesaid document. If after the tender is accepted, I/We fail to commence the execution of the works as provided for in the terms and conditions of contract, I/We agree that INDIAN BANK shall without prejudice to any of their rights or remedy be at liberty to forfeit the said earnest money absolutely.

Date _____Signature in the capacity of _____
Duly authorized to sign the tender on behalf of _____

shall without prejudice to any of their rights or remedy be at liberty to forfeit the said earnest money absolutely.

Date _____Signature in the capacity of _____
Duly authorized to sign the tender on behalf of _____

GENERAL RULES AND INSTRUCTIONS FOR THE GUIDANCE OF TENDERERS

Tenders are hereby invited on behalf of INDIAN BANK for Civil, Sanitary, plumbing & electrical Works for Proposed Construction of INDSETI Building at Midnapur,West Bengal

01.Contract documents consisting of two parts, Part-I & Part-II, plans, complete specifications, schedule of quantities of the various classes of work to be done, and the set of conditions of contract to be complied with by the person whose tenders may be accepted, and which will also be found in the form of tenders, can be purchased at Indian Bank, Zonal Office 1st Floor, Bidhan Nagar Near Old Water Tank, Midnapur, WBbetween the hours from 10 am to 5 pm on Monday to Friday and 10 am. to 2 pm on Saturdays, except Holidays. The site of the work is also available for inspection as per above timings.

02. Tenders which should always be placed in separate sealed covers for Part-I and Part- II with the name of project written on the envelopes will be received and sealed covers of part-I & part-II shall be opened at the office of the Asst. General Manager, Indian Bank, Zonal Office, Midnapur as per programme given in NIT. **Tender are to be dropped in the Tender Box kept at Bank's Zonal Office Midnapur.**

03.Tenders are to be on the prescribed form which can be obtained from the office of Zonal Manager, Indian Bank, Zonal Office,Midnapur on payment as mentioned in NIT. The time allowed for the carrying out of the work will be 12 (Twelve) calendar months including rainy season from the date of commencement.

04. The contractors should quote in **figures as well as in words the rate and amount** tendered by them. The amount for each item should be worked out and the requisite totals given. If on check there are differences between the rates given by the contractor in words and figures or in the amount worked out by him, the following procedure shall be followed.

a) When there is a difference between the rates in figures and in words, the rates which correspond to the amounts worked out by the contractor, shall be taken as correct.

b) When the amount of an item is not worked out by the contractor or it does not correspond with the rate written either in figures or in words, then the rate quoted by the contractors in words shall be taken as correct.

c) When the rate quoted by the contractor in figures and in words tallies but the amount is not worked out correctly, the rate quoted by the contractor shall be taken as correct and not the amount.

05. When a contractor signs a tender in an Indian language the tendered rates and the total amount tendered should also be written in the same language. In case of illiterate Tenderers the rates or the amounts tendered should be attested by a witness.

06. Issue of tender form will be stopped two Days before the Date fixed for the opening of the tenders.

07. **Earnest money amounting to** Rs. 2.69 Lacs. (Rupees Two Lakhs and Sixty Nine Thousands only)in the form of Demand Draft/Banker's Cheque favoring Indian Bank and payable at Midnapur, must accompany part-I of the tender. Both parts of the tender are to be separately placed in sealed covers super scribed **"TENDER FOR CIVIL, SANITARY, PLUMBING &ELECTRICAL WORKS FOR THE PROPOSED BANK'S RSETI BUILDING AT Midnapur"**, Part-I and Part-II respectively and addressed to the Asst. General Manager, Indian Bank, Zonal Office, 1st Floor, Bidhan Nagar Near Old Water Tank, Midnapur, WB.

08.The Contractor, whose tender is accepted will have to deposit as **Initial Security Deposit a further sum to make up 2%** of the value of the accepted tender including the earnest money

within 14 days of written acceptance of the tender. The Total Security Deposit shall be collected as detailed in relevant clause (clause-11) of the General Conditions of Contract. The Earnest Money Deposit of the contractor, whose tender is accepted, shall be forfeited in full, in case he does not remit the **Initial Security Deposit within stipulated period or start the work by the stipulated date mentioned in the award letter.**

09. The acceptance of a tender will rest with Indian Bank which does not bind itself to accept the lowest tender, and reserves to itself the authority to reject any or all of the tenders received without the assignment of a reason. All tenders in which any of the prescribed conditions are not fulfilled or are incomplete in any respect are liable to be rejected.

    The Bank reserves the right to accept the tender in full or in part and the Tenderers shall have no claim for revision of rates or other conditions if his tender is accepted in parts.

10. Canvassing in connection with tenders is strictly prohibited and the tenders submitted by the contractor who resort to canvassing will be liable to rejection.

11. All rates shall be quoted on the proper form of the tender alone.

12. An item rate tender containing percentage below / above will be summarily rejected. However any unconditional rebate on quoted rates may be accepted.

13. On acceptance of the tender, the name of the accredited representative(s) of the contractor who would be responsible for taking instructions from the Employer / Architects shall be communicated to the Employer.

14. Special care should be taken to write the rates in figures as well as in words and the amounts in figures only, in such a way that interpolation is not possible. The total amount should be written both in figures and in words. In case of figures, the words 'Rs.' Should be written before the figure of rupees and words 'p' after the decimal figures, e.g. Rs.2.15p and in case of words, the word "Rupees" should precede and the word 'Paise' should be written at the end, unless the rate is in whole rupees and followed by the words "only", it should invariably be up to two decimal places. While quoting the rate in schedule of quantities, the word 'only' should be written closely following the amount and it should not be written in the next line.

15. The bank does not bind itself to accept the lowest or any tender and reserves to itself the right of accepting the whole or any part of the tender and the Tenderers shall be bound to perform the same at the rate quoted.

16. All taxes including VAT/ Sales tax, Income tax or any other tax on material or on finished works like works contract tax or turn over tax, in respect of this contract shall be payable by the contractor and the bank will not entertain any claim whatsoever in this respect. "TDS, as applicable will be deducted from all bills / payments, made in connection with this work.

17. The contractor shall give a list of his relatives working with the Bank along with their designations and addresses.

18. No employee of the bank is allowed to work as a contractor for a period of two years, immediately following retirement from bank service, without the prior permission of the bank. This contract is liable to be cancelled if either the contractor or any of his employees is found at any time to be such a person who had not obtained the permission of the bank as aforesaid before submission of the tender or engagement in the contractor's service.

19. The tender for works shall remain open for acceptance for period of 120 days from the date of opening of part-I of tenders. If any Tenderers withdraws his tender before the said period, then the bank shall be at liberty to forfeit the Earnest Money paid along with the tender.

20. The tender for the work shall not be witnessed by a contractor or contractors who himself /themselves has /have tendered or who may had / have tendered for the same work. Failure to observe this condition would render tenders of the contractors tendering as well as witnessing the tender liable to summary rejection.

21. It will be obligatory on the part of the Tenderers to tender and sign the tender documents for all the component parts and that, after the work is awarded, he will have to enter into an agreement for each component with the Bank.

22. The Tenderers is required to submit income tax clearance certificate of the preceding tax assessment year along with Part-I of the tender.

23. The Tenderers, apart from being a competent contractor must associate himself with agencies of the appropriate class who are eligible to tender for (i) Electrical (ii) Sanitary & Water supply installation work (iii) Fire fighting installation work (iv)Landscaping/Horticulture work

Asst. General Manager
Indian Bank, Zonal Office
Midnapur

APPENDIX TO CONDITIONS OF CONTRACT

1) Date of commencement	1) 2nd day from the date of the agreement or the date of handing over the site whichever is later. Agreement is to be executed within fifteen days of letter of acceptance, issued by the Bank.
2)Completion period	2) 12 (Twelve) calendar months
3) Total Security Deposit i.e (Earnest Money Deposit+ Initial Security Deposit + Retention Money) (Clause 11 **GENERAL CONDITIONS OF CONTRACT**)	3) ~~10% on the first Rs.1,00,000/- of the cost~~ ~~7.5% on the next Rs.1,00,000/- of the cost~~ ~~5% on the next amount~~ 7% of the cost
4) Value of work for Interim Payment(Clause 32 of **GENERAL CONDITIONS OF CONTRACT**)	4) Maximum one interim bill per month subject to minimum amount of Rs.~~10~~25.00 lacs.
5) Period of honouring certificate for payment (From the date of Architects certificate received by ZO)	5)(a)R/A Bills - 75% of payable amount - 10 days (b) - 25% of payable amount -30 days ©Final Bill - 100% of payable amount - 90 days
6)Period of final measurements	6) 90 days from virtual completion of work
7) Deduction of Tax at source (clause 8 **GENERAL CONDITIONS OF CONTRACT**)	7) As per statutory provision of income tax Act and / or latest amendments thereof. VAT/Sales tax, works contracts tax or other taxes as applicable from time to time as per rules will also be deducted as applicable.
8) Defect Liability Period (DLP) (Clause-34 **GENERAL CONDITIONS OF CONTRACT**)	8) 12 months from the date of virtual completion of work as certified by the Architects and Bank.
9)Liquidated damages for delay (Clause-14 **GENERAL CONDITIONS OF CONTRACT**)	9) 1 % of the accepted tender amount per week subject to maximum of 10% of the accepted contracted amount but not exceeding the total Security Deposit of contract.
10)(a)Refund of Earnest Money Deposit, (Clause 11 **GENERAL CONDITIONS OF CONTRACT**) (b)Refund of Earnest Money & Initial security money (Clause 11 **GENERAL CONDITIONS OF CONTRACT**) (c) Refund of Retention Money (Clause 11 **GENERAL CONDITIONS OF CONTRACT**)	10) (a)The earnest money deposit of the unsuccessful Tenderers will be refunded without any interest soon after the decision to award the work is taken or after expiry of validity period of the tender. (b)The Initial Security deposit including (E.M.D) will be invested by the Employer in a fixed deposit account for the duration of the contract period. It shall be refunded to the contractor along with accrued interest within 14 days after the issue of virtual completion. (c) Retention Money shall be refunded to the contractor 14 (fourteen) days after the end of defect liability period provided he has satisfactorily carried out of all the works and attended to all defects in accordance with the conditions of the contract. No interest is allowed on retention money.
11) Insurance (Clause 28 & 29 **GENERAL CONDITIONS OF CONTRACT**)	11) Contractor to get the work insured for contract sum and keeps the same valid till virtual completion. Premium should be deposited within 21 days from the date of issue of work order. Policy should be submitted to bank

ARTICLE OF AGREEMENT

This Agreement made at _____ on the _____day of _____Two Thousand twenty-five between INDIAN BANK, a body Corporate Constituted under the Banking Companies (Acquisition and transfer of Undertakings) Act, 1970 having its Corporate Office at Indian Bank, Corporate Office, PB No: 5555, 254-260, AvvaiShanmugamSalai, Royapettah, Chennai – 600014 and its Zonal Office at _____., hereinafter called "The Employer" which term shall include its successors and assign of the ONE PART and M/s.---------- ----------a partnership / proprietorship firm/Private Limited carrying on business its successors and assign / legal heirs and representatives of the OTHER PART.

Whereas the Employer is desirous of Construction (civil, sanitary, plumbing, fire and electric works) of proposed Indian Bank building at Midnapur, W.B. and therein has caused drawings and specification describing the work to be done to be prepared by M/s. Dhar& Associates Pvt Ltd which term shall include its successors and assigns / legal heirs and representatives and whereas the said drawings and specifications and the Priced Schedule of Quantities and other conditions as per tender documents, have been assigned by or on behalf of the portion hereto, whereas the contractor has agreed to execute upon and subject to the conditions set forth herein (hereinafter referred to as the said condition) that work shown upon "the said drawings" and described in "the said specifications" and the said "Priced Schedule of quantities".

At the _____ respective rates quoted by the contractor in priced schedule of quantities for Rs. _____ (herein referred to as the contract amount) And whereas the contractor has deposited Rs. _____ (Rs. _____) with the bank for the due performance of the agreement as initial security deposit and agreed that the said amount will be kept in the fixed deposit receipt in the employers name.

NOW IT IS AGREED AS FOLLOWS:

1. In consideration of the payments to be made to the contractor as hereinafter provided it/he/they shall upon and subject to the said condition execute and complete the works shown upon the said drawings and such further detailed drawings as may be furnished to him by the Employer and / or Architect s and described in the specifications and the said priced schedule of quantities.
2. The Employer shall pay the Contractor such sum as shall become payable hereunder at the times and in the manner specified in the said conditions and Employer shall have lien on all materials delivered at site of work.
3. The term "Architect" in the said conditions shall mean the said **M/s. Dhar& Associates Pvt Ltd** and in the event of their death or ceasing to be the Architects for the purpose of this contract such other person or persons or firm or company as shall be nominated for that purpose by the Employer.
4. The within plans, agreement and tender documents herein above mentioned shall form the basis of this contract and the decision of the Employer and Architect or the other Architect for the time being as mentioned on the conditions of contract matters of dispute as to the materials, workmanship or account and as to the intended interpretation of the clauses of this agreement or any other documents attached hereto shall be final and binding on both parties and may be made rule of Court.
5. The General conditions of contract including contract labour regulations, model rules for labour welfare, safety code, special conditions of contract, particular specifications and special clauses forming part of schedule of quantities, drawings, modification / amendments to the tender document & drawings and more familiarly known as tender document shall be read and constituted as part of this agreement and the parties hereto will respectively abide by and submit themselves to the conditions and stipulations and perform the agreements on their parts respectively in such conditions contained.
6. Periods of Guarantee / Warranty for specialist work viz. waterproofing and anti termite treatment which is supplementary to this agreement, will prevail over and supersede the defect liability period stated in the general conditions of contract.

7.In case of dispute or difference pertaining to the under noted matters (called expected matters), the decision in writing of the The Deputy General Manager, Indian Bank, Zonal Office_____., shall be final, conclusive and binding on the parties.

i) Instructions.
ii) Transactions.
iii) Quality of materials.
iv) Assigning or under letting of the contract.
v) Certificate as to reasons of delay on the part of contractor and extension of time.
vi) Rectification of defects, pointed out during the "Defect liability period".
vii) Notice of the contractor to the effect that he is not proceeding with due diligence.
viii) Certificate that the contractor has abandoned the contract.
ix) Notice of determination of the contract by the Employer.

8. As the several parts of this contract have been read to us and fully understood by us, we set out hands and seal this day of 2025

Signed by the Said
In the Presence of

INDIAN BANK

Signed by the said
In the Presence of

CONTRACTOR

GENERAL CONDITIONS OF CONTRACT

Except where provided for in the description of the individual items in the schedule of quantities and in the specifications and conditions laid down hereinafter and in the drawings, the work shall be carried out as per standard specifications and under the directions of the Bank/Architects.

1. INTERPRETATION

In the construing these conditions, the specifications, the schedule of quantities, tender and agreement, the following words shall have the meaning herein assigned to them except where the subject or context otherwise requires.

i) **Employer**: The term Employer shall denote Indian Bank with their Corporate Office at PB No: 5555, 254-260, AvvaiShanmugamSalai, Royapettah, Chennai – 600014 and Zonal Office at Midnapur and any of its employees/ representative authorized on their behalf.

ii) **Architect**: The Architect shall mean **M/s.Dhar& Associates Pvt. Ltd** or in the event of their ceasing to be the Architects for the purpose of this contract such other person(s) as the Employer shall nominate for the purpose.

iii) **Contractor**: The term contractor shall mean M/s. _____ and his / their legal heirs, representative, assigns and successors.

iv) **Site**: Indian Bank RSETI building site at Midnapur, WB.

v) **Drawings**: The work is to be carried out in accordance with drawings, specifications, the schedule of quantities and any further drawing which may be supplied or any other instructions, which may be given by the Employer / Architects at commencement or during the execution of work.

All drawings relating to work given to the contractor together with a copy of schedule of quantities / contract agreement, bar / pert chart and activity network etc (e.g. complete set as required at site) are to be kept at site and the employer / Architects shall be given access to such drawings and / or schedule of quantities / contract agreement, bar / pert chart and activity network etc whenever necessary.
In case any detailed drawings are necessary, contractor shall prepare such detailed drawings and / or dimensional sketches thereof and have it confirmed by the Employer/Architects prior to taking up such work. The contractor shall ask in writing for all clarifications on matters occurring anywhere in drawings, specifications and schedule of quantities or to additional instructions at least 15 days ahead from the time when it is required for implementation so that the Employer may be able to give decision thereon consulting with Architects(If required).

vi) "**Site Engineer**" The Site Engineer shall be deputed at work site by the Bank. The Bank may also determine the number of Site Engineers and the supporting staff at site office to assist them.

vii) "**The Works**" The work shall mean the work or works to be executed or done as specified under this contract.

viii) "**Act of Insolvency**" shall mean any act as such as defined by the Presidency towns Insolvency Act or in Provincial Insolvency Act or any amending statutes.

ix) "**The Schedule of Quantities**" shall mean the schedule of quantities as specified and forming part of this contract.

x) **"Priced Schedule of Quantities"** shall mean the schedule of quantities duly priced with the accepted quoted rates of the contractor.

xi) **"Notice in Writing"** or Written Notice shall mean a notice in written / typed or printed characters sent (unless delivered personally or otherwise proved to have been received) by registered post to the last known private or business address or registered office of the addressee and shall be deemed to have been received when in the ordinary course of post it would have been delivered.

xii) **"Virtual Completion"** shall mean that the work in the opinion of the Employer / Architects is fit for utility and put into serviceable conditions.

2. SCOPE

The work consists of construction (civil, sanitary, plumbing, fire, site development, construction of internal road/pathways and Electrical works) of proposed Indian Bank Building, at Debra, Midnapur, WB in accordance with the specifications, drawings and "Schedule of Quantities". The civil, sanitary, plumbing, fire, site development, construction of internal road/pathways, landscaping and electrical works etc., are within the scope of this tender. It includes providing/furnishing all materials, labour, tools and equipment and management necessary for and incidental to the proper execution/construction and completion of the work. All work, during its progress and upon completion, shall conform to the lines, elevations and grades as shown on the drawings furnished by the Employer / Architects. Should any details essential for efficient completion of the work be omitted from the drawings and specifications, it shall be the responsibility of the contractor to inform the Employer / Architects well in advance and to furnish and install such detail with Employer's / Architect's concurrence, so that upon completion of the proposed work the same will be acceptable and ready for use. Employer / Architects may in their absolute discretion issue further drawings and/or written instructions, details, directions and explanations, which are, hereafter collectively referred to as "The Employer's /Architect's instructions" in regard to: -

a. The variation or modification of the design quality or quantity of works or the addition or omission or substitution of any work.
b. Any discrepancy in the drawings or between the schedule of quantities and / or drawings and / or specifications.
c. The removal from the site of any defective material brought thereon by the contractor And the substitution of any other material thereof.
d. The demolition removal and/or re-execution of any work executed by the contractor/s.
e. The dismissal from the work of any persons employed thereupon.
f. The opening up for inspection of any work covered up.
g. The rectification and making good of any defects under clauses hereinafter mentioned and those arising during the maintenance period (Retention Period).

The contractor shall forthwith comply with and duly execute any work comprised in such Employer's/Architect's instructions, provided always that verbal instructions, directions and explanations given to the contractor's or his representative upon the works by the Employer/Architects shall, if involving a variation, be confirmed in writing to the contractor/s within seven days. No works, for which rates are not specifically mentioned in the priced schedule of quantities, shall be taken up without written permission of the Employer or his agent/ Architects. Rates of items not mentioned in the priced schedule of quantities shall be fixed by the Employer in consultation with the Architects as provided in **clause "variation**.

The contractor shall set up a field laboratory with necessary equipment's for day-to-day testing of materials like grading of course and fine aggregates, silt content and bulk age of sand etc. Regarding all factory made products for which ISI marked products are available, only product bearing ISI mark shall be used in the work.

3. TENDERERS SHALL VISIT THE SITE

Intending Tenderers shall visit the site and make himself thoroughly acquainted with the local site condition, nature and requirements of the works, facilities of transport condition, effective labour and materials, access and storage for materials and removal of rubbish. The Tenderers shall provide in their tender for cost of carriage, freight and other charges as also for any special difficulties and including police restriction for transport etc. for proper execution of work as indicated in the drawings. The successful Tenderers will not be entitled to any claim of compensation for difficulties faced or losses incurred on account of any site condition which existed before the commencement of the work or which in the opinion of the Employer / Architects might be deemed to have reasonably been inferred to be so existing before commencement of work.

4. TENDERS

The entire set of tender papers issued to the Tenderers should be submitted fully priced and also signed on the last page together with initials on every page. Initial / Signature will indicate the acceptance of tender papers by the Tenderers. The schedule of quantities shall be filled in as follows:-

i) The 'Rate' column to be legibly filled in ink in both English figures and English words.
ii) Amount column to be filled in for each item and the amount for each sub-head as detailed in the "Schedule of Quantities".
iii) All corrections are to be initialed.
iv) The "Rate Column" for alternative items shall be filled up.
v) The "Amount" column for alternative items of which the quantities are not mentioned shall not be filled up.
vi) In case of any errors/omissions in the quoted rates, the rates given in the tender marked "Original" (if any) shall be taken as correct rates.

No modifications, overwriting or corrections can be made in the tender papers by the Tenderers, but may at his option offer his comments or modifications in a separate sheet of paper attached to the original tender papers Part I only. No condition should be attached with Part II (Price bid) of tender. If the conditions are found attached with Price Bid (Part II) of tender **the condition will be considered as null & void.**

The Employer reserves the right to reject the lowest or any tender and also the discharge any or all of the tenders for each section or to split up and distribute any item of work to any specialist firm or firms, without assigning any reason.

The Tenderers should note that the tender is strictly on the item rate basis and their attention is drawn to the fact that the rates for each and every item should be correct, workable and self-supporting. If called upon by the Employer/Architects, detailed analysis of any or all the rates shall be submitted. The Employer/Architects shall not be bound to recognize the contractor's analysis.

The work shall be paid for as "measured work" on the basis of actual work done and not as "lump sum" contract, unless otherwise specified. All items of work described in the schedule of quantities are to be deemed and paid as complete works in all respects and details including preparatory and finishing works involved, directly related to and reasonably detectable from the drawings, specifications and schedule of quantities and no further extra charges will be allowed in this connection. In the case of lump sum charges in the tender in respect of any item of works, the payment of such items of work will be made for the actual work done on the basis of lump sum charges as will be assessed to be payable by the Employer/Architects.

The Employer has power to add to, omit from any work as shown in drawings or described in specifications or included in schedule of quantities and intimate the same in writing but no addition, omissions or variation shall be made by the contractor without authorization from the Employer. No variation shall vitiate the contract.

The Tenderers shall note that his tender shall remain open for consideration for a period of 120 days from the date of opening of the tender.

5. AGREEMENT

The successful contractor shall be required to sign agreement within fifteen days from written acceptance of tender and shall pay for all stamps legal expenses, incidental thereto. A model Article of Agreement is enclosed with the tender document.

6. PERMITS AND LICENCES

Permits and Licenses for release of materials which are under Government control. The Employer will render necessary assistance, sign any forms, drawings or applications that may be necessary. It may be clearly understood that no compensation or additional charges can be claimed by the contractor for non-receipt of the controlled materials in due time on this account or according to his own requirements.

The Employer / Architects shall be indemnified against all Government or legal actions for theft or misuse cement, M.S rods and any controlled materials in the custody of the contractor.

7. GOVERNMENT AND LOCAL RULES

The contractor shall conform to the provisions of all local Bye-laws and Acts relating to the work and to the Regulations etc. of the Government and local Authorities and of any company with whose system the structure is proposed to be connected/**constructed**. The contractor shall give all notices required by said Act, Rules, Regulations, and Bye laws etc and pay all fees payable to such authority / authorities for execution of work involved.

The contractor will make necessary liaison work with Electric Supply co. BEST or other departments for obtaining required Electric load Kwt meters.
The contractor will arrange all the document/formalities required for getting Electric load & deposit the same duly filled by the Bank.
The security & other changes as demanded by Power supply co. as per their demand note issued by them will be paid by the Bank.

The cost, if any, shall be deemed to have been included in his quoted rates, taking into account all liabilities for licenses, fees for footpath encroachment and restorations etc. and shall indemnify the Employer against such liabilities and shall defend all actions arising from such claims or liabilities.

8. TAXES AND DUTIES

a) The Tenderers must include in their tender prices quoted for all duties, royalties, cess or any other taxes or local charges if applicable. No extra claim on this account will in any case be entertained. **TDS, as applicable will be deducted from all bills / payments, made in connection with this work as per provision of Income tax Act and or latest amendments thereof.**

b) **<u>GST on works Contracts</u> : The rates quoted shall be exclusive of GST on Works. Owner shall paid GST (if any) extra as per GOI norms on works contracts.**

9. QUANTITY OF WORK TO BE EXECUTED

The quantities shown in the schedule of quantities are intended to cover the entire Construction Works (civil, sanitary, landscaping, fire and electric works) of proposed RSETI building at Midnapur, West Bengal indicated in the drawings but the Employer reserves the right to execute only a part or the whole or any excess thereof without assigning any reason therefore. Variation in the value is however not expected to be more than + /- 25%.

10. OTHER PERSONS ENGAGED BY THE EMPLOYER

The Employer reserves the right to execute any part of the work included in this contract or any work which is not included in this contract by other Agency or persons and contractor shall allow all reasonable facilities and use of his scaffolding for the execution of such work. The main contractor shall extend all co-operations in this regard.

11. EARNEST MONEY DEPOSIT(E.M.D),INITIAL SECURITY DEPOSIT(I.S.D),RETENTION MONEY(R.M) AND TOTAL SECURITY DEPOSIT(T.S.D)

The tenderer will have to deposit Earnest money as mentioned in NIT. The Employer is not liable to pay any interest on the Earnest Money. The Earnest Money of the unsuccessful tenderers will be refunded without any interest soon after the decision to award the work is taken or after the expiry of the validity period of the tender.

The successful tenderer to whom the contract is awarded will have to deposit as initial security deposit a further sum to make up 2% of the value of the accepted tender including the Earnest Money.**The Initial Security Deposit will have to be made within 14 days from the date of acceptance of tender**, failing which the Employer at his discretion may revoke the letter of acceptance and forfeit the Earnest Money deposit furnished along with the tender. The Initial Security deposit including (E.M.D) will be invested by the Employer in a fixed deposit account for the duration of the contract period. It shall be refunded to the contractor along with accrued interest within 14 days after the issue of certificate of virtual completion.

Apart from the initial security deposit made as above, retention money shall be deducted from progressive running bills/final bill @ 5% of the gross value of each running bills/final bill until the total security deposit, i.e. the Initial Security Deposit(including E.M.D) plus the retention money equals the value equivalent to 7% of the accepted contract sum i.e Total Security Deposit. The retention amount will be refunded to the contractor 14 (fourteen) days after the end of defect liability period provided he has satisfactorily carried out all the works and attended to all defects in accordance with the conditions of the contract. No interest is allowed on retention money.

12. CONTRACTOR TO PROVIDE EVERYTHING NECESSARY

The contractor shall provide everything necessary for the proper execution of the work according to the intent and meaning of the drawings, schedule of quantities and specifications taken together whether the same may or may not be particularly shown or described therein provided that same can reasonably be inferred therefrom and if the contractor finds any discrepancies therein he shall immediately and in writing ,refer the same to the Employer / Architects whose decision shall be final and binding upon the contractor. The contractor shall provide himself for ground and fresh water for carrying out of the works at his own cost. The Employer shall on no account be responsible for the expenses incurred by the contractor for hired ground or fresh water obtained from elsewhere. The Contractor shall have also to make his own arrangement to obtain power connections and maintain at his expenses an efficient service of electric light and power and shall pay for the electricity consumed. The Employer as well as the Architect shall give all possible assistance to the Contractor to obtain the requisite permission from the various authorities, but the responsibility for obtaining the same shall be that of the Contractor.

The rates quoted against individual items will be inclusive of everything necessary to complete the said items of work within the contemplation of the contract, and beyond the unit price no extra payment will be allowed for the incidental or contingent work, labour and/or materials inclusive of all taxes and duties whatsoever except for specific items if any, stipulated in the tender documents.

The contractor shall supply, fix and maintain at his own cost, for execution of any work, all tools, tackles and machineries and equipments and all the necessary centering, scaffolding, staging, planking, timbering, strutting, pumping, fencing, boarding , watching and lighting by night as well as by day required not only for the proper execution and protection of the said work but also for the protection of the public and safety of any adjacent roads, streets, walls, house, building, all other erections matters and things and the contractor shall take down and remove any or all such centering, scaffolding, planking, timbering, strutting, shoring etc., as occasion shall be required or when ordered so to do, and shall fully reinstate and make all good matters and things disturbed during the execution of works to the satisfaction of the Employer / Architects.

The contractor shall also provide such temporary road on the site as may be necessary for the proper performance of the contract, and for his own convenience but not otherwise. Upon completion, such roads shall be broken up and levelled where so required by the drawings unless the Employer shall otherwise direct.

13. TIME OF COMPLETION, EXTENTION OF TIME & PROGRESS CHART

1. **Time of completion**: The entire work is to be completed in all respects within the stipulated period of 12 months including rainy season. The work shall be deemed to be commenced from 2nd day from the date of agreement or date of handing over of site to the contractor, whichever is later. Time is the essence of the contract and shall be strictly observed by the contractor.

   The work shall not be considered as complete until the Employer / Architects have certified in writing that the work has been completed and the Defects Liability Period shall commence from the date of such certificate.

2. **Certificate of Completion:** When the whole of the works are substantially completed and have satisfactorily passed any final test prescribed in the contract, Contractor shall give a written notice to that effect to the Architects with an undertaking to finish any outstanding defect during Defect Liability Period for issue of Certificate of Completion in respect of the works.

   The Architects within 10 days of receipt of such notice either issue to the employer, a certificate, as per following proforma, stating the date on which to his opinion the works were substantially completed in terms of the contract. Then the employer will record the completion certificate in MB (Measurement Book) as per the agreement.

   I have inspected the work of ___(Name of work)_____ contract value of which is Rs---------- on ___(date)___.As result of this inspection and my previous inspections, I certify that the work has been carried out as per specification and completed satisfactorily. There are no noticeable defects, except for the following:
   a) ---------- b) ---------- c) ---------- d) ----------

Date-

Signature of the Architect
With Seal

OR-

Give instructions in writing to the contractor, specifying all the work, which requires to be done by the contractor before the issue of such certificate of completion as also defects in the works affecting substantial completion. The Contractor shall be entitled to receive certificate of completion within 10 days of completion and making good any such defects so notified to the satisfaction of the employer / Architect.

3. **Extension of Time**: If in the opinion of Employer / Architects the works be delayed
   (a) By reason of exceptionally inclement weather or
   (b) By reason of instructions from the Employer in consequence of proceedings taken or threatened by or disputes, with adjoining or neighbouring owners or
   (c) By the works, or delay, of other contractor or tradesman engaged or nominated by the Employer and not referred to in the specification or
   (d) By reason of authorised extra and additions or
   (e) By reason of any combination of workmen or strikes or lockout affecting any of the buildings trades or
   (f) From other causes which the Employer may consider being beyond the control of the contractor, the Employer at the completion of the time allowed for the contract shall make fair and reasonable extension of time for completion in respect therefor. In the event of the Employer failing to give possession of the site upon the day specified above the time of completion shall be extended suitably.

In case of such strikes or lockout, as are referred to above, the contractor shall, immediately give the Employer, written notice thereof. Nevertheless, the contractor shall use his best endeavours to prevent delay and shall do all that may be reasonably required, to the satisfaction of the Employer to proceed with the works and on his doing so that it will be ground of consideration by the Employer for an extension of time as above provided. The decision of the Employer as to the period to be allowed for an extension of time for completion hereunder (which decision shall be final and binding on the contractor) shall be promulgated at the conclusion of such strike or lockout and the Employer shall then in the event of extension being granted determined and declared the final completion date. The provision in clause 14 with respect to payment of liquidated damages shall in such case, be read and construed as is the extended dated fixed by the Employer where substituted for and the damage shall be deducted accordingly.

The contractor will have to submit his application for extension of time / period in banks standard format only as mentioned

PROFORMA FOR APPLICATION FOR EXTENSION OF TIME PERIOD

1. Name of contractor :

2. Name of the work as given in the Agreement :

3. Agreement No. :

4. Estimated tender amount :

5. Date of commencement of work as per Agreement :

6. Period allowed for completion of work as per Agreement :

7. Date of completion stipulated in Agreement :

8. Period for which extension of time has been given previously :

a) 1st extension vide Architect's/Bank's letter
No dated Month Days

b) 2nd extension vide Architect's /Bank's letter
No. dated Month Days

c) 3rd extension vide Architect's/Bank's letter
No. dated Month Days

d) 4th extension vide Architect's/Bank's letter
No. dated Month Days

Total extension previously given

9. Reasons for which extensions have been previously given (copies of the previous applications should be attached) :

10. Period for which extension is applied for :

11.Hindrances on account of which extension is applied for with dates on which hindrances occurred and the period for which these are likely to last:

a)Serial No. :

b)Nature of hindrance :

c)Date of occurrence :

d)Period for which it is likely to last :

e)Period for which extension required for this particular hindrance :

f)Overlapping period if any, with reference to item (e) above :

g)Net extension applied for :

h)Remarks, if any :

12.Extension of time required for extra work :

13.Details of extra work and the amount involved :

a)Total value of extra work :

b)Proportionate period of extension of time on estimated amount put to tender :

14.Total extension of time required for 11 & 12 :

Submitted to the Architect/Bank

.....

Signature of Contractor

Date:

4. **Progress of work** : During the period of work the contractor shall maintain proportionate progress on the basis of a program chart submitted by the contractor immediately before commencement of work and agreed to by the Employer / Architects. Contractor should also improve the planning for procurement for scarce material well in advance and reflect the same in the program chart so that there is no delay in completion of the project.

14. LIQUIDATED DAMAGES

Should the work be not completed to the satisfaction of the Employer / Architects within the stipulated period, the contractor shall be bound to pay to the Employer a sum equivalent to 1% of the accepted tendered amount per week subject to ceiling of 10% of the accepted contract amount subjected to maximum of the total security deposit (accrual of which entitles the Employer to rescind the contract) by way of liquidated damages and not as penalty during which the work remains uncommenced or unfinished after the expiry of the completion date.

15. TOOLS, STORAGES OF MATERIALS, PROTECTIVE WORKS AND SITE OFFICE REQUIREMENTS

The contractor shall provide, fix up and maintain in an approved position proper office accommodation for the its representatives and staff, which offices shall be opened at all reasonable hours to receive instructions notices or communications and clear away on completion of the works and make good all work disturbed.

All drawings maintained on the site are to be carefully kept with cloth pasted on back side of each drawings. They are to be protected from ravages of termites, ants, and other insects.

The contractor shall provide at his own cost all artificial light required for the work and to enable other contractors and sub contractors to complete the work within the specified time.
The contractor shall provide a suitable temporary hut for the watchmen and clear away the same when no longer required and to provide all necessary attendance, lights etc. required.
The contractor shall arrange for temporary latrines for the use of workers and field staff and keep the same in a clear and sanitary condition to the satisfaction of the Public Health Authorities and shall cause such latrines and soil to be cleared away whenever necessary and shall make good all the works disturbed by these conveniences.

The contractor shall not fix or place any placards or advertisement of any description or permit the same to be fixed or placed in or upon any boarding, gantry, building structure other than those approved by the Employer.

Protective Measures : The contractor from the time of being-placed in possession of the site must make suitable arrangements for watching, lighting and protecting the work, the site and surrounding property by day, by night, on Sundays and other holidays. Contractor shall indemnify the Employer against any possible damage to the building, roads, or member of the public in course of execution of the work.

The contractor shall provide necessary temporary enclosures, gates, entrances, etc for the protection of the work and materials and for altering and adopting the same as may be required and removing on completion of the works and making good all works disturbed.

Storage of Materials : The contractor shall provide and maintain proper sheds for the proper storage and adequate protection of the materials etc and other work that may be executed on the site including the tools and materials of sub-contractors and remove same on completion.

Cement godown shall be constructed for storing about six weeks requirements of cement and stored as per norms with a stack of 10 bags each and 2 feet opening all around with 2 feet passage of each stack. Structure shall be water-proof from all the sides and top. Cement should be stored one feet above the ground level the have pucca raised floor.

So also reinforcement bars are to be stored above the ground level to prevent the same from getting rusted.

Construction chemicals shall be stacked and stored in a separate room, which shall be cool and dust proof. Care shall be taken to see that no volatile material and fire of any kind are near this room. Adequate Fire safety measures shall be taken.

Tools : Theodolite, levels, prismatic compass, chain,steel and metallic tapes and all other surveying instruments found necessary of the works shall be provided by the contractor for the due performance of this contract as instructed by the site engineer. Contractor shall provide and **maintain an electronic balance** to weigh construction chemicals accurately as per manufacturer's specifications. All measuring tapes shall be of steel and suitable steel scaffolding and ladders that may required for safely taking measurements shall be supplied by the contractor.

The mistries and the supervisors on the works shall carry with them always **a three metre steel tape, a measuring tape of 30 metres, a sprit level, a plumb bob and a square** and shall check the work to see that the work is being done according to the drawing and specifications. The Site Engineer will use any or all measuring instruments or tools belonging to the contractors as he chooses for checking the works executed or being executed or being executed on the contract. The contractor should cover in his rates for making provisions for all reasonable facilities for the use of his scaffolding, tools and plant etc. by sub contractors for their work.

16. NOTICE AND PATENTS OF APPROPRIATE AUTHORITY AND OWNERS

The contractor shall conform to the provisions of any Acts of the Legislature relating to the work, and to the Regulations and Bye-laws of any authorities, and/or any water, lighting and other companies, and/or authorities with whose systems the structures were proposed to have connection and shall before making any variations form the drawings or specification that may be associated to so conform, give the Employer/Architects written notices specifying the variations proposed to be made and the reasons for making them and apply for instructions thereon. The Employer /Architects on receipt of such intimation, shall give a decision within a reasonable time.

The contractor/s shall arrange to give all notices required for by the said Acts, Regulations or Bye-laws to be given to any authority, and to pay to such authority or to any public officer all fees that may be properly chargeable in respect of the work and lodge the receipts with the Employer.

The contractor shall indemnify the Employer against all claims in respect of patent rights, royalties, damages to building, roads or member or public in course of execution of work and shall defend all actions arising from such claims and shall keep the Employer saved harmless and indemnified in all respects from such actions, costs and expenses.

17. CLEARING SITE AND SETTING OUT WORKS.

The site shown on the plan shall be cleared of all obstructions, loose stone and materials rubbish of all kinds. All holes or hollows whether originally existing or produced by removal or loose stone or materials shall be carefully filled up with earth well rammed and levelled off as directed at own cost.

The contractor shall set out the works and shall be responsible for the true and perfect setting out of the work and for the correctness of the positions, levels, dimensions and alignment of all parts thereof. If at any time, any error shall appear during the process of any part of the work, the contractor shall at his own expenses rectify such error, if called upon the satisfaction of the Employer. The contractor shall further set out the works to the alternative positions at the site until one is finally approved and rates quoted in this tender should include for this and no extra on this account will be entertained.

18. DATUM

The average ground level will be considered as crown of the nearest road, which should be taken as "Datum" which is however, subject to final confirmation by the Employer / Architects. All levels shown in the drawings are to be strictly adhered to.

19. BENCHES

The contractor is to construct and maintain proper benches of all the main walls, in order that the lines and levels may be accurately checked at all times.

The benches will consist of salwood post of adequate length and minimum diameter 75mm to be driven in the ground at suitable distance as directed encased with brickwork. The wire nails will be driven on the top of salwood post on the center lines of columns, walls, inside and outside faces of foundations trenches, in order that lines may be stretched between the benches and accurate intersection of excavation. Centre lines of walls, columns etc., may be clearly indicated and checked at any time if it is so required.

20. CONTRACTOR IMMEDIATELY TO REMOVE ALL OFFENSIVE MATTERS

All soil, filth or other matters of any offensive nature taken out of any trench, sewer, drain, cesspool or other place shall not be deposited on the surface but shall be at once carted away by the contractor to place provided by him ,**By paying Royalty to collector as May payable.**

The contractor shall keep the foundations and works free from water and shall provide and maintain at his own expenses electrically or other power driven pumps and other plant to the satisfaction of the Employer for the purpose, until the building is handed over to the Employer. The contractor shall arrange for the disposal of the water so accumulated to the satisfaction of the Employer and the local authority and no claims will be entertained afterwards if he does not include in his rates for the purpose.

21. ACCESS

Any authorized representative of the Employer shall at all reasonable times have free access to the works and/or to the workshops, factories or other places where materials are being prepared or constructed for the work and also to any places where the materials are lying or from where they are being obtained, and the contractor shall give every facility to the bank or their representative necessary for inspection and examination and test of the materials and workmanship. Except the representatives of the Employer no person shall be allowed at any time without the written permission of the Employer.

22. MATERIALS, WORMANSHIP, SAMPLES, TESTING OF MATERIALS

All the works specified and provided for in the specifications or which may be required to be done in order to perform and complete any part thereof shall be executed in the best and approved quality of the respective kinds in accordance with particulars contained in and implied by the specifications and as represented by the drawings or according to such other additional particulars, and instructions as may from time to time be given by the Employer / Architects during the execution of the work, and to his entire satisfaction,

If required by the employer / Architects the contractor shall have to carry out tests on materials and workmanship in approved materials testing laboratories as prescribed by the Employer / Architects, at his own cost to prove that the materials etc. ,under test conform to the relevant I.S. Standards or as specified in the specifications. The necessary charges for preparation of mould (in case of concrete cube) transporting, testing etc., shall have to be borne by the contractor. No extra payment on this account should in any case be entertained.

All the materials (except where otherwise described) stores and equipment required for the full performance of the work under the contract must be provided through normal channels and must include charge for import duties, sales tax, octroi and other charges and must be the best of their kind available and the contractor/s must entirely responsible for the order.

and efficient carrying out of the work. The work must be done in the best workman like manner. Samples of all materials to be used must be submitted to the Employer / Architects when so directed by the Site Engineer / Architects and written approval from Employer / Architects must be obtained prior to placement of order.

During the inclement whether the contractor shall suspend concreting and plastering for such time as the Employer / Architects may direct and shall protect from injury all work when in course of execution. Any damage (during constructions) to any part of the work for any reasons due to rain, storm or neglect of contractor shall be rectified by the contractor in an approved manner at no extra cost.

Should the work be suspended by reason of rain, strike, lock-outs, or any other cause, the contractor shall take all precautions necessary for the protection of work and at his won expenses shall make good any damage arising from any of these cause.

The contractor shall cover up and protect from damage, from any cause, all new work and supply all temporary doors, protection to windows, and any other requisite protection for the execution of the work whether by himself or special tradesmen or sub-contractor and any damage caused must be made good by the contractor at his own expenses.

23. REMOVAL OF IMPROPER WORK

The Employer shall during the progress of the work have power to order in writing from time to time the removal from the work within such reasonable time or times as may be specified in the order of any materials which in the opinion of the Employer / Architects are not in accordance with specification or instructions, the substitution or proper re-execution of any work executed with materials or workmanship not in accordance with the drawings and specifications or instructions. In case the contractor refuses to comply with the order the Employer shall have the power to employ and pay other agencies to carry out the work and all expenses consequent thereon or incidental thereto as certified by the Employer / Architects shall be borne by the contractor or may be deducted from any money due to or that may become due to the contractor. **No certificate which may be given by the Architects shall relieve the contractor from his liability in respect of unsound work or bad materials.**

24. SITE ENGINEER

The term Site Engineer shall mean the person appointed and paid by the Employer to superintend the work. The contractor shall afford the Site Engineer every facility and assistance for examining the works and materials and for checking and measuring work and materials. The Site Engineer shall have no power to revoke, alter, enlarge or relax any requirements of the contractor or to sanction any day work, additions, alterations, deviations or omissions or any extra work whatever, except in so far as such authority may be specially conferred by a written order of the Employer.

The Site Engineer shall have power to give notice to the contractor or to his foreman, of non-approval of any work or materials and such work shall be suspended or the use of such materials shall be discontinued until the decision of the Employer is obtained. The work will from time to time be examined by the Architects, Engineers from the premises Department of the Employer and the Site Engineer. But such **examination shall not in any way exonerate the contractor from the obligation to remedy any defects** which may be found to exist at any stage of the work or after the same is complete. Subject to the limitations of this clause the contractor shall take instructions only from the Architects / Employer or his representative.

25. CONTRACTOR'S EMPLOYEES

The contractor shall employ technically qualified and competent supervisors for the work who shall be available (by turn) throughout the working hours to receive and comply with instructions of the Employer/Architects. The contractor shall engage at least one qualified B.E Degree Holder in Civil Engineer experienced in building construction jobs as Site-in-charge and one diploma holder Engineer for execution of the work. The contractor shall provide certified copy of their degree &b diploma certificate along with their attested signature within 7 days of the date of commencement of work. The Site-in-charge will have power from contractor side to sign Bank's documents/MB & received letter etc .at site as required by the Bank.

The Contractor shall employ in connection with the work persons having the appropriate skill or ability to perform their jobs efficiently. The contractor shall employ local labourers on the work as far as possible. **No labour below the age of eighteen years and who is not an Indian National** shall be employed on the work.

Any labour supplied by the contractor to be engaged on the work on day-work basis either wholly or partly under the direct order or control of the Employer or his representative shall be deemed to be a person employed by the contractor. The contractor shall comply with the provisions of all labour legislation including the requirement of

a) The payment of Wages Act.
b) Employer's liability Act.
c) Workmen's compensation Act.
d) Contract labour (Regulation & Abolition) Act, 1970 and Central Rules 1971.
e) Apprentices Act 1961.
f) Minimum wages Act.
g) Employees Insurance Act etc.
h) Any other Act or enactment relating thereto and rules framed there under from time to time.

The contractor shall keep the Employer saved harmless and indemnified against claims if any of the workmen and all costs and expenses as may be incurred by the Employer in connection with any claim that may be made by any workmen.

The contractor shall comply at his own cost with the order of requirement of any Health Officer of the state or any local authority or of the Employer regarding the maintenance of proper environmental sanitation of the area where the contractor's labourers are housed or accommodated, for the prevention of small pox, cholera, plague, typhoid, malaria and other contagious diseases. The contractor shall provide, maintain and keep in good sanitary condition adequate sanitary accommodation and provide facility for pure drinking water at all times for the use of men engaged on the works and shall remove and clear away the same on completion of the works. Adequate precautions shall be taken by the contractor to prevent nuisance of any kind on the works or the lands adjoining the same. The contractor shall arrange to provide first-aid treatment to the labourers engaged on the works. He shall within 24 hours of occurrence of any accident at or about the site or in connection with execution of works, report such accident to the employer and also to the competent authority where such report is required by law.

26. DISMISSAL OF WORKMEN

The contractor shall on the request of the Employer immediately dismiss from works and remove from site any persons employed thereon by him, who may in opinion of the Employer be unsuitable or incompetent or who may misconduct himself. Such discharges shall not be the basis of any claim for compensation or damages against the Employer or any of their officer or employee.

27. ASSIGNMENT

The whole of the works included in the contract shall be executed by the contractor and contractor shall not directly or indirectly transfer, assign or underlet the contract or any part

share or interest therein nor, shall take a new partner, without written consent of the Employer and no subletting shall relieve the contractor from the full and entire responsibility of the contract or from active superintendence of the work during their progress.

28. DAMAGE TO PERSONS AND PROPERTY INSURANCE ETC.

The contractor shall be responsible for all injury to the work or workmen to persons, animals or things and for all damages to the structural and/or decorative part of property which may arise from the operations or neglect of himself or of any sub-contractor or of any of his or a sub-contractor's employees, whether such injury or damage arise from carelessness, accident or any other cause whatsoever in any way connected with the carrying out of this contract. The clause shall be held to include inter-alia, any damage to buildings, roads whether immediately adjacent or otherwise, and any damage to roads, streets, footpaths, or ways as well as damages caused to the buildings and the works forming the subject of this contract by rain, wind or other inclemency of the weather. The contractor shall indemnify the Employer and hold harmless in respect of all and any expenses arising from any such injury or damages to persons or property as aforesaid and also in respect of any claim made in respect of injury or damage under any acts of compensation or damage consequent or damage upon such claim.

The contractor shall reinstate all damage of every sort mentioned in this clause, so as to deliver the whole of the contract works complete and perfect in every respect and so as to make good or otherwise satisfy all claims for damages to the property or third parties.

The contractor shall effect the insurance necessary and indemnify the Employer entirely from all responsibility in this respect. The insurance must be placed with a company approved by the Employer and must be effected jointly in the name of the contractor and Employer and the policy lodged with the latter. The scope of insurance is to include damage or loss to the contract itself till this is made over in a complete state. Insurance is compulsory and must be effected from very initial stage. The contractor shall also be responsible for anything which may be excluded from damage to any property arising out of incidents, negligence or defective carrying out of this contract.

The Employer shall be at liberty and is hereby empowered to deduct the amount of any damages, compensations, costs, charges and expenses arising or accruing from or in respect of any such claim or damages from any sums due or to become due to the contractor.

29. INSURANCE

Unless otherwise instructed the contractor shall insure the works and keep them insured until the virtual completion of the contract against loss or damage by **mishandling of construction practice, not following the procedure of execution of restoration and rehabilitation**, fire and /or earthquake, flood. The insurance must be placed with a company approved by the Employer, in the joint names of the Employer and the contractor for such amount and for any further sum if called to do so by the employer, the premium of such further sum being allowed to the contractor as an authorised extra.

The contractor shall deposit the policy and receipt for premiums paid with the Employer within 21 (twenty-one) days from the date of issue of work order unless otherwise instructed. In default of the contractor insuring as provided above, the Employer on his behalf may so insure and may deduct the premiums paid from any money due, or which may become due to the contractor. The contractor shall as soon as the claim under policy is settled or the work reinstated by the Insurance company should they elect to do so, proceed with due diligence with the completion of the works in the same manner as though the fire has not occurred and in all respects under the condition of the contract. The contractor in

case of rebinding or reinstatement after fire shall be entitled to extension of time for completion as the Employer may deem fit.

30. ACCOUNTS, RECEIPTS AND VOUCHERS

The contractor shall, upon the request of the Employer furnish them with all the invoices, accounts, receipts and other vouchers that they may require in connection with the works under this contract. If the contractor shall use materials less than what he is required under the contract, the value of the difference in the quantity of the materials he was required to use and that he actually used shall be deducted from his dues. The decision of the Employer shall be final and binding on the contractor as to the amount or materials the contractor is required to use for any work under this contract.

31. Before taking any measurement of any work, the Site Engineer or a Subordinatedeputed by him shall give reasonable notice to the contractor. If the contractor fails to attend at the measurements after such notice or fails to countersign or to record the difference within a week from the date of measurement in the manner required by the Site Engineer then in any such event the measurements taken by the site engineer or by the subordinate deputed by him as the case may be is final and binding on the contractor and the contractor shall have no right to dispute the same.

32. PAYMENTS

All bills shall be prepared by the contractor in the form prescribed by the Employer / Architects. Normally one interim bill shall be prepared each month subject to minimum value for interim certificate as stated in these documents. The bills in proper form must be duly accompanied by detailed measurements in support of the quantities of work done and must show deductions for all previous payments, retention money etc.

The Employer/Architects shall issue a certificate after due scrutiny of the contractors bill stating the amount due to the contractor from the Employer and the contractor shall be entitled to payment thereof, within the period of honoring certificates named in these documents. In case of delay due to some reasons in the processing of such bills for payment, an additional advance of 75% of the billed amount duly certified by the Architect may be paid on the request of the contractor for the smooth progress of the work.

The amount stated in an interim certificate shall be the total value of work properly executed less the amount to the retained by the Employer as retention money vide clause-11 of these conditions. The Employer will deduct previous payments, TDS, any other taxes and retention money. The refund of Retention Money will be made as specified in this document. If the Employer has supplied any materials or goods to the contractor, the cost of any such materials or goods will be progressively deducted from the amount due to the contractor in accordance with the quantities consumed in the work.

All the interim payments shall be regarded as payments by way of advance against the final payment only and not as payments for work actually done and completed and shall not preclude the requiring of bad, unsound and imperfect or unskilled work to be removed and taken away and reconstructed or re-erected or be considered as an admission of the due performance of the contract, or any part thereof in any respect or the accruing of any claim, nor shall, it conclude, determine or affect in anyway the power of the Employer under these conditions or any of them as to the final settlement and adjustment of the accounts or otherwise or in any other way vary or affect the contract.

FINAL PAYMENT

The final bill shall be submitted by the contractor within one month of the date fixed for completion of the work or of the date of certificate of completion furnished by the Employer/Architects and payment shall be made within three months.

The final bill shall be accompanied by a certificate of completion from the Employer / Architects. Payments of final bill shall be made after deduction of all previous payments, TDS, any other tax and retention money as specified in relevant clause of these conditions. The acceptance of payment of the final bill by the contractor would indicate that he will have no further claim in respect of the work executed.
The contractor/Firm shall submit the As-built Drawing including electric and plumbing detailed Layout shown distinctly on the As-built Drawing.

33. VARIATION / DEVIATION

The Price/rates of all such additional item / non-tendered items will be worked out on the basis of rates quoted for similar items in the contract wherever existing orengineering rate analysis based on prevalent fair price of labour, material and other components as required including wastage and 15% towards tax, overhead and contractor's profit. The tender rates, shall hold good for any increase or decrease in the tendered quantities upto variation of 25%.For variation beyond 25%, the rate for the respective item may be reviewed on mutually agreed terms.

34. SUBSTITUTION

Should the contractor desire to substitute any materials and workmanship, he / **they must obtain the approval of the Employer/Architects in writing** for any such substitution well in advance. Materials designed in this specification indefinitely by such term as "Equal" or "Equivalent" or "other approved" etc. specific approval of the Employer / Architects has to be obtained in writing.

35. PREPARATION OF BUILDING WORKS FOR OCCUPATION AND USE ON COMPLETION

The whole of the work will be thoroughly inspected by the contractor and deficiencies and defects put right. On completion of such inspection the contractor shall inform the Employer that he has completed the work and it is ready for inspection.

On completion the contractor shall clean all windows and doors including the cleaning and oiling, if necessary, of all hardware, inside and outside, all floors, staircases, and every part of the building. He will leave the entire building neat and clean and ready for immediate occupation and to the satisfaction of the Bank/Employer.

36. CLEARING SITE ON DAY TO DAY BASIS / ON COMPLETION

On completion of the works the contractor shall clear away and remove from the site all constructional plant, surplus materials, rubbish and temporary works of every kind and leave the whole of the site and the works clean and in a workman like condition to the satisfaction of the Employer/Architects.

37. DEFECTS AFTER COMPLETION

The contractor shall make good at his own cost and to the satisfaction of the Employer all defects, shrinkage, settlements or other faults which may appear within 12 months after completion of the work. In default, the Employer may employ and pay other persons / agencies to amend and make good such damages, losses and expenses consequent thereon or incidental thereto shall be made good and borne by the contractor and such damages, loss and expenses shall be recoverable from him by the Employer or may be deducted by the Employer, in lieu of such amending and making good by the contractor, deduct from any money due to the contractor a sum equivalent to the cost of amending such work and in the event of the amount retained being insufficient, recover that balance from the contractor from the amount retained under Clause No.11 together with any expenses the Employer may have incurred in connection therewith.

38. CONCEALED WORK

The contractor shall give due notice to the Employer / Architects whenever any work is to be buried in the earth, concrete or in the bodies of walls or otherwise becoming inaccessible later on, in order that the work may be inspected and correct dimensions taken before such burial, in default whereof the same shall, at the option of the Employer / Architects be either opened up for measurement at the contractor's expense or no payment may be made for such materials. Should any dispute or differences arise after the execution of any work as to measurements etc. or other matters which cannot be conveniently tested or checked, the notes of the Employer / Architects shall be accepted as correct and binding on the contractor.

39. ESCALATION

The rate quoted shall be firm throughout the tenure of the contract (including extension of time, if any, granted) and will not be subject to any fluctuation due to increase in cost of materials, labour, Tax, octroi etc.

40. IDLE LABOUR

Whatever the reasons may be, no claim for idle labour, additional establishments cost of hire and labour charges of tools and plants would be entertained under any circumstances.

41. SUSPENSION

If the contractor except on account of any legal restraint upon the Employer preventing the continuance of the work or in the opinion of the Employer shall neglect or fail to proceed with due diligence in the performance of his part of the contract or if he shall more than once make default, the Employer shall have the power to give notice in writing to the contractor requiring the work to be proceeded within a reasonable manner and with reasonable dispatch, such notices purport to be a notice under this clause.

After such notice shall have been given the contractor shall not be at liberty to remove from the site of the works or from any ground contiguous thereto any plant or materials to subsist from the date of such notice being given until the notice shall have been complied with. If the contractor fails to start the work within 7 (Seven) days after such notice has been given to proceed with the works as therein prescribed, the Employer may proceed as provided in clause-42 (Termination of contract by Employer).

42. TERMINATION OF CONTRACT BY EMPLOYER

If the contractor being a company go into liquidation whether voluntary or compulsory or being a firm shall be dissolved or being an individual shall be adjudicated insolvent or shall make an assignment or a composition for the benefit of the greater part, in number of amount of his creditors or shall enter into a Deed or arrangement with his creditors, or if the official Assignee in insolvency, or the Receiver of the contractor in insolvency, shall repudiate the contract or if a Receiver of the contractor's firm appointed by the court shall be unable, within fourteen days after notice to him requiring him to do so, to show to the reasonable satisfaction of the employer that he is able to carry out and fulfill the contract, and if so required by the employer to give reasonable security therefore, or if the contractor shall suffer execution to be issued, or shall suffer any payment under this contract to be attached by or on behalf of and of the creditor's of the contractor, or shall assign, charge or encumber this contract or any payments due or which may become due to the contractor, there under, or shall neglect or fails to observe and perform all or any of the acts matters of things by this contract, to be observed and performed by the contractor within three clear days after the notice shall have been given to the contractor in manner hereinafter mentioned requiring the contractor to observe or perform the same or shall use improper materials or workmanship in carrying on the work, the

shall in the opinion of the Employer not exercise such due diligence and make such due progress as would enable the work to be completed within due time agreed upon, and shall fail to proceed to the satisfaction of the Employer after three clear days notice requiring the contractor so to do shall have been given to contractor as hereinafter mentioned, or shall abandon the contract, then and in any of the said cases, the Bank may not withstanding previous waiver determine the contract by a notice in writing to the effect as hereinafter mentioned, but without thereby effecting the powers of the Employer of the obligations and liabilities of the contractor the whole of which shall continue in force as fully as if the contract, had not been so determined and as if the works subsequently executed had been executed by or on behalf of the contractor (without thereby creating any trust in favor of the contractor) further the Employer or his agent, or servants, may enter upon and take possession of the work and all plants, tools, scaffolding, sheds, machinery, steam and other power, utensils and materials lying upon premises or the adjoining lands or roads and sell the same as his own property or may employ the same by means of his own servants and workmen in carrying on and completing the works or by employing any other contractor or other persons or person to complete the works, and the contractor shall not in any way interrupt or do any act, matter of thing to prevent or hinder such other contractors or other persons or person employed from completing and finishing or using the materials and plants for the works when the works shall be completed, or as soon thereafter as conveniently may be, the Employer shall give notice in writing to the contractor to remove his surplus materials and plants and should the contractor fail to do so within a period of 14 days after receipt by him the Employer may sell the same by Public Auction and shall give credit to the contractor for the amount so realised. Any expenses or losses incurred by the Employer in getting the works carried out by other contractors shall be adjusted against the amount payable to the contractor by way of selling his tools and plants or due on account of work carried out by the contractor prior to engaging other contractors or against the Security Deposit.

43. ARBITRATION

All disputes or differences of any kind whatsoever which shall at any time arise between the parties hereto touching or concerning the works or the execution or maintenance thereof of this contract or the rights touching or concerning the works or the execution of maintenance thereof of this contract or the construction remaining operation or effect thereof or to the rights or liabilities of the parties or arising out of or in relation thereto whether during or after determination, foreclosure or breach of the contract (other than those in respect of which the decision of any person is by the contract expressed to be final and binding) shall after written notice by either party to the contract to the other of them and to the Employer hereinafter mentioned be referred for adjudication to a sole Arbitrator to be appointed as hereinafter provided.

For the purpose of appointing the sole Arbitrator referred to above, the Employer will send within thirty days of receipt of the notice, to the contractor a panel of three names of persons who shall be presently unconnected with the organization for which the work is executed.

The contractor shall on receipt of the names as aforesaid, select any one of the persons named to be appointed as a sole Arbitrator and communicate his name to the Employer within thirty days of receipt of the names. The Employer shall thereupon without any delay appoint the said person as the Sole Arbitrator. If the contractor fails to communicate such selection as provided above within the period specified, the competent authority shall make the selection and appoint the selected person as the Sole Arbitrator.

If the Employer fails to send to the contractor the panel of three names as aforesaid within the period specified, the contractor shall send to the Employer a panel of names of persons who shall all be unconnected with either party. The Employer shall on receipt of the name as aforesaid select any one of the person's names and appoint him as the sole Arbitrator. If the Employer fails to select the person and appoint him as the Sole Arbitrator within 30 days of receipt of the panel and inform the contractor accordingly, the contractor shall be entitled to

appoint one of the persons from the panel as the Sole Arbitrator and communicate his name to the Employer.

If the Arbitrator so appointed is unable or unwilling to act or resigns his appointment or vacates his office due to any reasons whatsoever another Sole Arbitrator shall be appointed as aforesaid.

The work under the contract shall, however, continue during the arbitration proceedings and no payment due or payable to the contractor shall be withheld on account of such proceedings.
The Arbitrator shall be deemed to have entered on the reference on the date he issued notice to both the parties fixing the date of the first hearing. The Arbitrator may from time to time, with the consent of the parties, enlarge the time for making and publishing the award.

The Arbitrator shall give a separate award in respect of each dispute or difference referred to him. The Arbitrator shall decide each dispute in accordance with the terms of the contract and give a reasoned award. The venue of arbitration shall be such place as may be fixed by the Arbitrator in his sole discretion.

The fees, if any, of the Arbitrator shall, if required to be paid before the award is made and published, be paid half and half by each of the parties. The cost of the reference and of the award including the fees, if any, of the Arbitrator who may direct to and by whom and in what manner, such costs or any part thereof shall be paid and may fix or settle and amount of costs to be so paid.

The award of the Arbitrator shall be final and binding on both the parties.

Subject to aforesaid the provisions of the Arbitration Act 1992 or any statutory modification or re-enactment thereof and the rules made thereunder, and for the time being in force shall apply to the arbitration proceeding under this clause.

The Employer and the contractor hereby also agree that arbitration under clause shall be a condition precedent to any right to action under the contract with regard to the matters hereby expressly agreed to be so referred to arbitration.

44. OFFICE ACCOMMODATION FOR THE SITE ENGINEER

The contractor shall provide, erect and maintain at his cost a separate simple watertight office accommodation for the Site Engineer. This accommodation shall be well lighted and ventilated and provided with windows, door with a lock. the Site Engineer office shall be minimum of 150Sft and the contractor shall provide a table/desk, chairs, drawers for keeping drawings, a almirah/cupboard having proper lock and a tack board for displaying drawings. The accommodation shall be demolished when directed.

45. MEASUREMENT

(A) Measurement Books

A.1 The number of pages for measurements alone shall be 100 per book.The pages shall be serially machine numbered. The book shall be in the custody of the Site Engineer.

A.2 Each book shall bear an identifying number.

(B) Recording of Measurements

B.1 The measurements shall be recorded by the Site Engineer or by an employee or an agency of the of the Bank, specifically authorized for the purpose.

B.2 The Site engineer (or his representative) shall take joint measurements (i.e. accompanied by the contractors/ their authorized representative and Architect/ their authorized representative) of the work as it progresses and record them directly in the Measurement Books.

B.3 It shall be ensured that the method of measurement is in accordance with the contract. The precision in measurements shall be as laid down in IS-1200. Any points of disagreement

contractor pertaining to measurements shall be promptly referred to the decision of the competent authority.

B.4 Extra / deviated items, as claimed by the contractor, shall not be recorded in Measurement Book until they are approved by the competent authority.

B.5 In case some allegedly extra/deviated item is carried out by. the contractor while complying with approved drawings and specifications and the same is to be covered up, the Site Engineer shall check the item and its specification and record its measurements but simultaneously enter up the proviso that their admittance is subject to the approval by the competent authority. Both the measurements and the proviso shall be got signed by the contractor.

The Measurement book shall not be handed over the contractor at any time. The contractor or his representative may be permitted by the Site Engineer to see it in his presence and / or make a (concurrent) copy of his own. The contractor shall, however, be warned that his copy shall be regarded as anunofficial copy of the Banks Measurement book. This is the only authorized document in the matter.

B.6 The measurement shall be signed at the end of each session of measurement of the days work, as the case may be by all the parties (i.e. Measurer / Site Engineer, the contractor/ their authorized representative and Architect/ their authorized representative).

(C)Concealed Work

The contractor shall give due notice to the Employer whenever any work is to be buried in the earth, concrete or in the bodies of walls or otherwise, becoming inaccessible later on, inorder that the work may be inspected and correct dimensions taken before such burial, indefault whereof the same shall, at the opinion of the Employer be either opened up for measurement at the contractors expense or no payment may be made for such materials should any dispute or difference arise after the execution of any work as to measurements etc., or other matters which cannot be conveniently tested or checked, the notes of the employer shall be accepted as correct and binding on the contractor.

(D) The following instructions shall be borne in mind while taking measurements.

D.1 The work shall be measured in same sequence as constructed.

D.2 Before the start of measurements of' excavation. the measurer should be in possession of the reduced levels (RLs)taken by surveyors leveling instrument of the bottom of the excavation, of the natural ground and of the ground floor level i.e. plinth top / **top of the basement**. When the different strata of sub-surfaces or courses of masonry are measured by a measuring rod, it should have checkedthat heights of strata / courses add up to the aggregate height ascertained from the recorded RLs. Any discrepancy in this shall be set right.

D.3 Work at different levels/stages/floors shall be kept scrupulously separate and not allowed to get mixed up. Ample location notes should be made opposite the respective dimension entries onMeasurement Book pages. This would facilitate their identification at later date.

D.4 Length dimensions recorded should be as large as possible viz., lengths of trenches / walls having equal widths should be collected together to form on length dimension. This collection of length with location notes should be recorded in a side cast at the right hand side of Measurement Book page and opposite the entry in the dimensions Column.

D.5 Abbreviations, commonly used by quantity surveyors should be freely used to convey maximum information about entries in the limited space available in the side casts.

D.6 Measurements should start at the left hand rear corner of the building, as one stands facing it, and follows in clockwise manner with wall or columns ina continuous sequence. The pattern of the walls inthe design can generally be sorted out in either of the following alternative systems:

D.6.1 Circuits: Outer circuits, Inner circuit, appendages to those, cross-connections in between. This method is usually convenient for load bearing walls. Each of these should be entered separately with the appropriate location notes.

D.6.2 Tiers: Beginning at the left hand rear corner of the building proceed towards right along the row up to its end, then switch back to left to the beginning of the second row / tier and proceed

towards right to its end repeat this process till one finishes at the front right corner of the building. Measurement for each tier should be kept separate. This method is convenient for framed structures. It may happen that the structural designer had adopted a similar method for numbering the columns. Incase he has followed a different scheme, the measurer should proceed in accordance with column numbers given on drawing.

D.7 The foregoing may appear to be in perfectionist's rule for a site with difficult terrain and unpredictable subsurface. In such a case where excavations and concreting are carried- out in discontinuous and irregular manner, the measurements have, perforce, to be taken. in the same sequence as the work was actually done. Inorder to ensure that such piecemeal measurements do not result in either omissions or double entries of overlapping parts, it will be a good plan for the Site Engineer to check-mark each measurement recorded in Measurement Book by a line (Colored for different offsets/levels) ona line plan of foundation and tallying the overall lengths as recorded with those on drawing.

D.8 The position of extra Pockets, steps and overlaps infoundation concretes should be clearly indicated in location notes.

D.9 When measuring lengths of walls and beams, those running from left to right should be measured infull (i.e. out toout length) while those meeting them at right angles for their in-between lengths. Care should always be taken to watch that the passing (i.e. overlaps at junctions) are properly accounted for.

D.10 Deductions for openings, penetration of dissimilar material as in wall seatings, bearing ends etc., as stipulated by the Standard Method of Measurement (SMM) should be properly accounted for.

D.11 Although the work as built is to be measured in order to confirm the accuracy of the line out and the fidelity of construction, the dimension – entries shall be only those figures on drawings or those ascertained from the verified dimensions on drawing, and not those found at site. Generally, such work where the measurements are to be restricted to "authorized dimensions" only occurs in the following trade/sections.

D.11.1 Excavations beyond contract widths and depths (authorized dimensions) and concreting to these enlarged dimensions.

D.1 1.2 Concrete footings. **/rotary drilling and macro piling.**

D.11.3 Brickwork – widths. **And R.C.C walls wherever shown in drawing.**

D.12 The entire record of measurements of work should be so methodical that after the perusal of a few pages only, any one should be able to follow the measurer's procedure or recording entries.

(E). Checking of Measurements

Checking of the measurements shall be as under. It shall not be perfunctory and should result inrevealing errors, accidental or deliberate, by the staff. It should also serve as a process of instruction to junior staff.

E.1 Measurements recorded shall be checked not less than 25% by an Engineer from the Premises Department of the Bank periodically.

E.2 All hidden measurements which cannot be checked at a later stage viz., of the Under noted categories of works, shall be checked not less than 25% by an Engineer of the Premises Department of the Bank.

E.2.1 Foundation: Earthwork, concrete, masonry/macro piling, pile caps if necessary.

E.2.2 Soiling and concrete bedding.

E.2. 3 Steel Reinforcement for all RCC work

E 2.4 Concealed - pipe work, conduits, and etc

E.3 He should also certify in the MB after the abstract of cost that the work done is as per the approved drawings and specifications.

SAFETY CODE

Scaffolds

i) Suitable scaffolds i.e. Steel tubular scaffolds of brand Accrow or its equivalent shall be provided for workmen for all works that cannot safely be done from the ground, or from solid construction except in the case of short duration work which can be done safely from ladders. When a ladder is used, it shall be of rigid construction made either of good quality wood or steel. The steps shall have a minimum width of 450 mm and a maximum rise of 300 mm. Suitable hand holds of good quality wood or steel shall be provided and the ladder shall be given an inclination not steeper than 1/4 to 1(1/4 horizontal and 1 vertical).

ii) Scaffolding or staging more than 4 m. above the ground floor, swung or suspended from an overhead support or erected with stationary support shall have a guard rail properly bolted, braced or otherwise secured, at least 1 m. above the floor or platform of such scaffolding or staging and extending along the entire length of the outside and ends thereof with only such openings as may be necessary for the delivery of materials. Such scaffolding or staging shall be so fastened as to prevent it from swaying from the building or structure.

iii) Working platforms, gangways and stairways shall be so constructed that they do not sag unduly or unequally and if the height of the platform, gangway or stairway is more than 4 m. above ground level or floor level, they shall be closely boarded and shall have adequate width and be suitably fenced as described in (ii) above.

iv) Every opening in the floor of a building or in a working platform shall be provided with suitable means to prevent the fall of Persons or materials by providing suitable fencing or railing whose minimum height shall be l.0 m.

Wherever there are open excavations in ground, they shall be fenced off by suitable railing and danger signals installed at night so as to prevent persons slipping into the excavations.

v) Safe means of access shall be provided to all working places. Every ladder shall be securely fixed. No portable single ladder shall be over 9 m. in length while the width between side rails in rung ladder shall in no case, be less than 290 mm. for ladder up to and including 3 m. in length. For longer ladders this width shall be increased at least 20 mm for each additional meter of length.

vi) A sketch of the ladders and scaffolds proposed to be used shall be prepared and approval of the Engineer obtained prior to construction.

Other Safety Measures

vii) All personnel of the contractor working within the plant site shall be provided with safety helmets. All welders shall wear welding goggles while doing welding work and all metal workers shall be provided with safety gloves. Persons employed on metal cutting and grinding shall wear safety glasses.

viii) Adequate precautions shall be taken to prevent danger from electrical equipment. No materials on any of the sites of work shall be so stacked or placed as to cause danger or inconvenience to any person or the public.

Excavation &Trenching

ix) All trenches, 1.25 m. or more in depth shall at all times be supplied with at least one ladder for each 30 m. in length or fraction thereof. The ladder shall be extended from bottoms of the trench to at least 1.0 m. above the surface of the ground. Sides of trenches which are 1.5 m. or more in depth shall be stepped back to give suitable slope or securely held by timber bracing so as to avoid the danger of sides collapsing. The excavated materials shall not be placed within 1.5 m. of the edges of the trench or half of the depth of the trench whichever is more. Cutting shall be done from top to bottom. Under no circumstances undermining or undercutting shall be done.

x)The contractor shall take all measures on the site of the work to protect the public from accidents and shall be bound to bear the expenses of defence of every suit, action or other proceedings at law that may be brought by any persons for injury sustained owing to neglect of the above precautions and to pay any such persons or which may with the consent of the contractor, be paid to compromise any claim by any such person.

Demolition

xi) Before any demolition work is commenced and also during the process of the work:

a) All roads and open areas adjacent to the work site shall either be closed or suitably protected.

b) No electric cable or apparatus which is liable to be a source of danger over a cable or apparatus used by the operator shall remain electrically charged.

c) All practical steps shall be taken to prevent danger to persons employed from the risk of fire or explosion or flooding. No floor, roof or other part of the building shall be so overloaded with debris or materials as to render it unsafe.

Personal Safety Equipments

xii) All necessary personal safety equipment as considered adequate by the Engineer should be kept available for the use of the person employed on the site and maintained in a condition suitable for immediate use, and the contractor should take adequate steps to ensure proper use of equipment by those concerned.

a) Workers employed on mixing asphalting materials, cement and lime mortars shall be provided with protective footwear and protective goggles.

b) Those engaged in white washing and mixing or stacking of cement bags or any material which is injurious to the eyes shall be provided with protective goggles.

c) Those engaged in welding works shall be provided with welder's protective eyesight lids.

d) Stone breakers shall be provided with protective goggles and protective clothing and seated at sufficiently safe intervals.

e) When workers are employed in sewers and manholes, which are in use, the contractor shall ensure that the manhole covers are opened and are ventilated at least for an hour before the workers are allowed to get into manholes and the manholes so opened shall be cordoned off with suitable railing and provided with warning signals or boards to prevent accident to the public.

f) The contractor shall not employ men below the age of 18 years and women, on the work of painting with products containing lead or any toxic material in any form. Wherever men above the age of 18 are employed on the work of such painting the following precautions should be taken:

i) No paint containing lead or lead products shall be used except in the form of paste or ready made paint. Paints like vinyl and epoxies having toxic fumes should be applied after following all precautions laid down by manufacturers.

ii) Suitable face masks should be supplied for use by the workers when paint is applied in the form of spray or a surface having lead paint dry rubbed and scrapped.

iii) Overalls shall be supplied by the contractor to the workmen and adequate facilities shall be provided to enable the working painters to wash during the cessation of work.

xiii) When the work is done near any public place where there is risk of drownings all necessary equipments should be provided and kept ready for use and all necessary steps taken for prompt rescue of any person in danger and adequate provision should be made for prompt first aid treatment of all injuries likely to be sustained during the course of the work.

Hoisting Machines

xiv) Use of hoisting machines and tackle including their attachments anchorage and supports shall conform to the following standards or conditions:

1.a) These shall be of good mechanical constructions sound material and adequate strength and free from patent defect and shall be kept in good repair and in good working order.

b) Every rope used in hoisting or lowering materials or as means of suspension shall be of durable quality and adequate strength and free from patent defects.

2. Every crane driver or hoisting appliance operator shall be properly qualified and no person under the age of 21 years shall be in charge of any hoisting machine including any scaffolding winch or give signals to operator.

3. In case of every hoisting machine and of every chain ring hook, shackle shovel and pulley block used in hoisting or as means of suspension the safe working load shall be ascertained by adequate means. Every hoisting machine and all gear referred to above shall be plainly marked with the safe working load. In case of a hoisting machine having a variable safe working load, each safe working load and the. Conditions under which it is applicable shall be clearly indicated. No part of any machine or any gear referred to above in this paragraph shall be loaded beyond the safe working load except for the purpose of testing.

4. In case of departmental machines, the safe working load shall be notified by the Engineer. As regards contractor's machine, the contractor shall notify the safe working load of the machine to the Engineer whenever he brings any machinery to site of work and get it verified by the Engineer concerned.

xv) Motors, gearing, transmission, electric wiring and other dangerous parts of hoisting appliances should be provided with efficient safeguards. Hoisting appliances should be provided with such means as will reduce to the minimum of the risk of any part of a suspended load becoming accidentally displaced. When workers are employed on electrical installations which are already energized, insulating mats, wearing apparel, such as gloves, sleeves and boots as may be necessary, should be provided. The workers should not wear any rings,
watches and carry keys or other materials which are good conductors of electricity

xvi) All scaffolds, ladders and other safety devices mentioned or described herein shall be maintained in safe condition and no scaffold, ladder or equipment shall be altered or removed while it is in use.

Adequate washing facilities should be provided at or near places of work.

xvii) These safety provisions should be brought to the notice of all concerned by display on a notice board at a prominent place at work spot. The person responsible for compliance of the safety code shall be named therein by the contractor.

xviii) To ensure effective enforcement of the rules and regulations relating to safety precautions the arrangements made by the contractor shall be open to inspection by the Labour Officer, Engineers of the Department or their representatives.

xix) Workers handling construction chemicals shall be provided with safety equipments like, over gowns, hand gloves, goggles etc. as per the precautions prescribed by the construction chemical manufacturer.

xx) Notwithstanding the above clause from (i) to (xix), there is nothing in these to exempt the contractor from the operations of any other Act or Rule in force in the Republic of India.

_____ Date:

Signature of Tenderers with seal

MODELS RULES FOR THE PROTECTION OF HEALTH AND SANITARY ARRANGEMENTS FOR WORKERS

1. Application

These rules shall apply to all buildings and construction works in charge of Construction of proposed Bank's Building at _____

Definitions

2.a)"Work place" means a place at which, at an average 50 workers is employed in connection with construction work.

b)"Large work" place means a place at which average 500 or more workers are employed in connection with construction work.

First Aid

3.a) At every work place there shall be maintained, in readily accessible place, first aid appliance including an adequate supply of sterilized dressings and sterilized cotton wool. The appliance shall kept in good order and in large work place they shall be readily available during working hours.

b) At large work places, where hospital facilities are not available within easy distance of the works, first aid posts shall be established and be run by a trained compounded.

c) Where large work places are remote from regular hospitals, an indoor ward shall be provided with one bed for every 250 employees.

d) Where large work places are situated in cities, towns in their suburbs and no beds are considered necessary owing to the proximity of city or town, hospitals, suitable transport shall be provided to facilitate removal of urgent cases to the hospitals.

At other work places, some conveyance facilities, such as a car, shall be kept readily available to take injured person or persons suddenly taken ill to the nearest hospital.

Drinking Water

4.a) In every work place, there shall be provided and maintained at suitable places easily accessible to labour sufficient supply of cold water fit for drinking.

b) Where drinking water is obtained from an intermittent public water supply, each work shall be provided with storage where such drinking water shall be stored.

c) Every water supply of storage shall be at a distance of not less than 15 m from any latrine, drain or other source of pollution. Where water has to be drawn from an existing well, which is within the proximity of latrine, drain or any other source of pollution, the well shall be properly chlorinated before water is drawn from it for drinking. All such wells be entirely closed in and be provided with a trap door which shall be dust and waterproof.

d) A reliable pump shall be fitted to each covered well, the trap door shall be kept locked and opened only for cleaning inspection which shall be done at least once a month.

Washing and bathing places

5.a) Adequate washing and bathing places shall be provided, separately for men and women.

b) Such places shall be kept in clean and drained condition.

Scale of Accommodation in Latrines and Urinals

6. There shall be provided within the premises of every work place latrines and Urinals in and accessible placed and the accommodation, separately for each of them shall not be less than the following scale:

	No of seats.
a) Where the number of persons does not exceed 50	2 seats
b) Where the number of persons exceeds 50, but does not exceed 100	3seats.
c) For every additional 100	3 seats per hundred

In particular cases, the Engineer shall have the powers to vary the scales where necessary.

Latrines and urinals for women

7. If women are employed, separate latrines and urinals screened form those for men and marked in the particular in conspicuous letters "For Women. Only" shall be provided on the scale laid in Rule 6. Those for men shall be similarly marked "For Men Only". A poster showing the figure of a man or a woman shall also be exhibited at the entrance of latrines for the respective sex. There shall be adequate supply of water close to the Urinals and Latrines.

Latrines and Urinals

8. All latrines shall be provided with septic tanks or leach pits in case of small units. All the latrines shall be kept in good sanitary condition.

Construction of Latrines

9. The inside walls shall be constructed of masonry of some suitable heat resisting non-absorbent materials and shall be cement washed inside and outside at least once a year. The dates of cement washing shall be noted in a register maintained for this purpose and kept available for inspection. Latrines will not be of standard lower than borehole system and should have thatched roof.

Disposal for Excreta

10. Unless otherwise arranged for by the local sanitary authority, arrangements for proper disposal of excreta shall be made by septic tank or leach pit duly approved by the Engineer and in conformity with the requirements of local public health authorities.

Provisions of Shelter During Rest

11. At every work place there shall be provided free of cost, two suitable sheds, one for meals and the other for rest separately for men and women for the use of labour. The height of the shelter shall not be less than 3. 5 Mt form the floor level, to the lowest part of the roof. The sheds should be roofed with at least thatched roof and mud flooring will be provided with a wart wall around not less than 750mm. Sheds should be kept clean and the space should be on the basis of at least 0.50 square meters per head.

Crèches

12.a) At every work place, at which 50 or more women workers are ordinarily employed, there shall be provided two huts for the use of children under the age of 6 years belonging to such women,

one hut shall be used for infants games and play and the other as their bed rooms. The huts shall not be constructed on a lower standard that the following:

i) Thatched roofs
ii) Mud floors and walls
iii) Planks spared over the mud floor and covered with matting

The huts shall be provided with suitable and sufficient openings for light and ventilation. There shall be adequate provision of sweepers to keep the place clean. There shall be provided to the satisfaction of the Health – officer of the area concerned. Sanitary utensils shall be provided to the satisfaction of the Health – Officer of the area concerned. The use of the hut shall be restricted to children, their attendants and mothers of the children.

b) Where the number of women workers is more than 25 but, less than 50, the contractor shall provide at least one hut and one day to look after the children of women workers.
c) The size of crèches or crèche shall vary according to the number of women workers
d) The crèche or crèches shall be properly maintained and necessary equipment like toys etc. shall be provided.

Canteen

13. A cooked food canteen on a moderate scale shall be provided for the benefit of workers wherever it is considered expedient.
14. The above rules shall be considered/followed by contractor as an integral part of the contract.

Date :

Signature of Tenderers with seal

ProformaFor Running A/C. Bill

1) Name of Contractor/Agency :
2) Name of work :
3) Sl. No. of this Bill :
4) No. and date of Pervious Bill :
5) Reference to Agreement No. :
6) Date of Written Order to commence :
7) Date of Completion as per Agreement :

Sr. No.	Item of Description	Unit	Rate (Rs.)	As per Tender		Upto Previous R.A.Bill		Upto Date (Gross)		Present Bill		Remark
				Qty.	Amount (Rs.)	Qty.	Amount (Rs.)	Qty.	Amount (Rs.)	Qty.	Amount (Rs.)	
1	2	3	4	5		6		7		8		9

FORMAT OF GUARANTEE TO BE EXECUTED BY THE FIRM IN RESPECT OF THE WORK OF CONSTRUCTION OF RSETI BUILDING AT _____

This AGREEMENT made this _____ day of _____Two Thousand ----- between INDIAN BANK, Zonal office , _____a body corporate constituted under the banking Companies (Acquisition and Transfer of undertakings) act, 1970 having its Corporate office at PB No: 5555, 254-260, AvvaiShanmugamSalai, Royapettah, Chennai – 600014, herein after called "the Employer" of the one part and M/s ---------- ------(Contractor)----- , herein after called "the Guarantor" of the other part.

WHEREAS Employer has given vide its letter no_____ Dated : ---------- to the Guarantor in which Employer appointed the Guarantor M/s.---------- for Pre-construction Anti-Termite/Water proofing work. And whereas by this agreement the Guarantor/Contractor inter alias undertook to render the building/structure completely free from any infestation of termites/ leakage from the roof i.e. where Pre-construction Anti-Termite/Water proofing work executed. And whereas the Guarantors agreed to give guarantee to the effect that the said building/structure shall remain free from any infestation of termites/ leakage from the roof i.e. where Pre-construction Anti-Termite/Water proofing work executed for a minimum period of ten years from the date of completion of Pre-construction Anti-Termite/Water proofing work as per the relevant I.S. Code.

Now the Guarantor hereby agrees to make good all defects and render the building/structure free from any infestation of termites/ leakage from the roof i.e where Pre-construction Anti-Termite/Water proofing work executed, during this period of guarantee and to the satisfaction of the Employer. The Guarantor also agrees to take up such rectification work at his won cost, and within one week from the date of issue of notice from the Employer, calling upon him to rectify the defects. The decision of the employer as to the cost payable by the Guarantor will be final and binding, in case the Guarantor fails to commence the work as per above notice and the work is got done through some other contractor. That if the Guarantor fails to execute of rectification works, as required in their Pre-construction Anti-Termite/Water proofing work or commits breach there under then the Guarantor will indemnify the principal and his successors against all loss, damage caused, expense or otherwise which may be incurred by him by any reason of any default on the part of the Guarantor in performance and observance of this agreement. As to the amount of loss and/or damage and/or cost incurred by the Employer the decision of the Employer will be final and binding.

In witness where of these presents have been executed by the obligator _____ _____and by_____ and for on behalf of the Employer on the day, month and year first above written.

Signed, and delivered by _____ by the hands of

Shri_____
in the presence of _____

Signed and delivered by the hand of _____ in the present of _____

SPECIAL CONDITIONS OF CONTRACT

1. For precautionary measures to avoid dust nuisance such as erection of G.I.shits screens at plot boundaries up to reasonable height shall be provided at site before starting the construction work by contractor.

2. The contractor shall make arrangements at his cost for all anti-malaria measures to be provided for the labors employed on the work. The anti-malaria measure shall be provided as directed by the Assistant Director of Public Health. The contractor shall also to pay pest control charges (PCO) to office of the pest control Dept.

3. The construction activity for work of necessary piling shall be carried out by employing modern techniques such as rotary drilling, micro piling etc. instead of conventional jack and hammer to avoid nuisance damage to adjoining building by the contractor, if requires.

4. The work shall be carried out on working days, from 9.00 A.M to 6.00 P.M Contractor will be given one hour prior to beginning of work for preparations The work may however be carried out during Day time on Holiday Sunday with prior Permission from the Owner in writing.

5. The successful Tenderers shall have to work in co-ordination and co-operation with any other contract agencies appointed by the INDIAN BANK to work simultaneously in the same or adjoining area. The decision of the INDIAN BANK in the case of any dispute between the different agencies appointed by the INDIAN BANK shall be final and binding

6. Water supply and Electricity arrangement, at work site shall be arranged by the contractor. Water brought to site of work for use in construction works shall be tested by the contractor for construction purpose, from Government approved laboratory at his own expense and it should be confirmed to IS: 456–2000 and any further amendments to it.

7. **Possession prior to completion.**

The Employer / Architects shall have the right to take possession of or use any completed or partially completed work or part of work. Such possessions or use shall not be deemed to be an acceptance of any work completed in accordance with the contract agreement. For taking such possession the contractor should take necessary action as directed by the Employer / Architects.

8. The Contractor will not be allowed to construct any temporary hutments for labour to stay at site. However, if required for above works maximum 5 labourers(bachelorsonly) could be permitted on site with prior permission, necessary photo identity will have to be provided to labour staying on site, if at any given time, identity is not furnished, the labour will have to leave the premises immediately or action will be taken by the bank against the Contractor.

PROTECTION OF ENVIRONMENT

a. The contractor shall take all reasonable steps to protect the environment on and off the Site and to avoid damage or nuisance to persons or to property of the public or others resulting from pollution, noise or other causes arising as a consequence of his methods of operation.

b. During continuance of the contract, the contractor and his sub-contractors shall abide at all times by all existing enactments on environmental protection and rules made there under, regulations, notifications and bye-laws of the State or Central Government or local authorities and any other law, bye-law, regulations that may be passed or notification that

may be issued in this respect in future by the State or Central Government or the local authority.

c. Ensure that all lights provided by the contractor shall be screened so as not to interfere with signal light on the railways or with any traffic or signal lights of any local or other authority

d. Take all reasonable steps to implement the environmental mitigation measures provided for in the "Environmental Management Plan" in accordance with objectives, procedures and other provisions set forth therein and shall not take any action which would prevent or interfere with such implementation.

e. The guidelines given in Environmental Management Plan prepared for this project specifically shall be followed during construction.

Salient features of some of the major laws that are applicable are given below:

The Water (Prevention and Control of Pollution) Act, 1974, This provides for the prevention and control of water pollution and the maintaining and restoring of wholesomeness of water. 'Pollution' means such contamination of water or such alteration of the Physical, chemical or biological properties of water or such discharge of any sewage or trade effluent or of any other liquid, gaseous or solid substance into water (whether directly or indirectly) as may, or is likely to, create a nuisance or render such water harmful or injurious to public health or safety, or to domestic, commercial, industrial, agricultural or other legitimate uses, or to the life and health of animals or plants or of aquatic organisms.

f. The Air (Prevention and Control of Pollution) Act, 1981, this provides for prevention, control and abatement of air pollution. 'Air Pollution' means the presence in the atmosphere of any 'air pollutant', which means any solid, liquid or gaseous substance (including noise) present in the atmosphere in such concentration as may be or tend to be injurious to human beings or other living creatures or plants or property or environment.

g. The Environment (Protection) Act, 1986, this provides for the protection and improvement of environment and for matters connected therewith, and the prevention of hazards to human beings, other living creatures, plants and property. 'Environment' includes water, air and land and the inter-relationship which exists among and between water, air and land, and human beings, other living creatures, plants, micro-organism and property.

h. The Public Liability Insurance Act, 1991, This provides for public liability insurance for the purpose of providing immediate relief to the persons affected by accident occurring while handling hazardous substances and for matters connected herewith or incidental thereto. Hazardous substance means any substance or preparation which is defined as hazardous substance under the Environment (Protection) Act 1986, and exceeding such quantity as may be specified by notification by the Central Government.

GENERAL TECHNICAL SPECIFICATIONS FOR CIVIL, SANITARY, ETC. WORK

INDEX

SECTION - A : MATERIALS

1. Materials shall be of approved quality. A list of materials of approved brand and manufacture is indicated in the list of materials of Approved Brand manufacture. The list is given to ensure the standard of quality and performance.

2. Contractors shall obtain approval of representative of Employer/Consultant on sample of all materials before placing order and the approved sample shall be carefully preserved in an appropriate manner at the site office for verification by the representative of Employer/Consultant.

3. For standard bought out items, the sizes manufactured by the firms listed shall prevail in case of discrepancy with the sizes mentioned in the schedule without any financial adjustment.

4. Materials shall be tested at site/any approved Testing Laboratory. The Laboratory Test Certificate in original shall be submitted to the representative of Employer/Consultant. Test results are also to be recorded at site registers appropriately.

5. Wherever work as per manufacturer's specification is indicated, it will be obligatory on the part of the contractor to submit manufacturers specification to Consultant/Employer. The Quoted rates shall be deemed to include for the complete work specified by the manufacturer even though not specifically mentioned in *the* schedule of items. Moreover, the quoted rates shall be deemed to include for the complete work specified by the manufacturer even though not specifically mentioned in the schedule of items.

6. It shall be obligatory for the contractor to furnish certificates, if demanded by the representative of Employer/Consultant, from manufacturer or the material supplier, stating that the work has been carried out by using their material.

7. All materials supplied by the representative of Employer/Consultant/any other specialist firm shall he properly stored and the Contractor shall be responsible for its safe custody until they are required on the works and till the completion of work.

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

9. Unless otherwise shown on the Drawings or mentioned in *the* "Schedule of Quantities" or anywhere in the contract, the quality of materials, workmanship, dimensions etc shall be as specified hereunder.

9.1 Material for filling

Shall be selected material as specified for filling and shall be free from building rubbish or organic decomposed material. They shall be obtained either from excavation or brought from outside, as specified, in the schedule of items.

9.2 Cement

Cement unless otherwise specified of grade 43, conforming to IS. *455/IS* and grade 53 conforming to IS: 12269 shall be used. The use of cement other than ordinary Portland cement/Blast furnace slag cement will not be allowed unless specifically advised by representative of Employer/Consultant. Cement shall be stored in dry weatherproof go-

down/shed built by the contractor at his own cost in order to prevent deterioration by dampness or intrusion of foreign matter. Not more than 10 bags should be kept in one stack and it shall be stored in such a manner as to permit easy access for proper inspection. It shall be stored in such a way as to allow the removal and use of cement in chronological order of receipt i. e., first received being first used. Cement deteriorated and/or clodded shall not be used on work but shall be removed at once from the site at Contractors cost.
Daily record of cement received and consumed shall be maintained by the Contractor in the cement register at site and submitted to representative of Employer/Consultant if called for. Theoretical consumption of cement for different materials brought at site by the Contractor shall also be submitted with proper documents with every bill for verification The consumption of cement for different items of work shall be as given in the tender and in its absence as per C. P. W. D. schedule. Consumption of cement in the corresponding items of work under the contract shall be computed on the basis of the quantities shown in the table subject to a variation of plus/minus three percent. The weight of 1 cum. of cement shall be taken as 1440 kg. Cement stored for more than three months shall be got tested before using it in work.

9.3 Lime

Lime shall be made from approved Lime Stone or Kankar and properly burnt and shall be of appropriate class for specific work given in IS: 712-1984. It shall be free from excess of unburnt kankar or lime stone ashes or other extraneous materials and shall be stored to prevent damage by rain, moisture or air slaking. Lime Shall be used within 14 days from the date of stacking and damaged lime shall not be used but shall be removed from the site of work forthwith at contractors cost.

9.4 Fine Aggregate

Shall be from natural source, chemically inert, clean, sharp, hard, durable and well graded and free from deleterious materials not exceeding the permissible limit as per IS : 383-1970. The Silt Content shall be within 8%. If it is in excess, washing shall be done in an approved manner to bring it within allowable limit. The fine aggregate for concrete shall be graded and the Fineness Modulus shall be between 2.60 to 3.20. The Fineness Modulus of fine aggregate shall be between1.80 to 2.60 for plaster& masonry work.

The fine aggregate shall be stacked carefully on a clean and dry surface so that it will mixed up with deleterious foreign materials. If such a Surface is not available, thick floor or a thin layer of lean concrete shall be prepared. The percentage of Materials shall be within the permissible limits as specified in IS 383-1970.

9.5 COURSE AGGREGATE

It shall consist of crushed or broken stone 95% which shall be retained on 4.75
Mm IS test Sieve. It shall be obtained from crushing Granite, Trap, Basalt or
Similar approved stones. Coarse aggregate shall be chemically inert when
Mixed with cement and shall be roughly cubical in shape and free from soft friable, thin, laminated or Flaky pieces. Maximum percentage of deleterious materials shall not exceed those specified in IS 383-1970. The coarse aggregate used in the work shall conform to the grading as limits specified in IS: 383-1970. It shall be washed if so desired by the Employer / Architects. Aggregates shall be Stored on platforms or otherwise so as to avoid inclusion of foreign materials. It shall be thoroughly wetted before being charged into tile hopper of the
concrete mixer.

9.6 Reinforcement

High Strength Deformed Bars

Unless specified otherwise, high strength deformed bars shall conform to IS: 1786-~~1985~~ of grade Fe 500/ 500 D and obtained from approved manufacturer.

Where mild steel bars are *specified* they shall conform to IS - 432 Part-I and shall be obtained from approved manufacturer.
Contractor shall get steel reinforcement tested at his cost as and when required and directed by the Employer/Architects/Consultants.

9.7 Bricks

The bricks shall be locally available kiln burnt bricks of generally regular and uniform size, shape and colour, uniformly well burnt throughout but not over burnt. They shall be free from cracks or other flaws.

They shall show a fine grained, uniform, homogeneous and dense texture on fracture and be free from lumps of lime, laminations, cracks, air-holes, soluble salts causing efflorescence or other defects which *may* in *any* way impair their strength, durability, appearance, usefulness for the purpose intended.
The size of brick shall be nominally 250 mm x 125 mm x 75 mm or 230 mm x 115 mm x 65 mm with a tolerance on dimension of ± 8%.

After Immersion in water, absorption by weight shall not exceed 20 percent of the dry weight of the brick when tested according to I. S. 1077-1970. The bricks shall have minimum average compressive strengths as specified nomenclature of the items. The compressive strength of any individual bricks on testing shall not fall below the average compressive strength by more than 20 (twenty percent). The rating of efflorescence of bricks shall not be more than 'Moderate'.

The Bricks to be used for the work shall be approved by the representative of Employer/ Consultant beforehand.

9.8 Water

Water for mixing Cement/Lime mortar of concrete shall not be salty or brackish and shall be clean, reasonably clear and free from injurious quantities of deleterious materials. It shall not contain any sugar or excess of oils, acid and injurious alkali, salts, organic matter which will either weaken the mortar or concrete or cause efflorescence or attack the steel in reinforced cement concrete. Water shall be obtained from source approved by the representative of Employer/Consultant. Potable water is generally considered satisfactory for mixing and curing concrete, mortar, masonry etc. Water shall be tested once before undertaking the construction work in an approved testing laboratory to establish *its suitability*. All charges connected therewith shall be borne by the Contractor. The pH value of water shall generally be not less than 6.

The permissible values of NaOH, H2 SO_4 and other organic and inorganic solids should be as per IS:456 and tile tests should be in accordance with IS : 3025.

9.9 Timber

Timber for carpentry/joinery works of all description shall be as specified as in schedule and seasoned, naturally or artificially as indicated therein. These shall be free from knot, shakes, fissures, flaws, sub-cracks and other defects to a reasonable extent. Representative of Employer/Consultant's decisions in this regard is final and binding. The moisture content for timber normally should not exceed the following limits :-

I) Timber for frames 14%

II) Timber for planking/ shutters etc. 12%

~~Tolerance up to maximum 5% on above is permissible~~.

In measuring cross-sectional dimensions of timber for the frames/shutters styles, rails or panel members, tolerance up to 1.5 mm shall be allowed for each planed surface.

9.10 Steel Windows, Doors & Ventilators

Steel windows and doors shall be fabricated out of approved steel sections. They shall be obtained from approved manufacturers. Unless otherwise stated the Indian Standard Specifications applicable for steel doors, Windows and ventilations shall be IS:1038. Wherever rolled steel sections are used the section should however conform to I.S. 226 and I.S. 1977 latest addition, and steel should be of weldable quality.

9.11 Ceramic Tiles

White or colored ceramic glazed/unglazed tiles shall be obtained from approved manufacturer and shall be flat and true to shape. They shall be free from cracks. *crazing*, spots, chipped edges *and* corners. The glazing and colour*shall*be of *uniform* shade. Tolerance in dimension shall be ± 1.0 mm in sizes and ± 0..5 mm in thickness The rear face shall be grooved and recessed in parts to provide the necessary key for mortar. They shall *generally* conform to I.S. 777.

9.12 Kota/Cudappah Stone

Sabs shall be of selected quality, hard, sound, dense and homogenous in texture, free from cracks, decay, weathering and flaws. They shall be hand/machine cut to the specified thickness and of approved quality and size shall be uniform in colour with straight edges. The tolerance in thickness shall be ± 2 mm. Before starting the work, the contractor shall get the samples approved from Employer/Consultant.

9.13 Marble Slabs

Marble shall conform to the following characteristics :-

Moisture absorption after 24 hours immersion
: Max. 0.4% by weight tested as per I.S.1124.

Hardness : Min. 3 on Mhos scaler

Specific Gravity : Min. 2.5 tested as per I.S. 1122.

The thickness shall be as specified with a tolerance +/- 2 mm.

9 .14 Glazing

Glass used for glazing shall be sheet glass/float glass as specified, clear or obscured as directed by the Employer/Consultant of approved quality free from flaws, specks *bubbles*.

9.15 C. I. Rain Water Pipes

All C. I. pipes and fittings shall be of approved manufacturer free from cracks, chipped edges *or corners* and other damages. The pipes shall be IS stamped and shall conform I.S. 3989.

9.16 Collapsible Gates

These shall be of approved manufacturer and fabricated from MS sections consisting of vertical double channels each 18 x 9 x 3 mm at 100 mm c/s braced with flat iron diagonals 18 x 5 mm and top and bottom rails of either T's or E's with minimum web of 40 x 12 mm and flange 40x 6 mm. The roller wheels shall be of grey iron castings and rivets shall be snap headed and not less than 6 mm dia.

The gates shall be provided with necessary bolts and nuts, loading arrangements, stoppers, handles etc. even if not specified.

9. 17 RollingShutter

Rolling shutter shall be of approved manufacturer as described in the schedule of quantities and fabricated from M.S. laths in single pieces, machine rolled and straightened with an effective bridge depth and shall be interlocked together throughout their entire length and joined at the end with end locks. These shall be mounted on specially designed pipe shaft. *The* springs shall be preferably coiled type manufactured from high tensile spring steel wire or strip of adequate strength to balance shutter at all positions. The spring pipe shaft shall be supported on MS brackets and covered with MS sections as that of lath. The guide channels shall be of MS deep channel pressed/rolled sections. The gap between legs should be just sufficient to allow free movement of shutter without making any rattling sound. The guide channels shall be provided with minimum three fixing cleats or supports with as pacing not exceeding 750 mm for *fixing* to *walls/columns* etc. with bolts/screws.

9.18 Marble Mosaic Tiles

Tiles shall conform to IS:1237-1959. They shall be of sizes as specified with tolerances of *(+/-)* 1 mm in length and breadth. The tolerance on thickness shall be 0, +3 mm & + 5 mm for 20 mm, 25 mm & 30 mm. tiles respectively. The tiles shall be manufactured with hydraulic pressure of not less than 140 kg/sq.cm.

9.19Paints

Dry distemper, oil bound distemper, cement primer, oil paint, enamel paint, flat oil paint, plastic emulsion paint, anti-corrosive primer, red lead, yellow zinc chromate, water-proof cement paint shall be from an approved manufacturer as listed. Ready mixed paints received from the manufacturer without any admixture shall be used, except for addition of thinner, if recommended by the manufacturer.

9.20Cement Admixtures

Cement admixtures are to be obtained from approved manufacturer with the explicit approval of the representative of Employer/Consultant. The use of admixture containing Calcium Chloride, Fluorides, Nitrates and Sulphates is prohibited The representative of Employer/Consultant's decision as regards use of admixtures is final and binding.

9.21 Hardware Fittings

The Hardware Fittings, Ferrous or Non-ferrous shall be obtained from approved manufacturer and IS stamped if available. The MS / Iron fitting are to be oxidized and Aluminum fittings anodized in natural colour mat satin finish, even though not specified in the schedule of quantities. The sample for fittings shall be submitted to the Employer/Architects for their approval.

9.22Mortars

Cement mortar shall be of proportions specified for each type of work in the schedule. It shall be composed *at* cement *and sand. The* ingredients shall be accurately gauged by measure and shall be well and evenly mixed together, care being taken not to add more water than is required. No mortar that has begun to set shall be used.

If hand mixing is done in lieu of mechanical mixture, then it shall be done on pucca water-proof platform. The gauged materials shall be put on the platform and mixed dry. *Water* will then be added and the whole mixed again until it is homogeneous and of uniform colour. The contractor shall use 10% extra cement for hand mixing for which no extra payment will be made.

9.23Aluminum doors & windows

Shall be obtained from approved manufacturer. All sections used shall be 'INDAL'. Thickness of anodic coating to aluminum members shall not be less than 15 micron.

9.24 Polysulphide Sealant

Polysulphide sealant if specified in the schedule of quantities should be obtained from approved manufacturers.

10,0 Codes

Wherever reference to codes is made, they shall mean the latest version of the particular IS Code under reference.

LIST OF MATERIALS OF APPROVED BRAND AND / OR MANUFACTURE

CEMENT	*Grade* 43 & 53 OP or Slag cement of ACCMODI/L&T/CENTURY/LAFARGE/AMBUJA/BIRLA.
WHITE CEMENT	JK & BIRLA.
STEEL	JSW, TISCO, SAIL, RINL ~~or any ISI approved manufacturer~~

CERAMIC TILES

I) UNGLAZED	SPARTEX, KAJARIA PLUS, NITCO, Regency.
1I) GLAZED	First Quality of .

i) H &R Johnson
II) Somani
iii) Cera
iv) Decora

WATERPROOFING COMPOUND : ROFFE, PIDILITE, SIKA QUALCRETE, CICO OF APPROVOVDE GRADE.

RED OXIDE ZINC CHROMATE : Shalimar, Asian Paints, Jenson and Nicholson.

WATERPROOF CIMENT PAINT : SNOECEM PLUS OR SIMILAR APPROVATE BRAND.

GLAZING : Modifloat and Asahifloat.

SHEET GLASS : Indo Ashal, Tribeni & Shreevallabh

SYNTHETIC ENAMEL PAINT : DULUX (ICI), LUXOL (BERGER)

ACRYLIC Emulsion : ICI, BERGER, JOHNSON &NICHOLKSON, ASIAN

FLUSH DOOR : GREEN PLY, CENTURY, SYLVAN OR EQUIVALENT

HARDWERE FITTINGS

I) FERROUS : MOWJEE AND EARL BIHARI OR EQUIVALANT

ii) NON-FERROUS : EARL BIHARI, METACO &ARGENT OR EQUIVALENT ISI STAMPED PRODUCT

COLLAPSIBLE GA TE :& ROLLING SHUTTER ANY ISI APPROVED MANUFACTURER.

ALUMINIUM Work	:	ANY ISI APPROVED MANUFACTURER
WATERPROOFING TREATMENT :		SIKA / PEDILITE / CHOKSHI OR EQUIVALANT
TILE FIXING ADHESIVE	:	ROFFE & PIDILITE
HDPE PIPES	:	EVEREST GIPS OR EQUIVALENT
MS CONDUITS	:	NIC, BEC OR EQUIVALENT ISI MARKED
RIGID PVC CONDUIT	:	BEC, PLAZA AKG KALINGA

SECTION - B

EARTHWORK

1.0 GENERAL

The excavation will generally refer to open excavation of foundation area wet or dry in all sorts of soils at any depth, unless otherwise specified except hard rocks for which separate provisions are made.

2.0 EXAMINE THE SITE

The contractor shall visit and ascertain the nature of the ground to be excavated and the work to be done and shall accept all responsibility for the cost of the work involved.

3.0 SETTING OUT

The contractor shall clear the entire site by cutting/uprooting jungles, bushes, grass, vegetation growth and trees and generally level the site and set out the centre line of the Building or other involved works and get the same approved from representative of Employer/Consultant. It shall be the responsibility of the contractor to install substantial reference marks; bench marks etc. and maintain them as long as required by the representative of *Employer/Consultant*. The contractor shall assume full responsibility for proper setting out, alignment, elevation and dimension of each and all part of the works.

4. 0 GROUND LEVEL AND SITE LEVEL

Before starting the excavation the existing ground level of the entire plot shall be taken by the contractor in consultation with the representative of Employer/Consultant and a proper record of these levels kept, which shall be jointly signed *by* the contractor and the representative of Employer/Consultant.

5.0 EXCAVATION AND PREPARATION OF FOUNDATION FOR

CONCRETE OTHER THAN HARD ROCK

Excavation shall include removal of all material of whatever nature including moored, soft rock, boulders, old foundations, concrete, asphalt or paved surfaces etc. at all depths and whether wet or dry necessary for the construction of foundation and sub-structure including mass excavation for underground reservoir, chess pits, septic tanks etc. where applicable, exactly in accordance with lines, levels, grades and curves shown in the drawings or as directed by the representative of Employer/Consultant. The bottoms of excavation shall be leveled both longitudinally and transversely or as directed by the representative of Employer/Consultant. Should *the* contractors excavate to a greater depth or width than shown on the drawings or as directed by the representative of Employer/Consultant, he shall at his own expenses fill the extra depth or *width* in cement concrete in proportion as directed by the representative of Employer/Consultant but in no case with concrete of thin linear than 1:5:10 cement concrete.

The contractor shall report to the representative of Employer/Consultant when they are ready to receive concrete. No concrete shall be placed in foundations until the contractor has obtained representative of Employer/Consultant approval. In case excavation is done through different strata of soil and if the same is payable as per provision in the Schedule of Quantities the contractor shall set the dimensions or the strata decided by the representative of Employer/Consultant for payment. If no specific provisions are made in the schedule of quantities, it will be presumed that excavation shall be in all types of strata except hard rock and the contractor's rate shall cover for the same, which are treated as a single entity.

After the excavation is passed by the representative of Employment/consultant and before having the concrete, the contractor shall get the depth and dimensions of excavations, levels, nature of strata as applicable as per schedule of quantities and measurements recorded from the representative of Employer and Consultant.

5.1 Shoring

The sides of the excavations, if required, should be protected by shoring in such a *way* as is necessary to secure them from falling in, and the shoring shall be maintained in position as long as necessary. The Contractor shall be responsible for the proper design of the shoring to hold the sides of the excavation in position and ensure safety of persons and properties etc. The shoring shall be removed as directed after the items for which it is required are completed. No extra payment will be made for shoring.

5.2 Protection

If instructed by the representative of Employer/Consultant all foundation pits, and similar excavations shall be strongly fenced and marked with red lights at night to avoid accidents. Adequate protective *measures* shall be taken to see that the excavation does not affect or damage adjoining structures. All measures required for the safety of the excavations, the people working in and near the foundation trenches and people in vicinity shall be taken by the contractor at his own cost.
The contractor will be entirely responsible for any injury or damage to property caused by his negligence of accident due to his constructional operations.

5.3 Stacking of Excavated Materials

All materials excavated will remain the property of the employer. The excavated materials at the first instance shall be sorted as directed by representative of Employer/Consultant and stacked appropriately by the sides of trenches as directed by the representative of Employer/Consultant before they are disposed off and leveled within the site at locations directed by the representative of Employer/Consultant. Materials suitable and useful for back filling, plinth filling or leveling of the plot or other use shall be stacked in convenient places in such a way so as not to obstruct the

movement of men, animals and vehicles or encroach on the area required for constructional purposes. The cost on account of sorting out useful materials/disposal within the site and removal or spoils etc outside in conformity with Local Municipal Rules will not be additionally paid for.

5.4 Back Filling / Plinth Filling

All shoring and form work shall be removed after their necessity ceases and trash of any sorts shall be cleaned out from the excavation. All space between foundation masonry or *concrete* and the sides of excavation shall be refilled to *the original* surface with approved excavated materials in layers 15 cm in thickness watered and rammed with iron and wooden rammers weighing 7-8 kg. with a base of 20 cm square or 20 cm diameter. The filling shall be done after concrete or masonry is fully set and done in such a way as not to cause undue thrust on any part of the structure. Where suitable excavated materials are to be used for refilling, it shall be brought from the space where it is temporarily stacked and used in refilling. When sand filling is done, it shall be consolidated by flooding with water. No excavation of foundations shall be filled in or covered up until all measurements at excavations, masonry concrete and other works below ground level jointly recorded. Black cotton soil shall not be used for back filling or in plinth filling.

5.5) Dewatering

Rate for excavation shall include bailing or pumping out water which may accumulate in the excavation during the progress of work either from seepage, springs, rain or any other cause and *diverting* surface flow if any by bends or other means. Pumping out water shall be done in such approved manner as to preclude the possibility of any damage to the foundation trench, concrete or masonry or any adjacent structure. When water is set in foundation trenches or in tank excavations, pumping out water shall be from auxiliary pit of adequate size dug slightly outside the excavation. The depth of auxiliary pit shall be more than the working foundation trench levels. The auxiliary pit shall be refilled with approved excavated materials after the dewatering is over.

The excavation shall be kept from water:
During inspection and measurement.
When concrete and/or masonry wall are in progress and till they come above the natural water level, and

Till the representative of' Employer/Consultant consider that the concrete mortar is sufficiently set.

5.6) Surplus Excavation Materials

All materials and spoils certified as surplus and not useful, shall be removed by the Contractor from the site in an approved manner at locations to be arranged by him in conformity with local regulations. The quantity to be disposed of shall be got pre-approved by Employer / Consultant.

The item of removal of surplus excavated materials shall only be undertaken by the Contractor only when specific instruction in this regard has been obtained from the representative of Employer/Consultant. The rate or the item will be mutually decided when such removal is advised.

6.0 Method of Measurement

6.1 Excavation

Excavation shall be measured in cum. As per drawing, the length and width being governed by themaximum dimensions of soling/bed concrete/structure concrete as in drawing and depth considered as the difference between average foundation level in a pit and average of pre-construction level there at. No extra measurements will be allowed for excavation for formwork, shoring, and working spaces or cut stability. No extra will be entertained for cost of dewatering and keeping trenches dry, protective shoring, if any needed. No Increase in bulk after cutting will be entertained. No deduction will be made for volume of pile heads, tree trunks or other masonry

structures nor any extra on account of above is payable.

6.2 **Filling**

Plinth filling shall be measured as net consolidated volume in cum as per drawing.

SECTION - C

1.0 PLAINAND REINFORCED CEMENT CONCRETE

All concrete work shall be carried out by the contractor under the supervision of a concrete foreman sufficiently experienced in this type of work.

Ingredients to be used in concrete and Reinforced concrete work :

Ingredients to be used in concrete should conform to the specifications as indicated under "Technical Specifications for Materials" given earlier.
As regards admixture, this shall be used with prior approval of representative of Employer/Consultant.

1.1 Mix Proportion.

The mix proportions shall be selected to ensure that the workability of the fresh concrete is suitable for the conditions of handling and placing so that after compaction it surrounds all reinforcements *and* completely fills the form work.

The determinations of the proportions of cement, aggregates and water to attain the required strength & workability shall be made as follows :

a) By designing the concrete mix such concrete shall be called "Design Mix Concrete" and *will* be permitted for use when complete quality control is ensured through use of weigh-batches, equipped field laboratory, approved transportation method and skilled technician.

b) By adopting nominal concrete mix, such concrete shall called "Nominal Mix Concrete". *The minimum cement content for nominal mix concrete shall be as under :*

Grade of Concrete	Cement/cum. of concrete (in kg)
M 20	400
M 15	317
1:3:6	235
1:4:8	180

1. 2 **Design Mix Concrete:**

The mix shall be designed to produce the grade of concrete having the required workability and a characteristic strength not less than values given in table Ä". The procedure given in Indian standard should be preferred for the design but other Standard methods may also be followed. As long as quality of material does not change a mix design done earlier may be considered adequate for later work.
When mix is designed, the records shall be maintained in the format annexed.

TABLE A-GRADES OF CONCRETE

GRADE OF CONCRETE	SPECIFIED CHARACTERISTIC COMPRESSIVE STRENGTH	
	AT 7 DAYS N/SQ.MM	AT 28 DAYS N/SQ.MM

M10	7.0	10
M15	10.0	15
M20	13.5	20
M25	17.0	25
M30	20.0	30
M35	23.5	35
M40	27.0	40

1.3 Nominal Mix CONCRETE

Nominal mix concrete may be used for concrete of grades M5, M7. 5, M10, M15 and M20. The proportion of materials for nominal mix concrete shall be in accordance with Table "B". However strength requirement is to be pre- established before resorting to mass work The proportions of fine to coarse aggregates should be adjusted from upper limit to lower limit progressively as the grading of the fine aggregate becomes finer and the maximum size of coarse aggregate becomes larger. Graded coarse aggregates shall be used.

The cement content In the mix specified 'B' for any nominal mix to be proportionately increased if the quantity of water in a mix has to be increased to overcome *the* difficulties of placement and compaction, so that the *water* cement ratio is specified is not changed. In the case of vibrated concrete, the limit specified may be suitably reduced to avoid segregation.

The quantity of water used in reinforced concrete work should be the quantity of water used in reinforced concrete work should be sufficient but not more than sufficient to produce dense concrete of adequate workability for its purpose which property grip all the reinforcement. Workability of concrete should be controlled by maintaining a water content that is found to give a concrete which is sufficiently wet to be placed and compacted without difficulty with the means available.

TABLE B - PROPORTIONS FOR NOMINAL MIX CONCRETE

GRADE OF CONCRETE	TOTAL QUANTITY OF DRY AGGREGATE BY MASS PER 50 KGS OF CEMENT TO BE TAKEN AS THE SUM OF THE INDIVIDUAL MASSES OF FINE AND COURSES AGGREGATE (MAXIMUM)	PROPORTION OF FINE AGGREGATE TO COURSE AGGREGATE	QUANTITY OF WATER PER 50 KGS OF CEMENT (MAXIMUM)
	KG	BY MASS	LITRE
M5	800	GENERALLY 1:2 BUT	60
M7.5	625	SUBJECTED TO AN	45
M10	480	UPPER LIMIT OF 1:1 ½	34
M15	350	AND A LOWER LIMIT	32
M25	250	OF 1:2 ½	30

2.0 PRODUCTION AND CONTROL OF CONCERTE

In proportioning Concrete the quantity of both Cement, Coarse/Fine Aggregate and water should be determined by weight in case of design mix or volume in case on nominal mix. Where weight of cement is determined on the basis of mass of cement per bag, a reasonable number *of bags* should be weighed periodically to check the net mass. Where the cement is weighed on the site and not in bags it should be weighed separately from the aggregates. Water should be either measured by volume in calibrated tanks or weighed. Any solid admixture that may be added may be measured by mass, liquid and paste admixture may be measured by volume or by mass. Batching plant when used should conform to IS: 4925. All measuring equipments should be maintained in a clean serviceable condition and their accuracy periodically checked.

Except where it can be shown to the satisfaction of the representative of Employer/Consultant that

supply of properly graded aggregate of uniform quality can be maintained over the period of work, the grading of aggregate should be controlled by obtaining the coarse aggregate in different sizes and blending them in right proportions, as required, the different sizes being stacked in separate Stock-piles. The grading of coarse *and* fine aggregate should be checked as frequently as possible to ensure that the specified grading is being maintained. No change in proportions of substitutions in materials shall be made without additional tests to show that the quality and strength of concrete are satisfactory.

2.1 Mixing

Concrete shall be mixed in a standard mechanical mixer. The mixing shall be continued until there is a uniform distribution of the materials and the mass is uniform in colour and consistency. If there is segregation after unloading from the mixer the concrete should be remixed. The mixing time may be *1-1/2* to 2 minutes generally. In exceptional circumstances such as mechanical breakdown of mixer, work in remote areas or when the quantity of concrete work *is* very small, hand mixing may be permitted subject to adding 10% extra cement for which no extra payment will be made to the contractor. When hand mixing is permitted it shall be carried out on a water tight platform and concrete is uniform in colour and consistency.

Workability of concrete should be controlled by direct measurement of water content and it should be checked at frequent intervals. For Nominal Mix workability measured by slump test may have values given in table "C".

TABLE 'C'

Sl. No. Type of work	When vibrated	When not vibrated
1. Mass concrete in RCC foundation footings, retaining walls and pavement	2.5 cm (1")	5 cm (2")
2. Beams, slabs, columns	2.5 cms to 5 cms	5 cms to 10 cms
With sample reinforcement	(1" to 2")	(2" to 4")
3.Thin sections with congested reinforcement	5 cms to 10 cms (2"to 4")	10 cms to 15 cms (4"to 6")

Note: Should conditions governing slump and workability change pointing to advisability of an increased slump, this shall only be done by decreasing the amount of aggregate and not by increasing the amount of water.

2.2 Transportation

The method of transportation shall be got pre-approved from Consultant/Employer. Concrete shall be transported from the mixer to the formwork as rapidly as possible by methods, which will prevent the segregation or loss of any of the ingredients and maintaining the required workability. In no case, more than 30 minutes shall elapse between mixing and consolidation in its position.

During hot and cold weather, concrete shaft be transported by deep containers. Other suitable methods to reduce the loss of water by evaporation in hot weather and heat loss in cold weather may also be adopted.

For buildings with height more than 18.0 Meter, transportation of concrete by suitable and pre-approved mechanical devices is essential.

2.3 Placing

The concrete shall be deposited as neatly as practicable in its final position to avoid rehandling. The concrete shall be placed and compacted before setting commences and should not be subsequently disturbed. Methods of placing should be such as to preclude segregation. Care should be taken to avoid displacement of reinforcement or movement of form work. Concrete shall not be dropped into position from a height greater than 2.0 m

2.4 Compaction

Concrete should be thoroughly compacted and fully worked around the reinforcement, embedded fixtures and into corners of the formwork. Mechanical vibrators should generally be used. Over-vibration or vibration of very wet mixes is harmful and should be avoided. Under-vibration is also harmful.

Whenever vibration is to be applied externally the design of form work and the disposition of vibrators should receive special consideration to ensure efficient compaction and to avoid surface blemishes.

Beams and columns shall be vibrated using immersion vibrators. Thin sections like walls of water tanks, chajjas, and aprons etc. should be vibrated preferably using surface vibrators. It is better to vibrate in smaller intervals for short period of time, rather than at wider intervals for longer periods of time. The vibrator shall be used only to aid compaction and not to push concrete laterally in the forms.

3.0 CONSTRUCTION JOINTS

Concreting shall be carried out continuously up to construction joints, the position and arrangement of which should be indicated by the designer.

The locations of construction *joints* shall *preferably* be kept parallel *to* the principal reinforcements. Where it is unavoidable, and is at right angles to the principal reinforcement, it shall be kept at approx. 1/3rd to 1/4th of the span. All joints shall be *vertically* formed with proper wooden stop boards.

When work is to be resumed on a surface, which has hardened, such surface shall be roughened. It shall then be swept clean and thoroughly wetted. For vertical joints neat cement slurry shall be applied on the surface before it is dry. For horizontal joints the surface shall be *covered with* a layer of *mortar* about 10 to 15 mm thick composed of cement and sand in the same ratio as the cement and sand in concrete mix. This layer of cement slurry or mortar shall be freshly mixed and applied immediately before placing of concrete.

Where concrete has not fully hardened, all laitance shall be removed by scrubbing the wet surface with wire or bristle brushes, care being taken to *avoid* dislodgement of particles of aggregate. The surface shall be thoroughly wetted and all free water removed. The surface shall then be coated with neat cement slurry. On this surface, a layer of concrete not exceeding 150 mm in thickness shall first be well rammed against old work, particular attention being paid to close pots. Work therefore shall proceed in the normal way.

2.
4.0 CURING

Unless otherwise specified all exposed surfaces of concrete shall be kept continuously in a damp or wet condition by ponding or by covering with a layer or sacking canvas or similar materials and kept constantly well at least 7 days from the date of placing of concrete. Mere sprinkling of water on vertical surfaces shall not be allowed. The rate of RCC/plain concrete work shall include cost of curing.

Approved curing compounds may be used at no additional cost to the owner in lieu of moist curing with the permission of the representative of Employer/Consultant. Such compounds shall be applied to *all* exposed surfaces of the concrete as soon as possible after the concrete has set.

5.0 FACIUTIES FOR PREPARATION AND TESTING OF CONCRETE AT SITE

In order to exercise the required degree of constant control over the concrete materials and its preparation the contractor is expected to set up and maintain at his own expense a Testing Laboratory at Site equipped with at least *the* following equipments :-

i) *Compression* Testing machine of capacity 80t/100t;
ii) A set of standard sieves;
iii) Measuring cylinders, adequate number of cube and *cylinder* moulds and slumps cones:
iv) Weighing balance,
v) Vicat apparatus;
vi) Curing tanks for Cubes.

5.1 Sampling, Testing and Acceptance of Concrete

Samples from fresh concrete shall be taken and cubes shall be made, cured and tested at 28 days in accordance with IS 516.

Tests shall be conducted for compressive strength on 15 cm x 15 cm x 15 cm Cubes of Concrete. Companion Specimens shall be cast from a single batch of concrete and shall be of the same age at the time of testing. In order to get a relatively quicker idea of the quality of concrete, additional tests of compressive strength tests at 7 days shall be carried out in addition to 28 days compressive strength tests. In all cases, 28 days compressive strength specified in Table 'A' shall alone be the criterion for acceptance or rejection of the concrete.

5.2 Frequency of Sampling

The frequency of sampling shall be as indicated in the list of mandatory tests.
Works test cubes shall represent quality of concrete incorporated in the work and taken out in sets of 6 cubes. The concrete for preparation of one set of 6 cubes shall be taken from one batch of mixed concrete discharged from mixer. The cubes shall be moulded in accordance with IS Code of practice. Out of 6 cubes, 3 cubes shall be tested at an age of 7 days. In case of testing in an approved laboratory the contractor shall arrange to transport the cubes from site to the laboratory and forward the test results to the representative of Employer/Consultant. The contractor shall bear all expenses in connection with the preparation of test cubes, cost of concrete, labour and transportation charges to the approved laboratory etc. including laboratory testing charges and his rate for concrete item shall be quoted accordingly.

The Specimens shall be tested as per IS : 516. The samples may be tested at site laboratory generally but should be tested in any other Government Test House or approved laboratory whenever asked for by the representative of Employer/Consultant for which no additional payment shall be made.

The work's concrete cubes shall be deemed to comply with the strength requirements if, the individual variation is not more than +/- 15% of the average test strength of three specimens. For mix design, however, acceptance criterion will be decided based on "Standard Deviation" as per IS : 456.

5.3 Concreting under special condition

The specifications and references given in IS: 456 for concrete in extreme weather condition should be adhered to.

6. 0 DEFECTIVE OR POOR CONCRETE : PROCEOURE FOR DEALING WITH

Concrete, which does not meet the strength requirement, shall be dealt with as under at the discretion of the representative of Employer/Consultant:

I) The structural adequacy of the parts affected shall be investigated and any consequential action as needed shall be taken. Costs of any such consequential action or any tests to be advised by the representative of Employer/Consultant are to be borne by the Contractor.

ii) If it is advised by the representative of Employer/ Engineer to retain the concrete having strength less than that specified payment shall be made at a reduced rate pro-rata to the strength obtained if not covered by Cl. (iii) below.

iii) If the deficiency In the opinion of the representative of Employer/Consultant is such as to necessitate removal of the concrete from the structure, then on being so directed by the representative of Employer/Consultant the Contractor at his own expense shall remove the portion of the concrete certified as deficient, and replace by concrete of specified strength at no additional cost. A register shall be maintained at site by the Contractor with the following details entered and initialed by the Contractor and the representative of Employer/Consultant.

i) Reference to specific structural members receiving the batch of concrete from which the cubes were cast.
Ii) Identification mark on cubes;
iii) Mix of concrete:
iv) Date and Time of casting,
i) Crushing strength as obtained at the end of 28 days and days for each set.
vi) Laboratory in which tested and certificates reference.

Concrete of each grade shall be assessed separately and shall be assessed daily for compliance. Concrete is liable to be rejected if it is porous or honey-combed, its placing has been interrupted without providing a proper construction joint, the reinforcement has been displaced beyond acceptable standard or construction tolerances have not been met. However the hardened concrete may be accepted after caring out suitable remedial measures to the satisfaction of the representative of Employer/Consultant.

7.0 FORM WORK

The form work shall conform to the shape, lines and dimensions as shown on the plans and be so constructed as to remain sufficiently rigid during the placing and compacting of the concrete and shall be sufficiently water light to prevent loss of cement slurry from the concrete.

The allowable tolerances to formwork shall be as under:

I)	Deviation from specified dimensions of cross-section of columns & beams	+/- 3 mm
il)	Plumb	1 in 1000 of height
lii)	Levels	± 3 mm before any deflection has taken place.
iv)	General setting	+/- 3 mm up to 4 meters and ± 5 mm beyond 4 meters.

Craft paper or polythene sheets shall be used by the Contractor to ensure water tightness without additional costs to the Employer. Form work or centering shall be constructed of steel or timber or shuttering ply and adequately designed to support the impact load of full load of weight concrete and labourers without detection and retain its form during laying *and* setting *of concrete*. Timber used shall be properly seasoned so as to prevent wrapping when wetted. A camber in all directions of 6 mm for every 5 meter span in all slab and beam centering shall be provided to allow for unavoidable sagging due to compression or other causes.
All props either timber or steal, shall be straight and of full height and no joints shall be allowed. Where timber props like bullies are used, they shall have a minimum diameter of 100 mm and shall be straight and adequately strong. Props shall be braced with wooden battens and where *additional* staging *is* necessary extra care *shall* be taken to use bigger diameter props with bracing at 4 or 5 levels at no extra cost. All prop shall be supported on sole plates and double wedges. At the time of removing props, wedges shall be gently eased off and not knocked out.

All rubbish, chippings, shavings and saw dust shall be removed from the interior of the forms and shall be cleaned and thoroughly wetted or treated, if considered necessary, with any approved material before concrete is poured at contractor's own cost. Care shall be taken that for such approved material is kept out of contact with the requirement.

Form work shall be removed when the concrete has reached a strength of at least twice the stress to *which* the concrete may be subjected at the *time* of removal of formwork.

This shall be stripped without shock or vibration and shall be eased off carefully in order to allow the structure to take up its load gradually. Forms shall not be disturbed until concrete has adequately hardened to take up the superimposed load.

In normal circumstances (generally where temperatures are above 20 degree Centigrade and where ordinary Portland cement is used) forms shall be struck after expiry of the following periods unless otherwise directed at site by the representative of Employer/Consultant:

Location	Striking time in days
a) Vertical sides of walls, stabs, beams and columns	2
b) Bottoms of slabs upto 4 .5 m span	7
c) Bottom of slabs above 4.5 m span & bottom of beams upto 6 m span	14
d) Bottom of beams over 6 m span	21

8.0 REINFORCEMENT CLEANING, BENDING, PLACING ETC.

8.1 Cleaning of Reinforcement

Before steel reinforcement is placed in position, the surface of the reinforcement shall be cleaned of rust, dust, grease and any other objectionable substances.

8.2 Bar Bending schedule of reinforcement

On receipt of structural drawing, contractor shall prepare bar bending schedule of reinforcement and shall get it approved by the representative of Employer/Consultant.

8.3 Cutting in Reinforcement

Before steel reinforcement bars are cut, the contractor shall study the length of bars required as per drawings and shall carry out to suit the sizes required as per drawings.

8.4 Placing and Security

Reinforcement bars shall be accurately placed and secured in position and firmly supported or wedged by precast concrete blocks of suitable thickness, at sufficiently close intervals so that they will not sag between the supports or get displaced during the placing of concrete or any other operation of the works. It is most important to maintain reinforcement in its correct position without displacement and to maintain the correct specified cover. The contractor shall be responsible for all costs for rectification required in case the bars are displaced out of their correct positions.

8.5 Binding Wire

The reinforcements shall be accurately tied wherever they cross each other or whenever required for with 20 gauge black soft annealed steel wire. The cost of materials and labourrequired for binding the reinforcement shall be included in the contractors quoted rate for reinforcement.

8.6 WELDING

Welding in lieu of splices may be carried out only after authorization in writing by the representative of Employer/Consultant. Welding shall be carried out as per relevant IS Code of Practice. However, no extra payment shall be allowed for the same.

8.7 Bend etc.

Bends, cranks, etc. in steel reinforcement shall be carefully formed, care being taken to keep bends out of winding. Otherwise all rods shall be truly straight. For any bend minimum radius of eight times diameter of the bar shall be used unless otherwise specified In the drawing. However, in respect of standard hooks the radius of bends shall be two times the diameter of bar. Heating ofreinforcement bars to facilitate bending *will not* be permitted. The bars shall be always be bent cold. In case of mild steel reinforcement bars of larger sizes where cold bending is not possible they may be bend by heating with written permission of the representative of Employer/Consultant. Bars when bent shall not be heated beyond cherry *red color and* after bending, shall be allowed to cool slowly without quenching. The bars damaged or weakened in any way in bending shall not be used on the work. High strength deformed bars shall in no case be heated to facilitate bending.

8.8 Inspection of Reinforcement

No concreting shall be commenced until the representative of Employer/Consultant have inspected the reinforcement in position and until their approval have been obtained. The contractor for inspection of reinforcement shall give a notice of at least 72 hours to the representative of Employer/Consultant. If in the opinion of the representative of Employer/Consultant any material is not in accordance with the specification or the reinforcement is incorrectly spaced, bent or otherwise defective, the contractor shall immediately remove such materials from the site and replace with new and rectify any other defects in accordance with the instruction of the representative of Employer/Consultant to their entire satisfaction at his own cost.

8.9 Cover for Reinforcement

Cover shall be measured from the outer surface of main reinforcement. Cover shall be as follows :

a) At each end of a reinforcing bar, 25 mm or twice the diameter of such rod or bar, whichever is greater,

b) For longitudinal reinforcing bar in beam 25 mm or the diameter of such rod or bar, whichever is greater,

c: For tensile, compressive, shear or in other reinforcement in slab 15 mm or the diameter of such reinforcement whichever is greater,

d) For reinforcement in any other member such as a lintel, chajja, canopy or pardi, 15 mm or the diameters of such reinforcements, whichever is greater,

e) For main reinforcement in isolated footing (side and bottom) clear cover shall be 50mm,

f) For column bars clear cover shall be 40 mm, unless otherwise specified in drawings,

g) For bars In slabs of strip footings and mat foundations clear cover shall be 50 mm. Slab bars shall be placed *over* beam bars, in the case of beam and slab type foundations.

h) For any other types covers is specified in I.S. 456 shall be provided.

8 .1 0 High Strength deformed Bars/Steel

High strength deformed bars manufactured by approved manufacturer conform to Fe 415 Gr. IS 1786-1985 shall be used in *work.*

9. 0 PRE-CAST CONCRETE

All thin pre-cast RCC members shall be cast using ply board base and timbered side shuttering s. Casting on floor over sand bed is not permitted.

Reinforcement cage to proper size as per design or instruction shall be placed after pouring concrete for the cover portion , duly leveled.

The top surfaces shall be finished smooth with additional cement in simultaneous operation.

Deshuttering shall be done carefully and rendering with cement mortar shall be immediately carried out.

Pre-cast members shall be fixed in positron only after 15 days curing.

10.0 METHOD OF MEASUREMENTS

10.1 Concrete

a) Actual net volume of work as actually executed and accepted based on the drawing and authorized variation if any shall be measured in Cum unless stated otherwise. No deduction for reinforcements shall be made.

b) Precast concrete work shall be measured in the same way as specified in the foregoing paragraph

10.2 Form Work and Centering

a) Actual net area of form work in contact with concrete shall be measured in Sq m unless stated otherwise, small charmers or fillet (Each not exceeding 10 sq cm. in cross section) and voids not exceeding 200 sq cm each on the exposed surface shall be ignored as if those are non-existent.

b) No separate payment shall be made for form work In case of precast units.

c) The work and payment thereof includes striping off after completion of the work.

10.3 Reinforcement

a) Actually net measurements by weight of reinforcement as actually used in the *permanent* works and accepted shall be paid *for.* Authorized extra for laps, hooks, steel chairs, spacer bars for keeping reinforcements in position shall be measured and paid for. The weight of binding wire or any fixture, shall be excluded from the measurement. The weight of bars shall be as per IS Code taken up to three decimal places. No extra for wastage, unnecessary overlaps or rolling margin shall be paid for.

b) Bar neither shown in drawings nor Instructed by the representative of Employer/Consultant but

required or constructional facilities shall not be measured.

11.0 TYPICAL FORMAT FOR RECORDING MIX DESIGN RESULTS

Concrete mix of design for M ____ . _____ (Grade of MIX) proposed to be used in (Designations and levels of structural member)

Weight in kgms. of

Cement	Coarse Aggregate	Fine Aggregate/Cement Ratio	Aggregate ratio	Water/Cement
1	2	3	4	5

Compacting factor	Result of preliminary tests cube Strength at 7 days/ 28 days	Gradation of Coarse Aggregate (C.A.)	Fine Agree gate (F.A.)	fineness Coarse Aggregate gate (C.A)	Fine Aggregate gate (F.A.)
6	7	8	9	10	11

Specific gravity of current	Absolute Volume	Density of cube by water displacement Method
Coarse Aggregate	Fine Aggregate	
12	13	14	15	16

Signature of the Testing Laboratory

Signature of the Contactor

SECTION -D

BRICK MASONRY

1.0 BRICK WORK

1.1 General

All brick work shall be carried out as shown on the drawings with setbacks, projections, curvatures, cuttings, footings etc. No additional cost for use of cut backs shall be allowed. Wherever the *proportion* of cement mortar has not been specifically mentioned, cement mortar in the proportion of 1:6 shall be used. Flat brick arches shall be provided wherever required without any extra cost. Brick work shall be kept wet while in progress, till mortar has properly set. Minimum curing period for work shall be 10 (ten) days. On holidays or when work is stopped, top of all unfinished masonry shall be kept wet. Should the mortar become dry, white or powdery, for want of curing, work shall be pulled down and rebuilt at the contractor's expense. All external brick work shall be done from outside by erecting rigid external scaffolds only.

2.0 BRICK MASONRY

2.1 Soaking

All bricks shall be immersed in water for twenty-four hours before being put into work so that they will be saturated and will not absorb water from the mortar.

2.2 Bats

No bats or cut bricks shall be used in the work unless absolutely necessary around irregular openings or for adjusting the dimensions of different course and for closures, in which case, full bricks shall be laid at corners, the bats being placed on the middle of the courses.

2.3 Laying

Unless otherwise specified, the brick work shall be laid in English bond. The brick shall be *laid in* cement mortar to line, level and thoroughly bedded in mortar and all joints shall be properly flushed and packed with mortar and no hollows left anywhere. Brick shall be handled carefully so as not to damage their edges. They should not also be thrown from any height to the ground *but* should be put down gently. *All courses shall* be laid truly horizontal and all vertical joints made truly vertical. Vertical joints on the course and the next below should not come over one another and shall not normally be nearer than quarter of a brick length. Fixtures, lugs, frames etc, if any, shall be built in at places shown in the plans while laying the course only and not later by removal of bricks already laid unless instructed by the representative of Employer/Consultant.

Care shall kill be taken during construction to see that edges of bricks are not

damaged.
The vertically of the walls and horizontally if the courses shall be checked very often with plumb bob and spirit level respectively.

2.4 Joints
Joints shall preferably not exceed 1 0 mm (about 3/8") in thickness,

2,5 Uniform raising
Brick work shall be carried up regularly. In all cases where the nature of work will admit, not leaving any part 60 cm lower than another. But where building at different levels necessary, the bricks shall be stopped so as to give later a uniform level and effective bond. Horizontal courses should be to line and level, and face plumb as shownon the plan. The rate of laying masonry may be up to a height of 80 cm (about 32 inch) per day if cement mortar is used, and 45 cm (about 18 inch) if lime mortar is used.

2.6 Scaffolding
The scaffolding must be strong and rigid stiffened with necessary cross bearers and always decked and beard on the sills with close boarding's/ceilings to prevent injury to persons or damage of materials. The contractor shall have to allow other tradesmen engaged by the employer to make use of the scaffoldings at no addition cost. Rates for brickwork is include all necessary costs and removal on *completion* of suitable scaffolding *needed for the work.* The contractor has to erect scaffolding arrangement for the same including licensinglicensing fees etc. shall be borne by the contractor and the employer is kept free from any liability on this account.

3:0 HALF BRICK WORK AND 75/65MM THICK BRICK WORK
The mortar mix for half-brick and *75/65* mm brick work shall be as specified in the schedule of quantities. Half brick thick and brick on edges *walls* shall be provided wire netting reinforcements. For half brick thick wall and brick on edge wall wire netting shall be provided at every third course and at alternate course respectively with wire netting 40 mm mesh made of 20 SWG soft G. I. iron wire, turned around the specified courses for continuity.

4.0 BRICK FLAT SOLING
For soling the bricks shall be picked slightly over burnt of approved brand, sound, hard, durable, dense, clean, *free* from soft spots, cracks, decay and other defects. Brick Bats shall not be used. All the fillings shall be watered and compacted to at maximum consolidation.

All necessary timings or flitting for laying of the soling In line and required grade shall be done. The sub-grade shall be marked by stacks and strings tor required depth for laying of soling. The cushioning as well as filling at joints shall be done with local sand.

The bricks shall be laid on flat (unless otherwise specified) touching each other. Brick shall be laid in parallel rows breaking bond or in herring bond pattern as directed by the representative of Employer/Consultant and firmly embedded true to line and filled with local sand.

5.0 MEASUREMENTS
The measurements shall be made Nett as per drawing or actual, whichever Is less. No deduction shall be made for ends of dissimilar materials up to 500 sq.crn in section.

SECTION-E

Plastering

1.0 SCAFFOLDING

Scaffolding for carrying out plastering work shall preferably be double scaffolding having two sets of vertical supports so that the scaffolding is independent of the walls.

1.1 Preparation of surface

All putlog holes in brickwork and junction between concrete and brickwork shall be properly filled in advance. Joints in brickwork shall be raked about 5 mm deep and concrete surface hacked to provide the grip to the plaster. Projecting burns of mortar formed due to gaps at joints in shuttering shall be removed.

The surface shall be scrubbed clean with wire brush/coir brush to remove dirt, dust etc. and the surface thoroughly washed with clean water to remove efflorescence, grease and oil etc. and shall be kept thoroughly wet prior to application of plaster.

1.2 Ordinary Cement Plaster

The preparation of surface shall be as stated above. The thickness and proportion of plaster shall be as specified *In*the schedule of Items.

The mortar shall be applied evenly with force on the surface to be plastered. The mortar surface shall be finished at once by being rubbed over with a trowel till the cement appears on the surface. All corners, angles and junctions shall be truly vertical and horizontal as the case may be and neatly finished. Rounding of corners and junctions where required shall be done without extra charges. Plastering in narrow grooves or making designed grooves on plastered surfaces are not separately payable. The *mortar* shall adhere to the surface intimately *when* set and there should be no hollow sound when struck

The completed plastered surface shall be cured for a minimum period of 10 days.

2.0 NEERUFINISH

'Neeru' shall be made of pure fat lime conforming to appropriate class
mentioned in IS: 712.
The lime shall be slaked with fresh water and thereafter shifted and reduced to a thick paste by grinding in a mill.
'Neeru' thus prepared shall be kept moist until use and shall be utilized within 15 days after preparation.
A thin layer of 'Neeru' shall then be applied on the plastered surface while it is still green. 'Neeru' shall be rubbed into the surface by trowelling until an even and smooth finish is obtained. Any leveling work etc shall be carried out at the plastering stage itself and not while putting 'Neeru' finish.
The surface shall be kept moist for seven days following which a coat of white wash may be applied, if specified.

3.0 PLASTER OF PARIS

Surface of walls/ceiling where specified shall be treated with plaster of Paris calcium sulphate Hemihydrates materials. It shall have a fineness such that residue after sieving of dry materials for 5 minutes through IS. Sieve designation 3.75 mm. will not exceed 1% by weight & initial setting time shall not be less than 13 minutes. The particular brand of this special plaster and its composition must be previously approved by the Consultant/Employer.

The paste of material made with water shall be applied by means of English Trowel.

The entire surface must be very smooth on completion and unevenness must be removed. Special trained and skilled artisans with previous experience of this *work* will have to be employed for the purpose of achieving high grade finish. Before application of plaster of paris, the surface to be treated shall be thoroughly cleaned, brushed and patching must be scraped properly and all holes, cracks and patches shall made good with approved materials.

3.0METHOD OF MEASURMENT

Measurement shall be in sq. mt as per drawing or actual whichever is less. Half the area of opening shall be deducted *tor* each face of wall plaster and jambs and soffits will not be separately paid for.

Deduction for ends of dissimilar materials if less than 0:5 sq. mt. will not be made.

SECTION - F

FLOOR FINISHING

1.0 TERRAZZO (MARBLE CHIPS) FLOORING LAID IN SITU

1.1 General

The thickness of the under layer shall be measured with a permissible tolerance of +/- 3 mm. The thickness of the top layer after polishing shall be measured with a tolerance of +/- 1.5 mm.

1 .2 Under Layer:

Cement concrete of specified mix shall be used. The panels shall be of sizes as directed by representative of Employer/Consultant and generally not exceeding 2 sq. mt. in *area* and 2 Mt in length for inside situations. In exposed situations the length of any side of the panel shall preferably be not more than 1.25 Meters or as directed. Cement slurry @ 2.00 kg. per sq. mt. shall be applied before laying of under layer over the cement concrete / R C. C. surface which will not be separately paid for.

1 3 Strip Fixing

Glass strips or aluminum strips as given in the schedule shall be fixed with their top at proper level.

1.4Top laver

Mortar: The mix for terrazzo topping shall consist of cement with or without pigment, marble powder, marble aggregate (marble chips) and water. The cement and marble powder shall be mixed in the proportion of 3 parts of cement to one part marble powder by weight. For every part of cement marble powder mix, the proportion of aggregate by volume shall be as follows

Size of Aggregate	Proportions of Aggregates to binder mix

For predominantly grade 00,0 and 1	1.50 parts
For predominantly grade 2 and 2	1.25 parts
For predominantly grade 4 and 5	1.25 parts

Grade No.	Size of Aggregate in (MM)	Minimum thickness of top layer in(MM)
00	1-2	6
0	2-4	9
1	4-7	9
2	7-10	12

Where aggregate of size larger than 10 mm are used the minimum thickness of topping shall not be less than 1.5 times the maximum size of the chips. Where large size chips such as 20 mm or 25 mm are used they shall be used only with a flat shape and bedded on the flat face so as to keep the maximum thickness of wearing layer. Before starting the work, the Contractor shall get the sample of marble chips approved by the representative of Employer/Consultant. The cement to be used shall be ordinary grey cement, white cement, colored cement or cement with admixture of coloring matter of approved quality in the ratio specified in the description of the Item or in the ratio to get the required shade as ordered by the representative of Employer/Consultant. Coloring matter where specified, shall be mixed dry thoroughly with the cement and marble powder and then chips added and mixed as specified above. The full quantity of dry mixture of mortar required for a room shall be prepared in a lot in order to ensure a uniform colour. This mixture shall be stored in a dry place and well covered and protected from moisture. The dry mortar shall be mixed with water in the usual way as and when required. The mixed mortar shall be homogeneous and stiff and contain just sufficient water to make it workable.

The terrazzo topping shall be laid while the under layer is still plastic but has hardened sufficiently to prevent cement from rising to the surface. This is normally achieved between 18 to 24 hours after the under layer has been laid. A cement slurry preferably of the same color as the topping shall be brushed on the surface immediately before laying is commenced. It shall be laid to a uniform thickness slightly more than that specified in order to get the specified finished thickness after rubbing. The surface of the top layer shall be toweled over, pressed and brought true to required level by a straight edge and steel floats in such a manner that the maximum amount or marble chips come up and are spread uniformly over the surface.

1.5 Polishing, Curing and Finishing

Polishing shall be done by machine. About 36 hours after laying the top layer, the surface shall be watered and ground evenly with machine fitted with special rapid cutting grit blocks (carborundum stone) of coarse grade (No 60) till the marble chips are evenly exposed and the floor is smooth. After the first grinding, the surface shall be thoroughly washed to remove all grinding mud and covered with o grout of cement or/and coloring matter in same mix and proportion as the topping in order to fill any pin holes that appear. The surface shall be allowed to cure for 5 to 7 days and then ground with machine fitted with fine grit blocks (No.120). The surface is cleaned and repaired as before and allowed to cure again tor 3 to 50 days. Finally the third grinding shall be done with machine fitted with fines grade grit blocks (No.320) to get even and smooth surface without pin holes. The finished surface should show the marble chips evenly exposed.

Where use of machine for polishing is not feasible or possible, rubbing and polishing shall be done

by hand, in the same manner as specified for machine polishing except that carborundum stone of coarse grade (No 60) shall be used for the 1st rubbing, stone of medium grade (No. 80) for second rubbing and stone of fine grade (No 120) for final rubbing and polishing.

After the final polish either by machine or by hand, oxalic acid shall be dusted over the surface @ 33 gm per square meter sprinkled with water and rubbed hard with a namdah block (Pad of woolen rags). The following day, the floor shall be wiped with a moist rag and dried with a soft cloth and finished clean.

Curing shall be done by suitable means such as laying moist, sawdust or ponding water. The finished floor shall not sound hollow when lapped with a wooden mallet.

1.6 Precautions :

Flooring in lavatories and bathrooms shall be laid after fixing of squatting pans and floor traps. Traps shall be plugged, while laying *the floors* and opened after the floors are cured and cleaned. Any damage done to W.C.'s squatting pans and floor traps during the execution of work shall be made good by the Contractor.

During cold weather, concreting shall not be done when the temperature falls below 4 degree centigrade. The concrete placed shall be protected against frost by suitable coverings. Concrete damaged by frost shall be removed and work redone. During hot weather, precautions shall be taken to see that the temperature of wet concrete does not exceed 38 degree centigrade. No concreting shall be laid within half an hour of the closing time of the day unless permitted by the representative of Employer/Consultant.

The floor shall be protected from any damage during the execution of work.

2.0 TERRAZZO (MARBLE CHIPS) SKIRTING-IN-SITU

2.1 Thickness:

The thickness of the bottom and top coats shall be as specified. The total thickness of skirting specified is of the total thickness of plaster as measured from the unplastered face of the masonry. Average thickness of the under coat shall not be less than 6 mm and minimum thickness *over* any portion of the surface shall not be less than 4 mm. A tolerance of 1.5 mm is applicable over the finished specified lop coat.

3.0 GLAZED / UNGLAZED CERAMIC TILE FLOORING:

3.1 Preparation of Surface and Laying

Sub-grade concrete or the RCC slab on which the tiles are to be laid shall be cleaned, wetted and mopped. The bedding *tor* the tile shall be either with cement mortar 1:3 (1 cement: 3 coarse sand) or approved cement based ready to use mortar on cement plastered (1:3) surface as specified. The average trickiness of the bedding for cement mortar shall be 10 mm while the thickness under portion of the tiles shall not be less than 5 mm.

Mortar shall be spread, tamped and corrected to proper levels and allowed to harden sufficiently to offer a rigid cushion for the tiles to be set and to enable the mason to place wooden plank across and squat on it.

Over this mortar bedding neat grey cement slurry of honey like consistency shall be spread @ 3.3 Kg of cement per square meter over such an area as would accommodate about twenty tiles. Tiles shall be soaked in water washed clean and shall be fixed in this grout one after another, each tiles gently being tapped with a wooden mallet till it is properly bedded and in level with the adjoining tiles. The

joints shall be kept as thin as possible and in straight lines or to suit the required pattern.

The surface of the flooring during laying shall be frequently checked with a straight edge about 2 m long so as to obtain a true surface with the required slope.

Where full sizes tiles cannot be fixed these shall be cut to the required sizes and their edged rubbed smooth to ensure straight and true joints.

Tiles, which are fixed in the floor adjoining the wall, shall enter not less than 10 mm under plaster, skirting or dado.

After tiles have been laid surplus cement grout shall be cleaned off.

3.2 Pointing and Finishing :

The grey cement grouts in joins shall be cleaned of with wire brush or trowel to adepth of 2 mm to 3 mm and all dust and loose mortar removed. Joints shall then be flush pointed with white cement added with pigment if required to match the colour of tiles. The floor shall then be kept wet for 7 days. After curing, the surface shall be washed and finished clean. The finished floor shall not sound hollow when tapped with a wooden.

4.0 CERAMIC TILES IN SKIRTING AND DADO

4.1 Laying

Tiles shall be laid either on 12 mm thick plaster of cement mortar 1:3 (1 cement : 3 coarse sand) or *mix* as specified shall be applied and allowedto harden. The plaster shall be roughened with wire brushes or by scratching diagonally closed intervals. The plaster thickness shall be reduced, as directed only for a leveling course, when ready to use approved cement based mortar is used.

The tiles should be soaked in water, washed clean and a coat of cement slurry or ready to use cement based mortar as the case may be applied liberally at the back of tiles and set in the bedding mortar. Approved epoxy adhesives, if specified in the bill of quantities shall be used in lieu of cement blurry as per manufacturer. The tiles shall be tamped and correctedto proper plane and lines. The tiles shall be set in the required pattern and butt jointed. The joints shall be as fine as possible. Top of skirting of dado shall be truly horizontally except where otherwise Indicated. Full size tiles cannot be fixed, these shall be cut (sawn) to the required size and their edges rubbed smooth.

4.2 Curing and Finishing:

The joints shall be cleaned off the grey cement grout with wire brush or trowel to a depth of 2 mm to 3 mm and all dust and loose mortar removed. Joints shall then be flush pointed with white cement added with pigments if required to match the color of tiles. The surface shall then be kept wet for 7 days.

After curing, the surface shall be washed and finished clean. The finished work shall not sound hollow when tapped with a wooden matter.

5.0 KOTA / CUDOAPAH STONE FLOORING

5.1 Dressing:

Every slab shall be cut to the required size and shape and fine chisel dressed on the sides to the full depth so that a straight edge laid along the side of the stone shall be full contact with it. The sides

(edges) shall be table rubbed with coarse sand or machine rubbed before paving. All angles and edges of the tiles shall be true, square and free *from* chippings and the surface shall be true and plane.

5.2 **Preparation of Surface and Laying :**

The sub-grade concrete or the RCC slab on which the slabs are to be laid shall be cleaned, wetted and mopped. The bedding for the slabs shall be with cement mortar 1:4 (1 cement : 4 coarse sand) or with lime mortar (1 lime putty: 1 surkhi : 1 coarse sand) as given in the description of the item except that the edges of the slabs to be jointed shall be buttered with grey cement, with admixture of pigment to match the shade of the slab.

5 3 **Polishing and Finishing:**

The day after the slabs are laid all joints shall be cleaned of the grey cement grout with a wire brush or trowelto a depth of 5 mm and all dust and loose mortar removed and cleaned. Joints shall then be grouted with grey or white cement mixed with or without pigment to match the shade of the stone slabs. The flooring, thus laid, shall be ground evenly with machine as spooned In Para 3.2, except that (a) first polishing with coarse grade carborundum stone shall not be done, (b) cement slurry with or without pigment shall not be applied on the surface before polishing.

6.0 KOTA / CUDDAPAH STONE IN SKIRTING, DADO, RISERS, STEPS ETC.

6.1 **Preparation of Surface:**

Shall be as specified In case of Glazed tiles and Dado.

6.2 **Laying:**

The stone slab for risers of steps and skirting/dado shall be set in grey or white cement admixed with or without pigment to match the shade of the stone as specified in the description of the item, with the line of *the* slab at such a distance from *the* wall so that the average width of the gap shall be 20 mm and at no place the width shall be less than 15 mm. If necessary, fixed in the wall at suitable intervals. The skirting/dado or riser face shall be checked for plane and plumb and corrected. The joints shall thus be left to harden then the rear of the skirting or risers slab shall be paced with cement mortar 1:3 (1 cement: 3 coarse sand) or other mix as specified in the description of the item. The fixing hooks shall be removed after the mortar filling the gap has acquired sufficient strength.

6.3 **Curing, Polishing and Finishing:**

It shall be as specified in Para 5.3 as applicable, except that cement slurry with or without pigment shall not be applied on the surface and polishing shall be done only with hand. The face and top skirting shall be polished.

7.0 ARTIFICIAL STONE FLOORING

Selection of materials, method of mixing placing and compacting shall generally conform to the specifications under plain and reinforced cement concrete described earlier. A stiff mix consistent with workability shall be used.

7.1 **Preparation of surface:**

Before the operation for laying topping is started the surface of base concrete shall be thoroughly cleaned of all dirt, loose particles, caked mortar, droppings and laitance, if any by scrubbing with coir or steel wire brush. Where the concrete has hardened so much that roughening of surface by wire

brush is not possible, the surface shall he roughened by chipping or hacking at close intervals. The surface shall then be cleaned with water and kept for 12 hours and surplus water shall be removed by moping before the topping is laid.

7.2STRIP FIXING

Where mentioned glass strips or Aluminum stripe as given in the schedule shall be fixed with their top at proper level.

7.3 LAYING

The screed strips shall be fixed over the base concrete dividing it into panels. The panels shall be uniform size and no dimension of a panel shall exceed 2 mt and the area of a panel shall not be more than 2 sq. cm. Before placing the concrete for topping, neat cement slurry shall be thoroughly brushed into the prepared surface of the base concrete just ahead of the finish. Concrete of specified proportion and thickness shall be laid in alternate panels to required level and shape and thoroughly tamped.

7.4 Finishing the surface

After the concrete has been fully compacted it shall be finished by toweling or floating with mixed cement rendering. Finishing operations shall start shortly after the *compaction* of concrete and the surface shall be toweled three times at intervals so as to produce a uniform and hard surface. The satisfactory resistance of floor to wear depends largely upon the care with which trowelling is carried out. The time interval allowed between successive troweling is very important. *Immediately* after placing cement rendering, only just sufficient trowelling shall be done to give a level surface. Excessive trowelling in the earlier stages shall be avoided as this tends to bring a layer rich in cement to the surface. Some time, after the first trowellinq the duration depending upon the temperature, atmospheric condition and the rate of set of cement used, the surface shall be re-trowelled to close any pores in the surface and to bring the surface and to scrap off the excess water in concrete. No dry cement shall be used directly on the surface to absorb moisture or to stiffen the mix. The final trowelling shall be done well before the concrete has become too hard but at such a time that considerable pressure is required to make any impression on the surface. If directed by the representative of Employer/Consultant, approved mineral pigment shall be added to the rendering to give desired color and shape, to the flooring at no extra cost. The finished floor shall not sound hollow when tamped with a wooden mallet.

8.0 CHEQUERED TILES:

The tiles of approved color shall be of normal size as 20 x 20 cm, 25 x 25 cm and 30 x 30 cm or of standards sizes with equal sides. The size of tiles to be used shall be as shown in drawings or as required by the representative of Employer/Consultant. The centre to centre distance of chequers shall not be less than 2.5 cm and not more than 5 cm.

The grooves in the chequers shall be uniform and straight. The depth of the grooves shall not be less than 3 mm.

The chequered tiles shall be cement tiles, or terrazzo tiles as specified in the description of the item.

The thickness of the upper layer measured from the top of the chequers shall not be less than 6 mm.

The tiles shall be given the first grinding with machine before delivery to site.

The tiles shall be manufactured under hydraulic pressure of not less than 140 kg per square centimeter and shall be given the first grinding with machine before delivery to site.

All exposed joints shall be pointed using mortars/water proof adhesives, as specified with admixture of pigment, duly approved by representative of Employer/Consultant to match the shade of marble.

Green work shall be protected from rains/adverse weather conditions by suitably *covering* the same. The work shall be kept constantly moist for a period of 7days.

The entire work shall be cleaned by acid polishing on completion of work.

The proportion at cement to aggregate in the backing of the tiles shall not be leaner than 1:3 by weight. Similarly, the proportion of cement to marble chips aggregate in the wearing layer of the tiles and the proportion of pigment to be used therein shall not exceed 10 per cent of weight of cement used in mix.

8.1 Laying and Curing

Laying and curing shall be as specified for terrazzo tiles.

9.0 CRAZY MARBLE FLOORING

Crazy marble flooring shall be laid on cement concrete sub-grade. The surface of the sub-grade shall be hacked roughened with steel wire brushes, washed clean & scared with a floating coat of cement slurry @ 2 Kg/Sq Cm to provide bond between sub-grade and flooring.

The under layer of specified thickness and mix shall then be laid over it.
After spreading cement slurry mix @ 2 Kg/Sq. Mt. over the under layer marble stone picks of approved size shape and color free from strains, crack decay etc. shall be laid piece by piece in the manner advised in such a way that the top surfaces of all stone pieces are true to the required level. After fixing of stone pieces, the gap is filled up with *the* mix of binder Marble chips (4:7) by volume, the binder being a mix of cement (with or without pigment) : marble dust (3:1) by weight. The filled surface shall be toweled, pressed so as to bring it to the level of stone pieces. Polishing, curing and finishing shall be dcne as done for in-situ terrazzo flooring and specified elsewhere.

10) METHOD OF MEASUREMENTS

Flooring work shall be measured net as per drawing or actual, whichever is less. Measurements for flooring shall be upto the wall (before plaster) and that for skirting shall be from above the floor finish.

Nett laid area shall be measured in square meters correct to two decimal places.

11.0TERRAZO TILE/MOSAIC TILE FLOORING

11.1TERRAZO TILES

Terrazzo tile shall be of best quality of approved manufacturer and generally conform to IS : 1237 latest publication.

The specific sizes of tiles to be used shall be as shown in the drawings or as approved.

11.1.2 TOLERANCE

Tolerance on length and breadth shall be plus or minus one millimeter; tolerance on thickness shall be plus 5 mm. The range of dimensions in any one delivery of tiles shall not exceed 1 mm on length and breadth and 3 mm on thickness.

11.1.3

The tiles shall be manufactured under hydraulic pressure of not less than 140 kg. per Square Centimeter and shall be given the first grinding with machine before delivery to site.

11 1.4

The proportion of cement to aggregate in the backing of the tiles shall not be leaner than 1:3 by weight. Similarly the proportion of cement to marble chips aggregate in the wearing *layer* of the tiles and the proportion of pigment to be used therein shall not exceed 10 per cent of weight of cement used in mix.

11.1.5

The finished thickness of the upper layers shall not be less than 5 mm for size of Marble chips from the smallest up to 6 mm *and* also, not less than 5 mm for size of Marble chips ranging from the smallest up to 12 mm and not less than 6 mm for sizes of marble chips varying from the smallest up to 20 mm.

11.1.6 LAYING

Sub grade concrete or the R.C.C slab on which the tiles are to be laid shall be cleaned, wetted and mopped.
The average thickness of the bedding mortar shall be 20 mm and the thickness at any place shall not be less than 10 mm.

11.1.7
The surface of the flooring during laying shall be frequently checked with a straight edge at least 2 meter long,
so as to obtain a true surface With the required slope.

11.1.8
Where full sizes tiles cannot be fixed, these shall be cut (sawn) to the required size and their edges rubbed
smooth to ensure a straight and true joint.
11.1.9

Tiles which are fixed in the floor adjoining the wall shall enter not less than 12 mm under the plaster, skirting *or* dado. The junction between wall plaster and tile work shall be finished neatly and without waviness.
11.1.10
After the tiles have been laid, surplus cement grout that may have come out of the joint shall be cleaned off.

11 2 <u>Curing, Polishing and Finishing:</u>
11.2.1

The day after the tiles are laid all joints shall be cleaned of the grey cement grout with a wire brush or trowel to a depth of 5 mm and all dust and loose mortar removed and cleaned. Joints shall than be grouted with grey or white cement mixed with or without pigment to match the shade of the topping of the wearing layer of the tiles. The same cement slurry shall be applied to the entire surface of the tiles in a thin coat with a view to protect the surface from abrasive damage and fill the pinholes that may exists on the surface.

11.2.2

The floor shall than be kept wet for a minimum period of 7 days. The surface
Shall thereafter be grounded evenly with machine fitted with coarse grade grit Blocks (No 60). Water shall be used profusely during grinding. After grinding the surface shall be thoroughly *washed*to remove all grinding mud, cleaned and mopped. It shall It than be covered with a thin coat of grey or white cement, fixed with or without pigment to match the color of the topping of the wearing surface in order to fill any pin hole that appear. The surface shall be again cured. The second grinding shall then be carried out with machine fitted with fine grade grit blocks (No. 120).

11 2:3

The final grinding with machine fitted with the finest grade grit blocks
(No. 320) shall be carried out the day after the second grinding described in the preceding Para before handing over the floor, as ordered.

For hand polishing the following carborundum stones, shall be used:

1st grinding–coarse grade stone (No. 60).

Second grinding–medium grade (No. 80).

Final grinding-fine grade (No 120).

In all other respects, the process shall be similar as for machine polishing.

11. 2.4

After the final polish, oxalic acid shall be dusted over the surface at the rate of 33 gm per square meter sprinkled with water and rubbed hard with a 'namdah' block (pad of woolen rags). The following day the floor shall be wiped with a moist rag and dried with a soft cloth and finished clean.

11.2.5

If any tile is disturbed or damaged, it shall be refitted or replaced, properly jointed and polished. The finished floor shall not sound hollow when tapped with a wooden mallet.

11 .2.6Measurements:

Terrazzo tile flooring shall be measured as laid in square meter correct to two places of decimal. For length and breadth dimensions correct to a cm before laying skirting, dado or wall plaster shall be taken. No deduction shall be made nor extra paid for any opening in the floor of area up to 0.1 square meter (10 cm2). Nothing extra shall bepaid for use of cut tiles nor for laying the floor.

11.2.7. Terrazzotile flooring laid in floor borders and similar band shall be measured under the Item of terrazzo tile flooring. No extra shall be paid in respect of similar bands formed of half sizes or multiples of half size standard tiles or other uncut tiles .

Skirting & dado paved with tiles shall be measured as follows:

The thickness of the skirting shall be as stated in the schedule of quantity. Length shall be measured along the finished face of riser, skirting or dado correct to a cm. Height shall be measured from the finished level of tread or floor to the top (the underside at tread in the case of steps). This shall be measured correct to 3 mm in case of riser skirting and dado. The area shall be calculated in square meter, correct to two places or decimal.

11.2.8. Rate

The rate shall include the cost of all materials and labor involved in all the operations described above.

12.0 MARBLE STONE FLOORING

12.1 Marble:

Marble shall be hard, sound dense and homogeneous in texture with crystalline texture. *It* shall be uniform in color and free from stains, crack, decay and weathering.

12.1.1. Dressing of Slabs:

Every stone shall be cut to the required size and shape, fine chisel dressed on all sides to the

full depth so that a straight edge laid along the side of the stone shall be fully *in* contact with it. The top surface shall also be fine chisel dressed to remove all waviness. The sides and top surface of slabs shall be machined rubbed or table rubbed with coarse sand before paving. All angles and edges of the marble slabs shall be true, square and free from chippings and the surface shall be true and plain.

The thickness of the slabs shall be 20, 30 or 40 mm as specified in the description of the item. Tolerance of ± 2 mm shall be allowed for the thickness. In respect of length and breadth of slabs a tolerance of 5 mm shall be allowed.

12.1.2 Laying:

12.1.3 Sub-grade concrete or the RC.C. slab on which the slabs age to be laid shall be cleaned, wetted and mopped. The bedding of the slabs shall be with cement mortar 1:4 (1 cement : 4 coarse sand) or as given in the description of the Item.

12.1 .4 The average thickness of the bedding mortar under the slab shall be 20 mm and the thickness at any place *under* the slab not be less than 12 mm.

12.1.5 The slab shall be laid in the following manner :-

Mortar of the specified mix shall be spread under tile area of each slab, roughly to the average thickness specified in the item. The slab shall be washed clean before laying. It shall be laid on top, pressed tapped with wooden mallet and brought it to level with the adjoining slabs. It shall be lifted and laid aside. The top surface of the mortar shall then be corrected by adding fresh mortar at hollows. The mortar is allowed to harden a bit and cement slurry of honey like consistency shall be spread over the same at the rate of 4.4 kg. of cement per sq. mt. The edges of the slab already paved shall be buttered with grey or white cement with or without admixture of pigment to match the shade of the marble slabs as given in the description of the item. The slab to be paved shall then be lowered gently back in position and tapped with wooden mallet till it is property bedded in level with and close to the adjoining slab with as fine a joint as possible. Subsequent slabs shall be laid in the same manner. After each slab has been laid, surplus cement on the surface of the slabs shall be cleaned off. The flooring shall be cured for a minimum period of seven days. The surface of the flooring as laid shall be true to levels and slopes as instructed.

12.1.6 The slabs shall be matched as shown in drawings or as instructed by the Consultant Employer.

12.1.7 Slabs which are fixed in the floor adjoining the wall shall enter not less than 12 mm under the plaster skirting or dado. The junction between wall plaster and floor shall be finished neatly and without waviness.

12.1.8Polishing and Finishing :

Slight unevenness at the meeting edges of slabs shall then be removed by the chiseling finished in the same manner as specified in 11.2 of Terrazo Mosaic flooring except that cement slurry with or without pigments shall not be applied on the surface before each polishing.

12.1.9 Measurements

Marble stone flooring with different kind of marble shall be measured separately and in square meter correct to two places of decimal. Length and breadth shall be measured between the finished faces of skirting, dado or wall plaster as the case may be, correct to a cm. No deduction shall be made nor extras paid for any opening in the floor of area up to 0.05 sq m (5 dm2). No extra shall be paid for laying the floor at different levels. Steps and treads of stairs paved with marble stone slabs

shall also be measured under the item of "Marble stone flooring". The width of treads in all cases shall be measured from the outer line to the finished face of riser.

12.1.10Rate:
The rate shall include the cost of all materials and labor involved in all the operation described above.

12.2Marbles stone in Risers of steps, Dado and Skirting

12.2.1 Marble stone slabs and dressing of slabs shall be as specified in 12.1.1 except that the thickness of slabs shall be as specified in the schedule quantities. A tolerance of +/- 2 mm shall be allowed unless otherwise specified in the description of the item.

12.2.2 Preparation of Surface :

The joints shall be racked out to a depth of at least 15 mm in masonry walls, while the masonry is being laid. In case of concrete walls, the surfaces shall be hauked and roughened with *wire* brushes. The surface *shall* be cleaned thoroughly, washed with water and kept wet before skirting risers of steps, dado and skirting is commenced. Where necessary, the wall surface shall be cut uniformity to the requisite depth so that the face shall have the projection from the finished *face of wall as shown in drawings or as required by the Employer/Consultant.*

12.2. 3. LAYING:
The risers of steps, dado and skirting shall be set in grey or white cement admixed with or without pigment to match the shade of the stone, *specified* in the description of the item with the line of the slab at such a distance from the wall that the average width of the gap shall be 12 mm and at no place the width shall be less than 10 mm. If necessary, the slabs shall be held in position by temporary M. S. hooks fixed Into the wall at suitable intervals. The skirting *or* riser face shall be checked for plane and plumb and connected. The Joints shall thus be left to harden then the rate of the skirting or riser face shall be packed with cement mortar 1 3 (1 cement: 3 coarse sand) *of* other *mix* as specified in the description of *the* item. *The* fixing hooks shall be removed after the mortar filling the gap has acquired sufficient strength.

The Joints shall be as fine as possible. The top line of skirting and risers shall be truly horizontal and Joints truly vertical, except where otherwise indicated.
The risers, dado and skirting slab shall be matched as shown in drawings or as instructed by the Consultant/Employer.

12.2. 4. Curing, Polishing And Finishing:

It shall be as specified in 11.2 of terrazzo mosaic flooring as far as applicable except that cement slurry with or without pigment shall not be applied on the surface and polishing shall be done only with hand. The face and top shall be polished.

12.2.5Measurements

Lengths shall be measured along the finished face of riser or skirting, correct to a cm. Height shall be measured from *the* finished level of tread or floor, to the top (the underside of tread, in the case of steps) correct to 1 mm. The area shall be calculated in square meter correct to two places of decimal.

12.2..6 Rate:
The rate shall include the cost of all materials and labour involved in all the operations described above.

13.0 MARBLE / DHOLPUR STONE / GRANITE SLAB IN SURFACE ENEERING WORK IN WALL LINING

13 1 Marble work shall be paid by under veneer work.

13.1.1 Dressing:

Dressing shall be same as specified in 12.1.1 except that the back shall not be dressed, but left rough cut, in order to ensure a good grip with the hearting or backing. The dressed slabs shall be of the thickness as specified with a tolerance of ± 2 mm. The tolerance in wall lining when a straight edge of 3 mt length is placed should not exceed more than 2mm.

13.1.2. Laying And Fixing :

The slab shall be sufficiently wetted before laying to prevent absorption of water from mortar. Sub-grade concrete or the RCC slab on which the slabs are to be laid shall be cleaned, wetted and mopped. The bedding tor the stabs shall be as specified in the schedule of quantities. Care shall be taken to match the grains of veneer work as directed by the Consultant/Employer. For purpose of matching, the grains the marble slabs shall be selected judiciously having uniform pattern of veins/streaks. Preferably, the slabs shall be those got out of the same block from the quarry. The area to be veneered shall be reproduced on the ground and the marble slabs laid in position and arranged in the manner to give the desired matching of grains. Any adjustment needed for achieving the best results shall be then carried out by replacing or interchanging the particular slabs. Special care shall be taken to achieve the continuity of grains between the two slabs one above the other along the horizontal joints. This shall then be got approved from me Consultant/Employer and each marble slab numbered properly and the same number shall be marked on a separate drawing as well as on the surface to be actually veneered, so as to ensure the fixing of the particulars slab on the correct location.

In case of marble slabs, granite slabs, dholpur stone adjoining pieces shall be secured to each other by means of 75 mm long 6 mm dia brass pins. The slabs shall also be secured to the backing masonry or concrete surface by means of 25 mm x 6 mm size brass cramps of suitable length. Pins cramps shall be got approved before use. They shall be fixed using cement mortar.

For the facing of the columns also the same procedure as mentioned above shall be followed.

13.1,3 Joints:

All joints shall be full of mortar. Special case shall be taken to see that groundings for veneer work are full of mortar. If any hollow groundings are detected by tapping the face stones, these shall be taken out and re-laid. The thickness of the face joints shall be uniform, straight and as fine as possible not more than 1.5 mm and in the face Joint the top 6 mm depth shall be filled with mortar specified for the pointing.

13.1.4Mortar;

The mortar used for jointing shall be as specified in the bill of quantities.

13.1.5 Curing: - The work shall be kept constantly moist on all faces for period of at least 7 days.

13.1.6 Finishing :- After the marble work is cured, it shall be rubbed with carborandum stone of different grades, No 60, 120 and 320 In succession, so as to give a plane true and highly smooth surface. It shall then be cleaned *with* a solution of oxalic acid washed and finished clean.

13.1.7: Protection :- Green work shall be protected from rain by suitable coverings. The workshall also be suitably protected from damage during construction.

13.1.8: Scaffolding :- Double scaffolding having two sets of vertical supports shall be provided, where necessary. The supports shall be sound and strong, tied together by horizontal pieces, over which the scaffolding planks shall be fixed.

13.1 9 Tolerances:

13.1.10Slabs:

(a)Length + 2 percent

(b) width

(c) Thickness ± 3 percent

13.1.11Measurements:

The length and breadth shall be measured correct to a cm. The area shall be calculated in square meter nearest to two places of decimal.

1

3.1.12Rate:

The rate includes the cost of material and labor required for all the operations described above, except for the cost of providing and fixing brass pins etc. which shall he paid for separately, as stipulated in the item of work.

14.0 CEMENT CONCRETE FLOORING WITH METALLIC HARDENER TOPPING

14.1 The thickness of cement concrete flooring and metallic hardener topping shall be as specified in schedule of quantities.

14.1.1Metallic Hardening Compound:

The Meramec hardening compound shall be approved quality consisting of uniformly graded iron particles, free from non-ferrous metal particles, oil, grease, sand, soluble alkaline compounds.

14.1.2 Sub-Grade :

Shall be as specified in 7.0 Artificial stone flooring.

14.1.3 Under layer :

Cement concrete flooring of specified thickness and mix shall be laid as under layer. The top surface shall be roughened with brushes while the concrete is still green and the forms shall be kept projecting up 12 mm over the concrete surface, to receive the metal hardening compound topping.

14.1.4 Topping:

The topping shall consist of 12 mm thick layer mix of 1:2(1 cement and two stone aggregate 6 mm normal size) by volume specified with which Metallic hardener compound as mixed in the ratio of 1:4(1 metallic concrete hardener and 4 cement) used by weight. Concrete hardener shall be mixed thoroughly with cement on a clean dry pucca platform. The dry mixture shall be mixed with stone aggregate 6 mm nominal size or as otherwise specified in the ratio of 1:2(1 cement and 2 stone aggregate) by volume and well turned over. Just enough water shall then be added to this dry mix as required for floor concrete.

The mixture so obtained shall be laid in 12 mm thickness, on cement floor within 2 to 4 hours of its laying. The topping shall be laid true to provide an uniform and even surface. It shall be firmly pressed in to the bottom concrete so as to have good bond with it. After the initial set has started, the surface shall be finished smooth and true to slope with steel floats.

The men engaged on finishing operation shall be provided with raised wooden platform to sit on, so as to prevent damage to new work.

14.1.5Curing :

The curing shall be done for a minimum period of 10 days. Curing shall not be commenced until the top layer has hardened. Covering with empty cement gunnies shall be avoided as the color is likely to be bleached with the remoments of cement matter from the bags.

14.1.6Measurements:

Length and breadth shall be measured correct to 3 cm and its area as laid shall be calculated in sq. m correct to two places of decimal length and breadth shall be measured before laying skirting dado or wall plaster. No deduction shall be made nor extra paid for any opening in the floor of area up to 0.10 sq m.

The flooring done with strips (in one operation) and without strips (in alternate panels) shall be measured together.

14.1.7Rate

The rate shall include the cost of all materials and labor involved in all operations described above including application of cement slurry on RCC slab or on sub- grade including roughening and cleaning the surface etc.

SECTION - G

EXTERNAL AND INTERNAL PAINTING WORKS

1.0WHITE WASING WITH LIME

1.1 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 bullies, bamboos or planks shall rest on or touch the surface which is being white washed.

For all exposed brick work or tile work, double scaffolding having two sets of vertical supports shall be provided. The supports shall be sound and strong, tied together with horizontal pieces over which scaffolding planks shall be fixed.

Note In case of special type of brick work, scaffolding shall be got approved from representative of Employer/Consultant in advance.

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

For while washing the ceiling, proper stage scaffolding shall be created.

1.2 Preparation of surface

Before new work is white washed the surface shall be thoroughly brushed free from mortar

droppings and foreign matter.

In the case of old work, all loose pieces and scale shall be scrapped off and holes In plaster as well as patches of less than 50 sq.cm. area shall be filled up with mortar of the same mix where so specifically ordered by the representative of Employer /Consultant, the entire surface of old white wash shall be thoroughly removed by scrapping and this shall be paid for separately.

1 .3 Preparation of Lime Wash

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

If not directed otherwise, Indigo (Neel) upto 3 gm per kg of lime dissolved in water shall be added and wash stirred well. Water shall than be added at the rate of about 5 liters per kg of lime to produce a milky solution. In case of lime wash on the surface finished with lime punning no indigo should be used unless otherwise directed by the representative of Employer/Consultant.

1.4 Application

The white wash shall be applied with moonj brushes to the specified number of coats. The operation for each coat shall consist of a stroke of the brush given from the top downwards, another from the bottom upwards over the first strike, and similarlystroke 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 representative of Employer/Consultant 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 surfaces presents a smooth and uniform finish through which the plaster does not show. The finished dry *surface* shall not show signs of cracking and reeling nor shall *it* come *off* readily on the band when rubbed.
For old work, after the surface has been prepared as described in Para 1.2, a coat of white wash shall be applied over the patches and repairs. Then a single coat or two or more coats of white wash as stipulated in the description of the item shall be applied over the entire surface. The white washed surface should present a uniform finish through which the plaster patches do not appear. The washing on ceiling should be done prior to that on walls.

1.5 Protective Measures

Doors, Windows, floors, articles of furniture etc. and such other parts of the building not to be white washed shall be protected from being splashed upon. Splashing and droppings if any shall be removed by the contractor at his own cost and the surfaces cleaned. Damages if any to furniture or fittings and fixtures shall be recoverable from the contractor

2.0CEMENT PAINT

2.1 Preparation of Surface

For new work, the surface shall be thoroughly cleaned of all mortar dropping, dirt, dust, algae, grease and other foreign matter by brushing and washing. The surface shall be thoroughly wetted with clean water before the cement paint is applied.
In the case of old work, all loose pieces and scales shall be removed and the surface shall be cleaned of all dirt, dust, algae, oil etc by brushing and washing. Pitting in plaster shall be made good and a coat of water proof cement paint shall be applied over patches after wetting them thoroughly.

2.2 Preparation of Mix

Cement paint shall be mixed in such quantities as can be used up within an hour of its mixing as otherwise the mixture will set and thicken, affecting flow and finish.

Cement paint shall be mixed with water in two stages. The first stage comprises of 2 parts of cement paint and one part of water stirred thoroughly and allowed to stand for 5 minutes. Care shall be taken to add the cement paint gradually to the water and not vice versa. The second stage shall comprise of adding further one part of water to the mix and stirring thoroughly to obtain a liquid of workable and uniform consistency. In all cases the manufacturer's instructions shall be given preference over the above specification, in case of variation between the two exists.

The lids of cement paint drums shall be kept tightly closed when not in use, as by exposure to atmosphere the cement paint rapidly becomes air set due to its hygroscopic qualities.

2.3 Application

The solution shall be applied on the clean and tested surface with brushes or spraying machine. The solution shall be kept well stirred *during* the period of application. It shall be applied on the surface which is on the shady side of the building so that the direct heat of the sun on the surface is avoided. The method of application of cement paint shall be as per manufacturer's specification. The completed surface shall be watered after the day's work.

The second coat shall be applied alter the first coat has been set for at least 24 hours. Before application of the second or subsequent coats, the surface of the previous coat shall not be wetted.For new work, the surface shall be treated with three or more coats of water proof cement paint as found necessary to get a uniform shade.

For old work, the treatment shall be with one or more coats as found necessary to get a uniform shade.

2.4 Precaution

Waterproof cement based paint shall not be applied on surfaces already treated with white wash, color wash, distemper dry or oil bound, varnishes, paints, etc. It shall not be applied on gypsum, wood and metal surfaces.
The specifications in respect of scaffolding, protective measures, measurements and rate shall not be as described under white washing with lime.

3.0 PAINTING

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 empties shall not be removed from the site of work, till the relevant item of work has been completed and permission obtained from the representative of Employer/Consultant.

3.1 Commencing Work

Painting shall not be started until the representative of Employer/Consultant has inspected the items of work to be painted, satisfied themselves about then proper quality and given their approval to commence the painting work. Painting of external surface should not be done in adverse weather condition like hail, storm and dust storm. Painting, except the priming coat shall generally be taken in hand after practically finishing all other builders work. The rooms should be thoroughly swept out and the entire building cleaned up at least one day in advance of the paint work being started.

3.2 Preparation of Surface

The surface shall be thoroughly cleaned and dusted. All rust, dirt, scales, smoke and grease shall be thoroughly removed before painting is started. The prepared surface shall receive the approval of the representative of Employer/Consultant after inspection, before painting is commenced.

3.3 Application

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

If for any reason, thinning is necessary in case of ready mixed paint, the brand of thinner recommended by the manufacturer or as instructed by the representative of Employer/Consultant shall be used.

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 and laying off consists of covering the area over with paint, brushing the surface hard for the first time over and then brushing alternately in opposite direction, two or three times and then finally brushing lightly in a 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 by spraying. Spray machine used may be (a) high pressure (small air aperture) type, or *(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 through ventilation. Each coat except the last coat shall be lightly rubbed down with sand paper or fine pumice stone and cleaned off before the next coat is laid

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

No hair marks from the brush or clogging of paint puddles in the corner 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. Top of shutters and surfaces in similar hidden locations shall not be left out in plaint.
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 according to the detailed specifications under the respective headings.

3.4Brushes and containers

After work, the brushes shall be completely cleaned of paint by rinsing with linseed oil or with turpentine. A brush in which paint has dried up is ruined and shall on no account be used for painting work. The container, when not in use, shall be kept dosed and tree from air so that paint does not thicken and also shall be kept safe 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.

4.0 PRIMING COAT ON WOOD, IRON OR PLASTERED SURFACE

4.1 Preparation of Surface

i) Wooden Surface

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 ducted. Knots, if any, shall be covered with preparation of red lead made by grinding red lead in water and mixing with strong glue sized and used hot. Appropriate filler materials with same shade as paint shall be used where specified.

The surface treated for knotting shall be dry before painting is applied. After the priming coat is applied, the holes and indentations on the surface shall be stopped with glazier's putty or wood putty. The primer shall be prepared on site or shall be of approved brand and manufacture as specified in the item. Paint shall be anti corrosivebitumastic paint, aluminum paint or other types of paint as specified in the description of the item. Stopping shall not be done before the priming coat *is* applied as the wood will absorb the oil in the stopping and the latter is therefore liable to crack.

ll) Iron &Steel Surface

All rust and scales shall be removed by scrapping or by brushing with steel wire brushes. Hard skin of oxide formed on the surface of wrought Iron during rolling which become 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.

iii)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 then be taken in hand. Before primer is applied, holes and undulations, shall be filled up with plaster of paris and rubbed smooth.

4.2 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 in cement paint above.

5.0 PAINTING WITH READY MIXED PAINT / SYNTHETIC ENAMEL PAINT

5.1 Painting on new surface

The surface which has not been painted earlier, or the paint has been removed by paint remover, burning, caustic Soda etc. shall be considered to be new surface.

5.2 Preparation of Surface

i) Wood work

The surface shall be cleaned and all unevenness removed as specified in wooden surface. Knots, if visible, shall be covered with a preparation of red lead. Holes and indentations on the surface 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

ll) 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, AU dust and dirt shall be carefully and thoroughly wiped away.

iii)plastered surface

The priming coat shall have dried up completely before painting is started. All dust of dirt that has settled on the priming coat shall be thoroughly wiped away before painting is started

5.3Application

The specifications described in Cement paint shall hold good as far as applicable. The number of coats to be applied will be as stipulated in the item. The powder surface shall present a *uniform* appeared Ice and glossy/mat finish 2S described in schedule of quantities free from streaks, blisters etc.

6.0 FRENCH SPIRIT POLISHIN

Pure shellac varying from pale orange to lemon color free from raisin or shall be dissolved in mentholated spirit at the rate of 140 gm of shellac to 1 It of spirit.Suitable pigment shall be added to ~et the required :)13dc.

6 .1 Polishing new surface

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 cove-reo with! a preparation of red lead and glue sized and used hot. Holes and indentations or: the surface shall be slopped with glazieries putty The surface shall be then given a Goat of wood filler made by mixing whiting (ground chalk in mentholated spirit at tile rate (If I 5 kg of *whiting* per liters of *spirit).* The surface shall *again* be rubbed down peddle smooth with glass paper and wired clean.

7.0METHOD OF MEASUREMENT

Measurements for painting on plastered surfaces shall be the same as that for plaster. For doors, windows etc., *the* following multiplying factors will be considered .

Sl. No.	Description of work	How measured	multiplying coefficients
I.	Woodwork - Doors, windows etc. Paneled or framed side)	Measured flC3t (not girthed) including chowkhat or frame edges chocks, cleats etc. shall be deemed to be included in the item	1.30 (for each braced L doors, windows etc.
2.	Flush doors etc.	Do-	1.20(-do-)
3.	Part paneled and part. glazed or Gauged doors. Windows	Do	1.00do
4.	Fully glazed or gauzed doors, windows etc	do	0.80 (do)
5.	Fully venetioned or louvered doors, windows etc	do	1.8 (do)
6.	Trellis (or Jaffna) two *way* shall be made for open spaces	Measured float, no deduction , supporting members Shall not	2 (for painting work one *way or* all over) be measured separately

7. plain sheeted steel Doors or windows	measured flat (not girthed) including frame edges etc. 0.50 (do)	1.10 (for each side)
8. Fully glazed or gauzed doors and windows	do	0.50(do)
9. Partly paneled and	do	0.80 (do)
10. Corrugated sheeted steel doors or windows 1.25 (do)	do	
11. Collapsible gates	measured flat	1.50(for painting all over)
12. Rolling shutters	Measured fiat (size' of . opening interlocked latch) all over: jambs, guides, bottom rails and locking arrangement etc. shall be included in the item 1.10 (for each (Top cover sha1.1 measured separately)	

SECTION – H

METAL DOORS/WINDOWS

1.0 STEEL DOORS, WINDOWS ETC

The windows shall be obtained from approved specialized manufacturers. The frames of doors, windows, ventilators etc. shall be formed by cutting section to required lengths and mitered. The corners shall be welded to form a solid framed welded joints. Sash barsof units shall be tanned and riveted into the frames and where they intersect the vertical tie shall be broached and the horizontal tie threaded through it, and the intersection closed by hydraulic pressure. For fixing steel hinges, slots shall be cut in the fixed frame and the hinges inserted inside and welded to the frame at the back. For fixing hinges to inside frame, the method described for fixing to outside frame may be adopted but weld shall be cleaned or holes made in the inside frame and hinge riveted. The hinge pin and washer shall be galvanized or, aluminum alloy 51 S-WP of suitable thickness.

The handle shall be mounted on handle plate which shall be welded to the opening frames. The handle shall have a two points nose which will engage with suitable tapered striking plate provided on the fixed frame

Top hung and bottom hung ventilators shall be provided with two plain hinges, with peg stays of sufficient length 3~ specified earlier

Centre hung ventilators shall be made with two outer frames, With mastic water-proof compound embedded between these two (Jute! frames Unless otherwise specials the ventilators shall be provided with spring catch whir-l) when pulled by a Cold, will allow Il le shutter bolero half to open outside and the top half opening inside.

Steel windows and ventilators shall be fixed to brick or concrete surface as shown In drawing or with M. S. Jugs of *sizes* 100 x 16 x 3 mm and to concrete work by means of 125 mm long counter sunk screw, or raw rules or other approved fastener after drilling into concrete With a power drill as specified in the item The lug shall be grouted it I concrete (1:2:4) mix of dimension as directed.

The frames should not be fixed in position until the structural work has been completed and the free deflection has taken place. The doors, wiredraws, etc. shall be erected in true plumb, line and level.

All steel doors, windows, ventilators shall be given a coat of anti-corrosive primer at the shop before delivery to site for erection but in no case prior to the materials have been inspected by the representative of Employer/Consultant.

Final painting shall be done after obtaining approval from the representative of E employer/ Consultant

2.0 STEEL GRILL AND RALINGS

The grills and railings for windows, verandah and balcony etc. shall be of mild steel. The design of grills/railings and shape and sizes of various components shall be according to the drawings. Where ever grills integrated with windows are specified they shall be manufactured at windows manufacturers shop

The edge angles and corners sl'1all be cleaned and true to shape. The joints, if possible, shall be mechanically interlocked and neatly spot welded in such a way that the grill is rigid. Grinding of the joints to achieve. a neat regular finish shall be done. The grills shall be fixed to true plumb, line and level as per drawing.

All grills, railings etc. after being fixed in position, shall be cleaned off dust, dirt, rust and loose scales before applying a coat of protective zinc chromate primer.

3.0 ROLLER SHU1TER

These shall be fixed in position as shown in drawing.
Brackets shall be fixed on the lintel or under the lintel as specified with rawl-pluges, and screw bolts etc. The shaft along with the spring shall then be fixed on the brackets.
The lath portion (shutter) shall be laid on ground and the side guide channels shall be bound *with* it with ropes etc. The shutter shall then be placed in position and top fixed with pipe shaft with bolts and nuts. The side guide channels and the cover frame shall then be fixed to the walls through the plate welded to the guides. These plates andbracket shall be fixed by means of steel screw bolts, and raw plugs drilled in the wall.The plates and screw bolts shall be concealed in plaster to make their location invisible shall be done accurately in a workman like manner that the operation of the shutter is easy and smooth.
After being fixed in position, these shall be cleaned off dust, dirt, rust or scales before applying a protective coat of zinc chromate.

4.0 COLLAPSIBLE GATE

T-iron shall be fixed to the' floor and to the lintel at top by means of another bolts embedded in cement concrete of floor and lintel. The anchor bolts shall be placed approximately at 45 cm centers alliteratively in the two flanges of the T -iron The bottom runner (T-iron) shall be embedded in the floor and propel you've shall be formed along the runner for the purpose. The collapsible shutter shall be fixed at Sides by fixing the end double channels with T-iron rails and also by hold-fasts bolted to the end double channel and fixed in the masonry of the side walls

5.0 ALUMINIUM DOORS /WINDOWS/CURTAIN WALLS

All aluminum doors, windows etc shall be procured from an approved manufacturer. Aluminum section Shall be extruded hollow sections conforming to latest IS Specifications including IS, 1948 and 1.S. 733. All sections have been approved by Employer/Consultant before placing the order. All extruded sections shall haveapproved IS specification with thickness The aluminum section; shall be anodized color and with micron thickness as specified in the schedule of quantities or as per approved IS specification.

Open able windows shall be double weather-stripped. One weather strip shall be provided in the other frame and other weather strip in the shutter frame. The *weather* strip shall be extruded neoprene and of a size to make the windows completed .weather tight. The weather-strip shall be dovetailed in the window sections.

The hinges of operable windows shall be strong. Pin of the hinges shall be stainless steel with nylon/PVC washers. In case the windows are projected type, these shall be provided with brass pivots sliding on stainless steel guides. Concealed type friction stays shall be provided to keep the windows open in any desired position. The window shall be provided with the handle (or two-point locking or single point locking as required and directed. The glass used shall be 4mm thick or 5.0mm sheet glass of first quality and approved make, free from scratches, waviness, bubbles, etc. all as shown

drawing or as specified and directed. Sliding windows wherever used should have tile sliding tracks, rollers, pins and the locking clamps as directed by the Employer/Consultant. General fabrication shall be as earlier given for steel windows and doors.

6.0 **Method of Measurements**

61 **Steel Windows**

Shall be measured in sq. m. up to two decimal places, the height and width being measured correct to 0.5 cm between out-to- out of frame.

6.2 **Rolling Shutter**

Shall be measured net in sq.m. Up to two decimal places, the width being measured overall out-to-out of guide towards channels and height taken as clear opening height, all measurements correct to 0.5 cm

6.3 **Collapsible gate**

Shall be measured Insq m. up to two decimal places. the width being measured In fully stretched position and height taken as between out to out as top runner, all correct to 0 .5 cm.

6.4 **Grills/railings etc**:

Shall be measured Nett in kg up to three decimal places, the sectional weights being taken as per IS Codes up to three decimal places. No extra wilt be entertained for welding etc.

6.5 **Aluminum windows/Doors**

Shall be measured in sq. cm up to two decimal places, the height and width being measured correct to 0.5 cm. between out - to -out of frame.

SECTION -I

SPEIFICACTION FOR WATER PROOFING

1.0 **DAMP PROOF COURSE (D P C)**

DPC shall be of thickness as shown in drawing or in the schedule of quantities unless otherwise mentioned, proportion shall be 1 parts of cement 2 parts of sand and 4 parts of aggregate mixed with approved water proofing compound as per manufacturers specification. Before laying the concrete the top surfaces of the wall shall be thoroughly cleaned of all dirt and loose particles, mortar droppings at and laitance, if any, scrubbing with coir or steel wire brush or by hacking, if necessary. The surface is then thoroughly wetted and the concrete is placed. The concrete shall be laid in every case for the full width of the plinth or as shown in drawing. The top surface shall be kept rubbed or rough or double-chequered for adhesion of mortar for brick *work*. Proper curing shall be done before starting the brick work over 0 P ~.

2.0 **BRICKCOBA WATERPROOFING**

The treatment shall be got executed by approved specialist firms and a guarantee of 10 years in the approved format is to be submitted along with a back-to-back separate guarantee by the main *contractor. Moreover,* in case of variations between specifications given below and the specification of the manufacturer, the tatter shall prevail

a: **Terrace**

The roof surface shall be thoroughly cleaned and prepared to receive water proofing treatment. Construction joints, if any, arc raked and cleaned Cement slurry with resinous admixtures of Specialist film is spread to penetrate into the:' structure and to till cracks and other porous areas. 15 mm thick cement mortar 1:4 (1 cement: 4 coarse sand) with resinous admixtures of specialist is laid over *the* prepared surface.

A layer of brick bats (Coba) ;6 laid over the mortar layer giving the required gradient for adequate drainage (A slope 01 1 in 120 is considered adequate). The joints between 1 he brick bats shall! generally be kept between 15-25 mm wide' Those joints arc filled with cement mortar (1 4) with *resinous* admixtures of *specialist* firm Curing is done *for:* two days

The top is finished smooth with 20 mm thick cement mortar (1 :4) with resinous admixtures of Specialist firm and marked with 300 mm x 300 mm false squares. Curing is done for two weeks.

b: **Sunk Slabs**

any existing covering on slab is removed and surface is prepared. Construction joints if any, are raked and cleaned. Cement slurry with resinous admixtures of Specialist firm is spread which penetrates into the structure. This fills cracks and other porous areas.

20 mm thick cement mortar 1:4 (1 cement: 4 coarse sand) with resinous admixtures of Specialist firm is laid over the prepared surface.

A layer of brick bats (Coba) is laid over the mortar layer giving the required gradient for adequate drainage. The joints between the brick bats are generally kept between 15-25 mm wide. These joints are filled with cement mortar (1:4) with resinous admixtures of Specialist firm Curing is done for two days.

The top IS finished smooth with 20 min thick cement plaster (1:4) with resinous admixtures of Specialist firm. Curing is done for two days

Existing covering, if any, is removed and surface is prepared upto the required height (A height of 150 mm above upper floor level IS considered adequate). A cement slurry coating with resinous admixtures of Specialist firm is given.

The side wall is provided with cement plaster (1:4) 20 nun thick with resinous admixtures of Specialist firm up to the height specified A vatta(Gala) 01 specified design is made in cement mortar (1 :4) With resinous admixtures at Specialist firm Curing is done for two weeks.

c. **Method of Measurement**

The measurement tor the complete work as per specification shall be taken clear between the walls. No separate measurements for "Golai" treatment to vertical surfaces shall be made.

SECTION-J

1.0 WOODWORK AND JOINERY

1.1 TIMBER

i) Unless otherwise specified all timbers for frames and shutters for doorswindows, ventilators, cupboards, etc. shall be free from knots, snakes, fissures, flaws, sub-cracks and other defects The planed surface shall be smooth and free from blemishes and discolorations.

ii) All timber for carpentry and joinery in touch with masonry or concrete shall be creosoted before fixing.

iii) All full fabricated timber shall be air seasoned at site of work for a period of not less than one month to allow for any shrinkage that may take place The preparation of timber for joinery is to commence simultaneously with H 12 beginning of the project work generally and should proceed continuously until all the wood work is prepared and fixed/stacked on or near the site as the case may

iv) Paneled shutter may be obtained from factories approved by Consultants/ Employer provided the contractor can ensure proper quality control to the satisfaction of Consultant/Employer

v) Paneled shutters shall be manufactured after taking correct measurements of openings so as to ensure that the dimensions of rails styles are not reduced than that indicated in schedule/drawing.

1.2 Workmanship and Constructions

A) The workmanship shall be first class and to the approval of the Representative of Employer/Consultant. Scantlings and board shall be accurately sawn and shall be of required width and thickness All carpenters

work shall be wrought except where otherwise described. The workmanship and Joinery shall be

framed together and securely fixed set out in strict conformity according to the drawings and shall be framed together and securely fixed in approved manner and with properly made joints. All work is to be properly tenured shouldered, wedged, pinned, braced etc. and properly glued with approved quality glue to tile; satisfaction of the representative of Employer/Consultant

B) Screws: Unless otherwise specified all screws to be used in woodwork and joinery shall be of cadmium plated and of approved quality. The size (diameter and Length) should conform to those specified in hardware schedule.

C) Tolerance: 1.5 mm (1/16)will be allowed for each wrought face of sizes specified except where described as finished in which case they shall hold to the full dimensions

D) Protection: All edges of timber frames shall be protected from being damaged during construction by providing rough timber casino securely fixed and other adequate protective measures.

E) If it is decided by the representative of Employer/Consultant to provide ant termite treatment, the buildings contractor shall co-ordinate his work suitably as directed by the representative of Employer/Consultant.

F) Door/Window frames shall have cut rebate. Planted rebates shall not be permitted unless shown in drawings. .

G) wooden cover, moulds of sizes shown in drawings shall be provided all round painted or finished as in doors. This will be paid as a separate item as described in Schedule of Quantities.

Holdfasts: Three holdfasts shall be fixed to each post of the door frame. The MS holdfasts shall be of the size 37 cm x -10 mm x 3 mm or as mentioned in the Schedule of Quantities and shall be fixed to the frames by means of screws and not nails. The other end of the holdfasts shall be fixed into jambs with 1:2:4 P.C.C of dimensions as directed. Ends of holdfast will be fish trailed

Whenever the frames are abutting to concrete surface approved metal expansion as directed shall be provided for frame, hangers rough grounds

The rates quoted for woodwork and joinery shall exclude the cost for all types of holdfasts or Raw Plugs or other frames shall be out and shall not be used as holdfasts.

The items of holdfast, metal fasteners etc. shall be paid as a separate item as described in Schedule of Quantities The rate for holdfasts shall include for cement grouting and fixing to frame work with screws etc. The rate tor *metal* fasteners shall *include* for nuts etc. as required.

2.0 Door/window Frame

Specified timber swan in the direction of grain and truly straight and square shall be used. The scanting shall be planed smooth and accurate to the full dimension, rebates, rounding &mouduling as shown in the drawing before assembling. All joints shall be mortice and Tenon type, simple near strong the joint shall be glued framed put together and pinned with timber.

2.1 WOODEN FLUSH SHUTTER (SOLID CORE TYPE)

Wooden flush shutters shall be of solid core type: and obtained from approved manufacturerpressed and phenol formaldehyde synthetic resin shall also be provided with external lapping fixed to shutter with synthetic adhesives & head-less pins

2.2 Paneled Shutters:

Where specified in the Schedule of quantities Shutters shall be manufactured from Kiln Seasoned and chemically treated commercial hardwood of approved quality Thickness and sizes of styles rails and panels etc. shall be as specified in the Schedule of Quantities and/or drawings Panel shall be in a single width piece. Shutters shall be manufactured conforming to the relevant IS Specification and an approved sample shall be kept in the site office of the representative of Employer/Consultant.

2.3 Teak wood glazed shutters :

The general specifications for glazed shutter shall be similar to that for paneled shutters described.

Styles and rails in the glazed shutters shall be rebated 5/8" x 1/2" (16 mm x 12 mm) to receive the glass unless otherwise specified.
Sash bars shall be of full thickness of the shutter and of width as shown in the drawings. These shall be molded and rebated miter on side to receive the glass as per drawing unless otherwise specified glass panels shall be fixed by means of molded teak beads and suitable G.I screws. Finished thickness of the shutter shall be as mentioned in the schedule of quantities. The rate shall be for *the* completed *work* fitted and fixed in position. An approved sample should be kept in the office of the representative of Employer/Consultant at the site for reference. The glass shall conform to specification as described under head galliard. The thickness of glass shall be mentioned in the Sct1edule of Quantities

3.0 **Method of measurements**
Door shutters shall be measured in square meter upto two decimal places The height and width shall be clear height and width of shutter.
Frames shall be measured along the centre line, no extra being allowed for embedment in floors.

2.1 WODDEN FIUSH SHUTTER (SOLID TYPE)
Wooden flush shutters shall be of solid core type and obtained from approved manufacturers as listed, Shutters shall be hot pressed and phenol formaldehyde synthetic resin shall also be provided with external lapping fixed to shutter with synthetic adhesives & head-less pins.

2.2 PaneledShutters:
Where specified in the Schedule of Quantities Shutter shall be manufactured from Kiln Seasoned and chemically treated commercial hardwood of approved quality, Thickness and sizes of styles rails and panels etc shall be as specified in the Schedule of Quantities and/or drawings Panel shall be in a single width piece. Shutters shall be manufactured conforming to the relevant I.S Specification and an approved sample shall be kept in the site office of j he representative of Employer/Consultant.

2.3 Teak Wood and Glazed Shutters:
The general specifications for glazed shutters shall be similar to that for paneled shutters described. Styles and rails in the glazed shutters shall be rebated 5/8" x ½ (16 mm x 12 mm) to receive the glass unless otherwise specified. Sash bars shall be of full thickness of the shutter and of width as shown in the drawing. These shall be molded and rebated mitre on side to receive the glass as per drawing unless otherwise specified glass panels shall be fixed by means of molded teak beads and suitable G.I. screws. Finished thickness of the shutter shall be as mentioned in the schedule of quantities. The rate shall be for the tile completed work fitted and fixed in position. An approved sample should be kept in the office of the representative of Employer/Consultant. The glass shall conform to specification as described under head glazing the thickness of glass shall be mentioned In the schedule of quantities.

3.0 METHOD OF MESUREMENTS
Door shutters shall be measured in square meter upto two decimal places. The height and width shall be clear height and width of shutter.
Frames shall be measured along the centre line, no extra being allowed for embedment in floors.

SECTION "K"

ANTI-TERMITE TREATMENT
1.0 **GENEREL**

The work should be executed through a specialized firm approved by the representative of Employer/Consultant. Approval of such firm shall be obtained from the representative of Employer/Co nsultant before commencement of work

2.0 SOIL TERATMENT SHALL CONFORM TO THE FOLLOWING

2.1 **Chemicals:** The treatment of the area shall be carried out by applying of chlorphyriphos chemical 20% EC at 1% or Endosulfan (30% EC) with 0.5% concentration. The chemicals shall be obtained from approved manufacturer.

2.2 Records: A daily record shall be maintained by the contractor indicating the amount of work done and quantity of chemical consumed for the: work The~; record book shall be property of the representative of Employer/Consultant.

2.3 Tests : The contractor should perform test at his own cost of the chemical to be used in the work and the result of the test should be submitted to the representative of Employer/Consultant.

2.4: **Method of Application:** The following paragraphs specify the manner and sequence of operations, which must be followed. The rates of applications of chemical as indicated in the following pares for various operation should be followed. These specifications represent the minimum rates of application of each operation and the contractor shall actually apply chemicals at rates that they may consider necessary for effectiveness during the 10 years guarantee period. In other words responsibility of applying adequate amounts of chemical as required to sustain the 10 years guarantee shall be that of the contractor but in no case shall actual rates of application be less than specified in the technical specifications.

2.4.TREATMENT OF JUNCTION OF WALL AND THE FLOORS

Special care shall be taken to establish continuity of the chemical barrier on the inner wall surface from ground level. To achieve this a small channel of 30 mm x 30 mm shall be made at the junction of walls and columns with the floor and rod holes made in the channel up to ground level 150 mm apart and the iron rod moved backward to break up the earth and chemical emulsion poured along the channel at the rate of 7.5 litres per square meter of the vertical wall or column surface so as to soak the soil right to the bottom

2.4.2TRATMENT OF TOP SURFACE OF PLINTH FILLING

The top surface! of the consolidated earth within plinth wells shell be treated with chemical emulsion at the rate or ~ liters per square meter of U1e surface before the sub-grade is laid. If the filled earth has been well rammed and the surface does not allow the emulsion to seep through, notes up to 50 to 70 mm deep at 150 mm centre both ways may be made with 12 mm diameter mild steel rod on the surface to facilitate saturation of the soil with the chemical emulsion.

2.4.3Treatment of soil surrounding Pipes, Wastes and Conduits

When pipes, wastes and conduits enter the solid inside the area of the foundations, soils surrounding the point of entry shall be loosened around each of such pipe, waste or conduit for a distance of 150 mm and to a depth of 75 mm before treatment is commenced. When they' enter the soil external to the foundations, they shall be similarly treated for a distance of over 300 mm unless they stand clear of the walls of the building by about 75 mm.

2.4.4Treatment of soil along External Perimeter of Building:

After the building is completed the earth along the external perimeter of the building should be rotted at intervals of 150 mm and to a depth of 300 mm. The rod should be moved backward and forward parallel to the wall to back up the earth and chemical emulsion poured along the wall at the rate of 7.5 fit res per square meter of *vertical* surfaces After the treatment, the earth should be tamped back into place. Should the earth outside the building be graded on completion of the building, this treatment should be carried out on completion of such grading.

In the event of filling being more than 300 mm, the external perimeter treatment shall be extended to the full depth of tilling up to the ground level so as to ensure continuity of the chemical harrier.

2.5 Treatment Shall not be made if the soil or fill is excessively wet or immediately after heavy rains to avoid surface flow of toxicant from application site. Unless the treated areas are to be immediately covered, percolation shall be taken to prevent distribution of the treatment by human or

animal contact with treated soil.

2. 6. Guarantee : 10 (ten) years guarantee should be submitted on non-judicial stamp paper as per the Performa attached. The guarantee shall be signed by the main contractor and the specialized who have execute the work. In the unlikely event of any treatment becoming necessary subsequently during the guarantee period, required inspection and treatment shall be carried out free of cost.

2.7 The work should be executed in stages according to the progress and in Co-ordination with the general building and other contractors. Idle labour, if any, for the same shall not be entertained.

2.8 Stages of Payment: The work has to be carried out in stages according to the progress of works.

2.8.1 The contractor shall have to furnish a guarantee on non-judicial stamp paper for 10 years as per the Performa. In the unlikely event of any treatment becoming necessary subsequently during the guarantee period, required inspection and treatment shall be carried out free of cost by the contractor.

2.8.2 Payment will be made on the plinth/floor area measurement and the rates should include to cover treatment to parts of structure as detailed out subject to deduction 1 for retention money, payment will be made in stages as under

a) On completion of treatment al junction and Floor & Ceiling.

..... 75%

b) On completion of treatment of all parts of structure required *and* pi pipes, waste conduits etc. etc.

.....100%

SECTION - X

TECHNICAL SPECIFICATION FOR SANITARY AND PLUMBING WORK

INDEX

SECTION - I

TECHNICAL SPECIFICATIONS FOR SANTARY FITTINGS

1.0 SANITARY AND ALLIED FITTINGS

All sanitary wares with their allied fittings must be first quality (best) of approved make and brand.

2.0 SQUATTING PATTERN W.C. PAN (INDIAN TYPE)

The W. C. Pan shall be of white vitreous China of specified size and pattern (Orissa or long pattern as specified) with an integral flushing rim. JI shall have the flushing horn in the hack unless it is not possible to accommodate cistern to *suit this* design. The pan shall be of approved quality. It shall have 100 mm C. I. Of porcelain trap 'P' or 'S' type with minimum effective seal of 50 mm and 50 vent ann.

2.1 Fixing of W.C. Pan

'The Squatting type W. C. Pan shall he sunk in floor sloped toward" the pan III a workmanship like manner, care being taken not to damage the pan in the process of fixing. If damaged it shall be replaced at Contractor's cost. It shall be fixed on a proper cement concrete base of 1 :3:6 proportion taking care that the cushion is uniform and even without having any hollows between the concrete base and pan and finished just below level of rim of pan to receive the specified thickness of the floor finishing. No extra for concrete bed shall be paid for.

'The joint between the pan and the trap shall be made with cement mortar 1: 1 and shall be leak proof.

3.0 PEDESTRAL WASHDOWN SYPHONIC (SINGLE OR DOUBLE TRAP)WATER CLOSET (EUROPEAN TYPE)

The W. C. pan shall be of white vitreous China unless otherwise specified of one piececonstruction of wash down type with integral P or S trap as required. It shall be of approved quality and pattern.

3.1 Installation

The weight of the fixture and user arc supported on the floor and not on The drainage pipe and this should be done in standard approved method.

3.2seat and cover

The double solid scat with lid shall he of welt plastic seat as specified in the schedule with rubber buffers and shall be fixed in position by using Chromium plated brass hinges and screws. It shall be non-absorptive and free from crack and crevices in the materials, The plastic seat and cover, where specified, shall conform to I.S. Specifications, and shall be of white colour unless otherwise specified.

3.3 Flushing

The flushing of the Squatting and pedestal w.c. Pan shall be done by 10w level' valueless symphonic flushing cistern of approved quality and capacity, as specified. In the former case, the connection between the flush pipe of the cistern and w.c.pan shall be made by using Rigid PVC pipe connection as specified. The. other specification will be as for Squatting pattern w.c.Pan.

The Hush pipe shall be fixed to wall by using holder bat clamps or embedded, as required.
As specified, low level Cisterns of specified capacity shall be with all internal fittings, brackets and C.P. brass flushing handle, and connected to the w.c.pan by means of 40 nun diameter Chromium Plated brass bend and rubber or any other, as specified.

4.1 BRACKETS

The cistern shall be fixed on Cast Iron Of rolled steel cantilever brackets Nylon braced of required strength which shall be firmly embedded in the wall or fixed by using wooden plug and screws, to the

satisfaction of the Consultant/Employer. Depending on (the characteristics of work any type of sanitary fixtures, the fixing of cistern should vary in quality of material and design also. Or it may be installed in other ways like placing on the top at the back of the w.c.

4.2 OVERFLOW

The Cistern shall be provided with 20 mm pipe with fittings which shall terminate into mosquito proof coupling secured in a manner that will permit it to be readily cleansed or renewed, when necessary.

4.3 .FLUSH PIPE:

Unless otherwise stated in the schedule of quantities, the outlet or flush pipe from the low level cistern shall be of 40mm rigid PVC/ brass chromium pipe minimum thickness of 2.6 mm as specified or PVC pipe as directed by the consultant/employer which shall be connected to the W.C pan by means of an approved type of joint adapts. The flush pipe shall be fixed to wall by using holder bat clamps or embedded as require.

4.4 PAINTING C.I. CISTERN

Inside of cisterns and fittings shall be painted with approved biutumastic paint and outside of the cisterns, if required, brackets, overflow and ibis pipes, if required shall be painted, with 2 coals (If synthetic enamel paint of approved primer to give an even appearance. The cost of such painting shall be include in the rates quoted for concerned items.

5.0STANDING URINALS

5.1 Bowl Urinal

The urinal sha1l be flat hack or angular pattern lipped front basin of required dimensions of white vitreous china and one piece construction with internal flushing' box rim of an approved make as specified. It shall be fixed in the position by using wooden plug embedded in the wall with screw of proper size, Each urinal shall be connected to a 40 mm dia, waste lead pipe unless otherwise specified, which shall discharge into a channel or a floor trap, or as specified.

5.2 Half Stall Urinals

The urinal stall and it" screen shall he of white vitreous China of approved quality and manufacturer, The stall shall be 114 cm high and 46 cm wide and 40 cm deep. The stall shall be provided with 84 cm x 36 cm division plates. In case of two or more urinals there shall he further division plates similar to end screens, the range shall have 15 cm deep tread plates of first class quality unless otherwise specified,

5.3 FLUSHING

Where not specified the stall shall be provided with white glazed vitreous China automatic flushing cistern of proper capacity with 6 mm minimum hotly thickness unless s otherwise specified. The cistern shall be complete with fittings and brackets which shall be fixed 10 the: wall the cistern shall be connected to the stall through standard size C.P. brass flush pipe with spreader arrangement and damp unless otherwise specified. Where cistern have not beenspecified it will be from distribution line through Brass C.P. connector and spreaders.

5.4 Outlet

Each of Half stall shall be provided with C.P. brass outlet grating of size 32mm for each half stall arid then through PVC pipe to urinal channel

6.0 SQUATTING URINALS

6.1SQUATTING PLATES

The urinal plates shall be of white glazed vitreous China with integral flushing rim of size 600 mm X 350 mm or as specified. There shall be white vitreous channel with stop and outlet pieces In front. The plate and channel shall he of approved quality.
The joint between the urinal plate and the flush pipes shall he made with putty or white lead mixed with chopped hemp.

6.2 Outlet

The squatting plate or a range of squatting plates shall be provided with a 65 mm dia. standard urinal C.I trap with vent arm having 65 mm C.P. brass outlet grating or as specified,

6.3 Walling

The squatting plate shall have 1.22 M high wall in front and on either side, these shall be lined as specified.

7.0 CISTERN

7. I Material

if not specified a high level cistern is intended to operate with minimum height of 191 cm and a low level cistern with a height of 60 cm approx. from the floor finish and the underside of the cistern.
The body thickness of' an earthenware cistern 1.3 cm. The cistern with internal parts shall be free from manufacturing faults and other defects and operate smoothly and efficiently. The cistern shall be considered mosquito proof only if there is no clearance anywhere which would permit a I.6 mm wire to pass through coupling in the permanent position (i. e. flushing or filling) or the cistern. The outlet tilting of each cistern shall he securely concern to the cistern. In the case die outlet shall he fix low *level* 40 mm dia.
Nominal bore). The outlet of flush pipe from the cistern shall be connected to the pan by means of putty or cement and for E.P.W.C. with rubber joint and putty. The Wish pipe shall he fixed 10 wall by using holder hat clamps.
The discharge rate of cistern shall be about 5 liters in 3 seconds when connected to an appropriate flush pipe and there shall be no appreciable change in the full discharge. The cistern shall have discharge capacity of 5,10, 12.5, and 13 liters with tolerance of +/- 0.5 ltr.

7.2CAPACITY OF CISTERNS AND THE SIZE OF FLUSH PIPE FOR FLAT BACK (BOWL) URINAL

Capacity: The capacity of the flushing cistern and the SIze of the Hush pipe for the number of urinals in a range *will* be as follows

Number of urinals in range	Capacity of flushing cistern	size of pipe	
		Main	ditribution
1	5 liters	20 mm	15 mm
2	10 liters	20 mm	15mm
3	10 liters	25 mm	15 mm
4	15 liters	25 mm	15 mm

The joint between the urinal basin flush and waste pipe shall be means of putty of white lead mixed with chopped hem, or as specified in case of PVC pipe.

7.3 For Squatting Plate Urinal

Capacity : The capacity of the Hushing cistern and the size of the flush pipe for the number of squalling place urinals in a range will he as follows

Number of urinals In range Main distribution	capacity of flushing cistern	size of flushing pipe	
1	5 liters	25 mm	20mm
2	10 liters	25mm	20mm
3	15 liters	32mm	20mm
4	15 liters	32mm	20mm

The cistern shall be fixed on R.S. C.I.cantilever brackets of requisite strength which shall he embedded or fixed to the wall by means of wooden plugs and screws,

8.0WASHING BASINS

8.1 BASIN: The wash basins shall be of white or colored vitreous China as specified and of approved quality, make and pattern. It shall be one piece construction with an integral combined overflow. The size of the basin shall be as specified.

8.2 FITTINGS: Each wash basin shall be provided with 15 mm C.P. brass pillartaps as specified, 32 mm C.P. waste - chain and rubber plug, unions, joint') etc. complete in all respects of approved quality.

8.3 FIXING: The basin shall be supported on a pair of M.S. or C.I. Cantilever or Nylon type brackets of requisite strength embedded or fixed in position by means of wooden cleats and screws. These metal brackets shall be painted to the required shade including a coat of anti-corrosive paint. The wall plaster on the rear shall he cut to overhang the top ~ of the basin.

8.4 WASTE CONNECTION :

The waste shall discharge into a floor trap leading to a gully trap on ground floor and on upper floor may be connected to waste stack.

Where specified wash basins shall be provided with a 20 mm G.I. puff pipe terminating with a brass perforated cap screwed on to *it* on the outside of the wall or connected to antisyphon stack. When the waste pipe discharge freely into a channel or floor trap and is or short length without all bends, no puff will be necessary

9.0 KITCHEN SINKS

Unless otherwise mentioned, the kitchen sink with drain hoard shall be of stainless sled and (If approved quality, make and pattern . It shall be of one piece construction with an integral combined overflow the size of the sink and drain board shall he as specified,

9.1 Fittings

Each sink shall be provided with 15 mm brass C.P. long body bib cock, 40/32 mm waste, chain and rubber plug, unions, joints etc. complete in all respects as specified and of approved quality.

9.2 Fixing

The sink shall be supported on a pair of M.S or C.I cantilever brackets of requisite strength embedded or fixing in position by means of wooden cleats and screws. The brackets shall be painted to required shade including a coat of anticorrosive paint.

9.3 Waste Connection

The waste shall discharge into a floor trap leading to a gully trap, OJ) ground floor and on upper floor it may he connected to waste pipe stack with bottle trap PVCwaste pipe.

10.0 TOILET REQUISITES

10.1 Mirror

The mirror shall be of approved make glass with beveled edges. The size and shape of the mirror shall be as specified. It shall be mounted on an asbestos sheet hack and provided with fiberglass frame.

10.2 Shelf

The shelf shall be of glass of approved quality with edge rounded off or of vitreous China (colored or white) of approved make. The size of the shelf shall be as specified. The shelf shall have C.P, brass or aluminum guard rail with rubber washers on positions resting 011 class plate and C P. brass Of aluminum brackets which shall he fixed with c.p. brass or aluminum screws 10 wooden plug firmly embedded in the wall.

10.3 Towel Rail

The towel rail shall be of C. P. brass or aluminum with two C. P. brass or aluminum brackets. The size of the rail shall be as specified. The bracket shall be fixed by means of c.p. brass or aluminum screws to wooden cleats firmly embedded in the wall which win projected 75 mm from wall surface,

10.4 chromium plated stop cock, taps, bib cocks, shower set, gun metal peets valves

If not mentioned otherwise in schedule, cocks and taps arc to be of brass standard head chromium plated of approved make and pattern. They must be capable to withstand at least 10.5 kg per sq.cm. pressure applied for 5 minutes without leakage. The valve arc to be of peel type gunmetal valves. Other conditions remain same as cocks and laps.

10.5 Liquid Soap Holder

This shall be glass Of P.V.C. Of C.P. brass as specified. It shall be fixed in position by means of c.P. brass screw to wooden *cleats* embedded in the wall. The liquid soap holder shall be or approved make,

10.6 Toilet Paper Holder

The paper holder shall be of C.P brass or vitreous chaina as specified. The rolled wooden paper holder shall be made of well seasoned take wood. This should preferably recessed type.

Section-II

SOIL, WASTE, RAIN WATER PIPES &FITTINGS

UPVC SWR(soil, waste, rain water) drawings system provides a rllge of pipes and fittings for soil, waste, vent, sewer and rain water drainage application and are extremely like in weight.
SWR drainage system is design to carry discharge from toilets baths and basin its consist of a range of pipes and injection molded fittings which are required to correct the waste and vent from each fixture to the sewer drain.

All traps arc to be supplied with either inlet (sockctened) of 125 mm or 110 mm and outlet (spigot end) 01110 mm only. The traps with 125 mm inlet are commonly used to the Indian w.c.pan. All traps have smooth / glazed inside.

Clean the outside of the! pipe's sought end and the inside of the scaling grove of the fitting. Apply the lubricant supplied by us unifonn1y to spigot and sealing ring and pass the spigot end into tile socket containing scaling ring only fully home. Make Rule position of the socket edge with the pencil of felt-tip pen on the: pipe, then withdraw the pipe from the soc 'ct by approx. 10 mm (towards

(thermal expansion gap).

With horizontal runs, the pipe clips should be spaced at intervals of no more than ten times the outside diameter of the pipes. Vertical lines are spaced *at* interval" of one meter to *a* maximum of two meters according to pipe diameter.
The wan / concrete slots should allow for a stress-free installation. Pipes and fitting to be inserted molded the slots without a cement base have to be applied fit with a thin cost of pvc solvent cement followed by sprinkling of dry sand(medium size). Allow it to dry. This process gives a sound base to cement fixation. This process is repeated while jointing PVC material to CI/AC materials

the Supreme UPVC SWR drainage system can he put to use immediately after installation, as no waiting lime required for joints to be set and. direct. However, for testing, seal hermetically all openings below the top of the section to be tested. The water level shall then be raised to a height of not less than three meters above highest point of the section being tested or as din the inspection. Officer may direct every l0in1 shall be carefully examined tor leaks.

SECTION-III

TECHNICAL SPECIFICATIONS FOR WATER SUPPLY PIPES & FITTINGS

1.0 G.I. PIPES AND FITTINGS

1.1 General

All galvanized iron pipes arc to be of mild steel continuously welded, screwed &socketed tubes, medium quality of Miss TAT A, Jamshedpur make. The pipes and sockets shall be cleanly finished when galvanized in and out and free from cracks surface flaws, lamination, and any other defects. The threads shall be well cut and clean. 1 be details of pipes and sockets regarding nominal] bore, thickness, and weight in kg/m are given below. All G.I. fittings shall *be* of approved brand or make as specified. The pipes and fittings arc to be screwed conforming to British Standard gas thread. In jointing the pipes, threaded portion of both pipes and sockets shall he oiled and rubbed over with white Zinc and fine spun yam wrapped round the screwed end of the pipe which then shall be screwed home to the socket with a pipe wrench. Care must be taken that all pipes and fittings are kept at all times free from dust and dirt during fixing. Any thread remaining exposed after jointing shall be painted.

1.2Laying of pipes

The layout of the mains and service pipes will be according 10 the drawings. The Contractor is to work out the exact position of flanges and (he exact run or all the pipes and must ascertain from the Consultant/Employer that these are approved, before commencing the work,

Where pipes are to be cut and rethreaded, ends shall be carefully filed so that no obstruction to the bore is offered.

All cutting holes, chases, trenches ere, at any place necessary in connection with the work as per items of this tender and subsequent mending damages are to be included in the rates and Hot to he paid extra unless otherwise specified.

1.3 External Line

Where the pipes run underground these must be fixed at least 45cm below ground level, The galvanized iron pipes and fittings shall be laid in trenches, the width and depth of the trenches for different dimensions of the pipes shall be as given below :

Dia. Of pipe	width of trench	depth of trench

1 5 mm to 50 mm	30 cm	60 cm
65 mm to 100 mm	45 cm	75 cm

At joints the trench width shall be widened where necessary.

The pipe shall be painted with two coats of anticorrosive bit mastic paint of approved quality. the pipes shall be laid on a layer of 7.5 mm sand and filled up to 15 mm above pipes and the remaining shall then be filled with excavated earth with proper ramming as described in Excavation and refilling. Pipes shall not be hid so as to pass through manhole, catch pit drain under any circumstances. Where it is unavoidable, the pipe shall be carried in sleeve MS/GI pipe as approved by the Consultant/Employer, cost of which should be included in the item rate. Where the service pipe will enter the budding below ground level a sleeve pipe is to be provided. The underground water service pipe should be kept at a sufficient distance apart from sewer line, at least 30 cm above where it will cross over the sewer pipe or In common trench. The rates for all above work should he included in item of pipes.

1.4 internal work

Where the pipes run along walls these are to be fixed at 25 mm away by clamps fixed at a distance not exceeding 1.80 cm apart and both sides of turning point. Where the pipe lines are chased in wall as shown in the drawing or specified in the bill of quantities the pipes are to be secured to wall by hook fixed at an interval of 1 M and hooks at all sides of the branches and turning point. Where the pipes cross RCC/masonry wall, column, beam or pillar, these must pass through the appropriate higher sizes of CI/GI sleeve pipe and arc to be included in the rates. No extra claim wills he entertained. In case the pipe is embedded in walls and floors, it should be painted with anticorrosive bit mastic paint of approved quality and the pipe shall be wrapped in burlap of hessian cloth impregnated with bitumen. The wrapping shall be made to fit tightly over the pipe and where wrapping with a new piece it shall overlap the old one and the joint shall be tied with M.S. wire or nylon thread.

It should not come in contact with lime mortar or. Lime concrete as it is corroded by lime. All pipes should be fixed truly horizontal and vertical,

Under the floor the pipes shall be laid ttl a layer of sand filling done under concrete floors.
For pipes 15 mm to 50 mm diameter the holes in the walls and Floors shall be made by drilling 'With chisel or jumper and not dismantling the brick work Of concrete. After fixing, the holes shall be made good with cement mortar 1:3 and properly Finished to match the adjacent surface. Union is to be provided in each of the vertical riser or drop on and from water tank one each near the peets valve. The long screw fittings arc to are to be fitted at aninterval of 3 meters for long horizontal line and inside the lavatory/kitchen/laboratory etc after 2 meters,

1.5 Testing the Joints and Lines

After laying and jointing the pipes and Linings shall be inspected under working condition of pressure and flow. Any joint found leaking should be removed and replaced without extra cost The pipes and fittings after they are laid shall be tested to hydraulic pressure of 6 kg/sg.cm, (60 meter or double the design working pressure whichever is more) for internal work and for CI water main a pressure of 7 kg. per sq.cm. The pipes shall be carefully charged with water allowing all *air* to escape and voiding all shock or water hammer. As water comes out of taps, slop cocks shall then be dosed and specified hydraulic pressure shall be applied gradually. Pressure gauge should be accurate and preferably should have been tested. The lest pressure should he maintained without loss for at least half an hour.

1.6 Painting (Exposed)

On completion of the test the exposed pipes and arc to be painted with two coats ofsynthetic enamel paint. or approved colour over coat of printing and the pipes running

underground shall be painted with two coats of anticorrosive bitumastic pain! with sand bed all round.

Measurement

The length shall he measured in running meter correct to 2. decimal places for the finished work, which shall include the GI pipes and fittings such as bends, tees, elbows etc. but excludes brass or gun metal fixtures like taps, cocks, valves, PVC connectors, etc. The length shall be taken along the centre line of the pipes and fittings as mentioned above. All pipes and fittings shall he classified according to their diameters, method of jointing and fixing substance, *quality and* finish. TIIC diameter shall be the nominal diameters of the internal bore.

or val

be stained or discolored. Before a fatling is plated, the washer plates shall he

SECTION – IV

TECHNICAL SPECIFICATIONS FOR SEWERS AND DRAINS

1.0 STONEWARE PIPES

1.1 Materials

The S. W. Pipes with spigot &socket ends and fittings should be Grade 'A' and shall he obtain from approved manufacturer listed in the tender. The pipe shall conform to IS 651-1955.

These shall be sound and free from visible defects such as fire crack or hair crack and Haw or blister, The pipe shall give a sharp clear note when struck with a 11ght hammer and should be perfectly salt glazed. The approximate thickness of 60 cm, Long pipes shall be as given in the table below:

1.2 S.Wpipes

Internal diameter of the pipe in mm.	Thickness of the barrel &socket in mm,	weight of each pipe per miter in kg
100	12	14
150	15	22
200	16	33
230	19	44
250	20	52
300	25	79

The length of pipes shall be 60 cm exclusive of the internal depth of socket

1.3 EXCAVATION OF TRENCHES

The gradient is to be set out by means of sight and bonning rods and the required depth be excavated at any point. The trench shall be excavated as directed the consultant/employer. The depth of the trench shall not be less than 1 miter measured from the top of the pipe to the surface of the ground under roads and less than 0.75 cm elsewhere. The width of the trench shall be nominal diameter of the pipe plus 40 cm but it shall not be less than 80 cm incase all kind of soil excluding rocks and not less than 55 cm. in case of work.

The bed of the trench, if in soil of made up earth, shall be well watered and rammed before laying (he pipes and the depressions if any shall be properly tilled with earth ahead consolidated in 20 cm lavers. If rock is met with, it shall be removed to I5 cm below the level of the pipe and the trench will be refilled with excavated materials and consolidated. the excavated materials shall not be placed within 1 (one) mere or half of the depth of the trench whichever is greater from the edge of the trench, I .The materials excavated shall be separated and stacked so that in refilling they may be re-laid and compacted in the same order to the satisfaction of the Consultant/Employer.

After the excavation of the trench is completed, foundation of cement concrete (1 :3 :6) or lime cone. as specified of proper width and thickness to be laid with proper level all along under the length of the pipe with hunching as per drawing.

1.4 Laying, Jointing, t launching of the pipe and fittings

The rain pipes shall he laid in straight lines and to even gradients as shown on the drawings. The socket end of the pipes shall face upstream. Adequate care shall be exercised in gelling out and determining the levels of the pipes and the contractor shall provide suitable instruments, templates sight rails, bending rod. s and equipment s necessary for the purpose tilt: joints arc to be kept wet until the cement joints are properly set with wet bag. The cement mortar joints shall he cured at least for seven days.

In case of S. W. Pipes joint" (socket and spigot), they should he caulked first with tarred jute (spun) soaked in cement slurry of requisite diameter, almost quarter depth of the socket, at ("T which cement mortar (I: I) is pushed in with wooden chisel and finished beveled at outside al 45 degree. Instead of jute or hemp rubber gasket of proper size may *also* be used.

in case of pipes less than 25 cm ,dia. joints should be made at ground level with 3 pipes at a time and for larger ones 2 pipes at. a time and after curing they should be rolled in foundation with the help of ropes ..

An pipes should be properly launched and/or provided with chair as per drawing. Details of the foundation and covering etc. are to be taken from the drawing provided. Where the pipes are crossing the building or road around concrete *1:4:8 is to be* done to 15 cm thick over the barrel of the pipe.

Any treasure-trove, coin or object or antiquity which may he found on the site shall be molded over the Employer.

5.0 CHAMBERS/MANHOLES

5. I Size

At every change of alignment, gradient or diameter of a drain there shall he a manhole or inspection pit. The maximum distance between manhole chamber shall be 30 M for road, 15 M within compound.

5.2 Size

All manholes shall have internal dimensions as shown on drawings The depth of invert shall be according (0 the gradient.

5.3 foundation

The base concrete shall be 15 cm thick and with 1:4:8 cement concrete laid over the brick flat soling. The slab shall be finished 75 mm beyond the external the face of the brick work.

5.4 Brick Work

The brick work shall he in cement sand mortar in the proportion. 1:5 and 250 nun thick or as mentioned in the tender. The joints shall be raked out.

Plaster

Inside walls and bottom of pit shall be plastered as specified in the item and shall be finished with floating, coat of neat cement. In wet ground, 20 mm thick plaster shall be done on the exterior surface of the walls also and this plaster shall be waterproof with the addition of approved water proofing compound :15 per manufacturer's specification,

Pointing

In dry ground pointing shall be done in 1:2 cement mortar to the outside surface.

5.5 Hunching and construction

On the top or the base slab from half pipe channel longitudinally at the centre, the channel is to be hunched up with concrete slopping towards from the edge of channel to meet the side of the chamber at gradient of 1:6, The channel and the benching arc to he floated to smooth *hard* surface *with a* coat of cement mortar. Extra cement Sewers areunequal sectional area shall not be joined at the event in a manhole unless it IS unavoidable. The branch sewers should deliver sewage in the hole in the direction of main flow and the junction must be made with heel rest bend at the bottom of drop connection C. J. shall he provided with heel rest bend at the bottom and bend with access door at the top for cleaning purposes.

6.0 CUTTLNG HOLEs, chases, etc, repairing the same:

Holes and chases to be cut into walls, slabs, etc. must be of the minimum size and extent required to run the service and in no case superfluous cueing is 10 be resorted to. After the services are laid, the chases and holes must be made good in cement concrete with suitable Finish, These repairs must be done very carefully S() that the finished surface is uniform and harmonious with the rest of the adjoining surface. No extra claim will be entertained in his respect.

7.0RCPC AND POLYELASTOMER STREET MANHOLE COVERS AND FRAMES:

7.1 Unless otherwise mentioned the covers and frames shall be at IS 2592

Unless otherwise mentioned the covers and frame shall be of IS 2592 Part I and Part 11 obtained from approved manufacturer and shall he of approved make and brand as listed.

Covers and frames shall be cleanly cast, they shall be free from air and sand holes, cold shut" and wrapping which are *likely* to impair the utility of the casting. All casing shall he free from voids whether due to shrinkage, gas inclusion or other causes. 'I he covers shall be gas tight and water tight with proper seal arrangement, but can be easily opened and closed and it shall be fitted in the frame in workmanship like manner. The cover used for sewer line should bear sewer engraved on top of casting. Simibr1y for storm line it shall be marked 'storm'. Size and dimensions are given .below with weight. 2.5 variations in weight shall be permissible. Size of cover shall be the clear internal dimensions of frame. Covers shall have raised chequered design to provide an adequate non-slip grip. The covers and frames shall be coated with anticorrosive paint of bituminous composition. 'I1IC frame of manhole cover shall be firmly embedded to correct alignment and levels in R.C.C. slab or plain concrete 3S the case may Be

8.0 GULLY PIT

To be of the standard size 1.06 m x 0.03 m and to be built in cement mortar (3:1) as specified in *strict* accordance with be drawings. The internal side and the floor are to be finished whit 12 mm cement plaster to be fitted with a 150 mm C.I. overflow pipe with hinged cover and handle 0.90 x 0.45 C.I. gully grid of the stander weight, 15 cm siphon. The gully grid and frame are to be of rcpc bearing capacity 20 M.T. size grating 700 x525 x 70 mm and frame 820 x 670 x165 mm.

S.W. GULLY TRAP

S. W. Gully trap of specified sizes and quality shall be fixed on 15 cm thick

cement concrete 1:3 :6 bedding and tile gully outlet of the branch drain shall be joined similar to joining of S. W. pips, A brick masonry chamber 30 cm x 30 cm internally shall be constructed half brick masonry with 1 :6 cement mortar and the space between the trap and the wall filled up with cement concretel:4:~ and the upper portion of the chamber finished internally with 1:3 cement mortar and finished with neat cement, the corners and the bottom of the chamber shall be rounded off so as to slope towards the grating. in addition

chamber shall have a C.I. grating with frame 30 cm x 30 cm (inside) with machined seating faces, fixed on the top of be brick with cement concrete 1:2:4 and rendered smooth. The weight off grating shall not be Jess than 4.53 kg. and that of frame 2.72 kgs.

SANITARY AND PLUMBING WORKS

LIST OF APPROVADE BRAND AND MANUFACTURERS

1. SANITARY FIXTURE(FIRST QUALITY VITREOUS CHINA):
M/S PARRY INDIA LTD,M/S HINDUSTAN SANITARY WARES.M/S MADHUSUDAN CERAMICS

2. FOR stainless steel sink: M/S EID PARRY INDIA LTD,M/S SAIL,M/S JYOTI INDUSTRIES(NIRALI) JAYNA BRAND

3. PVC FLUSHING CISTERNS – SLIMELINE/COMMANDO/DUROLITE

4. CHROMIUM PLATED BRASS FITI1NGS: ESSCO, Jaquar Kingston, MARE, ESSESS,

5. a) UPVC(SWR). SOIL, WASTE RAIN WATER PIPE AND FITTINGS -IS 13592 SUPREME,PRINCE,ORIPLAST .

b)HCI son, WASTE PIPE AND FITTING IS 1729 : ALC, BIC, AMC,

6)GALVANISED IRON PIPES –IS 1239 :TATA ,NEZONE JINDAL I

8.G.I. FITTINGS: IS:879 'R' Brand manufactured by M's R.M. Engineering Ltd., Ahmedabad, 'SUN' Brand, NMC, AA, I-IB, Nil

9.GUNIv1ETAL VALVE &COCK: IS:778-84
'Leader' Jallundhcr, *Mls* Bombay Metal &Alloy Mfg. Co.(J• ltd., Zoloto Industries, lallamlhar.

11. GLAZED STONWE WERE PIPE & FITTING IS-651/1955 M/s I LIND CERARNICS LTD.

12. WHITE REGID PVC PIPES & FITTING IS 4985 SQER SUPRIM, PRINCE, ORIPLAST.

13.H.D.P.E. PIPE & FITTINGS IS 4984 ORIPLAST, EMCO BRAND.

NOTE

1	THE ARCHITECT / BANK RESERVES THE RIGHT TO CHOOSE ANY ONE OF THE MAKES OF MATERIALS IN THE APPROVED LIST.
2	THE CONTRACTOR SHALL FURNISH, AS AND WHEN DEMANDED BY THE EMPLOYER/ CONSULTANT, THE INVOICE/ BILLS OF PURCHASE FOR VERIFICATION OF QUALITY QUANTITY AND MAKE OF THE MATERIALS.

Signature of Contractor: Name of Contractor
Address of the Contractor Date and Seal:

TECHNICAL SPECIFICATIONS FOR ELECTRICAL WORK

SCOPE

The Scope of work under Internal Electrical Works shall cover the supply installation, testing and commissioning of the complete electrical power, lighting, fire alarm & access control system and communication system (if any) of the entire Premises including approval from statutory authorities.

It is not the intent to specify completely herein all aspects of design and constructional features of equipments and details of the work to be carried out, nevertheless, the equipment and work shall conform in all respects to high standards of Engineering, design and workmanship and shall be capable of performing in continuous

operation in a man acceptable to the Client who will interpret the meaning of the specifications and drawings and shall have right to reject or accept any work or material which in assessment is not complete to meet the requirement of this specifications and or applicable code and standards mentioned else where in this specifications.

1.0 STANDARDS AND REGULATIONS

2.1 All materials and the equipments used in the work shall be ISI and TAC approved and installed with a high degree of workmanship.

2.2 The installation as a whole, shall confirm in all respects with I.E. rules, Indian StandardSpecifications, Regulations of the Tariff Advisory Committee (General Insurance) and the Electricity Supply Co.'s rules and regulations.

3.0 GENERAL

3.1 BROCHURE AND DATA

The contractor shall submit four copies of all brochures, manufacturer's description data and similar literature. One copy will be returned to the contractor after approval.

3.2 APPROVAL

The Engineer's approval of such drawings, schedule, brochures, etc. will be an approval of general details and arrangements only and shall not relieve the contractor from responsibility for deviation from drawings or specifications unless he has in writing called the Engineer's attention to such deviations at the time of submission nor shall it relieve the contractor from responsibility for errors or omissions of any kind in the shop drawings when approved.

3.3 STORAGE

All materials and equipment's shall be stored properly to the satisfaction of the Engineer so that physical handling and climatic conditions do not affect the equipment's.

3.4 CUTTING& PATCHING

Cutting, patching and redoing shall be kept to the minimum. Wherever such works are required to be carried out, necessary permission shall be obtained from Engineer before cutting and patching up. Those shall be subsequently furnished properly to the satisfaction of Engineer. Care shall be taken to prevent damage of finishing.

3.5 PROTECTION

All work, equipment and material shall be protected at all times to prevent obstructions, damage or breakage. All equipments shall be covered and protected against water, dust, sand as well as chemical and or mechanical damage. At the completion of the work, all equipment shall be thoroughly cleaned and delivered in a perfect unblemished and working conditions.

3.6CONTRACT RATES

The rates and prices shall be deemed to have included all labour, materials used,plants and tools, temporary works, minor building works like cutting, chases, holes, making good, grouting, finishing etc., insurance, sales tax, local taxes and duties, establishment charges, profit, supervision, transport, storage, testing & commissioning and other charges and fees and every expenses required to be incurred for proper and due execution including approval from Electrical Inspector and/or from all other statutory authorities or may be required and amended by laws till commissioning of the project.

3.7 COMPETENCY OF ELECTRICAL STAFF

Accepted norms of good workmanship is required. The electrical works shall be done by qualified and trained staff having First Class Wireman's license and Supervisory Competency Certificate having sufficient competency in electrical works and under the overall supervision of electrical contractors.

3.8 APPROVAL OF MATERIALS

All materials used on the works shall be new and of the best quality available, conforming to the relevant specifications and approved makes list. Prior approval should be obtained in writing from the Engineer for all materials proposed to be purchased of makes not included in 'Approved Makes list' and when necessary, approved sample duly identified and labeled shall be deposited with the Engineer.

3.9AS BUILT DRAWINGS

On completion of work, the contractor shall submit to the Engineer, a reproducible and five copies of as built drawings showing :-

a) Conduit layout, location of junction bozes and number of wires through each section of conduit.

b) Circuit distribution scheme for each main and sub-distribution board. This shall indicate various outlets controlled by each fuse/circuit breaker and phase wise distribution of load.

c) Location of distribution and sub-distribution boards.

d) Distribution layout of telephone system.

e) Distribution layout of computer network.

f) Earthing system

4.0 LIGHTING SYSTEM EQUIPMENT

4.1 SCOPE

This specification covers the design, manufacture, testing, inspection and delivery to site of lighting system equipment such as light control switches, lighting and power receptacle units, ceiling fans, lighting fixtures conduits and other similar items necessary for lighting system.

4.2 SUB-DISTRIBUTION BOARDS (NORMAL & EMERGENCY)

4.2.1 CONSTRUCTIONAL FEATURES

Boards shall be sheet steel enclosed and shall be fully dust and vermin proof, providing a degree of protection of IP:52. The sheet steel used shall be cold rolled and 2 mm thick for meter boards.

All boards and panels shall be provided with hinged doors for access to equipment. Doors shall be casketed all round with neoprene gaskets. For wall mounting, lighting

panels when provided with MCBs, a hinged, latched front door shall be provided with key-locking facility and a slotted bakelite sheet shall be provided inside. Only the MCBs operating knobs shall project out of the bakelite sheet slots for safe operation and neat appearance.

All accessible live connections/metals shall be shrouded and it shall be possible to change individual MCBs from the front of the boards/panels without danger of contact with live metal.

Adequate interior cabling space and suitable removable cable entry plates shall be provided for top'bottom entry of cables through glands and or conduits. Necessary number of glands to suit the specified cable sizes shall be provided. Cable glands shall be screwed on type and made of brass.

Two earthing terminals shall be provided to suit the PURCHASER's earthing conductor.

All sheets steel parts shall undergo rust-proofing process which should include degeasing, de-scaling and a recognized phosphating process. The steel works shall then be painted with two coats of Zinc-chromate primer and two coats of final stove-enameled finish paint of colour. For chemical/corrosive areas, epoxy paint shall be used.

4.3 BUSBARS

Busbars shall be of aluminium alloy of 91E grade as per IS 5082 for Main Panel and of electrolytic grade copper for sub-distribution boards (SDB/SLDB).

Busbars shall be provided with at least the minimum clearances in air as per applicable standards for a 500V, 3 phase system.

Busbar shall be totally sleeved with coloured (Red , Yellow , Blue and Black)heat shrunk PVC , High tensile bolts , nuts , washers spring washers shall be provided at all the Bus bar joints

Busbars shall be adequately sized for the continuous current rating such that the maximum temperature of the busbars, busbar risers/droppers and contacts does not exceed 85°C under site reference temperature.

The busbars, busbar connections and busbar supports shall have sufficient strength to withstand thermal and electro-mechanical stresses of the fuse/MCB's let through/cut-off current associated with the specified short-circuit level of the system.

Busbar supports shall be made from FRP (Fibreglass Reinforced Polyester).Separate supports shall be provided for each phase of the busbars. If a common support is provided for all three phases, anti-tracking barriers shall be incorporated.

The neutral bus of the main 3 phase, 4 wire distribution board shall be rated not less than 50% of the phase busbars. The neutral bus of the 1 phase ways lighting panel shall be rated same as the phase busbars. The neutral bus should have sufficient terminals and detachable links for full number of single-phase outgoing lighting circuits.

4.4 PANELS/BOARDS' COMPONENT EQUIPMENT

4.4.1 Miniature Circuit Breakers (MCB)

MCBs shall be hand operated, air break, quick make, quick break type conforming to applicable standards.

MCB shall be provided with overload/sort-circuit protective device for protection under overload and short-circuit conditions. The minimum breaking capacity of MCBs shall be 10 kA r.m.s. at 415V.

4.4.2 Internal Wiring

Panel/boards shall be supplied completely wired, ready for the PURCHASER's external connections at the terminal blocks. Wiring shall be carried out with 1100/650V grade, PVC insulated, stranded copper, conductors. Conductors of adequate size shall be used to suit the rated circuit current.

Engraved identification ferrules, marked to correspond with the wiring diagram shall be fitted at both ends of each wire.

All wiring shall be terminated on terminal blocks. Terminal blocks shall be one piece moulded 650V, of reputed make, preferably stud type for higher current ratings such that wires are connected by cable-lugs and complete with nuts and washers. Terminals shall be adequately rated for the circuit current, the minimum rating shall be 20A.
Terminals for circuits with voltage exceeding 125V shall be shrouded.

Terminals shall be numbered and provided with identification strip for identification of the circuit.

4.4.3 Label & Diagram Plate

All door mounted equipment as well as equipment mounted inside the switchboards/panels shall be provided with individual labels with equipment designation/rating. Also the boards/panels shall be provided on the front with a label engraved with the designation of the board/panel as furnished by the PURCHASER.

Labels shall be made of non-rusting metals, 3-ply lamicoid or engraved PVC.

Inside the door of the 1 phase ways lighting panels a circuit diagram/description shall be fixed for reference and identification.

4.5Light Control Switches

Light control switches of ratings and types, i.e. decorative shall be supplied as indicated in BOQ. The switches shall be grid plate type/Piano Key type suitable for use on 240V, 1 Phase, 50 Hz supply.

Switches shall be of flush type for mounting behind an insulated plate or incorporated with a switch plate for mounting flush with the surface of wall or switch box/suitable enclosure. The switch box/enclosure may be recessed into or mounted on a wall as per the requirements of project layouts.

The size of enclosure boxes shall be chosen to accommodate the number of switches to installed at the particular location. The enclosures shall be 16 SWG sheet steel stove enameled/galvanized. The enclosure box shall be covered with perspex/insulating cover. An enclosure intended for surface mounting shall not have holes or gaps in its sides other than those expressly provided for cable entry.

4.6 Receptacle Units

Receptacle units shall consist of socket outlet with associated switch and plug.The sockets outlet and switch or MCB shall be flush mounted within a stove enameled 16 SWG steel enclosure with Perspex/insulating cover. The box may be recessed into or mounted on a wall as per requirements of project layouts.

The receptacle units shall be suitable for 240V, 1 phase, 50 Hz/415V, 3 phase, 5Hz supply as indicated. Single phase receptacles shall be associated with a switch/MCB of same current rating and the receptacle shall become live only when the associated switch/MCB is in "ON" position.

The plugs shall be provided with cord grips to prevent strain and damage to conductors/wires at connection and entry points.
The types and current rating of receptacle units shall be as indicated in BOQ and they shall conform to the applicable standards.
Whenever required, receptacle units may be provided with MCBs instead of switch.

4.7 Lighting Wires

The wiring of lighting system shall be carried out through 650/1100V, PVC insulated, unarmored stranded copper conductors, unless otherwise specified. The wires shall conform to the applicable standards.

The minimum area of conductors shall be 1.5 sq.mm for point wiring of light fittings and 6A receptacles and 4.0 sq.mm for receptacles rated 16A and above as indicated in BOQ. The Circuit wiring for light fitting shall be with 2.5 sq.mm stranded copper conductors.

The wires shall be coated red, yellow, blue for R,Y,B phase and black for neutral and green for earthing.
The approximate quantities of wires shall be indicated by the PURCHASER only when the same are not covered in the CONTRACTOR's "Point Wiring" work under lighting system installation work. Unless otherwise specified, lighting cables shall be of 650/1100V grade, 3, 3-1/2 and 4C, PVC insulated and armoured type for main distribution boards.

4.8 Conduits UPVC (Unplasticised PVC) conduits and their associated fittings as per sizes shall conform to applicable
standards. The minimum size of conduit shall be 20mm.

Supply of conduits shall include all associated fittings like couplers, bends and tees as required for lighting system installation work including suitable fish wire, if necessary.

4.9Junction Boxes

Junction boxes with terminals shall be supplied for branching and terminating lighting cables when required for outdoor areas, 3 phase receptacles etc.

The junction boxes shall be dust and vermin proof and shall be fabricated from 14 gauge sheet steel and shall
be complete with removable cover plate with gaskets, two earthing terminals each with nut, bolt and washer.
Boxes shall be additionally weather-proof when specified.

The boxes shall have provision for wall, column, pole or structure mounting and shall be provided with cable/conduit entry knock outs, terminal blocks, HRC fuses, etc.

The terminal blocks, with specified number of terminals, shall be mounted securely on bracket welded to the back sheet of the box. The terminals shall be 600V grade,one piece construction complete with terminals,
insulation barriers, galvanized nuts, bolts and washers and provided with identification strips of UPVC. The
terminals shall be made of copper alloy and shall be of box clamp type.
The boxes shall be painted with one shop coat of Red Oxide Zinc chromate primer followed by a finishing coat of paint as specified.

2.0 LIGHTING SYSTEM INSTALLATION WORK

5.1 Scope

This specification indicates the requirements of lighting system installation work. The installation, testing and commissioning of complete lighting system and power receptacles shall be carried out in accordance with the Lighting Installation Notes, the PURCHASER's /ENGINEER's Drawings and as stipulated in this specification and Data Sheets. Separate Specifications when enclosed, cover the requirements of lighting equipment supply.

5.2 Installation Work Scope

The installation work shall include storing, unpacking, fixing of all equipment associated with lighting system, routing and laying conduits, wiring, termination with copper lugs wherever required, testing, commissioning and all other work items necessary for completing the job.

The supply of all mounting accessories, earthing wires and incidental hardware and consumables like fixing saddles, spacer plates, junction boxes and conduits required for the fitting fixing/suspension points, point boxes and connectors, jointing ferrules, all fixing brackets, screws and studs, shall be deemed to be included as part of installation work. Mounting accessories like saddles, spacer plates, joint boxes, junction boxes and
fixing hardware shall be of galvanized mild steel.

The CONTRACTOR shall work in co-ordination with the Civil and Air- conditioning Contractors and where holes or openings in walls and floors, cut-outs in false ceilings are required the CONTRACTOR shall inform the ENGINEER and other respective Contractors. Holes in walls made by the CONTRACTOR shall necessarily be patched by him in a good and approved manner, using the same kind of masonry as in the uncut surfaces.

The CONTRACTOR shall be responsible if parts of panels, fittings, etc. are lost or damaged and all damage and thefts shall be made good by the CONTRACTOR till the installation is handed over to the PURCHASER.

The CONTRACTOR shall touch-up painting on lighting panels/boards if the same is damaged during installation handling.

5.3Point Wiring

Whenever asked for, if installation is to be carried out on point wiring basis, the supply of following shall be deemed to be included as part of the installation work, in addition to the items mentioned in para 4.3.3.

a) 650/1100V lighting wires for conduit wiring, minimum size of 1.5 sq. mm PVC insulated copper conductor.

b) MS conduits with all relevant accessories and junction/inspection boxes. Minimum size 20 mm for exposed/concealed conduits respectively.

c) Necessary 6A/16A light control switches of grid plate type on MS boxes.

d) Required switch and receptacles units in similar boxes as in item (d) above. Wiring of each lighting fitting/receptacle unit/ceiling fan/bell etc. shall be considered as one point. However, when two or more receptacles are to be wired at the same location/in the same box. Wiring of first receptacle shall be considered as one point and wiring of each of subsequent receptacle at that location shall be considered as half point each.

5.4Concealed Wiring

For installations requiring concealed conduit wiring, the supply routing and laying of UPVC conduits of minimum size 20mm in walls/ceiling, from lighting panels upto fittings, receptacles, inspection/junction boxes etc. shall be in the CONTRACTOR's scope. The CONTRACTOR shall closely co-ordinate his work with that of the Civil Contractor. The CONTRACTOR shall prepare and furnish drawings showing the location of the embedded conduits/junction boxes/inspection boxes, based on the PURCHASER's lighting layout drawings.

5.5Wiring

Unless otherwise stated wiring shall be carried out in UPVC conduits. All types of wiring, concealed or unconcealed shall be capable of easy inspection.

Unconcealed wiring when run along walls shall be as near the ceiling as possible. In all types of wiring, due consideration shall be given for neatness and good appearance.

Wherever specified, Emergency lighting shall be switched in through change-over Switch on AC mains failure, and manually switched in for testing, independently of normal lighting. Emergency lighting cables shall run in a separate conduit system. In large rooms, the lighting system shall be distributed among three phases. Wiring shall be colour coded so as to enable easy identification of phase and Neutral conductors. The neutral shall be of the same size as the phase conductor. There shall be a circuit breaker or a linked switch on each live conductor of supply mains at the point of entry. The wiring throughout the installation shall be such that there is no break in neutral wire in the form of switch or fuse unit.

Conductors not arranged for connection to the same system and circuit or supply different phases of the same supply, shall be kept a part throughout their entire run.

Receptacles and lighting fittings in general shall be fed from different circuits. Six amps receptacles for toilet or small change rooms can be fed from the lighting circuit with proper isolating arrangement.

Each final sub-circuit from a lighting panel shall be controlled by a single pole switch connected to the live conductor.

For long conduit wiring runs, inspection/pull boxes shall be provided at intervals not exceeding 5m. Such facilities shall also be provided at conduit bends.

5.6 General Practices

All receptacles and switches to be installed in offices and control rooms shall be flush mounted within the wall and those in other areas shall be wall or column mounted.
Ceiling roses shall not embody fuse terminals as an integral part of it. For voltages exceeding 250 volts, a ceiling rose or any similar attachment shall not be used.

A socket outlet shall not embody fuse terminals as an integral part of it. The switch controlling the socket outlet shall be on the live side of the line.

All exposed metal parts of the plug, when the plug is in complete engagement with the socket outlet, shall be in effective electrical connection with the earthing pin.

5.7Earthing
Conduits and fittings shall be earthed by 14 SWG Copper wires (unless otherwise stated, run along the length of the conduit and secured by means of suitable clamps efficiently fastened to conduit pipe. To achieve perfect electrical continuity, the conduits shall be bonded effectively on either end of a coupling and other joints. Earth bonding clips shall be provided.
Conduits shall be grounded at the ends adjacent to switch boards at which they originate or otherwise at the commencement of the ru, by aearthing conductor connected at an earth clip, clamp or gland, in effective electrical contact with the conduit.

5.8Testing and Commissioning
Before a completed installation, or an extension to an existing installation is put into service, installation tests stipulated in applicable Standards and Codes of Practices shall be carried out by the CONTRACTOR in the presence of the Client's representative.

6.0 LIGHTING FITTING AND ACCESSORIES

6.1 Scope
This specification covers the design, material specification, manufacture, testing, inspection and delivery to site and installation & commissioning of lighting fittings and their associated accessories.

6.2Standards
The lighting fittings and their associated accessories such as lamps/tubes, reflectors, housings, ballasts, etc. shall comply with the latest applicable standards as specified. Where no standards are available, the supply items shall be backed by test results, shall be of good quality and workmanship & any supply items which are bought out by the VENDOR shall be procured from approved manufacturers acceptable to the PURCHASER/ENGINEER.

6.3 Lighting Fittings – General Requirements
Fittings shall be designed for continuous trouble free operation under atmospheric conditions as specified (in Sections B & C of project information) without reduction in lamp life or without deterioration of materials and internal wiring. Outdoor fittings shall be weather-proof and rain-proof type.

The fittings shall be designed so as to facilitate easy maintenance, including cleaning, replacement of lamps/starters etc.

Connections between different components shall be made in such a way that they will not work loose by small vibration.
For each type of lighting fitting the VENDOR shall supply the utilization factor to indicate the proportion of the
light emitted by the bare lamps which falls on the working plane.

All fittings shall be supplied complete with lamps suitable for operation on a supply voltage and the variation in supply voltage.

The fittings and accessories shall be designed to have low temperature rise. The Temperature rise above the ambient temperature shall be as indicated in the relevant standards.

All mercury vapour and sodium vapour lamp fittings shall be complete with accessories like lamps, ballasts, power factor improvement capacitors, starters wherever applicable etc. These shall be mounted as far as possible in the fitting assembly only. If these cannot be accommodated inside, then a separate metal enclosed box shall be included to accommodate the accessories and in addition with

a fuse and a terminal block suitable for loop-in, loop-out connections. Outdoor type fittings shall be provided with outdoor type weather-proof box.

All fluorescent lamp fittings shall be complete with all accessories like ballasts, power factor improvement capacitors, lamps, starters and capacitors for correction of stroboscopic effect.

Each fitting shall have a terminal block suitable for loop-in, loop-out and T-off connection by 650/1100V, 3 core, PVC insulated Cu conductor cable of 2.5 sq. mm. in size unless otherwise specified in Data Sheet A1. The internal wiring should be completed by the MANUFACTURER by means of stranded copper wire and terminated on the terminal block.

The mounting facility and conduit knock-outs for the fixtures shall be as specified.

All hardware used in the luminaire shall be suitably plated or anodized and passivated for use in chemical industrial and power plants.

6.4 Earthing

Each lighting fitting shall be provided with an earthing terminal suitable for connection to the earthing conductor.

All metal or metal enclosed parts of the housing shall be bounded and connected to the earthing terminal so as to ensure satisfactory earthing continuity throughout the fixture.

6.5 Painting / Finish

All surfaces of the fittings shall be thoroughly cleaned and degreased. The fittings shall be free from scale, rust sharp edges and burrs.

When enamel finish is specified, it shall have a minimum thickness of 2 mills for outside surface and 1.5 mills for inside surface. The finish shall be non-porous and free from blemishes, blisters and fading. The housing shall be stove-enameled/epoxy stove-enameled-vitreous enameled or anodized as indicated on flame-proof fittings is prohibited.

The surface shall be scratch resistant and shall show no sign of cracking or flaking when bent through 900 over ½" dia mandrel.

Te finish of the fittings shall be such that no bright spots are produced either by direct light source or by reflection.

7.0 EARTHING SYSTEM

7.1 General

The earthing system shall comply with all currently applicable standards, regulations and safety codes of the locality where the installation is to be carried out. Nothing in this specification shall be construed to relieve the CONTRACTOR of this responsibility.

The installation work shall conform to the latest applicable Electricity Rules, standards (IS : 3043) and codes of practice.

7.2 Scope of Supply

The earthing& electrodes shall be supplied by the CONTRACTOR when specifically indicated. Conductors shall be free from rust, scale and other electrical and mechanical

defects and all materials used shall conform to relevant standards or approved by the Engineer . The sizes, materials and quantity shall be as listed.

Steel earthing conductors above ground shall be hot-dip galvanized , unless otherwise stated to prevent atmospheric corrosion.

7.3 Scope of Installation Work

The CONTRACTOR shall carry out the earthing of all equipment/panels / structures. Whether specifically shown in drawings or not, building columns, hand-rails, miscellaneous items such as junction/marshalling boxes, field switches, cable boxes etc., shall be earthed.

The CONTRACTOR shall install bare/insulated, copper/aluminium conductors, braids, etc. required for system and individual equipment earthing. All work such as cutting, bending, supporting, painting/coating, drilling, brazing/soldering/ welding, clamping, bolting and connecting into structures, equipment frames, terminals, rails or other devices shall be in the CONTRACTOR's scope of work. All incidental hardware and consumable such as fixing cleats/clamps, anchor fasteners, lugs, bolts, nuts, washers, bitumastic compound, anti-corrosive paint as required for the complete work shall be deemed to be included by the CONTRACTOR as part of the installation work.

The quantities, sizes and material of earthing conductors and electrodes to be installed, and routes of the conductors and locations of electrodes shall be shown on the project drawings.

The alignments of conductors are approximately shown in the earthing drawings and these may be suitably shifted/finalized in consultation with the site ENGINEER / PURCHASER to avoid any interference. If earth connection to any device is not shown specifically in the relevant earthing drawings, it shall be field routed.

The scope of installation of electrodes shall include installation of these electrodes such as (a) directly in earth, (b) in constructed earth pits, and connecting to main buried earth grid, as per enclosed drawings/relevant standards. The scope of work shall include excavation, construction of the earth pits including all materials required for construction of the earth pits, placing the rod, providing and fixing test links on those rods in test pits and connecting to main earth grid conductors. The location of the earth electrodes will be such that the soil has reasonable chances of remaining moist, as far as possible. Entrances, pavements and roadways are definitely avoided for locating the earth electrodes.
The scope of installation of the test links shall include mounting of the same at specified height on wall/column by suitable brackets and connections of the test link to the earth electrode.

7.4 Work Details

Earthing conductors along their run on walls and columns shall be supported by cleating/welding at intervals of 750 mm and 1000 mm respectively.

Wherever earthing conductors cross underground service ducts and pipes, it will be laid 300mm below, the earthing conductor shall be bounded to such service ducts/pipes.

Wherever main earthing conductor crosses cable trenches, they shall be buried below the trench floor.

Suitable earth risers approved by the ENGINEER shall be provided above finished floor/ground level, if the equipment is not available at the time of laying of the main earth conductors. The minimum length of such riser inside the building shall be 200 mm and outdoors shall be 500 mm above ground level. The risers to be provided shall be marked in project drawings.

Earth leads and risers between equipment earthing terminals and the earthing grid shall follow as direct and short a path as possible.

Neutral connection shall never be used for the equipment earthing. Each neutral point of a transformer shall beearthed to two separate earth electrodes for connection with earthling system.

Shield wire in sub-stations shall be connected to the earthing grid through test links at every alternate switchyard portal tower.

An earthing pad as shown in the drawings shall be provided under each operating handle of the isolator and operating mechanism of HV breakers. Operating handle of the isolator and supporting structure shall be bonded together by a flexible connection and connected to the earthing grid.

A separate earth electrode bed shall be provided adjacent to structures supporting lightning arrestors and coupling capacitors. Each connections shall be as short and as straight as practicable. For arrestors mounted near transformers, earth conductors shall be located clear of the tank and coolers.

Whenever earthing conductor passes through walls, galvanized iron sleeves shall be provided for the passage of earthing conductor. The pipe ends shall be sealed by the CONTRACTOR by suitable water proof compound. Water stops shall be provided wherever earthing conductor enters the building form outside below grade level. Water stops and above mentioned sleeves shall be provided by the civil contractor.

7.5 Earthing Connections

All connections in the main earth conductors buried in earth/concrete shall be welded/brazed type. Connection between main earthing conductor and earth leads also be a welded/brazed type. Cad welding type connections shall be done if specifically indicated.

Connection between earth leads and equipments shall be of bolted type, unless, otherwise specified or shown in the drawings. Equipment vendors shall provide earthing terminals on their equipments.

Welding and brazing operations and fluxes/alloys shall be of approved standards.

All connections shall be of low resistance. Contact resistance also shall be minimum.

All bimetallic connections shall be treated with suitable compound to prevent moisture ingression.

Metallic conduits and pipes shall be connected to the earthing system unless, otherwise specified.

Lightning protection system down conductors shall not be connected to other earthing conductors above ground level. Also no intermediate earthing connection shall be made to lightning arrestor, transformer and CVT earthing leads which shall be directly connected to pipe plate/rod electrode.

7.6 Earth Electrode

Electrodes shall as far as practicable, be embedded below permanent moisture level.

Some electrodes shall be housed in test pits with concrete covers for periodic testing of earth resistivity. Installation of rod/pipe/plate electrodes in test pits shall be convenient for inspection, tasting and watering.

7.7 Pipe Earth Electrodes

GI pipe shall be of medium Class-B 50 mm dia and 3.0 m length Galvanising of the pipe shall confirm to relevant Indian Standards. GI Pipe electrodes shall be tapered at the bottom and provided with holes of 12 mm dia drilled not less than 7.5 cm from each other up to suitable length from bottom. The electrode shall beburied in the ground vertically with its top hot less 20 cm below ground level.

7.8 Plate Earth Electrode

For Plate electrode minimum dimension of the electrode shall be as under : GI plate electrode 60 cm x 60 cm x 6 mm thick Heavy duty cast iron/MS frame with cover shall be suitably embedded in the masonry.

Soil, salt and charcoal placed around the electrode shall be finely graded, free from stones and other harmful mixures. Backfill shall be placed in the layers of 250 mm thick uniformly spread and compacted. If excavated soil is found unsuitable for backfilling, the CONTRACTOR shall arrange for a suitable soil from outside.

7.9 Method of Connecting Earthing Lead to Earth Electrode

In the case of plate earth electrodes, the earthing lead shall be securely bolted to the plate with two bolts, nuts, check nuts and washers. In the case of pipe earth electrodes, they shall be connected by means of a through bolt, nuts and washers and cable socket.

All materials used for connecting the earth lead with electrodes shall be GI in case of GI pipe and GI plate earth electrodes The earthing lead shall be securely connected at the other end to the main board.

7.10 Lightning Protection System

Lightning protection of any installation shall be done in accordance with IS:2309:1989.

The lightning protection air termination and/or horizontal air termination conductors shall be fixed in such a way that they remain in their installed position even during severe weather conditions.

Air termination system shall be connected to earthing system by down conductors as shown in various drawings. The down conductors shall follow a direct path to earth. There shall not be any sharp bends, turns and kinks in the down conductors.

All metalic structures within 2 m vicinity of down conductors shall be bonded to the lightning protection system.

Every down conductor shall be provided with a test joint at about 100 mm above ground level. The test joint shall be directly connected to the earthing system/electrode.

The lightning protection system shall not be direct contact with underground metallic service ducts, cables, cable conduits and metal enclosures of electrical equipment.

The recommendation shape and minimum size of conductors for use above and below ground are given below and should be used unless otherwise indicated.

	Above ground	Below ground
GI Strip	20 x 3 mm	32 x 6 mm

Down conductors shall be provided for every 30 m of perimeter or one for first 100 sq. m plus ne more for every additional 300 sq.m or part thereof. Out of the two cases, smaller of two shall be applicable.

Joints as far as possible, should be avoided and wherever joints are necessary, they shall be mechanically and electrically effective. The joints may be clamped, screwed, bolted, riveted, sweated, braced or welded. No joints should be made below ground.

The lightning conductors shall be secured at not more than 2 m apart for horizontal run and 1.0 m for vertical run by fasteners resistive to corrosion. Earth down conductor shall have an independent earth termination. The interconnection of all the earth terminals shall be preferred. It should be capable of isolation for testing purpose by "Testing Joints". The whole of lightning protective system should have combined resistance to earth not exceeding 10 ohm before any bonding has been affected to metal in or on a structure of surface below ground. In addition the resistance from the earth electrode to the nearest test clamps shall not exceed 0.2 ohm.

8.0 GENERAL INSTRUCTIONS ON ELECTRICAL PRE-COMMISSIONINGARRANGEMENT AND TESTS.

8.1 All tests shall be carried out by the Contractor using his own instruments, testing equipments as well as qualified testing personnel.

8.2 The result of all tests shall conform to the specification requirements as well as any specific performance data guaranteed during finalization of contract.

8.3 Cable termination and jointing.

Termination and jointing of alluminiumconductor power cable shall be by means of compression method using compression type alluminium lugs. Copper conductor control cables shall be terminated directly into screwed type terminals provided in the equipment. Wherever control cables are to be terminated by means of terminal lugs, the same shall be of tinned copper compression type.

8.4 Testing and Commissioning of Electrical Equipment Installation

8.4.1 General

The testing and commissioning for all electrical equipment at site shall be according to the procedure laid down below.

All electrical equipments shall be tested, installed and commissioned in accordance with the latest relavant standards and codes of practice published by Indian Standard Institution where ever available and stipulations and in relevant general specifications.

8.4.2 Polarity test of Switches

In a two wire installation a test shall be made to verify that all switches in every circuit have been fitted in the same conductor throughout and such conductor shall be labelled or marked for connection to the phase conductor or to the non earthed conductor of the supply.

A verification of polarity shall be made and shall be ensured that all fuses and single pole control devices are connected in the live conductor only and for socket outlets that the wiring is correctly connected.

8.4.3 Earth Electrode Resistance Test

The earth resistance of the earth electrode is to be measured by an earth testing 'Megger' provided with a direct reading Ohmmeter. Readings obtained in ohms shall not be more than 1 ohms.

If necessary, with the approval of Engineer-in-Charge additional electrode shall be provided away from the resistance and linked to the electrode system.

8.4.4 Insulation resistance test should be made before the installation is permanently connected to the Electric supply. The insulation resistance to be measured by using an approved portable hand operated insulation resistance tester reading directly in Ohms.

8.4.5 Earth continuity test

The earth continuity conductor should be tested for continuity to ensure that there is no breakage or loose connections in the system.

8.4.6 The installation with fittings complete shall before the current is switched on satisfactorily pass the following tests a) All lamps and appliances having been connected and all witches 'ON' a pressure of not less than twice the working pressure (subject to a limit of 500 V) shall be applied and insulation resistance of the whole or any part of installation to earth , must not be less than 50 Mega Ohms divided by the number of points.

b) With all lamps and appliance removed from the circuit and all switches 'ON' a similar test between poles shall satisfy the above requirement

c) Test to ensure that all single pole switches are on the live side of the apparatus they control.

d) Insulation test in accordance with Indian Electricity rules

e) Earth continuity and resistance test in accordance with IS specification and Indian Electricity rules

f) Load balancing test with tong tester.

8.4.6 **Test Certificates**

Type and routine test certificates for the factory build assembly of board / panels, flameproof enclosures and for all competent parts and other equipmentseg. Switches, MCBs , fuses, conduits, lighting wires, light switches etc. shall be furnished

APPROVED LIST OF MATERIALS FOR ELECTRICAL WORKS

Sl. No.	ITEMS		MAKERS / BRANDS
1	MCB Distribution Board with MCB Isolator /	:	HAGER / HAVELS / LEGRAND

	MCB / ELCB / RCCB/ RCBO		
2	PVC INSULATED SINGLE CORE MULTISTRANDED FLEXIBLE COPPER CONDUCTOR 1100V GRADE FRLS	:	FINOLEX / POLYCAB / RR CABLE
3	PVC INSULATED TELEPHONE CABLES & WIRES (ARMOURED / UNMOURED)	:	DELTON / NETCO
4	UTP CABLE	:	D-LINK / AVAYA
5	CONDUIT	:	
	a) EI (MS) CONDUIT		BEC / SUPREM / KK A.K.G / PRECISION /
	b) PVC (RIGID) CONDUIT		SUPREME / AKG / PRECISION
6	6/16A SWITCH, SOCKET, BELL PUSH, TELEPHONE & TV SOCKET ETC. (MODULAR)	:	WIPRO FLAT SWITCH(PLATIA) /HAGER (Insysta)/ LEGRAND/ HAVELS
7	CEILING ROSE	:	ANCHOR / PRECISION / SSK
8	SINGLE PHASE MOTOR STARTER UNIT	:	NORTHWEST / ELECTRON DEVICE
9	LIGHTING FIXTURES (INDOOR)	:	PHILIPS / WIPRO / CORMPTON
10	LAMPS (CF & FL.TUBE)	:	PHILIPS / OSRAM / BAJAJ
11	CEILING FAN / WALL BRACKET FAN	:	CROMPTON / POLAR /HAVELS
12	EXHAUST FAN	:	CALCUTTE / EPC / CROMPTON / POLAR / HAVELS
13	CURRENT TRANSFORMER	:	KPPA / A.E.
14	INCATING METERS (AMMETER/VOLTMETER/FREQUENCY METER ETC. (ANALOG TYPE)	:	A.E / IMP
15	SELECTOR SWITCH (AMMETER / VOLTMETER)	:	KAYCEE / HPL / VAISHNO
16	INCATING LAMP	:	VAISHNO / BINAY
17	MCCB (MP THERMAL I MAGNATE RELEASE)	:	L&T / SIEMENS / HAGER

18	SWITCH DISCONNECTOR FUSE (HRC) UNIT (OPEN& SS ENCLOSURE UNIT)	:	L&T / ABB / SIEMENS
19	ON – LOAD CHANGE OVER SWITCH (OPEN & SS ENCLOSURE UNIT)	:	L&T / ABB / LEGRAND
20	XIPE – ARMOURED AL CABLE	:	NICCO / GLOSTER
21	MCB CHANGE OVER ISOLATO(CENTRE OFF)	:	ABB / HAVELLS / LEGRAND
22	METAL CLADED POWER PLUG & SOCKET (FLUSH TYPE)	:	LEGRAND / SIEMENS

Note: 1) Architects reserves the right to insist contractor for use of any specific brand / make etc.

2) In case any materials are not available from the above brands, Architect will suggest names of other brands / manufacturers and contractor will have to abide by the same.

Date: Signature of Contractor with Seal

(INTEGRITY PACT)

Integrity Pact Between**INDIAN BANK** hereinafter referred to as"**The Principal**"
And ..... hereinafter referred to as"**The Bidder / Contractor**"

Preamble

The Principal intends to award, under laid down organizational procedures, contract/ s for ..... The Principal values full compliance with all relevant laws of the land, rules,

regulations, economic use of resources and of fairness / transparency in its relations with its Bidder(s) and / or Contractor(s).
In order to achieve these goals, the Principal will appoint Independent External Monitors (IEMs) who will monitor the tender process and the execution of the contract for compliance with the principles mentioned above.

Section 1 - Commitment of the Principal

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

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

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

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

1.2 If the Principal obtains information on the conduct of any of its employees which is a criminal offence under the IPC/PC Act, or if there be a substantive suspicion in this regard, the Principal will inform the Chief Vigilance Officer and in addition can initiate disciplinary actions.

Section 2 - Commitment of the Bidder(s) / Contractor(s)

2.1 The Bidder(s)/ Contractor(s) commit themselves to take all measures necessary to prevent corruption. The Bidder(s)/ Contractor(s) commit themselves to observe the following principles during participation in the tender process and during the contract execution.

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

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

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

(d) The Bidder(s)/Contractors(s) of foreign origin shall disclose the name and address of the Agents/representatives in India, if any, similarly the Bidder(s)/Contractors(s) of Indian Nationality shall furnish the name and address of the foreign principals, if any. Further details as mentioned in the "Guidelines on Indian Agents of Foreign Suppliers"shall be disclosed by the Bidder(s)/Contractor(s).Further, as mentioned in the Guidelines all the payments made to the Indian agent/representative have to be in Indian Rupees only. Copy of the "Guidelines on Indian Agents of Foreign Suppliers" is placed at (page nos. 6- 7).

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

(f) Bidder(s) /Contractor(s) who have signed the integrity Pact shall not approach the Courts while representing the matter to IEMs and shall wait for their decision in the matter.

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

Section 3- Disqualification from tender process and exclusion from future contracts-

If the Bidder(s)/Contractor(s), before award or during execution has committed a transgression through a violation of Section 2, above or in any other form such as to put their reliability or credibility in question, the Principal is entitled to disqualify the Bidder(s)/Contractor(s) from the tender process or take action as per the procedure mentioned in the "Guidelines on Banning of business dealings".

Section 4 - Compensation for Damages

4.1 If the Principal has disqualified the Bidder(s) from the tender process prior to the award according to Section 3, the Principal is entitled to demand and recover the damages equivalent to Earnest Money Deposit/ Bid Security.

4.2 If the Principal has terminated the contract according to Section 3, or if the Principal is entitled to terminate the contract according to Section 3, the principal shall be entitled to demand and recover from the Contractor liquidated damages of the Contract value or the amount equivalent to Performance Bank Guarantee.

Section 5 - Previous transgression

5.1 The Bidder declares that no previous transgressions occurred in the last three years with any other Company in any country conforming to the anti-corruption approach or with aPublic Sector Enterprise in India that could justify his exclusion from the tender process.

5.2 If the Bidder makes incorrect statement on this subject, he can be disqualified from the tender process or action can be taken as per the procedure mentioned in "Guidelines on Banning of business dealings".

Section 6 - Equal treatment of all Bidders I Contractors I Subcontractors

6.1 In case of Sub-contracting, the Principal Contractor shall take the responsibility of the adoption of Integrity Pact by the Sub-contractor.

6.2 The Principal will enter into agreements with identical conditions as this one with all Bidders and Contractors.

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

Section 7 - Criminal charges against violating Bidder(s)/ contractor(s)/ Subcontractor(s)

7.1 If the Principal obtains knowledge of conduct of a Bidder, Contractor or Subcontractor, or of an employee or a representative or an associate of a Bidder, Contractor or Subcontractor which constitutes corruption, or if the Principal has substantive suspicion in this regard, the Principal will inform the same to the Chief Vigilance Officer.

Section 8 - Independent External Monitor

8.1 The Principal appoints competent and credible Independent External Monitor for this Pact after approval by Central Vigilance Commission. The task of the Monitor is to review independently and objectively, whether and to what extent parties comply with the obligations under this agreement.

8.2 The Monitor is not subject to instructions by the representatives of the parties and performs his/her functions neutrally andindependently. The Monitor would have access to all Contract documents, whenever required. It will be obligatory for him/her to treat the information and documents of the Bidders/Contractors as confidential. He/she reports to the MD & CEO, Indian Bank.

8.3 The Bidder(s)/Contractor(s) accepts that the Monitor has the right to access without restriction to all Project documentation of the Principal including that provided by the Contractor. The Contractor will also grant the Monitor, upon his/her request and demonstration of a valid interest, unrestricted and unconditional access to their project documentation. The same is applicable to Sub-contractors.

8.4 The Monitor is under contractual obligation to treat the information and documents of the Bidder(s)/Contractor(s)/Sub-contractor(s) with confidentiality. The Monitor has also sighed declarations on 'Non-Disclosure of Confidential Information' and of 'Absence of Conflict of Interest'. In case of any conflict of interest arising at a later date, the IEM shall inform MD & CEO, Indian BANK and recues himself/herself from that case.

8.5 The Principal will provide to the Monitor sufficient information about all meetings among the parties related to the Project provided such meetings could have an impact on the contractual relations between the principal and the Contractor. The parties offer to the Monitor the option to participate in such meetings.

8.6 Assoon as the Monitor notices, or believes to notice, a violation of this agreement, he/she will so inform the Management of the Principal and request the Management to discontinue or take corrective action, or to take other relevant action. The monitor can in his regard submit non-binding recommendations. Beyond this, the Monitor has no right to demand from the parties that they act in a specific manner, refrain from action or tolerate action.

8.7 The Monitor will submit a written report to the MD & CEO, Indian Bank within 8 to10 weeks from the date of reference or intimation to him by the Principal and, should the occasion arise, submit proposals for correcting problematic situations.

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

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

Section - 9 - Earnest Money/Security Deposit

9.1 Every bidder, while submitting commercial bid, shall deposit an amount* as specified in the RFP as Earnest Money/Security Deposit, with the buyer through any of the following instruments:-

(i) Bank Draft or a Pay Order in favour of the .....

(ii) A confirmed guarantee by an Indian Nationalized Bank, promising payment of the guaranteed sum to the UCIL, Government of India, represented on behalf of the President of India, on demand within three working days without any demur whatsoever and without seeking any reasons whatsoever. The demand for payment by the Buyer shall be treated as conclusive proof for payment.

(iii) Any other mode or through any other instrument, as stated in RFP.

9.2 The Earnest Money/Security Deposit shall be valid till the complete conclusion of contractual obligations to complete satisfaction of both the bidder and the buyer, whichever is later.

9.3 In the case of successful bidder a clause would also be incorporated in the Article pertaining to Performance Bond in the Purchase Contract that the provisions of Sanctions for Violation shall be applicable for forfeiture of Performance Bond in case of a decision by the Buyer to forfeit the same with assigning any reason for imposing sanction for violation of this pact.

9.4 The provisions regarding Sanctions for Violation in Integrity Pact include forfeiture of Performance Bond in case of a decision by the Buyer to forfeit the same without assigning any reason for imposing sanction for violation of Integrity Pact.

9.5 No interest shall be payable by the Buyer to the Bidder(s) on Earnest Money / Security Deposit for the period of its currency.

Section -10 Sanctions for Violation

10.1 Any breach of the aforesaid provisions by the Bidder or any one employed by him or acting on his behalf (whether with or without the knowledge of the Bidder) or the commission of any offence by the Bidder or any one employed by him or acting on his behalf, as defined in Chapter IX of the Indian Penal Code, 1860 or the Prevention of Corruption Act 1988 or any other act enacted for the prevention of corruption shall entitle the Buyer to take all or any one of the following actions, wherever required:-

(a) To immediately call off the pre-contract negotiations without assigning any reason or giving any compensation to the Bidder. However, the proceedings with the other Bidder(s) would continue.

(b) The Earnest Money/Security Deposit/Performance Bond shall stand forfeited either fully or partially, as decided by the Buyer and the Buyer shall not be required to assign any reason therefore.

(c) To immediately cancel the contract, if already signed, without giving any compensation to the Bidder.

(d) To recover all sums already paid by the Buyer, and in case of an Indian Bidder with interest thereon at 2% higher than the prevailing Prime Lending Rate, while in case of a Bidder from a country other than India with interest thereon at 2% higher than the LIBOR. If any outstanding payment is due to the Buyer from the Bidder in connection with any other

contract for any other stores, such outstanding payment could also be utilized to recover the aforesaid sum and interest.

(e) To encash the advance bank guarantee and performance bond/warranty bond, if furnished by the Bidder, in order to recover the payments, already made by the Buyer, along with interest.

(f) To cancel all or any other Contracts with the Bidder.

(g) To debar the Bidder from entering into any bid from the Government of India for a minimum period of five years, which may be further extended at the discretion of the Bank.

(h) To recover all sums paid in violation of this Pact by Bidder(s) to any middleman or agent or broker with a view to securing the contract.

10.2 If the Bidder or any employee of the Bidder or any person acting on behalf of the Bidder, either directly or indirectly, is closely related to any of the officers of the Buyer, or alternatively, if any close relative of an officer of the Buyer has financial interest/stake in the Bidder's firm, the same shall be disclosed by the Bidder at the time of filing of tender. Any failure to disclose the interest involved shall entitle the Buyer to rescind the contract without payment of any compensation to the Bidder. The term 'close relative' for this purpose would mean spouse whether residing with the Government servant or not, but not include a spouse separated from the Government servant by a decree or order of a competent court; son or daughter or step son or step daughter and wholly dependent upon Government servant, but does not include a child or step child who is no longer in any way dependent upon the Government servant or of whose custody the Government servant has been deprived of by or under any law; any other person related, whether by blood or marriage, to the Government servantor to the Government servant's wife or husband and wholly dependent upon Government servant.

10.3 The Bidder shall not lend to or borrow any money from or enter into any monetary dealings or transactions, directly or indirectly, with any employee of the Buyer, and if he does so, the Buyer shall be entitled forthwith to rescind the contract and all other contracts with the Bidder. The Bidder shall be liable to pay compensation for any loss or damage to the Buyer resulting from such rescission and the Buyer shall be entitled to deduct the amount so payable from the money(s) due to the Bidder.

10.4 In cases where irrevocable Letters of Credit have been received in respect of any contract signed by the Buyer with the Bidder, the same shall not be opened.

10.5 The decision of the Buyer to the effect that a breach of the provisions of this Integrity Pact has been committed by the Bidder shall be final and binding on the Bidder, however, the Bidder can approach the monitor(s) appointed for the purposes of this Pact.

Section 11- Fall Clause

11.1 The Bidder undertakes that he has not supplied/is not supplying the similar systems or subsystems at a price lower than that offered in the present bid in respect of any other Ministry/Department of the Government of India and if it is found at any stage that the similar system or sub-system was supplied by the Bidder to any other Ministry/Department of the Government of India at a lower price, then that very price will be applicable to the present case and the difference in the cost would be refunded by the Bidder to the Buyer, if the contract has already been concluded.

Section 12 - Pact Duration

12.1 This Pact begins when both parties have legally signed it. It expires for the Contractor 12 months after the last payment under the contract, and for all other Bidders 6 months after the contract has been awarded. Any violation of the same would entail disqualification of the bidders and exclusion from future business dealings.

12.2 If any claim is made / lodged during this time, the same shall be binding and continue to be valid despite the lapse of this pact as specified above, unless it is discharged / determined by MD & CEO of INDIAN BANK.

Section 13 - Other provisions

13.1 Thisagreement is subject to Indian Law, Place of performance and jurisdictionistheRegisteredOfficeofthe Principal,i.e.Kolkata

Changes andsupplementsaswell asterminationnoticesneed to emadeinwriting.Sideagreements havenot beenmade.

13.3 IftheContractoris apartnership ora consortium,thisa g r e e m e n t mustbe signed b y allpartners orconsortiummembers.

13.4 Should one or several provisions of this agreement turn out to be invalid, theremainder of this agreement remains valid. In this case, the parties will strive to come to an agreement to their original intentions.

13.5 issueslike Warranty/Guaranteeetc. Shall b e outsidethe purviewofIEMs.

13.6 Inthe eventof anycontradiction between the IntegrityPact and its Annexure, the Clause in the Integrity Pact will prevail.

(For&Onbehalf o f thePrincipal)(For&Onbehalf o f Bidder/ Contractor)
(Office Seal) (OfficeSeal)
Place---------- Date ----------

Witness 1
(Name &Address)

Witness 2:

(Name &Address)

PART-'A'	CONSTRUCTION OF BOUNDARY WALL,'PLOT-B'				
SL				RATE	AMOUNT
No	DESCRIPTION	UNIT	QNT	Rs. P.	Rs. P.
1	Earth work in excavation of foundation trenches for boundary wall, in all sorts of soil (including mixed soil but excluding laterite or sand stone) including removing. Spreading or stacking the spoils within a lead of 75m. as directed. The item includes necessary trimming the sides of trenches, levelling, dressing and ramming the bottom, bailing out water etc. as required complete.				
	Depth of excavation not exceeding 1500mm.	Cum	96		
2	Filling in foundation trench plinth with earth obtained from excavation of foundation in layers not exceeding 150mm, as directed and consolidating the same by thorough saturation with water, ramming complete.	Cum	57		
3	Removal of rubbish from the working site and disposal of the same, beyond the compound exceding 10 Km. and depositing and levelling in conformity with the Municipal/ Corporation Rules for such disposal, loading into truck and cleaning the site in all respect as per direction of E.I.C.	Cum	39		
4	Providing and laying in position cement concrete of specified grade excluding the cost of centering and shuttering.				
a	1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40mm nominal size).	Cum	15		
b	1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 40mm nominal size).	Cum	6		
5	125 mm thick Brick masonry work in cement mortar (1:4) using approved H.B. netting in every third layer with approved 1st class bricks (250 x 125 x 75) having minimum crushing strength of 105 kg per Cmsq. including curing at least for 7 days, before using it for work cleaning and soaking the brick at least for 24 hours, scaffolding, staging, all leads and lifts from any point to any point inside the site, in all structures such as walls / pillars / supports etc. as directed by the E.I.C.	Sqm	173		
6	Reinforcement Cement concrete (mix 1:2:4) with graded stone chips (20 mm nominal size) excluding shuttering and reinforcement,if any, in ground floor as per relevant IS codes.	Cum	45		
7	Hire and labour charges for shuttering with centering and necessary staging upto 4 M. using approved stout proper and hard wood planks of approved thickness with required bracing for concrete slabs, beams, stairs, columns, walls, lintel, any curved member, fins, chajjas and fascia etc. including fitting, fixing and striking out after completion of mandatory period as specified.				
	Steel shuttering or 9 mm to 12 mm thick approved quality ply board shuttering in any concrete work.	Sqm	465		

B.O.Q. FOR CIVIL,SANITARY,BOUNDARY WALL,SITE DEVELOPMENT AND ELECTRICAL WORKS FOR INDSETI BUILDING AT MIDNAPUR UNDER INDIAN BANK ZONAL OFFICE,WEST BENGAL.

SL No	DESCRIPTION	UNIT	QNT	RATE Rs. P.	AMOUNT Rs. P.
8	Reinforcement steel (Fe-500) for reinforced concrete work in all sorts of structures including distribution bars, stirrups binders etc. including supply of steel bars, initial straightening and removal of loose rust (if necessary), cutting to requisite length, hooking and bending to correct shape placing in proper position and binding with 16 gauge black annealed wire at every inter-section, complete as per drawing	MT	5.3		
9	Providing & applying 20mm thick cement plaster to external surfaces of masonry and concrete surface in two coats, underlayer 12mm thick cement mortar 1:6 (1 cement : 6 coarse sand) and top layer 8mm thick cement plaster 1:6 (1 cement: 6 coarse sand) finished smooth and leveling the surface all complete. External plastering shall include roughening of the concrete surface, raking out joints of brick works including groove where ever required, curing at least for	Sqm	600		
10	Neat cement punning 1.5mm thick.	Sqm	112.5		
11	Applying exterior grade Acrylic primer (Single coat) of approved quality and brand on plastered or concrete surface to receive decorative textured or smooth finish acrylic exterior emulsion paint including smoothening the surface by sand papering and scaffolding etc. complete in all respect as per direction of the E.I.C.	Sqm	600		
12	Priming single coats on steel surface with synthetic oil bound primer of approved make and brand including smoothening the surface by sand papering and scaffolding etc.	Sqm	345		
13	Supplying & applying two coats of protective and decorative Acrylic smooth exterior (anti fulgal) emulsion paints of approved quality on external / internal wall surface including surface preparation, scaffolding etc. complete as per direction of E.I.C.				
	Super protective 100% acrylic emulsion.	Sqm	600		
14	Painting with best quality synthetic enamel paint of approved make and brand including smoothening surface by sand papering etc. including using of approved putty etc. on the surface, if necessary with scaffolding, complete				
	On steel or other M.S. surface with hi gloss				
	Two coats with approved shade.	Sqm	345		
15	M.S. Ornamental grill / raling of approved design joints continuously welded with M.S, W.I. Flats and bars of windows, railing etc. fitted and fixed with necessary screws and lugs Grill weighing above 14 Kg./sqm and up to 16 Kg./sqm	Kg	1680		

SL No	DESCRIPTION	UNIT	QNT	RATE Rs. P.	AMOUNT Rs. P.
16	Supplyng, fitting and fixing grill gate, frame made from 50 mm x 6 mm M.S. flat iron with another horizontal flat at the middle, 20 mm dia M.S.bars at 200 mm apart from bottom flat to top and 20 mm dia M.S. bars at 200 mm apart from bottom flat to middle flat including drilling, welding etc. complete. All vertical bars are to be protruded at least 100 mm above the middle and top flat is to be flattended and pointed as directed. Necessary locking arrangement on both faces, arrangement for temporary closing the gate and 2 nos strong iron hinges of M.S. bars and flat of same sizes on each leaf to be embeded in C.C. brick / R.C.C. pillars as necessary including a red oxide painting to all iron works as directed and	Kg	540		
17	M.S.works in post made of angles, tees et. To sizes spec ialybent, twisted, forged; making holes drilled and fitted with necessary bolts, asherorsc rews etc.	Kg	525		
	PART-'A': TOTAL CARRIED TO GENERAL SUMMARY				
PART-'B'	**CIVIL WORK**				
1	Earth work in excavation of foundation trenches for boundary wall, in all sorts of soil (including mixed soil but excluding laterite or sand stone) including removing. Spreading or stacking the spoils within a lead of 75m. as directed. The item includes necessary trimming the sides of trenches, levelling, dressing and ramming the bottom, bailing out water etc. as required complete.				
a	Depth of excavation not exceeding 1500mm.	Cum	350		
b	Depth of excavation for additional depth beyind 1500 mm and upto 3000 mm.	Cum	25		
2	Filling in foundation trench plinth with earth obtained from excavation of foundation in layers not exceeding 150mm, as directed and consolidating the same by thorough saturation with water, ramming complete.	Cum	125		
3	Filling in foundation trench plinth with silver sands in layers not exceeding 150mm, as directed and consolidating the same by thorough saturation with water, ramming complete including the cost of supply of silver sand.	Cum	150		
4	Removal of rubbish from the working site and disposal of the same, beyond the compound exceding 10 Km. and depositing and levelling in conformity with the Municipal/ Corporation Rules for such disposal, loading into truck and cleaning the site in all respect as per direction of E.I.C.	Cum	250		

B.O.Q. FOR CIVIL,SANITARY,BOUNDARY WALL,SITE DEVELOPMENT AND ELECTRICAL WORKS FOR INDSETI BUILDING AT MIDNAPUR UNDER INDIAN BANK ZONAL OFFICE,WEST BENGAL.

SL				RATE	AMOUNT
No	DESCRIPTION	UNIT	QNT	Rs. P.	Rs. P.
5	Anti termite treatment to the back filling of R.C.C. foundation with chemical emulsion by admixing chloropyrofos emulsifiable concentrate (1% concentration) with water by weight atthe rate of 7.5 ltr. per sq.m. ofthe vertical surface of the substructure of each side of the foundation. The work shall be carried out as per specification as described in para 6.3.1 of code IS6313 (part-II) 1981 (Mode of measurement will be per sqm of vertical area of foundation treated).	Sqm	462		
6	Anti termite treatment to the top surface of the consolidated earth within plinth walls with chemical emulsion by admixing chloropyrofos emulsifiable concentrates (1% concentration) with water by weight at the rate of 5 Litres per sq. m. of the surface before sand bed or sub-grade is laid. Holes upto 50 mm. to 75 mm. deep at 150 mm. centre to centre both ways shall be made with 12 mm. diameter mild steel rod on the surface to facilitate saturationofthesoilwiththechemical emulsion.The work shall be carried out as per specification described in para 6.4 of code IS-6313 (part -II) 1981. (Mode ofmeasurment willbe perSq.m ofplan area of plinth treated.)	Sqm	472		
7	Single brick flat soling of picked jhama bricks including ramming and dressing bed to proper level, and filling joints with powdered earth or sand.	Sqm	425		
8	Providing and laying in position cement concrete of specified grade excluding the cost of centering and shuttering.				
a	1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40mm nominal size).	Cum	65		
b	1:4:8 (1 cement : 4 coarse sand : 8 graded stone aggregate 40mm nominal size).	Cum	2		
9	Brick masonry work in cement mortar (1:6) using approved 1st class bricks (250 x 125 x 75) having minimum crushing strength of 105 kg per Cmsq. including V- Groove jointing on both faces, curing at least for 7 days, cleaning and soaking the brick at least for 24 hours before using it for work, scaffolding, staging, all leads and lifts from any point to any point inside the site in all structures such as walls / pillars / supports etc. as directed by the E.I.C.	Cum	210		
10	125 mm thick Brick masonry work in cement mortar (1:4) using approved H.B. netting in every third layer with approved 1st class bricks (250 x 125 x 75) having minimum crushing strength of 105 kg per Cmsq. including curing at least for 7 days, before using it for work cleaning and soaking the brick at least for 24 hours, scaffolding, staging, all leads and lifts from any point to any point inside the site, in all structures such as walls / pillars / supports etc. as directed by the E.I.C.	Sqm	400		

SL No	DESCRIPTION	UNIT	QNT	RATE Rs. P.	AMOUNT Rs. P.
11	Providing and laying Design mixe concrete of M-25 grade (BMC / RMC) with well graded stone chips of maximum size 20mm containing designed quantity of cement per Cu.m. of wet concrete produced in computerized batching plant under controlled condition using approved super plastisizer designing concrete mix following I.S. 10262 and I.S. 456 transporting the mix with agitation in transit mixer to work site depositing the mix on a plat form erected for the purpose at required levels of concreting and then placing the mix in its final location of form work compacting and curing the same complete as per specification & direction of the Engineer-in-charge including computerized batching plant, transit mixer with all accessories vibrators etc. inclusive of all other incidental charges in this connection complete including the cost of platform and its supporting staging. With approved concrete pump	Cum	451		
12	Hire and labour charges for shuttering with centering and necessary staging upto 4 M. using approved stout proper and hard wood planks of approved thickness with required bracing for concrete slabs, beams, stairs, columns, walls, lintel, any curved member, fins, chajjas and fascia etc. including fitting, fixing and striking out after completion of mandatory period as specified.				
a	Steel shuttering or 9 mm to 12 mm thick approved quality ply board shuttering in any concrete work.	Sqm	3610		
b	Add extra over normal shuttering for staging beyond 4 M in any floor (mode of measurement : area in plan x mean height of staging up soffit of shuttering above intial 4 M)	Cum	150		
13	Reinforcement steel (Fe-500) for reinforced concrete work in all sorts of structures including distribution bars, stirrups binders etc. including supply of steel bars, initial straightening and removal of loose rust (if necessary), cutting to requisite length, hooking and bending to correct shape placing in proper position and binding with 16 gauge black annealed wire at every inter-section, complete as per drawing and direction of E.I.C.	MT	61		
14	Providing & applying 10mm thick Plaster in cement mortar (1:4) to all RCC. surfaces including celling with cement and sand mortar (1 part of cement + 4 parts of sand) including necessary scaffolding, rounding off or chamfering corners as directed and raking out joints & roughening of concrete surface, including throating, nosing , groove where ever required , curing at least for 7 days etc. complete as per the drawings and specifications / as directed by the E.I.C.	Sqm	950		
15	Providing & applying 15 mm thick Plaster in cement mortar (1:6) to all internal wall surfaces with cement and sand mortar (1 part of cement + 6 parts of sand) including necessary scaffolding, rounding off or chamfering corners as directed and raking out joints & roughening of concrete surface, including throating, nosing, groove where ever required , curing at least for 7 days etc. complete as per the drawings and specifications / as directed by the E.I.C.	Sqm	1570		

SL				RATE	AMOUNT
No	DESCRIPTION	UNIT	QNT	Rs. P.	Rs. P.
16	Providing & applying 20mm thick cement plaster to external surfaces of masonry and concrete surface in two coats, underlayer 12mm thick cement mortar 1:6 (1 cement : 6 coarse sand) and top layer 8mm thick cement plaster 1:6 (1 cement: 6 coarse sand) finished smooth and leveling the surface all complete. External plastering shall include roughening of the concrete surface, raking out joints of brick works including groove where ever required, curing at least for 7 days etc., scaffolding, staging etc.	Sqm	1200		
17	Neat cement punning 1.5mm thick.	Sqm	30		
18	Plinth Protection				
	Material and labour for providing 50 mm thick P.C.C. 1:3:6 (1 cement : 3 sand : 6 20mm down stone aggregate) over 75 mm bed by dry brick ballast 40 mm norminal size well rammed and consolidated with fine sand including finishing the top with net cement complete all as specified and directed by E.I.C.	Sqm	85		
19	Water Proofing of Roof Slab				
	Providing and laying water proofing treatment on roof sabs as flowing stages :-				
a	Cleaning the RCC roof slab including parapet up to 300 mm height by wire brush, chisel out any mortar protrusions thereafter rendering of uneven surface with cement sand motar (1:4) mixed with integral water proofing compound to make it even.	Sqm	471		
b	After surface preparation, first layer of slurry of cement @ 0.488 kg / Sqm mixed with polymer modified water proofing cement compound @ 0.253 Kg / Sqm.	Sqm	471		
c	Laying second layer of fibre glass cloth when first layer is still green. Overlaps of joints of fibre cloth should not be less than 100 mm.	Sqm	471		
d	Third layer of 1.5 mm thickness consisting of slurry of cement @ 1.289 Kg / Sqm mixed with polymer modified water proofing cement compound @ 0.670 Kg / Sqm and coarse sand @ 1.289 Kg / Sqm. This will be allowed to air for 4 hours followed by water curing for 48 hours. The entire treatment will be taken upto 300 mm on parapet wall and tucked into groove in parapet all around.	Sqm	471		
20	Providing & laying Screed concrete 1:1.5 :3 (1 part of cement : 1.5 parts of fine aggregate : 3 parts of coarse aggregate 12 mm) on the roof slabe / toilets / kitchen / balcony etc.of 40 mm average thickness synthetic fiber over waterproofing treatment. This shall include careful compaction , proper curing, minimum for a period of 7 days etc. as per direction and to the satisfaction of the E.I.C. waterproofing treatment measured separately.	Sqm	471		

SL No	DESCRIPTION	UNIT	QNT	RATE Rs. P.	AMOUNT Rs. P.
21	25 mm thick damp proof with cement concrete (1 : 1-1/2 :3)(with graded stone chips 10 mm normal size) and admixture of water proofing compound as per manufacture's soecification followed by two coat of of polymer based paint (1st coat after 4 to 5 days of concerete laying and 2nd coat just before brick masonary work) as directed.	Sqm	50		
a	Extra rate over item No. 26 for using water proofing and plasticising admixture @ 0.2% by weight of cement (or at manufacturer's specified rate) for concrete of various grades.	Kg	5		
b	Extra rate over item No. 36 for applying 2 coats of bonding agent with syntheticmulfi functional rubber emulasion having adhesive and water proofing properties by mixing with in propertion (1 bonding agent : 4 water : 6 cement) as per manufacturer's soecification.	Sqm	50		
22	M.S. structural steel works for fire stair in columns, beams etc. with simple rolled structure members joists, angle, channel section conforming to IS : 226, IS : 800 & SP (6) 1964 connected to one another with bracket, gussct, cleats as per design, direction of E.I.C. complete including cutting to requisite size, fabrication with necessary metal arc welding conforming to IS : 816 - 1956 & IS : 1995 using electrodes of approved make and brand conforming to IS : 814 - 1957,haulage, hoisting and erection at roof levl of multiplexes all complet. The rate includes the cost of rolled steel section. consumables such as electrodes, gas and hire charges of all tools and plants and labour required for the work and one coat of red oxide zinc chromath promer including all incidental charges such as electricity charges, labour insurance charges etc.	Mt	4		
23	Kota stone slabs 20 mm thick in floor, treads and risers, skirting etc. laid on 20 mm (average) thick cement mortar 1 : 4 (1 cement : 4 coarse sand) and jointed with grey cement slurry mixed with pigment to match the shade of the slabs, including providing grooves on treads and rubbing and polishing complete. Moulding and groove measured separately, complete in all respect as per drawing and specifications and as per direction of Architect/E.I.C. –Basic Price Rs.377/- SqM.	Sqm	83		
24	Providing edge moulding for srair/counters /others place including machine polishing to edge to give high gloss finish etc. complete as per design approved by E.I.C.	Rm	100		
25	Making 6 mm wide, 3 mm deep groove on stair with machine cut finish in true line and level complete	Rm	300		

B.O.Q. FOR CIVIL,SANITARY,BOUNDARY WALL,SITE DEVELOPMENT AND ELECTRICAL WORKS FOR INDSETI BUILDING AT MIDNAPUR UNDER INDIAN BANK ZONAL OFFICE,WEST BENGAL.

SL				RATE	AMOUNT
No	DESCRIPTION	UNIT	QNT	Rs. P.	Rs. P.
26	Providing & fixing of ceramic tiles (thickness to be specified by the manu-facturer) of 1st quality conforming to I.S.: 15622 of approved make and colours for Dado at all levels & heights over a cement mortar (1:3) bed of 15 mm thick and 2 mm thick cement slurry at back side of tiles using cement @ 2.91 Kg/Sqm and joint filling using white cement slurry with pigment including cutting wherever required, making Hole for traps, pipes, comode & electric box, cladding, copla, V groove cutting (with moulding) including cleaning, curing, tools complete in all respect as per drawing and specifications and as per direction of Architect/E.I.C. –Basic Price Rs.775/- SqM.				
	Size of each tile 600 x 300 mm.	Sqm.	275		
27	Providing and laying Antiskid ceramic floor tiles (thickness to be specified by the manu-facturer) of 1st quality conforming to I.S.: 15622 of approved make in colours laid on 20mm thick Cement Mortar 1: 4 (1 cement: 4 Coarse Sand) including pointing the joints with white cement and matching pigment etc. complete.–Basic Price Rs.485/- SqM.				
	Size of each tile 450 x 450 mm.	Sqm.	75		
28	Supplying and laying true to line and level vitrified tile of approved brand (10 mm thick) in floor, skirting etc. over 20 mm thick sand cement mortar 1 : 4 (1 cement : 4 coarse sand) and 2 mm thick cement slurry using cement @ 2.91 kg / Sqm joints with white cement and colouring pigment to match with colour of tiles. Removal of wax coating of top surface of tiles with warm warer and polishing the tiles using soft and dry cloth upto mirror finish complete including the cost of meterials, labour and all other incidental charges complete true to the manfaccturer's specification and direction of E.I.C. –Basic Price Rs807/- SqM.				
	Size of each tile 600 x 600 mm 9.5 mm thick	Sqm	785		
29	Supplying, lifting, cutting and laying / fixing of 20 mm thick 600 mm wide single pice pre-polished Granite Slab for kitchen platform over one set of horizontal 25 mm thick Cuddapah Stone. Cudappah and granite stone min. 25 mm deep inserted to wall, jamming by cement mortar & fixing by araldite on the top edge of the cudappah stone, finished to all shapes (curved or straight), making Hole for traps, pipes, electric box, cutting openings for Kitchen sink, Cladding, copla, V groove cutting (with moulding) & polishing and filling the proper joints with matching colour pigment, curing etc as per drawings, specifications and direction of the EIC. (Including all but excluding the cost of cuddapah stone.) – Basic Price Rs 3000/- SqM	Sqm.	2		

SL No	DESCRIPTION	UNIT	QNT	RATE Rs. P.	AMOUNT Rs. P.
30	Supplying, lifting, cutting and laying / fixing of 25 mm thick 600 mm wide single pice cuddapah stone Slab for kitchen platform horizontally and vertically. Cudappah stone min. 25 mm deep inserted to wall, jamming by cement mortar & fixing by araldite, finished to all shapes (curved or straight), making Hole for traps, pipes, electric box, cutting openings for Kitchen sink, Cladding, copla, V groove cutting (with moulding) & polishing and filling the proper joints with matching colour pigment, curing etc as per drawings, specifications and direction of the EIC. –Basic Price Rs.344/- SqM.	Sqm.	2		
31	Supplying, lifting, cutting and laying / fixing of 20 mm thick 450 mm to 600 mm wide single pice pre-polished Granite Slab for toilet counter / basin top fixed 25 mm deep inserted to wall and jamming by cement mortar. Making Hole for traps / pipes with moulding & polishing and filling the proper joints with matching colour pigment, curing etc as per drawings, specifications and direction of the EIC.–Basic Price Rs.3000/- SqM.	Sqm.	5		
32	Providing & laying Artificial stone floor (P.C.C. flooring) with cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 stone chips) laid in panels as directed with 3mm thick topping made with ordinary grey cement and marble dust in proportion (2 : 1) including smooth, finishing and application of cement slurry before flooring works using cement @ 1.75 kg./Sqm. All complete including all material and labours as per specification and direction of E.I.C. 25mm thick.	Sqm	50		
33	Providing two coats of (Birla White/J.K. white or other equivalent) Wall Care Putty (Water Resistant White Cement based putty for walls and ceiling both internal and external) after removing all loosely adhering material from the wall surface with the help of emery stone, putty blade or wire brush and moistening the wall with sufficient quantity of clean water as specified and directed by the department (Total thickness of two coats is maximum 1.5mm).	Sqm	2420		
34	Applying interior grade Acrylic primer (Double coat) of approved quality and brand on plastered or concrete surface to receive acrylic emulsion paint or other interior paint including smoothening the surface by sand papering and scaffolding etc. complete in all respect as per direction of the E.I.C.	Sqm	2420		
35	Applying exterior grade Acrylic primer (Double coat) of approved quality and brand on plastered or concrete surface to receive decorative textured or smooth finish acrylic exterior emulsion paint including smoothening the surface by sand papering and scaffolding etc. complete in all respect as per direction of the E.I.C.	Sqm	1160		
36	Priming Double coats on wooden surface with synthetic oil bound primer of approved make and brand including smoothening the surface by sand papering and scaffolding etc.	Sqm	65		

SL No	DESCRIPTION	UNIT	QNT	RATE Rs. P.	AMOUNT Rs. P.
37	Priming Double coats on steel surface with synthetic oil bound primer of approved make and brand including smoothening the surface by sand papering and scaffolding etc.	Sqm	150		
38	Supplying & applying two coats of protective and decorative Acrylic smooth exterior (anti fulgal) emulsion paints of approved quality on external / internal wall surface including surface preparation, scaffolding etc. complete as per direction of E.I.C.				
	Super protective 100% acrylic emulsion.	Sqm	900		
39	Protective and applying Two coats textured high class matt finish paint of approved quality including surface preparation, scaffolding etc. complete as per direction of E.I.C.	Sqm	260		
40	Applying Two coats acrylic emulsion paint of approved make and brand on interior wall, celing and others including cleaning and smoothening the surface.				
	Luxury Quality	Sqm	2420		
41	Painting with best quality synthetic enamel paint of approved make and brand including smoothening surface by sand papering etc. including using of approved putty etc. on the surface, if necessary with scaffolding, complete				
a	On timber surface hi gloss				
	Two coat with approved shade	Sqm	65		
b	On steel or other M.S. surface with hi gloss				
	Two coats with approved shade.	Sqm	150		
42	French polishing to wood work with ready mixed french polish of approved brand including preparing the surface. (ordinary gloss)	Sqm	60		
43	Wood work in door / window frame fitted and fixed complete including a proective coat of painting at the contact surface of the frame with brick / concrete.				
	Sal wood local	Cum	1.85		
44	Supplying 35 mm thick solid flush type doors of deluxe decorative one side veener finished conforming to IS : 2202, the timber frame consisting of top and bottom rails and side styles of well seasoned timber 65mm wide each and the entire frame fitted with 37.5mm wide battens placed both ways in order to make the door of solid core and internal lipping with teak, mahogony or rose or similar wood veneers using phenol for maldehyde as glue etc. complete, including fitting, fixing shutters in position but excluding the cost of hinges and other fittings	Sqm	57		

SL No	DESCRIPTION	UNIT	QNT	RATE Rs. P.	AMOUNT Rs. P.
45	Supplying 35 mm thick solid flush type doors of deluxe decorative one side laminated finished quality conforming to IS : 2202, the timber frame consisting of top and bottom rails and side styles of well seasoned timber 65mm wide each and the entire frame fitted with 37.5mm wide battens placed both ways in order to make the door of solid core and internal lipping with teak, mahogony or rose or similar wood veneers using phenol for maldehyde as glue etc. complete, including fitting, fixing shutters in position but excluding the cost of hinges and other fittings.	Sqm	38		
46	Providing and fixing 15micron colour anodised aluminium work for windows, ventilators made with extruded built up standard tubular section / appropriate Z section and other sections of approved make conforming to IS: 733 and IS : 1285 fixed with dash fasteners of required dia and size, including necessary filling up the gaps at junctions i.e. at top, bottom and sides with silicone sealant with approved EPDM gasket. Aluminium snap beading for glazing/ panelling, C.P. brass/ stainless steel screws, all accessories etc. complete as per architectural drawings including fixing of glass. Alluminium fabricator shall be a reputed fabricator and to be got approved from E.I.C. including all fitting and fixture like handel, locking agreement etc. At any level.				
a	Sliding window (two tract) fixed with 5 mm thick clear glass.	Sqm	13.5		
b	Sliding window (three tract) fixed with 5 mm thick clear glass.	Sqm	52		
c	Fixed glass louver with 5 mm thick clear glass.	Sqm	2		
d	Partly fixed & partly glass louver fixed with 4 mm thick fosted glass.	Sqm	6		
e	Full glass double leaf door fixed with 8 mm thick glass.	Sqm	8.4		
47	Providing and fixing 50mm thick, one hour fire resistant rating insulated wooden fire floor, door shutter (single leaf) with frame including heat activated seal, in fill insulating materials and fire resistant coating, TAC approved and commercial Veneering and conforming to relevant Indian Standards complete with all necessary and required fittings and fixtures as per drawing, design and direction of Architect/ E.I.C.	Sqm	4.2		
48	Collapsible gate with 40 mm x 40 mm x 6 mm tee as top and bottom guide rail 20 mm x 10 mm x 2 mm vertical channels 100 mm apart in fully stretchedf position 20 mmn x 5 mm M.S. flats as collapsible bracings properly rivetted and washered including 38 mm steel rollers including locking arragements, fitted and fixed in position with lugs set in cement concrete and including cutting necessary holes, chasing etc. in walls, floors etc. and making good damagess complete.	Sqm	10		

SL				RATE	AMOUNT
No	DESCRIPTION	UNIT	QNT	Rs. P.	Rs. P.
49	M.S. Ornamental grill of approved design joints continuously welded with M.S Flats and bars of windows, railing etc. fitted and fixed with necessary screws and lugsetc. Grill weighing above 10 Kg./sq.mtr and up to 16 Kg./sq. mtr.	Kg	1636		
50	Supplying, fitting & fixing teak wood hand railing over stair railing / balustrade as per drawing with necessary fixtures, complete including polishing as per direction of architect / E.I.C.	Cum	0.25		
51	Supplying, fitting and fixing M.S. clamps for door and window frame made of ftal bent bar, end bifurcated with necessary screws etc. by cement cincrete (1:2:4) as oer direction (cost of concrete will be paid separtely)				
	40 x 6 x 125 mm	Each	294		
52	Providing and fixing IS : 12817 marked stainless steel butt hinges with stainless steel screws etc. complet.				
a	125 x 64 x 1.90 mm	Each	78		
b	100 x 58 x 1.90 mm	Each	72		
53	Providing and fixing stainless steel tower bolts with necessary screws etc. complete.				
a	200 x 10 mm	Each	21		
b	150 x 10 mm	Each	49		
54	Providing and fixing stainless steel sliding bolts with necessary screws etc. complete.				
a	300 mm long and 16 mm dia.	Each	2		
b	250 mm long and 12 mm dia.	Each	2		
55	Providing and fixing stainless steal handele with necessary screws etc. complete.				
a	125 mm long	Each	49		
b	150 mm long	Each	26		
56	Providing and fixing stainless steel hanging type floor door stopper with necessary screws etc. complete.	Each	28		
57	Providing and fixing of PVC door buffer.	Each	49		
	PART-'B': TOTAL CARRIED TO GENERAL SUMMARY				
PART-'C'	**INTERNAL AND EXTERNAL SANITARY & PLUMBING WORKS**				
1	Supplying, fitting and fixing white glazed vitreous chinaware EPWC / Floor mounted wall hung with Cistern, flush pipe etc. approved make supplied, fitted and fixed complete in position with seat & lid. Size 675x435x735 mm	Nos.	15		

SL No	DESCRIPTION	UNIT	QNT	RATE Rs. P.	AMOUNT Rs. P.
2	Supplying, fitting and fixing Orissa pattern water closet 580mm x 440 mm size with cistern complete with cement concrete complete	Nos.	2		
3	Supplying fitting & fixing white vitrious china Wash Basin with C.P. waste, long threads. etc. complete in all respects. (Size 550mm X 400mm)	Nos.	12		
4	Supplying fitting and fixing white vitrious large type Urinal with C.P. waste grating angular stop cock, spreader, connector, with brass screws, PVC waste pipe with coupling complete in all respect. (590mm X 390mm x 380mm).	Nos.	10		
5	Supplying fitting and fixing urinal Partion Wall. (Porcelain) (Size 618mm X 310mm)	Nos	7		
6	15 dia C.P. heavy Pillar cock	Nos.	12		
7	Supplying, fitting & fixing C.P Health faucet [Hand shower] with flexible tube [1mtr long] with wall hook etc. complete in all respects.	Nos.	17		
8	Supplying, fitting and fixing C.P. two in one Bib Cock of approved make and brand tested to 21 kg. Per sq.cm. 15mm.	Nos.	17		
9	Supplying, fitting and fixing C.P. Angular Stop Cock of approved make complete in all respect.	Nos.	36		
10	Supplying, fitting and fixing C.P. Bottle Trap. 32mm. dia. etc. complete in all respects.	Set	12		
11	Supplying, fitting and fixing Liquid Soap holder / Dish with C.P. brass screws etc. complete in all respect.	Nos.	12		
12	Supplying, fitting and fixing Towel Rail with two brackets 25mm dia. C.P. on brass 450mm. long of approved make with C.P. brass screws complete.	Nos.	8		
13	Supplying, fitting and fixing C.P Soap dispenser with glass bottle with approved make.	Nos.	8		
14	Supplying, fitting and fixing C.P. Robe hook with approved make.	Nos.	25		
15	Supplying, fitting and fixing C.P. Towel ring with approved make.	Nos.	4		
16	Supplying, fitting and fixing C.P. Connector of approved make complete in all respect. 600mm long.	Nos.	36		
17	Supplying, fitting and fixing cement joint brass on C.P. grating of approved make complete in all respect. 125 mm dia (cockroch type)	Nos.	35		
18	Supplying, fitting and fixiang C.P. long body bib cock.	Sets	2		

SL No	DESCRIPTION	UNIT	QNT	RATE Rs. P.	AMOUNT Rs. P.
19	Supplying, fitting and fixing stainless steel sink without drain board with waste including C.I. Brackets on 75mm.x 75mm. wooden blocks with brass screws etc. complete in all respects (size 630mm x 550mm. x 180mm).	Each	1		
20	Supplying, fitting & fixing 25mm/32mm dia. ball cock with polythene ball for O.H. Tank etc. complete in all respects.	Each	1		
21	Supplying fitting & fixing Bevelled Edge Mirror 5.5mm thick silver red as per IS 3438/1965 together with brass C.P.hinges. Including approved becking wooden board complete in all respects.	Sqm	8		
22	Supplying, fitting and fixing G.I. Waste Pipe for (basin, urinal, bath tub and sink) with C.I. specials with (concealed) cutting floor and wall and chasing floor as per drawing and direction G.I. waste pipe for basin, complete in all respects. (Each length 2000mm. from bottle trap waste to floor trap. (TATA make 'M' class).				
	32mm/40mm. dia.	Nos.	21		
23	S. I. T. & C. in position **Chlorinated Polyvinyl Chloride (CPVC)** SDR-11 pipes as per ASTM D-2846 standard, having thermal stability for hot & cold water supply, including all CPVC plain & brass threaded fittings, including concealing the pipes in walls or under floors, including making chases in the walls, fixing in the wall with M.S. clamps and making good the wall surface fixing the pipe with support clamps at 1.00 m spacing, includes jointing of pipes & fittings with one step CPVC solvent cement and testing of joints at pressure 10Kg.Cm², etc. complete as per direction by our Architects **(work within toilet)**				
a	15 mm nominal outer dia Pipes	Mtr.	88		
b	20 mm nominal outer dia Pipes	Mtr.	44		
c	25 mm nominal outer dia Pipes	Mtr.	47		
d	32 mm nominal outer dia Pipes	Mtr.	6		
e	40 mm nominal outer dia Pipes	Mtr.	30		
24	Supply, Laying SITC in position **Unplasticised PVC pipes** conforming to IS : 13592 - 1992, Type - B, SWR quality, along with fittings like bends, couplers, cleanouts with rubber ring joints / solvent cement joint.M.S. brackets or clamps support at every 2m so as to keep the pipes away from the wall including all scaffolding, water testing after laying the pipes as specified and painting etc complete. Routing of pipes show in drawings is only indicative.The contractor to consider all the required number of fittings to do piping for smooth and efficient flow of sewage all complete as per direction by our Architects				
24.1	110 mm dia	Mtr	105		
24.2	75 mm dia	Mtr	105		

SL No	DESCRIPTION	UNIT	QNT	RATE Rs. P.	AMOUNT Rs. P.
25	Supplying, fitting and fixing M.S. hanger/ hook/clamp as per instruction for CPVC pipe /U. P.V.C. pipe with grouting in wall and floor and repairing the same as per instruction complete in all respects (each 3 kg. weight).	Kg	25		
26	Supplying, fitting and fixing Peet's / Gate valve fullway gunmetal standard pattern best quality of approved brand bearing I.S.I. Marking with fittings (tested to 21 Kg.per sq.cm.).(Leader or any other approved similar).				
a	20mm. dia.	No	1		
b	25mm. dia.	No	1		
c	32mm. dia.	Nos	2		
d	40mm. dia.	Nos	4		
27	Supplying, laying & jointing S.W. pipe Grade "A" in pipe trenchs to required depth and adequate width of trench including earth work in excavation and stacking of earth at convenient location (as per instruction of Engineer-in-Charge) complete 150mm thick bed concrete (PCC - 1:3:6) and all round pipe 75mm thick as per approved drawing. Pipes are to be laid in straight aligned lengths to correct line and level with sight rails and boning rods. Pipes shall be tested in as laid condition but before pouring surrounding concrete. Concreting shall be done in dry condition of trench by dewatering. After concreting back filling the trenches in layers of 150mm. depth with selected back fill materials and consolidating by manual ramming, dewatering etc. and disposing surplus earth, hard soil, laterite etc. as directed upto a lead of 500m. only Concrete work to be paid separately (For sewer line and drainage line).				
	150mm. dia. (upto 1.5m. depth from F.G.L).	Mtr.	150		
28	S.W.Yard Gully 225mm X 150mm including chamber pit 450mm x 450mm upto 600mm deep with approved C.I. 38 Kg weight road type grating fixed with R.C.C. slab complete.	Nos.	8		
29	Constructing brick masonry Manholes with bricks in cement mortar 1:4 @ 150mm (1 cement :4 coarse sand) RCC top slab 150mm. thick with reinforcement bars 8mm. c/c both ways with mix 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20m. nominal size), foundation concrete 200mm. thick 1:4:8 mix (1 cement : 4 coarse sand: 8 graded stone aggregate 40mm. nominal size) outside inside plastering 12mm. thick with cement mortar with water approved water proofing compound 1 : 3 (1 cement : 3 coarse sand) finished with a floating coat of neat cement and finished including 12mm 4 graded stone aggregate 20mm. nominal size), neatly thick external plaster				

SL No	DESCRIPTION	UNIT	QNT	RATE Rs. P.	AMOUNT Rs. P.
	out side wall upto 500mm deep from cover level with cement mortar 1:6 (1 cement:6 fine sand) completely as per standard design including excavation, dewatering if any, shuttering, shoring, refilling and disposal f surplus earth within plot complete as per specifications and drawings.				
	Inside size 45cm x 45cm. and upto 600 cm. deep including CI cover /CI grating /Road type grating thick brick work total weight of grating cover and frame to be not less than 38 Kgs. including M.S. foot rest as per instruction.	Nos.	20		
	NOTE :				
	Type of cover and M.S. rung to be mension in drawing. (cost of M.S. rung to be considered in above rates (position of M.S. Rung, I.P., Manhole & for U.G./O.H water reservoir).				
30	Providing and laying concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 112.5mm. and down) for Bed Concrete for pipe line, including 75mm. thick all round concrete on pipe or benching and concrete chair as per drawing and direction.(For S.W. pipe).	Cum.	10		
31	Construction of septic tank 50 users capacity as per approved drawing .	No	1		
32	Construction of Soak Well Etc. complete in all respects.	No	1		
33	Construction of chlorination chamber as per drawing & direction. Size 900mm x 1500mm.	No	1		
	PART-'C': TOTAL CARRIED TO GENERAL SUMMARY				
PART-'D':	**SITE DEVELOPMENT,ROADS,ETC.WORK**				
	FOR DEVELOPMENT OF LAND INCLUDING LEVELLING AND GRADING, PROVISION OF ROADS,PATH WAYS, PARKING, LANDSCAPING AND ALLIED WORKS				
1	Earth work in filling in compound, tank, low land, ditches etc. with good earth, in layers not exceeding 150 mm. including breaking clods and consolidating the same by ramming and dressing complete. (Payment will be made on profile measurement before and after the work)				
	With carried earth arranged by the contractor within a radius exceeding 5 km. but not exceeding 10 km. including cost of carried earth.	Cum	250		
2	Box cutting or filling in road embankment in all sorts of soil including spreading the spoils properly and rooling the sub-grade with power roller to proper camber and grade as per direction and satisfaction of E.I.C.				
a	Depth up to 150 mm.	Sqm.	82		
b	For each additional depth of 150 mm and part thereof.	Sqm.	122		

SL No	DESCRIPTION	UNIT	QNT	RATE Rs. P.	AMOUNT Rs. P.
3	Supplying, spreading and compacting fiend Sand to required thickness, in layers not exceeding 150 mm to proper gradient and camber, inundating each layer by water and packing and ramming layer by layer to achieve desired compaction, including lighting, guarding, barricading and making adequate earthen bundh where necessary, curing with water as per direction, mending cracks and depressions by ramming wherever necessary. (The payment is to be made on the basis of the finished compacted volume.)	Cum	50		
4	Construction of dry lean cement concrete Sub- base over a prepared sub-grade with coarse and fine aggregate conforming to IS: 383, the size of coarse aggregate not exceeding 25 mm, aggregate cement ratio not to exceed 15:1, aggregate gradation after blending to be as per table 600-1, cement content not to be less than 150 kg/ cum, optimum moisture content to be determined during trial length construction, concrete strength not to be less than 10 Mpa at 7 days, mixed in a batching plant, transported to site, laid with a paver with electronic sensor, compacting with 8-10 tonnes vibratory roller, finishing and curing. (As per clause 601 of specifications for Road & Bridge Works of MoRT & H (5th Revision)	Cum	80		
5	Providing and laying Controlled cement concrete grade M-25 mix with well graded stone chips excluding shuttering and reinforcement with complete design of concrete mix as per I.S.I. Codes and relevant special publication submission of job mix formula after preliminary mix design after testing of concrete cube as per direction of the Engineer-in-charges. Consum-ption of cement will not be less than 350 kg. per cum. of controlled concrete but will be determined on the basis of preliminary test job mix formula.	Cum	60		
6	Supplying and laying 120 micron thick polythene sheet on prepared surface of PCC base course, overlaping of polysheets minimum 100 mm laid wrinkle free complete as specified and directed by E.I.C.	Sqm.	390		
7	Supplying and laying 60 mm thick coloured interlocking paver blocks of M-30 grade factory made laid over 50mm thick uniform layer of silver sand bed on PCC / WBM sruface completed in level, slope etc. as shown drawing and joints filled with fine sand.	Sqm.	150		
8	Supplying and laying 25 mm thick tiles as per IS: 1237-2012 for road / pabment laid over 25 mm thick cement sand mortar (1: 3) and cement slurry @ 4.4 kg / Sqm at back site of the tiles on concrete base, joint duly sealed with grouting matrial as recomaneded by manufactureer complete all as direction by E.I.C.	Sqm	60		
9	Edging with 2nd class bricks, laid dry lengthwise, including excavation, refilling, consolidation, with a hand packing and spreading nearly surplus earth within a lead of 50 metres	RM	250		
	PART-'D': TOTAL CARRIED TO GENERAL SUMMARY				

SL No	DESCRIPTION	UNIT	QNT	RATE Rs. P.	AMOUNT Rs. P.
PART-'E':	**ELECTRICAL WORK**				
A - POWER DISTRIBUTION WORK :					
1	Supplying and fixing 415V, 315A, TPN SFU with sheet steel enclosure on flat iron/angle iron frame on wall with nuts bolts etc incl. S & F 3 nos. DIN type HRC fuse as per rating.	1	Set		
2. a)	Supply at site the 14 SWG MS Sheet metal fabricated free standing on floor Main LT Distribution Panel Board based on the ISMC - 75 Channel, to be of size not over 1750mm (Length) x 1500mm (Ht.) x 350mm (Depth). The Panel Board Would be completed with the Cable Alleys at both side, Bus Alley and powder coat painting 'Siemens Grey' and also by the all sorts of internal wiring by the PVC insulated 'FR', 1100V Grade Copper Wires incl. finishing their every ends by suitable size tinned copper socket (of Dowell's make) and PVC insulating tapes. The panel Bord will be containing the following electrical switching / Measuring / Indicating & Current Bussing accessories				
	Refering the 'SLD' for the same :-				
A)	**Switching Accessories :** All 'L&T' Make.				
	Following all the MCCB, by Thermal Magnetic and Adjustable / Fixed OL - Range as undementioned and complete with the direct rotary handle, Auxilary and trip Alarm Contact & Spreader Terminal as per following mention :-				
	i) 250A (200 - 250) A, 4 Pole, 415V, Br. Cap. 50 KA as Incomer, (Type DN2 - 250N) - 1 Set.				
	ii) 160A Fixed OL, 3 Pole, 415V, Br. Cap. 50 KA as outgoing Fdr., (Type DN 1 - 160 M) - 1 Set				
	iii) 125A (100 - 125)A, 4 Pole, 415 V, Br. Cap 30 KA as outgoing (3 sets) & spare (1 set) - 4 Sets				
	(Type DU125H) With 415V AC Shunt Trip Release - 4 Sets.				
B)	**Change Over Switch :**				
	i) 'L&T make, 125A / 415V, 4-Pole ON-LOAD centre OFF open executed Switch - 1 Set.				
C)	**Measuring, Indicating & Alarming & Allied Accessories :**				
	i) 'L&T' make (96 x 96) Sqmm. Digital Ammeter 3Ph, Cl.1.0 (1 xxx Series) (Sel Switch - 2 Sets in built)				
	ii) 'L&T' make (96 x 96) Sqmm Digital Voltmeter 3Ph, Cl.1.0 (1 XXX Series) (Sel Switch inbuilt) - 2 Sets				
	iii) Kappa / AE Make CT, Cl.1.0, 5.0VA each by				
	a) Set of 3 X 100/5A - 1 Set				
	b) Set of 3 X 100/5A - 1 Set.				

SL No	DESCRIPTION	UNIT	QNT	RATE Rs. P.	AMOUNT Rs. P.
	iv) 'L&T' make, 6A, SP-C MCB Br. Cap. 10KA as the back up protection against 2 nos. Voltmeter @ 3 nos. Per Voltmeter X 2 - 6 Nos.				
	v) Set of 'Vaishno' make Buzzer (96 X 96) Sq.mm., 240V AC with 'L&T' make Push Button 'Yellow' Actuator & '1NO' element all in a set - 1 Set.				
	vi) Set of 'L&T' Make Control / Auxoliary Contactor of '2NO + 2NC' Contact of 240V AC operated, Type : MX022E - 1 Set.				
	vii) Set of 'L&T' make, 240V AC operated LED Indicating Lamp, in total quantity Red - 9 nos ; Yellow - 2 nos.; Blue - 2 nos. ; Green - 6 nos. & Amber - 6 nos.				
D)	**BUSBAR** ; 350 A/Ph. Capacity by 4 x (40 x 5) Sq.mm. Tinned Copper Flat as main Busbar on DMC / SMC Insulator of appropriate length - 1 set.				
E)	**EARTH BUSBAR** ; Continious run of hot dip GI Flat by (32 X 3) Sq.mm. or equivalent cross section - 1set				
	(Complete item of works as above and all in a set)	1	Set		
2b	Installation of above LT Panel Board above the pre-constructed masonary trench inside the Electrical Room by S&F MS long threaded Nut Boil & Washer, etc. incl. Testing for commissioning of the unit (Complete item of work)	1	Set		
3.a	Supplying and fixing double door Horizontal TPN MCB Distribution board with IP-42/43 protection, concealed in wall after cutting the wall & mending good the damages to original finish incl. Inter connection with suitable size of copper wire and neutral link & provision for earthing attachment as per approved Vendor make				
	6 - Way Board	6	Set		
3.b	Supplying and fixing 240/415 V 63A-FP MCB Isolator on din rail of existing DBs and necessary connection as per approved Vendor make and same make to that of DB - Enclosure.	6	Set		
3.c	Supplying and fixing 240/415 V MCB of Breaking capacity 10kA & C characteristics on din rail of existing DBs and necessary connection as per approved Vendor make and same make to that of DB-Enclosure as per following rating ; 6 X 10A, 6 X 16A & 6 x 20A = 18 nos. / DB X 6 Set.	108	Each		
4.a	Supplying and fixing (2+8) Way double-door SPN MCB Distribution Board with IP-42/43 protection, concealed in wall after cutting the wall & mending good the damages to original finish incl. Inter connection with suitable size of copper wire and neutral link & provision for earthing attachment as per approved make.	6	Set		
4.b	Supplying and fixing 240 V DP MCB Isolator, 40A on din rail of existing DBs and necessary connection to be of same make of DB. .	6	Set		

SL No	DESCRIPTION	UNIT	QNT	RATE Rs. P.	AMOUNT Rs. P.
4.c	Supplying and fixing 240 V SP MCB of Breaking capacity 10kA & C characteristics on din rail of existing DBs and necessary connection 6/ 10A to be of same make of DB to the above DB.	48	No		
5.a	Supplying and fixing double door Vertical TPN MCB Distribution board for MCCB incomer with IP-42/43 protection, on angle iron frame on wall & mending good the damages to original finish incl. Inter connection with suitable size of copper wire and neutral link & provision for earthing attachment as per approved Vendor make list 6 - Way upto 160A	2	Set		
5.b	Supplying and fixing 415 V 100A Four Pole MCCB of Breaking capacity 25kA/35kA with adjustable thermal and fixed magnetic setting in existing DBs / enclosure and necessary connection as per approved Vendor make and same make to that of the DB - Enclosure	2	Set		
5.c	Supplying and fixing 415 V, 3 X25 & 3X32A, TP-C MCB of Breaking capacity 10kA & C characteristics on din rail of existing DBs and necessary connection as per approved Vendor make and same make to the DB @ 6 nos / Brd X 2 = 12 Nos.	12	Each		
6	Supplying and fixing double door sheet steel (16SWG), powder coated cable end box for TPN DB horizontal / vertical enclosure with IP-42/43 protection, on angle iron frame on wall & mending good the damages to original finish with nuts bolts etc incl. provision for earthing attachment @ 2 sets / VTPN - BDB both top & bottom X BDB = 4 Sets both at Stair Case wall of Ground Floor.	4	Set		
7	Supply at site the undermentioned XLPE / Armoured -Al. Conductor Cable of 1100 V Grade of approved make:				
	i) 4C - 120 Sq.mm.	12	Mtr		
	ii) 3.5C - 95 Sq.mm	70	Mtr		
	iii) 4C - 70 Sq.mm	80	Mtr		
8	**Laying of the above Cable by the following Way :**				
a	Laying of cable above 3½ core 90 sqmm and upto 3½ core 150 sqmm on wall/surface including S & F MS clams with earthing attachment in 2 x 10 SWG GI (Hot Dip) Wire, making hole etc. as necy., mending good damages and painting	11	Mtr		
b	**Laying Through UG Trench :**				
i	Laying of one No. cable above 35 sqmm and upto 185 sqmm in underground trench 460mm wide x 760mm average depth, with brick protection on the top of the cable with 8 (eight) Nos. bricks per Mtr. including filling the space between the bricks and cable and also the trenchwith shifted soil, leveling up and restoring surface duly rammed				
	For - i) 1x3.5C - 95 Sq.mm. - 57 mtr.				
	ii) 1 x 4C - 70 Sq. mm. - 70 mtr.				

SL No	DESCRIPTION	UNIT	QNT	RATE Rs. P.	AMOUNT Rs. P.
	In different trenches 127 mtr.	127	Mtr		
II	Laying of one No. cable upto 35 sqmm in underground trench 460 mm wide x 760 mm average depth, with brick protection on the top of the cable with 8 (eight) Nos. bricks per metre, including filling the space between the brick & cable and also the trench with shifted soil, leveling up and restoring surface duly rammed in different trenches for 4C - 6 Sq.mm.	352	Mtr		
c	**Laying Through Floor / Wall :**				
	Laying of cable, 4C-50 Sq.mm after cutting floor/pavement/wall/ and making holes incl., embedding the cable at an average depth as below and mending good the damages to original finish incl. removing the rubbish at an average in floor / wall etc. through the prelaid GI Protection Pipe average 4 mtrs / run x 2 runs = 8 mtrs	8	Mtr		
9	**GI Pipe Protection :**				
	Supplying & fixing medium gauge GI Pipe (ISI-Medium) Protection with necessary fittings and jointing metarials as required				
i	65 mm dia for 3.5C - 95 Sq.mm. Cable both at Line & Load end average 1.5 mtr/end x 2 = 3.0 Mtr.	3	Mtr		
ii	50 mm dia for 4C - 70 Sq.mm. cable both at Line & Load end average 5 Mtrs / end x 2 = 10 Mtrs.	10	Mtr		
10. a.	Supplying and fixing compression type gland complete with brass gland, brass ring & rubber ring for dust & moisture-proof entry of XLPE/PVC armoured cables as below :				
i	4C - 120 Sq.mm.	4	Set		
ii	3.5C - 95 Sq.mm.	2	Set		
iii	4C - 70 Sq.mm.	4	Set		
iv	4C - 6 Sq.mm.	30	Set		
10. b.	Finishing the end of above XLPE/PVC armoured cables by crimping method incl. supplying and fixing solderless socket (Dowels make), tapes, anticorrosive paste & jointing materials :				
i	4C - 120 Sq.mm.	4	Set		
ii	3.5C - 95 Sq.mm.	2	Set		
iii	4C - 70 Sq.mm.	4	Set		
iv	4C - 6 Sq.mm.	30	Set		

SL No	DESCRIPTION	UNIT	QNT	RATE Rs. P.	AMOUNT Rs. P.
11	Supplying and fixing polythene pipe complete with fittings as necy. under ceiling/beam, bound with 22 SWG GI binding wire incl. supplying and drawing 1x18 SWG GI Wire as fish wire inside the pipes and fittings and providing 50 mm dia disc of MS sheet (20 SWG) having colour paint at one face fastened at the load point end of the polythene pipe with fish wire (synchronizing with roof/beam casting work of building construction)				
a	25 mm dia 3 mm thick Polythene Pipe (for TPN - BDB, from the end of the VTPN - BDB ; average 20 mtrs per floor run X 2 floors = 40 Mtrs.	40	Mtr		
b	19mm dia 3 mm thick Polythene Pipe from the TPN-BDB to SPN - BDB and also to the proposed position of the General Power Plug & Computer Power Plugs, average 180 mtrs./floor x 2 floors = 360 mtrs.	360	Mtr		
12	Cutting Channel of following size on the masonary wall				
a	(43 mm X 43 mm) Channel for 25 mm dia Polythene Pipe without Earth Continuty Wire average 1.5 mtrs / run X 2 runs = 3 mtrs.	3	Mtr		
b	(40 mm x 40 mm) channel for 19 mm dia Polythene Pipe without earth Continuty wire average 1.5 mtrs / run x 24 runs / floor X 2 Floor	72	Mtr		
13	Supplying & Fixing sheet metal inspection box (16 SWG) of the following sizes flushed in wall by housing the same after cutting brick wall incl. making earthing attachment, painting and mending good damages to building works, size 200 mm X 150 mm X 65 mm	65	Each		
14	Supplying and Drawing 1.1 KV single core stranded 'FR' PVC insulated & unsheathed single core stranded copper wire (Brand approved by EIC) of the following sizes in the prelaid polythene pipe and by the prelaid GI fish wire and making necy. connection as required				
a	By (4 X 1C - 6 + 2 X 1C - 4) Sqmm. Wires from the end of the VTPN-BDB and upto the TPN - BDB (incl. the extra length of the wires) for keeping the length inside the Switch Board and the BDB (average 13 mtrs / runs X 6 runs = 78 mtrs)	78	Mtr		
b	By (2X1C - 4 + 2 X 1C - 2.5) Sqmm. Wires, from the end of the TPN-BDB & upto the AC M/C P/Plug via the starters SPN-BDB and also average 20mtrs /run X 14 runs incl. the extra length of the wires for keeping inside the TPN & SPN BDB's & also inside the Starters etc.	280	Mtr		
c	By (2X1C - 2.5 + 1X1C-1.5) Sqmm. Wires from the end of the TPN-BDB and upto the General Power & Computers Plug Boards by extension of runs from one comp. Plug board to another as per direction, average 16 mtrs/run X 40run)	640	Mtr		

SL No	DESCRIPTION	UNIT	QNT	RATE Rs. P.	AMOUNT Rs. P.
15	Finishing of the PVC insulated wire ends by socketting with pin/ ring type copper sockets and insulated tapes etc., including supplying sockets, tapes.				
i	6 Sqmm.	48	Each		
ii	4 Sqmm.	60	Each		
iii	2.5 Sqmm.	98	Each		
B	**INSTALLATION OF THE ELECTRICAL UTILITIES (FITTINGS SUPPLY BY THE BANK), SUPPLY AND INSTALLATION GENERAL & COMPUTER PURPOSE POWER PLUGS, AC-M/C STARTERS ETC.**				
16	Supply at site under the original Packed Condition the 'Philips' make LED Luminaries compl. With all the relevant accessories and Lamps conforming the following Model/Cat. No., etc.				
a	Twin 18 Watt/4ft. Long 'LED' Tube Luminaire, Cat. No. - " TMC 501P2XT-LED 22 W P3242" with LED Tube Lamps, Model No. "MAS LED Tube 1200 mm 18W 865 T81 (both in a set).	50	Set		
b	Single 18 Watt / 4ft. Long 'LED' Tube Luminaire, Cat. No. "TMC 501 P1XT-LED 22W P3241" with LED Tube Lamp, Model No. - "MAS LED Tube 1200 mm 18W 865 T8 1" (both in a set).	39	Set		
c	15 Watt Surface Mounted 'LED' Squared Luminaire, Type 'SM200C LED 15S 4000 PSU OD WH'.	33	Set		
d	10 Watt Surface Mounted 'LED' Squared Luminaire Type 'DN097B LED 10S - 6500 PSU WH'.	27	Set		
e	20 Watt Recessed 'LED' Down Lighter Type 'DN195B LED 20S - 6500 PSU WH S1'	40	Set		
f	10 Watt, Surface/Suspend Mounted 'LED' Batten Luminaire, Type : 'BN021 LED10S - 4000 PSU SRS1'.	11	Set		
g	72 Watt 'LED' Street Lighting Luminaire, Type : 'BRP410 LED CW 072 MR FG S1 PSU GR'.	19	Set		
h	88 Watt 'LED' Street Lighting Luminaire, Type: 'BRP 410 LED 088 CW HE NR PC s2 PSU GR'.	13	Set		
i	25 Watt 'LED' Post Top Luminaire, Type: 'BG P161 LED 2500/NW PSU 220-240V 7043 IN'.	2	Set		
17	Supply at site under the original packed condition the 48 inch (=1200mm) Sweep 240V AC operated, 3 bladed ceiling Fan Compl. With all the relevant accessories except the Regulator, Make: 'USHA' Model Name 'ALLure Plug' or equivalent, ORIENT make, Model Name 'Deluxe', (Colour - White).	52	Set		

SL No	DESCRIPTION	UNIT	QNT	RATE Rs. P.	AMOUNT Rs. P.
18	Supply at site under the original packed condition the following make & size (by Sweep) AC High Speed Exhaust Fan, compl. With all the relevant components.				
a	12 inch (=300mm) Sweep ; (Colour-Grey) 'USHA' make, model name : 'Turbo LD DBB' (or equivalent 'Orient' make, model name: Power Flow).	1	Set		
b	9 inch (=225mm) Sweep ; (Colour - Grey) 'USHA' make, Model Name: 'Turbo LD Jet Dir' (or equivalent 'Orient make, Model Name: 'Hi-Speed')	17	Set		
19	Supply at site under the original packed condition, the following make & model, 16 inch (=400mm) Sweep, White Colour Wall Bracket Fan, Cord operated, Make - 'USHA' ; Model - 'Striker High Speed' or equivalent Make of Orient, Model - 'Wall - 47 - High Speed'.	19	Set		
20	Installation of the above supplied electrical utilities by the undermentioned way as per the electrical Layout or as per the direction of the Eng.-in-Charge :-				
a					
	i) Twin Set :				
	Ground Floor - 36 Sets & 1st Floor - 14 Sets.				
	ii) Single Set:				
	Ground Floor-0Set & 1st Floor - 35 Sets (Total 85 Sts)	85	Set		
b					
	i) Stair Case of the Administrative Building - 2 sets				
	ii) Electrical Meter Room - 2 Sets	4	Set		
c	The 15 & 10 Watt Surface Mounted LED squared Luminaire directly on the ceiling by S&F MS Screws.				
	i) 15 Watt LED				
	Gr. Flr.-9 sets + 1st Flr. 24 sets = 33 sets				
	ii) 10 Watt LED				
	Gr. Flr.-9 sets + 1st Flr. 18 sets = 27 sets				
	Total - 60 Sets	60	Set		
d	The 10 Watt LED Surface/Suspended Luminaire directly on the Wall of the Toilet Block of Ground Floor only.	11	Set		
e	Fixing only the 48 inch ceiling fan by fixing complete with blades, canopy, fork, rubber bush etc. incl. S&F connecting wire for down rod upto 30 cm incl. painting the rod with approved paint and making necessary connection as required by 2x1.5 sqmm flexible copper wire.	52	Nos		
f	Fixing only the exhaust fan after making hole in wall and making good damages and smooth cement finish etc. as practicable as possible and providing necy. length of PVC insulated wire and making connection for exhaust of following diameter:				
i	For 9 inch (=230mm) Sweep Fan.				
	Gr. Floor - 7 Nos. & 1st Flr. - 11 nos. = 18 nos.	18	Nos		
ii	For 12 inch (=300mm) Sweep Fan				

SL No	DESCRIPTION	UNIT	QNT	RATE Rs. P.	AMOUNT Rs. P.
	Gr. Flr. - 0 no. & 1st Flr. - 1 no.	1	Nos		
g	Fixing only the wall fan on the wall by S&F rag bolts, nuts & washers (6 mm dia x 62 mm long) or as reqd. incl. S&F 24/0.20 PVC insulated flexible copper wire 0.5 mt. length				
	Gr. Glr.- 19 nos. + 1st Flr.-0 no. = 19 Nos.	19	Nos		
21	Supply & Fixing 240V, Modular Socket (2 Module) type fan regulator (Step type) (Brand approved by EIC) on the all existing and respective(as per layout or as per instruction) Modular GI switch board with top cover plate incl. making necy. connections etc.	52	Set		
22	Supplying & Fixing GI Modular Switch Board of the following sizes complete with top cover plate flushed in wall for housing the board after cutting the brick wall incl. making earthing attachment, painting and mending good damages to building works (as per approved Vendor List)				
a	2 Module -Gr. Flr.- 43 sets + 1st Flr.- 27 sets = 70 sets	70	Set		
b	4 Module - Gr. Flr. - 22 sets + 1st flr. - 9 sets = 31 sets	31	Set		
c	8 Module - Gr. Flr. - 17 sets + 1st flr. - 9 sets = 26 sets	26	Set		
23	Supply & Fixing 240 V, 25A Modular starter (Brand approved by EIC) on existing GI Modular type switch board with top cover plate and making necy. connections with PVC Cu wire and earth continuity wire etc.	16	Set		
24	Supply & Fixing 240 V, 25 A, 3 pin Modular type plug socket (Brand out of Vendor List approved by EIC), without plug top and switch with 2 Module GI Modular type switch board with top cover plate flushed in wall and making necy. connections with PVC Cu wire and earth continuity wire etc.	16	Set		
25	Supply & Fixing 240 V,25 A, 3 pin Modular type plug top with indicator to be of same Brand as that of Plug Socket in the above item and making the necessary connection with the cord of the AC M/C.	16	Set		
26	Supply & Fixing RJ45 suitable for CAT6 Cable (same brand that of Modular Switch Board) and Top Cover Plate on the above existing Mod. Switch Board and making the necessary connection as required for				
	Gr. Flr. - 14 sets + 1st Flr. - 16 sets = 30 sets.	30	Set		
27	Supply & Fixing Telephone socket (RJ11) Modular type (Brand approved by EIC) with PVC board and top cover plate on wall and making necessary connections & testing as required for				
	Gr. Flr. - 7 sets + 1st Flr. - 6 sets = 13 sets.	13	Set		
28	Supply & Fixing TV Socket suitable for Co-Axial TV Cable on the above 2M Board as per direction or as per layout inclusive making the necessary connection for				
	Gr. Flr. - 6 sets + 1st Flr. - 5 sets = 11 sets.	11	Set		

SL No	DESCRIPTION	UNIT	QNT	RATE Rs. P.	AMOUNT Rs. P.
29. a.	Supplying & Fixing 240 V AC/DC superior type Ding-Dong Call Bell (Anchor) on HW board incl. S&F HW board one each on the entrance wall of Principal Room & Faculty Room	2	Set		
29. b.	Supply & Fixing 0.5 Watt/240V LED Coloured (Blue or Amber) Bulbs in the existing batten holder meant for night camp in the Dormitory, 1st Floor . (Make PHILIPS / CGL)	8	Nos		
C	**CIRCUIT & DISTRIBUTION WIRING OF POINTS & ALLIED WORKS :**				
30	Supply & Fixing 19mm dia 3mm thick Polythene Pipe complete with fittings as necy. under ceiling/beam, bound with 22 SWG GI binding wire incl. supplying and drawing 1x18 SWG GI Wire as fish wire inside the pipes and fittings and providing 50 mm dia disc of MS sheet (20 SWG) having colour paint at one face fastened at the load point end of the polythene pipe with fish wire (synchronizing with roof/beam casting work of building construction) for all the wires, proposed for the general plug boards, 'LAN', TV & Telephone points.	650	Rm		
31	Cutting channel of 40 mm x 40 mm size on masonry wall incl. S&F heavy gauge polythene pipe 19 mm dia 3 mm thick polythene pipe without earth continuity wire, by means of iron hooks and supplying and drawing 18 SWG GI Wire as fish wire incl. mending good damages to building works for the vertical extenssion of the aforesaid Wires as per I/No.-1	260	Mtrs		
32	Supplying & Fixing CRC sheet metal (16 SWG) JB-cum- Switch Board of the 175 mm x 100 mm x 65 mm complete with three no. suitable size Copper bar with holes (for Ph, N & E) fixed on bakelite/Hard Rubber insulator over he MS welded chairs incl. bakelite/Perspex/coloured Perspex (wall matching colour) top cover 3 mm thick flushed in wall for housing the board after cutting the brick wall incl. making earthing attachment, painting and mending good damages to building works	42	Nos		
33	Making Channel on R.C.C. Casting/Floor, 40mm depth X 40 mm Width andS & Drawing 19 mm OD thin flexible PVC Pipe.	12	Mtrs		
34	Supplying and Drawing 1.1 KV single core stranded 'FR' PVC insulated & unsheathed single core stranded copper wire (Brand approved by EIC) of the following sizes in the prelaid polythene pipe and by the prelaid GI fish wire and making necy. connection as required, all from the end of the respective TPN-BDB and consideringthe extra run of the wires at both Line and Load end.				
a	2 X 1C - 4+ 1 X 1C - 205 Sq. mm Wires, upto the 25A Plug Socket via the AC M/C Starter (average 16 mtrs/run X 16 runs) = 256 mtrs	256	Mtrs		

SL				RATE	AMOUNT
No	DESCRIPTION	UNIT	QNT	Rs. P.	Rs. P.
b	i) 2x1c-2.5+1x1c-15 Sq.mm. Wires, upto the General Power Plug Boards, both at the Ground and 1st floor, (average 12mtrs/run x 31 runs) = 372 mtrs (+) (Gr. Floor - 22 runs & 1st Floor - 9 runs, Total - 31 runs				
	ii) (2x1C - 2.5 + 1X1C-1.5) Sq.mm. Wires, upto the Computer's Plug Board (as Primary Run at Ground floor - 9 runs) average- 15 mtrs/run x 9runs = 135 mtrs				
	Total - (372 + 135) = 507 mtrs.	507	Mtrs		
c	(3X1C - 1.5) Sq.mm. Wires, extended from the above board and to adjacent another Board in the same room, under the same circuit average 13 mtrs/run X 8 run = 104 mtrs.	104	Mtrs		
35	Finishing of the above PVC insulated Wire ends by socketing with Pin/Ring type Copper Sockets and insulated tapes etc. incl. Supplying Socket, tapes, for				
a	4 Sq. mm.	128	No		
b	2.5 Sq.mm.	224	No		
36	DISTRIBUTION WIRING :				
	Distn. wiring in 1.5 sqmm single core stranded 'FR' PVC insulated & unsheathed single core stranded copper wire (Brand approved by EIC) in 19 mm bore, 3 mm thick polythen pipe complete with all accessories embedded in wall to light/fan/call bell points with Modular type switch (Brand approved by EIC) fixed on Modular GI switch board with top cover plate flushed in wall incl. mending good damages to original finish for the following mentioned Points under the average run of 7.0 mtr./Pt. for				
a	All the Surface Mounted Points :				
	Gr. Flr. - 74 + 1st Flr. -99, Total -173 Pts. (+)				
b	All the Ceiling Fan:				
	Gr. Flr. - 36 + 1st Flr. -26, Total - 62 Pts. (+)				
c	All the Wall Fans :				
	Gr. Flr. - 19 + 1st Flr. - Nil, Total - 19 Pts. (+)				
d	All the Exhaust Fans :				
	Gr. Flr. - 07 + 1st Flr. - 11, Total - 18 Pts. (+)				
e	Call Bell Point :				
	Total - 1 Pt.				
	Net Total Points = 273 Pts.	273	Pt.		

SL No	DESCRIPTION	UNIT	QNT	RATE Rs. P.	AMOUNT Rs. P.
37	Distribution wiring in 1.1 KV grade 2x22/0.3 (1.5 sqmm) single core stranded 'FR' PVC insulated & unsheathed copper wire (Brand approved by EIC) partly in 20mm size PVC rigid conduit 'FR' (Precision make) [for ceiling portion only] and in 19mm bore, 3mm thick polythene pipe [for horizontal & vertical run embedded in wall], with 1x22/0.3 (1.5 sqmm) single core stranded 'FR' PVC insulated & unsheathed copper wire for ECC, to light/fan/call bell points with Modular type switch (Brand approved by EIC) fixed on Modular GI switch board complete with 2 no. suitable size "Ph & N" copper bar with top cover plate making earthing attachment fixed on wall incl. mending good damages to original finish. [only PVC Rigid Conduit on ceiling and remaining portion concealed] for the Ceiling Recessed Luminaire at Gr. Floor average run 9.0 mtrs /pt.	40	Pt.		
38	Distn. wiring in 22/0.3 (1.5 sqmm) single core stranded 'FR' PVC insulated & unsheathed single core stranded copper wire (Brand approved by EIC) in 19 mm bore, 3 mm thick polythen pipe complete with all accessories embedded in wall to 240 V 6A 5 pin plug point incl. S&F 240 V 6A 3 pin Modular type plug socket & Modular type switch (Brand approved by EIC) incl. S&F earth continuity wire, fixed on 4 Module GI switch board with 3/4 Module top cover plate flushed in wall incl. mending good damages to original finish				
a	On the respective Switch Board :				
	Gr. Flr. - 20 Sets (+), 1st Flr. - 10sets ; Total - 30 Sets	30	Set		
b	Away From the Room's Sw. Brd, i.e. on separate Sw. Brd.				
	Average run 3.0 mtrs/pt (or Set)				
	Gr. Flr. - 21Sets (+), 1st Flr. - 20sets ; Total - 41 Sets	41	Set		
39. a.	Supplying & Drawing LAN cable (CAT6) (Brand approved by EIC) in prelaid PVC rigid conduit/ in polythene pipe embeded in wall.	80	Rm		
39. b.	Supplying & Drawing 2-pair Telephone cables with high density polyethylene insulated solid annealed high conductivity bare copper of dia 0.5mm in prelaid PVC rigid conduit/ in polythene pipe embeded in wall.	120	Rm		
D	**SUPPLY & INSTALLATION OF DRINKING CUM WORKING WATER PUMP MOTOR & ALLIED WORKS :**				
40. a.	Supply at site, 'CGL' (Crompton Greaves Ltd.) make "OPENWELL SUBMERCIBLE MONOSET HORIZONTAL" Pump Motor Set, of 2.2Kw/3.0HP @ Maximum Head 36 Mtrs with 80LPM discharge with outlet size 40mm (1.5 inch) with SS Shaft & Thurst Bearing, 'Type OWKS32SS'	2	Set		
40. b.	Installation of the above supplied 'PM' Set in the UG-Reservoir on the pre-installed MS Iron frame by S&F SS Nut, Bolt & Washer.	2	Set		
40. c.	Installation of the Hot Dip GI, MS Channel made frame on the PCC Base in the Reservoir by S&F the MS Channel Frame made from ISMC75.	2	Set		

SL No	DESCRIPTION	UNIT	QNT	RATE Rs. P.	AMOUNT Rs. P.
41. a.	Supply the set of 16SWG MS CRCA Sheet Metal Fabricated, Wall Mounted Cubicle Type Power Cum Motor Control Centre (PMCC) Panel Board, Compartmetalised rubber gasketed Door of suitable size to accommodate the Following electrical accessories each compl. with socket ended 1100V. Grade FR Copper Wires.				
	i) 'L&T' make 25A 4P-C MCB (10KA Br. Cap) as I/C Unit - 1 set.				
	ii) 'L&T' make, 10A 4P-C MCB (10KA Br. Cap as O/G Unit - 3 Sets.				
	iii) 'L&T' make, 16A 4P-C MCB (10KA Br. Cap) as o/G Unit - 2 Sets				
	iv) 'L&T' make, AC-3 Rating 12A, TP Power Contractor, (Coil Voltage 415V AC) Type MX Mini -2 sets				
	v) 'L&T' make, (with '1no' Contact) Directed operated Thermal OL-Relay, Range (3.6 - 5.2)A, Type 'RX' - 2 Sets				
	vi) 'L&T' make 'ON' push Button of Green Actuator with '1No' element - 2 Sets				
	vii) 'L&T' make 'OFF' Push Button of Red Actuator with '1no' element - 2 Sets.				
	viii) 'L&T' make 2x'RED' LED Indicating Lamp, 230V AC & 'RED', 'Yellow', & Blue' - (2+3) = 5 Sets.				
	ix) 'L&T' make, 6A, 240V, 1 Pole, 2-Way with Centre OFF Rotary CAM Switch - 1 No.				
	The Board to be completed by all above accessories and to be completed by Powder Coat Painting along with 2 X M8 Bolt, Nut & double Washer, etc. (All in a set)	1	Set		
41. b.	Installation of the above unit on the pre installed MS long threaded Bolt with its fixing flanges on the wall of Pump Room including necessary Testing, etc. (Complete Works).	1	Set		
42. a.	Supply at site XLPE/Armoured - Al Conductor Cable of 1100V Grade, (as per list specified make) the 4C-16 Sq.mm. Cable.	40	Mtr		
42. b.	Laying of the above Cable by the undermentioned Ways from the end of the VTPN-BDB and upto the PMCC Panel Board in the Pump Room.				
i	By the same way as PART-'A" ; I/No. - 8c	7	Mtr		
ii	By the same way as PART-'A" ; I/No. - 7	42	Mtr		
42. c.	S&F Medium Gauge 40mm GI Pipe (ISI-Medium) Protection with Necessary Fittings & Jointing materials as required, for the above Cable, @ 1.0 Mtr at the bopth end of the cable.	2	Mtr		
42. d.	Supplying and fixing compression type gland complete with brass gland, brass ring & rubber ring for 4C - 16 Sq.mm. Cable.	2	Nos		
42. e.	Finishing the end of the cables by crimping method incl. supplying and fixing solderless socket (Dowels make), tapes, anticorrosive paste & jointing materials	2	Set		

SL No	DESCRIPTION	UNIT	QNT	RATE Rs. P.	AMOUNT Rs. P.
43	Supplying and fixing 2.5 mm OD PVC Rigid Conduit 'FR' [Precision Make] on wall, ceiling with saddles and other accessories as required and mending good damages to building works, average 8 mtrs/run X 2 run = 16 mtrs.	16	Mtr		
44	Supply & Drawing 'Gloster/Polycab' make 3-Core, 2.5 Sq.mm. Flat PVC insulated & sheathed, 1100V Grade Copper Cable through the above PVC Rigid Pipe including making connections.	20	Mtr		
E	**LIGHTING ARRESTER INSTALLATION WORKS (BY CONVENTIONAL SYSTEM) :**				
45	S & F Lightning conductor Air-terminals made of 15 mm dia 1500 mm long GI pipe (ISI Medium) having five prongs of 4 SWG GI (Hot Dip) wire at top with 85 mm dia 6 mm thick GI base plate at bottom incl. necessary holes etc. duly grouted on the parapet etc. in CC mortar (4:2:1).	8	Nos		
46. a.	Supply & fixing GI (Hot Dip) strips 20 mm x 3 mm thick for horizontal run on the Parapet/Roof/ Wall with GI Saddles 1100 mm apart incl. mending good the damages to building works	147	Mtr		
46. b.	Supply & fixing of GI (Hot Dip) strips 20 mm x 3 mm thick for down vertical run on the building outer wall with GI saddles spaced not exceeding 1000 mm apart incl. mending good damages to building work , average 7.5 mtrs/run X 6 runs	45	Mtr		
47	Supply & Fixing of Testing Joints by 20 mm x 3 mm thick GI (Hot Dip) strip 125 mm long grouted on wall having clearance of 6 mm from wall for making connection with thimbles at the end of 7/10 SWG GI (Hot Dip) stranded Wire and 4 SWG GI (Hot Dip) wire of vertical conductor and conductor from earth electrode complete with S & F thimbles, GI bolts, nuts, check-nuts, spring washers etc. as required on the each Vertical/Down Conductor at a height of 0.75 mtr. above the G.L	6	Set		
48	Making the soldered joints between conductors and down pipes/ other metallic objects for 14 SWG GI (Hot Dip) wire including supply of necessary 4 SWG GI (Hot Dip) wire, jointing materials and painting with 2 (two) coats of bituminous paint	12	Set		
49	Hiring charges for Scafolding arrangement including dismantling at the end of work and carriage for the installation of Vertical Conductor, @ 6.0 mtr/Vert. Conductor = 6 x 6 = 36 mtrs.	36	Mtr		
F	**COMPOUND & AREA LIGHTING INSTALLATION & ALLIED E.I. WORKS :**				

SL No	DESCRIPTION	UNIT	QNT	RATE Rs. P.	AMOUNT Rs. P.
50	Fixing only LED outdoor/Street Light Fitting of 72 Watt, Complete item with the accessories to be fixed/projected from the inside wall of the parapet on the roof incl. making holes/providing clamping arrangement & necessary GI reducer as required, for 32 mm dia GI Pipe (ISI- Medium quality), 1.5 mtrs average length from top & upto the bottom, would have suitable bend, incl. S&F necessary length of 3X1C - 1.5 Sq.mm. PVC - Insulated Single Core multistranded annealed Copper Wire and making connections as required, as per the proposed Layout or as per direction of the E.I.C., and mending good the damages to Wall incl. painting by 2 coat of aluminium Paint over 1 coat of R.O. Primer.	19	Set		
51	S&F CRC Sheet metal (16 SWG) JB - Cum Switch Brd of following size just below the above arm bracket				
52	Supply at site, 7.5 mtr overall length, the SWAGED Tubular Pole as per IS:2713 (P-11)-1980 and as per designation '410 SP-9' would have the following length of the sectiones :-				
	Bottom/Middle/Top = 4.5m/1.5m/1.5 and corresponding OD & thickness of the section (139.7 X 5.40)mm / (114.3 X 3.65) mm / (88.9 X 32.5) mm and overall weight to be 110 Kg. to be complete with Pole Cap and Base/Sole Plate of suitable dimenssion and thickness, etc.	13	Set		
53. a.	Erection of Single Steel tubular pole of length as given below with/without sole plate & Cap etc. in CC foundation (Proportion and dimension indicated below), having 600x600x150 mm thick CC (4:2:1) base block below sole plate/pole with hard jhama metal including CC (6:3:1) muffing 0.30 mts. dia and 0.30 mts. above ground level including 3 mm thick neat cemented finish and GI earth bolt after making drilled holes etc. on pole & carriage of pole upto 1.6 Km from Store to work-site including filling up the excavated earth pit with shifted soil and ramming properly				
	Size : (0.6 X 0.6 X 1.25) mtrs	13	Set		
53. b.	Extra on items 1& 2 above, for providing CC (6:3:1) base block (around the pole) dimension 0.60x0.60x0.76 mt. above ground level, neatly cemented finish (3 mm thick), at the base pole (in lieu of CC muffing) suitable for alkathene/ polythene pipe entry as directed for street light wiring, incl. S & F 25cmx25cmx10cm GI Loop box, 16SWG & incl. drilled hole in pole	13	Set		
54	Supply & Installation of the 1.0 mtr. Long 40mm OD, thickness 2.0mm, Arm Bracket fixed with Switch with have the suitable arrangement of stiffner plate and arrangement of fixing with the pole by 4 x M8 both at 90 degree angle with each other at Central position and also by S&F long through bolt with double nut & washer, etc. (as per direction of the E.I.C.)	13	Set		

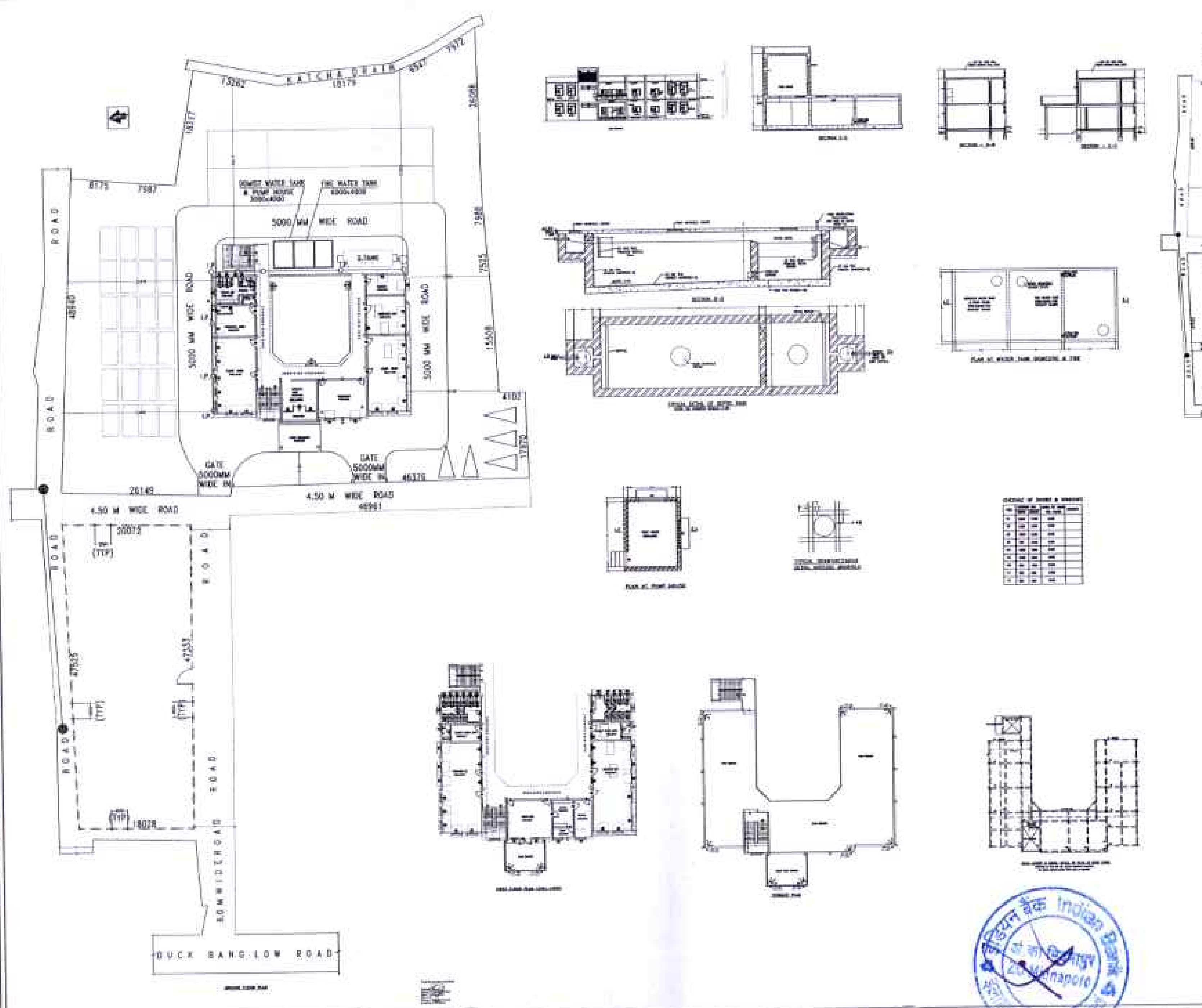
SL No	DESCRIPTION	UNIT	QNT	RATE Rs. P.	AMOUNT Rs. P.
55	Fixing of the supplied LED Luminaries of 88 Watt LED fittings, (Ref. Supply item no. 16h), with the Arm bracket and also making internal connection by S&F drawing (3X1C - 1.5) Sq.mm. PVC Copper Wire by supplying and installation 19mm OD PVC flexible / corrugated Pipe starting from the end of the Loop Box and upto the Terminal Block of the Luminaire by using ladder etc. (Compl. item of Works).	13	Set		
56	Supply & Drawing 25mm OD, 3mm thick Polethene Pipe, 2 Sets at each Pole below the foundation block of the each pole average length 1.0 mtr. (one for I/C Cable & other for O/G Cable) (Compl. Item of Works & all in a set).	25	Set		
57. a.	Painting of Steel Tubular Pole of lengths and no. of coats of paint, as given below with ready mixed paint/primer of approved make, and brand incl. preparation of surface by sand paper/emery paper, cleaning etc. for receiving fresh coat of paint by				
	i) One coat of Red Coad/Zinc Chromate Printing & (ii) 2nd Coat of Synthetic enamel paint over the 1st coat of paint (Compl. Items of Work and in a set)	13	Set		
57. b.	Painting with Lime Washing the Mutting Block over the GI as per direction of the E.I.C. in respect of selection of the paint colour etc. (Complete item of works).	13	Set		
58. a.	Installation by S&F of the 40 mm OD GI Pipe by direct grouting over the Gate Pilar, at a depth of 0.5 mtr. And height at 0.3 mtr. Over the pilar incl. S& Drawing 2X25 mm OD & 3mm thick & 1.5 mtr each in length, Polythene Pipe from the end of the each GI Loop Box by S&F GI Loop Box in the respective Gate Pillar (Compl. item of works & all in a set)	2	Set		
58. b.	S & Drawing 3 X 1C - 1.5 Sq.mm., PVC Copper Wires incl. making connection from the end of the Loop Box and upto the Terminal Block of the Luminaire through the prelaid polythene pipe, (average 3.0 mtrs/Gate X 2) = 6.0 mtrs.	6	Mtrs		
59. a.	Supply at the site 16SWG MS CRCA sheet metal fabricated 'AUTO/MANUAL' Light Control Box (for all the Roof and Outdoor Area Lighting Luminaires, etc.), to be suitable for direc wall mounting the overall dimension not to be over 750mm (Ht.) X 400mm (Width) X 300mm (depth). The control Boxes to be completed by front openable and rubber gascketed hinged door and with 12 SWG MS Sheet as the Top & Bottom detactable gland cover (plate) and also by powder coat painting alongwith 2XM8 Earthing Bolt with Nut & Washers, etc. and also to be completed by interconnection by PVC insulated 'FR' 1100V Grade multistandard / 1-Core Copper Wires for both the Powered Control Wires and by finishing the Wires and try S&F Copper Socket of Suitable size.				
	The internal accessories will be as undermentioned :				
	i) 'L&T' make 25A, 415 V, 4P-MCCB (Br.Cap. 10KA) as I/C Unit - 1 Set.				
	ii) 'L&T' make 32A/415V, 4-Pole power Contactor (AC-1 rating) Type 'MC X 03' with (2 nos. + 2 NC) add on Control Block (all in a set) - 1 Set				

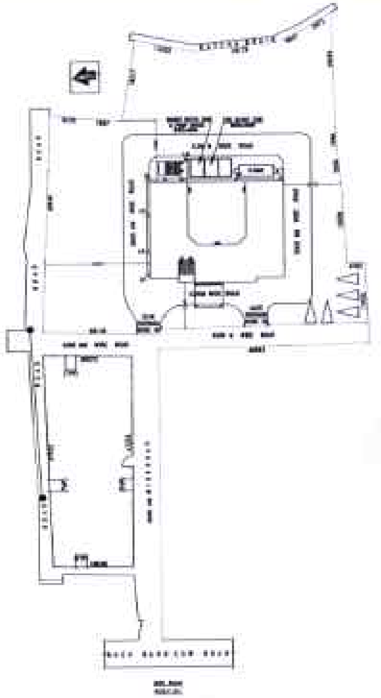
SL No	DESCRIPTION	UNIT	QNT	RATE Rs. P.	AMOUNT Rs. P.
	iii) 'L&T' make, 24hrs/Daily Quartz Clock operated TIME SWITCH, 240V AC DIN Amounting, Type 'FMI/QUARTZ with 1 Xclo Contact. - 1 Set				
	iv) 'L&T' make, 6A/240V, 1-Pole, 2-Way ON & CENTRE OFF Rotary CAM Switch (as AUTO/MANNUAL SWITCH) - 1 Set				
	v) 'L&T' make, LED operated 230V AC indicating Lamp 'Red & Green' (1no. Each). - 2 nos.				
	vi) Set of tinned Copper Flat 4X(19 x 3) Sq.mm., length each 250 mm on the small DMC Insulators, in a set - 1 Set				
	vii) 'L&T' make 6A SP-C MCB (Br. Cap. 10kA) on DIN Channel - 10 Nos.				
	1 no. for protection of the Control Ckt. 9 nos. for O/G ckt. (3nos. To be spare) (Compl. As per all above items and in a set).	2	Set		
59. b.	Inatallation of the above both Light Control B on the Wall, respectively in the Pump Room (one set) & onother one in the Building (1st Flior), at the respective position as would be shown, on the pre-grouted long threated both nut, washer, etc. with its fixing flages and consucting the necessary test after installation etc. (Compl. item of works and all in a set).	2	Set		
60. a.	S&F 25mm Size PVC Rigid Conduit 'FR' precision make on the inside Wall of the parapet, all along for the parapet mounted compound Luminaires and mending good damages to building Works.	125	Rm		
60. b.	Supplying and Drawing 1.1 KV single core stranded 'FR' PVC insulated & unsheathed single core stranded copper wire (Brand approved by EIC) of the following sizes in the prelaid polythene pipe and by the prelaid GI fish wire and making necy. connection as required , by (4 X 1C - 2.5 + 2 X 1C - 1.5)X Sq.mm. Copper Wires by 2 runs, @ 70 mtr. per run, from the end of the Auto/Mannual Light Control Box (meant for the Roofs Light at 1st Floor = 70 mtrs X 2 = 140 mtrs.	140	Rm		
G	**EARTHING INSTALLATION WORKS :**				
61	Earthing with 50 mm dia GI pipe (TATA-Medium)x 3.04 Mts. long and 1 x 4SWG GI (Hot Dip) wire (4 Mts. long), 13 mm dia x 80 mm long galvanized bolt, double nuts, double washers including socketing at both ends of stranded GI (Hot Dip) wire by crimping sockets/ thimbles and S & F 15 mm dia GI pipe (ISI-Medium) protection (1 Mts. long) to be filled with bitumen partly below the ground level by TATA Medium GI Pipes.				
	a) For System Earthing - 4 sets				
	b) For LA-Door Conductor (Earthing) - 3 sets				
	c) For F/Fighting / Pump Room - 2 Sts				
	d) For DG's Neutral Point - 2 Sets	11	Set		
62	Supplying & fixing earth busbar of galvanized (Hot Dip) MS flat 40 mm x 6 mm on wall having clearance of 6 mm from wall including providing drilled holes on the busbar complete with GI bolts, nuts, washers, spacing insulators etc. as required	1	Mtrs		

SL No	DESCRIPTION	UNIT	QNT	RATE Rs. P.	AMOUNT Rs. P.
63	Extra for providing masonery enclosure on the top of the earth electrode of overall size 86.36 cm x 86.36 cm x 46 cm deep (below Ground level) complete with cemented brick work(1:6) f 25 cm width duly plastered ith cement morter (inside) Cl inged inspection cover of size 36.56 cm x 35.56 cm with ocking arrangement, GI reducer including drilling of 46 nos. 12 mm dia holes on the GI pipe	11	Set		
64	Connecting the equipments to earth busbar including S & F GI (Hot Dip) wire of size as below on wall/floor with staples buried inside wall/floor as required and making connection to equipments with bolts, nuts, washers, cable lugs etc. as required and mending good damages	8	Mtrs		
	PART-E TOTAL CARRIED TO GENERAL SUMMARY				
PART-'F'	**CONSTRUCTION OF BOUNDARY WALL,'PLOT-A'**				
	Earth work in excavation of foundation trenches for boundary wall, in all sorts of soil (including mixed soil but excluding laterite or sand stone) including removing. Spreading or stacking the spoils within a lead of 75m. as directed. The item includes necessary trimming the sides of trenches, levelling, dressing and ramming the bottom, bailing out water etc. as required complete.				
	Depth of excavation not exceeding 1500mm.	Cum	70		
	Filling in foundation trench plinth with earth obtained from excavation of foundation in layers not exceeding 150mm, as directed and consolidating the same by thorough saturation with water, ramming complete.	Cum	33		
	Removal of rubbish from the working site and disposal of the same, beyond the compound exceding 10 Km. and depositing and levelling in conformity with the Municipal/ Corporation Rules for such disposal, loading into truck and cleaning the site in all respect as per direction of E.I.C.	Cum	37		
	Providing and laying in position cement concrete of specified grade excluding the cost of centering and shuttering.				
PLACE:					
	1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40mm nominal size).	Cum	7		
DATE:					
	1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 40mm nominal size).	Cum	3.5		
	125 mm thick Brick masonry work in cement mortar (1:4) using approved H.B. netting in every third layer with approved 1st class bricks (250 x 125 x 75) having minimum crushing strength of 105 kg per Cmsq. including curing at least for 7 days, before using it for work cleaning and soaking the brick at least for 24 hours, scaffolding, staging, all leads and lifts from any point to any point inside the site, in all structures such as walls / pillars / supports etc. as directed by the E.I.C.	Sqm	150		

SL No	DESCRIPTION	UNIT	QNT	RATE Rs. P.	AMOUNT Rs. P.
	Reinforcement Cement concrete (mix 1:2:4) with graded stone chips (20 mm nominal size) excluding shuttering and reinforcement,if any, in ground floor as per relevant IS codes.	Cum	32.5		
	Hire and labour charges for shuttering with centering and necessary staging upto 4 M. using approved stout proper and hard wood planks of approved thickness with required bracing for concrete slabs, beams, stairs, columns, walls, lintel, any curved member, fins, chajjas and fascia etc. including fitting, fixing and striking out after completion of mandatory period as specified.				
	Steel shuttering or 9 mm to 12 mm thick approved quality ply board shuttering in any concrete work.	Sqm	345		
	Reinforcement steel (Fe-500) for reinforced concrete work in all sorts of structures including distribution bars, stirrups binders etc. including supply of steel bars, initial straightening and removal of loose rust (if necessary), cutting to requisite length, hooking and bending to correct shape placing in proper position and binding with 16 gauge black annealed wire at every inter-section, complete as per drawing and direction of E.I.C.	MT	4.0		
	Providing & applying 20mm thick cement plaster to external surfaces of masonry and concrete surface in two coats, underlayer 12mm thick cement mortar 1:6 (1 cement : 6 coarse sand) and top layer 8mm thick cement plaster 1:6 (1 cement: 6 coarse sand) finished smooth and leveling the surface all complete. External plastering shall include roughening of the concrete surface, raking out joints of brick works including groove where ever required, curing at least for 7 days etc. scaffolding, staging etc.	Sqm	490		
	Neat cement punning 1.5mm thick.	Sqm	80		
	Applying exterior grade Acrylic primer (Single coat) of approved quality and brand on plastered or concrete surface to receive decorative textured or smooth finish acrylic exterior emulsion paint including smoothening the surface by sand papering and scaffolding etc. complete in all respect as per direction of the E.I.C.	Sqm	490		
	Priming single coats on steel surface with synthetic oil bound primer of approved make and brand including smoothening the surface by sand papering and scaffolding etc.	Sqm	90		
	Supplying & applying two coats of protective and decorative Acrylic smooth exterior (anti fulgal) emulsion paints of approved quality on external / internal wall surface including surface preparation, scaffolding etc. complete as per direction of E.I.C.				
	Super protective 100% acrylic emulsion.	Sqm	490		
	Painting with best quality synthetic enamel paint of approved make and brand including smoothening surface by sand papering etc. including using of approved putty etc. on the surface, if necessary with scaffolding, complete				

SL No	DESCRIPTION	UNIT	QNT	RATE Rs. P.	AMOUNT Rs. P.
	On steel or other M.S. surface with hi gloss				
	Two coats with approved shade.	Sqm	90		
	M.S. Ornamental grill / raling of approved design joints continuously welded with M.S, W.I. Flats and bars of windows, railing etc. fitted and fixed with necessary screws and lugs Grill weighing above 14 Kg./sqm and up to 16 Kg./sqm	Kg	676		
	Supplyng, fitting and fixing grill gate, frame made from 50 mm x 6 mm M.S. flat iron with another horizontal flat at the middle, 20 mm dia M.S.bars at 200 mm apart from bottom flat to top and 20 mm dia M.S. bars at 200 mm apart from bottom flat to middle flat including drilling, welding etc. complete. All vertical bars are to be protruded at least 100 mm above the middle and top flat is to be flattended and pointed as directed. Necessary locking arrangement on both faces, arrangement for temporary closing the gate and 2 nos strong iron hinges of M.S. bars and flat of same sizes on each leaf to be embeded in C.C. brick / R.C.C. pillars as necessary including a red oxide painting to all iron works as directed and specified	Kg	65		
	PART-F TOTAL CARRIED TO GENERAL SUMMARY				
	TOTAL CARRIED DOWN TO GENERAL SUMMARY				
PART-"A"	CONSTRUCTION OF BOUNDARY WALL,'PLOT-B'WORKS				
PART-'B'	CIVIL WORKS				
PART-"C"	INTERNAL AND EXTERNAL SANITARY & PLUMBING WORKS				
PART-"D"	SITE DEVELOPMENT,ROADS,ETC.WORK				
PART-"E"	ELECTRICAL WORKS				
PART-"F"	CONSTRUCTION OF BOUNDARY WALL –PLOT-'A' WORKS				
	TOTAL GROSS VALUE				
	ADD CGST 9 %				
	ADD SGST 9%				
	TOTAL NET VALUE				
	RUPEES IN WORDS:				
DATE:	05/04/2025				
PLACE:	MIDNAPORE	Estimate on the basis of PWD Scheduled 2024			





NOTES:-
ALL DIMENSION ARE IN MM

1) TOTAL AREA LAND (A+B) - 3B-1BK-8CH. = 5117.2060M
2) TOTAL AREA OF LAND (B) - 4334 SQM
3) GROUND FLOOR COVD AREA - 662.60 SM
4) TOTAL BUILTUP AREA-
   i) GROUND FLOOR - 662.60 SM
   2) FIRST FLOOR - 540.45 SM
   3) STAIR - 25.200 SM

TOTAL - 1228.25 SM

CLIENT

ARCHITECT

ENGINEER

CLIENT	INDIAN BANK TRUST FOR RURAL DEVELOPMENT
PROJECT	INDSETI BUILDINGS AT MIDNAPUR
TITLE	GROUND & FIRST FLOOR ... SEPTIC TANK, SITE PLAN

e-Grihanaksha
Online Building Plan Approval System

BUILDING PERMIT

Date: **10-02-2025**

From :

The **Chairman**

Midnapore Municipality

Building Permit Number: **SWS-OBPAS/1606/2024/0481**

To:

Mr. Braj Kishore Prasad

Old Water Tank,Station Road,Midnapore

Subject: Issue of sanction of erection of the building and issue of Building Permit under rule 21.

Building Particulars:

Premises No	**1168**	Holding No	**1168**
Street/Lane	**Saratpally**	Borough No	--
Ward		Block No	--
Plot No : Khatian No	**LR-593 : 2557**		
Mouza	**NARAMPUR**	JL	**174**
Police Station	**Midnapore Sadar**		

Sir/Madam,

With reference to your application dated **25-11-2024** for the sanction of the building with particulars mentioned above, this Building Permit is hereby granted subject to the following conditions :-

1. The Building Permit is valid up to **09-02-2028**
2. The Building Permit No. **SWS-OBPAS/1606/2024/0481** dated **10-02-2025** is valid for **Institutional** purpose
3. The construction will be undertaken as per sanctioned plan only and no deviation from West Bengal Municipal (Building) Rules 2007 (as amended) will be permitted.

Any deviation done against the said rules is liable to be demolished.

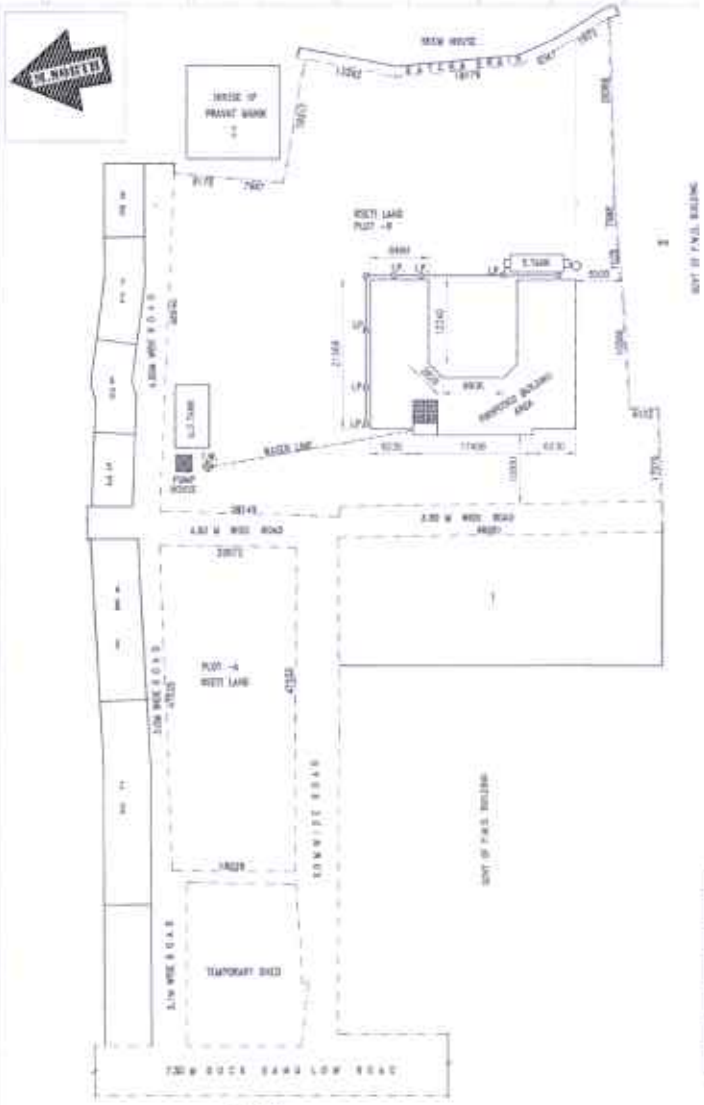
Indian Bank ZO Midnapore Allahabad

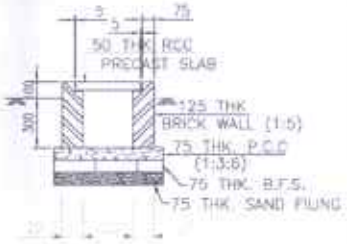
Yours faithfully,

Signature Not Verified
Digitally Signed.
Name: SOUMEN KHAN
Date: 10-Feb-2025 15:47:53
Reason: Building Permit
Location: Midnapore

SOUMEN KHAN

Chairman





CROSS SECTION OF
HOUSE DRAIN

ROOF PLAN.
SCALE:- 1:600

REFERENCE	
PLOT LINE	
PROP. DRAIN	
WATER LINE	
DRAINAGE & SEWFRAGE WORK	
ELECTRIC POST	T
WATERTAP	

TOTAL AREA LAND (A+B) - 3B-16K.-8

1) VINODA MORA MEMORIAL DIABETIC CLINIC
2) R-50/1-HOUSE OF S.ROY
3) R-50/2-HOUSE OF S.DESAI
4) R-50/3-HOUSE OF ARUP HAR (25)
5) GODOWN OWNER'S NAME NOT AVAILABLE
6) HOUSE OF SHARMILA GUHA
7) HOUSE UNDER CONSTRACTION
8) VACANT PLOT
9) VACANT PLOT OF AJRI MARKETING DEPTT. (

NOTES:-

ALL DIMENSION ARE IN MM

WATER TO BE SUPPLIED IN TO THE HOUSE FROM WELL THROUGH OVER HEAD TANK BY 1 HP 2-PUMP.

CLIENT

ARCHITECT

ENGINEER

CLIENT	INDIAN BANK
DETAIL OF PREMISES	PROPOSED SITE PLAN FOR CONSTRUCTION OF INOSETI BUILDING R.S PLOT NO - 34 (P), L.R. PLOT NO - 593 (P), KHATIAN NO - 2557 MOUZA - NARAMPUR, J.L. NO - 174, P.S. - MEDINIPUR, HOLDING NO. 1168, MAHALLA -SARADPALLY WARD NO. 23(NEW) 24(OLD), DALIL NO. 3209/17 DIST-PASCHIM MEDINIPUR,UNDER MIDNAPORE MUNICIPALITY
PROJECT	INOSETI BUILDINGS AT MIDNAPUR

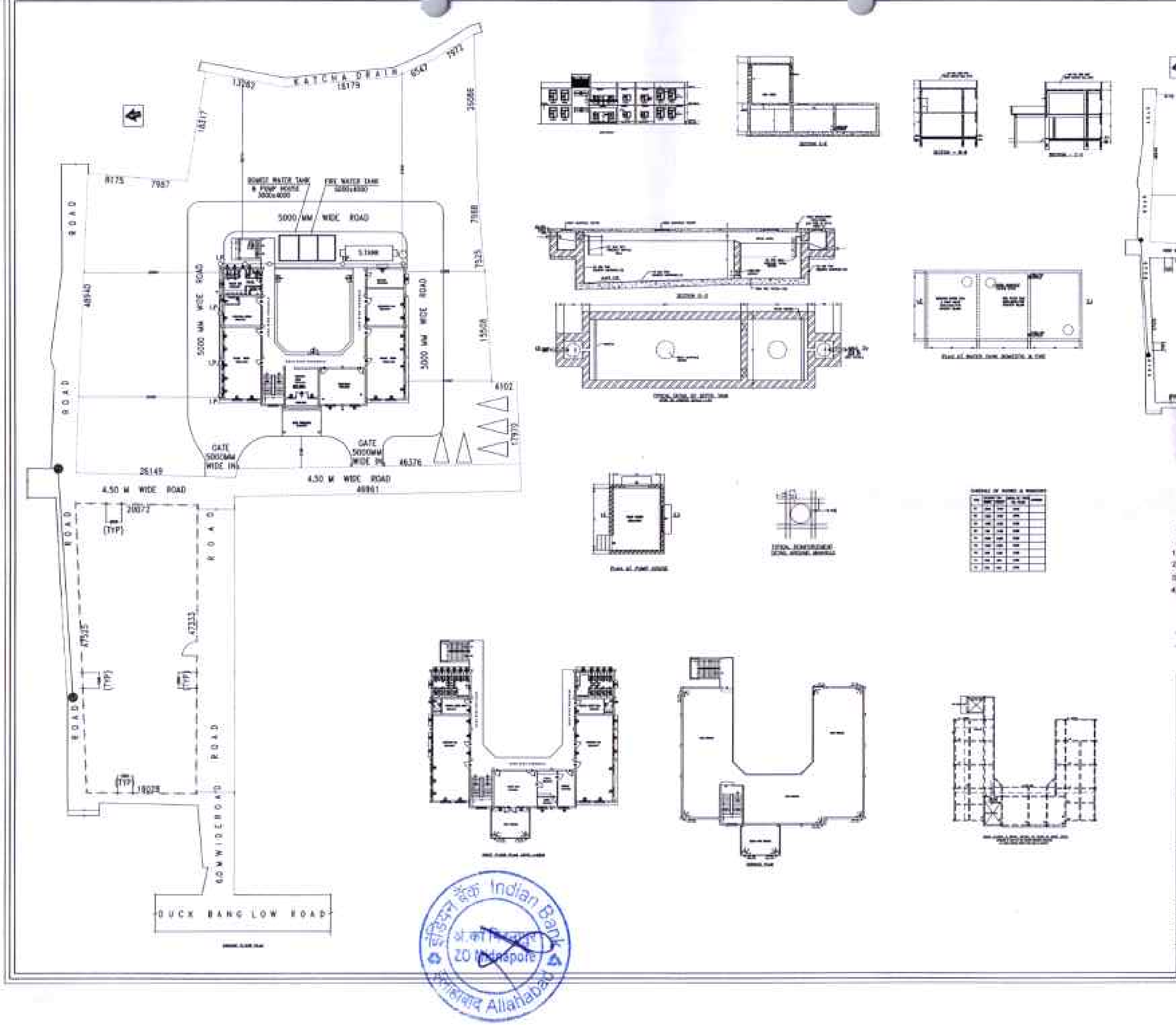
SHEET:		NAME	DATE
SCALE: 1:600	DRAWN	S.B.	23.11.23
	CHECKED	A.DHAR	23.11.23
	APPROVED		23.11.23

TITLE: SITE PLAN

CONSULTANT

DHAR & ASSOCIATES (P) LTD.
7, RED CROSS PLACE.
4 TH FLOOR, KOLKATA-700001.

DWG. No: Rev. 0



NOTES:-

1) TOTAL AREA LAND (A+B) - 39-10K-8CH. = 5117.896SM
2) TOTAL AREA OF LAND (B) - 4324 SQM
3) GROUND FLOOR COVD AREA - 662.69 SM
4) TOTAL BUILT UP AREA -
   i) GROUND FLOOR - 662.69 SM
   ii) FIRST FLOOR - 540.43 SM
   iii) STAIR - 25.200 SM

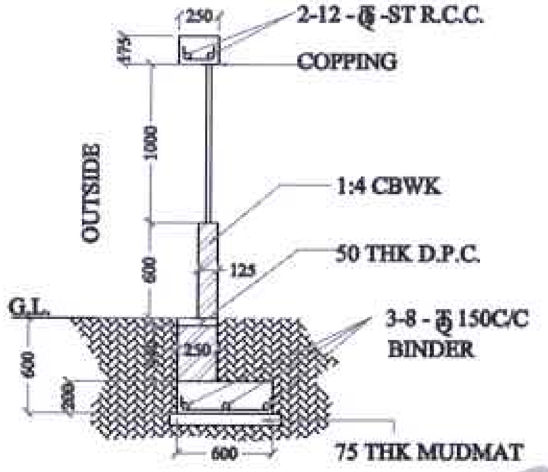
TOTAL - 1228.25 SM

CLIENT

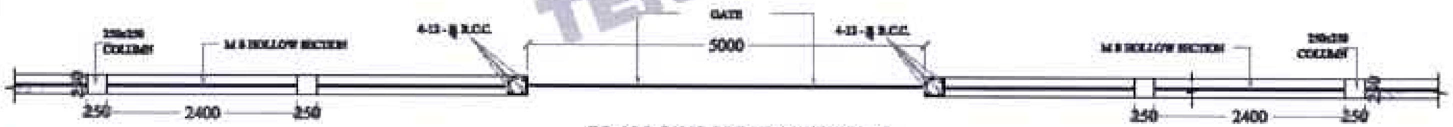
ARCHITECT

ENGINEER

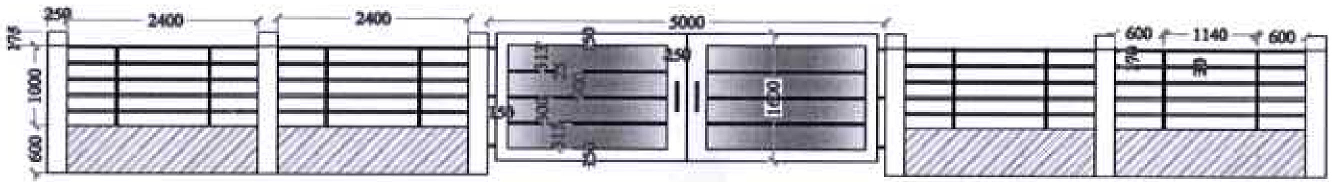
CLIENT	INDIAN BANK TRUST FOR RURAL DEVELOPMENT
DETAIL OF PREMISES	[illegible]
PROJECT	RSETI BUILDINGS AT MIDNAPUR
TITLE	GROUND FLOOR PLAN & SEPTIC TANK, SITE PLAN



SECTION: A - A'



PLAN OF BOUNDARY WALL



ELEVATION OF BOUNDARY WALL

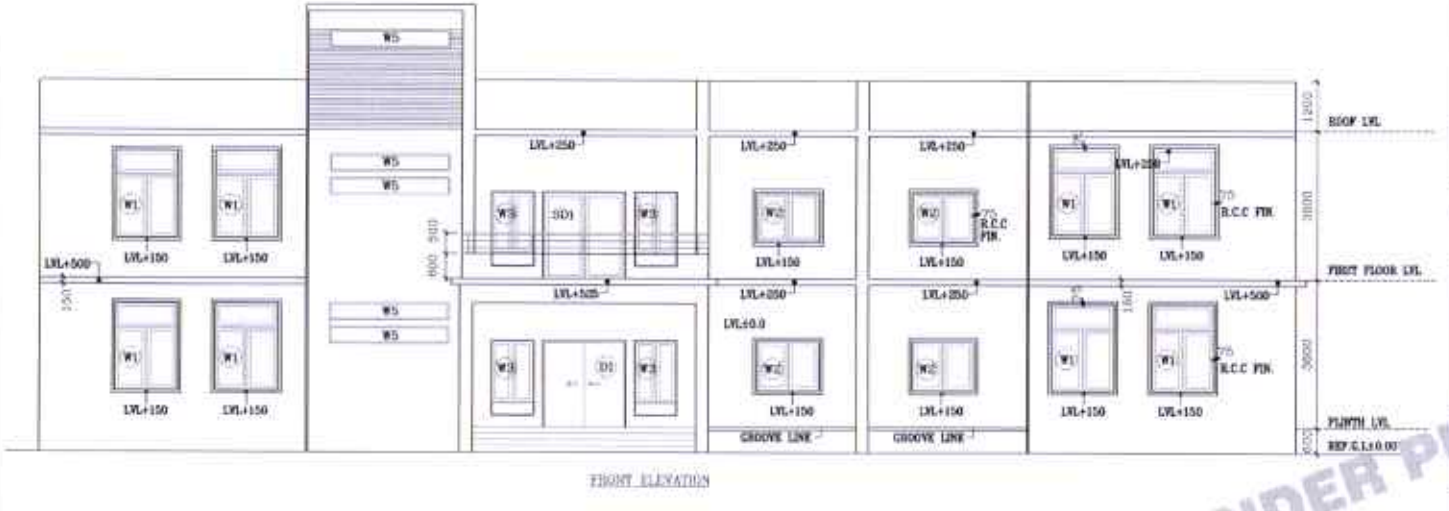
DATE: 11.02.2025

DETAILS OF BOUNDARY WALL

INDIAN BANK
INDSETI BULDING AT MIDNAPUR

DHAR & ASSOCIATES PVT. LTD.

Architects, Structural Engineers,
Industrial Consultants, Interior Designers
7, Red Cross Place, 4th Floor, Kolkata – 700001.



FRONT ELEVATION

THIS DRAWING IS TENDER PURPOSE ONLY

PROJECT: INDSETI BUILDING AT MIDNAPUR

CLIENT: INDIAN BANK
ZONAL OFFICE, MIDNAPUR

DHAR & ASSOCIATES PVT. LTD.

Architects, Structural Engineers
Industrial Consultants, Interior Designers
7, Red Cross Place, 4th Floor, Kolkata – 700001

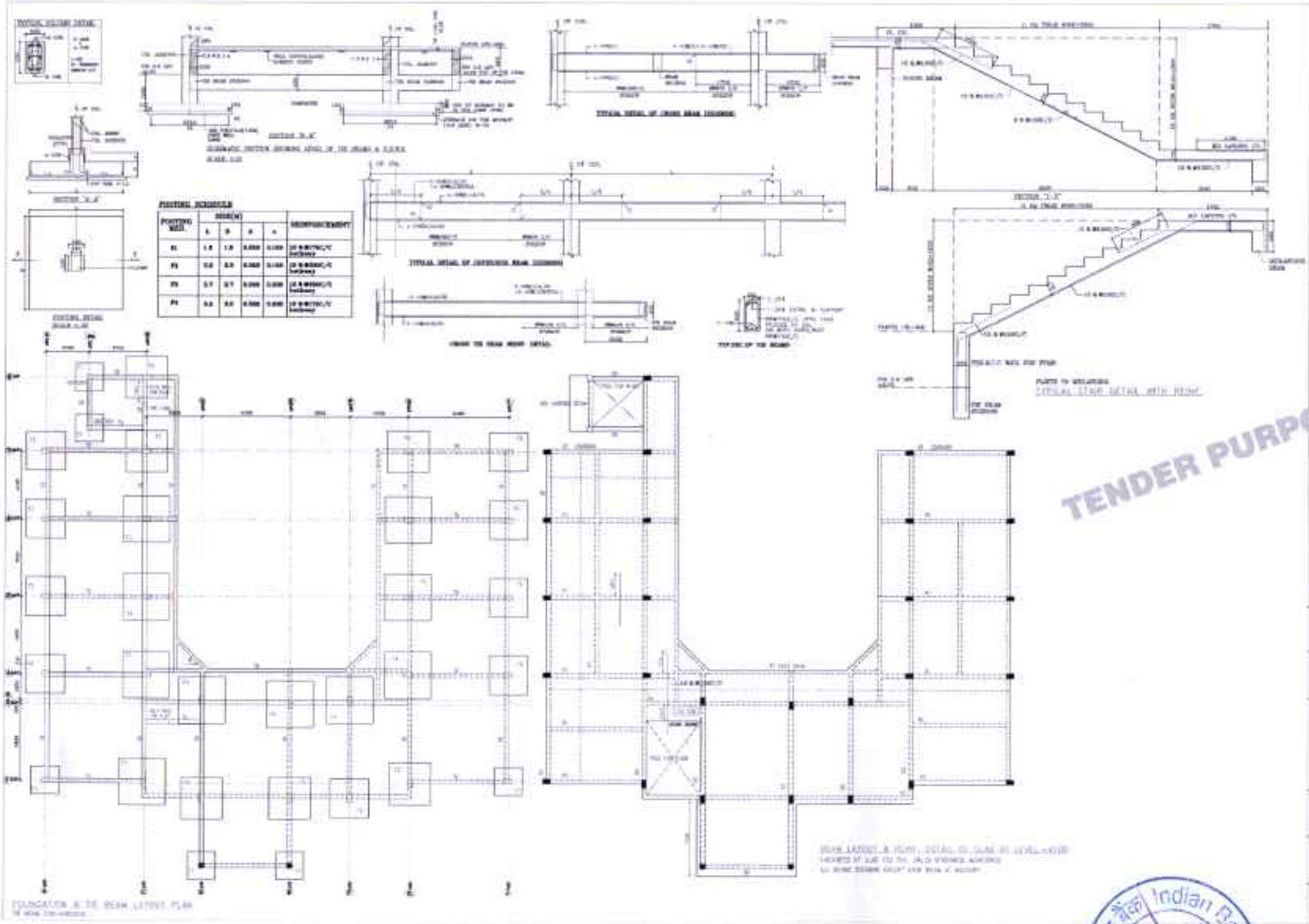
TENDER PURPOSE ONLY

ELEVATION

R1: 08.12.23
R2: 04.12.24

SCALE	DRN. BY	CHKD. BY	DRAWING NO.	DATE
1:100	Moushumi		DA/IND/INDSETI/607	

Indian Bank
ZO Midnapore
Allahabad



TENDER PURPOSE ONLY

THIS DRAWING IS TENDER PURPOSE ONLY

PROJECT: INDSETI BUILDING AT MIDNAPUR

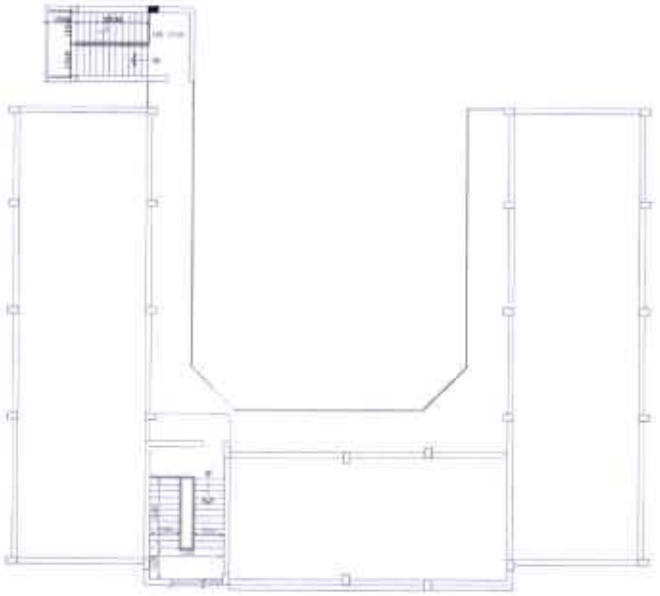
CLIENT: INDIAN BANK
ZONAL OFFICE, MIDNAPUR

DHAR & ASSOCIATES PVT. LTD.

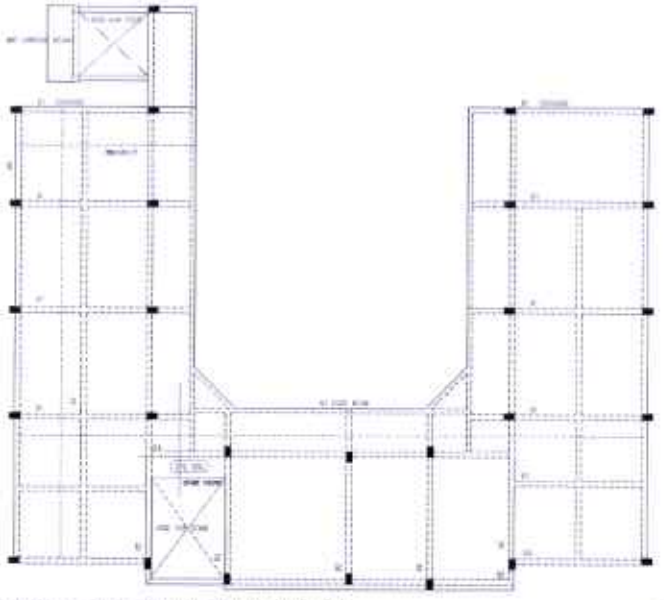
Architects, Structural Engineers,
Industrial Consultants, Interior Designers
7, Red Cross Place, 4th Floor, Kolkata – 700001

FOUNDATION, BEAM LAYOUT & SECTIONS	RT-08.12.23 R2 04.12.24

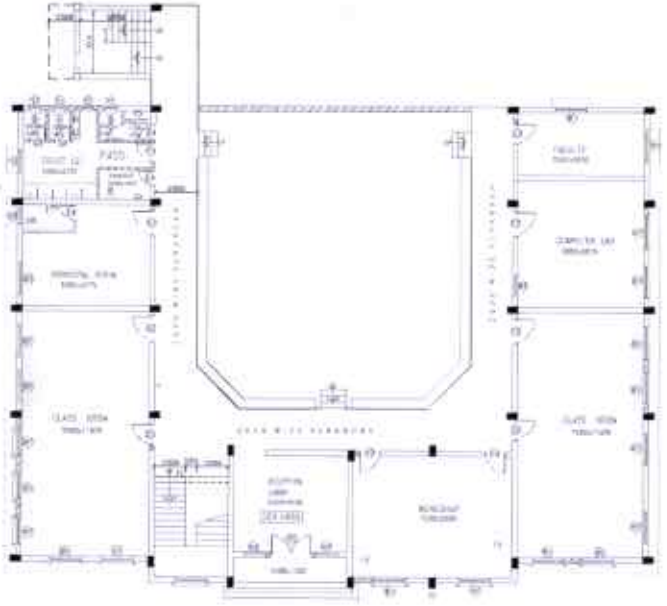
SCALE	DRN. BY	CHKD. BY	DRAWING NO.	DATE
1:100	Nayahumi		DA/IND/INDSETI/606	23.11.2023



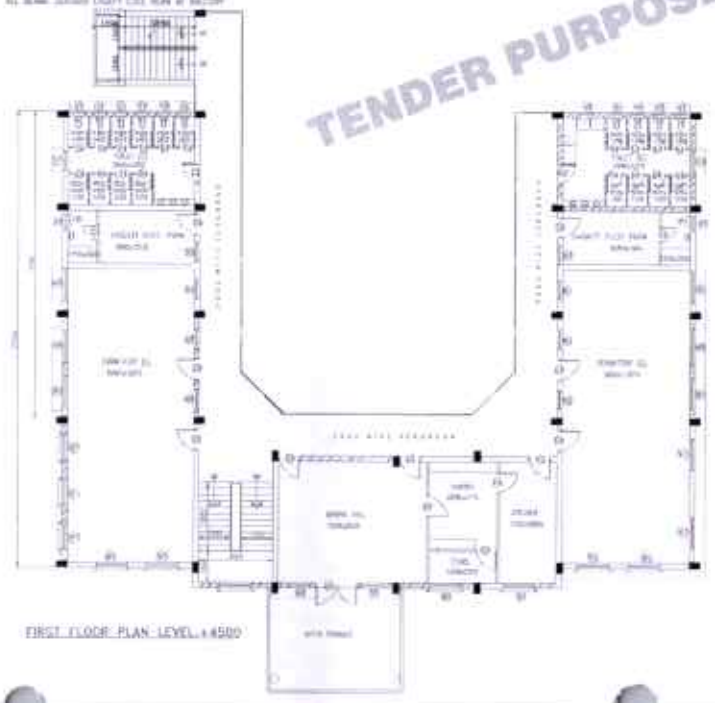
ROOF PLAN



BEAM LAYOUT & REINF. DETAIL OF SLAB AT ROOF LEVEL



GROUND FLOOR PLAN



FIRST FLOOR PLAN LEVEL +4500

THIS DRAWING IS TENDER PURPOSE ONLY

PROJECT: INDSETI BUILDING AT MIDNAPUR

CLIENT: INDIAN BANK
ZONAL OFFICE, MIDNAPUR

DHAR & ASSOCIATES PVT. LTD.

Architects, Structural Engineers,
Industrial Consultants, Interior Designers
7, Red Cross Place, 4th Floor, Kolkata – 700001

FIRST, SECOND, ROOF PLAN AND BEAM LAYOUT & REINF DETAILS

AT:-08.12.23
RE: 04.12.24

SCALE	DRN. BY	CHKD. BY	DRAWING NO.	DATE
1:100	Moushumi		DA/IND/INDSETI/805	23.11.2023