INDIAN BANK

ZONAL OFFICE, RANCHI

TENDER DOCUMENT

INTERIOR, FURNITURE AND ELECTRICAL WORK
AT
BOARI BRANCH

Name of Contractor : _____

Address : _____

_____

CONTENTS

SECTION – I

NOTICE OF INVITATION TO TENDER

Note :
Tender Document collect/download and submit only Indian Bank, Empaneled contractor in Composite categories.

Sealed Item rate tenders, are invited on behalf of

The Zonal Manager
Indian Bank
Ranchi Zonal Office,
Bahubazar Chowk,
Ranchi

For the following work :

a)	Name of work	:	Interior, furniture & electrical work at Boari Branch
b)	Estimated Cost	:	Rs. 5.26 Lakhs (approx) (excluding GST)
c)	Time of Completion	:	6 (Six) weeks.
d)	Cost of Tender Document	:	Rs. 500/- in favour of Indian Bank. Zonal Office, Ranchi in the form of Demand Draft or Cheque per set of documents (original document are to be submitted in the tender process). (Non-refundable)
e)	Availability of Tender Document	:	http://indianbank.in
f)	Issue of Tender Document	:	On 05.07.2023 to 14.07.2023 till 5 :00 PM.

Contd..

g) Time and date of Submission of tender : Tender should be submitted physically on or before 15.07.2023 till 03.00 P.M.

h) Time and date of opening of tender : After 11:00 AM. on 17.07.2023

i) Venue : The Zonal Manager
Indian Bank
Ranchi Zonal Office,
Bahubazar Chowk
Ranchi

j) Tender to be addressed and submitted to : The Zonal Manager
Indian Bank
Ranchi Zonal Office,
Bahubazar Chowk
Ranchi

k) Tender without tender cost in proper form will be rejected.

l) Drawings other than enclosed ones can be seen and clarification, if any, to be obtained from :
Indian Bank
Ranchi Zonal Office,
Bahubazar Chowk
Ranchi

m) Validity of Tenders : 3 (Three) calendar months from the date of submission of Tender

n) Goods and Service Tax (GST) shall be paid to the contractors as per applicable rules. The contractors, however, shall duly comply all necessary formalities in this regard and submit valid documents to the Bank.

Contd..

o) Delay in submission : Delay in submission of any part arising due to postal or any other irregularities at any stage will not be considered. The Bank will not be responsible for any damage in transit in case of postal delivery / delivery through courier service.

p) All tenders in which any of the prescribed conditions are not fulfilled or are incomplete in any respect are liable to be rejected.

q) The acceptance of tender will rest with **Indian Bank** which does not bind itself to accept the lowest or any tender and reserves to itself the right to reject any or all the tenders received without assigning any reason/s thereof.

The Bank also 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 rates quoted.

Yours faithfully,
For **Indian Bank**

SECTION – II

GENERAL RULES AND INSTRUCTION FOR THE GUIDANCE OF TENDERER

Tenders are hereby invited on behalf of The Zonal Office, Ranchi, Bahubazar Chowk, Ranchi for Interior, furniture & electrical work at Boari Branch.

1. Tender Document consisting of the following :

    i) Tender Notice

    ii) General rules and instructions for the Guidance of Tenderers

    iii) Form of tender

    iv) Articles of Agreement

    v) General Conditions of Contract with Appendices

    vi) Technical Specifications

    vii) Schedule of Quantities

    viii) Drawings issued

2. Tender can be downloaded only from **http://indianbank.in** on stipulated days from 05.07.2023 to 14.07.2023. Tender will be rejected without application fees.

3. Only empaneled vendor can apply.

    Note: If the quoted cost is 20% above or less than the estimated cost then the bidder have to submit proper explanation with rate analysis to the bank. Unsatisfactory or unrealistic reply may attract cancellation.

4. The site of the work is available.

5. Tenders in only printed should be placed in sealed cover addressed to The Zonal Office, Ranchi, Bahubazar Chowk, Ranchi the name of the project written on the envelopes and submitted at the above office.

6. The sealed cover shall contain two separate sealed covers superscribed with Part - I and Part - II containing the documents as under :

Part– I : (TD)	Covering Letter / GST Certificate
Part– II : (PS)	The tender document with bill of quantities, duly priced, any condition stipulated in Part-II will not be accepted. Conditional rebates, if any given in Part-II, shall be treated as unconditional.

7. Part-I will be opened on 17.07.2023 at 11:00 AM. The tenderers may depute their authorized representative to be present at the time of opening Part II, which will be opened immediately thereafter after verification of submissions made in Part – I, which might necessitate withdrawal of conditions and its financial impact on the tendered sum, if any. Part – II of tenders will be treated as informal in case submissions in Part – I are found to be not in order. Informal tenders will not be opened and returned subsequently to the tenderer by registered post.

8. The tenderers should quote in figures as well as in words the rates, and amount tendered by them. The language for filling tender documents shall be in English. The amount for each item should be worked out and requisite total given.

   All corrections shall be attested by the initials of the tenderers with the seal of the firm. In case any discrepancy/ difference is found on checking between rates quoted 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 figure and in words, the rate which corresponds to the amount worked out by the Contractor, shall be taken as correct.
   b) When the amount of any 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 rates quoted by the Contractor in figures and in words tally but the amount is not worked out correctly, rate quoted by the Contractor shall be taken as correct and not the amount.

d) Amendments as mentioned above shall be based on the tender marked "original" only.

9. All rates shall be quoted on the proper form of the tender alone. 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 figures of rupees and words paise after the decimal figures, e.g. Rs.2.15 P. 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 upto 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.

10. The Contractor, whose tender is accepted will be required to furnish by way of security deposit for the due fulfillment of his contract, such sum as detailed in Clause No. 17 of the General Conditions of Contract.

11. The acceptance of a tender will rest with The Zonal Office, Ranchi, Bahubazar Chowk, Ranchi, who does not bind itself to accept the lowest tender and reserves to itself the authority to reject any or all the tenders received without assignment of any 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 Employer reserves the right to accept the tender in full or in part and the tenderer shall have no claim for revision of rates or other conditions if his tender is accepted in parts.

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

13. An item rate tender containing percentage below / above will be summarily rejected.

14. 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/Consultant shall be communicated to the Employer / Consultant.

15. Goods and Service Tax (GST) shall be paid to the contractors as per applicable rules. The contractors, however, shall duly comply all necessary formalities in this regard and submit valid documents to the Bank.

16. The Contractor shall give a list of his relative working with the Employer along with their designations and address.

17. No employee of the Employer is allowed to work as a Contractor for a period of two years of his retirement from Employer's services, without the previous permission of the Employer. The 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 Employer / Consultant as aforesaid before submission of the tender or engagement in the Contractor's service.

18. The tender for work shall remain open for acceptance for a period of 3 (Three) months from the date of submission of tenders. If any tenderer withdraws his tender before the said period, then the Employer shall be at liberty to forfeit the Earnest Money paid along with the tender.

19. The tender for the work shall not be witnessed by a Contractor or contractors who himself / themselves has / have tendered or who may and 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.

20. It will be obligatory on the part of the tenderer 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 Employer.

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SECTION – III

FORM OF TENDER

The Zonal Manager
Indian Bank
Ranchi Zonal Office,
Bahubazar Chowk
Ranchi

Dear Sir (s),

Re : **Interior, furniture & electrical work at Boari Branch**

1. I/We refer to the tender notice issued by Indian Bank, The Zonal Office, Ranchi, Bahubazar Chowk, Ranchi on your behalf in connection with the above work.

2. I/We do hereby offer to perform, provide, execute, complete and maintain the work in conformity with drawings, conditions of contract, specifications, schedule of quantities for the sum and at the respective rates quoted in the schedule of quantities.

3. I/We have satisfied myself / ourselves as to the site conditions, examined the drawings and all aspects of the tender conditions. Subject to above, I/We do hereby agree, should this tender be accepted in whole or in part to :

   a) Abide by and fulfill all the terms and provisions of the said conditions annexed hereto :
   b) Complete the work within 6 (six) weeks, as stipulated by working in two or three shifts, if considered necessary by the consultants, at no extra cost to the Employer.

4. I/We note, will not bear any interest and is subject to forfeiture solely at Bank's discretion if :

   i) the work is not commenced by me/us within 7 (Seven) days from the date of issue of formal work order.

ii) the offer is withdrawn within the validity period of acceptance

or

iii) the agreement of the contract is not executed within 30 days from award of contract.

5. I/We understand that you are not bound to accept the lowest or any tender you receive.

6. The acceptance of this tender shall constitute a binding contract and any failure as mentioned in item 4 above shall constitute a breach of contract by us and the tender accepting authority shall be entitled to have the work executed at our risk and cost and to claim extra cost/expenditure incurred by them from us.

7. Our Bankers are :

i)
ii)
iii)

8. Name of partners / directors of our firm :

i)
ii)
iii)
iv)

Yours faithfully,

Signature .....

Name of Partner / Director of the firm authorised to sign or Name of person having power of attorney to sign the contract. (Certified true copy of power of attorney should be attached)	: Name …….. : Designation ……
Signature and addresses of Withnesses	: a) Signature : …… Name …… Address…….. …… b) Signature : …… Name …… Address…….. ……

SECTION – IV
ARTICLES OF AGREEMENT

ARTICLES OF AGREEMENT made the day of between INDIAN BANK, The Zonal Office, Ranchi, Bahubazar Chowk, Ranchi, (hereinafter called "the Employer") which expression should include its successors and assignee of the one Part and (hereinafter called the "Contractor") of the other Part which expression should include its successor and assignee.

WHEREAS the Employer is desirous Interior, furniture & electrical work at Boari Branch and has caused drawings and specifications describing the work to be prepared by Indian Bank, Zonal Office, Ranchi.

AND WHEREAS the said DRAWINGS numbered the specifications and the schedule of items and quantities have been signed by and on behalf of the parties hereto.

AND WHEREAS the Contractor has agreed to execute upon and subject for the conditions set forth herein and schedule of items and quantities, General Conditions of Contract, Special Conditions including other Conditions etc., Technical Specifications, decisions of negotiation meetings if any all correspondences exchanged by or between the parties from the date of tender notice till the award of work both letters inclusive, (all of which are collectively herein after referred to as "the said Conditions"). The work shown upon the drawings and or described in the said specification and included in the schedule of items and quantities at the respective rates therein set forth amounting to the sum as therein arrived at or such other sum as shall become payable thereunder (hereinafter referred to as "the said contract amount").

NOW IT IS HEREBY AGREED AS FOLLOWS :

1. In consideration of the said contract amount to be paid at the times in the manner set forth in the said conditions, the contractor shall upon and subject to the said execute and complete the work shown upon the said drawings and described in the said specifications and the schedule of items and quantities.

2. The Employer shall pay the contractor the said contract amount, or such other sum as shall become payable, at the times and in the manner specified in the said conditions.

3. The said conditions and Appendices thereto shall be read and considered as forming Part of this Agreement, and the parties hereto shall respectively abide by, submit themselves to the said conditions and perform the agreements on their Part respectively in the said conditions contained.

4. The plans, agreements and documents mentioned herein shall form the basis of this contract.

5. This contract is neither a fixed lump sum contract nor piece work contract but is a contract to carry out the work in respect of the Interior furnishing work at Boari Branch as per the scope described and to be paid for according to actual measured quantities at the rates contained in the Schedule of rates and probable quantities or as provided in the said conditions.

6. The Employer reserves to itself the right of altering the drawings and nature of the work by adding to or omitting any items of work or having portions of the same carried out without prejudice to this contract.

7. Time shall be considered as the essence of this contract and the contractor hereby agrees to commence the work on the day on which he is instructed to take possession of the site or from fourteenth day after the date of issue of formal work order as provided for in the said conditions whichever is later and to complete the entire work within 6 (six) weeks subject nevertheless to the provisions for extension of time.

8. All payments by the Employer under this contract will be made only at Bhagalpur.

   Any dispute arising under this Agreement shall be referred to arbitration in accordance with the stipulation laid down in the general conditions of contract.

9. That the several Parts of this contract have been read by the contractor and fully understood by the contractor.

IN WITHNESS WHEREOF the Employer and the contractor have set their respective hands to these Presents and two duplicates hereof the day and year first herein above written.

If the contractor is a Partnership or an individual.

IN WITNESS whereof the Employer has set its hands to these Presents through its duly authorised official and the contractor has caused its common seal to be affixed hereunto and the said two duplicates / has caused these Presents and the said two duplicate hereof to be executed on its behalf, the day and year first herein above written.

If the Contractor is a Company.

Signature clause :

……..

SIGNED AND DELIVERED

By the hand of Shri ……..
(Name and Designation) ……..

In the presence of

(1) ……..

Address ……..

(2) ……..

Address ……..

SIGNED AND DELIVERED by ……
in the presence of

Witness

(1)……..

Address ……..

(2) ……..

Address …….

If the party is a partnership firm or an Individual should be signed by all or on behalf of all the partners.

The COMMON SEAL OF…….. was herein to affixed pursuant to the resolutions passed by its Board of Directors at the meeting held on

Witness

(1)……..

(2)……..

If the contrac- tor signs under its common seal, the signature clause should tally with the sealing clause in the Articles of Association.

Directors who have signed these presents in token thereof in the presence of

1) ……..

2) ……..

If the Contractor is signed by the hand of power of attorney, whether a company of individual.

……..
Signed on behalf of the Indian Bank
by its duly authorised official.

SECTION – V
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 direction of the Employer / Consultant.

1. **INTERPRETATION**

In 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 having their office Zonal Office, Bahubazar Chowk, Ranchi or any of its employees / representative authorized on their behalf.

ii) **Contractor :** The Contractor shall mean the individual or firm or company whether incorporated or not, undertaking the work and shall include legal representative(s) of such individual or persons composing such firm or company or successors of such firm or company as the case may be and permitted assigns of such individual or firm or company.

iii) **Site :**The site shall mean the site where the work are to be executed as shown within the boundary in red border on the site plan including any building and erections thereon allotted by the Employer for the Contractors use.

iv) **Site Engineer / Project Management Consultant (PMC) :** The Site Engineer shall be appointed by the Employer. The Employer may also appoint the Project Management Consultant (PMC).

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

All drawings relating to work given to the Contractor together with a copy of schedule of quantities are to be kept at site and the Employer/ Consultant shall be given access to such drawings or schedule of quantities whenever necessary.

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 20 days ahead from the time when it is required for implementation so that the Employer / Consultant may be able to give decision thereon.

vi) **"The Work"** shall mean the work to be executed or done under this contract.

vii) **"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.

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

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

x) **Please note that firms registered with MSME / NSIC** under single point registration with valid certificates issued by GOI are exempted from submitting EMD. Necessary Certificates must accompany bid. No other type of certificate is acceptable. The exemption and relaxation in EMD is subject to the validity & acceptance of their registration certificate on the date of opening of Tender.

2. **SCOPE**

The work consists of Interior, furniture & electrical work at Boari Branch in accordance with the drawings and "Schedule of items and quantities". It includes furnishing all materials, labour, tools and equipment and management necessary and incidental to the 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 / Consultant. Should any detail, 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 / Consultant and to furnish and install such detail with Employers' / Consultant's concurrence, so that upon completion of the proposed work the same will be acceptable and ready for use.

Employer / Consultant may in their absolute discretion issue further drawings and/or written instructions, details, directions and explanations, which are, here after collectively referred to as "The Employer's / Consultant's instructions" in regard to :

a) The variation on modification of the design, quality or quantity of work 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 specification.

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 opening up for inspection of any work covered up.

e) The rectification and making good of any defects under clauses hereinafter mentioned and those arising during the Defect Liability period.

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

3. **DETAILED DRAWINGS AND INSTRUCTIONS**

The Employer through its Consultant shall furnish with reasonable promptness additional instructions by means of drawings or otherwise necessary for the proper execution of the work. All such drawings and instructions shall be consistent with the Contract Documents, true developments thereof, and reasonably inferable therefrom.

The work shall be executed in conformity therewith and the Contractor shall not work without proper drawings and instructions.

Immediately after receipt of the work order of the contract the contractor shall prepare a detailed progress schedule and submit the same to the Employer through the Consultant for approval which shall indicate the dates for the starting and completion of the various stages of constructions.

4. **COPIES FURNISHED**

The Contractor on the signing hereof shall be furnished by the Employer through its Consultant free of charge with a copy of the priced schedule of quantities / rates, two copies of each of the said drawings and one copy of specifications and two copies of all further drawings issued during the progress of the work. Any further copies of such drawings required by the Contractor shall be supplied on payment of the charges thereof by the contractor.

5. **OWNERSHIP OF DRAWING**

All drawings, specification and copies thereof furnished by the Employer through its Consultant are the property of the Employer. They are not to be used on other work, and with the exception of the signed contract set, are to be returned to the Employer on request at the completion of the work.

6. **FAILURE BY CONTRACTORS TO COMPLY WITH EMPLOYER'S / CONSULTANT'S INSTRUCTION**

If the contractor after receipt of written notice from the Employer and/or the Consultant requiring compliance of any instructions within ten days fails to comply with such further drawings and/or Employer's / Consultant's instructions, the Employer through the Consultant or other person, may employ other person to execute any such work whatsoever that may be necessary to give effect thereto and pay all cost incurred in connection therewith and same shall be recoverable from the contractor by the Employer on the certificate of the Consultant as a debt or shall have right to deduct same from any moneys due or to become due to the contractor.

7. **TENDERER SHALL VISIT THE SITE**

Intending tenderer shall visit the site and make himself thoroughly acquainted with the local site condition, nature and requirements of the work, facilities of transport condition, effective labour and materials, access and storage for materials and removal of rubbish. The tenderer 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 tenderer 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 / Consultant might be deemed to have reasonably been inferred to be so existing before commencement of work.

8. **TENDERS**

The entire set of tender paper issued to the tenderer 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 the tender papers by the tenderer.

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 subhead as detailed in the "Schedule of Quantities".

iii) All corrections / overwriting are to be initiated with the seal of the Firm.

No modifications, writings or corrections can be made in the tender papers by the tenderer, but may at his option offer his comments or modifications in a separate sheet of paper attached to the original tender papers.

The Employer reserves the right to reject the lowest or any tender and also to 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 / Consultant detailed analysis of any or all the rates shall be submitted. The Employer / Consultant shall not be bound to recognise the Contractor's analysis.

The work will be paid for as "measured work" on the basis of actual work done and not as "lump sum" contract.

All items of work described in the schedule of quantities are to be deemed and paid as complete work in all respects and details including preparatory and finishing work 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 work, the payment of such item 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 / Consultant.

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, omission or variation shall be made by the Contractor without authorisation from the Employer. No variation shall vitiate the contract.

9. AGREEMENT

The successful Contractor shall sign the agreement as per draft agreement annexed within 15 days from the date of issue of formal work order and he shall pay for all stamps and legal expenses, incidental thereto. However, the written acceptance of the tender by the Employer / Consultant on behalf of Employer will constitute a binding contract between the Employer and the person so tendering whether such formal agreement is or is not subsequently executed.

10. **ROYALTIES & PATENTS**

The contractor shall pay all royalties and license fees. He shall defend all suits or claims for infringement of any patent rights and shall save the Employer harmless from loss on account thereof.

11. **PERMITS AND LICENCES**

Permits and licenses for release of materials which are under Government control will be arranged by the contractor. The Employer will render necessary assistance, sign any forms or applications that may be necessary.

12. **GOVERNMENT AND LOCAL RULES**

The Contractor shall conform to the provisions of all local Bylaws 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. The Contractor shall give all notices required by the said Act, Rules, Regulations and Bylaws etc and pay all fees payable to such authority / authorities for execution of the work involved. 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.

13. **TAXES AND DUTIES**

Goods and Service Tax (GST) shall be paid to the contractors as per applicable rules. The contractors, however, shall duly comply all necessary formalities in this regard and submit valid documents to the Bank.

14. **PROVISIONAL SUMS (P.S.)**

All provisional sum described in the schedule of quantities as P.S. shall be exclusively allotted to the purchase of materials & not for any handling & fixing with profit (or transportation charges where and if required) which shall be separately included in the contract price and described in the schedule of quantities. The disposal of the amounts covered under this head will be absolutely at the discretion of the Employer. Contractor is to make payments for these materials to the suppliers on certificate or order issued by the Employer / Consultant and release them through his bills from the Employer.

15. **QUANTITY OF WORK TO BE EXECUTED**

The quantities shown in the Schedule of quantities are intended to Part the entire new structure 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 therefor. If at any time after the commencement of the work, the Employer / Consultant shall for any reason whatsoever not require the whole work thereof as specified in the tender to be carried out, the Consultant / Employer shall give notice in writing of the fact to the contractor who shall have no claim to any payment or compensation whatsoever on account of any profit or advantage with which he might have

derived from the execution of the work in full, but which he did not derive in consequence of the full amount of the work not having been carried out; neither shall he have any claim for compensation by reason of any alterations having been made in the original specification, drawing, designs and instructions which shall involve any curtailment of the work as originally contemplated.

16. **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 the Contractor shall allow all reasonable facilities and use of his scaffolding for the execution of such work. The General building Contractor shall extend all co-operation in this regard.

17. **SECURITY DEPOSIT & RETENTION MONEY**

The successful tenderer to whom the contract is awarded will have to deposit as "initial security deposit "(ISD) a further sum to make up 2% of the value of the accepted tender. ISD may be submitted in the form of Bank Draft/Pay Order or Bank Guarantee in a format approved by the employer. The Bank Guarantee shall be from any nationalized/ Foreign Bank banking in India other than the clientele. The initial Security Deposit will have to be made within 14 days from the date of acceptance of tender.

Apart from the initial security deposit made as above retention shall be deducted from progressive running bills @ 8% of the gross value of each running bill until the Total Security Deposit, i.e, the initial Security Deposit plus the retention money equals :

10 % on the first Rs. 1,00,000.00 of the cost of work
7.50 % on the next Rs. 1,00,000.00 of the cost of work
5.0 % on the remaining amount of the cost of work

Cost of work shall mean accepted Contract sum initially and ultimately shall mean the actual Total cost i.e. Gross value of the final bill by the Employer /Consultant

After realisation by deduction from the bill of the total retention as specified above, 50% of the total retention amount will be due for release after 15 days of virtual completion certificate issued by the Consultant/Employer.

50% of the retention amount will be refunded to the contractor on completion, subject to the following :

a) issue of Virtual Completion Certificate by the Consultant / Employer.
b) contractor's removal of his materials, equipment, labour force, temporary sheds/stores etc. from the site (excepting for a small presence required if any for the Defect Liability Period and approved by the Bank).

The balance 50% will be released to the Contractor within a reasonable period after the end of "Defect liability period" provided he has satisfactorily carried out all the work, submitted all documents contractually called for and attended to all defects in accordance with the conditions of the contract. No interest is allowed on retention money and earnest money deposit. The balance retention money may be transformed in appropriate Bank Guarantee on a Bank other than Indian Bank subject to performance of the project.

Further, if some dues to the Employer from the Contractor(s) have still to be recovered, the Employer reserves the right to withhold payment of so much of the retention money as in his opinion, represents the cost of the same.

18. **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 or may not be particularly shown or described therein provided that the 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 / Consultant whose decision shall be final and binding. The Contractor shall provide himself for fresh and tested water for carrying out the work 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 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 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 the execution of any work, all tools, tackles, machineries and equipments and all the necessary centering, scaffolding, staging, planking, timbering, strutting, shoring, 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, houses, buildings, 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 requires or when ordered so to do and shall fully reinstate and make good all matters and things disturbed during the execution of work to the satisfaction of the Employer / Consultant.

The Contractor shall also provide such temporary road on site as may be necessary for the proper performance of the contract, and for his own convenience but not otherwise. Upon completion, such road shall be broken

up and leveled where so required by the drawings unless the Employer shall otherwise direct.

The Contractor shall at all times give access to workers employed by the Employer or any men employed on the buildings and to provide such parties with proper sufficient and if required, special scaffolding, hoists and ladders and provide them with water and lighting and leave or make any holes, grooves etc. in any work, where directed by the Employer as may be required to enable such workmen to lay or fix pipes, electrical and telephone conduit laying, special fittings, etc. The quoted rates of the tenderers shall accordingly include all these above mentioned contingent work.

19. **TIME OF COMPLETION, EXTENSION OF TIME AND PROGRESS CHART**

a) Time of Completion :

The entire work is to be completed in all respects within the stipulated period of 6 (six) weeks The work shall be deemed to be commenced within 7 (Seven) days from the date of issue of formal work order or the date on which the Contractor is instructed to take possession of the site, whichever is later. Time is the essence of the contract and shall be strictly adhered to by the Contractor.

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

b) Extension of Time :

If in the opinion of the Employer / Consultant the work be delayed (a) by reason of any exceptionally inclement weather, or (b) by reason of instructions from the Employer / Consultant in consequence of proceedings taken or threatened by or disputes, with adjoining or neighboring owners or (c) by the work, or delay, of other contractors or tradesmen engaged or nominated by the Employer / Consultant and not referred to in the specification or (d) by reason of authorized extra and additions or (e) by reason of any combination of workmen or strike or lock-out affecting any of the building trades or (f) from other causes which the Employer / Consultant may consider are 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 lock-outs, as are referred to above, the Contractor shall, immediately give the Employer, written notice thereof. Nevertheless, the Contractor shall use his best endeavors to prevent delay, and shall do all that may be reasonably required, to the satisfaction of the Employer / Consultant to proceed with the work and on his doing so that it will be ground of consideration by the Employer / Consultant 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 lock-out and the Employer shall then, in the event of extension being granted, determine and declare the final completion date. The provision in Clause 20 with respect to payment of liquidated damages shall in such case, be read and construed as if the extended date fixed by the Employer were substituted for and the damage shall be deducted accordingly.

Hindrance Register in the approved format shall be maintained and proper record of hindrances arisen and solved with the dates to be recorded in the register by the Employer's Site Engineer / Consultant's Site Engineer and Contractor's authorized representative so that extension of time to be granted can be derived from the register and recommended by the Consultant and approved by the Employer.

c) Progress of work / work programme :

During the period of construction/execution of work, the Contractor shall maintain proportionate progress on the basis of the Programme Chart submitted by the Contractor immediately before commencement of work and agreed to by the Employer / Consultant. Contractor should also include planning for procurement for scarce materials well in advance and reflect the same in the Programme Chart so that there is no delay in completion of the project.

20. LIQUIDATED DAMAGES

Should the work be not completed to the satisfaction of the Employer / Consultant within the stipulated period, the Contractor shall be bound to pay to the Employer a sum calculated @ 1.00% of the accepted contract sum per week of delay subject to a maximum of 10% of the accepted contract value by way of liquidated damages and not as penalty during which the work remains un-commenced or unfinished after the expiry of the completion date.

21. ACTION WHEN WHOLE OF SECURITY DEPOSIT IS FORFEITED

In any case in which under any clause or clauses of this contract, the contractor shall have rendered himself liable to pay liquidated damages amounting to the whole of his security deposit (whether paid in one sum or deducted by installments) the Employer shall have power to adopt any of the following courses as they may deem best suited to the interest of the Employer :-

a) To rescind the contract (of which rescission notice in writing to the contractor under hand of the Employer shall be conclusive evidence), and in which case the security deposit of the contractor shall stand forfeited and be absolutely at the disposal of the Employer.

b) To employ labour by the Employer and to supply materials to carry out the work, or any part of the work, debiting the contractor with the cost of the labour and price of material (of the amount of which cost and

price of a certificate of the Consultant shall be final and conclusive against the contractor) and crediting him with the value of the work done, in all respects in the same manner and at the same rates as if it had been carried out by the contractor under the terms of this contract the certificate of the Employer as to the value of the work done, shall be final and conclusive against the contractor.

c) To measure up the work of the contractor, and to take such part thereof as shall be unexecuted, out of his hands, and to give it to another contractor to complete in which any expenses which may be incurred in excess of the sum which would have been paid to the original contractor, if the whole work had been executed by him (of the amount of which excess the certificates in writing of the Consultant shall be final and conclusive) shall be borne and paid by the original contractor and may be deducted from any money due to him by the Employer under the contract or otherwise, or from his security deposit or the proceeds of sale thereof or a sufficient part thereof.

In the event of any of the above courses being adopted by the Employer / Consultant the contractor shall have no claim to compensation for any loss sustained by him by reasons of his having purchased or procured any materials or entered into any engagements, or make any advances on account of or with a view to the execution of the work or the performance of the contract. And in case the contract shall be rescinded under the provision aforesaid, the contractor shall not be entitled to recover or be paid any sum for any work thereto for actually performed under this contract unless and until the Employer / Consultant will have certified in writing the performance of such work and the value payable in respect thereof, and he shall only be entitled to be paid the value so certified.

22. **TOOLS, STORAGE 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 Contractor's representative and staff, which offices shall be open at all reasonable hours to receive instruction notices or communications and clear away on completion of the work and make good all work disturbed.

All drawings maintained on the site are to be carefully mounted on boards of appropriate size. 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 clean 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 work disturbed by these conveniences.

Every precaution shall be taken by the Contractor to prevent the breeding of mosquitoes on the work during the construction and all receptacles, cisterns, water tanks etc. used for storage of water must be suitably protected against breeding of mosquitoes. The contractor shall indemnify the Employer against any each of rules in respect of anti-malarial measures. 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.

The 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 work and making good all work undisturbed.

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. Sheds for storage of cement are to have pucca floor raised above the ground. 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, two ft. opening all around with two ft. passage between each stack. Structure shall be waterproof from all the sides and top. Cement should be stored one ft. above the ground level and have pucca raised floor.

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

Tools

All tools, equipment and instruments as instructed by the Employer / Consultant and considered necessary for the work shall be provided by the Contractor for the due performance of this contract.

All measuring tapes shall be of steel and suitable scaffolding and ladders that may be required for taking measurement shall be supplied by the Contractor.

The mistries and the supervisors on the work shall carry with them always an one metre or two metre steel tapes and a measuring tape of 30 metres, a spirit 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 work 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 erected scaffolding, and / or tools and plant etc by sub-contractors for their work or for work to be carried out by other agencies employed by the Employer / Consultant.

23. **NOTICE AND PATENTS OF APPROPRIATE AUTHORITY AND OWNERS**

The Contractor shall conform to the provisions of any Act of the Legislature relating to the work and to the Regulations and Bylaws 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 from the drawings or specification that may be associated to so conform, give the Employer / Consultant written notices specifying the variations proposed to be made and the reasons for making them and apply for instruction thereon. The Employer / Consultant 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 Byelaws 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 buildings, roads or member of 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.

24. CLEARING SITE AND SETTING OUT WORKS

The site shown on the plan shall be cleared of all obstructions, trees, bushes, shrubs, loose stone, and rubbish materials 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 leveled off as directed at his own cost.

The Contractor shall set out the work 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 progress of any part of the work, the Contractor shall at his own expenses rectify such error, if called upon to the satisfaction of the Employer / Consultant. The Contractor shall further set out the work to the alternative positions at the site until one is finally approved and the rates quoted in his tender should include for this and no extra on this account will be entertained.

25. DATUM

The 'datum' will be furnished by the Consultant / Employer in conformity with regulations of appropriate Authority. The contractor shall make arrangements for preserving the above datum till completion of the work. All levels shown in the drawings are to be strictly adhered to.

26. 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.

These benches will consist of timber posts of adequate length and minimum diameter 75mm to be driven in the ground at suitable distance as directed encased with brick work. The wire nails will be driven on the top of wooden post on the center line of columns, walls, inside and outside faces of foundation trenches. Center line of walls, columns etc. may be clearly indicated so that checking may be done at any time, if it is so required.

27. 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 a safe place as per rules of the appropriate authorities.

The Contractor shall keep the foundations and work free from water and shall provide and maintain at his own expenses electrical 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.

28. **ACCESS**

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

29. **MATERIALS, WORKMANSHIP, SAMPLES, TESTING OF MATERIALS**

All the work 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 most workman like manner with materials of the approved quality of the respective kinds in accordance with the 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 / Consultant during the execution of the work, and to his entire satisfaction.

A list of Mandatory Tests is annexed (Appendix III) which is only indicative and not exhaustive. The contractor will have to carry out the tests at his own cost in any approved testing laboratory as necessary. Any other tests, special or routine, on any material or workmanship, if advised to be done by the Employer / Consultant for any reason whatsoever, shall be carried out by the Contractor for which no additional payment will be made.

A list of materials of approved make and brand is shown in the "Technical Specifications". Materials are to be used from the annexed approved materials list. In case of non-availability of specified makes, alternative products of equivalent quality may be used with prior permission from the Employer / Consultant.

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 charges for all duties and other charges legally payable and must be the best of their kind available and the Contractor/s must be entirely responsible for the proper 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 / Consultant when so directed by the Employer / Consultant and written approval from Employer / Consultant must be obtained prior to placement of order.

During the inclement weather, the Contractor shall suspend concreting and plastering for such time as the Employer / Consultant may direct and shall protect from injury all work during its course of execution. Any damage (during construction) 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 own expenses shall make good any damage arising from any of these causes.

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.

30. **REMOVAL OF IMPROPER WORK**

The Employer / Consultant 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 / Consultant are not in accordance with specifications or instructions, the substitutions 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 / Consultant 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 / Consultant 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 Consultant shall relieve the Contractor from his liability in respect of unsound work or bad materials.

31. SITE ENGINEER / PROJECT MANAGEMENT CONSULTANTS (PMC)

The term Site Engineer / Project Management Consultants (PMC) shall mean the person appointed and paid by the Employer to superintendent the work. The Contractor shall afford the Site Engineer / PMC every facility and assistance for examining the work and materials and for checking and measuring work and materials. The Site Engineer / PMC shall have no power to revoke, alter, enlarge or relax any requirements of the contract or to sanction any day work, additions, alterations, deviations or omission or any extra work whatever, except in so far as such authority may be specially confirmed by a written order of the Employer.

The Site Engineer / PMC shall have power to give notice to be 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 / Consultant is obtained. The work will from time to time be examined by the Consultant, Engineer of the Employer and the Site Engineer / PMC. But such examination shall not in 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 Consultant / Employer.

32. OFFICE ACCOMMODATION FOR THE SITE ENGINEER / PMC

The Contractor shall provide, erect and maintain at his cost a separate simple watertight office accommodation for the Site Engineer / PMC in case it is not already available at site. This accommodation shall be well lighted and ventilated and provided with windows, door with a lock. The Site Engineer / PMC's office shall be a minimum of 14 Sqm. (150 Sqft.) and the contractor shall provide a desk, chairs, drawers for keeping drawings, a cupboard having proper lock and a tackboard for displaying drawings and lights and fans. The accommodation shall be demolished when directed.

33. 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 instruction of the Employer / Consultant. The Contractor shall engage at least one experienced Engineer as Site Engineer for execution of the work. The Contractor shall employ in connection with the work persons having the appropriate skill or ability to perform their job efficiently.

The Contractor shall employ local labourers on the work as far as possible.

No labourer below the age of sixteen years and who is not an Indian National shall be employed on the work.

Any labourer 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 requirements of –

a: The Payment of Wages Act
b: Employer's Liability Act
c: Workmen's Compensation Act
d: Contract Labour (Regulation and Abolition) Act, 1970 and Central Rules – 1971.
e: Apprentices Act 1961
f: Any other Act or enactment relating thereto and rules framed thereunder 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 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 facilities for pure drinking water at all times for the use of men engaged on the work and shall remove and clear away the same on completion of the work. Adequate precautions shall be taken by the Contractor to prevent nuisance of any kind on the work or the lands adjoining the same.

The Contractor shall arrange to provide first-aid treatment to the labourers engaged on the work. He shall within 24 hours of the occurrence of any accident at or about the site or in connection with execution of the work, report such accident to the Consultant / Employer and also to the competent authority where such report is required by law.

34. **DISMISSAL OF WORKMEN**

The Contractor shall on the request of the Employer / Consultant immediately dismiss from work any person employed thereon by him, who may in the opinion of the Employer / Consultant be unsuitable or incompetent or who may misconduct himself. Such discharge shall not be the basis of any claim for compensation or damages against the Employer / Consultant or any of their officer or employee.

35. **ASSIGNMENT**

The whole of the work included in the contract shall be executed by the Contractor and the Contractor shall not directly or indirectly transfer, assign or 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.

36. **NOMINATED SUB-CONTRACTOR**

All specialists, Merchants, Tradesmen and others executing any work or supply and fixing any goods for which prime cost prices or provisional sums are included in the Schedule of Quantities / Rates and / or specifications who may be nominated or selected by the Employer are hereby declared to be sub-contractors employed by the contractor and are herein referred to as nominated sub-contractors.

No nominated sub-contractor shall be employed on or in connection with the work against whom the contractor shall make reasonable objection or save where the Employer and contractor shall otherwise agree who will not enter into a contract provided :

a) That the nominated sub-contractor shall indemnify the contractor against the same obligations in respect of the subcontract as the Contractor is under in respect of this contract.

b) That the nominated sub-contractor shall indemnify the contractor against claims in respect of any negligence by the sub-contractor, his servants or agents or any misuse by him or them of any scaffolding or other plants the property of the contractor or under any Workman's compensation Act in force.

c) Payment shall be made to the nominated sub-contractor by the contractor within fourteen days of his receipt of the Consultant's certificate provided that before any certificate is issued the contractor shall upon request furnish to the Consultant proof that all nominated sub-contractors' accounts included in previous certification have been duly discharged, in default whereof the Employer may pay the same upon a certificate of the Consultant and deduct the amount thereof from any sums due to the contractor. The exercise of this power shall not create privity of contract between the Employer and the sub-contractor.

37. **DAMAGE TO PERSONS AND PROPERTY, INSURANCE ETC**.

The Contractor shall be responsible for any 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 whether immediately adjacent or otherwise, and any damage to roads, street, foot-paths or pathways as well as damage caused to the buildings and the work forming the subject of this contract by rain, wind or other inclemency of the weather. The Contractor shall indemnify and hold harmless the Employer 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 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 work 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.

38. **INSURANCES**

The Contractor shall obtain a policy covering under Workmen Compensation Act, a third party Insurance as well as any other insurance and indemnity the Employer entirely from all responsibility in this respect. The insurance must be placed with a company approved by the employer.

Unless otherwise instructed the Contractor shall insure the work and keep them insured until the virtual completion of the contract against loss or damage by fire and/or earthquake, flood or damages from whatever cause by an "All Risk Insurance Policy" for the full value of the contract and workmen. The minimum limit of coverage for third party insurance shall be 0.5% (zero point five percent) of the accepted contract sum per occasion and maximum four occurrences a year at any time of the contract period.

The insurance is to be at their own cost and must be placed with a company approved by the Employer, in the joint names of the Employer and the Contractor for such amount. For any further sum if called upon to do so by the Employer, the premium of such further sum being allowed to the Contractor as an authorised extra.

Moreover, the contractor will be required to obtain "Workmans Compensation Insurance" from an approved insurance company at his own cost.

The Contractor shall deposit the policy and receipt for premiums paid with the Employer within 7 (Seven) days from the date of commencement of the work 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 the 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 work in the same manner as though the fire has not occurred and in all respects under the conditions of the contract. The Contractor in case of rebuilding or reinstatement after fire, shall be entitled to extension of time for completion as the Employer may deem fit.

Insurance is compulsory and must be effected from the very initial stage. The Contractor shall also be responsible for any thing 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.

39. ACCOUNTS RECEIPTS AND VOUCHERS

The Contractor shall, upon the request of the Employer / Consultant furnish them all the invoices, accounts , receipts and other vouchers that they may require in connection with the work 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 of materials the Contractor is required to use for any work under this contract.

40. **MEASUREMENT OF WORK**

The Contractor will record the measurements in the approved printed measurement book available in the Consultant's office on payment and submit measurements for verification and endorsement of Project Management Consultant / Site Engineer and representatives of Consultant and Employer. The contractor should submit the bill with such endorsement.

The Consultant shall upon receipt of the bill intimate to the contractor that he requires the work to be measured, and the contractor shall forthwith attend or send a Qualified Agent to assist the Consultant or the Consultant's Representative / Employer's Representatives in taking such measurements and calculations and to furnish all particulars or to give all assistance required by either of them.

Should the Contractor not attend or neglect or omit to send such Agent then the measurement taken by the Consultant or a Representative approved by him shall be taken to be the correct measurement of the work.

The Contractor or his Agents may at the time of measurement take such notes and measurements as he may require. All authorised extra work, omissions and all variations made without the Consultant's knowledge, if subsequently sanctioned by him in writing, with the approval of the Employer shall be included in such measurements. The final measurement should be done within three months from the date of completion of work jointly by the Consultant and / or his Representative. If the contractor fails to comply, the measurements taken by the Consultant will be final.

41. **METHOD OF MEASUREMENT**

Unless otherwise mentioned elsewhere in the tender document, measurements will be done on the net quantities of work produced in accordance with upto date rules laid down by the Indian Standard Institution. In the event of any dispute with regard to the measurement of the work executed, the decision of the Consultant / Employer shall be final and binding on the contractor.

42. **ACTION WHERE NO SPECIFICATION**

In the case of any class of work for which there is no such specification in Technical Specification, such work shall be carried out in accordance with the I.S. Specification and in the event of there being no I.S. Specification, then in such case the work shall be carried out in all respects in accordance with the instructions and requirements of the Consultant / Employer.

43. **CONTRACTOR NOT TO DEPOSIT MATERIALS IN A MANNER THAT MAY CAUSE INCONVENIENCE TO THE PUBLIC**

The contractor (s) shall not deposit materials on any site which will cause inconvenience to the public. The Employer / Consultant may require the contractor to remove any materials, which are considered by him to be a danger or inconvenience to the public or cause them to be removed at the contractors cost.

44. **PAYMENTS**

All bills shall be prepared by the Contractor in the form prescribed by the Employer / Consultant (format enclosed). Normally one interim bill shall be prepared each month subject to minimum value for interim bill as stated in APPENDIX – I, for interim certificates. The bills in proper forms must be duly accompanied by detailed measurements recorded in the approved measurement books and should be submitted any other duly endorsed by the Site Engineer as defined in Clauses 40 & 41 above in support of quantities of work done and must show deductions for all previous payments, retention money, etc. Ad-hoc payment for work actually executed together with other accepted claims will be made for the interest of Bank's work at absolute discretion of the Employer on specific request of the contractor. However ad-hoc payment will be made, shall not exceed more than 75% of billed value. The contractor will be required to submit the bill along with the records of joint measurements for claiming ad-hoc payment together with vouchers / bills etc.

The Consultant / Employer shall issue a certificate after due scrutiny of the Contractor's bill stating the amount due to the Contractor from the Employer and the Contractor shall be entitled to payment thereof, by the Employer within the period of honoring certificates mentioned in the APPENDIX – I.

The amount stated in an interim certificate shall be the total value of work properly executed and approx. 75% of invoiced valued of material brought to site for permanent incorporation into the work upto the date of the bill provided that they are of a durable non-fragile nature less the amount to be retained by the Employer as retention money vide Clause 17 of these conditions and less installments previously paid under these conditions. The materials against which secured advance will be considered are timber, ply boards, block boards, pre-laminated particle boards, laminated sheets, door and window frames & shutters, flooring materials, paints, G.I. & C.I. pipes & fittings, sanitary fixtures & fittings etc. Such materials against which secured advance are considered are not to be prematurely brought to site.

The materials to be considered for secured advance shall only include the value of the said material and goods as and from such time as they are reasonably, properly and not prematurely brought to or placed adjacent to the work and then only if adequately protected against weather or other casualties, provided also that the materials are considered acceptable by the PMC / Consultant. An indemnity bond is to be submitted in the annexed format whenever Secured Advance against materials are prayed for.

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 powers 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. The final bill shall be submitted by the Contractor to the Consultant within one month of the date fixed for completion of the work or of the date of certificate of completion furnished by the Consultant and payment shall be made by the Employer within three months from the date of receipt of the final bill duly verified & certified by the Consultant.

FINAL PAYMENT

The final bill shall be accompanied by a certificate of completion from the Consultant. Payments of final bill shall be made after deduction of Retention Money as specified in Clause 17 of these conditions, which sum shall be refunded in the manner stated in Clause 17. 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.

45. **VARIATION / DEVIATION**

The Contractor may when authorised and shall when directed in writing by the Employer add and / or omit or vary the works shown in the drawings or described in the specifications or included in the Price Schedule of Quantities. The Contractor on his own accord shall make no addition, omission or variation without such authorisation or direction by the Employer or his accredited representative shall when confirm correctly by the contractor in writing within 3 days shall be deemed to have been given in writing.

The price all of such non-tendered / substituted items will be worked out on the basis of rates quoted for similar items in the contract wherever existing or on Engineering rate analysis based on prevalent fair price of labour, materials at site of work and other components as required.

No claim for an extra shall be allowed unless it shall have been executed by the authorisation of Employer/ Consultant. No variation i.e. addition, omission or substitution shall vitiate the contract.

It is further clarified that for all such authorized extra items where rates cannot be derived from the tender, the contractor shall submit rates duly supported by rate analysis worked on the " market rate basis " for material, labour, hire/running charges of equipment and wastages etc. plus 15% towards establishment charges, contractor' overheads and profit. Such items shall not be eligible for escalation.

46. SUBSTITUTION

Should the Contractor desire to substitute any materials and workmanship, he/they must obtain the approval of the Employer / Consultant in writing for any such substitution well in advance. For materials designated in this specification by such term as "Equal" or "Other approved" etc. specific approval of the Employer / Consultant has to be obtained in writing.

47. 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, he shall inform the Consultant that he has completed the work and it is ready for inspection.

On completion, the Contractor shall clean all windows & doors including cleaning and oiling, if necessary, of all hardware, inside & 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 Employer / Consultant.

48. CLEARING SITE ON COMPLETION

On completion of the work the Contractor shall clear away and remove from the site all constructional plant, surplus materials, rubbish and temporary work of every kind and leave the whole of the site and the work clean and in a workmanlike condition to the satisfaction of the Employer / Consultant.

49. DEFECTS AFTER COMPLETION

The Contractor shall make good at his own cost and to the satisfaction of the Employer / Consultant all defects, shrinkage, settlements or other faults which may appear within 12 months after completion of the work and considered as the "defect liability period". In default the Employer may employ and pay other persons 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.17 together with any expenses the Employer may have incurred in connection therewith.

50. **CONCEALED WORK**

The Contractor shall give due notice to the Employer / Consultant 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 opinion of the Employer / Consultant be either opened up for measurement at the Contractor's expense or no payment 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 / Consultant shall be accepted as correct and binding on the Contractor.

51. **ESCALATION**

The rates 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, etc. unless specifically provided in these documents.

52. **IDLE LABOUR**

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

53. **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 be proceeded within a reasonable manner 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 work 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 shall fail for 7 (seven) days after such notice has been given to proceed with the work as therein prescribed, the Employer may proceed as provided in the Clause 54. (Termination of Contract by the Employer).

54. **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 his 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 therefor, 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 creditors of the contractor, or shall assign, charge or encumber this contract or any payments due or which may become due to the Contractor, thereunder, or shall neglect or fail 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, or 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 the Contractor as hereinafter mentioned, or shall abandon the contract, then and in any of the said cases, the Employer may not withstanding previous waiver determine the contract by a notice in writing to the effect as hereinafter mentioned, but without thereby affecting 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 work subsequently executed had been executed by or on behalf of the Contractor (without thereby creating any trust in favour 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 work or by employing any other contractors or other persons or person to complete the work, and the Contractor shall not in any way interrupt or do any act, matter or 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 work when the work 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 work 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.

55. **ARBITRATION**

A) All disputes or differences of any kind whatsoever which shall at any time arise between the parties hereto touching or concerning the work or the execution or maintenance thereof of this contract or the rights touching or concerning the work or the execution or maintenance thereof of this contract or the construction remaining operation or effect thereof or to the right or liabilities of the parties or arising out of or in relation thereto whether during or after determination, fore closure 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 Appointing Authority who shall be appointed for this purpose by the Employer be referred for adjudication to a sole Arbitrator to be appointed as hereinafter provided.

B) It is also a term of the contract that if Contractor (s) do/does not make any demand for arbitration in respect of any claim (s) within 90 days of receiving intimation from Employer / Consultant that the bill after due verification is passed for payment of a lesser amount, or he has accepted the payment as per clause 44 whichever is earlier or otherwise, the Contractor's right under this agreement to refer to arbitration shall be deemed to have been forfeited and Employer / Consultant shall be relieved and discharged of their liabililty under this agreement in respect of such claims. Further, it is agreed that for the purpose of this clause, such notice is deemed to have been received by the Contractor(s) within 2 days of posting of the letter by Employer / Consultant or when delivered by hand immediately after receipt thereof by the Contractor(s), whichever is earlier. Further, a letter signed by the officials of Employer / Consultant that the letter so posted to the Contractor(s) shall be conclusive.

For the purpose of appointing the sole Arbitrator referred to above, the Appointing Authority will send within thirty days of receipt by him of the written notice, aforesaid to the Contractor, a panel of three names of persons who shall be presently unconnected with the organisation for which the work is executed from the following categories of Arbitrators.

i) Retired High Court / Supreme Court Judges, who have experience in handling Arbitration cases.
ii) Members of the Council of Arbitration.
iii) Fellow of the Institution of Engineers, or Indian Institute of Consultant.
iv) Eminent Retired Chief Engineers from State / Central P.W.D. / Public Sector Undertakings, of good reputation and integrity.

C) The Contractor shall on receipt by him 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 Appointing Authority within thirty days of receipt by him of the names. The Appointing Authority 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 Appointing Authority shall make the selection and appoint the selected person as the Sole Arbitrator.

D) If the Appointing Authority fails to send to the Contractor, the panel of three names as aforesaid within the period specified, the Contractor shall send to the Appointing Authority a Panel of three names of persons out of the above mentioned four categories of Arbitrators who shall all be unconnected with either party. The appointing Authority shall on receipt by him of the names as aforesaid select any one of the person named and appoint him as the sole Arbitrator. If the Appointing Authority fails to select the person and appoint him as the sole Arbitrator within 30 days of receipt by him 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 Appointing Authority.

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

F) 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.

G) The Arbitrator shall be deemed to have entered on the reference on the date he issues notice to both the Parties fixing the date of the first hearing.

H) The Arbitrator may from time to time, with the consent of the Parties, enlarge the time for making and publishing the award.

I) 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. The venue of arbitration shall be such place as may be fixed by the Arbitrator in his sole discretion.

J) In all cases, where the amount of claim in dispute is Rs.75,000/- (Rupees seventy five thousand only) and above, the Arbitrator shall give reasons for the award.

K) The fees, if any, of the Arbitrator shall, is 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 Cover thereof shall be paid and may fix or settle the amount of costs to be so paid.

L) The award of the Arbitrator shall be final and binding on both the Parties.

M) Subject to aforesaid the provisions of the Arbitration Conciliation Act, 1996 or any statutory modification or re-enactment thereof and the rules made thereunder, and for the time being inforce, shall apply to the Arbitration proceeding under this clause.

56. The contractors should have their own Electrical License.

57. The contractors needs to be empanelled with Indian Bank.

58. The contractors should have minimum working experience in Indian Bank atleast 5 Lakhs in any two projects or 10 Lakhs in any one project in the year 2022 – 2023.

APPENDIX – I

1.	Name of work	:	Interior, furniture & electrical work at Boari Branch
2.	Defect liability period (Cl. 49)	:	12 (Twelve) months
3.	Date of commencement (Cl.19)	:	7th day from issue of order or handing over site, whichever is later.
4.	Date / Time of completion (Cl. 19)	:	6 (six) weeks.
5.	Liquidated damages (Cl.20)	:	1.00% of the accepted contract sum per week subject to a maximum of 10% of the accepted contract value.
6.	Initial security deposit (Cl.17)	:	2% of the accepted contract sum to be deposited within 14 days of date of acceptance of tender.
7.	Retention Percentage (Cl.17)	:	8% of the value of work done, till it equals : 10 % on the first Rs. 1,00,000.00 of the cost of work 7.50 % on the next Rs. 1,00,000.00 of the cost of work 5.0 % on the remaining amount of the cost of work
8.	Installment after completion Certificate (Cl. 17)	:	50% of the total retention amount.

9.	Period of Honouring Certificate (Cl. 44)	:	2 weeks from date of receipt of Certificate from the Consultant.

NOTE : Clauses (Cl) refer to General Conditions of Contract.

A P P E N D I X – II

BILL FORMAT

R U N N I N G A / C B I L L

1.	Name of work	:
2.	Name of Employer	:
3.	Name of Contractor	:
4.	Accepted Contract amount	:
5.	Date of commencement	:
6.	Stipulated date of completion	:
7.	Actual date of completion	:
8.	Extension, if any	:
9.	Insurance valid upto	
	a) Workmen Compensation Act	:
	b) Contractor's all risk comprehensive insurance Policy etc.	:
10.	Labour License No. and date and valid upto	:
11.	Serial No. of this bill	:
12.	No. & date of previous bill	:
13.	Ref. to Agreement No.	:
14.	Earnest money deposit	:
15.	Total retention money excluding E.M. upto this bill	:

16. Period of execution of work for Work which this bill has been Prepared (Date to be Mentioned) : From to

Sl. No.	Item Description	Unit	Rate (Rs.)	As per Tender	
				Qnty.	Amount
1.	2.	3.	4.	5.	

Upto previous R/A Bill		Upto date (Gross)		Present bill		Remarks
Qty.	Amount (Rs)	Qty.	Amount (Rs)	Qty.	Amount (Rs)	
6		7		8		9

Note : 1) If part rate is allowed for any time, It should be indicated with reasons for allowing such a rate.

2) If adhoc payment is made, it should be mentioned specifically.

Net Value (A)
Since previous
Bill.

ACCOUNT OF SECURED ADVANCE, IF ADMISSIBLE ON MATERIALS HELD AT SITE BY THE CONTRACTOR

No.	Item	Quantity	Unit	Amount	Remarks
1.	2.	3.	4.	5.	6.

Total value of materials at site

Secured Advance @ ……%, of above value (B)

Certified (I) that the materials mentioned above have actually been brought by the Contractor to the site of the work and no advance on any quantity of any of this item is outstanding on their security, (ii) that the materials (are of imperishable nature) and are all required by the Contractor for use in the work in connection with the items for which rates of finished work have been agreed upon.

Date :…… ……
Signature of Site Engineer /PMC preparing the bill

Date :…… ……
Signature of Contractor

Date :…… ……
Signature of Consultant's Site Engineer

Date :…… ……
Signature of Consultant at Kolkata

MEMORANDUM OF PAYMENT

Date :

1.	Name of work	:		
2.	Name of Employer	:		
3.	Name of contractor	:		
4.	Contract Amount	:		
5.	Date of Commencement	:		
6.	Stipulated date of completion	:		
7.	Actual date of completion	:		
8.	Insurance valid upto			
a)	Workmen Compensation Act	:		
b)	All Risk Insurance Policy	:		
9.	Gross value of work done			
	Upto ..... Bill	:		
	Less : Rebate @ as per tender	:		
10.	Retention money	:		
11.	Add : Secured Advance against materials	:		
12.	Less : Payment made upto .....Bill	:	(-)	Rs. ---------- Rs.

13. Less : Ad-hoc payment certified : (-) Rs.

Rs.

Say Rs.

For **Indian Bank**

The bill amounting to Rs…….. (Rupees …… ……..) has been scrutinised by me after due test checking of the measurements of work as required and is recommended for payment.

Signature of Bank's Engineer
with date.

Statutory deductions :

(1) Total amount due : Rs……..

(2) Less : I.T. Payable : (-)Rs……..

(3) Less : Tax on Works Contract : (-)Rs……..

Net payable : Rs……..

The figures given in the Memorandum of Payment has been verified and the bill passed for payment of Rs…… (Rupees ……..)

Date :

Signature of Authorized Official
of **Indian Bank**.

C E R T I F I C A T E

Certified that the various items of work claimed in this ….. running bill / final bill by the contractors' ……. have been completed to the extent claimed and at appropriate rates and that the items are in accordance with and fully conforming to the standard / prescribed specifications and drawings . We further certify that we have checked the measurements to the extent of 100% (one hundred per cent) of each item claimed in this bill. Hence the bill is recommended for payment of Rs. ……

(Signature of the Architect)

Date ——————

TECHNICAL SPECIFICATIONS FOR INTERIOR DECORATION WORKS WITH ASSOCIATED CIVIL AND OTHER MISCELLANEOUS WORKS

Note : Product with ISI stamp shall have to be provided where available in case of non- availability of such stamping for a particular product, Architects / Employer's decision as per list of material or otherwise shall be final & binding.

1.0. WOOD WORK

1.1. Teak Wood

Teak wood shall be of the best quality available in India. It should be well seasoned and free from sap, knots, warps, cracks and other defects. All wood work shall be planed neatly and truly finished to the exact dimension. All joints shall be neat and strong, truly and accurately fitted and glued before being fitted together.

1.2. Veneers and Plywood

The veneers and the ply wood shall conform to the IS : 851 and IS:303 respectively. It shall be resin bonded suitable for intended use. The Contractor shall submit approved samples at the Architect / Owner site office.

1.3. Phenol Bonded Ply Wood

Commercial ply wood, decorative ply wood conforming to IS:303/1975 bonded with phenol formaldehyde synthetic resin of B.W.P. type as specified in IS:848/1974 of approved make should be used.

1.4. Phenol Bonded Block Board

Commercial block board conforming of IS:1659/1979 bonded with phenol formaldehyde synthetic resin of IS:840/1974 of approved make should be used.

1.5. Phenol Bonded Teak Particle Board

Commercial particle board conforming to IS:3097-1980 exterior grade bonded with BWP type phenol formaldehyde synthetic resin. All edges of the particle board to be painted with one coat of chlorinated paint of approved shade, make and quality. The particle board should be of approved make.

1.6. Phenol Bonded Prelaminated Particle Board

Prelaminated particle board should be 3 layered melamine faced conforming to IS:12823 of latest edition. This should also conforms to DIN:68765 NEMA LD-3 and BIS Licence IS-3087 for plain particle board. All edges of the board to be painted with one coat of chlorinated paint of approved shade, make and quality. The prelaminated particle board should be approved make with ISI mark.

1.7. Decorative Laminates

Laminate sheets shall be 1 mm or 1.5 mm (as per design requirements) or as specified in the respective items) thick with +0.127 mm tolerance and obtained from any of the following approved manufacturers e.g. Formica, Decolam, Merino and Greenlam & samples should have approval of the Architects / Employer.

1.8. Wooden Flush Shutters

(Solid Core Type) : Solid core flush shutters shall be commercial or teak veneered type as specified in the item of approved manufacturer registered with ISI and shutter shall bear ISI mark. An approved sample shall be deposited in the office of the Owner / Architects at site for reference. The shutter will be provided with lipping. Finished thickness of the shutter shall be as mentioned in the item. Shutter should be hot pressed and phenol formaldehyde should be used as glue.

1.9. Hardware Fittings

All hardware fittings for doors shall be either oxidised iron, brass, anodised aluminium as specified in the schedule of quantities. These hardware fittings shall be obtained from approved manufacturers and shall bear ISI mark wherever available. The samples for the fittings shall be submitted to the Owner / Architects for their approval. Hardware fittings for door shutters shall be paid in door shutter item or separately as given in schedule of quantities. No separate payment shall be made for hardware fittings if not mentioned otherwise in the schedule of quantities. The rate for hardware fittings shall include for supplying, fitting and fixing the fittings with necessaruy cadmium plated screws, washers, bolts, nuts, etc. as required. All locks shall be provided with keys in duplicate and rate shall include for the same.

Approved samples of hardware fittings shall be deposited with Owner /Architects for reference.

1.10. Workmanship

a) The workmanship shall be first class and to the approval of the Owner / Architects. Scantlings and board shall be accurately sawn and shall be of required width and thickness. All carpenter's work shall be wrought except where otherwise described. The workmanship and joinery shall be accurately 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 tenoned shouldered, wedged, pinned, braced etc. and properly glued with approved quality glue to the satisfaction of the Owner / Architect.

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 : 1.5mm (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.

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

v) If it is decided by the Owner to provide antitermite treatment, the building contractor shall co-ordinate his work suitably as directed by the Owner / Architects.

vi) Door / Window frames shall have cut rebate. Planted rebates shall not be permitted.

vii) Where door frames are fixed flush with plaster to wall, teak wood cover mould 40 x 12 mm as per drawings shall be provided all round and shall be painted or polish finished to match with finished shutters. This will be paid as a separate item as described in Schedule of Quantities.

1.11. Rates to Include :

Apart from other factors mentioned elsewhere in this contract the rate for item of wood work and joinery shall include for the following –

A. Items of scantling :

i) All labour, materials and equipments for fixing frame work as per drawing excluding the cost of holdfasts, Rawl Plugs or other fasteners etc.

B. Items of shutters :

i) All labour, materials, hardware fittings and equipments for carrying out the work as per drawing.
ii) Labour for fixing the shutters in position (excluding cost of fittings) as per drawing.

1.12. Mode of Measurement

All measurements shall be as per relevant section of I.S. 1200 of latest edition.

i) Scantling shall be measured in cum. The sectional area shall be the area of the least square, or rectangles from which the scantling may be cut. The length shall be actual length of timber required for the purposes including the extra portion required for jointing.

ii) Shuttering shall be measured in square metre for closed door shutters area i.e. rebate to rebate without extra measurement for rebates and/or splayed meeting styles of door.

2.0. PLASTIC EMULSION PAINT

2.1. Material

The emulsion paint and primers in general shall be of approved quality colour and shade of approved manufacturers.

2.2. Scaffolding

This shall be double or single as required and directed. If ladders are used, pieces of gunny bags or cloth bags shall be tied on their tops to avoid damage or scratches to the plastered surfaces etc. proper stage scaffolding shall be erected when painting the ceiling.

2.3. Preparation of the surface

The surface to be painted shall be cleaned and all cracks, holes and surface defects shall be repaired with plaster of paris for spot filling, and with filler prepared with whiting, water and a little quantity paint for filling and levelling the wider areas.

2.4. Priming Coat

The priming coat of the cement primer of approved quality, make shall be applied over the completely dry surface in the manner as recommended by the paint manufacturers.

2.5. Application of Emulsion Paint

The recommendation of approved paint manufacturer whose product is used, shall be followed regarding the preparation of the surface and the application of the priming and finishing coats.
The contractor shall arrange for technical assistance and supervision from the paint manufacturer, during the execution of the painting work. After the priming coat has been applied and perfectly dried, all holes, scratches, if any, shall be repaired as mentioned in 'preparation of surface' and then the second coat of approved shade and manufacturer shall be evenly applied and allowed to dry.
The third coat shall be carefully applied to achieve smooth and even surface after the previous coat has dried up. Minimum 3 coats of paint shall be applied inclusive of primer coat. If a proper and even surface is not obtained to the satisfaction of the Owner / Architects in 3 coats, Contractor shall carry out additional coats of painting to approval at contractor's expenses. Care shall be taken that dust or other foreign materials do not settle or disfigure the various coats.

2.6. Rates to include

Apart from other factors mentioned elsewhere in this contract, the rates for the item of plastic emulsion paint shall include for the following :-

i) All labour, materials and equipment necessary to carry out the work.
ii) Supplying the approved emulsion paint for priming and finishing coats.
iii) Preparing the surface for receiving the primer and finishing coats.
iv) Scaffolding including its erections and dismantling.
v) Application of one primer coat and minimum two coats of finishing. If a proper and even surface is not obtained to the satisfaction of Owner / Architects in 3 coats mentioned above, the contractor shall carry out additional coats of painting to approval at contractor's expense.
vi) Protection to painted surface till dried and handed over.
vii) Expense, if any, for supervision and technical assistance supplied by the approved paint manufacturers.

2.7. Mode of Measurement

The measurement shall be in square metre. The mode of measurement shall be as per relevant section of I.S.:1200 of latest edition.

3.0. PAINTING & FRENCH POLISHING

3.1. Painting

a) Material : Ready mixed oil paints and primer, in general, shall be of approved quality, colour and of approved manufacturer. These materials shall be in sealed tin and shall be opened in the presence of the Owner / Architects.

b) Preparation of Surface

i) Iron and Steel works : Surface to be painted shall be thoroughly cleaned, sand papered and/or rubbed with emery cloth, if necessary to remove grease, mortar or any other foreign materials. In case of rusted surface, it shall be first cleaned with wire brushes till the corroded rust is removed. The prepared surface shall be shiny and free from brush marks, patches, blisters and other irregularities. The surface thus finished shall be got approved for painting.

ii) Wood work : All surface to be painted shall be thoroughly cleaned, sand papered and removed of all foreign materials. In case of surfaces having knot and nail holes, this shall be filled with knotting and stopping materials. The knotting materials shall consist of pure shellac dissolved in methylated spirit. Stopping materials shall consist of putty. The surface thus treated shall be allowed to dry and then sand papered smooth.

c) Application : After preparing the surface, a primer coat shall be applied. The primer coat shall be ready mix of approved make and manufacturer. After the primer coat is applied and perfectly dried, all holes, cracks etc. which shall remain, shall be filled in with putty and the surface sand papered smooth. Then a second coat of paint of approved shade and manufacturers shall be evenly applied and allowed to dry.

The third coat shall be carefully applied to achieve smooth and even surface after the previous coat has dried up. Minimum 3 coats of paint shall be applied inclusive of a primer coat. If a proper and even surface is not obtained to the satisfaction of the Owner / Architects in 3 coats, contractor shall carry out additional coats of painting to approval, at contractor's expenses. Care shall be taken that dust or other foreign materials do not settle or otherwise disfigure the various coats.

d) Rates to include : Apart from other factors mentioned elsewhere in this contract, the rate for the item of painting shall include for the following –

i) All labour, materials equipment necessary to carry out the work.
ii) Supplying the approved paint for priming and finishing coats.
iii) Preparing the surface including knotting and stopping for receiving the priming and finishing coats.
iv) Scaffolding including its erection and dismantling.
v) Application of atleast one primer coat and two coats of finishing for wood work and at least two finishing coats for steel work unless otherwise specified. If a proper and even surface is not obtained to the satisfaction of Owner / Architects, contractor shall carry out additional coat of painting to approval at contractor's expense.
vi) Protection to painted surface till dried and handed over.

Mode of Measurement : Painting to wood work and steel shall be measured separately as per I.S. 1200 (Part XV) of latest edition.

3.2. French Polishing

French polish to be used shall comply with I.S. 348 of latest edition in the requirements of quality.

Before french polish is applied, the surface of wood work shall be prepared in the same manner as for painting. The wood to be polished should be first painted with a filler composed of 1 part of whiting mixed with 0.53 part of methylated spirit. After drying, it should be finely sand papered.

On the wood work thus treated, a thin coat of french polish shall be applied and allowed to dry. After drying, the surface shall be lightly rubbed with a fine sand paper prior to the second and third coat. The surface shall show an even polished surface and be approved by the Owner / Architects.

i) Rates to Include : Similar to that of painting.
ii) Mode of measurement : Similar to that of painting.

4.0. MELAMINE COATING

The materials shall be of approved brand for wood finish. The application has to be made using sprayer and as per manufacturer's specification.

The surface to be used shall be sand papered using Emery Paper No. 180 or any suitable grade along the grains. After brushing the surface free of loose dust, wood filler shall be applied. Excess filler shall be removed immediately. Allow a gap of 1 hr. if second coat is required. On drying of the filler, after 8 hrs. the surface is to be sand papered again with Emery paper no. 180/220 and the surface is brushed free of loose dust. Sealer coat as per manufacturers specification is then applied in two coats & then sand papered with emery paper no. 240 & finally with emery paper no. 400 & clean thoroughly. Final finish coat is then applied on the finished surface after mixing the base and hardner in a container and allowing the mix to stand for 30 minutes fittered and then applied.

Rates to Include

i) Similar to that of painting including cost for applying by spray machine.

5.0. N.C. LACQUER

N.C. lacquer should be of approved brand & quality, approval of Architects is obligatory.

Before application of N.C. lacquer, the surface is to be polished using white lac only. The surface should be highly polished as per desired shade. Fillers used during polish should be N.C. putty only. N.C. lacquer shall be applied under spraying machines using 1:1 (N.C. lacquer to N.C. thinner) on dust free surface and shall be allowed to dry for minimum 12 hours in fair weather condition. The drying time may have to be increased in moist atmospheric condition. After drying, the lacquered surface should be rubbed with muslin cloth. No other treatment on the lacquered surface should be made once it is completed.

i) Rates to Include : Similar to that of painting.
ii) Mode of Measurement : Similar to that of painting.

6.0. GLASS

Glass used shall be clean and/or tinted float or toughened as mentioned in the Schedule of Quantities and of the best quality approved by Architect / Employer without any scratches, bubbles, specks, waviness, undulations or any other defects, unless otherwise specified, all glass shall be as shown on the drawings. The glass used shall be toughened glass with bevelled edges etchings etc. as per requirement and indicated in the drawings and BOQ and is to be got approved by Architect / Employer. Glass shall be well protected from any damage during transportation, storage and progress of work. Any glass which in the opinion of Architect / Employer is not suitable for work shall be rejected and the contractor shall replace the glass with an approved one.

7.0. LOOSE FURNITURE

The contractor shall make one sample of each furniture item as per drawing and specification provided by the Architect for the final approval of the Architects / Employer. The bulk production can be taken in hand as soon as the sample is approved and finalised. No extra charges shall be payable for any alternation / modification done in the sample furniture item and also for rejected samples. All upholstery work is to be done in the best workmenship manner to the entire satisfaction of the Employer / Architects. The decision taken by the Architects for the approval of the sample shall be final and binding on the contractor. Brass or aluminium cushion vents to be installed at the back seat or underside of seat cushion as per direction of the Employer / Architects and contractors' quoted rates should include the same.

8.0. CHAIRS

All cantilevered chairs have slightly reinforced tubular structure to resist static and impact loads inflicted on the same in day to day use. The tubular frame work is to be made strong and resilent to ensure that the same does not loss its shape after prolonged use as it often happens in case of cheaper chairs of other make. The above is to be achieved by using 25mm steel tubing of 1.6mm thickness. Additional tubes of slightly lower diameter and the same thickness are used as inserts for providing reinforcement at all 4 bends of the chair. Wooden seats, backs, armrests, plastic canes and cushions, 100% inspection of wood components should be arranged to ensure that the quality of the wood used is as per the specifications.

9.0. CARPET

Supply and laying carpet of different quality as per BOQ and drawing i.e. woolen, synthetic /acrylic, type designed or plain carpet fixing to floor as per location and type as directed in the drawing and specification of Bill of Quantities with manufacturer's specification complete with necessary work. Prior to fixing, sample and manufacturer shall be approved by Architect / Employer. The fixing should be made as per manufacturer's specification. Rate should be

inclusive of labour, materials inclusive of backing cushion materials if specified end stiching and all other associated works as per direction, complete in all respect. Payment should be made on as per actual floor area. No payment shall be made against any sorts of wastage.

9.1. FALSE CEILING

9.2. G.R.G. Ceiling

10.1.1. Composition

The GRG range of ceiling tiles are manufactured from glass reinforced gypsum and comprise non-combustible gypsum casting plaster reinforced with a glass fibre membrane resulting in a light weight, strong and prestresed panel.

10.1.2. Surface Finish

The plaster should have silky smooth or textured moulded finish.

10.1.3. Dimensions

All designer tiles are to be designed for installation on a standard 600 x 600mm moulded 24mm table exposed metal grid and are precision made to within plus or minus 0.25 mm.

10.1.4. Fire Performance

Non combustibility : GRG tiles are rated non-combustible as defined in BS 476 : Part 4:1970.

Surface Spread of Flame : GRG tiles are rated Class I for surface spread of flame to BS 476 : Part – 7:1987.

Fire propagation : Test results to BS 476 : Part 6 : 1989 indicate a Class 0 surface.

Smoke and toxic fume emission : The tiles are zero rated for smoke emission. No toxic fumes are given off.

10.1.5. Humidity Resistance

The tiles have excellent moisture resistance and can be used in areas of high humidity including covered external areas, kitchens and bathrooms. Tested in an atmosphere of 95% R.H. at 21 Degree C for 14 days, the tiles did not sag or distort and showed only a minimal increase in weight.

Unlike most other ceiling materials, this important attribute can often be used to speed up the building program by installing the ceiling before the building is fully weathertight.

10.1.6. Biological

GRG tiles will not support the growth of bacteria or other micro – organisms.

10.1.7. Lifespan

Under normal conditions GRG tiles will not deteriorate and can be expected to last the lifetime of the building.

10.1.8. Suspension system is standard 24mm table exposed metal grid. GRG exposed metal grid systems are designed for maximum strength. The grid features main manners and cross tees performed from galvanised steel to RS 7989 7-18 zinc coating min tensile strength 270 Mpa. Grid systems are designed to satify ASTM C635 loading and deflection criteria. The main and cross runners are provided with beyonet couplings top brick runners are provided with beyonet couplings for brick installation. The runners are pre-slotted to variety of layouts. Main and cross runners are provided with a coil coated steel capping on the exposed table in off-white colour. Cappings in other colours are available on request.

Grid system features main and cross tees 38 mm high. The grid is suspended from the roof with GI wire roads of quick adjustment suspension hangers at maximum 1200 mm along the main runners.

GRG tiles are designed for lay-in mounting from below into standard grid.

Tiles grid suspension systems are made in association with Chicago Metallic, belgium.

10.1.9. Site Work

a) Transport, Handling and Storage

GRG tiles are supplied packed in cardboard carton. Cartons should be transported and stacked in the vertical position only, never flat. The stack should be a maximum of three cartons high. Similarly, tiles should be stacked vertically when awaiting fixing.

b) Installation

Main tees should normally be fixed at 1200 mm centres with hangers every 1200 mm along the length of the tee. The tees would be infilled with 1200 mm and 600mm cross tees. The grid manufacturer's recommendations should be followed at all times. Hangers to be fixed to roof by expansion fastners.

For light fittings, grills diffusers and cutouts etc. have to be provided additional members of frame works as per direction of Architects / Employer.

10.1.10. Mode of Measurements

The measurement shall be square metres for the finished exposed area.

Rate to include : Apart from other factors mentioned elsewhere in this contract, the rates for items of false ceiling work shall include for the following:

a) All labour, materials, equipments, scaffolding, hardware fittings, etc. for carrying out the works as per drawing.

11. STANDARD SPECIFICATIONS

Unless otherwise specified elsewhere in this contract, all work under this contract shall be carried out in accordance with the technical specification and the latest issue of the Indian Standard Specification applicable to the particular class of work. If Indian Standards are not formulated for any particular material of work, the relevant British Standard Specification shall apply. Relevant issue of I.S. specifications applicable to the particular work have been described along with the specification for the respective works. In case of any confusion or dispute regarding the meaning and interpretation of any specification for the respective works, the decision of the Owner / Architects shall be final and binding on the contractor.

12.0. PARTITIONS

12.1. Frame Work

Modular Partitions will have a thickness of 40mm and the width and height will be as per drawing & specifications. The vertical members will be made from 40 x 40 x 1.2mm M.S. pipes and the horizontal members from 40x20x1.2 mm M.S. pipes.

Low height partitions will be free standing and self-supporting. In full height partitions the vertical members will be jacked under tension to the main ceiling / beam bottom (as the case may be). Both, low height and full height partitions will be provided with levelling systems to adjust the partitions to unevenness and differences in floor and ceiling levels.

12.2. Skirting

Low Height Partitions will be provided with a box type skirting raceways for wire management, either along the base and/or at table height as per drawing. The skirting will have a height of 130mm and thickness of 40mm and will be fabricated out of 20 swg M.S. sheet. There will be an openable cover on one side for easy access to carry out electrical installations and maintenance.

In full height partitions, the skirting cover will have a height of 130mm and a thickness of 40mm. The skirting will be approachable from both sides and will have channels for adjustment for floors. Box type raceway can be provided at table height.

12.3. Doors

The vertical members as well as the top horizontal members will be made of 40 x 40 x 1.2 mm M.S. pipes. The bottom horizontal member will be of 40 x 20 x 1.2 mm M.S. pipes with skirting and telescopic "C" channel for adjustments upto 20mm to flooring and carpet levels. The doors will be fixed on pivots and will have door closers and locking arrangement.

12.4. Finishes

Partitions and Doors are available within fill panels in the following finishes :

a) P.F. bonded exterior grade Prelaminated board of 8mm thickness (on both sides)
b) Fabric cladded softboard of 12mm thickness (on both sides)
c) Glass of 6mm thickness in clear or tinted, as specified.
d) Wood veneer of 3.5mm thickness, as specified.

Various combination of the above finishes on all the sides can be provided as specified by the Architects / Employer.

All the in-fill panels in doors and partitions are fitted by using aluminium profiles and PVC extrusions are used as trimmings.

Phenol formaldehyde bonded exterior grade prelaminated boards shall be of any shade as per drawing and direction.

All metal sections, fabricated M.S. components and aluminium profiles are finished in epoxy powder coating of a thickness 50 microns. The standard shades are Grey, Black and Brown or as specified by Architect / Employer.

12.5. Table and Work surfaces

Table will be comprised of :

a) Table Top : Fabricated out of 18mm particle board finished with 1.5mm laminate on top. The top shall be supported by a frame fabricated out of 25 x 25 x 1.2 mm M.S. pipe and 25 x 25 x 1.2 mm M.S. angle for additional strength. The frame will have the necessary provisions for suspending drawer units and fixing of sides.

b) Modesty Panel (Apron) will be fabricated out of 18mm P.F. bonded exterior grade prelaminated particle board duly lipped with necessary knock-down fittings to fix the two sides.

c) Board side will be fabricated out of 18mm thick P.F. bonded exterior grade prelaminated particle board duly lipped with necessary hardware for fixing.

d) Metal side will be fabricated out of 25x25x1.2 mm M.S. pipe with necessary hardware for fixing the same.

All board component tops, sides etc. are finished with laminate of approved shade, quality & thickness. All the edges are to be chamfered at 45 degree.

The distribution of components in various tables / work surface is as follows :

1. Board Side Table : will consist of a top, two board sides and a modesty panel.
2. Metal Side Table : will consist of a top, 2 metal sides and a modesty panel.
3. Table Board / Metal Side : will consist a top, 1 board side, 1 metal side and a modesty panel.
4. Table with 1 Board / Metal Side will consist of a top, 1 metal /board side and the other side will be anchored to the partition.
5. Work Surface : Only the top will be anchored on both sides to the partition. It will also be provided with end metal at board side as per Architect / Employer's requirement.
6. Corner Work Surface will be attached to the frame of work surfaces / tables. It will consist of a top and metal / board side in the case of an independent work surface.

12.6. Drawer Units

a) Suspended Drawer Unit : The drawer facia is to be fabricated out of 18mm P.F. bonded exterior grade prelaminated particle board. The sides are fabricated out of 18mm thick P.F. bonded exterior grade prelaminated particle board. The top, bottom and back are fabricated out of 8mm P.F. bonded exterior grade prelaminated particle board.

The drawers are to be fabricated out of M.S. sheets and assembled with drawer runners for smooth operation. A single central locking system is to be provided. The drawers are available in two types viz. 2D and 3D. All metal components will be finished in black epoxy coating.

b) Mobile Drawer Unit : The facia, top and sides will be fabricated out of 18mm thick P.F. bonded exterior grade prelaminated particle board. The back will be of 8mm thick P.F. bonded exterior grade prelaminated particle board. These will be fitted to the frame fabricated out of 25 x 25 x 1.2 mm pipe fitted with lockable castors. The drawers will be similar to suspended drawer units. All Metal Components will be finished in black epoxy powder coating and are. available in three types viz. 2D, 3D and 4D.

c) Pencil Drawer : will be fabricated out of M.S. sheets and the facia will be made of P.F. bonded exterior grade prelaminated particle board of 18mm thickness. The smooth movement will be ensured by drawer runners (The pencil drawer will not have a lock and handle) and all metal components will be finished with black epoxy powder coating.

d) Key Board Drawer : will be fabricated entirely out of M.S. sheet. It has an ergonomical tilting and table mounting adjustment. The key board drawer moves on drawer runners for smooth operation and is not provided with a lock. Finishing will be in black epoxy coating.

12.7. Vertical Storage Unit

All components – top, bottom, sides, shutters and shelves are fabricated out of 18mm thick P.F. bonded exterior grade prelaminated particle board and the back of 8mm thick P.F. bonded exterior grade prelaminated particle board. Will be mounted on a 150mm box stand fabricated out of M.S. sheet with a system for levelling and the necessary knock down fittings, lock and stoppers will be provided.

All board components edges are finished in laminate and chamfered at 45 degree.

12.8. The top is finished with laminate. The top, bottom and sides are to be fabricated out of 18mm thick P.F. bonded exterior grade pre-laminated particle board with necessary knock down hardware fittings.

The shutter is fabricated out of 12 mm thick P.F. bonded exterior grade prelaminated particle board with necessary wheels for easy sliding of the shutters.

The back is fabricated out of 8mm thick P.F. bonded exterior grade prelaminated board.

It is mounted on a 150 mm box stand fabricated out of M.S. sheet with a system for levelling.

TECHNICAL SPECIFICATION FOR ELECTRICAL WORK

SECTION	A	:	TECHNICAL SPECIFICATION FOR ELECTRICAL EQUIPMENT
SECTION	B	:	TECHNICAL SPECIFICATION FOR WIRING SYSTEM

1.0. SCOPE

This specification covers the supply of materials, fabrication and erection, testing and commissioning of Electrical Switch boards, wiring system, light fittings and other associated items required for successful completion of the work. Any equipment, device, component or work not specifically mentioned in this specification but considered essential for proper design and operation shall be included by the tenderer in his offer. Applicable provisions and conditions of contract shall govern the work under the Section.

2.0. GENERAL

2.1. The power supply system in the building shall be made available at 415/240 Volts, 50 Hz. A.C. 3 phase 4 wire, earthed neutral from local Electric Supply Authority.

2.2. All supply and installation work shall be carried out as per specification and in accordance with the construction drawings and shall conform to requirements called for in the Indian Electricity Rules 1956 with its latest amendment, Indian Electricity Acts and all relevant codes and practices issued by the Indian Standards Institution as amended up-to-date. The work shall also comply with the provisions of the general or local set of legislatures and regulations of any local or other statutory authority which may be applicable.

2.3. The Contractor for electrical works must possess valid Electrical contractor's License endorsed by the Licensing Board. Directorate of Electricity of concerned State Government for the type of work he shall execute.

2.4. The work to be provided for by the Contractor, unless otherwise specified, shall include but not limited to the following :

i. Furnish all labour, supervision, services, materials, supports, scaffolds, construction equipment, tools, plants and transportation etc. required for the proper execution of the job as per drawings, specification and schedule of items and get all necessary tests on materials and work conducted at their cost.

ii. Not withstanding the electrical layout shown in the drawing, the contractor shall obtain further approval of the layout at site from the Consultant / Engineer-in-Charge before commencement of the work.

iii. Furnish samples for approval including arranging necessary tests on samples as directed by the Consultant / Engineer-in-Charge in an approved Laboratory.

iv. To extend facilities to the Consultant / Engineer-in-Charge to inspect work and assist them to obtain samples, if they so desire.

v. Furnish general arrangement drawings of the switchboard and other fabrication items which the Consultant / Engineer-in-Charge may direct for their approval.

vi. To employ a full time experienced supervisor having electrical supervisor's certificate of competency endorsed by the Licensing Board, Directorate of Electricity of concerned State to supervise the work. The Consultant / Engineer-in-Charge have the right to stop the work if the contractor's supervisor is not present when the work is being carried out.

vii. To keep the appropriate Electrical Inspector, supply authority informed as to programme of the work and shall be responsible for ensuring that all work passes their approval.

viii. To provide all incidental items not shown or specified in particular but necessary for proper execution of works in accordance with the drawing, specification and schedule of items.

ix. intain the work and keep them maintained till handed over to he owner in proper working condition.

x. dinate with all agencies including those engaged by the owner or proper execution of the job.

3.0. MATERIALS

3.1. Materials shall be of the approved quality. A list of materials of approved brand and manufacture is indicated in the annexure. If the list of materials mentioned above stipulates two or more or alternative brands / makes of any product, the decision as to which brand / make shall be used in the work shall be taken by the Architects / Employer and the contractor shall provide the brand / make so selected without any extra cost.

In case, materials are required to be obtained from any manufacturer other than those listed on account of non-availability then prior approval from Architects will be necessary, supported by relevant test certificates qualifying the required standard. Further tests as directed by the architects shall also be carried out by the contractor at their own cost, if required.

3.2. Contractors shall obtain approval of the Architects / Owner of 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 Owner / Architects.

3.3. For standard bought out items, the sizes manufactured by the firms listed shall prevail when there is discrepancy in the sizes mentioned in the schedule without any financial adjustment.

4.0. SPECIFICATIONS

4.1. Unless specifically mentioned otherwise, all applicable codes and standards published by the Bureau of Indian Standard and all other such publication as may be published by them after construction work starts, shall govern in respect of design, workmanship, quality and properties of material and method of testing.

5.0. SAFETY

5.1. All equipment shall be complete with approved safety devices wherever a potential hazard to personnel exists and with provision for safe access of personnel to and around equipment for operation and maintenance functions.

5.2. Special care shall be taken to make enclosed equipment proof against entry of rats, lizards and other creeping reptiles which may create electrical short circuit inside live equipment.

6.0. DRAWINGS

On completion of all works the contractor shall furnish three copies of Ammonia print along with the original tracing of the following as done drawings to the Consultant without any extra cost.

i. Wiring diagram for final power / lighting distribution showing the rating / size of switchgear, cables, conduits, lighting fixtures and all accessories for individual installation.

ii. Detailed arrangement drawings of the switchboard. Complete with dimension in metric units.

iii. Drawings showing the route of conduits and cables with sizes, lengths, sources and destination of all cables with the circuit designation number, etc.

iv. Drawings showing the balancing of phases with connected load in each circuits, etc.

7.0. TEST CERTIFICATES AND INSTRUCTIONS

7.1. Unless specifically mentioned otherwise, the contractor shall furnish in duplicate Manufacturer's Test Certificate with the delivery of the equipment to the Consultant and instruction in English for operations and maintenance of equipment where required.

8.0. TESTING AND COMMISSIONING

8.1. Before each field test, the contractor shall obtain the permission from the site engineer and all tests shall be conducted in the presence of duly authorised representative. Records of each test shall be prepared immediately after the test and this record shall be signed by contractor's representative conducting the test and the site engineer attending the test. Copies of their record in quadruplicate shall be handed over to the Consultant / Engineer-in-Charge.

8.2. A certificate in quadruplicate shall be furnished by the contractor countersigned by the certified supervisor under whose direct supervision the installation was carried out and the owner's site engineer. This certificate shall be in the prescribed forms in addition to the test certificate required by the Local Electric Supply authorities. Recommended format completion certificate is given in Appendix 'A'.

9.0. COMPLETION OF WORK

9.1. Each item of the electrical work shall be considered as complete in all respects only after obtaining permanent service connection from local supply authority, energising, testing and final commissioning of the complete installation as directed by the Consultant / Engineer-in-Charge.

9.2. Payment on each item of electrical work shall be made as per measurement and proportionate to the quantum of works completed. In the event of any dispute with regard to the proportion of work complete, the decision of the Consultant / Engineer-in-Charge shall be final and binding to the contractor.

10.0. PREAMBLE TO THE SCHEDULE OF WORK

10.1. The successful tenderer shall carefully go through the Clauses of Invitation to Tender, Specification, Schedule of Work and drawings and shall include in his rates and sum he may consider necessary to cover the fulfillment of the various clauses contained therein. Unit prices stated in the schedule of work against the item of work shall be inclusive of all installation accessories and consumables necessary to complete the said work within the contemplation of the contract. Beyond the unit prices no extra amount will be paid for incidental contingent work and materials.

10.2. The quantities mentioned in the schedule of work are probable quantities and it must be clearly understood that the contract is not a lump sum contract, that the probable quantities, the value of the entire tender are only indicative and owner does not in any way assure the tenderer or guarantee that the actual quantity of work would correspond to the probable quantities in the tender.

10.3. No change in unit rate will be admissible on any variation of quantity.

APPENDIX

FORM FOR COMPLETION CERTIFICATE

I/We certify that the installation detailed below has been installed by me / us and tested and that to the best of my / our knowledge and belief. It complies with Indian Electricity Rules, 1956 as well as IS:732-1963 Code of Practice for Electrical installation

at ----------

Voltage and system of supply ----------

a:	Particulars of work	Number	Total Load:	Type of system of wiring

1. Light points ----------
2. Fan points ----------
3. Plug points (3 pin) ----------
4. Motors ----------
5. Other plant ----------

b: If the work involves installation of overhead lines and/cr underground cable

---

c: Earthing

Description of earthing electrode, size of earth wire and number of earth electrodes provided ----------
---

d: Testing Results

1. i. Between conductors ----------

ii. between each conductor and earth ----------

1. Resistance of earthing electrodes or earthing system

---

2. Maximum earthing resistance of installation ----------

Signature of Supervisor Signature of Contractor

Name & Address of Supervisor Name & Address of Contractor

SECTION : A

TECHNICAL SPECIFICATION FOR ELECTRICAL EQUIPMENT

1.0. SCOPE

This specification covers for supply of materials, fabrication, erection, testing and commissioning of switch boards, Distribution fuse boards. Meter board, lighting equipment, Switches, socket outlets and miscellaneous items. Applicable provisions and conditions of contract shall govern the work under the section.

2.0. GENERAL

2.1. The contractor shall submit manufacturer's Test Certificate for switchboards, switch fuse units, meters, rewireable type porcelain fuse fittings, miniature circuit breaker and isolating switches and other items as directed by the Consultant / Engineer-in-Charge.

2.2. After completion of such supply and installation work of the electrical equipment if any defect in the material or workmanship is found by the Consultant / Engineer-in-Charge, the contractor shall remove the same and supply better and approved materials at his own cost.

2.3. All precaution against theft and fire shall also be taken by the contractor.

2.4. The contractor shall provide complete supervisions for proper execution of the work.

3.0. MATERIAL

3.1 All materials used in the work shall be of ISI approved / quality and in its absence conforming to the I.S. Specification.

3.2 For fabricated equipment special care shall be taken to make the enclosed equipment proof against entry of creeping reptile which may create electrical short circuits inside the live equipment.

4.0. L.T. MAIN DISTRIBUTION SWITCH BOARD / DIST. SWITCH BOARD

4.1.0. The 415 Volt main distribution switch board shall have incoming unit fed from L.V. side of transformer or main LT source.

4.2.0. STANDARDS
The equipment shall be designed to confirm to the requirements of I.S. 4237. I.S. 2147 and I.S. 375.

4.3.0. CONSTRUCTION

4.3.1. The main L.T. P.C.C. board shall be of totally enclosed tropicalised, vermin proof, free standing cubical type as front minimum 2.0 mm thick sheet steel construction with angle iron frame work housing incoming switch gear ACB/MCCB, requisite number of outgoint ACB, MCCB, fuse switch or switch fuse units, busbars, switch board shall be readily extensible on both sides. The L.T. terminal of the transformer shall be connected to the incoming terminal of the MCCB/Air Circuit Breaker through adequate number and size of aluminium conductor 1.1 KV grade PVC and A cable.

4.3.2. The incoming and outgoing functional units shall be arranged in multitier formation, to provide a compact switch board having a pleasant appearance. Each unit shall be accommodated in a separate compartment having gasketed hinged door which shall be interlocked with the operation mechanism so as to prevent opening of the door when the switch is in the 'ON' position and also to prevent closing of the switch with the door not properly secured.

4.3.3. The 'ON' and 'OFF' positions of the switch handle shall be distinctly indicated by proper marking. Modular construction shall be adopted to cater for different units with each cubical having a busbar chamber at top and a rear cable compartment. The maximum height of the devices on the panel shall not exceed 2000mm.

4.3.4. Suitably engraved identification levels shall be provided on each unit.

4.3.5. When switch board of floor or wall mounting type is specified instead of cubicle type with incoming and outgoing Fuse switch unit or switch fuse units, the board shall comprise a suitable length of Busbar chamber. The board shall have provision for future extension. The floor stands or wall bracket shall have sufficient mechanical strength to carry the weight the entire switch board.

4.3.6. The height shall be such that maximum operating height of the top unit shall not exceed 1800 mm.

4.4.0. BUSBAR

4.4.1. The main horizontal busbar shall be air insulated and made of high conductivity, high strength aluminium alloy or electrolyte copper complying with the requirements of grade E 91 E of IS 5082. The current density in each busbar shall not exceed 160 Amp. per sq.cm. for copper and 125 sq.amp. per sq.cm. for aluminium.

4.4.2. The main phase busbar shall have continuous current rating throughout the length of power control centre and the neutral busbar shall have a continuous rating of at least 50% of the phase busbar.

4.4.3. Large clearance and creepage distance shall be provided on the busbar system to minimise the possibility of a fault.

4.4.4. The busbar and vertical risers shall be fully insulated with PVC sleeve or tape to prevent accidental touch.

4.4.5. The busbar including neutral and earth bar shall be short circuit tested for fault withstand of 60 KA RMS for one second as per IS:8623 for factory Built Assemblies.

4.4.6. In no case the rating of busbars shall be less than the Incoming Circuit Breaker or switch.

4.4.7. Busbar should be supplied with insulating material such as Permali, Hylam and support shall be sufficient close and robust and support should permit – sufficient movement for compensation of comparative stress in the event of short circuit.

4.5.0. AIR CIRCUIT BREAKER

The circuit breaker would be constructed in modular construction or would be enclosed in cassettes, designed for easy Switch Board Construction. The formed and welded steel construction should be given corrosive resistance treatment following fabrication work.

The breaker would have three distinct position, service / test /isolated within the cubicle, achieved by a racking cam and slide rails, simplifying inspection and from this position breaker should be able to withdrawn from housing. With door closed, the breaker should be withdrawn to test and isolated position.

The contact system should be designed to ruggedly and to effectively utilize the magnetic force generating in the current path ensuing high short time with- stand current and interrupting capacity and reducing the let through energy. The ACB should be provided with separate set of arcing contacts and main contacts ensuing high mechanical and electrical life. Arc chutes on arcing contacts with de-ionisation plate should be provided. The contact tips should be made of Silver Nickel Alloy and arcing contact tips are of Silver Tungsten Alloy.

ACB should be suitable for manual or Motor wound stored charge spring closing mechanism. ACB should be provided with static trip release, inherent safety inter locks such as safety shutters and door inter lock, "OFF" & "ON" indicator auxiliary switches and contacts. ACB should be complete with overload protection, short circuit protection, under voltage trip, auxiliary contacts and instruments as specified in the schedule.

The ACB should comply with Indian Standard Specification I.S. 2517-1977 and IEC 157 and should be certified by CPRI.

4.6.0. MOULDED CASE CIRCUIT BREAKER

These MCCBs should comprise of a switching mechanism, contact system are extinguishing device and the tripping unit, contained in a compact moulded case and cover.

The insulating case and cover shall be made of high strength heat resistant, flame retardant thermo setting materials, providing interphase insulation of a very high delectric strength and an insulated enclosure with high withstand capability against thermal and mechanical stresses with protection against secondary fire hazards.

Trip free toggle mechanism should ensure that the trip command overrides all other commands.
MCCB should employ a maintenance free contact system designed to minimise the let through energies while handling abnormal currents. The special sintered contact tip should provide a wiping action, high resistance to erosion during interruption and a stable contact for normal service current.
A series of grid plates should be mounted in parallel between supports of insulating material. The profile of the de-ion steel plates extends directly over the contacts and draws the arc from the moving contact up into the divider chamber, thus confining, dividing and extinguishing the Arc.

The handle position should give positive indication of whether the MCCB is 'ON' (top), 'OFF' (bottom) or 'TRIPPED' (midway).

The tripping element provided on each pole of the MCCB should operate on a common trip bar because of which it does not create single phasing in the event of a fault on any of the phases.

The base design ambient of these MCCBs should 40 degree C.

When specified the MCCB should be fitted with under voltage protection, earth fault protection, alarm & auxiliary switch etc.

4.7.0. FUSE SWITCH UNIT

The fuse switch units shall be of double break type suitable for load break duty, with quick make and break mechanism and front drive mechanism, generally conforming to IS: 4064-1978 having fully shrouded contacts. All switch contacts shall be shelf aligning, spring loaded, silver plated. The isolators shall be connected on the busbar side or incoming side and fuses on the load side. However fully withdrawable carriage to facilitate quick fuse link replacement is preferred.

The individual fuse switch units shall be either triple pole and neutral or single pole and neutral as specified with a front operating handle. The fuse links shall be non-deteriorating HRC type complying with IS:2208-1962 and having rupturing capacity of 80 KA at 415 Volts.

The units which are to be installed separately should be totally enclosed fully shrouded sheet steel clad / cast steel casting.

INSTRUMENTS

The measuring instruments shall comply with IS: 1248 in all respects.

Moving iron, square, flush mounting type instruments shall be used for measuring A.C. Voltage and currents.

The instruments shall normally be mounted on the hinged door of an all welded fabricated sheet steel housing of rigid construction to allow easy access to small wirings. Protective circuits shall be protected by HRC type fuse links complying with IS:9224 (Part-II) – 1979. The fuses shall be mounted near the tap-off point from the main connections so that a fault in the instrument wiring does not affect the main supply. Small wiring shall be of 660 Volt grade single core fire resistant P.V.C. cable with copper conductor having minimum size 2.5 sq. mm.

These shall be coloured coded for identification of circuits. The instruments shall be of IMP/Automatic Electric / G.E.C. or equivalent make acceptable to the Consultant / Engineer-in-Charge.

4.8.0. CABLE TERMINATIONS

4.8.1. Separate cable compartment with doors bolted cover plates shall be provided at rear of each vertical section to facilitate cable termination of individual units. The design shall ensure generous availability of space for ease of installation and maintenance of cabling and adequate safety for working in one vertical section without coming into accidental contact with live parts in an adjacent section. The compartments shall have detachable cover plate with gaskets at the bottom of the cable compartment unless specified otherwise. Cable glands and slugs of suitable sizes shall be provided for cable termination. Suitable arrangements shall be provided in the compartment for clamping of the cables.

4.9.0. EARTHING

G.I. / copper flats shall run the entire length of the switch board. Two bolted type earthing terminals shall be provided in the board for connecting to the earth grid.

4.9.1. METAL TREATMENT

All steel materials used in the construction of the switch board shall undergo a rigorous rust proofing process comprising alkaline digreousing, descaling in dilute sulphuric acid, cold rinsing, recognised phosphating process. Passivating and drying with compressed air in dust free atmosphere. It shall then receive two coats of highly corrosion resistant enamel paint of approved shade.

5.0. DISTRIBUTION FUSE BOARDS

5.1. The distribution fuse board shall comply with IS:2675-1983 and B.S. 214 in all respects.

5.2. The distribution fuse board shall be housed in a dust and vermin proof metallic enclosure fabricated from 2mm thick all welded sheet steel suitable for wall / column mounting and complete with a door of rigid construction fitted with dust protecting gasket and robust fasteners. The enclosure shall have suitable provision for fixing fuse fittings and neutral bar on high grade rigid insulating support. The fuse fittings shall be provided with a cable socket for the incoming cable. The socket shall be situated centrally and must be covered by an insulating shroud for safety. Phase separation barriers made out of arc resistant materials shall be provided between the fuse banks. All bare current carrying parts shall be protected with a bakelite sheet of 3.5mm thick to prevent accidental contact.

5.3. The distribution fuse board of single phase and neutral type shall be fitted with an earth bar for termination of each continuity conductor of outgoing circuits.

5.4. In case of concealed system, the boxes are to be flushed with the wall and the cover shall be made from 5mm thick opal acrylic sheet or 3 mm thick decorative white top Bakelite Electrical switch board cover of Hylam make.

5.5. The sheet steel parts shall undergo a rigorous rust proofing process comprising alkaline degreasing, de-scaling in dilute sulfuric acid, cold rising and a recognized phosphating process. The steel work shall then receive two coats of high corrosion resistant primer paint before final painting by application of synthetic enamel paint.

6.0. MINIATURE CIRCUIT BREAKER DISTRIBUTION BOARDS (SP&N)

6.1. The MCB Distribution Board (SP&N) shall be housed in rust protected sheet steel enclosure shall be designed to provide protection against ingress to IP42 of IS-2147. This shall also be provided with the add – on acrylic door / double door (Metallic) when specified. The MCB DB – shall be supplied complete with tinned copper busbars rated 100 Amps and incorporating Isolator; MCB or equivalent RCCB as incomer. MCB's shall be mounted by inserting the MCR onto specially designed mounting channel and tightening just one screw. The special mounting channel shall permit easy removal – even of – MCB in the middle of the bank without disturbing other MCB's.

The incomer shall accept 35 sq.mm. wire with wire while neutral, for branch circuits, accepts 16 sq.mm. wire. The consumer unit shall have provision of 20mm/25mm knockouts at top and bottom and two 32 /23 mm knockout on sides facilitates wiring space making for flexibility and convenience of wiring.

6.2. MCB DISTRIBUTION BOARDS (TP&N)

TPN Distribution Boards shall be fabricated from CRCA sheet. This shall be painted in aesthetically appealing two-tone powder coated finish. The TP & N DB's shall be 4/8/12 for incorporating isolator, MCB or RCCB as incomer. The busbar shall be integral type single piece busbar (Cu) and coupling links. The MCB's shall be arranged in two vertical banks with switch lever operating in horizontal plane for on-off switching. Specially designed mounting channel for quick shop fitting and easy removal shall be fitted.

The sheet steel enclosure fitted with add-on acrylic door / double metallic door shall be provided with protection against ingress IP42 or IS:2147. The incomer shall accept upto 35 sq.mm. cable while the neutral shall accept 16 sq.mm. wires.

Two conduit entry plates at top and bottom shall be provided to facilitate drilling conduit holes at site to suit site requirements. The TPN DB's shall conform to IS: 8623 for factory built assemblies.

7.0. METER BOARD

7.1. Unless otherwise mentioned in the schedule of quantities the Meter Board shall house a kwh meter in a dust and vermin proof metallic

enclosure fabricated from 2 mm thick all welded sheet steel suitable for wall mounting. The door shall be secured by fasteners, enabling dust protecting gasket to be compressed easily. The kwh meter shall be of G.E.C. / Universal or equivalent make and the same shall be mounted on a rigid insulating support. There must be a viewing apprture on the M.S. Door covered with a 2 mm thick clear acrylic sheet for easy meter reading and it shall be possible to seal the enclosure against unauthorised opening.

7.2. The sheet steel enclosure shall undergo rust proofing process and painting as specified in 7.5.

8.0. FUSE CUT OUTS

8.1. The fuse cut outs shall be totally enclosed, metal clad suitably for mounting on flat vertical surface and shall be provided with a screwed top cover. It shall be possible to seal the enclosure against unauthorised opening.

9.0. PUSH BUTTONS AND CONTROL SWITCHES

9.1. All push button switches shall be of sturdy design suitable for all types of control circuit. Unit construction shall be adopted so as to have any desired arrangement of contact.

9.2. Control and selector switches shall be of sturdy design with modular construction comprising rotary type switch with pistol grip or twist type operating handle and a number of switching elements operated by a single shaft and shall have suitable position indicator to show that the switch is in selected position.

9.3. The push button and control switch shall be of Larsen & Toubro / Siemens or equivalent make.

10.0. CONTACTOR UNITS

10.1. The contactor units shall comply with IS:2959 in all respects.

10.2. The main contactor units shall be of robust in design having double break bounce free type contacts and pressure type terminal clamps. The contacts shall be made of antiweld silver cadmium oxide. The coil shall be vacuum impregnated, backed with inter-layer paper insulation and finally moulded in hard resin.

10.3. The contactor units shall be of Larsen & Toubro / Siemens / Crompton Greaves make.

11.0. LIGHTING EQUIPMENT (Bank Supply Item)

11.1 The luminaires for fluorescent lamps shall be shop assembled fully wired and suitable for 1 No. 4 ft. tube or 2 Nos. 4 ft. tubes as the case may be. The salient features of these luminaires are basic channels / rails, 240 volt ballasts with copper winding wire, spring loaded bipin type lamp holders, glow type starters
and condensers. Reflectors and / or decorative covers shall be supplied as specified in the Schedule of Quantities.

11.2 The luminaires for incandescent lamps shall be as specified in the schedule of quantities and approved by the Consultant / Engineer-in-Charge before the same is used.

11.3 The incandescent Bulkhead type fittings shall be of cast aluminium alloy body, finished by application of synthetic enamelled silver grey paint outside, white insides, with front glass, wire guard, tropicalised gasket, B.C. Lamp holder and suitable for use with 100 Watt G.L.S. Lamp. The fittings shall have tapped 19mm E.T. for conduit entry.

11.4 The Highbay luminaires for sodium /mercury vapour lamps shall be integral type unit having a spun aluminium canister at the top for housing control gear, terminal block for the incoming supply, earthing terminal and suspension arrangement. The luminair shall have reflectors of spun anodized aluminium with a secular finish and suitable for use with 250 / 400 watt HPSV / HPMV lamp as the case may be.

11.5 The Post-top lantern type luminaires shall have a die-cast aluminium electrical unit / housing with provision for pipe entry from below, a canopy made of spun aluminium and an opal, white acrylic diffuser resistant to ultraviolet radiation and heat. The luminaire shall be rain proof, insect tight and fully wired upto the terminal block and suitable for use with 80/125 watt HPMV or 100 watt G.L.S. Lamp as specified in the schedule of quantities.

11.6 The flood lighting luninaires shall have a rugged construction housing made of cast aluminium alloy of low copper content for corrosion resistant, highly polished and anodised aluminium reflector for beam control, a heat resistant front glass with gasket and terminal block. To facilitate aiming and fixing bracket shall be provided on the housing. The luminaire shall be rain proof, and suitable for use with 1000W tungsten halogen lamp or 250 / 400 Watt HPSV lamp as specified in the schedule of quantities.

11.7 The ballasts for fluorescent tube shall conform to IS: 1534 & IS:1534 (Part-I) 1977 and the same for high intensity discharge lamps shall conform to IS:6616-1982 and these shall have high grade synthetic enamelled copper winding wires, quality grade insulation materials, good quality low hysteresis loses electrical stampings and complete unit shall have polyester filling. The ballasts shall be suitable for use on single phase 240 Volts 50 Hz. A.C. system and of G.E.C. / Phillips make.

11.8 The capacitors shall comply with IS:1569-1976 and be of hermetically sealed type.

12.0. CEILING FANS AND REGULATORS

The ceiling fans and regulators shall conform to IS:374-1979. The fans shall have totally enclosed capacitor start and run motors suitable for operation on 230/240 Volt, Single phase, 50 Hz. A.C. system. The regulator shall have an 'ON' 'OFF' position next to the lowest speed contact and shall be provided with at least five running positions.

13.0. EXHAUST FANS

13.1. The Exhaust fans shall conform to IS:2312-1967 and suitable for operation on 230/240 Volt single phase, 50 Hz. A.C. system. The fans shall be ring mounted type designed to give maximum air volume changes under free air flow conditions.

14.0. SWITCHES

14.1. Light and fan switches shall be rated for 5 amp. 250 volts and of Piano-key type and suitable for flush mounting on sheet steel board or seasoned teak wood board of double panel construction. The switches shall be of Anchor or equivalent make acceptable to the Consultant / Engineer-in-Charge. For surface mounting these shall be of robust design, tumbler type and of Ellora or equivalent make. The switches shall comply with relevant I.S.

15.0. SOCKET OUTLET AND PLUG

15.1. These shall be of 3 pin type and of rating 6 amps (For light) and 16 amps. (for power). Each socket outlet shall be complete with controlling switch and plug top. Protective fuse links shall be provided with 16 amps. power socket outlet. The socket outlets shall have piano-key type switches and of Anchor or equivalent make acceptable to the Consultant / Engineer-in-Charge. The socket outlet and plug shall comply with the relevant I.S. specifications.

16.0. SWITCH BOXES

Sheet metal (16 SWG) switch boxes / connection boxes with 3 mm thick bakelite top cover flushed in wall by housing the box after cutting brick wall. Sheet metal boxes shall be treated against corrosive by passivation or other approved method.

17.0. FEEDER PILLAR

17.1. The feeder pillar shall be of the floor mounting type, totally enclosed and weather proof. The cubicle shall be fabricated out of heavy gauge sheet steel of thickness not less than 10 gauge with suitable side frames and 12 gauge stiffeners.

17.2. Hinged doors of not less than 3 mm thick shall be provided at the front and rear of the cubicle to provide access for installations, operations, tests and inspection. All doors shall be fitted with dust excluding gaskets. The door shall also be fitted with suitable locking arrangement to prevent unauthorised opening. The cubicle shall be designed for mounting over cement concrete plinth by the roadside and shall be of substantial construction capable of withstanding the vibration normally experienced due to vehicular traffic.

17.3. The sheet steel materials used in the construction of the cubicle shall undergo a rigorous rust proofing process comprising alkaline degreasing, descaling in dilute sulphuric acid, cold rinsing and a recognised phosphating process. After matel treatment, the interior of
the cubicle shall be painted with two coats of air drying red lead primer followed by two coats of air drying anti-condensation paint. The exterior of the cubicle shall be painted with two coats of stoving red oxide primer and finished by application of two coats aluminium paint or any other colour shade acceptable to Consultant / Engineer-in-Charge.

17.4. Ventilation louvers in the form of finely divided wire mesh shall be provided on the two sides to ensure natural ventilation.

18.0. TUBULAR POLE / G.I. PIPE POLES

Where tubular steel pole are specified (either swagged or stepped), the same should be manufactured and supplied as per I.S. 2713 part I to III – 1980. Where G.I. pipe pole are specified the same should be approved to I.S.

19.0. LOOP-IN JUNCTION BOX

19.1. These junction boxes shall be drip proof type dust and vermin proof construction fabricated from 2 mm thick sheet steel having internal dimensions of 200 x 150 x 130 mm depth for single phase distribution system and 250 x 200 x 130 mm depth for three phase distribution system. These shall have moulded bakelite base connector block with anti-vibration nickel plated brass terminals of suitable size and rating and porcelain fuse fittings.

20.0. MANUFACTURER'S DRAWING

20.1. The successful tenderer shall submit for approval General arrangement and dimensioned drawings for Power and Lighting distribution switch board, Motor Control centre, Bus-duct arrangement, Miniature circuit breaker distribution board, Fuse Distribution board, Interlocked Switch socket outlets, Clock switch control panel, T P Power Cable junction box and cable rack etc. as required in three sets before commencing manufacture.

21.0. WORKMANSHIP AND INSTALLATION WORK

21.1. The workmanship shall be of good commercial quality and all supply materials and installation work shall be completed to the full satisfaction of the Consultant / Engineer-in-Charge.

22.0. CONTRACTORS RATE TO INCLUDE

22.1. Apart from other factors mentioned elsewhere in this contract, the rates for the above shall include for the following :

i. All labour, materials, tools and construction equipment required for fabricating and fixing of above stated items.
ii. Scaffolding including erection and removal.
iii. Making good of all damaged civil work, if any.
iv. Necessary modification of pre-laid conduit including supply & fixing of Metal / PVC conduits and accessories, chase cutting etc. as required to complete the work.

23.0. METHOD OF MEASUREMENT

23.1. Unless otherwise mentioned in the Schedule of Quantities, measurement will be on net quantities of work produced. In the event of any dispute with regard to the measurement of work executed, the decision of the Consultant / Engineer-in-Charge shall be final, and binding to the Contractor.

SECTION : B

TECHNICAL SPECIFICATION FOR WIRING SYSTEM

1.0. SCOPE

1.1. This specification covers for supply of materials, erection and commissioning of distribution wiring, connection to distribution boards, cable laying, earthing and miscellaneous items. Applicable provisions and conditions of contract shall govern the work under the section.

2.0. GENERAL

2.1. Works to be provided for by the Contractor, unless otherwise specified shall include but not be limited to the following :

i. Furnishing of labour, materials, supports, scaffolds, transportation etc. required for the work.

ii. To provide all incidental items not shown or specified in particular but reasonably be implied or necessary for successful completion of the work in connection with the drawings specification and schedule of items.

iii. To provide all supervision for proper execution of the work

iv. To conduct and bear all costs in respect of any test advised.

2.2. After completion of supply and installation of wiring system and earthing, if any defect in the material or workmanship is found by the Consultant / Engineer-in-Charge, the contractor shall remove the same and supply better and approved materials at his own cost.

2.3. All precaution against theft and fire shall also be taken by the contractor.

3.0. MATERIALS

3.1. All materials used in the work shall be ISI approved quality and in its absence conforming to the IS Specification.

4.0. WIRING SYSTEM

4.1. The electric load of all lights, power outlets, etc. shall be balanced across the three phases.

4.2. Generally the final loading of any sub-circuit for lights and fans shall not exceed 800 watts and shall not be connected to more than total 10 fans, lights, socket outlets, etc. Bell push if operated at low voltage shall be fed from a separate circuit of distribution fuse board.

4.3. The final 16 amps sub-circuit for power shall be connected to a maximum one 16 amp. socket outlet or two 6 amp. socket outlets.

4.4. A power circuit shall always be originating from a distribution fuse board or MCB DB and the same shall run in a separate conduit.

4.5. The point wiring shall mean wiring from one way of distribution board to point of utilisation of electricity i.e. where the load is applied and this shall include complete wiring from distribution board, supply and fixing of switch board, controlling switches, ceiling rose, batten holder and socket outlet etc.

4.6. Insulated or covered earthing conductors where used, shall have green insulation braiding or covering as appropriate. Under no circumstances shall the colour green be used for other than earthing conductor. In addition where it is required, cables of different colours be used. For identification purposes the following system shall be employed :

Red or any colour (other than Black or green)	:	For outer phases or switch wire.
Black	:	For middle wire or Neutral.

4.7. Unless otherwise mentioned in the schedule of quantities, single way porcelain / bakelite terminal connectors with nickel plated brass inserts and screws to suit the conductor size shall be used for intermediate wiring / joints in junction boxes and in switch boards or by any other method approved by the Consultant / Engineer-in-Charge.

4.8. Distribution wiring in conduit to light, fan, plug points etc. shall be done in looping in system. In this system, no joints or connections shall be made anywhere of the system except at terminating points such as at terminals of switches, ceiling roses, etc. and in case of socket outlets at the socket terminals. Intermediate wiring joints of neutral wire in junction boxes will not be permitted.

4.9. In the looping back system of wiring on hard wood batten, the wiring shall be done without any junction or connector boxes on the line. All intermediate joints or connections shall be made in the switch board only. Intermediate wiring joints of neutral wire in the junction box will not be permitted.

5.0. CONDUIT WIRING

5.1. All conduit shall be conforming to I.S. 9537 (Part – II) – 1981 and finished with galvanised or stove enamelled surface. All conduit accessories shall be conforming to IS:2667-1988 and be threaded type. Conduit less than 20mm in diameter shall not be used. All conduits shall be of 1.4 to 1.8 mm thickness below 32 mm dia. and 1.6 to 2.2 mm thickness for 32 mm dia. and above.

5.2. The conduit for each circuit shall be erected complete with necessary bushes before drawing in of any wire. Galvanised M.S. Spacer of 3mm thick minimum shall be used between the conduit saddle and fixing surface. The saddle shall be fixed at an interval of not more than 750 mm apart for vertical run and 600mm apart for horizontal run.

5.3. The joint in conduits shall be made by means of threaded couplers and threaded accessories only to ensure electrical continuity throughtout. All pipes after cutting, the threading shall be carefully reemed cut with special reamer to remove any burr and then painted immediately with an anti-corrosive preservative after removing all traces of oil or grease. Junction boxes shall be provided with gasketed covers to render them dust and damp proof. The conduit accessories having pull outlet for conductors shall only be used in all conduit installation.

5.4. Where specified, P.V.C. conduit conforming to IS:2509-1973 or IS:9537 (Part – III) shall be used. The thickness of P.V.C. conduit shall be adequate to withstand mechanical injuries. Where necessary PVC conduit, accessories conforming to IS:3419-1976 shall be used along with PVC conduit.

5.5. The entire conduit system shall be effectively earthed by means of suitable earthing conductors and the resistance from any point to earth shall not be more than one OHM.

5.6. After installation of conduit pipes and fittings are completed in all respects, the exposed outer surfaces of the conduit and accessories shall be painted with two coats of approved enamel paints or aluminium paint over a coat of red oxide as required to match the surrounding wall finishing. To protect against rust the bare thread portion shall be painted with anti-corrosive preservative.

6.0. CONCEALED WIRING

6.1. Recessed conduit wiring system : This system of wiring shall comply with all the requirements of surface conduit wiring system specified in Causes 5.1 to 5.6 in addition to the following Clauses.

6.2. Making of chase : The chase in the wall shall be filled up neatly made and be of ample dimensions to permit the conduit to be fixed in the manner desired. In case of buildings under construction, chases shall be provided in the wall, ceiling etc. at the time of their construction and shall be filled up neatly after erection of conduit and brought to the original finish of the wall. Specially for ceiling, conduit shall be laid before casting.

6.3. Fixing of conduit in chase : The conduit in chase in the wall shall be fixed by means of staples or by means of saddles not more than 60 cm apart. Fixing of standard bends or elbows shall be avoided as far as practicable and all curves maintained by bending the conduit pipe itself with a long radius which will permit easy drawing in conductors. All threaded joints of conduits shall be treated with some approved preservative compound to secure protection against rust.

6.4. Inspection boxes : Suitable inspection boxes shall be provided to permit periodical inspection and to facilitate removal of wires, if necessary. These shall be provided in the inspection box covers.

6.5. Types of accessories to be used : All outlets such as switches, wall sockets etc. may be either flush mounting type or of surface mounting type.

The outlet box shall be the same as in Clauses 15 of Section I and shall be mounted flush with the wall. The metal box shall be efficiently earthed with conduit by an approved means of earth attachment.

6.6. Fish wire : 1 x 18 SWG G.I. wire inside the conduit and accessories to be provided with an extension of 230 mm at both the conduit ends.

6.7. Conduit laying in floor /roof slabs before casting : M.S. / G.I. /rigid PVC/polythene conduit shall be laid straight as far as practicable and properly placed including binding with the steel reinforcement rods with 22 SWG G.I. binding wire so that proper positions of conduits are maintained.

While laying the conduits for concealed wiring in the ceiling / beams / columns / walls before casting the contractor shall ensure that both ends of the conduit are plugged by means of dead – end sockets or otherwise to prevent the entry of any foreign material against conduit chocking.

All precaution must be taken while laying the conduits on the slabs, R.C. walls, columns, etc. and the contractor shall rectify at his own cost, if any defects are found during process of drawing cables through the concealed prelaid conduits.

Each M.S. / G.I. conduit shall be provided with protruding length of 150 mm on free end of the conduits under the bottom level of slab / beam.

Each rigid PVC/polythene conduit shall be provided with protruding length of 150mm on free end of the conduits under the bottom level of slab / beam.

There shall be no intermediate joints in one straight run of conduit.

All ceiling outlets shall be terminated in a round M.S./G.I. circular box (80 mm depth minimum) / deep box to suit standard size ceiling rose or/and rectangular M.S. junction box or Fan Hook Box as the case may be.

It will be mandatory for the contractor to get the layouts approved by the Engineer-in-Charge / Consultant, measurements are checked when the conduits are laid and bound to steel reinforcement rods, before he can release the work for casting of slabs / floor / beams etc.

6.8. Connector Boxes, Draw-in-Box, Junction Boxes :

These shall be constructed from 14 SWG M.S. sheet and have M.S. cover. Minimum size for connector box is 150mm x 100mm and for Draw-in-Box is 100mm x 100mm with required depth upto 80mm.

6.9. Fan Hook Box ;

These shall be 100mm dia x 80mm depth, constructed from 14 SWG M.S. sheet and provided with one 16mm dia. M.S. rod of 300mm long having 'U' bend inside the box.

6.10. Painting :

Outside of wall switch board, connection box, draw-in-box and other M.S. accessories shall be painted with two coats of anti-corrosive paint in addition to other painting instructions given elsewhere.

7.0. WIRES

7.1. Unless otherwise mentioned in the schedule of quantities, only single core PVC insulated / PVC insulated & sheathed cable consisting of single / multistrand / flexible copper / aluminium conductor and of approved manufacturers conforming to relevant I.S. shall be used for wiring in conduit system.

7.2. The maximum number of wires drawn in one conduit shall not be greater that the recommended number given in the Table 1 given at the end this section.

8.0. PVC SHEATHED WIRING LAID ON HARD WOOD BATTEN

8.1. Unless otherwise mentioned in the schedule of quantities only single core flat PVC/Polyethylene insulated and sheathed wire of 650 volts grade consisting of single / multistrand, copper / aluminium conductor conforming to relevant ISG shall be used for exposed batten wiring.

8.2. All PVC wires shall run on well seasoned perfectly straight hard wood batten varnished on four sides but not less than 10mm finished thick and the width of which is such as to suit total width of cables laid on batten. Prior to the erection, these shall be painted with one coat of varnish. The battens shall be screwed to the walls and ceiling by flat head wood screws to wood plugs or other approved plugs at an interval not exceeding 750mm. The flat head wood screws shall be counter sunk within wood batten and smoothened down with a file.

8.3. Link clips shall be conforming to IS:2412-1975 and these shall be so arranged that one single clip shall not hold more than two twin core PVC wire upto 2.65 sq.mm. above which a single clip shall hold a single twin core wire. The clips shall be fixed on varnished wood batten with brass pins spaced at intervals of 100mm in the case of horizontal runs and 150mm in the case of vertical runs. The link clips shall be made of heavy tinned brass sheet or Aluminium sheet the thickness being not less than 27 gauge.

8.4. Where wires pass through walls / floors these shall be protected from mechanical injury by means of rigid steel conduit. The end of the conduit shall be neatly bushed with bakelite. The conduit shall extent 1.5mm above the floor and flush with the ceilings or walls.

8.5. After erection, the P.V.C. wiring along the batten shall be painted with one coat of synthetic enamel paint of an approved colour.

9.0. INSTALLATION AND WIRING OF DISTRIBUTION FUSE BOARDS / MCB DISTRIBUTION BOARD.

9.1. Where fixing of distribution fuse board / MCB DB on doubel teak wood board is specified only hinged type wooden board with brass hinge shall be provided and the size of the board shall be such as to match the size of the Distribution fuse board / MCB DB. A minimum margin of 25mm shall be provided on all sides of the distribution fuse board / MCB DB. The outgoing circuit shall be taken out through a horizontal slot at the rear side of the distribution fuse board / MCB DB enclosure.

9.2. Where fixing of Distribution fuse board / MCB DB on M.S. frame is specified, the frame shall have sufficient mechanical strength to carry the weight of the D.F.B. /MCB DB.

9.3. Where fixing of Distribution fuse board / MCB DB will be of concealed type, the chase in the wall shall be neatly made and be of ample dimensions to permit the DB to be recessed in wall and flushed with finished wall surface.

9.4. The cable / wires shall be connected to the terminal only by soldered or crimped lugs, unless the terminal is of such a form that it is possible to securely clamp them without cutting away of cable strands.

9.5. All bare conductors shall be rigidly fixed in such a manner that a clearance of at least 25mm is maintained between conductors and material other than insulating material.

10.0. CABLES

10.1. TYPE AND QUALITY OF CABLES

Unless otherwise specified in the Schedule of Quantities all wiring cables shall be PVC insulated and PVC sheathed conforming to relevant IS Standard. The conductor of cable shall be of stranded wires of aluminium or copper as specified. All power cables shall be 1100 volts grade, PVC insulated, PVC sheathed and armoured with stranded aluminium conductor. Materials should be obtained from the approved list of manufacturers / brands as indicated in the document.

10.2. HANDLING OF CABLES

It shall be ensured that both ends of the cables are properly sealed to prevent ingress / absorption of moisture by the insulation.

When the cable drums have to be moved over short distances, they should be rolled in the direction of the arrow marked on the drum. While removing cables, the drum shall be properly mounted on jacks or on a cable wheel or any other suitable device, making sure that the spindle, jack, etc. are strong enough to take the weight of the drum.

10.3. DEFECTIVE CABLES

Cables with kinks and straightened kinks or with similar apparent defects like defective armoring etc. shall not be installed.

10.4. BENDING RADIUS

Cable runs shall be uniformly spaced, properly supported and protected in an approved manner. All bends in runs shall be well defined and made with due consideration to avoid sharp bending and kinking of the cable. The minimum safe bending radius for all types of PVC cables shall be taken as 12 times the overall diameter of the cable. Wherever practicable larger radius shall be adopted.

10.5. LENGTH OF CABLES

All cables shall be laid in one length. No joint shall normally be made at any intermediate point in through runs of cables unless the length of the run is more than the length of the standard drum supplied by the cable manufacturer. In such cases where jointing is unavoidable, the same shall be made by means of standard cable joint boxes / kits. Before cutting the cables, the requisite length between terminals (including extra length required at loops) shall be carefully measured.

10.6. STRIPPING OF OUTER COVERING

While cutting and stripping the outer covering (i.e. sheathing of the cable, care shall be taken that the sharp edge of the cutting instrument does not cut or damage the inner insulation of the conductor. The protective outer covering of the cable shall be stripped off near the connecting terminal the protective covering being maintained upto a point as close as possible to the connecting terminal.

11.0. CABLE LAID IN TRENCHES

11.1 Cables shall be laid generally in accordance with Indian Standard Code of Practice IS: 1255.

11.2. SIZE OF TRENCH

Unless otherwise mentioned in the Schedule of Quantities the minimum width and average depth of trench for laying a single cable in ground shall be 460mm and 760mm for L.T. and 1000 mm for H.T. cable respectively. For laying of multiple 11 KV and 6.6 KV grade power cables horizontal axial spacing shall be 250mm. For 1100 volt grade power cables the horizontal axial spacing shall be 150mm. However, communication cable shall not be taken in a common trench. Where more than one cable are to be laid in the same trench in horizontal formation, the width of trench shall be increased according to the above stated inter-axial spacing between the cable except where otherwise specified). There shall be a clearance of at least 150mm between the trench edge and axis of the end cable.

11.3. EXCAVATION OF TRENCH AND PREPARATION OF BED

The trench shall be excavated in reasonably straight line where there is a change in direction, suitable curvature shall be provided. Where gradients and changes in depth are unavoidable these shall be gradual.

Adequate precautions shall be taken during excavation not to damage any existing cables, pipes or similar installations in the proposed route. Where bricks, tiles or protective covers or bare cables are encountered, further excavation shall not be carried out without the approval of the Consultant / Engineer-in-Charge.

The bottom of the trench shall be level across the width and free from stone, brick bats etc. The trench shall be then provided with a cushion of fine sand, the thickness of the cushion being not less than 75mm.

11.4. LAYING OF CABLES

All cables shall be tested for proper insulation prior to laying. The cable drums shall be transported on wheels to the place of work. The cables shall be laid out in proper direction as indicated on the drum using cable drum lifting jacks. In case of higher size cables, the laid out cables shall run over rollers placed at close intervals and finally transferred carefully on to the trenches and racks, care shall be taken so that kinks and twists or any mechanical damage does not occur in cables. Only approved cable pulling grips or other devices shall be used. The entire length of cable shall as far as possible, be paid in one operation. However, if this is not possible, the remainder of the cable may be shifted from position by 'falking' i.e. by making one long loop in the reverse direction. For crossing water, gas or sewerage pipes, etc. cables shall be taken above the pipes where minimum 500mm clearance is not available. The cable shall cross these pipes through RC/GI pipes at a minimum depth of 750 mm from finished ground level keeping the distance between the utility pipes and pipe carrying cables 300mm minimum.

While laying cables parallel to building, railway track, utility pipe lines, drainage, sewerage, etc. the minimum clearance shall not be less than 1000 mm.

Adequate length of cables shall be pulled inside the switch boards, control panel terminal boxes, feeder pillar etc. so as to permit neat termination of each core.

11.5. SURPLUS CABLE

At the time of original inspection, approximately 1 meter of surplus cable (in the form of a loop or otherwise) shall be left at each entry or exit of the cable at a pole or at the pillar box, or near any terminal as may be directed by the Consultant / Engineer-in-Charge.

11.6. PROTECTIVE COVER FOR CABLES DIRECTLY BURIED IN GROUND

Except where otherwise directed by the Consultant / Engineer-in-Charge, the cable (for the entire length in trench) shall be protected by a layer of bricks laid flat on top and shall be provided at least by 75mm sand cushioning both at top
and bottom. This brick protection shall cover all the cables in the trench (single cable or multiple cables, in horizontal formation). In case of a single cable, the brick protection shall consist of one brick flat (with the length along the width of the trench) and supported on two lines of brick 'OFF' edge, one on each side of the cable (with the length of the bricks along the length of the trench).

For multiple cables in horizontal formation, in addition to the two outer lines of brick-on-edge, there shall be additional lines in between adjacent cables. The top cover of brick flat shall extend to cover all the cables each brick being supported on the lines of brick-on-edge.

11.7. BACK FILLING OF TRENCH

After laying of cables the remaining portion of the trench shall be back filled with good excavated soil and well rammed in successive layers not exceeding 300mm depth each and duly compacted to the satisfaction of the Consultant / Engineer-in-Charge. Surplus soild of excavation shall be removed or disposed of as per direction of the Consultant / Engineer-in-Charge.

11.8. All material like sand, brick and clamp, etc. shall be supplied by the contractor. The cable laying rate shall be inclusive of all these items.

12.0. CABLES LAID THROUGH PIPE SLEEVES

12.1. Entry of cable from underground trenches to the building or tunnel shall be through pipe sleeves. Necessary precaution shall be taken to make entry point fully water tight by properly sealing the pipe sleeves in a manner approved by the Consultant / Engineer-in-Charge.

12.2. Where cables are required to cross roads, railway tracks and surface drains, they shall be taken through pipe sleeves at a minimum depth of 1000 mm.

13.0. LAYING OF CABLES ON RACK / TRAY / BRACKET / HOOKS / MASONRY TRENCH

13.1. Where cables are required to be laid directly along structure walkway, walls, ceiling, they shall generally be taken exposed on brackets, cable racks, trays, hooks laid along building structure. Spacing of saddles / hooks shall be such that the cables are straight and shall not exceed 750 mm.

13.2. The cable rack / trays shall be ladder type / pre-fabricated perforated type and bends / curvature shall be smooth and suitable for bending the largest cable running in the rack / tray. The cable rack / trays shall be suitably installed on the building structure with proper support at regular intervals.

13.3. Cable rack / trays shall be so arranged that they do not obstruct or impair clearance of passage way.

13.4. Where there is possibility of mechanical damage cable racks / trays shall be adequately protected by sheet steel cover.

13.5. Unless otherwise specified in the schedule of quantities the rack / trays shall be painted with corrosion resistant paint and finished with enamel paint of shade battleship grey or any other colour shade acceptable to Consultant / Engineer-in-Charge.

14.0. CABLE ROUTE MARKER

14.1. Cable route markers shall be provided at each joint, entry to buildings, each turn, either side of the road crossings and at 30 meter intervals for straight cable runs and at location directed by the Consultant / Engineer-in-Charge.

14.2. The cable marker shall be of cement concrete slab of R.C.C. type (1:2:4) and of size 600mm x 300mm at the bottom and 500mm x 200mm at the top with a thickness of 100mm with marking CABLE and shall be laid flat at finished ground level centered over the cables for easy identification.

14.3. Unless otherwise specified in the schedule of quantities galvanised Iron type cable route marker of size 100mm dia 50mm thick G.I. Plate with marking 'CABLE' thereon welded to 35mm x 35mm x 6mm angle iron 600mm long fixed in a rigid manner may also be used as approved by the Consultant / Engineer-in-Charge.

14.4. All materials like cable route marker, sand and cement etc. for fixing the same be supplied by the contractor. The cable laying rate shall be inclusive of all these items.

15.0. CABLES TERMINATION

15.1. Power cable termination shall be carried out in such a manner as to avoid strain on the terminals by providing suitable clamp near the terminals. All power cables shall be terminated to the switch fuse terminals, busbars, etc. by means of suitable sizes crimping type or soldering type cable socket / lugs / ferrules and empire tape upto palm of the cable lug. PVC tape shall not be used directly, because of its poor thermal stability. It may however, be used over the empire tape. Control cables shall be terminated by crimping or directly clamped in the terminal blocks by screws.

15.2. When pinching the smaller size conductor directly in the terminal bore of the switches, the individual strands shall be fanned out and cleaned by wire wool or emery paper and the cleaned surface shall be coated with a thin layer of oxide inhibiting grease. The conductor shall be tightened fully to the terminal bore but over tightening shall be avoided.

15.3. For connection to busbars and other terminals brass or cadmium plated / nuts / bolts and washers shall be used. Copper cables shall never be terminated directly on aluminium busbar. Suitable measure shall be taken to avoid heating due to bimetallic contacts.

15.4. A selection chart of crimping type cable lugs for various combination of cables / busbar / fuse switch terminals is shown below :

	Material of busbar / switch terminals	Material of Cables	Material of crimping lug
a:	Aluminium	Aluminium	Aluminium over tin plated copper
b:	Copper	Aluminium	Aluminium lug with copper plated palm
c:	Silver / tin plated copper	Aluminium	Aluminium or tin plated copper
d:	Aluminium	Copper	Tin plated copper
e:	Copper	Copper	Copper or tin plated copper

16.0. EARTHING

All non current carrying metallic part of varioud electrical equipment as well as cable armouring, metallic conduit, cable racks / trays, brackets, supporting structures, etc. shall be effectively earthed by not less than two separate and distinct earth connection in accordance with Indian Electricity Rules, and the relevant Indian Code of Practice for earthing 3043 1987.

16.1. EARTH ELECTRODE

16.1.1. PIPE ELECTRODE

The earth electrode for earthing station shall comprise G.I. pipe 'B' Class of 50mm internal diameter and 3 mtr. long in one single piece with holes 12mm dia on all sides at 150mm centre, upto a minimum height of 2.5 metre from bottom. Removable caps / wire mesh funnel shall be provided at the top of pipe to facilitate pouring of water. Suitable clamps made of 40mm x 6mm galvanised M.S. flats complete with bolt and nut shall be provided with the electrodes at 100mm from the top end for connecting earth conductor. No joints will be allowed in the earth electrode. The electrode shall be driven at least 2 metre clear from masonry structure and the distance between two electrode shall be not less than 2 metre when installed in parallel and preferably placed twice the length of the electrode i.e. 6 metre. A masonry inspection pit of size 600mm x 600mm x 450mm deep (unless otherwise stated) shall be built with 125 mm thick cement mortar (6:1) brick work both inside and outside plastered 20mm thick and neatly cemented 1.5 mm thick, inside top and outside around the top of the earth pit, so that the top of the G.I. pipe is 250mm below the finished ground level and the opening
on top shall be provided with C.I. manhole ring having lockable C.I. cover fixed & flush with the outside finished ground level.

16.1.2. PLATE ELECTRODE

Where plate electrode for earthing is to be employed, the size of the plate shall not be less than 600 mm x 600mm x 6.3mm for G.I. plate in thickness and 600mm x 600mm x 3.15mm thickness in case of copper plate.

The plate shall have a drilled hole 14mm dia. at the centre. The G.I. flat of not less than 30mm x 6mm (1 No. 25mm x 6mm G.I. flat for lighting conductor installation) should be connected to the plate by means of a 63 mm long 12mm dia galv. Bolt, double nuts using double galv. Washers. In case of copper plate, copper flat of not less than 32mm x 6.0 mm shall be used as the earth lead. The flat shall first be fastened on one side of the plate, leaving adequate length of flat, which shall be taken over to the other side i.e. to the earth busbar, switch board, pole, continuous earth wire for G.H. line, service bracket, lighting arrestor or the object to be earthed and be fastened as per the details of IS:3043-1987. No joint on the earth lead conductor is permitted. Every care be taken to ensure that the ends of the wire/flats have been securely clamped by the bolt on cleaned surface of the plate and established a good electrical contact.

The plate shall be buried vertically at a minimum of 6.0 M below the ground level for sandy soil and 2.0 m below the ground level for normal soil. In order to place the same at the prescribed depth, the dimension of pit to be excavated shall be 900mm x 900mm 3000mm deep. The G.I. plate shall be placed in position by the contractor only after the inspection of excavated pit and approval is obtained from the Consultant /Engineer-in-Charge.

After placing the plate the earth lead conductor shall be protected by means of a continuous length of G.I. pipe (Class B) having 50mm dia (minimum) bore or route depending upon the size of the lead, right from plate upto a height of 600mm metre (2 ft.) above ground level. The whole length of pipe shall be fill with bituminous compound of approved make and brand. The molten compound shall be poured from the top end of the pipe and topped upto over flowing.

A masonry inspection pit for the earth station of size approximately 600mm x 600mm x 450mm depth (unless otherwise stated) shall be built with 125 mm thick cement morter (6:1) brick work with 1st class bricks, both inside and outside plastered 20mm thick and neatly cemented 1.5mm thick, inside, top and outside around the top of the earth pit. The opening on top shall be provided with C.I. manhole ring having lockable C.I. cover fixed and flush with the outside finished ground level.

Electrodes shall be buried at least 2 metre away from masonry structure / building / pole or object to be earthed. However,

earthing electrodes for L.T. installations should be as close to the down conductors as possible. Electrodes when installed in parallel, shall not be placed less than 2 metre apart and preferably placed at distance greater than 6 metres.

All the excavations shall be duly back filled dressed and rammed.

16.2. EARTH BUSBAR

16.2.1. GALVANISED M.S. FLAT

Unless otherwise specified in the schedule of quantities the earth busbars shall be of heavily galvanised M.S. Flat of cross section 40mm x 6mm having adequate number of drilled holes with 10mm galvanised steel bolts, nuts, plain and spring washers for securely connected the earth leads and the continuity conductor. The busbar shall be fixed on wall, having clearance of 6mm from wall with spacing insulators with at least the numbers 13mm G.I. rag bolts spaced about 500mm apart.

16.2.2. COPPER FLATS

To be used, as specified in the schedule of items, where earthing requirements are more stringent Brass bolts, nuts, washers shall be used for connections.

17.0. EARTH LEAD CONDUCTORS

17.1. The earth lead for each electrode shall be 7/14 SWG standed G.I. wire connected securely to the earth electrode and earth busbar. The earth lead shall be mechanically protected with a continuous length 20mm dia G.I. Pipe (Class 'B') right from the electrode to the earth busbar and the pipe shall be filled with bituminous compound.

17.2. Galvanised M.S. Flat earth conductor directly buried in ground shall generally be taken at a depth of 600mm and shall be provided with one coat of bituminized paint, one layer of half lapped bituminised tape and a final coat of bituminised paint to prevent corrosion.

17.3. The earth conductor when laid inside building / sub-station shall be taken either exposed on cable racks / trays, walls, ceiling, etc. or embedded in concrete depending on installation. Galvanised M.S. saddles clamped to M.S. flat spacers with tapped holes shall be used for clamping earth conductor. Flats shall be supported at intervals not exceeding 1000 mm and stranded wires at intervals of 300mm.

17.4. Connection of earthing leads to earth electrodes and termination of flat earth continuity conductor to equipment shall be made by means of bolting. Connection of stranded earth wire to earth bus as well as to equipment shall be made through crimping type lugs and bolting. Jointing and tapping of flat earth conductor shall be done by means of welding.

17.5. The earth resistance from any point of the earthing system shall not be more than one ohm.

18.0. WORKMANSHIP AND INSTALLATION WORK

18.1. The workmanship shall be of good commercial quality and all supply material and installation work shall be completed to the full satisfaction of the Consultant / Engineer-in-Charge.

19.0. CONTRACTORS RATE TO INCLUDE

19.1. Apart from other factors mentioned elsewhere in this contract, the rates for the above shall include the following :

i. All labour materials, tools and construction equipment required for proper execution of job.

ii. Scaffolding including erection and removal.

iii. Making good of all damaged civil work if any.

iv. Necessary modifications in prelaid conduits for drawing cables through it and making good all damages.

20.0. METHOD OF MEASUREMENT

20.1. All stove enamelled black M.S. conduit, G.I. conduit / pipe and rigid PVC Conduit shall be measured for neat length as laid or fixed over all fittings. Bends, elbows, tees, etc. shall not be paid separately.

20.2. Installed cable measurement will be based on length from gland to gland with an allowance of 300mm for cable entering switch boards.

20.3. Unless otherwise mentioned in the Schedule of Quantities, measurement will be on neat quantities of work produced. In the event of any dispute with regard to the measurement of work executed, the decision of the Consultant / Engineer-in-Charge shall be final and binding to the Contractor.

TABLE – 1

MAXIMUM CAPACITY OF CONDUITS FOR DRAWING OF
PVC INSULATED 650/1100V GRADE CABLES

Sl. No.	Nominal area of conductor in sq.mm.	Approximate overall Diameter of cable sq.mm.	Size of conduits				
			20 mm	25mm	32mm	40mm	50mm
1	1.0	2.8	5	11	13	-	-
2	1.5	3.1	4	9	10	-	-
3	2.5	3.8	3	6	8	-	-
4	4	4.4	-	4	5	5	-
5	6	5.3	-	3	4	5	-
6	10	6.8	-	2	3	3	-
7	16	8.2	-	-	-	3	5
8	25	10.0	-	-	-	2	5
9	35	11.2	-	-	-	-	3
10	50	13.5	-	-	-	-	2

The table applies to all types of conduits irrespective of whether they are light gauge or heavy gauge.

G E N E R A L S U M M A R Y

Note :

1) Rates to include any incidental expenses incurred on account of dismantling, handling, temporary stacking/storing and removal of existing partitions, grilles, furniture/electrical items etc. necessary for the work.

2) The contractors have to provide temporary electrical / LAN cabling arrangement for smooth operation of the Branch. No separate payment on this account will be admissible.

SECTION NO.	D E S C R I P T I O N	FOLIO NO.	AMOUNT Rs.
I	INTERIOR WORK	SCH-INT/3	
II	FURNITURE WORK	SCH-FUR/2	
III	ELECTRICAL WORK	SCH-E/1	
	TOTAL :		

SECTION - I
INTERIOR WORK

SL. NO.	ITEM DESCRIPTION	UNIT	QTY.	RATE (Rs.)	AMOUNT (Rs.)
1	Supplying and erecting **full height opaque partitions** (upto max. 2500 high) as per drawing and conforming to the following specifications : Framework of aluminium sections (minimum 60 x 40 mm.) at horizontal and vertical spacings not exceeding 600 mm. c/c. Aluminium sections shall be suitable treated with appropriate wood preservatives. Single layer 6 mm.BWR grade plywood on each face, as per drawing/instructions. 1 mm thick laminate sheet of same or combination shades as per instructions. Quoted rates shall include all necessary materials , accessories and labour and also allow provisions for electrical/telephone/computer wiring conduits and switch boxes, etc (Materials for wiring conduits and switch boxes shall be separately paid for.)	Sqm.	23.00		
2	Supplying and erecting **full height partly glazed partitions** (upto max. 2500 mm. high) as per drawing and conforming to the following specifications : Framework of aluminium sections (minimum 60 x 40 mm.) at horizontal and vertical spacings not exceeding 600 mm. c/c. Aluminium sections shall be suitable treated with appropriate wood preservatives. Exposed frame members in the glazed portions shall have wider spacings (max. 2400 mm. clear)as per instructions. (Opaque portion upto 900 mm from floor level and from 2100 mm. to 2500 mm. from floor level with single layer 6 mm. thick BWR grade plywood on each face, as per drawing/instructions 1 mm thick laminate sheet of same or combination shades as per instructions. glazing : 8 mm. thick clear float glass fixed with continuous teak wood glazing beads of approved shape (from 35 x 25 mm) all round , polished and coated with melamine lacquer finish. Quoted rates shall include all necessary materials , accessories and labour and also allow provisions for electrical/telephone/computer wiring conduits and switch boxes, etc (Materials for wiring conduits and switch boxes shall be separately paid for.)	Sqm.	20.00		
3	Supplying and erecting **low height opaque partitions** (upto max. 1050 mm. high) as per drawing and conforming to the following specifications : Framework of aluminium sections (minimum 60 x 40 mm.) at horizontal and vertical spacings not exceeding 600 mm. c/c. Aluminium sections shall be suitable treated with appropriate wood preservatives. Single layer 6 mm. BWR grade plywood on each face, as per drawing/instructions. 1 mm thick laminate sheet of same or combination shades as per instructions. All free top/end surfaces shall have polished teak wood moulds of approved shape of size 90 mm x 20 mm with melamine lacquer in mat satin finish. Quoted rates shall include all necessary materials , accessories and labour and also allow provisions for electrical/telephone/computer wiring conduits and switch boxes, etc (Materials for wiring conduits and switch boxes shall be separately paid for.)	Sqm.	3.00		
4	Providing and fixing 12 mm thick **clear float glass**, machine polished along all free edges of low height partitions.	Sqm.	2.00		

CARRIED OVER :

SL. NO.	ITEM DESCRIPTION	UNIT	QTY.	RATE (Rs.)	AMOUNT (Rs.)
	BROUGHT FORWARD :				
5	Supplying and erecting **coloumn/wall panelling/single skin full height opaque partitions** as per drawing and conforming to the following specifications : Framework of aluminium sections (minimum 50 x 25 mm.) at horizontal and vertical spacings not exceeding 600 mm. c/c. Aluminium sections shall be suitable treated with appropriate wood preservatives. Single layer 6 mm thick BWR grade plyboard as per drawing/instructions. 1 mm thick laminate sheet of same or combination shades as per instructions Quoted rates shall include all necessary materials , accessories and labour and also allow provisions for electrical/telephone/computer wiring conduits and switch boxes, etc (Materials for wiring conduits and switch boxes shall be separately paid for).	Sqm.	10.00		
6	Providing and erecting in position, **Cash Workstation** comprising of the basic workstation and a side - top unit conforming to relevant drawings and following specifications: <u>Basic workstation</u> Approximate overall size 1500mm. long, 850 mm. wide and 750 mm. high. The workstation shall include a **customer - top** of approx. overall size 1500 mm. long, 300 mm. wide and 1050 mm. high (finished size) The workstation shall be made of 19 mm thick, BWR grade blockboards, suitably supported on the peripheral partition system. The workstation shall also include a **cash - drawer unit** of approx. overall size 400 mm. wide, 500 mm. deep and 725 mm. high comprising of one tea - tray and three cash drawers of equal depth. It shall be made of 19mm. thick BWR grade blockboards and 12 mm. thick BWR grade plywoods for drawers. The customer side of the drawer unit shall be protected with a lining of 14G MS sheet over the entire area. The metal surfaces shall be finished with two coats of synthetic enamel paint over a coat of approved primer. The **customer - top** shall be made of 19 mm. thick BWR grade blockboards with the writing surface finished with mirror polished granite slab of approved shade and quality (single piece upto 1500 mm. length and 300 mm. wide) fixed with approved chemical adhesive. The work shall also include necessary edge mouldings of the stone in approved profile. A **box - band** of 'U' profile made of 19 mm. thick BWR grade blockboards of approx. overall size 1500 mm. long, 300 mm. wide and max. 650 mm high shall be erected at height of approx. 1050 mm. above the customer top level. The box- band shall be supported on the peripheral partition system and shall be finished with 1 mm. thick laminate sheet of approved shade over an additional layer of minimum 5.5 mm. thick MDF board in grooved pattern. The vertical gap between the customer - top and the box - band (approx. 1050 mm.) shall have 12 mm clear float glazing in two pieces (1 No. 1500 mm. x 300 mm. and 1 No. 1500 mm. x 550 mm. approx.) as per drawing / instructions. Glass edges shall have machine polished finish. Fixing arrangements of glazings shall be with SS glazing cleats and supporting angles of approved quality at both ends. All blockboard surfaces shall be finished with 1 mm. thick laminate sheet of approved shade or combination of shades as per instructions. Inner faces of workstation including cabinets and drawers shall have polished finish. Blockboard edges shall have polished lippings of approved quality wood. Lamination of the apron part shall be on an additional layer of 4 mm. thick BWR grade plywood laid in grooved pattern.				
	CARRIED OVER :				

SL. NO.	ITEM DESCRIPTION	UNIT	QTY.	RATE (Rs.)	AMOUNT (Rs.)
	BROUGHT FORWARD :				
6	Contd.. Basic side - top unit Approx. overall size 1200 mm. long, 400 mm. deep and 725 mm. high. The side - top shall also include a **drawer unit** of approx. overall size 400 mm. wide, 400 mm deep and 700 mm. high comprising of one ordinary drawer (approx. 100 mm. clear height) and one shuttered cabinet below. The side - top unit shall be made of 19 mm thick BWR grade blockboards and 12 mm. thick BWR grade plywood for drawers. It shall be suitably supported from the peripheral partition system and the workstation structure. All blockboard surfaces shall be finished with 1 mm thick laminate sheet of approved shade or combination of shades as per instructions. Inner faces of workstation including cabinets and drawers shall have polished finish. Blockboard edges shall have polished lippings of approved quality wood. Accessories The work of high cash workstations shall also include the following accessories : Readymade metal keyboard drawer (INNOFITT/ IS KD 510 M or similar approved) Readymade CPU Trolly (INNOFITT / IS CPU TR) Approved quality drawer slides (25 kg) (EGL / GLYDO) Approved quality concealed type auto - closing shutter hinges Approved quality shutter / drawer locks with keys in duplicate. Approved quality SS cabinet / drawer handles in matt satin finish. Approved quality wire managers (plastic). Rates to include all necessary allied works. Partition system shall be seperately paid for.	Mtr.	1.50		
7	Supplying and fixing in position overall 37 mm. thick **solid** core hot pressed phenol formaldehyde bonded approved **flush door shutter** finished with 1.0 mm. thick laminate sheet (without joints) of approved shade and quality on both sides of the door shutter including cost of hardware fittings e.g.brass hinges, Mortice lock sets with handles etc.of approved make and quality.	Sqm.	6.00		
8	Supplying and fixing in position **37 mm thick partly glazed door shutter** made of 15 mm thick well seasoned second class teak wood planks with double layer (6 mm + 4 mm thick) BWR grade plywood finished wirth 1.00 mm thick laminate sheet (without joints) of approved quality on both sides of the door shutter upto 900 mm from floor level. The upper portion of the shutter is to be provided with 6 mm thick clear float glass fixed with polished steam beech wood glazing beads of approved design, complete as per drawing. Rate to include cost of hardware fittings e.g. tower bolts, brass hinges etc. of approved make and quality locks and handles.	Sqm.	4.00		
9	Providing and fixing **slim - stile door** made of 50 mm thick well seasoned first class teak wood for stiles and rails, with 12 mm thick clear float glass, necessary hardware fixtures of approved make and design, viz. heavy duty 125 mm. stainless steel butt hinges ('Hettich' or approved equivalent) @ 4 no. per shutter, aluminium towerbolts, etc. complete as per instructions. Wooden surfaces shall be polished in approved shade melamine lacquer in mat satin finish.	Sqm	2.20		
10	Supplying and fixing in position well seasoned **teak wood scantling** to entrance door frame as directed and specified. Exposed surfaces are to be polished in approved colour and finished with melamine lacquer in mat satin finish.	Cum.	0.04		

TOAL CARRIED TO GENERAL SUMMARY :

SECTION - II
FURNITURE WORK

SL. NO.	ITEM DESCRIPTION	UNIT	QTY.	RATE (Rs.)	AMOUNT (Rs.)
1	Providing and erecting in position, **free - standing table** as per drawing and conforming to the following specifications : basic structure of 19 mm thick BWR grade block board for sides, top and modesty panel, finished with 1.00 mm thick laminate sheet of approved shade and make including inner faces. The laminate on the front face of modesty panel shall be on an additional single layer of 4 mm BWR plyboard forming 4 x 4 mm groove pattern. drawer-cum-cabinet unit of approximate overall size of 400 x 500 x 725 mm (w x d x h) of 19 mm thick BWR grade block board and 12/6 mm thick BWR grade plywood. The drawer unit shall comprise of one readymade drawer manager of engineering plastic (DM BG 1416/ INNOFITT SYSTEMS or similar) with laminated block board facia, one ordinary drawer and one cabinet with inner faces polished in approved shade. The drawer unit shall be finished with 1.00 mm thick laminate sheet of approved shade including inner faces of cabinet shutters. Readymade keyboard drawer of engineering plastic (KD 575. P.MT / INNOFITT SYSTEMS or similar) and all necessary accessories , suitably susppended below table top; Readymade CPU holder with swivel facility (CPU HL SW / INNOFITT SYSTEMS or similar) Quoted rates shall also include cost of polished teak wood moulding (finished 40x20 mm and 20 x 20 mm sections) to edges; polished teak wood lipping (6mm thick) to free edges of block board /plywood surfaces ; approved drawer-slides , concealed type auto - closing shutter hinges and locks with keys in duplicate; other necessary hardware and accessories including satin finish S.S handles and plastic wire - managers etc of approved quality				
i)	Approx. size 1650 x 750 x 750 mm	Each	1		
ii)	Approx. size 1500 x 750 x 750 mm	Each	4		
2	Providing free standing **Daptari table** of approx. overall size 900 mm x 600 mm x 750 mm high, made of well seasoned malaysian sal wood support of 50 mm x 50 mm and 19 mm. thick block board on top finished with 1.0 mm thick laminate sheet of approved shade and quality. The exposed edges of block board shall be provided with 6 mm. thick teak wood lipping. All the exposed timber surfaces are to be polished in approved colour.	Each	1		
3	Providing and erecting in position **side / back cabinet units** with sliding shutters of approx. size of 450 mm deep x 700 mm high made of 19mm thick BWR grade block boards including intermediate shelves as per drawing /instructions. Exposed block board surfaces shall be finished with 1.00 mm laminate sheet of approved shade and quality. Inner faces of sliding shutters shall be finished with 1.00 mm thick balancing white laminate sheet. Free edges of block board shall have polished teak wood half round moulds (out of 20 x 20 mm sections) . Inner faces of cabinet units shall be polished in approved shade Quoted rates shall include cost of necessary hardware, vis handles, locks with keys in duplicate , etc.	Rmt	5.00		

CARRIED OVER :

SL. NO.	ITEM DESCRIPTION	UNIT	QTY.	RATE (Rs.)	AMOUNT (Rs.)
	BROUGHT FORWARD :				
4	Supplying and erecting free-standing **customer writing ledge/suggestions box/Cheque drop box/writing ledge** of overall size 450 mm long x 300 mm deep x 900 mm high made of 19 mm thick phenol formaldehyde block board, all as in drawing, complete with hardware fittings and fixtures of approved make and quality. On top 18 mm thick single piece granite of approved shade and quality including moulding piece, all complete as in drawing. All exposed surfaces of block board are to be finished with 1mm thick laminate sheet of approved shade and quality. Inner faces of block board surfaces are to be finished with minimum two coats of synthetic enamal paint of approved shade and quality over a coat of approved primer.	Each	1		
5	Providing and fixing in position **notice board** as per drawing and conforming to the following specifications basic frame work : well seasoned Malayasian sal wood sections, treated with two coats of wood preservatives, minimum 50 x 25 mm, at suitable horizontal / vertical spacings not exceeding 600 mm c/c. skin membrane : 1 x 4 mm. thick BWR grade plywood over which 12 mm thick approved quality soft board cladded with fabric of approved shade and quality. edge moulding : All free edges shall have polished 2nd class teak wood moulds of approved shape (finished 50 x 25 mm sectons) with melamine lacquer in mat finish.	Sqm	2.00		

TOTAL CARRIED TO GENERAL SUMMARY :

E L E C T R I C A L S U M M A R Y OF COST

IMPORTANT NOTE :

i) Megger test of the newly installed electrical system shall be mandatory.

ii) Bidders shall make themselves familiar with actual site conditions before submitting their rates.

iii) The successful bidder assigned to execute the work shall make necessary arrangements to dismantle the existing wiring system, electrical fittings,A.C. wirings,UPS & LAN in a phased manner and also temporarily re- install the same to facilitate normal functioning of the Branch/Office according to actual site conditions.The quoted rates shall have to be accordingly worked out by the bidders and no separate claims on these accounts shall be entertained.

iv) During the execution period ,the contractors shall ensure presence of a competent electrician in order to maintain normal office activities.

SECTION NO.	D E S C R I P T I O N	FOLIO NO.	AMOUNT Rs.
A	DB'S,CABLING AND WIRING WORK	SCH-E/6	
B	SUPPLY & INSTALLATION OF LIGHT FITTINGS	SCH-E/7	
C	COMPUTER POWER WIRING	SCH-E/9	
D	TELEPHONE SYSTEM	SCH-E/10	
	TOTAL CARRIED TO GENERAL SUMMARY :		

A. DB's,CABLING AND WIRING WORK

SL. NO.	ITEM DESCRIPTION	UNIT	QTY.	RATE (Rs.)	AMOUNT (Rs.)
1.1	MAIN SWITCH Supply and fixing of Switch Fuse Unit (SFU) with HRC fuse in sheet steel enclosure on M.S. angle frame / M.S. legs on wall complete with interconnection, mending good damages to original finish, painting, etc. as required.				
i)	63 A TPN SFU with HRC fuses.	Each.	1		
ii)	32 A TPN SFU with HRC fuses.	Each.	2		
1.2	CHANGE OVER SWITCH (COS) Supply, installation, testing and commissioning of 63A 4P On load front operated change over switch in sheet steel enclousure on M.S legs on wall complete with interconnection, mending good damages to original finish, painting etc. as required.	Each	1		
1.3	MCB DISTRIBUTION BOARD Supply, installation, testing and commissioning of following MCB Distribution Board in sheet steel enclosure with double door and suitable for mounting on wall by chase cutting and flushed with finished level to the position shown in the Electrical Layout complete in all respect, mending good all damages to the original finish, painting, interconnection, etc. as required. Short circuit I.C. of all MCBs should be 10 KA (minimum) and RCBO should have earth leakage, overload and short circuit protection. Name plate of DB's to be fixed / written on front door alongwith switch board numbers / DB's at the outgoing.				
a)	MAIN DISTRIBUTION BOARD (MDB) TPN 6 way vertical type MCB DB complete with busbar and the following MCBs : Incoming 1 no. : 63A 4P MCB Iso. Outgoing : 1 no. : 415V,32A TP, MCB 6 nos. : 240V, 20-25A SP MCB 3 nos. : 240V,16A SP MCB Complete board as above	Each.	1		
b)	Lighting Distribution Board (LDB) TPN 4 way vertical type MCB DB complete with busbar and the following MCBs : Incoming 1 no. : 40A FP MCB				

CARRIED OVER :	

SL. NO.	ITEM DESCRIPTION	UNIT	QTY.	RATE (Rs.)	AMOUNT (Rs.)
	BROUGHT FORWARD :				
c)	**Contd…**				
	Outgoing : 3 Nos. : 25A TP MCB 2X32A DPMCB				
	Complete board as above	Each.	1		
d)	12 way Horizontal type SPN DB				
	Incoming : 1 No. 32 A DB MCB (20 KA) Outgoing : 10x6/10a SPMCB	Each	1		
e)	MCB FOR GLOW SIGN BOARD				
	Supply and fixing of 20A SPN MCB & 20A timmer with 40A DP contractor suitable enclosure on wall for enclosure on wall for Glow Sign board connection.	Each.	1		
1.4	DISTRIBUTION CABLE :				
a)	SUPPLYING OF CABLE :				
	Supplying of 1.1 KV grade following PVC insulated and PVC sheathed armoured aluminium conductor cables conforming of IS:1554 (Part-I) :				
i)	3.5 core 35 Sq.mm.	Mtr.	45.00		
ii)	4 core 16 Sq.mm.	Mtr.	50.00		
b)	LAYING OF CABLE				
	Laying of above cable from metre to MDB on wall/column/as per side condition including supply and fixing of M.S. clamps/galvanised bar saddles @ 300 mm apart, making holes and mending good damages or partly through pre-laid pipe.				
i)	3.5 core 35 Sq.mm.	Mtr.	45.00		
ii)	4 core 16 Sq.mm.	Mtr.	50.00		
c)	CABLE GLAND AND FINISHING THE END				
	Supplying and fixing of compression type brass cable gland alongwith rubber rings for dust and moisture proof entry of following 1.1 KV grade aluminium conductor PVC insulated and PVC sheathed armoured cable and finishing the end by crimping method including supply and fixing of “Dowell” make solderless socket, tapes and jointing materials as required to be completed in all respect.				
i)	3.5 core 35 Sq.mm.	Set	2		
ii)	4 core 16 Sq.mm.	Set	6		

CARRIED OVER :

SL. NO.	ITEM DESCRIPTION	UNIT	QTY.	RATE (Rs.)	AMOUNT (Rs.)
	BROUGHT FORWARD :				
1.5	SUBMAIN WIRING				
	Submain wiring with following sizes 1100 V grade, single core, PVC insulated flexible FRLS copper conductor wire (IS:694) through suitable size PVC. conduit (ISI marked embossed on conduit surface)/ flexible PVC conduit complete with junction box, circular box, elbows, bends and other accessories on surface above false ceiling or concealed by chase cutting on wall/in wooden furnitures, as per site condition, mending good all damages to original finish, interconnection, painting etc. as required to be completed in all respect. All connections of wires to be done by means of "Wago" type connectors:				
i)	With 2 Nos. 6 Sq. mm + 1 No. 2.5 Sq. mm (green colour for earth) PVC insulated Copper wire.(For Glow Sign Board)	Mtr.	100.00		
1.6	AC POINT WIRING (UPTO 2.0 TON)				
i)	A.C. power point wiring from Main DB to A.C. Power points with 1100 volt grade following rating (Green colour for earthing) PVC insulated flexible FR copper conductor cable through suitable size PVC conduit (ISI marked embossed on conduit surface) complete with junction box, circular box, elbows, bends, couplers and other accessories surfaced on wall above false ceiling or concealed by chase cutting on brick / wooden wall. The work includes supply & fixing by chase cutting on wall, 'North-West' make A.C. power unit having suitable rating socket with plug,plug-top & starter in sheet steel enclosure complete with interconnection, mending good all damages to original finish, painting etc. as required. All connections of wires to be done by means of 'Wago' type connectors.				
	With 2 nos. 4 sq.mm. + 1 no. 2.5 sq.mm. (green colour for earth) PVC insulated copper wire in 25 mm dia PVC conduit / casing caping. (for AC unit)	Each.	3		
1.7	6 /16A SOCKET OUTLET POINT WIRING				
	Power point wiring for 6 pin 6/16 A shuttered socket outle wiring with controlling switch from DB with 1100 volt grade 2 Nos. single core 2.5 sq.mm. + 1 No. 1.5 sq.mm. (Green colour for earthing) PVC insulated flexible FRLS copper conductor wire (IS:694) through suitable size PVC. conduit (ISI marked embossed on conduit surface) complete with junction box, circular box, elbows, bends, couplers and other accessories on surface above false ceiling or concealed by chase cutting on wall. The work includes supply & fixing of modular type 6/16A 6 pin shuttered socket outlet with controlling switch, suitable size mounting box and front plate for socket outlet flushed with finished wall, mending good all damages to original finish, interconnection, painting, etc. as required to be completed in all respect. All connections of wires to be done by means of 'Wago' type connectors.	Each	4		

CARRIED OVER :

SL. NO.	ITEM DESCRIPTION	UNIT	QTY.	RATE (Rs.)	AMOUNT (Rs.)
	BROUGHT FORWARD :				
1.8	POINT WIRING				
	Point wiring with 1100 V grade 3 nos. single core 1.5 sq.mm. (1 for phase, 1 (black colour) for common neutral by looping method and 1 (green colour) for common earth by looping method) PVC insulated flexible FRLS copper conductor cable (IS:694) through suitable size PVC. conduit (ISI marked embossed on conduit surface) complete with junction box, circular box, elbows, bends, couplers and other accessories on surface above false ceiling or concealed by chase cutting on wall from light & fan switch board to light, fan & 6A socket outlet on the same switch board or separately mounted switch board. The work includes supply and fixing of all materials such as modular type 6A switch for each light and fan point, 6A 2/3 pin shuttered socket outlet with switch, 3 plate ceiling rose / angle or batten holder etc. as required. **The point wiring also includes circuit wiring with 1100 V grade 2 nos. single core 2.5 sq.mm. (1 for phase and 1 (Black colour) for neutral) + 1 no. single core 1.5 sq.mm. (Green colour for earth)** PVC insulated flexible (FRLS) copper conductor cable (IS:694) through suitable size PVC. conduit as described above from DB to switch board, interconnection, mending good all damages to original finish, painting etc. as required to be completed in all respect. All connections of wires to be done by means of "Wago" type connectors. (All wiring in strong room, locker room, records & stationery room will be of surface conduit type).				
i)	1 light control by 1 switch.	Each	16		
ii)	2 light control by 1 switch.	Each	4		
iii)	Exhaust fan point	Each	3		
iv)	Call bell point with bell push	Each	1		
v)	Red light & incandescent light point	Each	1		
vi)	1x6A 2/3 pin shuttered socket with switch on separate switch board other than light / fan switch board	Each	8		
vii)	2/3 pin 6A switch shuttered socket outlet with switch on light and fan switch board.	Each	6		
viii)	Ceiling fan point with supply and fixing of 2 module step Regulator 280 W min	Each	7		
ix)	UPS power point	Each	3		

CARRIED OVER :

SL. NO.	ITEM DESCRIPTION	UNIT	QTY.	RATE (Rs.)	AMOUNT (Rs.)
	BROUGHT FORWARD :				
1.9	Connecting the main switch to MCB DB by supply and fixing of 6 SWG G.I. wire along the cable with G.I. staples, bolts, nuts, washers, etc. and mending good all damages to original finish.	Mtr.	60.00		
1.10	Supply and fixing of 16A modular type master controlling switch with indicator in mounting box and front plate on wall for controlling external light fittings including interconnection, etc. as required.	Each	1		
1.11	Earthing (General) Earthing the installation as per I.E Rules conforming to I.S : 3043 - 1987 or its latest ammendment by making earth sation with 3 meter long 50 mm dia G.I earth Pipe (Partly Perforated) to be installed such that its top end shall be at 300 mm below ground level after preparation of ground with charcoal & Salt and connecting with 25 mm x 6 mm G.I earth lead-in-strip upto 10 metre length by bolting and then brazing, complete with nut, bolt, washer etc. as required. The earthing station shall be provided with 300 mm x 300 mm x 300 mm inside dimension masonry inspection Pit with C.I. hinged cover.	Each	2		
1.12	Extra for earth lead-in-strip exceeding 10 meter as mentioned in above Item with supply and fixing of 25mm x 6mm G.I Strip to be fixed on wall or directly buried in ground including connection complete.	Mtr	15.00		
1.13	Supplying and fixing of 16 A plug top with 1100 V grade 3 core 2.5 sq. mm PVC insulated copper cable of 1.5 mtr. length one metre to be permanently fixed to the Switch Board of Locker Room, complete in all respects.	Each	1		
1.14	Supply & fixing of 415V,40A 4P MCB in suitable size M.S. Box same for Light cut off switch in Main Gate.	Each	1		

TOTAL CARRIED TO ELECTRICAL SUMMARY :

B SUPPLY AND INSTATIONAL OF LIGHT FITTINGS & FANS

SL. NO.	ITEM DESCRIPTION	UNIT	QTY.	RATE (Rs.)	AMOUNT (Rs.)
2.1	Supply of light and electrical fittings including lamp and all necessary accessories :				
2.1.1	Surface mounted / Suspended luminaries				
i)	1x22 watt Led Light fittings (Philips) including lamp (Philips or similar approved make) .	Each	23		
2.1.2	Recessed mounted luminaries				
i)	1X15W PL light Philips with lamp(Philips or similar approved make) or equivalent approved make. (for cash counter)	Each	1		
2.3	Supply of fan fittings with all necessary accessories, but except regulator.				
i)	Ceiling fan 1200mm dia.	Each	7		
ii)	Exhaust Fan 300 mm dia witout mounting ring & louvre complete	Each	2		
2.4	SUPPLY & FIXING OF CALL BELLS				
	Supplying and fixing on wall call bell buzzer (approved by Consultant) suitable for 240 volt single phase A.C. supply including interconnection, etc. as required.	Each.	1		

TOTAL CARRIED TO ELECTRICAL SUNMMARY :

C. COMPUTER POWER WIRING

SL. NO.	DESCRIPTION OF ITEM	UNIT	QTY.	RATE (Rs.)	AMOUNT (Rs.)
3.1	INDUSTRIAL TYPE SOCKET AND PLUG DB				
	Supply and installation of following Legrand make universal mounting DB with Industrial type socket and match plug for UPS incoming & outgoing only :				
i)	32A, 3P+N+E, 5 pin industrial type socket with matching plug and 25A, TP MCB control including interconnection.(for UPS incoming)	Each	2		
ii)	32A, 2P+E, 3 pin industrial type socket with matching plug and 25A, DP MCB control including interconnection.(for UPS outgoing)	Each	2		
iii)	Supply and installation of 2 no 32A 4P on load cahnge over switch,100A copper busber, 2 nos 32A SP MCBs etc. in sheet steel enclosure for computer distribution system.	Each	1		
3.2	COMPUTER DISTRIBUTION BOARD (CDB)				
	Supply and installation of following MDS make metallic double door MCB Distribution Board with MCB having short circuit breaking capacity of 10 KA (minimum) and RCBO of 300 mA sensitivity having overload, short circuit and earth leakage protection complete with busbar, interconnection, mounted on flat iron frame on wall/flushed with finished wall by chase cutting, mending good to original finish, painting, etc. as required. Name plate of DB is to be fixed up on front door of DB for its identification.				
	SPN 12 way SPN MCB DB complete with busbar and the following MCBs./ RCBO : INCOMING : 1 No. 240 V 25A DP MCB OUTGOING : 10 Nos. 240 V 6A SP MCB	Each	2		
3.3	COMPUTER SOCKET OUTLET CLUSTER POINT WIRING				
	Computer socket outlet cluster point wiring with 1100 V grade 3 nos. single core (1 for earth, green colour) 2.5 sq.mm. PVC insulated flexible FRLS copper conductor cable conforming to IS : 694 through suitable size PVC.conduit (ISI mark embossed on conduit surface) and conduit accessories partly concealed in wall/ embedded in floor, partly on surface above false ceiling and partly through partition or through flexible conduit from DB to computer socket outlet cluster as detailed below and upto connection of 2 nos. socket clusters in 1 (one) circuit connecting by looping method. The work includes supply and fixing of socket outlet clusters component/ sets as detailed below :				
i)	Each computer socket outlet cluster comprising the following : 2 nos. 6A 5 pin modular type shuttered socket. (below table) 2 no. 6/16A 6 pin modular type shuttered socket. (below table) 2 no. 16A modular type controlling switch with indicator. (above table) 1 no. Front Plate of suitable size. 1 no. Mounting box of suitable size.	Each	8		

CARRIED OVER :

SL. NO.	DESCRIPTION OF ITEM	UNIT	QTY.	RATE (Rs.)	AMOUNT (Rs.)
	BROUGHT FORWARD :				
3.4	SUBMAIN WIRING :				
	Submain wiring with following size 1100 V grade, single core, PVC insulated flexible copper conductor cable conforming to IS : 694 through PVC.conduit (ISI mark embossed on conduit surface) and conduit accessories partly on surface (above false ceiling) with M.S. bar saddles, partly through partition and partly concealed in wall / embedded in floor by chase cutting, mending good all damages, painting, etc. as required to be completed in all respect.				
i)	From Main DB to UPS Incoming and UPS outgoing to CDB with 2 nos. 6 Sq.mm. + 1 no. 2.5 Sq.mm. (Green colour for earth) PVC insulated flexible copper conductor cable in 25 mm dia. M.S.conduit	Mtr	120.00		
ii)	With 2 nos. 2.5 sq.mm. + 1 no. 1.5 sq.mm. (green colour for earth) PVC insulated copper wire in 20 mm dia PVC conduit / casing caping. (for each computer power point)	Mtr	250.00		
3.5	EARTHING (COMPUTER)				
	Earthing the installation as per I.E. rules conforming to IS:3043-1987 or its latest amendment by making earth station with 450mm x 450mm x 6mm (minimum) thick copper plate electrode to be installed such that its top edge shall be at a minimum depth of 3.0 metre below ground level after preparation of ground with charcoal and salt and connecting the earth lead-in-wire by bolting and then brazing to the copper plate complete with copper bolts of suitable length double nuts and washers, copper lugs including supply and fixing of 50mm dia. partly perforated G.I. pipe with funnel for watering arrangement.				
i)	The earthing installation should be provided with 300mm x 300mm and 300mm depth inside dimension masonry inspection pit with C.I. hinged cover having locking arrangement and restoring the surfaces duly rammed.	Each	1		
ii)	Supplying and fixing of 1 x 10 Sq.mm PVC insulated copper wire through suitable size PVC conduit to be fixed on wall surface with bar saddles / clamps at an interval of 300mm etc. as required to be completed in all respect. The underground portion of earth lead-in-wire to be laid at an average depth of 500 mm below ground level.	Mtr.	15.00		
3.6	COMPUTER DATA SOCKET				
	Supply and fixing on wall / furniture / partition recessed type D - Link make Computer data socket (RJ 45) with mounting box & front plate as shown in the drawing complete with chase cutting, mending good etc. as required.	Each	8		
3.7	COMPUTER DATA WIRING				
	Supplying and laying of CAT – 6 cables through pre-laid rigid PVC conduit as shown in the drawing or otherwise as directed by the consultant from server to Computer Data Socket (through HUB, if required) including interconnection mending good, etc. as required to be completed in all respect.	Mtr.	450.00		

TOTAL CARRIED TO ELECTRICAL SUMMARY :

D. TELEPHONE SYSTEM

SL. NO.	DESCRIPTION OF ITEM	UNIT	QTY.	RATE (Rs.)	AMOUNT (Rs.)
4.1	SUPPLYING AND LAYING OF P.V.C. CONDUIT				
	Supplying and laying of 25mm dia heavy duty rigid PVC conduit (ISI marked embossed on every metre) complete with junction box, circular box, elbows, bends, couplers and other accessories as required by chase cutting on wall embedded in floor or on surface or through partition. The work includes making good all damages to original finish, painting etc. as required.	Mtr.	125.00		
4.2	TELEPHONE SOCKET				
	Supply and fixing on wall / furniture / partition recessed type MDS/North-West /Anchor woods make Telephone socket outlet (RJ 11) with mounting box & front plate as shown in the drawing complete with chase cutting, mending good etc. as required.	Each	4		
4.3	TELEPHONE WIRING				
	Supplying and laying of 2 pair 0.50 mm dia. unarmoured telephone cable through prelaid rigid PVC conduit as shown in the drawing or otherwise as directed by the consultant from Telephone Junction box to Telephone Socket outlet including interconnection, etc. as required.	Mtr.	125.00		

TOTAL CARRIED TO ELECTRICAL SUMMARY :

LIST OF APPROVED MATERIALS

INTERIOR & FURNITURE WORKS

SL. NO.	MATERIAL	BRAND/MANUFACTURER
1.	GYPBOARD FALSE CEILING	- India Gypsum is now SAINT GOBAIN 'GYPROC'
2.	MINERAL FIBRE FALSE CEILING	- ARMSTRONG - DAIKEN - USG
3.	MR/BWR GRADE BLOCK BOARD, PLY BOARD AND FLUSH DOOR SHUTTER	- GREEN - CENTURY - SATABDI
4	LAMINATES	- GREEN - CENTURY - MERRINO
5.	GLAZING	- MODI FLOAT - ST GOBAIN
6.	SYNTHETIC ENAMEL PAINT	- "LUXOL HIGLOSS" (BERGER) - DULUX 'VELVET TOUCH' ENAMEL (ICI) - ASIAN
7.	WHITE CEMENT PUTTY	- BIRLA WHITE - J.K WHITE - MYK - LATICRETE
8.	ACRYLIC EMULSION PAINT	- ASIAN PAINT - BERGER
9.	CABINET /DRAWER LOCKS, DRAWER SLIDES, AUTO-HINGES, KEYBOARD TRAYS	- DORSET - GODREJ - EBCO
10.	DOOR LOCKS AND HANDLES	- DORSET - DORMA (XL) - OZONE

LIST OF APPROVED MATERIALS

ELECTRICAL WORKS

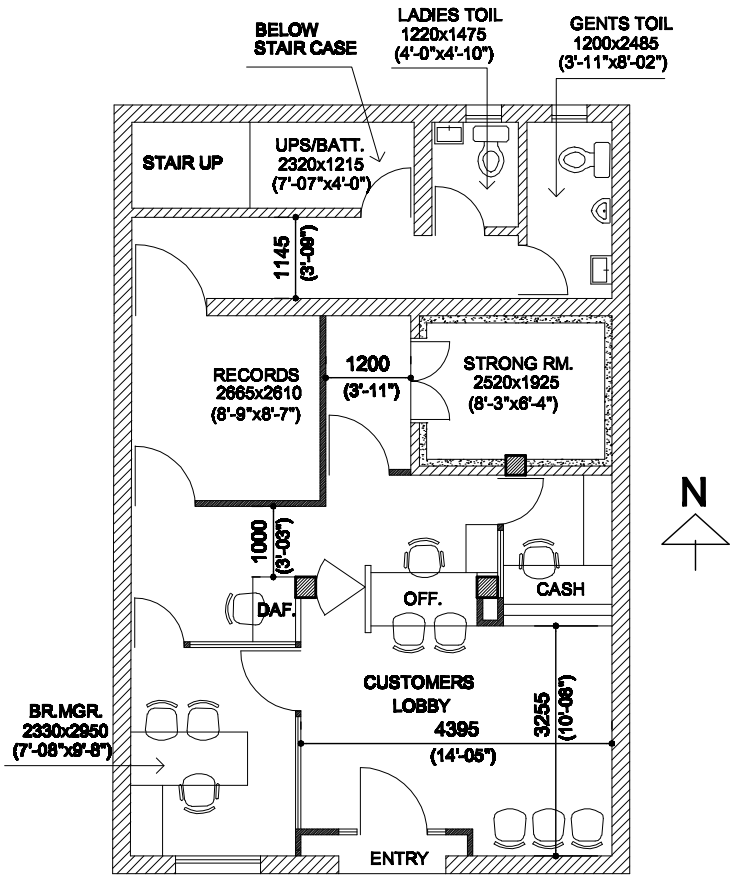
SL. NO.	ITEM	ITEM DETAIL	APPROVED BRAND / MANUFACTURER
1.	CONDUITS	I) M.S.(BLACK STOVE ENAMELED)	- B.E.C. - NIC - AKG - SENCO
		II) PVC RIGID	- B.E.C. - AKG - PRECISION
		III) G.I. FLEXIBLE	- B.E.C. - PRECISION - AKG - ATUL
		IV) GALVANISED STEEL	- B.E.C. - PRECISION - AKG - ATUL
		V) PVC CASING –CAPPING	- PRECISION - PRESTO-PLUS
2.	CABLES & WIRES	I) 11 KV ALUMINUM	- POLYCAB - FINOLEX - HAVELS - MESCAB
		II) 1100 V GRADE PVC / XLPE INSULATED STEEL ARMORED AND OVER ALL PVC SHEATHED	- FINOLEX - POLYCAB - HAVELS - MESCAB
		III) PVC INSULATED STRANDED/FLEXIBLE COPPER CONDUCTOR WIRE WITH SIZE IN SQMM. EMBOSSED ON CABLE SURFACE (FOR INTERNAL WIRING)	- FINOLEX - POLYCAB - HAVELS - MESCAB
		IV) LAN	- FINOLEX - LUCENT - D – LINK/AMP/MOLEX
		V) TELEPHONE	- FINOLEX - DELTON
		VI) TV ANTENNA	- FINOLEX - POLYCAB - ORBIT - KEI - MESCAB

SL. NO.	ITEM	ITEM DETAIL	APPROVED BRAND / MANUFACTURER
3.	PROTECTIVE DEVICE	I) TPN & SPN SWITCH FUSE UNIT WITH HRC FUSE	- SIEMENS - L&T - SCHNEIDER - ABB - INDO ASIAN - NORTH WEST
		II) MCCB, MCB, MCB-DB, RCBO, RCCB, ACB & ELCB	-SIEMENS -L&T - SCHNEIDER - ABB - HAVELS - PHILIPS
		III) MANUAL CHANGEOVER SWITCH/AUTO CHANGE OVER SWITCH	- L&T - LEGRAND, -HAGER
		IV) DOL STRATER	- SIEMENS - LARSEN & TOUBRO - INDO ASIAN
		V) CURRENT TRANSFORMER	- L & T, - KAYCCE - KUPPA/AE/IMP - INDO ASIAN
4.	SWITCHES & SOCKET SWITCH FRONT PLATE AND MOUNTING BOX (MODULAR TYPE)	I) 6A / 16A SWITCH, SOCKET, TELEPHONE SOCKET (RJ-11) LAN SOCKET(RJ-45), ELECTRONIC REGULATOR/DIMMER	- MK(WRAPAROUND PLUS) - Anchor(Roma) -Legrand(Myrius)
		II) ON/OFF / SELECTOR SWITCH	- SIEMENS - LARSEN & TUBRO - INDO ASIAN
		III) METAL CLAD SOCKET & PLUG HAVING SCRAPING EARTH ARRANGEMENT	- SIEMENS - LEGRAND - HAGER
5.	BELL	BUZZER BELL/CALL BELL, BUZZER INDICATOR (LUMINOUS TYPE)	- BAJAJ - ANCHOR
6	INSTRUMENT	INDICATING INSTRUMENT/ MEASURING INSTRUMENT	- AE - IMP - L&T - GE
7.	LUMINARIES	I) LED LIGHT FITTINGS	- PHILIPS - WIPRO - HAVELLS - BAJAJ

SL. NO.	ITEM	ITEM DETAIL	APPROVED BRAND / MANUFACTURER
8.	FAN FITTINGS	I) CEILING FAN	- HAVELLS - BAJAJ - CROMPTON - USHA - ORIENT - POLAR
		II) WALL MOUNTING / PEDESTAL FAN	- HAVELLS - BAJAJ - CROMPTON - USHA - ORIENT - POLAR
		III) EXHAUST FAN	- HAVELLS - BAJAJ - CROMPTON - USHA - ORIENT
9.	AIR-CONDITIONERS (3 STAR OR EQUIVALENT)	WINDOW TYPE HI-WALL SPLIT TYPE DUCTABLE SPLIT TYPE	- VOLTAS - CARRIER - HITACHI - BLUE-STAR
10.	STARTER	LIGHT-STARTER	-SIEMENS -L&T - SCHNEIDER
11.	REGULATOR	CEILING FAN-REGULATOR	-ANCHOR -LEGRAND -CLIPSAL
12.	RELAY		-L &T -ABB -SIEMENS -INDO ASIAN

Note :

All other items not covered above, as per sample approved by employer/consultant.



ROAD

TOTAL CARPET AREA EXCLUDING COLUMN- 66.28SQM. (713.17 SFT.)

PARTLY GLAZED PARTITION -

FULL HT. OPAQUE PARTITION -

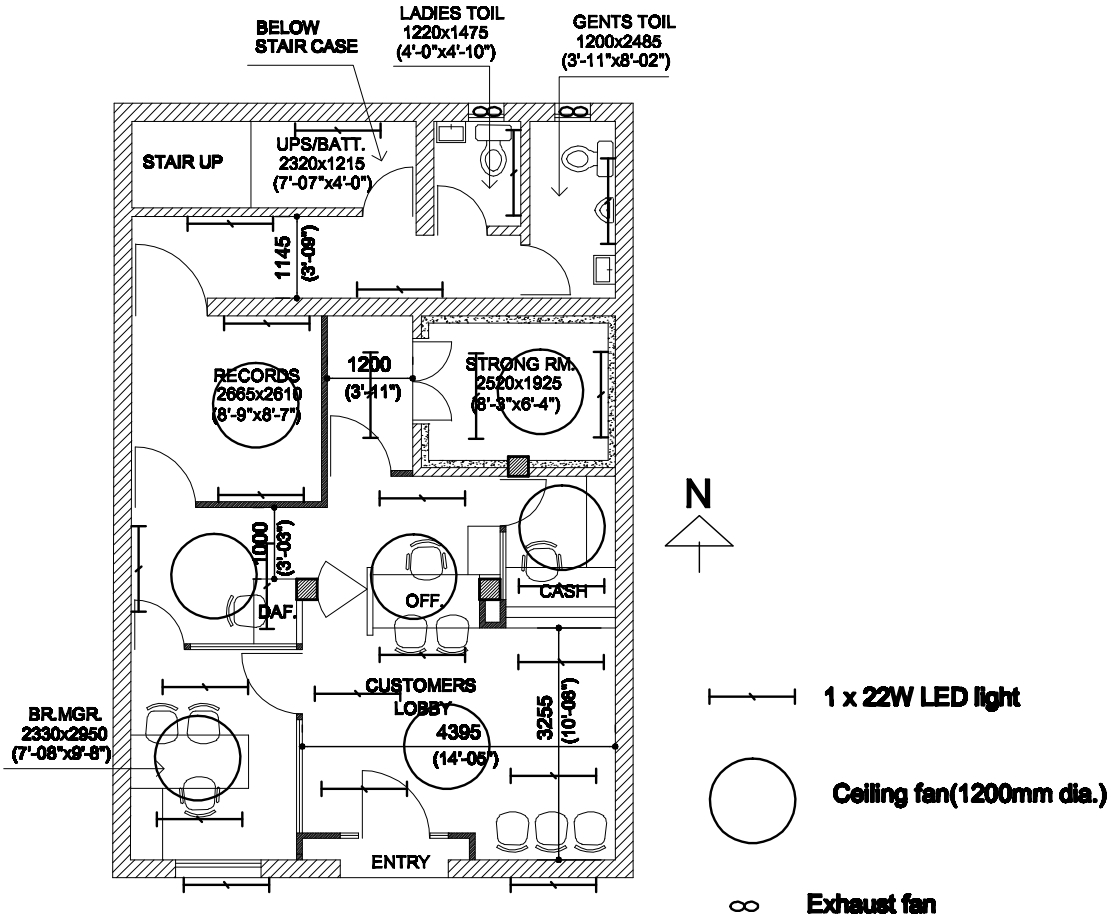
LOW HT. OPAQUE PARTITION -

PROPOSED GROUND FLOOR LAY-OUT PLAN FOR INDIAN BANK BOARI BRANCH

DEALT- N.G.KUNDU
SCALE:-1:100
DATE - 01.05. 2023

ALTERNATIVE-1

axis
DD 185, NEW TOWN,
STREET NO. 295,
KOLKATA- 700 156



ROAD

TOTAL CARPET AREA EXCLUDING COLUMN- 66.28SQM. (713.17 SFT.)

PARTLY GLAZED PARTITION -

FULL HT. OPAQUE PARTITION -

LOW HT. OPAQUE PARTITION -

PROPOSED GROUND FLOOR ELECTRICAL LAY-OUT PLAN

FOR INDIAN BANK BOARI BRANCH

DEALT- N.G.KUNDU
SCALE:-1:100
DATE - 01.05. 2023

ALTERNATIVE-1

axis
DD 185, NEW TOWN,
STREET NO. 295,
KOLKATA- 700 156