

THE ORIENTAL INSURANCE CO. LTD.

**Regional Office,
4th Floor, Alok Bharati Tower,
Saheed Nagar, Bhubaneswar - 07**

Tender Document

FINANCIAL BID

**For Repair & Renovation Work of Flat No.
232 & 233 of Sarthak Tower at
Cuttack, Odisha**

Architects / Consultants

**Architects Creation
B-9, 2nd Floor, Saheed Nagar
Bhubaneswar – 751007
Ph. No. – (0674) 2547838**

PART – B (Financial Bid)
The Oriental Insurance Co. Ltd.

Regional Office,
4th Floor, Alok Bharati Tower, Saheed Nagar,
Bhubaneswar – 751007

Tender Document

FOR REPAIR AND RENOVATION WORK OF FLAT NO. 232 &
233 OF SARTHAK TOWER, CUTTACK,
ODISHA

Name of the Tenderer: _____

Address: _____

Date of Submission: On or before 29/05/2015 at 17.30 Hrs.

Architects / Consultants

Architects Creation
B-9, 2nd Floor, Saheed Nagar
Near Deepak Nursing Home,
Bhubaneswar – 751007

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NOTICE OF INVITATION OF TENDER

Sealed item rate tenders both part-A & part-B in duplicate, are invited on behalf of:

Chief Regional Manager
The Oriental Insurance Co. Ltd,
4th Floor, Alok Bharati Tower,
Saheed Nagar,
Bhubaneswar - 07

for the following work:-

- 1) **Name of the work** : Repair & Renovation work of Flat No. 232 & 233 of Sarthak Tower, Cuttack, Odisha
- 2) **Place of the work** : Cuttack, Odisha.
- 3) **Time of completion** : 03 (Three) calender Months.
- 4) **Earnest Money** : Rs.17,000.00 (Rupees Seventeen thousand) only & by crossed demand draft/Pay order of any nationalized Bank, drawn in favour of The Oriental Insurance Co. Ltd. payable at Bhubaneswar. Tender without earnest money in proper form will be rejected.
- 5) **Estimated Cost** : Rs. 16.91 Lakhs
- 6) **Cost of Tender Document** : The tender paper can be downloaded from the official Website [www.orientalinsurance.org.in\(tender\)](http://www.orientalinsurance.org.in(tender)) without any cost.
- 7) **Availability of Tender Document** : The complete tender document in duplicate can be downloaded from the official Website [www.orientalinsurance.org.in\(tender\)](http://www.orientalinsurance.org.in(tender)) While submitting tender, crossed D.D. of Rs. 17,000.00 in favour of 'The Oriental Insurance Co. Ltd.' payable at Bhubaneswar towards E.M.D. are to be enclosed against cost of the tender.

- 8) **Time, date and place of submission of Tender** : On or before 17.30 Hrs. 29/05/2015
At the office of the:-
Chief Regional Manager
The Oriental Insurance Co. Ltd,
4th Floor, Alok Bharati Tower,
Saheed Nagar,
Bhubaneswar - 07
- 9) **Time, date and place of opening of tender** : Part-A of the Tender will be opened first at 1500 Hrs. on the same day at the office of the :-

Chief Regional Manager
The Oriental Insurance Co. Ltd,
4th Floor, Alok Bharati Tower,
Saheed Nagar,
Bhubaneswar - 07

Date & time of opening of the Part-B (Price Bid) will be intimated on the same day and / or to be decided by the Tender Committee constituted by the Company.
- 10) **Tender to be addressed to** : **Chief Regional Manager**
The Oriental Insurance Co. Ltd,
4th Floor, Alok Bharati Tower,
Saheed Nagar,
Bhubaneswar - 07
- 11) **Procedure of submission of Tender** : Tenders in duplicate are to be submitted in two parts viz; Part-A & Part-B separately sealed and superscribed with the name of the work along with the required document and manner as detailed in General rules and instruction for the guidance to the tenderers.
- 12) **Inspection of drawing and clarifications** : May be obtained from the office of the consultant on all working hours and days upto _____.
- 13) **Validity of Tender** : Three (3) calendar months from the stipulated last date of submission of tender.
- 14) **Pre-Bid Meeting** : A Pre-bid meeting will be held on _____ at _____ hrs. in the conference room of The Oriental Insurance Co. Ltd., 4th Floor, Alok Bharati Tower, Saheed Nagar, Bhubaneswar.

- 15) Sales Tax / Value Added Tax / Service Tax or any other tax on materials or finished work like Works Contract Tax, Turn Over Tax etc. in respect of this contract whether in vogue or may be imposed in future shall be payable by the contractor and the Company will not entertain any claim whatsoever in this respect. However any benefit due to reduction of taxes etc. shall be passed to the employer.
- 16) Delay in submission arising out of postal or any other irregularities will not be considered. The Company in any case will not be responsible for any damage in transit in case of postal delivery.
- 17) The Company will not be bound to accept the lowest tender and reserves the rights to accept or reject any or all the tenders without assigning any reason whatsoever.

Chief Regional Manager

The Oriental Insurance Co. Ltd,
4th Floor, Alok Bharati Tower,
Saheed Nagar,
Bhubaneswar - 07

GENERAL RULES AND INSTRUCTIONS FOR THE GUIDANCE OF TENDERERS

1. Tenders are hereby invited on behalf of **The Chief Regional Manager, The Oriental Insurance Co. Ltd, 4th Floor, Alok Bharati Tower, Saheed Nagar, Bhubaneswar - 07** for **Repair & Renovation Work of Flat No. 232 & 233 of Sarthak Tower, Cuttack, Odisha** at an Estimated cost of Rs. 16.91 Lakhs.
 2. Tender document consisting of the following:
 - i. Notice of Invitation of Tender.
 - ii. General Rules and instructions for the Guidance of Tenderers.
 - iii. Form Of Tender.
 - iv. Article of Agreement.
 - v. General Condition of Contract.
 - vi. Special Conditions and Annexures.
 - vii. Technical Specifications for Civil, Sanitary Interior & Electrical Work.
 - viii. Bill of Quantities.
 3. The site for the work is readily available.
 4. Tenders, which shall always be placed in sealed cover, with the name of the project written on the envelopes will be received by **The Chief Regional Manager, The Oriental Insurance Co. Ltd, 4th Floor, Alok Bharati Tower, Saheed Nagar, Bhubaneswar - 07** on or before time and date and will be opened by him in his office on the same day as stipulated in the Tender Notice.
 - 4.1 Tender in duplicate, will have to be submitted in two parts PART:A and PART:B separately superscribed, sealed and both contained in another sealed envelope, superscribed with the name of the work.
- 4.1.1 PART : A Shall contain :-
- a) The covering letter without any condition and without dis-closing any of the quoted rate or total tender sum.
 - b) A Letter of authorisation in favour of the representative attending the Tender.
 - c) Earnest Money in required shape.
 - d) Tender Paper Cost in required shape.
 - d). The complete documents of 'Part-A' duly filled in.

4.1.2 PART-B Shall contain :-

Offered price with the tender document duly filled with all the items of the bill of quantities enclosed together with the tender document.

4.1.3 Part-A will be opened first on the date and time as stipulated in Tender Notice.

In case E.M.D. in improper shape or No E.M.D. is found then the Tender shall be rejected and the 'Part-B' of the tender will remain unopened thus rendering the Tender as 'NON-BONAFIDE'.

The Tender with conditions, what-so-ever, which, in the opinion of the Company, may have financial implication, will be out-rightly rejected and in the event of the same the part-II of the Tender will remain un-opened and the same will be returned back to the tenderer without assigning any reason whatsoever.

The content of 'part-A' will be evaluated first and the contractors whoever are eligible and qualified in the opinion of the company will be notified with the date, time and place of opening of 'part-B' the price bid of this Tender. No reason whatsoever will be furnished to non-qualified contractors.

Tenderers are strictly warned, not to advice any thing other than the prices which is to be offered in words as well as in figure for all the items listed in the bill of quantities. The tender will be summarily rejected in case of any advice made other than the offered prices in the requisite columns and also in case of any of the item found without rate. No opportunity will be given to fill/quote for any omission/s thus rendering the tender as incomplete tender and the tender will be summarily rejected under the sole discretion of the Company.

5. The time allowed for carrying out of the work will be 03 (Three) Calender Months to be reckoned from the Fourteenth day after the date of written order to commence work or handing over the site whichever is later.
6. The contractors should quote in figures as well as in words the rate, and amount tendered by them. The amount for each item should be worked out and the requisite totals given.

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 rates 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 rates quoted by the Contractors in words shall be taken as correct.
- c) When the rates quoted by the Contractor in figure 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.

7. When a contractor signs a tender in an Indian Language, the tendered amount and total amount tendered shall also be written in the same language. In the case of illiterate contractors the rates or the amounts tendered should be attested by a witness.
8. Earnest money in the form of Bank Draft of any nationalized Bank drawn in favour of The Oriental Insurance Co. Ltd. must accompany each tender and each tender is to be in a sealed cover superscribed "Tender for **Repair & Renovation Work of Flat No. 232 & 233 of Sarthak Tower, Cuttack, Odisha** and addressed to **The Chief Regional Manager, The Oriental Insurance Co. Ltd, 4th Floor, Alok Bharati Tower, Saheed Nagar, Bhubaneswar - 07.**
9. 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 will amount as detailed in subsequent clause, hereinafter, of the General Conditions of the Contract.

The EMD of the contractor whose tender is accepted, shall be forfeited in full in case he does not submit the initial Security Deposit within the stipulated period or start the work by the stipulated date mentioned in the award letter.

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

The Company 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.

11. Canvassing in connection with tenders is strictly prohibited and the tender submitted by the contractors who resort to canvassing will be liable to rejection.
12. All rates shall be quoted on the proper form of the tender alone.
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 / Architects shall be communicated to the Employer.
15. Special care should be taken to write the rates in figures as well as in words and the amounts in figures only, in such a way that interpolation is not possible. The total amount should be written both in figures and in words. In case of figures, the words "Rs." should be written before the figure of rupees and words "P" after the decimal figures, e.g. Rs.2.15p. and in case of words, the word "Rupees" should precede and the word "Paise" should be written at the end, unless the rate is in whole rupees and followed by the words "only", it should invariably be up to two decimal places. While quoting the rate in schedule of quantities, the word "only" should be written closely following the amount and it should not be written in the next line.

16. The Company does not bind itself to accept the lowest or any tender and reserves to itself the right of accepting the whole or any part of the tender and the tenderer shall be bound to perform the same at the rate quoted.
17. All taxes including Sales Tax / Value Added Tax / Service Tax or any other tax on material or on finished works like work's contract tax, Turn-over Tax, etc. in respect of this contract shall be payable by the contractor and the Company will not entertain any claim whatsoever in this respect. Sales Tax / Value Added Tax / Service Tax or any other tax on materials or finished work like Works Contract Tax, Turn Over Tax etc. in respect of this contract whether in vogue or may be imposed in future shall be payable by the contractor and the Company will not entertain any claim whatsoever in this respect. However any benefit due to reduction of taxes etc. shall be passed to the employer.
18. The contractor shall give a list of his relatives working with the Company along with their designations and addresses.
19. No employees of the Company is allowed to work as a contractor for a period of two years of his retirement from Company service, without the previous permission of the Company. The contract is liable to be canceled 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 Company as aforesaid before submission of the tender or engagement in the contractor's service.
20. The tender for works shall remain open for acceptance for a period of Three months from the date of opening of tenders. If any tenderer withdraws his tender before the said period, then the Company shall be at liberty to forfeit Earnest Money paid along with the tender.
21. 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.
22. It will be obligatory on the part of the tenderer to tender and sign and 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 Competent Authority in the Company.
23. The tenderer, apart from being a competent contractor must associate himself with agencies of the appropriate class who are eligible to tender for (i) Electrical (ii) Sanitary and Water supply installations and (iii) Specialist's Work.

Chief Regional Manager

The Oriental Insurance Co. Ltd,
4th Floor, Alok Bharati Tower,
Saheed Nagar,
Bhubaneswar - 07

FORM OF TENDER.

To,

Chief Regional Manager
The Oriental Insurance Co. Ltd,
4th Floor, Alok Bharati Tower,
Saheed Nagar,
Bhubaneswar - 07

Ref : Repair & Renovation Work of Flat No. 232 & 233 of Sarthak Tower, Cuttack, Odisha.

Dear Sir,

I/We refer to the tender notice issued by your consultant M/s Architects Creation, B-9 Sahid Nagar, Bhubaneswar-751 007 on your behalf for the repair and renovation work in connection with the above.

2. I/We do hereby offer to perform, provide, execute, complete and maintain the works in conformity with the conditions of contract, specifications, bill of quantities for the sum of Rs. _____ arrived at the respective rates quoted in the bill 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.
 - a). Abide by and fulfill all the terms and provisions of the said conditions annexed hereto;
 - b). Complete the works within 03 (Three) calendar months as stipulated by working in two or more shifts or at night if considered necessary and if directed by the Architects/Consultant/Owner/Employer at no extra cost to the Owner/Employer.
4. I/We have deposited the earnest money of Rs. _____ (Rupees, _____) only in the form of demand draft/pay order/Bankers Cheque which, I/We note, will not bear any interest and is liable to forfeiture solely at Bank's discretion:
 - i) If the offer is withdrawn within the validity period of acceptance.

Or

- ii) If the contract is not executed within 14 days from award of contract.

Or

- iii) If the works is not commenced within 14 days after issue of work order or the day on which I/We will be instructed to take possession of the site, whichever is later.

Or

- iv) If the initial security is not deposited within 15 days of issue of work order.
- 5. The acceptance of this tender shall constitute a binding contract on me/us and any failure as mentioned in Cl.4, above shall constitute a breach of contract by me/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 me/us.
- 6. I/We understand that you are not bound to accept the lowest or any tender you receive.
- 7. Our Bankers are :
 - i) -----
 - ii) -----

The names of partners/Directors of our firm are

- i) -----
- ii) -----

(Name of the partner/Directors of the firm Authorised to sign).

Name of person having power of attorney to sign the contract. (Certified true copy of the power of attorney should be attached).

Signature and addresses of Witnesses.

- 1.
- 2.

Your's faithfully,

Place:
Date:

Authorised Signatory of Tenderer.

ARTICLE OF AGREEMENT

ARTICLES OF AGREEMENT made this _____ day of _____ Two Thousand Fifteen between The Oriental Insurance Co. Ltd. having its head office at Oriental House, Post Box No. 7037, A-25/27, Asaf Ali Road, New Delhi, represented by **The Chief Regional Manager, The Oriental Insurance Co. Ltd, 4th Floor, Alok Bharati Tower, Saheed Nagar, Bhubaneswar – 07** "; (hereafter referred to as the OWNER which expression shall include its successor or assigns of the ONE PART

AND

M/s _____ having its office at _____ (hereinafter called the 'CONTRACTOR' which expression should include in successor/s and assignee/s of the OTHER PART.

WHEREAS the Employer is desirous of executing the **Repair & Renovation Work of Flat No. 232 & 233 of Sarthak Tower, Cuttack, Odisha** '(hereinafter called the WORKS').

AND WHEREAS the Owner/Employer in order to effectively carry out the said works, has engaged Messers Architects Creation, B-9, Sahid Nagar, Bhubaneswar-751007. (hereinafter referred to as the ARCHITECTS / CONSULTANTS to prepare drawings, specifications, describing the works to be executed, to call for the tenders from contractors for the job, to open tenders received at the office of the Owner / Employer, to scrutinize and recommend to the Employer the name or names of the contractor or contractors from whom the tenders were received and to issue work order after having the approval and acceptance thereof from the Employer.

AND WHEREAS the Owner/Employer has caused drawings and specifications, priced schedule of quantities of the said works as per General Conditions of Contract, Special Conditions, Additional Conditions, Instruction to the Tenderer etc. all which have been prepared with the assistance of the said Architects / Consultants subject to which the offer of the contractor has been accepted.

AND WHEREAS the Contractor has agreed to execute upon and subject to the conditions set forth herein and Schedule of items and quantities, General Conditions of Contract, Special Conditions of Contract including all other conditions as mentioned in the tender document, specifications and all correspondence exchanged by or between the parties from the submission of tender till the award of work, both letters inclusive, (all of which are collectively hereinafter referred to as "the said conditions") the work shown upon the said 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 of Rs. _____ (Rupees _____) only as therein arrived at or such other sum as shall become payable thereunder (Hereinafter referred to as "the said Contract amount") or such other amount as shall become payable hereunder at the times and in the manner specified in the said conditions.

AND WHEREAS the tender of the Contractor for execution of the said work has been approved by the Owner/Employer.

AND WHEREAS the contractor has deposited with the owner Rs. _____ (Rupees _____) only as Initial Security Deposit for the due performance of the Agreement.

AND WHEREAS the said Architect/Consultant has issued the work order thereafter to the Contractor.

AND WHEREAS the said DRAWINGS numbered as mentioned in the tender document and to be issued from time to time, the Specifications and the Schedule of items and quantities have been signed by and on behalf of the parties hereto.

NOW IT IS HEREBY AGREED AS FOLLOWS:

1. In consideration of the said contract amount to be paid at the times and in the manner set forth in the said conditions, the Contractor shall upon and subject to the said conditions execute and complete the work shown upon the said drawings etc. and such further detailed drawings as may be furnished to the contractor through the Architect/Consultant as described in the said specifications and the schedule of items and quantities.
2. The Consultant in the said conditions shall mean the said M/s Architects Creation, B-9 (2nd floor), Sahid Nagar, Bhubaneswar-751007 or, in the event of their ceasing to be the Consultant for the purpose of this contract for whatever reason, such other person or persons as shall be nominated for the purpose by the Employer. Provided always that no person subsequently appointed to be the Consultant under this contract shall be entitled to disregard or over rule any previous decision or approval or direction given or expressed in writing by the Consultant for the time being.
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 agreement 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 a piece work contract but is a contract to carry out the work in respect of **Repair & Renovation Work of Flat No. 232 & 233 of Sarthak Tower, Cuttack, Odisha** 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 said contract comprises the building and the relevant development work as mentioned in tender document and all subsidiary works connected therewith within the same site as may be ordered to be done from time to time by said employer through the Architect/Consultants or other Architects/Consultants as the case may be even though the said works may not be shown on the drawings or described in the said specifications or the priced schedule of quantities.

7. 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.
8. Time shall be considered as the essence of this contract and the contractor hereby agrees to commence the work on the day of handing over of the site or within fourteenth days from the date of issue of formal work order whichever is later as provided for in the said conditions and to complete the entire work within 18 (eighteen) calendar months subject never the less to the provisions of extension of time.
9. All payments by the Employer under this contract will be made at Bhubaneswar.
10. Any dispute arising under this agreement between the parties hereto shall be deemed to have arisen at Bhubaneswar and shall be referred for adjudication to a sole arbitrator in the manner and in terms of the provisions as laid down in the General Conditions of Contract and Courts in Bhubaneswar shall have jurisdiction to determine the same.
11. That the several parts of this contract have been read by the contractor and fully understood by the contractor.
12. In witness whereof the Employer and the contractor have set their respective hands to these presents through their duly authorised official and the said two duplicates hereof to be executed on its behalf of the day and year first herein above written.

Signed by the Owner/Employer _____ Signed by the Contractor _____

In the presence : In the presence:
 (1) Signature _____ (1) Signature _____

Name and Address _____ Name & Address _____

(2) Signature _____ (2) Signature _____
 Name and Address _____ Name & Address _____

GENERAL CONDITIONS OF CONTRACT

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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 **The Chief Regional Manager, The Oriental Insurance Co. Ltd, 4th Floor, Alok Bharati Tower, Saheed Nagar, Bhubaneswar – 07** and any of its employees/representative authorised on their behalf.
- ii) **Architects/Consultants**: The term Consultant shall mean "Architects Creation, B-9, (2nd Floor), Saheed Nagar, Bhubaneswar-751007" or in the event of their ceasing to be the Consultant for the purpose of this contract such other person/s as the Employer shall nominate for the purpose.
- iii) **Contractor**: The term contractor shall mean 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.
- iv) **Site**: The site shall mean the site where the works are to be executed as shown within boundary in red border on the site plan including any building and erections thereon allotted by the Employer for the contractor's use.
- v) **Site Engineer**: The Site Engineer shall be appointed by the Company. The Company may also determine the number of Site Engineers and the supporting staff at site office to assist them and also whether the Site Engineer shall be temporary or permanent. As far as possible, the Site Engineer should assume charge of his post before the contractor reports on site of work. Where more than one Site Engineer is appointed, one of them shall be designated as Senior Site Engineer by the Company and the other Site Engineer shall be reporting to the Senior Site Engineer. Wherever PMC is engaged, Site Engineer, if any, will work in close co-ordination with PMC.
- vi) **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/Architects shall be given access to such drawings or schedule of quantities whenever necessary.

In case any detailed Drawings are necessary contractor shall prepare such detailed drawings and / or dimensional sketches therefor and have it confirmed by the Employer / Architects / as case may be prior to taking up such work.

The contractor shall ask in writing for all clarifications on matters occurring anywhere in drawings, specifications and schedule of quantities or to additional instructions at least 10 days ahead from the time when it is required for implementation so that the Employer may be able to give decision thereon.

- vii) **"The Works"** shall mean the work or works to be executed or done under this contract.
- viii) **"Act of Insolvency"** shall mean any act as such as defined by the Presidency Towns Insolvency Act or in Provincial Insolvency Act or any amending statutes.
- ix) **"The Schedule of Quantities"** shall mean the schedule of quantities as specified and forming part of this contract.
- x) **"Priced Schedule of Quantities"** shall mean the schedule of quantities duly priced with the accepted quoted rates of the contractor.

2. **Scope:**

The work consists of works relating to **Repair & Renovation Work of Flat No. 232 & 233 of Sarthak Tower, Cuttack, Odisha** and all subsidiary works connected therewith within the same site in accordance with the "drawings" and "Schedule of Quantities". It includes furnishing all materials, labour, tools and equipment and management necessary for 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/detail specifications furnished by the Employer/Architects. Should any detail essential for efficient completion of the work be omitted from the drawings/specifications it shall be the responsibility of the contractor to inform the Employer/Architects and to furnish and install such detail with Employer's/Architect's concurrence, so that upon completion of the proposed work the same will be acceptable and ready for use.

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

- a) The variation or modification of the design quality or quantity of works or the addition or omission or substitution of any work.
- b) Any discrepancy in the drawings or between the schedule of quantities and/or drawings and/or 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 demolition removal and/or Re-execution of any work executed by the contractor/s.

- e) The dismissal from the work of any persons employed thereupon.
- f) The opening up for inspection of any work covered up.
- g) The rectification and making good of any defects under clauses hereinafter mentioned and those arising during the maintenance period (Defect Liability period).

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

The contractor shall set up a field laboratory with necessary equipments for day to day testing of materials like grading of coarse and fine aggregates, silt content and bulkage of sand etc.

Regarding all factory made products for which ISI marked products are available, only products bearing ISI marking shall be used in the work.

3. **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 works, 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/specifications. 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.

4. **Tenders**

The entire set of tender paper issued in duplicate 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 sub head as detailed in the "Schedule of Quantities".

- iii) All corrections are to be initialed.
- iv) The "Rate Column" for alternative items shall be filled up.
- v) The "Amount" column for alternative items of which the quantities are not mentioned shall not be filled up.
- vi) In case of any errors/omissions in the quoted rates, the rates given in the tender marked "Original" shall be taken as correct rates.

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 works 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 works in all respects and details including preparatory and finishing works involved, directly, related to and reasonably detectable from the drawings, specifications and schedule of quantities and no further extra charges will be allowed in this connection. In the case of lump-sum charges in the tender in respect of any item of works, the payment of such items of work will be made for the actual work done on the basis of lump-sum charges as will be assessed to be payable by the Employer/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.

The tenderer shall note that his tender shall remain open for consideration for a period of three months from the date of opening of the tender.

5. **Agreement**

The successful contractor shall be required to sign agreement as per the draft agreement within the time as stipulated herein before the date of issue of the formal work order and shall pay for all stamps and legal expenses, incidental thereto.

6. Permits and Licenses

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

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.

The Employer/Architect/Consultant shall be indemnified against all Government or legal actions for theft or misuse of any Government controlled materials in the custody of the contractor.

7. Government and Local Rules

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

8. Taxes and Duties

The tenderers must include in their tender prices quoted for all duties royalties, cess and sale tax or any other taxes or local charged if applicable. No extra claim on this account will in any case be entertained.

9. Quantity of Work to be Executed

The quantities shown in the schedule of quantities are intended to cover the entire work indicated in the schedule of works 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 amount of any profit or advantage 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 and instructions which shall involve any curtailment of the work as originally contemplated.

The schedule of quantities (BOQ) unless or otherwise stated shall be deemed to have been prepared in accordance with the Indian Standard Method of

Measurements and quantities. The rate quoted shall remain valid for variation of quantity against individual item to any extent.

The quantities shown in the schedule of items are approximate and may vary to any extent. No compensation, whatsoever, shall be entertained for increase or decrease of any/all quantities shown against the item of works in the schedule of quantity.

No order in writing shall be required for increase or decrease in the quantity of any work where such increase or decrease is not the result of an order given under this clause, but is the result of actual quantities varying from those stated in the schedule of quantities.

Any error in the description or in quantity or omission of any item from the schedule of quantities shall not vitiate the contract but shall be adjusted by adding to or deducting from the contract sum provided that no rectification errors, if any shall be allowed in the contractors schedule of rates.

10. **Other Persons Engaged by the Employer**

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

11. **Earnest Money and Security Deposit**

The tenderer will have to deposit an amount of **Rs. 17,000.00** (Rupees Seventeen thousand) only in the form of Bank Draft / Pay Order / Banker's Cheque drawn in favour of "The Oriental Insurance Co. Ltd." at the time of submission of tender as an Earnest Money. The employer is not liable to pay any interest on the Earnest Money. The Earnest Money of the unsuccessful tenderers will be refunded without any interest soon after the decision to award the work is taken or after the expiry of the validity period of the tender.

The successful tenderer to whom the contract is awarded will have to deposit as initial security deposit a further sum to make up 2% of the value of the accepted tender including the Earnest Money subject to a ceiling of Rs. 5.00 Lakhs. The initial Security Deposit will have to be made within 15 days from the date of acceptance of tender, failing which the Employer at his discretion may revoke the letter of acceptance and forfeit the Earnest Money Deposit furnished along with the tender. It shall be refunded to the contractor within fourteen days after the issue of certificate of virtual completion by the Architect/consultant no interest will be payable on initial security deposit.

Apart from the Initial Security Deposit made as above, retention money 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:

- a) 10.00% on the first Rs.1,00,000 of the cost of work.

- b) 7.5% on the next Rs.1,00,000 of the cost of work.
- c) 5.0% on the next amount upto Rs.2 crores of the cost of work.
- d) 2.0% for the amount in excess of Rs. 2 crores of the cost of work subject to a ceiling on the Total Security at Rs. 25,00,000.

The retention amount will be refunded to the contractor 14 (fourteen) days after the end of defects liability period provided he has satisfactorily carried out all the work and attended to all defects in accordance with the conditions of the contract. No interest is allowed on retention money.

A part of the Security Deposit if and as decided by the Company can also be furnished in the form of a Bank Guarantee.

However, the retention money will not be deducted from progressive running bills till the amount of the initial security deposit is covered Also the retention money will not be deducted from the contractor's running bills if Bank Guarantee from a Nationalized bank in favour of **The Oriental Insurance Co. Ltd.** covering the retention money calculated as above, is submitted by the contractor.

After realization of the total retention money by deduction from the bills of the contractor as specified above, 50% of the total retention money will be refunded to the contractor on completion of work subject to the following:-

- i). Issue of the virtual completion certificate by the consultant
- ii). Contractor's removal of his materials, equipment, labour force, temporary sheds/stores etc. from the site. Excepting for small presence required if any for the defect liability period and approved by the Company.

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 works, submitted all documents including as built drawings etc. No interest is allowed on retention money and earnest money deposit.

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

12. **Contractor to Provide Everything Necessary**

The contractor shall provide everything necessary for the proper execution of the work according to the intent and meaning of the drawings, schedule of quantities and specifications taken together whether the same may or may not be particularly shown or described therein provided that 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/Architect/Consultant whose decision shall be final and binding. The contractor shall provide himself for ground and fresh water for carrying out of the works at his own cost. The Employer shall on no account be responsible for the expenses incurred by the contractor for hired ground or fresh water obtained from elsewhere.

The 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 shall be required or when ordered so to do, and shall fully reinstate and make good all matters and things disturbed during the execution of works to the satisfaction of the Employer/Consultant.

The contractor shall also provide such temporary road on the site as may be necessary for the proper performance of the contract, and for his own convenience but not otherwise. Upon completion, such roads shall be broken up and leveled where so required by the drawings/specifications 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 wiring, special fittings etc. The quoted rates of the tenderers shall accordingly include all these above mentioned contingent works.

13. Time of Completion, Extension of Time & Progress Chart

13.1. Time of Completion: The entire work is to be completed in all respects within the stipulated period of 03 (Three) calendar months. The work shall deemed to be commenced within Fourteen days from the date of acceptance letter or date of handing over of site, whichever is later. Time is the essence of the contract and shall be strictly observed by the contractor.

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

13.2 Extension of Time: If in the opinion of the Employer / Architect / Consultant the works be delayed

(a) reason of any exceptionally inclement weather,

or

(b) by reason of instructions from the Employer in consequence of proceedings taken or threatened by or disputes, with adjoining or neighboring owners

or

(c) by the works, or delay, of other contractors or tradesmen engaged or nominated by the Employer and not referred to in the specification

or

(d) by reason of authorised extra and additions

or

(e) by reason of any combination of workmen or strikes or lock-out affecting any of the building trades

or

(f) from other causes which the Employer may consider being beyond the control of the contractor, the Employer at the completion of the time allowed for the contract shall make fair and reasonable extension of time for completion in respect therefor. In the event of the Employer failing to give possession of the site upon the day specified above the time of completion shall be extended suitably.

In case of such strikes or 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 all that to prevent delay, and shall do all that may be reasonably required, to the satisfaction of the Employer to proceed with the works and on his doing so that it will be ground of consideration by the Employer for an extension of time as above provided. The decision of the Employer as to the period to be allowed for an extension of time for completion hereunder (which decision shall be final and binding on the contractor) shall be promulgated at the conclusion of such strike or lock-out and the Employer shall then, in the event of an extension being granted, determine and declare the final completion date. The provision in clause 15 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.

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

14. **Liquidated Damages**

Should the work be not completed to the satisfaction of the Employer / Architect / Consultant within the stipulated period, the contractor shall be bound to pay to the Employer a sum calculated as given below by way of liquidated damages and not as

penalty during which the work remains uncommenced or unfinished after the expiry of the completion date.

For contracts having time for completion 6 months and less	1.00% of the estimated amount shown in the tender per week subject to a ceiling of 10.0% of the accepted contracted sum
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15. Action when whole of security deposit is forfeited.

In any case which under any 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/ Consultant shall have power to adopt any of the following courses as they may deem best suitable 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 and 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 case 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.

16. Tools, Storage of Materials, Projective 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 works and make good all work disturbed.

All drawings maintained on the site are to be carefully mounted on boards of appropriate size and covered with a coat of approved varnish. 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 works disturbed by these conveniences.

Every precaution shall be taken by the contractor to prevent the breeding of mosquitoes on the works during the construction, and all receptacles, cisterns, water tanks etc., used for the storage of water must be suitable protected against breeding of mosquitoes. The contractor shall indemnify the Employer against any breach 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.

Contractor shall indemnify the Employer against any possible damage to the building, roads, or members of the public in course of execution of the work.

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

Storage of materials: The contractor shall provide and maintain proper sheds for the proper storage and adequate protection of the materials etc. and other work that may

be executed on the site including the tools and materials of sub-contractors and remove same on completion.

Cement godown shall be constructed for storing about six weeks' requirement of cement and stored as per norms with a stack of 10 bags each and 2 feet opening all around with 2 feet passage of each stock. Structure shall be water-proof from all the sides and top. Cement should be stored one feet 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: The all tools, equipments, levels, prismatic compass, chain, steel and metallic tapes and all other surveying instruments found necessary on the works shall be provided by the contractor for the due performance of this contractor.

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

The mistries and the supervisors on the works shall carry with them always a one metre or two metre steel tape, 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 works executed or being executed on the contract.

The contractor should cover in his rates for making provisions for all reasonable facilities for the use of his scaffolding, tools and plant etc., by sub-contractors for their work or for work to be carried out by other agencies employed by the Employer/Consultant.

17. Notice and Patents of Appropriate Authority and Owners

The contractor shall conform to the provisions of any Acts of the Legislature relating to the work, and to the Regulations and Bye-laws of any authorities, and/or any water, lighting and other companies, and/or authorities with whose systems the structures were proposed to have connection and shall before making any variations 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 Bye-laws to be given to any authority, and to pay to such authority or to any public officer all fees that may be properly chargeable in respect of the work and lodge the receipts with the Employer.

The contractor shall indemnify the Employer against all claims in respect of patent rights, royalties, damages to buildings, roads or members 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.

18. Clearing Site and Setting out Works

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

The contractor shall set out the works and shall be responsible for the true and perfect setting out of the work and for the correctness of the positions, levels, dimensions and alignment of all parts thereof. If at any time, any error shall appear during the 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. The contractor shall further set out the works 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.

19. Datum

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

20. 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 salwood post of adequate length and minimum diameter 75 mm 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 salwood post on the centre lines of columns, walls, inside and outside faces of foundation trenches, in order that lines may be stretched between the benches and accurate intersection of excavation. Centre line of walls columns etc., may be clearly indicated and checked at any time if it is so required.

21. 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/instruction of the Employer/Consultant.

The contractor shall keep the foundations and works free from water and shall provide and maintain at his own expenses electrically or other power driven pumps and other plant to the satisfaction of the Employer for the purpose, until the building is handed over to the Employer. The contractor shall arrange for the disposal of the water so accumulated to the satisfaction of the Employer and local authority and

no claims will be entertained afterwards if he does not include in his rates for the purpose.

22. 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.

23. Materials, Workmanship, Samples, Testing of Materials

All the works specified and provided for in the specifications or which may be required to be done in order to perform and complete any part thereof shall be executed in the best and most workmanlike manner with materials of the best and 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.

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

All the materials (except where otherwise described) stores and equipment required for the full performance of the work under the contract must be provided through normal channels and must include charge for import duties, sales tax, octroi and other charges and must be the best of their kind available and the contractor/s must be entirely responsible for the proper and efficient carrying out of the work. The work must be done in the best workmanlike manner. Samples of all materials to be used must be submitted to the Employer/Consultant when so directed by the Engineer/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 when in course of execution. Any damage (during constructions) to any part of the work for any reasons due to rain, storm, or neglect of contractor shall be rectified by the contractor in an approved manner at no extra cost.

Should the work be suspended by reason of rain, strike, lock-outs or any other cause, the contractor shall take all precautions necessary for the protection of work

and at his 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.

24. 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 specification or instructions, the substitution or proper re-execution of any work executed with materials or workmanships not in accordance with the drawings and specifications or instructions. In case the contractor refuses to comply with the order the Employer shall have the power to employ and pay other agencies to carry out the work and all expenses consequent thereon or incidental thereto as certified by the Employer/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 Employer/Consultant shall relieve the contractor from his liability in respect of unsound work or bad materials

25. Site Engineer

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

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

26. Contractor's Employees

The contractor shall employ technically qualified and competent supervisors for the work who shall be available (by turn) throughout the working hours to receive and comply with instructions of the Employer/Consultant. The contractor shall engage at

least one experienced Engineer as site-in-charge 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 at least one graduate engineer having min. 3 years of experience or a senior diploma holder having minimum 5 years of experience. In case contractor fails to employ the technical staff as aforesaid then the contractor shall be liable to pay a sum of Rs.15,000/- each month or part thereof for default. The decision of Architects/Consultants as to the period of default shall be final and binding on the contractor.

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 & Abolition) Act, 1970 and Central Rules 1971.
- e) Apprentices Act 1961
- f) Minimum Wages Act
- g) 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 own cost with the order of requirement of any Health Officer of the State or any local authority or of the Employer regarding the maintenance of proper environmental sanitation of the area where the contractor's labourers are housed or accommodated, for the prevention of small pox, cholera, plague, typhoid, malaria and other contagious diseases. The contractor shall provide, maintain and keep in good sanitary condition adequate sanitary accommodation and provide facilities for pure drinking water at all times for the use of men engaged on the works and shall remove and clear away the same on completion of the works. Adequate precautions shall be taken by the contractor to prevent nuisance of any kind on the works or the lands adjoining the same.

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

27. Dismissal of Workmen

The contractor shall on the request of the Employer/Consultant immediately dismiss from works 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 discharges shall not be the basis of any claim for compensation or damages against the Employer/Consultant or any of their officer or employee.

28. Assignment

The whole of the works included in the contract shall be executed by the contractor and the contractor shall not directly or indirectly transfer, assign or under let 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.

29. Damage to Persons and Property Insurance Etc.

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

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

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

The Employer shall be at liberty and is hereby empowered to deduct the amount of any damages, compensations, costs, charges and expenses arising or accruing from

or in respect of any such claim or damages from any sums due or to become due to the contractor.

30. INSURANCE.

Unless otherwise instructed the contractor shall insure the works and keep them insured until the virtual completion of the contract against loss or damage by fire and/or earth quake, flood. The insurance must be placed with a company approved by the Employer, in the joint names of the Employer and the contractor for such amount and for any further sum if called to do so by the employer, the premium of such further sum being allowed to the contractor as an authorised extra.

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

Insurance is compulsory and the Contractor shall effect insurance before undertaking construction work and deposit the policy and receipt for premiums paid with the Employer within 14 (Fourteen) days from the date of issue of work order unless otherwise instructed. In default of the contractor insuring as provided above, the Employer on his behalf may so insure and may deduct the premiums paid from any money due, or which may become due to the contractor. The contractor shall as soon as the claim under 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 the works 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 rebinding or reinstatement after fire shall be entitled to extension of time for completion as the Employer may deem fit.

31. ACCOUNTS RECEIPTS & VOUCHERS

The contractor shall, upon the request of the Employer furnish them with all the invoices, accounts, receipts and other vouchers that they may require in connection with the works under this contract.

If the contractor shall use materials less than what he is required under the contract, the value of the difference in the quantity of the material 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.

32. MEASUREMENT OF WORK

The contractor will record the measurements in the approved printed measurement books available in the Consultant's office on payment, and submit measurements for verification and endorsement of site Engineer / site representative/s of the Consultant, if any. The contractor should submit the bill to the Consultant 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 weeks 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.

33. METHOD OF MEASUREMENT

Unless otherwise mentioned elsewhere in the tender document, measurements will be 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.

34. 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.

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

35.1 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 contractor's cost.

35.2 The contractor(s) shall also obtain permission from the society for dumping the waste materials and also for storage of the materials to be used in the work.

35.3 The contractor(s) shall also abide by laws of the society in the premises and shall not carry out any activity which may cause inconvenience to the residents of the apartment.

35.4 The work may be taken up in pleased manner to avoid inconvenience to the residents and in such an event the contractor(s) shall not claim any compensation whatsoever.

36. Payments

All bills shall be prepared by the contractor in the form prescribed by the Architect/Consultant. Normally one interim bill shall be prepared each month subject to minimum value for interim certificate as stated in appendix herein referto. The bills in proper forms must be dully accompanied by detailed measurements in support of the quantities of work done and must shown deductions for all previous payments, retention money etc.

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

The amount stated as in appendix, in an interim certificate shall be the total value of work properly executed and 75% of invoiced / assecced value of material brought to site for permanent incorporation into the work up to the date of the bill less the amount to be retained by the Employer as retention money of these conditions and less installments previously paid under these conditions, provided that such certificate shall only include the value of 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 weath or other causalities.

If the Employer has supplied any materials or goods to the contractor, the cost of any such materials or goods will be progressively deducted from the amount due to the contractor in accordance with the quantities consumed in the work.

All the interim payments shall be regarded as payments by way of advance against the final payment only and not as payments for work actually done and completed, and shall not preclude the requiring of bad, unsound, and imperfect or unskilled work to be removed and taken away and reconstructed, or re-erected or be considered as an admission of the due performance of the contract, or any part thereof in any respect or the accruing of any claim, nor shall, it conclude, determine or affect in anyway the power of the Employer under these conditions or any of them as to the final settlement and adjustment of the accounts or otherwise or in any other way vary or affect the contract. The final bill shall be submitted by the contractor within one month of the date fixed for completion of the work or of the date of certificate of completion furnished by the Consultant and payment shall be made by the Employer within three months from date of receipt of the final bill duly verified & certified by the Consultant.

The Employer/Consultant reserves the right to withhold in part or full payment of bills in case of non-compliance/violation of any terms and conditions stipulated in the agreement. The contractor shall neither suspend the work nor claim for extension of time for non-payment/withholding of payment on this account and no interest is also payable on the payment with-held/due.

37. 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 herein before of this documents, which sum shall be refunded after the completion of the defects Liability Period after receiving the Consultants' certificate that the contractor has rectified all defects to the satisfaction of the Consultant. 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.

38. Variation/Deviation

No alteration, omission or variation ordered in writing by the Architect/Consultant shall vitiate the contract. In case of The Company/Architect/Consultant thinks proper at any time during the progress of work to make any alteration in, or addition to or omission from the works or any alteration in the kind or quality of the materials to be used therein, the Architect/Consultant shall give notice thereof in writing to the contractor or shall confirm in writing within seven days of giving such oral instructions the contractor shall alter to, add to, or omit from as the case may be in accordance with such notice, but the contractor shall not do any work extra to or make any alternations or additions to or omissions from the works or any deviation from any of the provisions of the contract, stipulations, specifications or contract drawings without previous consent in writing of the Architect/Consultant and the value of such extras, alterations, additions or omissions shall in all cases be determined by the Architect/Consultant and the same shall be added to or deducted from the contract value, as the case may be.

39. Valuation of Variations

No claim for an extra shall be allowed unless it shall have been executed by the authorisation of Consultant. Any such extra is herein referred to as authorised extra and shall be made in accordance with the following provisions.

- a)(i) The net rates or prices in the contract shall determine the valuation of the extra work where such extra work is of similar character and executed under similar conditions as the work priced herein.
- (ii) Rates for all items, wherever possible should be derived out of the rates given in the priced BOQ. If in arriving at the contract sum the contractor have added to or deducted from the total of the items in the tender any sum either as a percentage or proportion, the same percentage or proportion shall apply to all items of works for valuation of variations.
- b) The net prices of the original tender shall determine the value of the items omitted, provided if omissions do not vary the conditions under which any remaining items of works are carried out, otherwise the prices for the same shall be valued under sub-clause (c) hereunder.
- c) Where the extra works are not of similar character and/or executed under similar conditions as aforesaid or where the omissions vary the conditions under which any remaining items or works are carried out, then the contractor shall within 7 days of

the receipt of the letter of acceptance inform the Architect/Consultant of the rate which he intends to charge for such items of work, duly supported by analysis of the rate based on the National Building Organisation, CPWD or in case such is not available therein, from the approved schedule with the various elements valued at local market price plus 15% (fifteen percent) towards profit and over heads.

- d) Where extra work cannot be properly measured or valued the contractor shall be allowed day work prices at the net rates stated in the tender of the BOQ or, if not, so stated then in accordance with the local day work rates and wages for the district provided that in either case, vouchers specifying the daily time (and if required by the Architect/Consultant) the workman's name and materials employed be delivered for verifications to the Architect/ Consultant at or before the end of the week following that in which the work has been executed.
- e) It is further clarified that for all such authorised extra items where rates cannot be derived from the tender or from any approved analysis of rate viz; C.P.W.D. or N.B.O., 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's overheads and profit. Such items shall not be eligible for escalation.
- f) Works Contract Sales Tax, if applicable will also be considered over and above 15%.
- g) Rates arrived at by any of the above methods and approved by Architects/ Consultants is final and binding on contractor.

40. **Substitution**

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

41. **Preparation of Works for Occupation and Use on Completion**

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

On completion the contractor shall clean all windows and doors including the cleaning and oiling if necessary, of all hardware, inside and outside, all floors, stair-cases, 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.

42. **Clearing Site on Completion**

On completion of the works the contractor shall clear away and remove from the site all constructional plant, surplus materials, rubbish and temporary works of every kind

and leave the whole of the site and the works clean and in a workmanlike condition to the satisfaction of the Employer/Consultant.

43. Defects after Completion

The contractor shall make good at his own cost and to the satisfaction of the Employer all defects, shrinkage, settlements or other faults which may appear within 12 (Twelve) months after completion of the work. 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 together with any expenses the Employer may have incurred in connection therewith.

44. 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 may be made for such materials. Should any dispute or differences arise after the execution of any work as to measurements etc., or other matters which cannot be conveniently tested or checked the notes of the Employer/Consultant shall be accepted as correct and binding on the contractor.

45. Escalation

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

46. 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.

47. Suspension

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

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

48. 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 or amount of his creditors or shall enter into a Deed or arrangement with his creditors, or if the Official Assignee in insolvency, or the Receiver of the contractor in insolvency, shall repudiate the contract, or if a Receiver of the contractor's firm appointed by the court shall be unable, within fourteen days after notice to him requiring him to do so, to show to the reasonable satisfaction of the employer that he is able to carry out and fulfill the contract, and if so required by the employer to give reasonable security 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 any 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 works, 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 Company may notwithstanding previous waiver determine the contract by a notice in writing to the effect as hereinafter mentioned, but without thereby effecting the powers of the employer of the obligations and liabilities of the contractor the whole of which shall continue in force as fully as if the contract, had not been so determined and as if the works subsequently executed had been executed by or on behalf of the contractor (without thereby creating any trust in 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 works or by employing any other contractors or other persons or person to complete the works, and the contractor shall not in any way interrupt or do any act, matter of thing to prevent or hinder such other contractors or other persons or person employed from completing and finishing or using the materials and plants for the works when the works shall be completed, or as soon thereafter as conveniently may be, the employer shall give notice in writing to the contractor to remove his surplus materials and plants and should the contractor fail to do so within a period of 14 days after receipt by him the employer

may sell the same by Public Auction and shall give credit to the contractor for the amount so realized. Any expenses or losses incurred by the employer in getting the works carried out by other contractors shall be adjusted against the amount payable to the contractor by way of selling his tools and plants or due on account of work carried out by the contractor prior to engaging other contractors or against the Security Deposit.

49. **ARBITRATION.**

All disputes or differences of any kind whatsoever which shall at any time arise between the parties hereto touching or concerning the works or the execution or maintenance thereof of his contract or the rights thereof this contract or the construction remaining operation or effect hereof or to the rights or liabilities of the parties or arising out of or in relation thereto whether during or after determination, for 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 thereafter provided.

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 45 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 liability 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 30 days of receipt by him of the written notice, aforesaid to the contractor a panel of 3 names of persons who shall be presently unconnected with the organisation for which the work is executed from the following categories of arbitrators.

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 30 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.

If the Employer fails to send to the Contractor the panel of three names as aforesaid within the period specified, the contractor shall send to the Employer a panel of three names of persons who shall all be unconnected with either party. The Employer 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 Employer 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 Employer.

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

The work under the contract shall, however, continue during the arbitration proceedings and no payment due or payable to the contractor shall be with held on account of such proceedings.

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.

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

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

In all cases, where the amount of claim in dispute is Rs.50,000/- (Rupees Fifty thousand) and above, the Arbitrator shall give reasons for the award.

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

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

Subject to aforesaid the provisions of the Arbitration Act. 1940 or any statutory modification or re-enactment thereof and the fules made thereunder, and for the time being enforce, shall apply to the Arbitration proceeding under this clause.

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

50. **Excepted Matters:**

If the disputes or differences pertain to the under noted matters (called excepted matters), the decision in writing of the officer of **The Oriental Insurance Co. Ltd.** designated in and signing the contract documents shall be final, conclusive and

binding on the parties. No arbitration shall arise in such matters except either by mutual agreement or under the directions of a competent Court.

- i) Instruction
- ii) Transactions with local authorities
- iii) Proof of quality of materials
- iv) Assigning or under letting of the contract
- v) Certificate as to the causes of delay on the part of the contractor and justifying extension of time.
- vi) Rectification of defects pointed out during the defects liability period.
- vii) Notice to the contractor to the effect that he is not proceeding with due diligence.
- viii) Certificate that the contractor has abandoned the contract.
- ix) Notice of determination of the contract by the Employer.

51. SECURITY ARRANGEMENTS

Proper arrangements shall be made to keep all records under lock and key.

It shall be ensured that the contractor provides for adequate fences, watch and ward and security of basic materials such as cement and steel etc.

Movement of material, stores and plant, especially of those in which the Company has got a financial interest or those which influence progress of work, shall be strictly controlled Checks shall be exercised at gate (entrance and exit shall be preferably through one gate only).

When the work is completed and handed over to the use, the responsibility of proper security arrangements shall rest with the users.

52. WORKING HOURS.

Site Office working hours shall normally be fixed as may be prevailing in the locality.

Normally no construction work of important structural nature shall be carried out on Sundays, Holidays and during nights. In exceptional circumstances, however, the work may be carried out with prior approval of the Site Engineer who shall depute supervising staff to be present on the occasion.

APPENDIX HEREINBEFORE REFERED TO

CLAUSE :

43. Defect liability period : 12 months from the date of completion of work.
37. Period of final measurement : 3 months from the date of completion of work.
13. Date of commencement : 14th days from the date of issue of work order. OR Handing over the site Whichever is later.
13. Time of completion : 03 (Three) calender months from the date of commencement of work.
36. Value of works for interim certificate. : Rs. 4.00 Lakhs
36. Period for honouring Interim certificate. : 14 Days.
14. Liquidated damages Rate : 1.00% of the estimated amount at the of shown in the Tender per week subject to a ceiling of 10.0% of the accepted contracted sum.
36. Installment after the issue : 50 % of the total S.D. retained on issue of completion certificate by the Architect/ Consultant

SPECIAL CONDITIONS

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SPECIAL CONDITIONS

CL.1. INSPECTION BY TECHNICAL EXAMINER.

The proposed work covered under this tender is subject to inspection by Technical Examiner or by an officer of the Vigilance cell of the Company on behalf of the Owner/Employer/Architects/Consultants. The contractor shall be required to extend all assistance and facilities for such inspections.

CL.2. SAFETY CODE

The Contractor shall strictly comply with the provision of safety code Refer Annexure-I.

CL.3. MODEL RULES FOR THE PROTECTION OF HEALTH AND SANITARY ARRANGEMENTS FOR WORKERS

The contractor shall strictly comply with the provision listed in the Annexure-II below.

CL.4. REGISTERS OF WORKS.

The contractor will be required to maintain the registers at site of work and should produce the same for inspection of Architects/ Consultants/ Owner/ Employer whenever desired by them. Typical proforma are enclosed. Refer Annexure-XV.

CL.5. SUBMISSION OF R.A. BILLS.

The Contractor will have to submit their running account bills in printed forms shown in annexure-IV.

CL.6. DISCREPANCIES AND ADJUSTMENT OF ERRORS.

The several documents forming the contract are to be taken as mutually explanatory of one another, detailed drawings being followed in preference to small scale drawings and figured dimensions in preference to scaled dimensions.

In the case of discrepancy between schedule of quantities, the specifications and/or the drawings, the following order of reference shall be observed;

- a). Description in the schedule of items and Quantities.
- b). Technical specifications.
- c). Drawings

If there are varying or conflicting, provisions made in any one document forming part of the contract, the accepting shall be the deciding authority with regard to the intention of the document.

Any error in description, quantity or rate in schedule of Quantities or any omission there from shall not vitiate the contract or release the contractor from the execution of

the whole or any part of the works comprised therein according to drawings and specifications or from any of his obligations under the contract.

CL.7. LAND FOR CONTRACTORS ESTABLISHMENT.

For the purpose of construction of contractor's store-yard, godowns, site office and ancillaries, the contractor may utilize portion of the land belonging to the employer at such location as would not interfere with the execution of the works. For all these, the contractor shall have to obtain permission of the Architects / Consultant / Owner / Employer. The contractor shall for this purpose submit to the Architects / Contractor / Owner / Employer for his approval a plan or plans of the proposed layouts for the site facilities. The Architects / Consultants reserves the right to alter and modify the contractor's proposal as he may deem fit. the contractor may arrange at his own cost lands for the said purpose from municipalities, local bodies, or other authorities if so required on terms as they may prescribe but this is subject to approval of Architects / Consultant / Owner / Employer.

CL.8. WATER

The rates quoted by the contractor shall include all expenditure for providing all the water for the full contract required for the works, including that or the work people and all staff on the site. He shall make his own arrangement for the supply of good quality water suitable for use in the works and the work people. He shall obtain municipal connection and all charges for connection shall be borne by him. If municipal water is not available or inadequate, he shall make other arrangements like sinking tube wells, making bore wells, or transport from out side by tankers or any other suitable means entirely at his cost, and no separate payment for the same will be made.

CL.9. POWER.

The Contractor shall at his own cost arrange for necessary power for construction and lighting for the entire period of contract. If power is available in the area, the contractor shall make his own arrangement to obtain necessary connections, maintain an efficient service of electric lights and power and shall pay for all requisite charges for the same.

The Owner/Employer, as well as the Architects/Consultant shall give all the recommendations necessary to obtain power and water connections from the concerned authorities, but the responsibility for obtaining the same shall rest with the contractor. If any other contractor, appointed by the employer, is required to use water and power, he shall be allowed to use the same and make temporary connections from the supply arranged by the contractor at rates and terms that may be mutually agreed upon by both, failing which, at rates, terms and conditions that may be decided by the Architect/Consultant/Owner/Employer will be final and binding upon him.

CL.10.FIRST - AID FACILITIES.

The Contractor shall at his own expense arrange to ensure availability of medical attendance promptly when necessary. He shall provide properly equipped first aid station In-Charge of qualified person at suitable location within easy reach of the

workmen and staff. The contractor shall also provide for transport of serious cases to the nearest hospital.

CL.11.FIRE FIGHTING ARRANGEMENTS.

The Contractor shall at his own expense provide at suitable, prominent and easily accessible places requisite number of Fire Extinguishers and Buckets, some filled with sand and some with water.

CL.12.REPORTS AND RETURNS.

Contractor shall maintain at site daily records of progress with regard to the works carried out, labour engaged and construction equipment deployed. These will be used as the basis for preparation of fortnight returns which are to be submitted to Architect/ Consultant/Owner/Employer regularly in the Progress Report forms. These daily records shall be made accessible to the Architect/ Consultant/Owner/Employer as and when required by him. Enlarged photographs are also to be submitted as and when advised by the Architect/Consultant/Owner/Employer.

CL.13.SITE BOOK.

For the purpose of quick communication the contractor should maintain and preserve at site a book with machine numbered pages in triplicate. Any instruction/advice given and recorded in the site order book by the Architect / Consultant / Owner / Employer shall be considered as a notice served on the contractor.

CL.14.RATES ALL INCLUSIVE.

The rates shall be inclusive of all duties and taxes, turn over tax, excise duty, octroi and any other tax, duty or levy levied by the Central Government, State Government, and local Authority including Value Added tax / Sales Tax on Work's Contract. The rate quoted shall be deemed to be for the finished item of work to be measured at site, and shall be inclusive of cost of all materials, labour, transport, constructional plant and other services like water, power and all that is necessary to conform to the general conditions, special conditions and all other terms and conditions embodied in the contract and all incidentals so far as the necessity for providing the same is specified in or is reasonable inferred from the contract, as also all overheads and profits. The Company will not entertain any claim whatsoever in this respect.

CL.15.SALES TAX ON WORKS CONTRACT.

The rates quoted shall also be inclusive of sales tax on works contract as applicable at the time of tender. However, the sales tax on works contract shall be deducted at source at prevailing rate from the bills or as prescribed by the Govt. of Orissa from time to time.

CL.16.INCOME TAX.

This shall be deducted at source as per rules at prevailing rates, unless certified if any, for deductions at lesser rate or nil deduction is furnished from appropriate authority.

CL.17.ITEM RATE TENDER.

The tenderer should note that the tender is strictly on the item-rate basis and his attention is specially drawn to the fact that the rate for each individual item should be correct, workable irrespective of the quantity actually done notwithstanding the quantity stated in the schedule of quantities.

CL.18.COMPLETION INVENTORY.

The contractor, while reporting completion should also furnish inventory of all fittings / fixture fixed by him in the work.

CL.19.GUARANTEE.

Wherever the tender provides for submission of a specific guarantee to keep any specialized work efficient and trouble free for a specific period, the same shall be submitted from the specialized agency along with a counter guarantee by the main Contractor engaged for the work. The specialized agency and the main contractor shall furnish the guarantee as mentioned above on non-judicial stamp papers of appropriate values. If the Contractor is required to submit guarantee/guarantees for any item/items for a period of more than 12 months, the guarantee/guarantees in case of those items shall remain valid even after expiry of the defect liability period of 6 months as stipulated in the contract.

CL.20. POSSESSION PRIOR TO COMPLETION

The Employer shall have the right to take possession of or use any completed or partially completed part of the work. Such possession or use shall not be an acceptance of any work not completed in accordance with the contract agreement.

CL.21.COMPLETION DRAWINGS, AND PHOTOGRAPHS

The contractor, while reporting on completion of their work, shall furnish along with to the Consultant:-i) "as done" completion drawing of services viz; sanitary/plumbing, electrical work etc. on ammonia prints, ii) inventory of all fittings fixed by him in the work, & iii) Enlarged completed photographs of the work.

SAFTY CODE

1. This shall be maintained in a readily accessible place first aid appliances including adequate supply of sterilized dressing and cotton wool.
2. An injured person shall be taken to a public Hospital with out loss of time in cases where the injury necessitates hospitalization.
3. Suitable and strong scaffolds should be provided for work men for all works that cannot safely be done from ground.
4. No portable single ladder shall be over 8 meters in length. The width between the side rails shall not be less than 30 cm. (clear) and the distance between two adjacent rungs shall not be more than 30 cm. when a ladder is used, an extra majdoor shall be engaged for holding the ladder.
5. The excavated materials shall not be placed within 1.5 Meters of the edge of the trench or half of the depth of trench which ever is more. All trench and excavations shall be provided with necessary fencing and lighting.
6. Every opening in the floor of a building or in the working plat form be provided with suitable means to prevent the fail of persons or heights shall be one meter.
7. No floor, roof or other part of the structure shall be so over loaded with debris or materials as to render it unsafe.
8. Workers employed on mixing and handling materials such as asphalt with protective footwear and rubber hand-gloves.
9. Those engaged in welding works shall be provided with welder's protective eye shields and gloves.
10. (i).No paint containing lead or lead products shall be used except in the form of paste or ready made paint.
(ii). Suitable face masks should be supplied for use by the workers when paint is applied in the form of spray or surface having lead paint dry rubbed and scrapped.
11. Overall shall be supplied by the contractor to the painters and adequate facilities shall be provided to enable the working painters to wash during the periods of cessation.
12. Hoisting machines and tackles used in the works, including their attachments, anchorage and supports shall be in perfect condition.
13. The ropes used in hoisting or lowering materials or as a means of suspension shall be durable quality and adequate strength and free from defects.

**STATEMENT SHOWING QUANTITIES OF THEORETICAL
CONSUMPTION OF CEMENT FOR MAJOR ITEMS OF WORK
(AS PER C.P.W.D. NORMS)**

Sl.	Description of item of work	Unit	Qty. of cement per unit No. Qty at work (Quintals)
1	2	3	4
1.	Plain cement concrete work		
a).	Cement concrete (1:2:4)	Cum.	3.20
b).	Cement concrete (1:3:6)	Cum.	2.20
c).	Cement concrete (1:4:8)	Cum.	1.70
2.	Damp Proof Course		
a).	25 mm. thick in C.C.(1:2:4)	100 Sq.m.	8.00
3.	Reinforced Cement Concrete work		
a).	R.C.C. work in C.C. (1:2:4)	Cum.	3.20
b).	R.C.C. work in C.C.(1:1.5:3)	Cum.	4.00
c).	Providing and fixing precast R.C.C. mortar 1:2 including finishing with cement plaster 1:3 of thickness not exceeding 6 mm.		
i)	Kerb, Step and the like	Cum.	3.68
ii)	Coping bed plates anchor blocks, window sills and the like	Cum.	3.86
iii)	Small lintels not exceeding 1.5 mm clear, coping shelves and the like	Cum.	3.90
4.a)	Brick work (all classes) in cement mortar 1:4		
i)	With modular brick	Cum.	0.84
ii)	With F.P.S. brick	Cum.	0.95

b).	Brick work (all classes) in cement mortar 1:6		
i)	With modular brick	Cum.	0.55
ii)	With F.P.S. brick	Cum.	0.62
c).	Brick work 3" in cement mortar 1:3 with F.P.S. brick	100 Sq.m.	9.23
5.	Flooring		
a)	25 mm thick cement concrete flooring 1:2:4 finished with a floating coat of neat cement.	100 Sq.m.	10.20
b)	40 mm thick cement concrete flooring 1:2:4 finished with a floating coat of neat cement.	100 Sq.m.	15.00
c)	Chequered terrazo tiles 22 mm thick with marble chips of sizes upto 6 mm on 25 mm thick bed of lime mortar jointed with neat cement slurry.		
i)	Light shade with white Cement	100 Sq.m.	04.40
	Grey Cement	100 Sq.m.	04.40
ii)	Medium shades using 50% White Cement & 50% grey cement		
	White Cement	100 Sq.m.	2.20
	Grey Cement		06.60
iii)	Neutral shade (with grey cement)	100 Sq.m.	08.80
d)	White glazed tiles 5.5 mm thick in flooring treads and risers of steps skirting and dado on 12 mm thick cement plaster 1:3 in base and jointed with white cement slurry etc.		
	White Cement	100 Sq.m.	2.50
	Grey Cement		10.44
e)	Marble stone slab flooring over 20 mm thick base lime mortar and jointed with grey cement slurry etc.		

i)	25 mm thick	100 Sq.m.	05.00
ii)	30 mm thick	100 Sq.m.	05.12
iii)	40 mm thick	100 Sq.m.	05.36
f)	Marble stone slab flooring over 20 mm thick base of cement mortar (1:4 and jointed with grey cement slurry).		
i)	25 mm thick	100 Sq.m.	13.51
ii)	30 mm thick	100 Sq.m.	13.63
iii)	40 mm thick	100 Sq.m.	13.87
g)	Extra if white cement slurry used instead of grey cement slurry in joints of stone flooring W. Cement.	100 Sq.m.	00.76
h)	Marble tiles 25 mm thick in risers of steps, skirting and pil lars, laid on 12 mm thick cement mortar (1:3) and jointed with Grey cement slurry etc.	100 Sq.m.	12.34
i)	Kotah stone slab flooring over 20 mm thick base of lime mortar and jointed with cement slurry etc.		
i)	25 mm thick	100 Sq.m.	03.40
ii)	30 mm thick	100 Sq.m.	06.80
iii)	40 mm thick	100 Sq.m.	07.60
j)	Kotah stone slab flooring over 20 mm thick base on cement mortar (1:4) and joint with neast cement slurry etc.		
i)	25 mm thick	100 Sq.m.	14.91
ii)	30 mm thick	100 Sq.m.	15.31
iii)	40 mm thick	100 Sq.m.	16.11
k)	Kotah stones slab 25 mm thick in rise of steps skirting dado and pilars laid on 12 mm thick cement		

	mortar 1:3 and jointed with neat cement slurry etc.	100 Sq.m.	13.74
6.	Finishing		
a)	12 mm cement plaster 1:3	100 Sq.m.	07.34
b)	12 mm cement plaster 1:4	100 Sq.m.	05.47
c)	12 mm cement plaster 1:6	100 Sq.m.	03.60
d)	15 mm cement plaster 1:3	100 Sq.m.	08.77
e)	15 mm cement plaster 1:4	100 Sq.m.	06.54
f)	15 mm cement plaster 1:6	100 Sq.m.	04.30
g)	20 mm cement plaster 1:3	100 Sq.m.	11.42
h)	20 mm cement plaster 1:4	100 Sq.m.	08.51
i)	6 mm cement plaster to ceiling 1:3	100 Sq.m.	03.67
j)	6 mm cement plaster to ceiling 1:4	100 Sq.m.	02.34
k)	Neat Cement punning	100 Sq.m.	02.20
7.	Mortar		
	Cement mortar 1:1	Cum.	10.20
	Cement mortar 1:2	Cum.	06.80
	Cement mortar 1:3	Cum.	05.10
	Cement mortar 1:4	Cum.	03.80
	Cement mortar 1:5	Cum.	03.10
	Cement mortar 1:6	Cum.	02.50

* As specified by the specialist firm at the time of tendering for the job.

Note:- For any other item of work site Engineer shall refer to the C.P.W.D. Specifications and norms. In case no coefficient is available for a specific item, the decision of Chief Engineer, shall be final and binding on the contractor.

FORM XII**PROFORMA OF REGISTER OF CONTRACTORS**

1. Name and addresses of the Principal Employer

2. Name and address of the Establishment

Sl. No.	Name and address of the contractor	Nature of work on contract	Location of contract work	From	To	Period of contract	Maximum Number of workmen employed by the contractor
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FROM VI-B

PROFORMA OF NOTICE OF COMMENCEMENT/COMPLETION OF CONTRACT WORK

1. Name and Principal Employer & address
2. No. and date of Certificate of registration
3. I/we hereby intimate that the contractor work _____ (Name of work) given to _____ (Name and address of the contractor) having License No. _____ Dated _____ has commenced/has been completed with effect from _____ (date)/on _____ (date).

Signature of the principal Employer

The Inspector,

I-RUNNING A/C BILLS

Name of the contractor/ Agency :
 Name of the work :
 Sr. No. of this Bill :
 No. and date of previous Bill :
 Reference to Agreement No. :
 Date of written order to commence :
 Date of completion as per agreement :

Sl. No.	Item Description	Unit	Rate as per tender	upto previous R/A Bill	upto date (gross)
1	2	3	4	5	6
			Rs.	Rs.	Rs.
			Qty.	Qty.	Qty.
			Rs.	Rs.	Rs.

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.

CERTIFICATE

The measurements on the basis of which the above entries for the Running Bill No. _____ were made have been taken jointly on _____ and are recorded at pages _____ to _____ of measurement book No. _____

Signature and
date of contractor's
representative
(Seal)

Signature and
date of Architect's
representative
(Seal)

Signature and Date
of Site Engineer of
Employer

The work recorded in the above mentioned measurements has been done at the site satisfactorily as per tender drawings, conditions and specifications.

Architect

Site Engineer/
Company's Engineer

PROFORMA FOR APPLICATION FOR EXTENSION OF TIME PERIOD.

1. Name of Contractor :
2. Name of the work as given in the agreement :
3. Agreement No. :
4. Estimated tender amount :
5. Date of commencement of work :
6. Period allowed for completion of work as per Agreement :
7. Date of completion stipulated in agreement :
8. Period for which extension of time has been given previously :
9. 1st Extension vide Architect's / Company's letter

No.	dated	Month	Days
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10. 2nd Extension vide Architect's/ Company's letter

No.	dated	Month	Days
-----	-------	-------	------
11. 3rd Extension vide Architect's /Company's letter.

No.	dated	Month	Days
-----	-------	-------	------
12. 4th Extension vide Architect's/ Company's letter

No.	dated	Month	Days
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- Total Extension previously given. :
14. Reasons for which extension have been previously given (copies of the previous application should be attended).
15. Period for which extension is applied for :

16. Hindrances on account of which extension is applied for with dates on which hindrances occurred and the period for which these are likely to last. :
- a. Serial No. :
- b. Nature of hindrance :
- c. Date of occurrence :
- d. Period for which it is likely to last :
- e. Period for which extension required for reference to item (e) above :
- f. Net extension applied for :
- g. Remarks, if any :
17. Details of extra work and the amount involved:
18. Details of extra work and the amount involved.:
19. Total value of extra work :
20. Proportionate period of extension of time on estimated amount put to tender :
21. Total extension of time required for 11 & 12 :
22. Submitted to the Architects / Company _____

Signature of Contractor

Date :

PROFORMA OF HINDRANCE REGISTER

Name of work : Date of state of work:

Name of contractor: Period of completion:

Agreement No.: Date of completion:

Sr. No.	Nature of hindrance	Date of occurrence of hindrance	Date of which hindrance was removed	Period of hindrance	Signature SE/PE	Remarks
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SE = Site Engineer

PE = Project Engineer

PROFORMA OF SITE ORDER BOOK

Name of the

Date of Commencement

Sr. No.	Remarks/ Instruct-ions of the site Engineer/ Architect	Dated of Site Engineer/ Architect	initials of the contractor for having received the instructions	Initials of the contractor	Action taken with the site Engineer	Dated initials of the Architects	Remarks of the PMC/C.C. Officials

PROFORMA OF REGISTER

RECEIPT OF MATERIALS AT SITE

Sr.	Description	Opening Balance	Receipt during	Consumption during month	Closing balance	Total qty. received till date
1.	Cement (M.T.)					
2.	Mild steel (M.T.)					
3.	Tor steel (M.T.)					
4.	Coarse aggregate (cu.mt.)					
5.	Fine aggregate (cu.mt.)					
6.	Teak wood (cum.mt.)					
7.	Bricks (Nos.)					
8.	Tiles (Nos.)					

Sr.	Description	Date of Commencement	Due date of Completion	Percentage Progress achieved
1.	General building work			
2.	Security equipment work			
3.	Pest control treatment work			
4.	Sanitary & Plumbing work			
5.	Electrical work			
6.	Air-conditioning work			
7.	Other works			

ABSTRACT OF THE SPECIFICATION FOR CIVIL WORK

A. Layout and Plan

- 1 : The Contractor shall set out all the work to be executed by him, in line with the standard base line, levels, position and bench marks and truly as per drawing at no extra cost to the owner.

B. Foundation

- 2.(a) In normal soil : Open foundation in spread footing for load bearing wall to be provided in K.B. Brick work in C.M.(1:6) proportion over (1:4:8) lean cement concrete.
- (b) In clayey soil : R.C.C. under reamed pile foundation is to be done considering the load as per IS 2911 (Part-III) with latest amendment.
3. Anti Termite treatment : The work shall be executed as specified in IS 6313 part-II-1998, with a ten year service guarantee in writing from a specialized agency for the job.
4. Plinth : Brick work in cement mortar (1:6) using kiln burnt brick having crushing strength 75 kg/sqm., & should conform to IS-10777-1992. Bricks should be tested as per IS-3495(part 1 to 4) 1992 method of test for Burnt clay building bricks.
5. Filling F&P : To be done with excavated materiel, if it is granular and sandy. Other wise suitable filling materials should be brought from out side Clay so should not be filled.

C. Superstructure :

6. Superstructure : Brick work in cement mortar (1:6) using K.B. Bricks having crushing strength 75kg/Sqm. should be used in accordance with IS-1077-1992.

The brick work in general shall be done in accordance with IS 2212-1991 as per specification given in the drawing.

7. Centering and shuttering : The shuttering shall conform to the shapes, lines, levels and dimensions shown in the drawing.
- It should be designed for a live load as per BIS code. A load of 400 kg/sqm. can be taken in addition to the weight of the green concrete. Any damage from faulty preparation or careless removal of centering should be made by the contractor at his own cost.
8. Bending, Binding of steel : Reinforcing bars for concrete shall be M.S. rounds conforming to Grade-I of IS 432-1982 or tor steel bars conforming to IS 1786-1985. Binding wire for reinforcement shall be annealed steel wire 20 BWG conforming to IS-280-1978. Unit weight of reinforcement bars shall be as per IS-1786-1985. Bending and placing of bars shall be as per design and conforming to IS-2502-1963. Code of practice for being and fixing of bars for concrete reinforcement.
9. R.C.C. Work : Cement used for all construction work and RCC works shall be ordinary portland cement or slag cement of specified grade conforming to IS-269-1989 & IS-455-1989 respectively.
- Water used for mixing concrete and mortar and curing shall be clean and free from Oil, acid, alkali, salts, and other organic materials and should be obtained from approved source only. Sand used for concrete and other works shall be hard durable, clean and shall be natural sand and shall comply with IS 2116-1980 sand for masonry mortar.
- The mixing placing compacting curing and finishing of concrete shall be done as per specification and according to IS-456-1978 code of practice of plane and reinforced concrete. The design of mix shall be according to IS-10262-1982 or any other approved standard method.

D. Finishing:

10. Plastering : Plastering shall be done in accordance with the provision of IS 1661-1972. Mix proportion and thickness of plaster shall be as per drawing and schedule of items.
- The surface to be plastered shall be cleaned with wire brush & primary levers are to be taken before applying plaster.
- Cement mortar for plastering work shall be used within 30 minutes after adding water.
11. Door and window : Door and window frames shall generally be built in at the time of construction. The M.S. clamps fixed to the frames shall be inserted & jammed in C.C. (1:2:4) mix.
- a) Aluminum Door & Window : Aluminum section for fabricating doors & windows etc. shall be extruded section conforming to IS-1948-1961 & 1949-1961.
- b) Angle iron chokath : The angle iron chokath shall be as per design and section and the general fabrication shall be conform to IS-1038-1983 and IS 1361-1978 as applicable.
12. Painting : All paints varnishes distempers or other surface coating materials shall be of approved quality conforming to appropriate Indian standard & to be used as per specification given drawing.
- White wash shall be prepared from freshly burnt lime, white in colour lime slaked on spot, conforming to IS-712-1984. Colour wash shall be prepared by adding mineral colour not affecting to lime.
- Cement paint shall be approved brand and manufacturer and shall conform with IS-5410-1992.
- Distemper should be of approved brand & manufacturer and with approved shade. This should comply to IS 427-1965 & 428-1969.

Enamel paint should be of approved brand & each to be used over Red oxide zinc chromate (IS 2074-1992) or wood primer to IS 3536-1966.

13. Flooring :

- a) A.S. flooring : Cement concrete shall be mixed, laid as specified and laying shall be done in alternate panels. The size and division of panels shall be as directed by Architect/Consultant. Granite finish shall either be laid over base concrete or separately laid over hard base concrete.
- b) Marble flooring : Flooring with 20 mm thick polished marble stone slabs of white variety of size 600 mm x 600 mm laid over existing flooring bed of C.C. with 20 mm thick CM (1:8) base course and neat grey cement slurry.
- c) 20 mm thick Pre cast pressed : Machine pressed mosaic tile of approved colour, should be in white/gray cement of 250mm x 250mm size with superior Indian marble chips of size upto 6mm, in approved colour, laid over existing C.C. bed, set over 12mm thick C.M. (1:4) based course.

1. TECHNICAL SPECIFICATION

1.1. General:

Scope of Work:

The work contemplated under this contract includes General Builder's work for the aforesaid project, all as detailed in the Bill of Quantities, Specifications and to complete the said work in every respect in accordance with this contract and with the directions and to the satisfaction of the Architect/ Consultant/ Owner/Employer.

Indian Standard Specification:

The particular Specifications for the work is as detailed hereinafter. These specifications shall be read in conjunction with the relevant Indian Standard Specifications and the obtainable as per local practice as detailed in various regional handbooks of practice and the work shall be executed accordingly. Where the specifications in any of the standards are at variance with the specifications detailed herein, the specifications herein shall govern.

Quality of Materials & General Standards of Work:

The contractor under this contract commits himself to use first class materials and assumes full responsibility for the quality of all material incorporated or brought for incorporation in the work. The work shall be executed in accordance with best engineering practice and as per direction of Architect/Consultant/Owner/ Employer.

Scaffolding:

All scaffolding and ladders required for the proper execution of the work shall be provided by the Contractor. The scaffolding should be stout and strong to prevent any collapse or displacement. Proper measure for safety of workmen working on scaffolding should be taken by the contractor.

Measurements:

The mode of measurements, wherever possible is specifically mentioned in these documents, where it has not been mentioned, it shall be as per provision of the relevant Indian Standards. All the measuring tapes and other accessories necessary shall be provided by the contractor.

Tools and Plant:

The contractor shall make all tools, plants and machinery necessary for execution of the works. He shall also arrange additional tools, plants and machinery as felt necessary by the Architect/Consultant time to time with no extra cost to owner. It is obligatory on the part of the contractor to arrange tools, plants & machinery at the work site in good and sound conditions, failing of which may constitute a breach of contract under the sole description of Architect/Consultant/Owner/ Employer.

Surveying and Staking:

It is the express responsibility of the contractor to bring to site all surveying instruments necessary for the marking out, fixation of levels, etc. and conduct these survey operations himself with utmost accuracy. The contractor shall put up stable bench marks etc. as necessary for the work. Architect/Consultant/ Owner/ Employer/his representative will be present when this work is being carried out and will inspect all these operations with the Contractor's assistance. The contractor shall be entirely responsible for accurate setting out of the work and he shall at his own expense make good any defects arising from errors in line and levels.

Dewatering:

Dewatering of accumulated water in all locations on job site from whatever source or cause until the virtual completion of the entire work shall be done by the contractor at his own expense and shall not be separately paid for. The rates quoted by the contractor shall be deemed to be inclusive of this.

Access to site, approach roads and roads within the premises:

The contractor shall at his own cost provide all approach roads required for the purpose of carrying out the work in the most expeditious and efficient manner and shall remove the temporary roads on completion. He shall acquaint himself thoroughly regarding condition and suitability of public roads leading upto the limits of the premises and will provide vehicles for transportation of materials which meet the requirements of these road conditions. It shall also be responsibility of the contractor to maintain at his own cost these roads till the construction is completed. The tenderer also acquainted himself with local laws and bylaws and complying with all police and highway authority requirements.

1.2 Earth Work:

Excavation:

Excavation for trenches over areas and for pits, etc. shall be done to widths, lines and levels as shown in drawings or to such lesser or greater widths lines and levels as directed. The bottom and side of excavation shall be trimmed to required side of excavation shall be trimmed to required levels, profile, etc. watered and thoroughly rammed. Where the contractor excavated below required level in good round inadvertently or carelessness they shall make up the void in concrete (1:5:10) at his own expense. During excavation the contractor shall take necessary precaution to retain earth, so that the earth will not slide or fall down to avoid any accident and hamper the progress of work. They will take necessary step to prevent the damage the adjacent structure or existing services. They shall repair and make good any such damage at their own expense to the satisfaction of the owner. A suitable path for men and materials around the excavated pit should be maintained throughout the work.

Dewatering:

All water which may get accumulated in excavations during the progress of work from whatever cause or source, shall bailed or pumped out as necessary. The rates for excavation shall be deemed to include for the same, if not otherwise specified.

Timbering to excavation (shoring):

Where the soil is soft and sides of excavation needs supporting suitably designed planking and strutting shall be provided. The rates for excavation shall be deemed to include for all planking and strutting as necessary.

Refilling around foundations:

Refilling around foundations shall be done with approved excavated materials. Refilling shall be done in layers not exceeding 30 cms thick, watered adequately and consolidated. The finished surface of filling shall be slightly proud to bring it to finished level after watering and consolidation as directed. The rates for refilling around foundations shall be deemed to include for this.

Disposal of Surplus excavated Materials:

All materials considered surplus shall be removed to destinations and disposed off as directed. The disposal of the materials can be in any of the following ways as directed by the Architect/Consultant/Owner/Employer.

1. Filling in low lying areas
2. Filling in at places of filling such as under floors, in roads, etc.
3. Stacking of materials in pre-designated stacking yard.
4. Removal of material outside the plot for disposal.

Filling:

Filling under floors or other places indicated shall be done with approved material obtained from excavation or approved materials brought from outside by the Contractor. The material should generally be of good quality. Filling shall be done in layers not exceeding 30 cms. thick and each layer shall be watered adequately and consolidated properly by 8 to 10 tones power rollers in the case of where floor is coming or pneumatic rammers where ever conditions permit. If it is not possible, the consolidation shall be done by hand rollers and pneumatic/hand rammers. The surface of the filling shall be finished to lines and levels as required. The filling shall be compacted in such a manner as to guarantee full stability. The compaction shall be such that minimum relative density obtained on testing is 90%. In general, test shall be performed for every 1000M² of compacted area. The filling final level after consolidation/then cutting and ready to take up soling work under the floor item, shall be checked by Architect/Consultant/ Owner/Employer.

Measurement:

Measurement for all excavation, filling, carting away and earth work shall be in solid measure. The rates quoted by the tenderers are thus for solid measure units. The following factors shall be applied to obtained quantities of solid measure.

- | | | |
|-------------------------------|---|--|
| . Excavation | : | No reduction in volume |
| . Filling watered and | : | Volume shall be determined by levels consolidated in layers levels taken before and after compacted filling and by measuring the length and breadth as required. |
| .Loose measure(as in trucks): | : | Volume of loose measure less or dumpings 25% or as per I.S. code of practice. |

Mild Steel and Tor Steel Reinforcement:

All M.S. reinforcement for concrete work shall conform strictly to the latest Indian Standards (IS: 432 - part I & II). They shall be of tested quality with a permissible stress value of 1400 Kg. Sqcm. High yield strength Ribbed Tor steel of cold twisted

steel for reinforcement shall be of tested quality and shall conform to the relevant Indian Standards (IS : 1786). Reinforcement shall be fabricated to shapes and dimensions shown on the drawing and shall be placed where indicated on the drawings or required to carry out the intent of drawing and specifications or as directed by Architect/ Consultant/Owner/ Employer. Before placing, reinforcement shall be thoroughly cleaned of loose rust, coating etc. which would result in reducing or destroying the bend. Oiling the bars to clean them is strictly prohibited. Bending, straightening, cutting etc. operations shall be carried out in a manner not injurious to the material.

All reinforcement shall be bent cold. Unless otherwise directed, reinforcement shall not be spliced at points of maximum stresses. Architect/Consultant/ Owner/Employer shall be informed of the same before such splicing is taken up. Laps and splicing shall conform to the latest Indian Standards.

Reinforcement shall be accurately tied at all intersections and laps with 16 SWG soft drawn binding wire, such that the reinforcement will give a rigid structure. Binding wire will not be measured or accounted for separately. The contractor's rate for reinforcement will be measured and paid for according to bending lists without allowances for cutting, wastage, binding wire etc. Authorized laps, hooks, chairs, spacers etc. shall however be accounted for in case, the contractor or Architect/Consultant/Owner/Employer desires to resort to welding or swivel nuts, there shall however be made as if the laps have been provided and no extra claim whatsoever shall be admissible on this account.

Reinforcement shall be assembled in place with proper concrete cover blocks to suit various covers as required.

Measurements:

All measurements shall be as given below or where not given as per latest IS : 1200. Concrete will be compensated for according to its actual volume.

The computation will be based upon the construction plans only and no site measurements shall be taken for this purpose. All incidental work stated in the Technical Specifications and also dewatering at the time of concreting are deemed to have been included for in the unit prices quoted by the contractor. Openings with an area larger than 0.1 sq.m. shall be deducted from concrete quantity and where openings are smaller, these shall not be deducted.

Form work will be measured and paid for according to their contact area. The unit prices of the forms incorporates all scaffolds, nails, clamps and all incidental work. Openings with an area larger than 2 M² shall be deducted from form work quantities and the form work required for sides of such openings shall be paid for. Openings of less than 1 M² area shall not be deducted from form work quantities and no allowance for form work for sides of such openings shall be made.

Reinforcement steel will be compensated for according to the approved bending lists without allowances for cutting, rolling margin and waste. Binding wire, cover blocks etc. will not be measured or paid for separately. The contractor shall prepare the Bar Bending Schedules and incorporate the same on the reinforcement

drawings all as directed and submit it to Architect/Consultant/ Owner/Employer for approval.

All openings and inserts which are indicated in drawings and as per requirements for services shall be provided at exact positions and no payments shall be made for providing or fixing these. Only such openings or inserts which have not been indicated earlier or such additional openings/inserts required specially due to changes made by Architect/Consultant/Owner/Employer shall be paid for.

Excepting for the above. All other measurements shall be as per stipulations under the latest Indian Standards Mode of Measurements for Building Works.

1.4 MASONRY:

Materials:

All bricks shall be table moulded, burnt bricks of first class quality. They shall be hard sound and well burnt with sharp edges and of uniform sizes and shapes. Bricks shall be neither under burnt nor over burnt and shall be free from cracks, stone floats, or other such defects.

When immersed in water for 24 hours, bricks shall not absorb more water than 20% of its dry weight. All bricks shall be identical/ equal to samples submitted and approved by Company before the commencement of the work. Crushing strength of 1st class bricks shall not be less than 80 Kg. Sq.cm. Metallic sound of brick is also a criteria for 1st class quality.

Cement and Sand:

Cement and sand used for masonry and plastering work shall confirm to the specifications laid down "Plain and Reinforced Concrete".

Additives:

Additives, like integral water proofing compounds, shall be of the approved type from reputed manufactures. These shall be used strictly in accordance with the manufacturer's instructions/specifications. The additives shall conform to IS: 9103.

Samples:

When demanded by Architect/Consultant/Owner/Employer, the Contractor shall produce samples of materials or carry out samples of work for Company's approval. All materials used as also works carried out shall conform, to the quality of approved samples. Production of these samples shall be at Contractors cost.

Brick masonry:

Brick shall be soaked in clear water for at least six hours in a vat before use. The average water absorption of brick after immersion in water shall not be more than 20% by weight. Bricks shall be laid in English bond unless specified otherwise. No

half or quarter brick shall be used except as closures. Brick shall be accurately raised to plumb.

Brick work shall be raised uniform all round and no part shall be raised more than 1 metre above another at any time, and the work shall be properly toothed and racked back.

In case of 11.5 cm. thick brick walls, hoop iron reinforcement 25mm x 12 to 16 gauge or wire netting reinforcement shall be provided in every fourth course. The reinforcement shall be properly bedded in mortar, properly lagged etc. all as directed.

The contractor will have to build in holdfast and such other fittings in brick work without extra cost.

Joints in brick work shall not be more than 10mm thick. Brick work shall not be raised more than 10 to 12 courses a day. The work shall be kept watered thrice a day for 10 days and afterwards twice a day for 3 weeks. All joints shall be thoroughly flushed with mortar at every course. Care shall be taken to see that bricks are properly bedded and all vertical joints completely filled to the full depth. The jointed of brick work shall be raised out to a depth not less than 10mm. as the work proceeds. The surface of brick work shall be cleaned down and watered properly before the mortar sets.

Construction joints are to be provided at an interval of 30 m in the case of boundary wall or where the length of brick wall is long.

The contractor shall also make or leave holes recesses as required and fill in the same at a later date as directed at no extra cost.

Measurements:

1. General

All the rates quoted by the Contractor shall be for a fully finished item of work and shall include for all material, labour, miscellaneous works like storage, loading/unloading, scaffolding, hoisting gear etc. as also all taxes, duties, overhead, profits, etc.

2. Masonry

Accounts on masonry shall be settled on the basis of cubic metres or square metres as indicated in the Bill of Quantities. Quantities will be decided on the basis of pertinent plans. Openings and recesses which exceed 0.10 cum. will be deducted from quantities. Openings left initially on specific instructions or as required shall be closed at a later date, if so instructed by Consultant, at no extra cost. Similarly, all openings, recesses, grooves etc. shall be provided at no extra cost. All materials supplied by Clients shall be fixed in masonry free of charge.

Lintels above door/window openings, for openings upto 100cm. clear width shall be treated as part of masonry and the cost therefor shall be settled in the same

manner as for masonry, irrespective of what material these lintels are made of. For openings of larger than 100cm. clear width, however, lintels shall be paid for under relevant items and due deduction shall be made in masonry.

1.5 Wood Work and Joinery:

Timber:

Unless otherwise specified all timber for frames for doors, windows & ventilators should be best quality sal wood, the timber should be free from knots, shakes, fissure, flaws, subcracks & other defects. The surface shall be smooth & free from blemishes & discolourations.

All timber for carpentry and joinery in touch with masonry of concrete shall be wood preservative before fixing.

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

Workmanship and Construction:

The workmanship shall be first class and to the approval of Architect/ Consultant/ Owner/ Employer . Scantlings and boardings shall be accurately sawn and shall be of required width and thickness. All carpenters work shall be wrought except where otherwise described. the workmanship and joinery shall be accurately set out in strict accordance with 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, braded, etc. and properly glued with approved quality adhesive to the satisfaction of Architect/Consultant/Owner/Employer. Door/Window frames shall have cut rebates. Planted rebates shall not be permitted. Where door frames are fixed flush with plaster to wall, wooden cover mould of 40 x 12 mm to be provided.

Doors, Windows Frames:

The specifications for frames of doors, windows, ventilators and clearstory windows are described here. The frames shall be wrought, framed and fixed in position as per detailed drawing and as directed by Architect/Consultant/ Owner/ Employer. Specified timber shall be used, and it shall be sawn in the direction of the grains. Sawing shall be truly straight and square. The scantling, shall be planed smooth and accurate to the full dimensions, rebates, roundings, and mouldings as shown in the drawings made, before assembling. Patching or plugging of any kind shall not be permitted except as provided. A tolerance of 2/3mm shall be allowed in the finished cross section dimensions of door and windows frames.

Joints:

These shall be of mortice and tenon type, simple, neat and strong Mortice and tenon joints shall fit in fully and accurately without wedging or filling. The joints shall

be glued, framed, put together and pinned with hardwood or bamboo pins not less than 10mm dia, after the frames are put together in position by means of a press.

Glueing of Joints:

The contact surface of tenon and mortice joints shall be treated before putting together with synthetic resin adhesive of make approved by Architect/Consultant/Owner/Employer.

Fixing in Position:

Before the frames are fixed in position these shall be inspected and pressed by Architect/Consultant/Owner/Employer, the frame shall be placed in proper position and secured to walls or columns as the case may be with metallic fastener, iron hold fasts as per direction by Architect/Consultant/ Owner/Employer.

In case of door frames without sills, the vertical members shall be embedded in the flooring to its full depth when sills are provided, these sills shall be embedded sunk in the floor to its full depth. The door frames without sills while being placed in position, shall be suitably strutted and wedged in order to prevent warping during construction. The frames shall also be protected from damage, during construction.

Measurements:

Wood work wrought and framed shall be measured for finished dimensions. No allowance shall be made for wastage and for dimensions supplied beyond those specified. Length of each piece shall be measured over all nearest to a cm. so as to include projections for tenons, scarves or mitres, width and thickness shall be measured to the nearest mm.

In case of mouldings, roundings, rebates, circular and varying sections, the sectional area of the piece shall be taken as the area of the least square or rectangle from which such a section can be cut.

Rate:

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

Paneled Shutters:

Solid wood panels for shutter shall be pattern and size as specified. Wherever possible each panel shall be in a single width piece . But where two pieces are used, width of each panel should not be less than 12.5 cm. when made from more than one piece, the pieces shall be jointed with a continuous tongued and grooved joint and glued together and reinforced with metal dewels. The grains of solid panel shall be framed into grooves to the full depth of the groove leaving in air space of 1.5mm and the faces shall be closely fitted to the sides of the grooves. Mouldings to the edge of panel openings shall be scribed at the joints. Approved sample should be kept at the site office as per direction of Architect/Consultant/ Owner/Employer.

Joinery Work:

Joinery work shall be started immediately after the commencement of the building work. All prices shall be accurately cut and planed smooth to the full dimensions without any patching or plugging of any kind. Rebates, roundings and mouldings as shown in drawings shall be made before assembling. The thickness of styles and rails shall be as specified for the shutters.

All members of the door shutters shall be straight without any warp or bow and shall have smooth, well planed faces at right angles to each other. The corners and edges of panels shall be finished as shown in drawings, and these shall be shall have mitred joints with the styles. Styles and rails shall be properly and accurately mortised and tenoned. Rails which are more than 180mm. in width shall have two tenons. Styles and end rails of shutters shall be made out of one piece only. The tenons shall pass through styles for atleast. 3/4th of the width of the style. When assembling a leaf, styles shall be left projecting as a horn. The styles and rails shall have 12mm. groove in paneled portion for the panel to fit in.

The depth of rebate in frames for housing the shutters shall in all cases be 1.25mm and the rebate in shutters for closing in double shutter doors or windows shall not be less than 2cm. In the case of double leafed shutters, the meeting of the styles shall be rebated 20mm. The rebate shall be splayed.

The joinery work shall be assembled and passed by Architect/Consultant/ Owner/ Employer and then the joints shall be pressed, and secured by bamboo pins of about 6mm diameter. The horns of styles shall be sawn off.

Tolerance:

The finished work with a tolerance of + 1 mm in thickness + 2/3mm in width of styles and rails shall be accepted.

Glueing of Joints:

The contact surfaces of tenon and mortice joints shall be treated before putting together with bulk type synthetic resin adhesive of a make approved by Architect/Consultant/Owner/Employer. Shutters shall not be painted, oiled or otherwise treated, before these are fixed in position and passed by Architect/Consultant/Owner/Employer. Mountings and glazing bars shall be stub-tenoned to the maximum depth which the size of the member would permit or to the depth of 25mm, whichever is less. Thickness of each tonon shall be approximately one third the finished thickness of the members and the width of each tenon shall not exceed five times its thickness.

Beading:

Timber, plywood, hard board and particle board panels shall be fixed only with grooves but additional beading may not be provided either on one side or on both sides. In so far as glass and asbestos panels are concerned beading shall always be provided without grooves, where beading is provided without grooves, the

beading shall be only on the side, the other side being supported by rebate from the styles. For external doors and windows beading shall be fixed on the outside.

Fittings:

Details of fittings to be provided as per the schedule of fittings.

Measurements:

Length and width of the shutters shall be measured to the nearest cm. in closed position covering the rebates of the frame but excluding the gap between the shutter and the frame. Overlap of two shutters shall not be measured. All work shall be measured net as fixed.

No extra payment shall be made for shape, joints etc.

Rate:

It includes the cost of materials and labour involved in all the operations described above.

1.7 ROLLING SHUTTERS, STEEL DOORS, M.S. WINDOWS:

M.S. Door frames:

The M.S. Door framing shall be fabricated as shown in drawing and fabricated with necessary stiffeners, hinges, holdfasts, etc. as per the drawings/sketches attached with the tender. The contractor shall quote the rate taking into account all the above requisites, including the width of frame and erecting at site in line, level, plumb, etc. and with one coat of shop paint of Red Oxide Primer. The metal door shall be stored under cover to prevent damage or distortion when taking delivery of items supplied by owner, the Contractor shall satisfy himself that the items supplied are up to the specified standard. Any defect detected shall promptly be brought to notice of Architect/Consultant/Owner/Employer.

The work shall have to be done in co-ordination with other agencies working at site.

Rolling Shutters:

The specifications shall be generally as per the manufactures one. However, the following may be noted. The M.S. laths for rolling shutters shall be 20 gauge and the type of rolling shutter shall be pull and push type. The workmanship should be of first class quality. The springs and other materials shall be of best quality. The vertical guides shall be straight and of pressed type and the shutters shall be sizes to suit the requirements of this tender.

M.S. Windows and Ventilators:

All windows shutters shall be fabricated to correct shape and size as per drawings approved by Company. However, before fabricating any item the contractor has to check the opening dimensions at site. Any discrepancy therein shall be brought to

Company's notice in writing mentioning the particular windows. Steel windows shall conform IS 1038 & IS 1361.

All sections for windows shall be extruded sections of approved quality. All extruded sections shall be of 14 gauge. Z sections shall be of 10 gauge sheet.

All glasses shall be standard glazing quality clear sheet glass and free from waves, specks, disfigurements or blemishes of any kind. All glasses shall be accurately cut and fitted with glazing clips or as directed by Company. The thickness of the glass will be as per the specification mention in the Bill of Quantities. Glass should be fixed in the frame with best quality putty of required thickness.

The contractor shall have to make all necessary holes in concrete masonry for fixing of windows. The contractor shall also fix and grout the shutter in line and level with his own masons.

The steel members shall be given a coat of approved anti-rust paint.

Hardware : Peg stay arms, handles, hinges etc. shall be of approved quality and details.

Fixed or openable panels of the windows shall be as shown in the drawing.

Measurement:

The rate quoted by the contractor under each item in the Bill of Quantities for a complete finished item of and no claims by the contractor in this regard shall be admissible. Supplying and fixing of all the fittings and iron mongery shall be deemed to have been included in contractor's rates and consequently, shall not be paid for separately.

The form work and scaffoldings shall be deemed to have been included in the rates quoted by the contractor and shall not be paid for separately for any of the items.

1.8 CEMENT PLASTERING (INTERNAL & EXTERNAL):

The Cement plaster shall be 6mm, 12mm or 20mm or any thickness as specified in the item.

Scaffolding:

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

For all other brick work in buildings, single scaffolding shall be permitted. In such cases, the inner end of the horizontal scaffolding pole shall rest in a hle provided only in the header course for the purpose. Only one header for each pole shall be left out. Such holes for scaffolding shall, however, not be allowed in pillars/ columns less than one metre in width, or immediately near the skew backs of arches. The holes left in masonry works for scaffolding purposes shall be filled and made good before plastering.

Preparation of Surface:

The Joints shall be raked out properly. Dust and loose mortar shall be brushed out. Efflorescence if any shall be removed by brushing and scraping. The surface shall then be thoroughly washed with water, cleaned and kept wet before plastering is commenced.

In case of concrete surface if a chemical retarder has been applied to the form work, the surface shall be roughened by wire brushing and all the resulting dust and loose particles cleaned off and care shall be taken that none of the retarders is left on the surface.

Application of Plaster:

Ceiling plaster shall be completed before commencement of wall plaster.

Plastering shall be started from the top and worked down towards the floor. All putlog holes shall be properly filled in advance of the plastering as the scaffolding is being taken down. To ensure even thickness and true surface, plaster about 15 x 15 cm. shall be first applied, horizontally and vertically at not more than 2m. intervals over the entire surface to serve as gauges. The surfaces of these gauged areas shall be truly in the plane of the finished plaster surface. The mortar shall then be laid on the wall, between the gauges with trowel. The mortar shall be applied in a uniform surface slightly more than the specified thickness. This shall be beaten with thin strips of bamboo about one metre long to ensure thorough filling of the joints, and then brought to a true surface, by working a wooden straight edge reaching across the gauges, with small upward and side ways movements at a time. Finally the surface shall be finished off true with trowel or wooden float according as a smooth or a sandy granular texture is required. Excessive trowel in or over working the float shall be avoided. During this process, a solution of like putty shall be applied on the surface to make the later workable.

All corners, arises, angles and junctions shall be truly vertical or horizontal as the case may be and shall be carefully finished. Rounding or chamfering corners, arises, junctions etc. where required shall be done without any extra payment. Such rounding or chamfering shall be carried out with proper templates to the sizes required.

In suspending work at the end of the day, the plaster shall be left, out clean to line both horizontally and vertically, when recommencing the plastering, the edge of the old work shall be scraped cleaned and wetted with lime putty before plaster is applied to the adjacent areas, to enable the two to properly joint together. Plastering work shall be closed at the end of the day on the body of wall and not nearer than 15 cm. to any corners or arises. It shall not be closed on the body of the features such as plasters, bands and cornices nor at the corners or arises. Horizontal joints in plaster work shall not also occur on parapet tops and copings, as these invariably lead to leakages.

No portion of the surface shall be left out initially to be patched up later on.

Finish:

The plaster shall be finished to a true and plumb surface and to the proper degree of smoothness as required. The work shall be tested frequently as the work proceeds with a true straight edge not less than 2.5m. long and with plumb bobs. All horizontal lines and surfaces shall be tested with a level and all jambs corners with a plumb bob as the work proceeds.

Thickness:

The thickness of the plaster specified shall be measured exclusive of the thickness of key i.e. grooves or open joints in brick work. The average thickness of plaster shall not be less than the specified thickness. The minimum thickness over any portion of the surface shall not be less than specified thickness by more than 3mm.

The average thickness should be regulated at the time of plastering by keeping suitable thickness of the gauges. Extra thickness required in dubbing behind rounding of corners at junctions of wall or in plastering of masonry cornices etc. will be ignored.

Curing:

Curing shall be started 24 hours after finishing the plaster. The plaster shall be kept wet for a period of seven days. During this period it shall be suitably protected from all damages at the contractor's expense by such means as the Architect/Consultant/Owner/ Employer may approve. The dates on which the plastering is done shall be legibly marked on the various sections plastered so that curing for the specified period there after can be watched.

Precaution:

Any cracks which appear in the surface and all portions, which should hollow when tapped or are found to be soft or otherwise defective, shall be cut out in rectangular shape and redone as directed by Architect/Consultant/ Owner/ Employer.

1.9 CEMENT PLASTER WITH A FLOATING COAT OF NEAT CEMENT:

The cement plaster shall be 6mm. 12mm or 20mm thick, finished with a floating coat of neat cement as described in the item.

When the plaster has been brought to a true surface with the wooden straight edge it shall be uniformly treated over its entire area with a paste of neat cement and rubbed smooth, so that the whole surface is covered with neat cement slurry 1.5mm thick while the plaster surface is still fresh. Smooth finishing shall be completed with trowel immediately and in no case later than half an hour adding water to the plaster mix.

1.10 CEMENT CONCRETE FLOORING:

Cement Concrete:

Cement concrete of specified mix shall be used and it shall generally conform to the specifications described in plain concrete.

Sub-grade:

Flooring shall be laid on concrete sub-grade where so provided. The sub-grade shall be provided with the slopes required for the flooring. Flooring in verandas, kitchens, baths, water closets and courtyards shall invariably be provided with suitable slope to drain off washing and rain water.

If the sub-grade consists of lime concrete, it shall be allowed to set for seven days and the flooring shall be laid in the next three days.

If the sub-grade is of lean cement concrete, the flooring shall be commenced preferably within 48 hours of the laying of sub-grade. The surface of the sub-grade shall be roughened with steel wire brushes without disturbing the concrete. Before laying the flooring the sub-grade shall be wetted and smeared with a coat of cement slurry at 2 Kgs. of cement spread over an area of one sqm. so as to get a good bond between the sub-grade and concrete floor.

If the cement concrete flooring is to be laid directly on the R.C.C. slab the surface of RCC slab shall be cleaned and the laitance shall be removed and a coat of cement slurry at 2 Kg. of cement per Sqm. shall be applied, so as to get a good bond between RC slab and concrete floor.

Thickness:

The thickness of floor shall be as specified in the description of the item.

Laying:

Panels:

Flooring of specified thickness shall be laid in the pattern as given in the drawings or as directed by Architect/Consultant/Owner/ Employer. The border shall have mitred joints at the corners of the room and intermediate joints shall be in straight line with the panels joints shall be in straight line with the panel joints. The panels shall be of uniform size.

The panels shall be bounded by wooden angle iron battens. The battens shall have the same depth as the concrete flooring. These shall be fixed in position, with their top at proper level, giving required slopes. The surface of the batten or flats, to come in contact with the concrete shall be smeared with soap solution or non-sticking oil (Form oil or raw linsed oil) before concreting. The flooring shall butt against the masonry wall, which shall not be plastered.

The concreting shall be done in the manner described in plain cement concrete. The battens used for shuttering, shall be removed on the next day of the laying of cement concrete. The ends thus exposed shall be repaired, if damaged, with cement mortar 1:2 (1 cement : 2 coarse sand) and allowed to set for minimum period of 24 hours. The alternate panels shall then be cleaned of dust, mortar droppings etc. and concrete laid. While laying concrete, care shall be taken to see that the edges of the previously laid panels are not damaged and fresh mortar is not splashed over them. The joints between the panels should come out as fine and straight lines.

Finishing:

The finishing of the surface shall follow immediately after the occasion of beating. The surface shall be left for some time, till moisture disappears from it. Excessive trawling shall be avoided. Use of dry cement or cement and sand mixture sprinkled on the surface to stiffen the concrete or absorb excessive moisture, shall not be permitted.

Fresh quantity of cement shall be mixed with water to form a thick slurry and spread over of flooring while the concrete is still green. The cement slurry shall then be properly pressed and finished smooth.

The junctions of floor with wall plaster, dado, or skirting shall be rounded off where so specified.

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

Curing:

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

Precautions:

Flooring in lavatories and bath rooms shall be laid after fixing of water closet and squatting pans and flooring traps. Traps shall be plugged, while laying the floors and opened after the floors are cured and cleaned. Any damages done to S.C's squatting pans and floor traps during the execution of work shall be made good.

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

Measurements:

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

Rate:

The rate shall include the cost of all matters and labour involved in all the operations described above including application of cement slurry on RCC and or on sub-grade including roughening and cleaning the surface. Nothing extra shall be paid for laying the floor at different levels in the same room or courtyard and rounding of edges of sunk floors.

In case the flooring is laid in alternate panels, it includes the cost of shuttering.

1.10.1 FLOORING:**Glazed Ceramic Tile Fixing:**

66mm thick glazed ceramic tiles of size (150mm x 150mm) upto 1500mm height from floor level of approved make confirming to IS : in Dado/Skirting in toilets Ground Floor fixed in neat cement slurry after soaking the tiles in water over 12mm thick cement plaster (1:3) with white cement pointing in joint, including washing and cleaning with oxalic acid etc. complete.

8mm thick glazed ceramic tiles of size (300mm x 300mm) upto 1500mm height from floor level of approved make confirming to IS in Dado/Skirting in Operation Theater in Ground Floor fixed in neat cement slurry after soaking the tiles in water over 12mm thick cement plaster (1:3) with white cement pointing in joint, including washing and cleaning with oxalic acid etc. complete.

Kota Stone Flooring:

50mm thick Kota stone flooring to all Toilets in Ground Floor with 25mm thick kota stone dressed and polished tiles bottom coated with neat cement slurry and fixing in flooring on 25mm thick bed of cement mortar (1:3) mix and joints filled with gray cement slurry, properly leveled, washed, acid cleaned and polished.

Cuddapah Stone Fixing:

Black Cuddapah stone Cladding in Ground Floor with 25mm thick Black Cuddapah stone Tiles dressed, rubbed and polished, bottom coated with neat cement slurry and fixed on 12mm thick cement mortar (1:3) mix to masonry surfaces to proper level and joints filled with cement mixed with black oxide in required proportion washed Acid Cleaned.

Factory Made Shutters:

38mm thick fully panelled Door shutter with style and rail made out of well seasoned chemically treated 2nd class hard wood of 100mm width style and top rail 175mm width lock all and bottom rail with 12mm inserted panels of marine grade phenol bonded BWP ply confirming to IS:303 or exterior grade pre-laminated board confirming to IS:12406/88 of approved make colour and shade etc.

38mm thick Mosquito Proof Door shutter with style and rail made out of well seasoned chemically treated 2nd class hard wood of 100mm width style and top

rail, 175mm width lock rail and bottom rail with inserted panels of Galvanised Steel wire Mesh complete.

30mm thick Partly (1/3) Glazed and Partly (2/3) paneled window shutter, of 75mm width style and rail made out of well seasoned chemically treated 2nd class hard Wood with 12mm thick inserted panels of marine grade phenol bonded BWP ply confirming to IS:303 or exterior grade pre-laminated board confirming to IS:12406/88 and Glazing shall be done by 4mm thick clear Glass.

PVC Door Frame:

PVC Door Frame shall be made out of PVC section in an overall size of 40mm x 58mm having multi chamber cross section with a maximum wall thickness of 2.5mm + 0.3mm to miter cut at the corner and welded. The frame shall be reinforced with steel or other appropriate materials as per requirement.

1.13 OIL EMULSION (OIL BOUND) DISTEMPERING:

Materials:

Oil emulsion (Oil Bound distemper (IS-428-1969) of approved brand and manufacture shall be used. The primer where used as on new work shall be cement primer or distemper primer as described in the item. These shall be of the same manufacturer as distemper. The distemper shall be diluted with water or any other prescribed thinner in a manner recommended by the manufacturer. Only sufficient quantity of distemper required for days work shall be prepared.

The distemper and primer shall be brought by the contractor in sealed tins in sufficient quantities at a time to suffice for a fortnight's work, and the same shall be kept in the joint custody of the contractor and Architect/Consultant/Owner/Employer. The empty tins shall not be removed from the site of work, till this item of work has been completed and passed by Architect/Consultant/Owner/ Employer.

Preparation of the Surface:

For new work the surface shall be thoroughly cleaned of dust, old white or colour wash by washing and scrubbing. The surface shall then be allowed to dry for at least 48 hours. It shall then be sand papered to give a smooth and even surface. An unevenness shall be made good by applying putty, made of plaster of paris mixed with water on the entire surface including filling up the undulation and then sand papering the same after it is dry.

In the case of old work, all loose pieces and scales shall be removed by sand papering. The surface shall be cleaned of all grease, dirt, etc. Pitting in plaster shall be made good with plaster of paris mixed with the colour to be used. The surface shall then be rubbed down again with a fine grade sand paper and made smooth. A coat of the distemper shall be applied over the patches. The patched surface shall be allowed to dry thoroughly before the regular coat of distemper is applied.

Application:

Priming Coat - The priming coat shall be with distemper primer or cement primer as required in the description of the item.

Note:

If the wall surface plaster has not dried completely cement primer shall be applied before distemping the walls. But if the distemping is done after the wall surface is dried completely, distemper primer shall be applied.

Oil bound distemper is not recommended to be applied, within six months of the completion of wall plaster.

For old work no primer coat is necessary.

Distemper coat - For new work, after the primer coat has dried for at least 48 hours, the surface shall be lightly sand papered to make it smooth for receiving the distemper, taking care not to rub out the priming coat. All loose parties shall be dusted off after rubbing. One coat of distemper properly diluted with thinner (water or other liquid as stipulated by the manufacturer) shall be applied with brushes in horizontal strokes followed immediately by vertical ones which together constitute one coat.

The subsequent coats shall be applied in the same way Two or more coats of distemper as are found necessary shall be applied over the primer coat to obtain an even shade.

A time interval of at least 24 hours shall be allowed between consecutive coats to permit of the proper drying of the proceeding coat.

For old work the distemper shall be applied over the prepared surface in the same manner as in new work. One or more coats of distemper as are found necessary shall be applied to obtain an even and uniform shade.

15cm. double bristled distemper brushes shall be used. After each day's work, brushes shall be thoroughly washed in hot water with soap solution and hung down to dry. Old brushes which are dirty and caked with distemper shall not be used on the work.

1.14 CEMENT PRIMER:

Cement primer coat is used as a based coat on wall finish of cement lime or lime cement plaster or on asbestos cement surfaces before oil emulsion distemper paints are applied on them. The cement primer is composed of a medium and pigment which are resistant to the alkalies present in the cement, lime or lime cement in well finish and provides a barrier for the protection of subsequent coats of oil emulsion distemper paints.

Primer coat shall be preferably applied by brushing and not by spraying. Hurried priming shall be avoided particularly on absorbent surfaces. New plaster patches in

old work should also be treated with cement primer before applying oil emulsion paints, etc.

Preparation of the Surface:

The surface shall be thoroughly cleaned of dust, old white or colour wash by washing and scrubbing. The surface shall then be sand papered to give a smooth and even surface. Any unevenness shall be made good by applying putty, made of plaster of parties mixed with water on the entire surface including filling up the undulation and then sand papering the same after it is dry.

Application:

The cement primer shall be applied with a brush on the clean dry and smooth surface. Horizontal strokes shall be given first and vertical strokes shall be applied immediately after wards. This entire operation will constitute one coat. The surface shall be finished as uniformly as possible leaving no brush marks. It shall be allowed to dry for at least 48 hours, before oil emulsion paint is applied.

1.15 CEMENT PAINT:

Materials:

The cement paint shall be (conforming to IS: 5400 1968) of approved brand and manufacture.

Preparation of Surface:

For new work, the surface shall be thoroughly cleaned of all mortar dropping, dirt, dust, leaned of all dirt, dust, algae, oil etc. by brushing and washing Pitting in plaster shall be made good and a coat of water proof cement paint shall be applied over patches after wetting them thoroughly.

Preparation of mix:

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

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

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

Application:

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

The second coat shall be applied after the first coat has been set for at least 24 hours. Before application of the second or subsequent coats the surface of the previous coat shall not be wetted.

For new work, the surface shall be treated with three or more coats of water proof cement paint as found necessary to get a uniform shade.

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

Precaution:

Water cement paint shall not be applied on surfaces already treated with white wash, colour wash, distemper dry or oil bound, varnishes, paints, etc. It shall not be applied on gypsum, wood and metal surfaces.

1.16 PAINTING:**Materials:**

Paints, oil varnishes etc. of approved brand and manufacture shall be used ready mixed paint as received from the manufacturer without any admixture shall be used.

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

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

Commencing Work:

Painting shall not be started until Architect / Consultant / Owner/ Employer has inspected the items of work to be painted, satisfied himself about their proper quality and given his approval to commence the painting work. Painting of external

surface should not be done in adverse weather condition like hail storm and dust storm.

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

The rooms should be thoroughly swept out and the entire building cleaned up, at least one day in advance of the paint work being started.

Preparation of Surface:

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

Application:

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

The painting shall be laid on evenly and smoothly by means of crossing and laying off, the later in the direction of the grain of wood. The crossing and laying off consists of covering the area over with paint, brushing the surface hard for the first time over and then brushing alternately in opposite direction, two or three times and then finally bushing lightly in a direction at right angles to the same. In this process, no brush marks shall be left after the laying off is finished. The full process of crossing and laying off with constitute one coat.

The left over paint shall be put back into the stock tins. When not in use, the containers shall be kept properly closed.

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

In painting doors and windows, the putty round the glass panes must also be painted, but care must be taken to see that no paint stains etc., are left on the glass. Tops of shutters and surfaces in similar hidden locations shall not be left out in painting.

In painting steel work, special care shall be taken while painting over bolts, nuts, rivets, overlaps etc.

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

Brush and Containers:

After work, the brushes shall be completely cleaned of paint and linsed oil by rinsing with turpentine. A brush in which paint has dried up is ruined and shall on no

account be used for painting work. The containers when not in use, shall be kept closed and free from air so that paint does not thicken and also shall be kept safe from dust. When the paint has been used, the containers shall be washed with turpentine and wiped dry with soft clean cloth, so that they are clean and can be used again.

Measurements:

The length and breadth shall be measured correct to a cm. The area shall be calculated in Sq. metres (correct to two places of decimal), except otherwise stated, small articles not exceeding 10 sq. decimetres (0.1 Sqm.) of painted surfaces where not in conjunction with similar painted work shall be enumerated.

Painting up to 15 Cm. in width or in girth and not in conjunction with similar painted work shall be given in running metres.

Priming coat on wood, Iron or Plastered Surface:

Primer:

The primer for wood work, iron work or plastered surface shall be as specified in the description of the item.

The primer shall be ready mixed primer of approved brand and manufacture.

Preparation of Surface:

Wooden Surface:

The wood work to be painted shall be dry and free from moisture. The surface shall be thoroughly cleaned. All unevenness shall be rubbed down smooth with sand paper and shall be well dusted. Knots, if any shall be covered with preparation of red lead made by grinding red lead in water and mixing with strong glue sized and used hot. Appropriate filler material with same shade as paint shall be used where specified.

The surface treated for knotting shall be dry before painting is applied. After the priming coat is applied the holes and indentation or the surface shall be stopped with glazier's putty or wood putty respectively. Stopping shall not be done before the priming coat is applied as the wood will absorb the oil in the stopping and the latter is therefore liable to crack.

Iron & Steel Surface:

All rust and scales shall be removed by scraping or by brushing with steel wire brushes. Hard skin of oxide formed on the surface of wrought iron during rolling which becomes loose by rusting. shall be removed.

All dust and dirt shall be thoroughly wiped away from the surface. If the surface is wet, it shall be dried before priming coat is undertaken.

Plastered Surface:

The surface shall ordinarily not be painted until it has dried completely Trial patches of primer shall be laid at intervals and where drying is satisfactorily, painting shall then be taken in hand. Before primer is applied, holes and undulations, shall be filled up with plaster of paris and rubbed smooth.

Application:

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

All other the specifications described under painting shall hold good so far as they are applicable.

Painting with ready mixed paint:

Ready mixed paints of approved brand and manufacture and of the required shades shall be used. They shall conform in all respects to the relevant IS specifications.

Painting of New Surface:

- a) Wood work - The surface shall be cleaned and all unevenness removed as specified in priming coat on wood, iron & plastered surface. Knots if visible, shall be covered with a preparation of red lead. Holes and indentations on the surface shall be filled in with glazier's putty or wood putty and rubbed smooth before painting is done. The surface should thoroughly dry before painting.
- b) Iron and Steel Work - The priming coat shall have dried up completely before painting is started. Rust and scaling shall be carefully removed by scraping or by brushing with steel wire brushes. All dust and dirt shall be carefully and thoroughly wiped away.
- c) Plastered Surface - The priming coat shall have dried up completely before painting is started. All dust and dirt that has settled on the priming coat shall be thoroughly wiped away before painting is started.

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

Painting on Old Surface:**Preparation of Surface:**

- a) Wood work - If the old paint is sound and firm and its removal is considered unnecessary, the surface shall be rubbed down with pumice stone after it has been cleaned of all smoke and grease by washing with lime and rinsing with water and

drying. All dust and loose paint shall be completely removed. The surface shall then be washed with soap and water.

- b) Plaster surface - It shall be as specified for (a) wood work.

If before painting any portion of the wall shows signs of dampness, the causes shall be investigated and the damp surface shall be properly treated. Such treatment shall be paid for separate. A thin coat of white lead if so required shall be applied on the wet or patchy portion of the surface before painting is undertaken and this shall be paid extra.

- c) Aluminium Paint - Aluminium paint of approved brand and manufacture shall be used. The paint comes in compact dual containers with the paste and the medium separately. The two shall be mixed together to proper consistency before use. Each coat shall be allowed to dry for 24 hours and lightly rubbed down with fine grade sand paper and dusted before the next coat is applied. The finished surface shall present an even and uniform appearance. As aluminium paint is likely to settle in the container, care shall be taken to frequently stir the paint during use. Also the paint shall be applied and laid off quickly, as surface is otherwise not easily finished.

Painting with Wood Preservative:

Oil type wood preservative of specified quality and approved make conforming to IS: 218-1961 shall be used. Generally, it shall be creosote oil type-1 or anthracene oil.

Painting on New Surface:

Preparation of surface:

Painting shall be done only when the surface is perfectly dry to permit of good absorption. All dirt, dust or other foreign matter shall be removed from the surface to be painted. All roughness shall be sand papered and cleaned.

Application:

The preservative shall be liberally with a stout brush and not daubed with rags or cotton waste. It shall be applied with a pencil brush at the joints of the wood work. The first coat shall be allowed at least 24 hours to soak in before the second (th final) coat is applied. The second coat shall be applied in the same manner as the first coat. The excess of preservative which does not soak into the wood shall be wiped off with a clean dry piece of cloth.

The specifications described in painting shall hold good in so far as they are applicable.

Guarantee:

The Contractor shall be required to furnish a guarantee in respect of the water tightness of the roof for a period of one year from the date of final completion of work.

TECHNICAL SPECIFICATIONS FOR SANITARY FITTINGS

1.0 SANITARY WARES AND ALLIED FITTINGS.

All sanitary wares with their allied fittings must be first quality (best) of approved make and brand.

2.0 SQUATTING PATTERN W.C. PAN (INDIAN TYPE)

The W.C. Pan shall be of white vitreous China of specified size and pattern (Orissa or long pattern as specified) with an integral flushing rim. It shall have the flushing horn in the back unless it is not possible to accommodate cistern to suit this design. The pan shall be of approved quality. it shall have 100 mm. C.I. or porcelain trap 'P' or 'S' type with minimum effective seal of 50 mm. and 50 mm. vent arm.

2.1 FIXING OF W.C. PAN

The squatting type W.C. pan shall be sunk in floor sloped towards the pan in a workmanship like manner, care being taken not to damage then pan in the process of fixing. It damaged in any way it shall be replaced at contractors cost. It shall be fixed on a proper cement concrete base of 1:3:6 proportion taking care that the cushion is uniform and even without having any hollows between the concrete base and pan and finished just below level of rim of pan to received the specified thickness of the floor finishing. No extra for concrete bed shall be paid for.

The joint between the pan and the trap shall be made with cement mortar 1:1 and shall be leak proof.

3.0 PEDESTAL WASH DOWN SYPHONIC (SINGLE OR DOUBLE TRAP) WATER CLOSET (EUROPEAN TYPE)

The W. C. Pan shall be of white vitreous chine unless otherwise specified of one piece construction of wash down type with integral 'P' or 'S' trap as required. It shall be of approved quality and pattern.

3.1 INSTALLATION :

The weight of the fixture and user are supported on the floor and not on the drainages pipe and this should be done in standard approved method.

3.2 SEAT AND COVER :

The double solid seat with lid shall be of well seasoned teak wood varnished or mahogany polished or plastic seat as specified with rubber buffers and shall be fixed in position by using chromium plated brass hinges and screws. the seat shall be nonabsorbable and free from cracks and crevices in the materials. The plastic seat and cover, where specified, shall conform to I.S. specifications and shall be of white colour unless otherwise specified.

4.0 FLUSHING :

The flushing of the squatting and pedestal W.C. pan shall be done by low level valveless syphonic flushing cistern of approved quality and capacity as specified. In the former case the connection between the flush pipe of the cistern and W.C. pan shall be made by Rigid PVC pipe connection as specified. The other specification will be as for squatting pattern W.C. pan.

The flush pipe shall be fixed to wall by using holder bat clamps or embedded as required.

As specified low level Cisterns of specified capacity shall be fitted with all internal fittings brackets and C.P. brass flushing handle, and connected to the W.C. pan by means of 40 mm. diameter chromium plated brass bend and rubber or any other as specified.

4.1 BRACKETS :

The cistern shall be fixed on cast Iron or rolled steel cantilever brackets of required strength which shall be firmly embedded in the wall or fixed by using wooden plug and secret, to the satisfaction of the Consultant/Employer. Depending on the quality of work and type of sanitary fixtures, the fixing of cistern should vary in quality of materials and design also. Or it may be installed in other ways like placing on the top at the back of the W.C.

4.2 OVERFLOW :

The cistern shall be provided with 20 mm. pipe with fittings which shall terminate into mosquito proof coupling secured in a manner that will permit it to be readily cleansed or renewed, when necessary.

4.3 FLUSH PIPE.

Unless otherwise stated in the schedule of quantities, the outlet or flush pipe from the low level cistern shall be of 40 mm. Rigid PVC/Brass chromium pipe minimum thickness of 2.6 mm. as specified or P.V.C. pipe as required by the Consultant/Employer which shall be connected to the W.C. pan by means of an approved type of joint adaptus. The flush pipe shall be fixed to wall by using holder bat clamps or embedded as required.

4.4. PAINTING C.I. CISTERN

Inside of cisterns and fittings shall be painted with approved bituminous paint and outside of the cisterns, if required, brackets, overflow and flush pipes, if required, etc. shall be painted with two coats of synthetic enamel paint of approved shade and make to given an even appearance. The cost of such painting shall be included in the rate quoted for the flushing cistern.

5.0 STANDING URINALS.

5.1 BOWL URINAL.

The urinal shall be flat back or angular pattern lipped front basin of required dimensions of white vitreous china and one piece construction with internal flushing box rim of an approved make as specified. It shall be fixed in the position by using wooden plug embedded in the wall with screw of proper size. Each urinal shall be connected to a 40 mm. diameter waste lead pipe unless otherwise specified, which shall discharge into a channel or a floor trap, or as specified.

5.2 HALF STALL URINALS.

The urinal stall and its screen shall be of white vitreous china of approved quality and manufacturer. The stall shall be 114 cm. high and 46 cm. wide and 40 cm. deep. the stall shall be provided with 84 cm. x 36 cm. division plates. In case of two or more urinals there shall be further division plates similar to end screens. The range shall have 15 cm. deep tread plates of first class quality unless otherwise specified.

5.3 FLUSHING :

Where not specified the stall shall be provided with white glazed vitreous china automatic flushing cistern of proper capacity with 6 mm. minimum body thickness unless otherwise specified. The cistern shall be complete with fittings and brackets which shall be fixed to the wall. The cistern shall be connected to the stall through standard size C.P. brass flush pipe with spreader arrangement and clamp unless otherwise specified. Where the cistern have not been specified it will be from distribution line through Brass C.P. connector and spreaders.

5.4 OUT-LET.

Each of half stall shall be provided with C.P. Brass outlet (dome shape) grating of size 32 mm. for each half stall and then through PVC pipe to urinal channel.

6.0 SQUATTING URINALS.

6.1 SQUATTING PLATES.

The urinal plates shall be of white glazed vitreous chine integral flushing rim of size 600 mm. x 350 mm. as specified. There shall be white vitreous channel with stop and outlet pieces in front. The plate and channel shall be of approved quality.

The joint between the urinal plate and the flush pipes shall be made with putty or white lead mixed with chopped heamp.

6.2 OUT-LET.

The squatting plate or a range of squatting plates shall be provided with a 65 mm. diameter standard urinal C.I. trap with vent arm having 65 mm. C.P. brass out-let grating or as specified.

6.3 WALLING.

The squatting plate shall have 1.22 M. high wall in front and on either side. These shall be lined as specified.

7.0 CISTERN.

7.1 MATERIAL.

If not specified a high level cistern is intended to operate with minimum height of 191 cm. and a low level cistern within height of 60 cm. approx. from the floor finish and the underside of the cistern.

The body thickness of an earthenware cistern 1.3 cm. The cistern with internal parts shall be free from manufacturing faults and other defects and operate smoothly and efficiently. The cistern shall be considered mosquito proof only if there is no clearance any where which would permit a 1.6 mm. wire to pass through coupling in the permanent position (i.e; flushing or filling) of the cistern. The outlet fitting of each cistern shall be securely connected to the cistern. In the case of outlet shall be from low level 40 mm. dia. (nominal bore). The outlet of flush pipe from the cistern shall be connected to the pan by means of putty or cement and for E.P.W.C. with rubber joint and putty . The flush pipe shall be fixed to wall by using holder bath clamp.

The discharge rate of cistern shall be about 5 litres in 3 seconds when connected to an appropriate flush pipe and there shall be no appreciable change in the full discharge. The cistern shall have discharge capacity of 5, 10, 12.5, 13, litres with tolerance of +/-0.5 liter and 15 litres with tolerance of +/-1 liter.

The cistern for a `Stall' type urinal or a W.C. may depending an situation be of glazed vitreous china, colour or white with the best quality fittings including brackets, as specified.

7.2 CAPACITY OF CISTERN AND THE SIZE OF FLUSH PIPE FOR FLAT BACK (BOWL)URINAL.

Capacity : The capacity of the flushing cistern and the size of the flush pipe for the number of urinals in a range will be as follows :

Number of urinals of range	Capacity of flushing cistern.	Size of pipe Main Distribution.
1	5 liters	20 mm
2	10 liters	20 mm
3	10 liters	25 mm
4	15 liters	25 mm.

The joint between the urinal basin in flush and waste pipe shall be made by means of putty of white lead mixed with chopped hemp, or as specified in case of PVC pipe.

7.3 FOR SQUATTING PLATE URINAL.

Capacity : The capacity of the flushing cistern and the size of the flush pipe for the number of squatting plate urinals in a range will be as follows.

Number of urinals of range		Capacity of flushing cistern.	Size of flush pipe Main Distribution.
1	5 liters	25 mm	20 mm.
2	10 liters	25 mm	20 mm
3	15 liters	32 mm	20 mm
4	15 liters	32 mm	20 mm

The cistern shall be fixed on R.S. or C.I. cantilever brackets of requisite strength which shall be embedded or fixed to the wall by means of wooden plug and screws.

8.0 WASHING BASINS

8.1 BASIN :

The wash basins shall be of white or coloured vitreous china as specified and of approved quality, make and pattern. It shall be one piece construction with an integral combined overflow. The size of the basin shall be as specified.

8.2 **FITTINGS:** Each wash basin shall be provided with 15 mm C.P. brass pillar taps as specified, 32 mm C.P. waste - chain and rubber plug, unions, joints etc. complete in all respects of approved quality.

8.3 FIXING.

The basin shall be supported on a pair of M.S. or C.I. Cantilever or Nylon type brackets of requisite strength embedded or fixed in position by means of wooden cleats and screws. These metal brackets shall be painted to the required shade including a coat of anti-corrosive paint. The wall plaster on the rear shall be cut to overhang the top edge of the basin.

8.4 WASTE CONNECTION.

The waste shall discharge into a floor trap leading to a gully trap, on ground floor and on upper floor it may be connected to waste pipe stack.

Where specified wash basins shall be provided with a 20 mm. G.I. puff pipe terminating with a brass perforated cap screwed on to it on the outside of the walls or connected to antisiphon stack. When the waste pipe discharges freely into a channel or floor trap and is of short length without any bends, no puff will be necessary.

9.0 KITCHEN SINKS.

Unless otherwise mentioned the kitchen sink with drain boards shall be of stainless steel and of approved quality, make and pattern. It shall be of one piece construction with an integral combined overflow, the size of the sink & drain board shall be as specified.

9.1 FITTINGS.

Each sink shall be provided with 15 mm. brass C.P. long body bib cock, 40/32 mm. waste, chain and rubber plug, unions joints etc. complete in all respect as specified and of approved quality.

9.2 FIXING .

The sink shall be supported on a pair of M.S. or C.I. cantilever brackets or requisite strength embedded or fixed in position by means of wooden cleats and screws. The brackets shall be painted to required shade including a coat of anticorrosive paint.

9.3 WASTE CONNECTION.

The waste shall discharge into a flow trap leading to a gully trap, on ground floor and on upper floor it may be connected to waste pipe stack with bottle tap/PVC waste pipe..

10.0 TOILET REQUISITES.

10.1 MIRROR :

The mirror shall be of approved make glass with beveled edges. The size and shape of the mirror shall be as specified. It shall be mounted on an asbestos sheet and shall be fixed in position by means of 4 C.P. brass screws and washers over rubber washers and wooden plugs firmly embedded in the wall C.P. brass clamps with C.P. screws alternatively with fiber glass frame.

10.2 SHELF.

The shelf shall be of glass of approved quality with edge rounded off or of vitreous china (coloured or white) of approved make. The size of the shelf shall be as specified. The shelf shall have C.P. brass or aluminium guard rail with rubber washers on positions resting on glass plate and C.P. brass or aluminium brackets which shall be fixed with C.P. brass or aluminium screws to wooden plugs firmly embedded on the wall.

10.3 TOWEL RAIL.

The towel rail shall be of C.P.brass or aluminium with two C.P. brass or aluminium brackets. The size of the rail shall be as specified. The bracket shall be fixed by means of C.P. brass or aluminium screws to wooden cleats firmly embedded in the wall.

10.4 CHROMIUM PLATED STOP COCK, TAPS, BIB COCKS, SHOWER SET, GUNMETAL PEETS VALVES :

If not mentioned otherwise schedule, cocks and taps are to be of brass standard head chromium plated of approved make and pattern. They must be capable to withstand at least 10.5 Kg/cm² pressure applied for 5 minutes without leakage. The valve are to be of peet type gunmetal valves. Other conditions remain same as cocks and taps.

10.5 LIQUID SOAP HOLDER :

This shall be glass or P.V.C. or C.P. brass specified. It shall be fixed in position by means of C.P. brass screws to wooden cleats embedded in the wall. The liquid soap holder shall be of approved make.

10.6 TOILET PAPER HOLDER.

The paper holder shall be of C.P. brass or vitreous china as specified. The rolled wooden paper holder shall be made of well seasoned teak wood.

SPECIFICATION FOR WATER SUPPLY PIPES & FITTINGS

All Pipes & Fittings shall manufactured using virgin CPVC compounds with cell class 23447B as defined by ASTM D1784.

BASIC PHYSICAL PROPERTIES:-

PROPERTY	TEST	CONDITION	ENGLISH UNITS	SI UNITS
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GENERAL

-Specific Gravity	ASTM D792	73°F/ 23°C	1.55	1.55
-Water Absorption	ASTM D 570	73°F/ 23°C	+0.03%	+0.03%
		212°F/100°C	+0.55%	+0.55%
-Rockwell Hardness	ASTM D785	73°F/23°C	119	

MECHANICAL

-Tensile Strength	ASTM D 638	73°F/23°C	8000 psi	55 N/mm ²
-Tensile Modulus	ASTM D 638	73°F/23°C	360,000 psi	2500 N/mm ²
-Compressive Modulus	ASTM D 638	73°F/23°C	10,100 psi	70 N/mm ²

THERMAL

-Coefficient of Thermal Expansion	ASTM D 695	3.4x10 ⁻⁵ in/in/°F	6.1x10 ⁻⁵ m/m/k	
-Thermal Conductivity	ASTM C177	0.9BTU in/hr/ft ² /°F	0.14 Wm/k/m ²	
-Heat Distortion Temperature	ASTM D648		217°F	103°C

FLAMMABILITY

-Flame Spread	ASTM E84			15
-Smoke Developed	ASTM E84			70-125
-Limiting Oxygen Index	ASTM D2863			60%

STANDARDS :-

Following Standards Shall be followed

(a) Copper tube size (CTS) in SDR-II & SDR-13.5

Sizes : 1/2", 3/4", 1", 1-1/4", 1-1/2" & 2"

Pipes & Fitting Standard : ASTM D 2846

Solvent Cement Standard : ASTM F 493

(b) Iron Pipe Size (IPS) in SCH 40 & 80

Sizes : 2-1/2", 3", 4", & 6"

Pipes & Fitting Standard : ASTM F 441

Fittings SCH 80 : ASTM F 439

Primer / Solvent Cement : ASTM F 656 & ASTM F 493

Recommended Horizontal Support Spacing (Distance between pipe clamps)

Nominal Pipes Sizes		23C		38C		60C		82C	
inch	mm	Ft.	Mt.	Ft.	Mt.	Ft.	Mt.	Ft.	Mt.
1/2	15	4.0	1.22	4.0	1.22	3.5	1.07	3	0.92
3/4	20	5.0	1.53	4.5	1.37	4.0	1.22	3	0.92
1	25	5.5	1.68	5.0	1.53	4.5	1.37	3	0.92
1-1/4	32	6.0	1.83	5.5	1.68	5.0	1.53	4	1.22
1-1/2	40	6.5	1.98	6.0	1.83	5.5	1.68	4	1.22
2	50	7.5	2.29	7.0	2.14	6.5	1.98	4	1.22

Note : Vertical CPVC piping should be supported at each floor and should have a mid-story guide, unless thermal expansion design calls for other provision.

Pressure Testing: Pressure testing shall be conducted after installation.

Once an installation is completed, it shall be provided adequate time to cure before undertaking pressure testing or use refer to the below mentioned cure timetables.

Jointing Procedure.

1. Cut pipe straight (very important). This will allow pipe to bottom into the socket.
2. Remove burr (shaving), use clean dry cloth or knife. Do not use abrasive materials.
3. Clean pipe and fitting & ensure no dirt, grease or any other foreign matter.
4. Check dry fit. Pipe should easily go into the socket 1/3 to 2/3 of the way before any resistance is felt.

This is commonly referred to as interference fit. If pipe goes to the bottom of the fitting without any resistance (interference) ensure fitting is correct size. If it is not correct size get another fitting.

5. Apply a thin coat of cement into the fittings socket and a full even coat on the pipe to the depth of socket bottom. Do not puddle cement in socket.
6. Insert pipe into the socket quickly while cement is still fluid (wet), if cement has dried, re-coat pipe and fitting. Twist pipe turn, this will allow cement to cover any dry spot. Make sure pipe goes all the way to the bottom of the fitting.
7. Hold pipe and fitting together (30 second) to make sure pipe does not push out.
8. Wipe off excess cement with clean dry cloth.
9. Allow cement to cure before applying water (fluid) pressure. Cure time is dependent upon temperature, humidity etc however under normal conditions, allow 24 hours cure time.

STANDARDS AND CODE COMPLIANCE

BIS 157778 : 2007

ASTM D 2846/F493

TECHNICAL DETAILS

Outside Diameter and Wall Thickness for CPVC 4120, SDR II & SDR 13.5 Plastic Pipe.

Nominal Sizes		Avg. OD MM		Tolerance	Min. Wall Thickness MM		Tolerance
inch	mm	SDR II	SDR 13.5	MM	SDR II	SDR 13.5	MM.
1/2	15	15.90	15.90	+/-0.08	1.73	1.40	+0.51
3/4	20	22.20	22.20	+/-0.08	2.03	1.65	+0.51
1"	25	28.60	28.60	+/-0.08	2.59	2.12	+0.51
1-1/4"	32	34.90	34.90	+/-0.08	3.18	2.59	+0.51
1-1/2"	40	41.30	41.30	+/-0.10	3.76	3.06	+0.51
2"	50	54.00	54.00	+/-0.10	4.90	4.00	+0.58

CPVC 4120 CTS SDR II Pipe Pressure Rating vs Temperature Table

Operating Temperature	Working Pressure Rating (kg/cm ²)	
	SDR II	SDR 13.5
	1/2", 3/4", 1", 1 1/4", 1 1/2", 2"	1/2", 3/4", 1", 1 1/4", 1 1/2", 2"
23°C	28.10	22.50
27°C	28.10	22.50
32°C	25.57	20.48
38°C	23.05	18.45
43°C	21.64	17.33
49°C	18.27	14.63
54°C	17.42	13.95
60°C	14.05	11.25
66°C	13.21	10.58
71°C	11.24	9.00
77°C	8.99	7.20
82°C	7.03	5.63
93°C	5.62	4.50

Approximate Number Of Joints that Can Be Made With One Fusion Compound (Solvent Cement) Can

Nominal Sizes	Inch	1/2"	3/4"	1"	1-1/4"	1-1/2"	2"
		MM	15	20	25	32	40
Approx. Number of joints Per Can	50 ml	35	23	15	14	10	07
	118 ml	82	55	34	33	23	17
	237 ml	164	110	68	66	46	34
	473 ml	328	220	136	132	92	68
	946 ml	656	440	272	264	184	136

SPECIFICATION

MATERIALS

1. Materials shall be of approved quality. A list of materials of approved Brand and manufacturer is indicated in the list of materials of Approved Brand and/or Manufacture. The list is given to ensure the standard of quality and performance.
2. Contractors shall obtain approval of representative of the Company/ Architect/Consultant on sample of all materials before placing order and the approved sample shall be carefully preserved in an appropriate manner at the site office for verification by the representative of the Company/ Architect/ Consultant.
3. For standard brought out items, the sizes manufactured by the firm listed shall prevail in case of discrepancy with the sizes mentioned in the schedule without any financial adjustment.
4. Materials shall be tested at site/any approved Testing Laboratory. The Laboratory Test Certificate in original shall be submitted to the representative of the Company/ Architect/Consultant. Test results are also to be recorded at site registers appropriately.
5. Wherever work as per manufacturer's specification is indicated, it will be obligatory on the part of the Contractor to submit manufacturer's specification to the Architect/Consultant/Company. The quoted rates shall be deemed to include for the complete work specified by the manufacturer even though not specifically mentioned in the schedule of items. Moreover the quoted rates shall be deemed to include for the complete work specified by the manufacturer even though not specifically mentioned in the schedule of items.
6. It shall be obligatory for the contractor to furnish certificates, if demanded by the representative of the Company / Architect / Consultant, from manufacturer or the material supplier stating that the work has been carried out by using their material.
7. All materials supplied by the representative of the Company/ Architect/Consultant any other specialist firm shall be properly stored and the Contractor shall be responsible for its safe custody until they are required on the works and till the completion of work.
8. All equipments and facilities for carrying out field tests on materials shall be provided by the Contractor without any extra cost.

Unless otherwise shown on the Drawings or mentioned in the "Schedule of Quantities" or anyway in the contract, the quality of materials, workmanship, dimensions etc. is annexed.

TECHNICAL SPECIFICATIONS FOR INTERIOR FURNISHING 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 Architect's/Consultant's/Company's decision as per list of materials or otherwise shall be final and 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 placed 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 Ply wood.

The veneers and the plywood 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's/Consultant's site office.

1.3 Phenol bonded Ply wood.

Commercial plywood, decorative ply wood conforms to IS:303/1975 bonded with phenol formaldehyde synthetic resin of B.W.R. type as specified in IS:846/1974 of approved make should be used.

1.4 Phenol bonded Block Board

Commercial block board conforming to 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:3079-1980 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 also conforms to DIN:68765 NEMA LD-3. Market Leaders in prelaminated boards over a decade, BIS Licenses of ES-3087 for plain particle boards since 1980. All edges of the board to be painted with one coat of chlorinated paint of approved shade and quality. The prelaminated particle board should be of 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 +0.3 mm tolerance and obtained from approved manufacturers and samples should have approval of the Architect/Consultant/Company.

1.8 Wooden Flush Door Shutters

(Solid Core Type): Solid core flush door 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 Architect/Consultant/Company at site for reference. The shutter will be provided with lipping. Finished thickness of the shutter shall be as mentioned in the item. Shutters should be not pressed and phenol formaldehyde should be used as glue.

1.9 Hardware Fittings

All hardware fittings for doors shall be either oxidized iron, brass, anodized 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 Architect / Consultant / Company for their approval. Hardware fittings for door shutters shall be paid in door shutters 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 necessary 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 the Architect/Consultant/Company for reference.

2.0 Workmanship

- a. The workmanship shall be first class and to the approval of the Architect/Consultant/Company. 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 toned, shouldered, wedged, pinned, braced etc. and properly glued with a approved quality glue to the satisfaction of the Architect/Consultant/Company.
- b. Screws: Unless otherwise specified, all screws to be used in woodwork and joinery shall be cadmium plated and of approved quality. The size (diameter and length) should conform to those specified in hardware schedule.
- c. Tolerance: 1.5 mm (1/16") will be allowed for each wrought face of sizes specified except where described as finished in which case they shall hold to the full dimensions.

- d. Protection: All edges of timber etc. shall be protected from being damaged during construction by providing rough timber casing securely fixed and other adequate protective measures.
- e. If it is decided by the Owner to provide anti-termite treatment the Contractor shall co-ordinate his work suitably as directed by the Architect/Consultant/Company.
- f. Door/Window frames shall have cut rebate. Planted rebates shall not be permitted.
- g. Where door frames are fixed flush with plaster to wall, teak wood cover mould 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.

3.0 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 hold fasts, 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 the cost of fittings) as per drawing.

4.0 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 joining.
- ii. Shuttering shall be measured in square meter for closed door shutters area i.e. rebate without extra measurement for rebates and/or splayed meeting styles of door.

5.0 Plastic Emulsion Paint

i. Material :

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

ii. 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 taps to avoid damage or scratches to the plastered surfaces etc. Proper stage scaffolding shall be erected when painting the ceiling.

iii. 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 leveling the wider areas.

iv. Priming Coat:

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

v. Application of Emulsion Paint:

The recommendation of the approved manufacturer, whose product is used, shall be followed regarding the preparation of the surface and the application of the priming and finishing coat. 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 Architect/Consultant/Company in 3 coats the 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.

vi. 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:- All labour, materials and equipments necessary to carry out the work. Supplying the approved emulsion paint for primer and finishing coats. Preparing the surface for receiving the primer and finishing coats. Scaffolding including its erections and dismantling. Application of one primer coat and minimum two coats of finishing. If a proper and even surface is not obtained to the satisfaction of the Architect/Consultant/Company in 3 coats mentioned above the Contractor shall carry out additional coats of painting to approval at contractor's expenses. Protection to painted surface till dried and handed over. Expense, if any, for supervision and technical assistance supplied by the approved paint manufacturer.

vii. Mode of Measurement:

The measurement shall be in square meter. The mode of measurement shall be as per relevant section of I.S. 1200 latest revision.

6.0 Painting and Polishing:

6.1 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 container and shall be opened in the presence of the Architect / Consultant / Company at site.
- b. Preparation of Surface Iron and Steel Works:
 - i. 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 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 Architect/Consultant/Company 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 at least 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 the Architect/Consultant/Company, 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.

6.2 French Polishing:

French Polish to be used shall comply with I.S. 348 of latest edition in 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 one part whiting mixed 0.53 part of methylated spirit. After drying, it should be finely sand papered.

On the 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 coats. The surface shall show an even polished surface and be approved by the Architect/Consultant/Company.

- i. Rates to include : Similar to that of painting.
- ii. Mode of measurement : Similar to that of painting

6.3 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 manufacturer's specification is then applied in two coats & then sand papered with Emery paper No.240 & finally with Emery paper No.400 & cleaned thoroughly. Final finish coat is then applied on the finished surface after mixing the base and hardener in a container and allowing the mix to stand for 30 minutes and then applied.

Rates to include : Similar to that of painting including cost for applying by spray machine.

6.4 N.C. Lacquer

N.C. Lacquer should be of approved brand & quality, approval of the Architect/Consultant is obligatory.

Before application of N.C. lacquer, the surface is to be polished using white lac only. The surface should be polished as per desired shade. Fillers used during polishing be N.C. putty only N.C. lacquer shall be applied uniformly by 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 atmosphere 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

7.0 Glass

Glass used shall be clean and/or tinted or toughened as mentioned in the Schedule of Quantities and of the best quality approved by the Architect/Consultant/Company 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 beveled edges etchings etc. as per requirement and indicated in the drawings and BOQ and is to be got approved by the Architect/Consultant/ Company. Glass shall be well protected from any damage during transportation, storage and progress of work. Any glass which in the opinion of the Architect/Consultant/Company is not suitable for work shall be rejected and the contractor shall replace the glass with an approved one.

8.0 Loose Furniture

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

9.0 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 resilient to ensure that the same does not loose 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 25 mm steel tubing of 1.6 mm thickness. Additional tubes of slightly lower diameter and the same thickness are used as inserts for providing reinforcement of all 4 bends of the chair. The total length of additional reinforcement tubing is 1.25 mm. Wooden seats, backs, armrests, plastic canes and cushions.

10. Carpet

Supply and laying 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 bill of quantities with manufacturer's specification complete with necessary work. Prior to fixing, sample and manufacture shall be approved by the Architect/Consultant/ Company. The fixing should be made as per manufacturer's specification. Rate should be inclusive of labour, materials inclusive of backing cushion materials, unless otherwise separately included in BOQ, end stitching and all other associated works as per direction, complete in all respect. Payment should be made as per actual floor area. No payment shall be made against any sorts of wastage.

11. False Ceiling

a) G.R.G. Ceiling

i. 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 prestressed panel.

ii. Surface Finish

The plaster should have a silky smooth textured moulded finish.

iii. Dimensions

All designer tiles are to be designed for installation on a standard 600x600 mm moulded 24 mm table exposed metal grid and are precision made to within plus or minus 0.25 mm.

iv. 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-1 for surface spread of flame to BS 476-7:1987.

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.

v. Humidity Resistance

The tiles have excellent moisture resistance and can be used in areas of high humidity including covered external areas, kitchens and bath rooms. 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 weather tight.

vi. Biological

GRG tiles will not support the growth of bacteria or other micro-organisms. Life span under normal conditions GRG tiles will not deteriorate and can be expected to last the life time of the building.

vii. Suspension

Suspension system is standard 24 mm table exposed metal grid. GRG exposed metal grid systems are designed for maximum strength. The grid features main runners and cross tees roll-formed from galvanized steel to RS 2989 7-18 zinc coating. Min. tensile strength 270 Mpa. Grid systems are designed to satisfy ASTM C635 loading and deflection criteria. The main and cross runners are provided with bayonet couplings for quick installation. The runners are pre-slotted to construction 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 or 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.

b) Site Work

i. 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.

ii. Installation

Main tees normally be fixed at 1200 mm centers with hangers every 1200 mm along the length of the tee. The tees would be infilled with 1200 mm and 600 mm

cross tees. The grid manufacturer's recommendations should be followed at all times. Hangers to be fixed to roof by expansion fasteners.

Light fittings, grills diffusers and cutouts etc. have to be provided with additional members of frame works as per direction of the Architect/ Consultant/ Company.

iii. Mode of Measurements

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

Rate to include : Apart from other factors mentioned elsewhere in this contract, the rates for items of false ceiling shall include for the following : All labour, materials, equipments, scaffolding, hardware fittings etc. for carrying out the work as per drawing.

iv. Standard Specification

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 or 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 Architect/ Consultant/ Company shall be final and binding on the contractor.

12. Marble Stone Flooring Marble:

- a. Marble : shall be hard, sound, dense and homogeneous in texture with crystalline structure. It shall be uniform in colour and free from stains, crack, decay and weathering
- b. Dressing of Slabs: Every stone shall be cut to the required size and shape, fine chisel dressed on all sides to the full depth so that a straight edge laid along the side of the stone shall be fully in contact with it. The top surface shall also be fine chisel dressed to remove all waviness. The sides and top surface of slabs shall be machine rubbed or table rubbed with coarse sand before paving. All angels and edges of the marble slabs shall be true, square and free from chipping and surface shall be true and plane.

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

c. Laying:

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

The average thickness of the bedding mortar under the slab shall be 20 mm and the thickness at any place under the slab no less than 12 mm.

The slab shall be laid in the following manners:-

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

The slab shall be matched as shown in drawings or as instructed by the Architect/Consultant/Company.

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

- d. Polishing and Finishing : Slight unevenness at the meeting edges of slabs shall then be removed by chiseling. The floor shall then be kept wet for a minimum period of 7 days. The surface shall thereafter be grounded evenly with machine fitted with coarse grade grit blocks (No.60). Water shall be used profusely during grinding. After grinding the surface shall be thoroughly washed to remove all grinding mud, cleaned and mopped. The second grinding shall then be carried out with machine fitted with fine grade grit blocks (No.120). The final grinding with machine fitted with the finest grade grit blocks (No.320) shall be carried out the day after the second grinding described in the preceding Para or before handing over the floor, as ordered.

For hand polishing the following carborundum stones be used:

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

2nd grinding - Medium grade (No.80). Final grinding - fine grade (No.120).

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

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

If any tile is disturbed or damaged, it shall be refitted or replaced properly jointed and polished.

The finished floor shall not sound hollow when tapped with a wooden mallet.

e. Measurements

Marble stone flooring with different kind of marble shall be measured separately and in square meter correct to two places of decimal. Length and breadth shall be measured between the finished faces of skirting, dado or wall, plaster as the case may be, correct to a cm. No. deduction shall be made nor extra be paid for any opening in the floor of area up to 0.05 Sqm. (5sq.dm.). No extra shall be paid for laying the floor at different levels. Steps and treads of stairs paved with marble stone shall also be measured under the item of "Marble Stone Flooring". The width of treads in all cases shall be measured from the outer line to the finished face of riser.

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

TECHNICAL SPECIFICATIONS FOR ELECTRICAL INSTALLATION WORKS

1. All installations shall comply with the requirements of the Indian Electricity Rules, 1956, as amended from time to time and as per relevant laws of National Electrical Code, 1985.
2. The materials to be arranged by the contractor for use in the work must be got approved from the Engineer-in-Charge well in advance before these are actually used on the work.
3. Bad workmanship is liable to be rejected in toto.
4. All repairs and patch work shall be neatly carried out to match with the original finish and to the entire satisfaction of the Owner / Architect. Any damages to the building due to execution of work shall have to be made good immediately by the contractor at his own cost.
5. The contractor shall make his own arrangements for storing the materials and watch & ward at his own cost, even for the installation till the date of completion and handing over the site.
6. The contractor shall make his own arrangement at his own cost for general and electrical tools and plants required for the work.
7. All debris due to the electrical works shall be removed and site shall be cleared by the contractor as soon as the work is completed.
8. Wiring conduit routes shall be marked at site first and get approved from Engineer-in-Charge before the commencement of the actual work.
9. The work shall ordinarily be carried out according to the drawings supplied with the schedule of work at the time of award of work, subject to any change made by the Engineer-in-Charge.
10. All the materials to be used on the work shall conform to one of the following specifications in order of priority.
 - (a) The materials should conform to ISI specifications and should be ISI marked wherever available.
 - (b) If materials to be used are not covered by any one of the above specifications, it should be get approved from the Owner / Architect.

Unless otherwise mentioned in the schedule of work, the contractor shall use the materials in the work according to the LIST OF SUGGESTED MANUFACTURERS' enclosed with the CONTRACT DOCUMENT.

In case the particular make of material mentioned are not available at the time to execution of the work, the alternative make of materials has to be approved from the Bank / Architect before its use.

11. The rates quoted shall include cost of for service connection charges, the cost of metering connection, PVC cables, cable sockets etc. unless-otherwise mentioned.
12. Distribution wiring shall include circuit wiring. No extra payment shall be made for circuit wiring unless-otherwise mentioned.
13. Rates quoted for point wiring of PVC wire on surface shall include cost of switches, ceiling roses etc. on wooden board or partly concealed as sated in the schedule of items. No extra cost for switches, ceiling roses, boards etc. shall be allowed.
14. Rates quoted for point wiring in surface conduit / concealed conduit will include switches, ceiling roses etc. on M. S. Broad as specified. No extra cost for switches, ceiling roses, boards etc. shall be allowed.
15. The rate for erection of ceiling fan and fluorescent fittings must include the cost of supplying down rod as necessary and flexible wires, connection charges, fixing of regulator and testing etc. unless-otherwise mentioned. If necessary, fans with down rod and fittings may be supplied by the employer.
16. The rates for plug socket point wiring shall include the cost of socket-outlet, plug top and control switch in box and necessary connection charges including earthing as specified.
17. The rates or fittings shall include cost of supply and fixing of fittings, lamps etc. and connection and testing charge.
18. The rates for cable laying shall include the cost of cable trenches with tiles, sand etc. and also the cost of saddle clamp (incase of surface wiring) providing G.I. pipes under road crossing, drain etc. necessary clamps etc.
19. The rates for cable joining shall include the cost of labour and materials including land, cable box clamp etc.
20. The rates for earthing shall include the cost of jointing earth wire with busbar by means of cable sockets, etc. and cost of earthing with specified earth wire. No. deviation from the specification for earthing work including earth stations will be accepted. Cost of required caution notices should be included in the rates of earthing
21. The wiring includes painting of installations with two coats of approved paints, and painting should match with the interior decoration of wall and ceiling. No extra charge for painting shall be entertained.
22. General spirit of the technical specification and method of measurement shall be as laid down in the latest addition of I.S. code of practice. Rates quoted for all items shall include for the cost of supplying, labour and materials fixing and / or erection complete with all the appliances necessary for the proper execution and carrying out of the work to the truest sense of drawing and specification though this may not be mentioned in particular item of work in the schedule of items.

23. All materials, fittings, appliances etc. used in the External shall confirm to relevant Indian Standard Specification / R.E.C. Specification and construction Standard wherever these exists. All the materials used shall be got approved by the Architect / Owner prior to actual use.

DEFINITIONS:

DISTRIBUTION WIRING:

This shall include all works necessary from final sub-circuit wiring from a way of Branch Distribution Board / Connectors Box to the point of utilization of the Electricity / Load to be applied for the wiring of light, fan or plug point etc. No extra payment will be made for circuit wiring.

FAN POINT

Distribution wiring from connection box / fixture, (for looping in system) to ceiling rose at the other end and also the switch wiring either from connector box or from any other source as decided by Architect / Consultant / Owner / Employer. The point shall be complete with a ceiling rose, a switch and regulator Board suitable to accommodate regulator.

LIGHT POINT

Distribution wiring from connection box or another fixture, (for looping in system) to ceiling rose / holder / bracket at the other end and also the switch wiring from connection box or from any other source as decided by Architect / Consultant / Owner / Employer.

5A, 250V.3 PIN PLUG POINT:

Necessary wiring from nearest connector box / B.D.B / to 3 Pin Plug with 1 x 14 SWG G.I. wire or 1 x 16 SWG Copper wire drawn along with the wiring as a part of wiring and shall be complete with supply and fixing 3 pin socket outlet with at incoming side.

3 PIN 250V, 10/15A POWER PLUG POINT:

Necessary wiring to 3 Pin 10/15A power point from a separate way of B.D.B. / Main Switch including supply and fixing socket, switch, 1 x 16 SWG Copper wire / 1 x 14 SWG Copper wire continuous earth and suitable sheet metal boards.

LOOP-IN-JUNCTION BOX

The junction boxes shall be drip-proof type and dust and vermin proof construction fabricated from 16 mm thick sheet steel or seasoned teak wood board having internal dimensions of 200 x 150 x 100 depth for single phase distribution system with bakelite top cover with brass screw.

WORKMANSHIP AND INSTALLATION WORK

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 / Bank.

METHOD OF MEASUREMENT

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 / Bank shall be final, and binding to the contractor.

CONDUIT WIRING

All conduit shall be conforming IS:1653-1972 or B.S. 31 and finished with galvanized or stove enameled surface. All conduit accessories shall be conforming to IS:4557-Part-II and the threaded type. Conduit less than 19 mm in diameter shall not be used. All conduit shall be of 16 Gauge upto 30 mm and 14 Gauge above 30 mm size.

The conduit for each circuit shall be erected complete with necessary bushes before drawing in of any wire T.W. spacer of 10 mm thick 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 600 mm apart for horizontal run.

WIRES

Unless otherwise mentioned in the schedule of quantities, only single core PVC / Polythene insulated cable consisting of single / multi strand copper conductor shall be used for wiring in conduit system.

EARTHING

All exposed metal parts of the electrical equipments shall be connected to earth electrodes 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 3043-1966.

EARTH ELECTRODE

The earth electrode shall be G.I. pipe 'B' class having 50 mm internal diameter 3 mt. long in one single pipe with holes 12 mm dia on all sides at 150 mm center, upto a minimum height of 2.5 mt. from bottom and two holes 15 mm dia at 100 mm from the top end to receive a 76 mm (3") long G.I. bolt, double nuts, washers and complete with wire-mesh funnel. No joints will be allowed in the earth electrode. The electrodes shall be driven at least 2 mt. clear from masonry structure and the distances between two electrodes shall not less than twice the length of the electrode. A masonry inspection pit of size 600 mm x 600 mm x 150 mm deep shall be built with 125 mm thick cement mortar (6:1) brick work both inside and outside around the top of the earth pipe, so that the top of the G.I. pipe is 250 mm below

the finished ground level and the opening on top shall be provided with G.I. manhole with C.I. cover fixed with the outside finished ground level.

4.0 SPECIFICATION FOR PVC SYSTEM OF WIRING

- 4.1 H.W. Battens for distribution wiring shall be from 1st class well seasoned hard wood free from knots and saps.

Battens shall be 13mm thick and wide enough to accommodate total number of wire placed parallel on horizontal or vertical run.

- 4.2 The Batten shall be secured to ceiling / wall with Deto fix, Spacing of screws shall not exceed 450 mm and 600mm for horizontal and vertical run respectively.

- 4.3 The wiring shall be done with good workmanship and neat appearance.

- 4.4 All Batten joints shall be half lapped or dove tailed.

- 4.5 The size of regulator board shall sufficient to accommodate switches for light, fan, fan regulator plug that are to be controlled from the board.

- 4.6 Back sides of T.W. materials shall be painted in with 2 coats of black anticorrosive paint to prevent moisture ingress before fixing on wall.

The fronts shall be highly polished with clear shellac varnish of approved quality in 2 coats.

- 4.7 Flat head Brass coated pins with link clips (made of at least 27 SWG thick soft aluminum sheet) shall be used to fasten PVC wires on wooden batten.

- 4.8 Total wiring length (except wiring on the switch or regulator board) shall be painted with 2 coats of synthetic enamel paint of approved colour and quality.

- 4.9 Mechanical Protection

- (a) Wiring / Cables passing through wall shall be through a protective tube to prevent any possibility of cables coming in contact with wall.

- (b) All wiring / cables passing through floor shall be through suitable G.I. conduit up to a height of 1.5m and shall be flush floor below.

- 5.0 Conduits used shall be heavy gauge type, threaded and coupled and with marker's label at the end of each standard length.

- 5.1 Conduits fittings like bend, tees, couplers, etc. shall be inspection type made of pressed M.S. or Malleable C.I.

- 5.2 The fittings shall either be black stove enameled or galvanized with zinc both outside and inside..

- 5.3 Conduits on surface on wall/ceiling shall be secured with screw and phil plug and spaced not more than 0.77m apart for vertical run and 0.6m for horizontal run.

- 5.4 When conduit run on exposed beams/truss, clamps made 25mm x 2mm iron flat having suitable holes to receive fixing screws to be used.
- 5.5 Lighting and Power cables shall be drawn through separate conduits.
- 5.6 The conduit system shall be electrically and mechanically and mechanically continuous throughout its length as per I.E.E. Regulations.
- 6.0 Cables for medium pressure system shall be laid in underground with brick/pipe protection as indicated.
- 6.1 Cables shall be terminated with compression gland.
- 7.0 R.C.C. B.S. shall be current operated type as per I.S: 12640/1988.
- 8.0 The system shall be effectively connected to the General Body of Earth.
- 8.1 The earth Electrodes shall be placed in position by the contractor only after the inspection of excavated holes. The excavated area around the electrode shall be back filled with loose soil, then properly rammed and consolidated by adding water.
- 8.2 Each lead shall be mechanically protected with suitable G.I. pipe and filled with approved Brand bituminous compound for hermetically sealing.
- 9.0 All Bus-bars Chambers shall be fabricated from No. 16 SWG sheet, in run proof totally enclosed chamber on angle iron frame.
- 9.1 The Bus-Bar shall be made from Aluminum flats having sufficient area. Neutral section shall be at least 50% of phases
- 9.2 The Bus-Bar chambers shall be rust proof with stove enameled paint finish and separate earth bolt and nut.
- 9.3 Incoming and outgoing switches to be mounted in tier formation below or above the chamber in a compact design.
- 10.0 Brass Bracket – Swan neck bracket shall be made from heavy gauge brass tubing duly polished and having projection of 227 mm.
- 10.1 Base plates and holders shall be properly screwed at both ends.
- 10.2 Normally swan neck type is acceptable but other shapes may be used on prior approval.
- 11.0 All fittings and accessories for internal/external wiring supplied by the Contractor shall be fixed in the manner decided by Architect / Consultant / Owner / Employer.
- 11.1 All light fittings shall be complete with choke, starters, lamp holder, pre-wired in manufacturer's factory and with all accessories and fixing arrangements as necessary for completing the installation.

When shown on drawing or called for in Schedule decorative of laminated sheets shall be bounded under pressure to the surface to be finished. The adhesive used shall be of approved brand and brought to site in sealed container. The rate of application and the length of time for which the pressure is to be applied shall be as per the manufacturers instructions. The edge of sheets shall be protected by lipping or beveled as shown on drawings.

- 11.2 The ballast for fluorescent fittings shall be of high P.F. compensating type and suitable for heavy duty. In addition P.F. improvement capacitors to be incorporated.

METHOD OF MEASUREMENT

All stove enameled black M.S. conduit, C.I. conduit/pipe and rigid PVC conduit shall be measured for net length as laid or fixed cover all fitting Bonds, elbows, tees etc. shall not be paid separately.

Installation measurement will be based on length from gland to gland with an allowances of 300 mm from cable entering fitting and accessories and one linear meter for cable entering switch boards.

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.

Thimbles are to be provided wherever required without any extra charge of cables terminations of size 16 Sq.mm above.

The adopter boxes are to be made up of not less than 16 SWG thick M.S. sheet.

Where unless specified, the G.I. boxes should be 600 mm deep (inside). The brass batten holders / angle holders should be as per ISI specifications and ISI approved.

The work shall comprise of entire labour including supervision and all materials necessary to make a complete installation and such test as commissioning may be required to give a satisfactory working installation to the satisfaction of the company.

All necessary safety features required as per various statutory authorities for the entire installation of work shall be taken into consideration by the contractor and work to be carried out accordingly.

LIST OF MATERIALS WITH SUGGESTIVE BRAND AND THEIR MANUFACTURE

C E M E N T	:	OF APPROVED BRAND.
S T E E L	:	TMT Bars of SAIL/TATA/RIN/ ISI APPROVED
WHITE GLAZED TILES	:	H & R JOHNSON/KAJARIA/SOMANI
FLUSH DOORS AND PLYWOOD PRODUCTS INCLUDING TEAK PARTICLE BOARDS.	:	AEON/CENTURY/GREEN
STEEL DOORS, WINDOWS & VENTILATORS.	:	LOCALLY MANUFACTURED.
ROLLING SHUTTERS & GRILLS	:	LOCALLY MANUFACTURED.
ALUMINIUM DOORS, WINDOWS, SECTIONS PARTITIONS.	:	MADE FROM JINDAL/OEL/INDAL
WATER PROOFING COMPOUNDS	:	PIDILITE/SIKA/ROFF/FOSROC
PAINTS AND DISTEMPERS.	:	SHALIMAR/ASIAN/BERGER/ JOHNSON & NICLOSON/ICI
REDOXIDE FOR IPS FLOORING	:	SHALIMAR/ICI
REXODIDE ZN CHROMATE	:	SHALIMAR/ASIAN/BERGER
WATER PROOF CEMENT PAINTS	:	SNOWCEM/DUROCEM/ICI
GLAZING SHEET GLASS	:	MODIGUARD-FLOAT GLASS/ TRIVENI/AIS
HARDWARE FITTINGS		
(i).FEEROUS	:	AS Approved
(ii).NON- FERROUS	:	AS Approved.
CERAMIC TILES	:	NAVEEN/REGENCY
VITIFIED TILES	:	NAVEEN/BELL/OREVA

SANITARY AND PLUMBING WORK

- | | | |
|-----|--|--|
| 1. | Sanitary Fittings of Vitous were
1st quality of M/s Hindustan | M/s. E.I.D. Parry (India) Ltd.
M/s. Neycer. |
| 2. | Pressed Steel Flushing Cystem | E.I.D.Parry/Hindware |
| 3. | Choromioum Platted Brass Fittings | Essco/Jaguar/Mark |
| 4. | PVC soil waste Pipe & Fittings | Finolex/Oriplast |
| 5. | CPVC Pipes & fittings | Ajay floor guard/ASTRAL |
| 6. | G.I. Fittings | ISI APPROVED |
| 7. | Gummetal Valve | ISI APPROVED |
| 8. | Glazed stone ware pipe & fittings | LOCALLY AVAILABLE BEST
QUALITY |
| 9. | PVC pipes & fittings | M/s Oriplast/Finolex |
| 10. | Cast Iron Manhole Clover & Frame
Locally available best Quality | ISI Approved. |
| 11. | Plastic Seat for E.P.W.C. | Commandar, Bestolite, Esco |
| 12. | Mirror | As Approved |

LIST OF MATERIALS OF APPROVED BRAND AND/OR MANUFACTURER

Sl.No.	Description	Name of the Manufacturer
1	Aluminium extrusion for doors, partitions, etc.	ALOM/HINDALCO/OEL or any other approved manufacturer conforming to I.S. specifications.
2.	Hardware	
a)	Aluminium	M/s Metako, M/s Allen, M/s Crown with ISI mark or similar approved by Company.
b)	Brass	M/s Brass Arts (India)Pvt.Ltd. M/s Vijay Industrial Engineering Corporation or similar approved by Company.
c)	Locks (Door)	M/s Godrej, M/s Acme Locks Ltd. M/s Secure Industries Ltd. M/s Yale India Ltd.
d)	Lock (Furniture)	M/s Efficient Gadjets M/s Godrej or similar approved by Company.
e)	Floor Spring	M/s Everite Agencies Pvt. Ltd. M/s NITA Floor Spring
f)	Screw	M/s Nettle Fold/G.K.W.
g)	Castors	M/s Efficient Gadjets
h)	Sliding drawer channels	M/s Efficient Gadjets M/s Earl Behari
3.	Synthetic enamel paint, Distemper, plastic emulsion Paints	M/s ICI Ltd. M/s Berger Paints(I) Ltd. M/s Jenson & Nicholson(I) Ltd
4.	Glazing	M/s Modi Float Glass Ltd. M/s Float Glass India Ltd. M/s Continental Float Glass Lt M/s Gujarat Guardian Ltd.
5.	Block Board & Ply Board	M/s Green Ply M/s True Wood M/s Century Ply M/s Mayur

6.	Phenol Bonded exterior grade Particle Board	M/s Novapan Industries Ltd. M/s Bhutan Board or similar approved by Company.
7.	Prelaminated particle board phenol bonded grade with ISI mark	M/s Green Ply M/s Century Ply or equivalent approved by Company
8.	False Ceiling	M/s India Gypsum Ltd. or approved equivalent quality
9.	Laminate	Greenlam, Centurylam or similar approved by Company.
10.	PVC Flooring	M/s Armstrong M/s Krishna Vinyle Limited M/s Premier Vinyle Ltd.
11.	Carpet	Glamour or Favourite (Balla Industries) or Gala Pablo, Fresco or Apollo-98 (Imperial Tuffling Company) Transasia.
12.	Furnishing Fabric	Woven type "harmony" range from "Vimal" or equivalent like seasons furnishing, Eden Furnishing or Shyam Ahuja Ltd.
13.	Leather Foam	M/s Bhor Industries or equivalent of approved quality.
14.	Sun Control Film	M/s Sun Control Garware Polyester Film or equivalent quality.
15.	Teak/Cedar/Mehogany/Wallnut/Veneer	M/s Durian M/s Century Ply Boards (I) Ltd M/s Jacsons Decorative Plywood
16.	Burt Veneer	M/s Century Ply Board (I) Ltd M/s Jacsons Decorative Plywood
17.	Synthetic Enamel Paint	M/s ICI Berger, Asian Paint
18.	Acrylic Emulsion & Primer	M/s ICI Berger, Asian Paints
19.	Textured Wall Paint	M/s ICI Spectrum, Heritage
20.	Tiles	M/s Nitco M/s Johnson M/s Kajaria or similar approved by Company.

Note:- If the approved brands mentioned above are not available, equivalent make as may be approved by the Architect/Consultant/ Company only to be used.

LIST OF MATERIALS AND THEIR MANUFACTURERS ELECTRICAL

<u>ITEM</u>	<u>MAKE/BRANDS</u>
1. Switch fuse with H.R.C. fuse	ALSTOM / CROMPTON / L&T / SIEMENS / HAVELLS
2. Switch fuse with rewirable type fuses	ALSTOM / ENGLISH ELECTRIC / CROMPTON / L&T / SIEMENS / HAVELLS
3. Isolator	ALSTOM / ENGLISH ELECTRIC / CROMPTON / L&T / SIEMENS / CRABTREE (xpro)
4. Splitter Switch	-do-
5. Iron clad change-over switch	-do- (Havells)
6. 1.10 K. V. grade PVC insulated armored aluminium cables, STI PVC	CCI / GLOSTER / FINOLEX / HAVELLS
7. 440 V/1.10 K.V. grade PVC insulated & unsheathed / copper wire, PVC insulated and flexible cords FR & HR PVC	FINOLEX / ANCHOR / HAVELLS
8. Steel conduit pipes and Accessories Black enameled	1st class as per IS.9537 Part-II, 1981 (Pipe samples to be approved) 1st class G.I. Pipe. Galvanized -do-
9. PVC / Polythene pipes	1st class pipe (ISI Mark) (Heavy Type)
10. G.I. Pipe	-do-
11. 30A/60A DP molded Isolating switch	ANCHOR / G.E.C. /L & T
12. Miniature Circuit Breaker / M.C.B. Type Isolator with factory made D.B. Board / ELCB	MDS / L&T / SIEMENS / LEGRAND / CRABTREE (xpro)
13. Voltmeter / Ammeter / Selection switch Bakelite cover	L & T / AE
14. 15 Amp. / 5 Amp. piano key type switch & Flushed type plug socket	ANCHOR / CONA / REO - HAVELLS

15. Ceiling Rose / Angle Holders	ANCHOR / CONA / REO - HAVELLS
16. Telephone Wire Holder	FINOLEX / INCAB / HAVELLS
17. Luminous indicating type buzzer with cancellation push	ANCHOR / HAVELS / CRABTREE (xpro)
18. Buzzer	HAVELS / CRABTREE / ATHENA
19. 15 Amp. / 5 Amp. / Modular type switches and sockets over PVC/ G.I. metallic boxes	- do -
20. Call bell / Alarm bell	ELLORA / ANCHOR / HAVELLS
21. Bulk head light fittings	G.E.C. / CROMPTON / BAJAJ / PHILIPS / HAVELLS
22. Fluorescent & M.V. light	PHILIPS / G.E.C. / BAJAJ / CROMPTON / HAVELLS
23. Ceiling Fan / Wall Bracket Fan	G.E.C. / CROMPTON / KHAITAN/ USHA / ANCHOR / ALMONARD / HAVELLS
24. Exhaust Fan	BAJAJ / USHA / ALMONARD / HAVELLS
25. Paint	Shalimar / Jenson & Nicholson / British paint / Tata
26. Mirror Optics Lights	Phillips / ECG / Decon / Anchor / Oasis / HAVELLS
27. Compact Florescent Light	Phillips / Crompton Greeves / HAVELLS
28. 150KVA, 11/0.4 KV	OEU / KT PVT. LYD / ALPHA DYN-11, ONAN Type cooling
29. Data wire & Accessories	D-Link / SYSMAX
30. Automatic A. C. starter	GEC / L& T / HAVELLS – CRABTREE
31. Air-Curtain	ALMONARD
32. TIMER SWITCH	CRABTREE (XPRO) (HAVELLS)