MMTC LIMITED

(A Government of India Enterprise)

TENDER DOCUMENT

TENDER DOCUMENT FOR INTERIOR FUNISHING & ELECTRICAL WORK OF MMTC OFFICE PREMISES AT ALOK BHARTI TOWER, SAHEED NAGAR, BHUBANESWAR.

No. MMTC/BBSR/Admn/RO/IW/2014-15 Dated: 25/11/2014

DATE OF SALE OF TENDER DOCUMENT (TECHNICAL & PRICE BID	: From 25th Nov 2014 1030 Hrs to 16th Dec 2014 Upto 1200 Hrs
DATE OF SUBMISSION OF TENDER DOCUMENT (TECHNICAL & PRICE BID)	: 16th Dec 2014 (Upto 1400 Hrs)
DATE OF OPENING OF TECHNICAL BID'S	: 16th Dec, 2014 (at 1500 Hrs)
CONSULTING ARCHITECT	:M/s. Designers Forum N-2/64, IRC Village Bhubaneswar-15
ISSUED TO	:M/s. _____ _____ _____

For & on behalf of MMTC Ltd.

Sr. Manager (P&A)

MMTC LIMITED

REGIONAL OFFICE

Alok Bharti Tower, 7th floor,

Saheed Nagar, Bhubaneswar

NIT No. MMTC/BBSR/Admn/RO/IW/2014-15

Memo No. MMTC/Estate/BBSR/893/Vol. II Dated: 25/11/2014

Sub. :- Furnishing work of Regional office premises at 7th floor, Alok Bharti Tower, Saheed Nagar, Bhubaneswar.

Sir,

You are hereby invited to submit Technical Proposal including Firm credential and Financial Proposals for the above work. The bid document is available online on MMTC Limited portal **http://www.mmtclimited.gov.in**, **www.eprocure.gov.in** and also physical from the Regional Office of MMTC Limited, 7th Floor, Alok Bharati Tower, Saheed Nagar, Bhubaneswar. Or Designer Forum, N-2/64, IRC Village, Nayapali, Bhubaneswar-15. from 25th November, 2014 10.30 hrs to 16th December, 2014 (up to 12:00 hrs). Bid may be submitted online only at http://www.mmtclimited.gov.in or Physically to the Regional Office, MMTC Limited at 7th Floor, Alok Bharti Tower, Saheed Nagar, Bhubaneswar. on or before 16th December, 2014 (up to 14:00 hrs IST)

Instruction to applicants regarding E-Tendering process:

a) The interested applicants can download the Tender documents from e-tendering Portal of the MMTC Limited.
b) The applicants can submit their Bids including scanned copy of Bid Security online in electronic format with Digital Signature. Or Physically.
c) Before submission of online bids, applicants must ensure that scanned copy of all the necessary documents have been attached with Bid.
d) MMTC Limited shall not be responsible for delay in online submission due to any reason whatsoever.
e) All documents/papers uploaded/submitted by the bidders must be legible.

The following are the important dates for award of the above Consultancy work:

Sl.No.	Event Description	Date
1	Date for receiving queries / Clarifications	25th Dec 10.30 hrs
2	Last Date for receiving queries / Clarifications	16th Dec 12.00 hrs
3	Proposal Due Date (PDD)	16th December, 2014 (14:00 Hrs.)
4	Opening of Proposal	16th December, 2014 (15:00 Hrs.)

SPECIAL TERMS & CONDITIONS FOR E-TENDER

1. The e-Tender is available on MMTC e-procurement website www.tenderwizard.com/mmtc for online bidding process. For this, Bidder is required to obtain minimum Class II Digital Signature (meant for e-tendering) from any of Certifying Authority recognized by Controller of Certifying Authority (www.cca.gov.in) and have to register with e-procurement portal www.tenderwizard.com/mmtc (a one time activity) independent of each other as given below:

   Procedure for Obtaining Digital Certificate
   The tenderer should obtain digital certificate to participate in the tender. The procedure for obtaining digital certificate is given in the web site www.tenderwizard.com/mmtc In case of any difficulty either mail or talk to the Technical Support Engineer, whose contact details are given below.

   Procedure for Registering in E-Procurement portal
   Further, you have to register with our E-Procurement portal. For registering, please go to www.tenderwizard.com/mmtc and follow the directions. In case of any difficulty either mail or talk to the Technical Support Engineer, whose contact details are given below.

2 For any assistance on e-bidding process, please contact

Particulars	Contact Person (S/Sh.)	Contact Nos.	e-mail ID
First Level Contact : Tender Wizard Help Desk	Pradeep S R	09686196751	pradeep.sr@antaressystems.com
Second Level Contact : Tender Wizard Help Desk	Yogesh	09686196755	yogesh.m@antaressystems.com
	Manjunath R N	09686196754	manjunath.rn@antaressystems.com
	Moulana	09686196758	moulana@antaressystems.com
	Ms. Smitha	08049352000	smitha.n@antaressystems.com
Alternate Contact	Madhusudan S	-------	madhusudans@antaressystems.com
	Harsh Dev	---------	harsh.bangalore@gmail.com

3. e-tender can be requested from e-tender portal of www.tenderwizard.com/mmtc from 25th November 2014, 10.30 hrs, to 16th December, 2014 (upto 12:00 hrs. IST).

Following may be noted :

a) Registration should be valid at least upto one month after the date of submission of tender.

b) E-tender can be submitted only during the validity of their registration.

c) The amendments / clarifications to the e-tender documents, if any, will be hosted on www.tenderwizard.com/mmtc

d) If the contractor's firm is already registered with e-tendering portal of MMTC Limited and validity of registration is not expired the firm is not required to get fresh registration.

e) Tender Reference No. – .

f) Tender ID –

g) All other details remaining the same in Tender and no further changes.

MMTC LIMITED

REGIONAL OFFICE

Alok Bharti Tower, 7th floor,

Saheed Nagar, Bhubaneswar

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TENDER DOCUMENT FOR INTERIOR FUNISHING & ELECTRICAL WORK OF MMTC OFFICE PREMISES AT ALOK BHARTI TOWER, SAHEED NAGAR, BHUBANESWAR.

No. MMTC/BBSR/Admn/RO/IW/2014-15 Dated: 25/11/2014

A P P E N D I X

1.0	Project Cost	:	39.2 lack
2.0	Period of Completion	:	SIX months from the 7th day of issue of letter of Intent /Work Order.
3.0	Security Deposit	:	As per relevant Clause of General Terms & Conditions of tender
4.0	Defect Liability period	:	12 months from the date of Completion/ virtual completion
5.0	Earnest Money Deposit	:	Rs. 40,000.00 (Rupees Forty thousand only)
6.0	Cost of Tender Paper	:	Rs. 4000.00 plus VAT @12.5%.
7.0	Availability of Tender paper	:	Sr. Manager (P&A) MMTC 7th Floor, Alok Bharati Tower Saheed Nagar,Bhubaneswar. And also the bid document is available online on MMTC Limited portal http://www.mmtclimited.gov.in From 25th November, 2014 to 16th December, 2014 between 10.30a.m. to 12 noon in all working days (except Sundays and holidays).
8.0	Submission and Opening of Tender paper	:	Sr. Manager (P&A) MMTC 7th Floor, Alok Bharati Tower Saheed Nagar, Bhubaneswar. upto 2.00 p.m. on 16th December,2014. Technical Bid shall be opened on same date and Place at 3:00 p.m.

NOTICE INVITING TENDER DOCUMENT FOR INTERIOR FUNISHING & ELECTRICAL WORK OF MMTC OFFICE PREMISES AT ALOK BHARTI TOWER, SAHEED NAGAR, BHUBANESWAR.

No. MMTC/BBSR/Admn/RO/IW/2014-15 Dated: 25/11/2014

The TENDER DOCUMENTs i.e. E-mode as well as physical mode under Two–Bid Systems on item rates basis are invited on behalf of the MMTC Limited, Saheed Nagar, Bhubaneswar from the eligible contractors who have successfully completed three similar type/nature of renovation works should be in Central Government like CPWD, Railways etc/ Central Govt Autonomous Bodies/ Central Public Sector Undertakings/ Central Govt Banks/ Central Govt Insurance Companies/ Central Govt. Financial Institutions etc and reputed private sector costing not less than the amount equal to Rs. 30.0 lack for each work or, two similar type/nature of works costing not less than the amount equal to Rs. 20.0 lack for each work or, one similar type/nature of works of aggregate cost not less than the amount equal to Rs. 16.0 lack, during the last 3 years. The bid validity period is three months from the date of submission of bids.

TENDER DOCUMENT FOR INTERIOR FUNISHING & ELECTRICAL WORK OF MMTC OFFICE PREMISES AT ALOK BHARTI TOWER, SAHEED NAGAR, BHUBANESWAR.

No. MMTC/BBSR/Admn/RO/IW/2014-15 Dated: 25/11/2014

REQUEST FOR TENDER

To
M/s. _____

_____

_____

BID DATE: 16th December (upto 14.00 Hrs)

TENDER (TECHNICAL BID) OPENING DATE: 16th December (15.00 Hrs)

MMTC Limited, Bhubaneswar, invites you to submit your competent, competitive offer for the subject work as per the terms and conditions of the tender document enclosed herewith.

1. Tender request in TWO BID SYSTEMS, which is to be submitted by post or hand, duly completed as per the given terms.

2. Purchase & supply items should be followed as per the NIT, instruction of Architect/ Officer In charge & sample/brands should be got approved by Architect/MMTC before use. Tenders with any deviations, shall be summarily rejected at the option of the owner (MMTC Ltd).

3. Please note that the tenders submitted without the requisite Tender fee & EMD under the prescribed manner (through Bank Demand Draft/Pay Order in favour of MMTC Limited, payable at Bhubaneswar) shall be summarily rejected.

4. The rates once quoted will not be considered for any subsequent price revision/ adjustment/revamping and should remain valid till completion of the work. As such, the tenderers are advised to ensure that their offers are complete in all respect and in full conformity to the tender terms and specifications.

   Therefore, it is the prime responsibility of the tenderer to acquaint themselves to understand the tender requirements fully before submission of their tender/bid.

5. COMPLETION PERIOD: The estimated completion time under normal circumstances shall be Six months from 7th day of issue of letter of Intent /Work Order.

6. The subject NIT is invited for INTERIOR FUNISHING & ELECTRICAL WORK OF MMTC OFFICE BUILDING works comprising necessary complete in all respect.

7. If desired, the tenderers may witness the Technical and Price Bid opening.

8. MMTC Ltd does not bind itself to accept the lowest or any other tender and reserves itself the authority to reject/ accept any or all the tenders received without assigning any reason whatsoever. Tenders in which any of the prescribed conditions is not fullfilled by the tenderer, shall be summarily rejected. Joint tenders shall not be accepted / considered. MMTC also reserves the right of accepting part or whole of the tender and the tenderer shall perform the same as per the tender.

Yours faithfully,
For MMTC LIMITED

Sr. Manager (P&A)

TENDER DOCUMENT FOR INTERIOR FUNISHING & ELECTRICAL WORK OF MMTC OFFICE PREMISES AT ALOK BHARTI TOWER, SAHEED NAGAR, BHUBANESWAR.

No. MMTC/BBSR/Admn/RO/IW/2014-15 Dated: 25/11/2014

INSTRUCTIONS TO TENDERERS

TENDER SUBMISSION PROCEDURE:

The tenderer shall submit the tender in two bid system. PART – 1 shall be TECHNICAL BID, PART – II shall be PRICE BID.

The tenderer shall enclose the following papers, documents with the Bid:

ENCLOSURES TO PART – I

1. TENDER DOCUMENT ALONG WITH THE COMPLETION CERTIFICATES ISSUED BY THE CLIENTS WHERE WORKS HAVE BEEN EXECUTED, COPIES OF LOI/ AWARD LETTER/W.O. INDICATING B.O.Q.S ETC OF SIMILAR NATURE/TYPE SHOULD BE ENCLOSED AS A PROOF INCLUDING WORKS EXECUTED IN MMTC LIMITED/ BHUBANESWAR-NCR. If submitted--- tick (yes)

2. EARNEST MONEY DEPOSIT OF RS. 40,000.00 (RUPEES Forty Thousand ONLY) IN THE FORM OF DEMAND DRAFT/PAY ORDER IN FAVOUR OF 'MMTC LIMITED' PAYABLE AT 'BHUBANESWAR'. THE NON-REFUNDABLE COST OF TENDER PAPERS OF RS. 4000.00 PLUS VAT @ 12.5% THRU' DD/ PAY ORDER ALSO BE SUBMITTED. If submitted---- tick (yes)

3. PROOF IN SUPPORT OF VALID REGISTRATION WITH STATUTORY AUTHORITIES: SELF CERTIFIED COPY OF WORKS CONTRACT TAX, VAT, EPF/ESI/TIN, PAN NO, S.T., LOCAL AUTHORITIES ETC. If submitted – tick (yes)

4. CERTIFIED COPY OF 'ANNUAL TURN-OVER' FOR THE LAST THREE CONSECUTIVE FINANTIAL YEARS DULY AUDITED INDICATING ANNUAL TURNOVER OF RS. 1.0 CRORE PLUS. THE BALANCE SHEET, IT RETURNS, P&L ACCOUNT ETC TO BE SUBMITTED. If submitted-tick (yes)

5. Profile of the Firm/ Company including copy (i.es) of registered partnership deed/ proprietorship deed, memorandum & articles of association etc. The details of manpower engaged by the firm/Company may also be indicated including qualified and experienced supervisors. If submitted- tick (yes)

6. E-PAYMENT FORMAT AS ENCLOSED (mandatory for submission)

7. Proof of financial soundness / attested copy of Solvency certificate issued from the scheduled/ nationalized Bank during current F.Y. for an amount not less than Rs. 25 lack (Rupees twenty five lack only). If submitted- tick (yes)

8. This is to confirm that in case of acceptance of our tender bid, we do hereby undertake to carry out the said works as per our quoted rates under the laid

down terms, schedules, BOQs, specifications, drawings etc in this tender. We also confirm that the work shall be done within the stipulated period as per the terms and conditions of this e-NIT. If submitted- tick (yes).

Foot Notes:

1. The tender shall be liable for rejection at the option of the owner, if the party fails to submit any one of the above documents (except Sl. No.6).

2. It should be noted that no price/rate indication directly or indirectly be reflected in any way in the Part – 1(Technical Bid).

ENCLOSURES TO PART – II

1. PRICE BID: B.O.Q. (BILL OF QUANTITIES) in prescribed format DULY FILLED AND SIGNED.

Sr. Manager (P&A)
MMTC Limited,
SAHEED NAGAR
BHUBANESWAR

TENDER DOCUMENT FOR INTERIOR FUNISHING & ELECTRICAL WORK OF MMTC OFFICE PREMISES AT ALOK BHARTI TOWER, SAHEED NAGAR, BHUBANESWAR

No. MMTC/BBSR/Admn/RO/IW/2014-15 Dated: 25/11/2014

GENERAL TERMS & CONDITIONS

1. The work shall be executed at MMTC office building, Alok bharti tower, Saheed Nagar, Bhubaneswar.

2. The quantities mentioned above are approximate. The payment shall be made on the basis of actual works executed. Variation in the quantities, if any, shall not vitiate the contract.

3. MMTC Limited may issue work order partly or fully depending upon the requirement of jobs.

4. The contractor shall have to make his own arrangement for storing/deploying the materials, manpower etc required for the works.

5. The minimum water shall be provided by MMTC in general without any cost. However, if need be, water tankers shall be put to use by Contractor at his own cost.

6. The tenderers shall remove all the existing partitions, furniture, false ceiling with debris/wastes etc before starting the job and wash and clean the floors/areas and hand over the site quite clean on completion of work.

7. The restricted supply of water is available in the colony flats and judicious use is required. However, the electric power requirements for the project shall be borne by the Contractor. The measurement of the works executed shall be as per CPWD Schedule applicable to Delhi, unless otherwise specifically mentioned. The payment shall be made on actual executed items.

8. The rates of extra non-scheduled items if any, shall be based on the rates quoted in the item for the work if the item is of similar nature, otherwise it shall be worked on the prevailing market rates for material and labour + 15% taken as contractor's over heads and profits. The rate of extra scheduled items, if any, shall be based on extant/prevalent CPWD DSR' 2012.

9. The contractor will ensure necessary precautions during the execution of works & will not create any obstacles to the inhabitants of flats situated in and around and also shall make good the installation damages, if any, during the execution.

10. The work shall be completed within 6 months approx counted from 7th day of issuance of the Work Order. Time is the essence of contract. If the contractor fails to execute or complete the work as stipulated and if the employer is satisfied that the same could have reasonably been completed in the time agreed or extended period of the contract as approved by GM, MMTC Ltd shall levy a penalty for delayed completion which shall be ½% per week of the delayed

period subject to the maximum of 10% of the contracted amount. The employer shall have the right to deduct such amount from any money due to the contractor. The incomplete work, if any, will be done by MMTC at the risk and cost of the contractor by MMTC.

11. The decision of MMTC Limited regarding extension of time with or without levy penalty shall be final.

11. The tenderers shall deposit Rs. 40,000.00 as EMD by Demand Draft/ /Pay Order in favour of MMTC Ltd payable at Bhubaneswar. The earnest money of the successful tenderer will be retained towards the interest free security deposit and the earnest money of the unsuccessful tender shall be refunded subsequently without interest.

12. Security amount will be deducted & retained from the payment @ 10% of value of work done (including EMD amount) and it shall be refunded to the contractor on virtual completion of the defect liability period which shall be 12 months from the date of completion/virtual completion of the works.

13. The labours engaged by contractor are the employees of contractor. The contractor shall pay to the labours engaged by him in connection with the work wages not less than Minimum Wages Act 1946, updated by Delhi Government time to time, and shall duly and properly comply with all types of extant legislations. Violation of this clause shall be deemed a breach of contract. The contractor shall comply with all provisions of labour laws/rules/regulations as may be in force from time to time and fulfill all obligation of Contract labour (regulation & abolition) 1970 Act. MMTC reserves the right to make payments of wages to contractor's labour out of amount payable to contractor in case contractor fails to perform his obligations under the Act. All expenses & losses, if any in this regard, by MMTC shall be to the account of contractor. The Contractor shall indemnify MMTC under Workmen's Compensation Act, their Industrial Legislations etc, in force from time to time. The contractor shall indemnify MMTC for the labour laws, insurance compliance. MMTC shall be totally indemnified of any liability whatsoever.

14. Tenderer's confirmation to read as:

(a) This is to confirm that in case we are considered, we do hereby undertake to carry out the said works as per our quoted rates under the laid down schedules, BOQs, specifications, drawings etc in the tender. We also confirm that the works shall be done within the stipulated period as per NIT. We shall give our best and all out efforts for the said works.

(b) The NIT/ tender form/ terms & conditions which is/are downloaded from the website(s) has not been changed or corrected in any manner. I understand that only the conditions and readings as appearing in the original uploaded form will be treated as valid. For checking the form and the conditions and the readings used by me in the tender submitted will be compared and confirmed with the original uploaded at MMTC &/or Govt. websites. If there are any changes/ corrections in the NIT/ tender form/ terms & conditions, my tender is liable to be rejected at as per the discretion of MMTC Ltd.

(c) I/We hereby confirm that, all the terms and conditions specified in this NIT/ Tender Form are acceptable to me/us. I/We further confirm that all the required details have been furnished in the appropriate places and if this Tender form is incomplete in any respect on my/our part, then the same is liable to be rejected at the discretion of MMTC Ltd.

15. The DVAT/ (TDS) will be deducted against the bill(s) of works done, as applicable. Payments for the executed work shall be made according to the terms of tender conditions. It is reiterated that the quoted prices are inclusive of all taxes, duties, octroi, levies, work contract tax, transportation etc. (except service tax reimbursement for the work executed as per extent service tax rule) and will remain firm till the completion of the works/contract. The VAT, TDS, any other statutory duties, taxes shall be deducted at source as per rules from the running bills/bills. Income Tax at the prevailing rates as applicable from time-to-time shall be deducted from contractor's bills as per Income Tax Act.

16. The tenderers are requested to submit an attested copy of the PAN Card, TIN No. and fill up the Vendor e-payment form of MMTC. The payment/refund shall be made subject to issue of Vendor code number of the Contractor as all payments/ refunds by MMTC will be done thru' e-payment mode only.

17. The contractor shall submit his interim bill/ final bill for the works within 15 days of final measurement jointly recorded between the contractor, consulting architect and MMTC. The payment of bill(s) shall be made after effecting all the due recoveries.

18. No payment for 'mobilization advance' shall be made in this contract and the contractor has to mobilize his own resources for the works. Their payment amount be released on running bill.

19. The Contractor shall depute competent Supervisor for day to day supervision, coordination, liaison and other works etc. The representative of the Contractor shall attend regular/required meetings to expedite the works and sort out difficulties, if any. The Contractor is responsible for progress of works and also for hurdles, if any, in the progress of works attributable to the contractor.

20. <u>TERMINATION OF THE CONTRACT :</u>

In the event, contractor fails to execute the work with due diligence or expedition or shall refuse or neglect to comply with any orders/ instructions given to him in writing within the scope of the work order or shall contravene the provisions of the work order, MMTC may give notice to the contractor in writing, calling him to make good the failure within such time which may be deemed reasonable, but not exceeding 15 days & in default, MMTC without prejudice to its right under the work order, may rescind or cancel the work order, holding the contractor liable for damages and MMTC shall have the option and be at liberty to get the balance /unexecuted work through some other agency at the risk and cost of the contractor. The cost so incurred alongwith damages as decided by the MMTC, shall be recoverable from the dues payable to the contractor for the work executed under this work order or any other of his dues payable by MMTC.

21. ARBITRATION:

In the event of any dispute or difference arising under or out of relating to the construction meaning, operation or effect of this agreement or breach thereof the matters dispute shall be referred to the Sole Arbitration of Chairman-cum-Managing Director of MMTC Limited or a person nominated by him. The decision/award of the Arbitrator shall be final and binding on the parties. The venue of arbitration shall be New Delhi.

22. FORCE MAJEURE:

Neither party shall be held responsible by the other for breach of any condition of this contract attributable to any 'Act of God'. 'Act of State' strike, lockout, sabotage, droughts, epidemics, riots and civil commotion, war, emergency, earthquakes, floods, lightening, embargo or any other reasons beyond the control of the parties and any breach of clause arising from such Force Majeure Conditions as aforesaid shall not be regarded as a breach of the provision of this contract.

TECHNICAL SPECIFICATIONS FOR CIVIL/INTERIOR WORKS

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GENERAL

CONTENTS

1.0 PREAMBLE

These Specifications cover the items of work in structural and non-structural parts of the works coming under Preview of this document. All work shall be carried out in conformation with this. In general, provisions of Indian Standards, Indian Roads Congress Codes and other national standards have been followed. These specifications are not intended to cover the minute details. All codes and standards referred to in these specifications shall be the latest thereof.

These specifications shall be read in conjunction with the Particular Specifications for various items of work. The Contractor shall carefully acquaint himself with the general specifications, coordinate the same with any other specifications forming a part of the Contract Document and determine his contractual obligations for the execution of various items of work in accordance with good engineering practices.

2.0 REFERENCE TO THE STANDARD CODES OF PRACTICE

2.1 All standards, tentative specifications, specifications, code of practice referred to shall be the latest editions including all applicable official amendments and revisions. The contractor shall make available at site all relevant Indian Standard Codes of Practice as applicable.

2.2 In case of discrepancy between standards, codes of practice, tentative specifications, and specifications referred to, the specifications of Indian Standard Codes of practice shall govern.

3.0 DIMENSIONS

3.1 Written dimensions on drawings shall supersede measurement by scale and drawings to a large scale shall take precedence over those to a smaller scale. Special dimensions or directions in the specifications shall supersede all others. All dimensions shall be checked on site prior to execution.

3.2 The dimensions where stated do not allow for waste, laps, joints, etc. but the Contractor shall provide at his own cost sufficient labour and materials to cover such waste, laps, joints, etc. and the rate quoted is inclusive of such provision and no separate payment will be made for the same.

3.3 The levels, measurements and other information concerning the existing site as shown on the drawings are believed to be correct, but the Contractor should verify them for himself and also examine the nature of the ground as no claim or allowance whatsoever will be entertained on account of any errors or omissions in the levels or the description of the ground levels or strata turning out different from what was expected or shown on the drawings.

4.0 MATERIALS

4.1 QUALITY

All materials used in the Works shall be of the best quality of their respective kinds as specified herein, obtained from sources and suppliers approved by the

Engineer and shall comply strictly with the tests prescribed hereafter, or where tests are not laid down in the specifications, with the requirements of the latest issues of the relevant Indian Standards.

4.2 SAMPLING AND TESTING

All materials used in the Works shall be subjected to inspection and tests in addition to test certificates. Samples of all materials proposed to be employed in permanent Works shall be submitted to the Engineer for approval before they are brought to the site.

Samples provided to the Engineer for their retention are to be labeled in boxes suitable for storage. Materials or workmanship not corresponding in character and quality with approved samples will be rejected by the Engineer.

Samples required for approval and testing must be supplied sufficiently in advance to allow for testing and approval, due allowance being made for the fact that if the first samples are rejected further samples may be required. Delay to the Works arising from the late submission of samples will not be acceptable as a reason for delay in completion of the Works.

Materials shall be tested before leaving the manufacturer's premises, quarry or source, wherever possible. Materials shall also be tested on the site and they may be rejected if not found suitable or in accordance with the specifications, notwithstanding the results of the tests at the manufacturer's Works or elsewhere or test certificates or any approval given earlier.

The contractor will bear all expenses for sampling and testing, whether at the manufacturer's premises at source, at site or at any testing laboratory or institution as directed by the Engineer. No extra payment shall be made on this account.

4.3 DISPATCH OF MATERIALS

Materials shall not be dispatched from the manufacturer's Works to the site without written authority from the Engineer.

4.4 TEST CERTIFICATES

All manufacturer's certificates of test, proof sheets, etc. showing that the materials have been tested in accordance with the requirement of this specifications and of the appropriate Indian Standard are to be supplied free of charge on request to the Engineer.

4.5 REJECTION

Any materials that have not been found to conform to the specifications will be rejected forthwith and shall be removed from the site by the Contractor at his own cost.

The Engineer shall have power to cause the Contractors to purchase and use such materials from any particular source, as may in his opinion be necessary for the proper execution of the work.

4.6 STORING OF MATERIALS AT SITE

All materials used in the Works shall be stored on racks, supports, in bins, under cover etc. as appropriate to prevent deterioration or damage from any cause whatsoever to the entire satisfaction of the Engineer. The storage of materials shall be in accordance with IS 4082 "Recommendation on stacking and storage of construction materials on site" and as per IS 7969 "Safety code for handling and storage of building materials". This shall include the safe custody of all materials until they are required on the works and till the completion of the works. The same shall be applicable for the materials supplied by the Employer or materials supplied by any specialized firms.

The materials shall be stored in a proper manner at places at site approved by the Engineer. Should the place where material is stored by the Contractor be required by the Employer for any other purpose, the Contractor shall forthwith remove the material from that place at his own cost and clear the place for the use of the Employer.

4.7 WATER

4.7.1 Water for construction: Clean fresh water only shall be used for the Works. The water shall be free from any deleterious matter in solution or in suspension. The quality of water shall conform to IS 465.

4.7.2 Storage of water: The Contractor shall make his own arrangements for storing water, if necessary, in drums or tanks or cisterns, to the approval of the Engineer. Care shall beexercised to see that water is not contaminated in any way.

5.0 WORKMANSHIP

5.1 All Works shall be true to level, plumb and square and the corners, edges and corners in all cases shall be unbroken and neat.

5.2 Any work not to the satisfaction of the Engineer or his representative will be rejected and the same shall be rectified, or removed and replaced with work of the required workmanship at no extra cost.

6.0 INCLUSIVE DOCUMENTS

The provision of Special Conditions of Contract, General Conditions of Contract, those specified on the tender as well as execution drawings and notes or other specifications issued in writing by the Engineer-In-Charge shall from part of these specifications.

7.0 MEASUREMENT AND PAYMENTS

The methods of measurement and payment shall be as described under various items and in the bill of quantity. Where specific definitions are not given,

the methods described in IS code will be followed. Should there be any detail of construction or materials which has not been referred to in specification or in the bill of quantities and drawings but the necessity for which may be implied or inferred wherefrom, or which are usual or essential to the completion of the work in the trades, the same shall be deemed to be included in the rates and prices quoted by the contractor in the bill of quantities.

8.0 UNACCEPTABLE WORKS

All defective works are liable to be demolished, rebuilt and defective materials replaced by the contractor at his own cost. In the event of such works being accepted by carrying out repairs etc. as specified by the engineer, the cost of repairs will be borne by the contractor.

In the event of the work being accepted by giving 'Design Concession', arising out of but not limited to under-sizing, under-strength, shift in location and alignment, etc. and accepting design stresses in members which are higher than those provided for in the original design or by accepting materials not fully meeting the specifications etc. the contractor will be paid for the works actually carried out by him at the suitable reduced rate of the tendered rates for the portion of the work thus accepted.

PAINTING

CONTENTS

1.0 SCOPE

These specifications cover the use of paints for the plastered and concrete surfaces. It also includes the painting of wood and metal surfaces.

2.0 GENERAL

The provisions of the latest revisions of the following ARE: Codes shall form a part of this specification.

IS: 63 Whiting for Paint & putty.
IS: 75 Specification for Linseed oil, raw & refined.
IS: 159 Specification for ready mixed paint, brushing, acid resistant.
IS: 345 Specification wood filler, transparent, liquid.
IS: 426 Specification for paste filler for colour coats.
IS: 427 Specification for Distemper, dry colour, as required.
IS: 428 Specification for Distemper, Oil Emulsion, colour as required.
IS: 533 Specification for Gum spirit of Turpentine (Oil of Turpentine)
IS: 710 Marine Plywood
IS: 1200 (Part XIII) Method of Measurement of Building & Civil Engg Works – White Washing, colour washing, distempering & other finishes.
IS: 1477 (Part 1) Code of practice for painting of ferrous metals in buildings Pretreatment
IS: 1477 (Part 11) Code of practice for finishing of ferrous metals in buildings, Painting
IS: 2338 (Part 1) Code of practice for finishing of wood and wood based materials Operations and workmanship for finishing.
IS: 2338 (Part 11) : Code of practice for finishing of wood and wood based materials, Schedule
IS: 2395 (Part 1) : Code of practice for painting concrete masonry and plaster surfaces. Operation & workmanship
IS: 2395 (Part 11) Code of practice for painting concrete, masonry and plaster surfaces. Schedule.
IS: 2524 (Part 1) Code of practice for painting of non-ferrous metal in buildings Pre-treatment
IS: 2524 (Part ll) Code of practice for painting of non-ferrous metal in buildings Painting
IS: 3140 Code of practice for painting asbestos cement buildings:
IS: 3537 Specification for ready mixed paint, finishing, interior for general purposes to IS colour.
IS: 5410 Specification for cement paints, colour as required.
IS : 6278 Code of practice for white washing & colour washing. Other IS Codes not specifically mentioned here, but pertaining to painting form part of these specifications.

3.0 MATERIALS

Materials shall strictly conform to the relevant IS: Specifications.

4.0 PAINTING WOOD AND METAL SURFACES

4.1 General Requirement :

The materials required for the execution of painting work shall be obtained directly from approved manufacturers and brought to the site in maker's drums, with seals unbroken. All paints shall conform to relevant Indian Standards as mentioned under sub-head "Material".

All materials not in actual use shall be kept properly protected. Lids of containers shall be kept closed and surface of paint in open or partially open containers covered with a thin layer of turpentine to prevent formation of skin. Materials which have become stale or fat due to improper and long storage shall not be used. The paint shall be stirred thoroughly in its container before pouring into small containers. While applying also, the paint shall be continuously stirred in the smaller container. No left over paint shall be put back into stock tins. When not in use, the containers shall be kept properly closed.

If for any reason thinning is necessary, in case of ready mixed paint, the brand of thinner recommended by manufacturer shall be used.

Painting except the priming coat shall generally be taken in hand after all other builder's work is practically finished. The rooms shall be thoroughly swept out and the entire building cleaned up at least one day in advance of the paint work being started. The surface to be painted shall be thoroughly cleaned and dusted. All rust, dirt scales, smoke and grease shall be thoroughly removed before painting is started.

No painting on exterior or other exposed parts of the work shall be carried out in wet, humid or otherwise unfavourable weather and all the surfaces must be thoroughly dry before painting work is started.

Brushing of Paint:

The brushing operations are to be adjusted to the spreading capacity advised by the manufacturers of the particular paint. The painting shall be applied 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 alternatively in the opposite directions two or three times and then finally brushing lightly in a direction at right angles to the same. In this process, no brush marks shall be left after the laying off is finished. The full process of crossing and laying off will constitute one coat.

During painting, every time after the paint has been worked out of the brush bristles or after the brush has been unloaded, the bristles of the brush. (which are drawn together due to the high surface tension) shall be opened up by striking the brush against a portion of the unpainted surface with the end of the bristles held at right angles to the surface, so that bristles thereafter will collect the correct amount of paint when dipped again into the paint container.

Spraying:

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

Spraying should be done only when dry conditions prevails. During spraying the spray gun shall be held perpendicular to the surface to be coated and shall be passed over the surface in a uniform sweeping motion. Different air pressures and fan adjustment shall be tried so as to obtain the best application

with the minimum wastage of paint. The air pressure shall not be kept too high as otherwise the paint will clog up and will be wasted.

Spots that are inaccessible to the spray pattern shall be touched up by brush after spraying.

At the end of the job, the spray-gun shall be cleaned thoroughly so as to be free from dirt.

Incorrect adjustments shall be set right, as otherwise they will result in variable spray patterns, runs, sags and uneven coats.

Each coat shall be allowed to dry completely and lightly rubbed with very fine grade of sand paper and loose particles brushed off before next coat is applied. Each coat shall vary slightly in shade and shall be got approved `from the Engineer-in-charge before next coat is started.

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

No hair marks from the brush or clogging of paint puddles in the corner panels, angles of moulding, etc. shall be left on the works. In painting doors and windows, the putty round the glass panes shall also be painted but care shall 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 according to the detailed specifications under the respective headings.

Brushes and containers:

After work, the brushes shall be completely cleaned off paint and linseed oil by rinsing with turpentine. After cleaning, the brushes are wrapped in heavy paper or water proof paper for storage. It is to be used the next day, it shall be hung in a thinner or linseed oil in a container. On no account shall brushes to be made to stand on bristles. 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 guarded from dust. When the paint has been used, the containers shall be washed with turpentine and wiped dry with soft clean cloth, before they can be used again.

4.2 Wood and wood Based Materials:

Preparation of Surface:

All wood work shall be dry and free from any foreign matter, incidental to building operation.

Nails shall be punched well below the surface to provide a firm key for stopping. Moulding shall be carefully smoothened with abrasive paper and projecting fibres shall be removed. Flat portions shall be smoothened off with abrasive paper used across the grain prior to painting. Any knots, resinous, streaks or bluish sap wood that are large not enough to justify cutting out shall be treated with two coats of pure shellac knotting, applied thinly and extended about 25 mm beyond the actual area requiring treatment.

Plywood and Block Board:

This shall be treated as for solid wood, described above.

Particle Board: The surface shall be filled with a thin brushable filler and finished as for solid wood.

Insulation Boards: Two thin coats of water based paints shall be applied by spraying.

Priming Coat:

The dirt or any other extraneous material shall be removed from the surface to be painted. In case the surface is already finished with printer coat but unsatisfactory, it shall be rubbed down to bare wood and surface reprimed. Primer shall be applied by brushing.

Application for transparent wood filler:

The filler shall be applied with brush or rag in such a way that it fills up all the pores and indentations and levels up the surface. It shall be allowed to dry for 24 hours and it shall then be cut and rubbed with emery paper so that the surface of the wood is laid bare, with, the filler only in the pores and crevices of the wood.

Stopping:

All holes, cracks, crevices, etc. shall be stopped carefully to true and level surface with putty before the main undercoat is applied and after the application of the priming coat, stopping shall be prepared as below:

Bees wax, resin and lac (orange in colour) in the proportion of 1: 1: 16 by weight shall be melted down together in a suitable pot using slow heat, the mix being kept well stirred. Colouring materials to produce the required shade shall be added into molten mixture and stirred. Stopping shall on cooling be rolled into stick forms for use.

Application of Paints:

This shall conform to specifications under Para 5. 1

Applying wood preservatives:

The preservatives of specified quality shall be applied in two coats. On new wood work, it shall be applied liberally with a stout brush and not doubled with rags or cotton waste, The first coat shall be allowed at least 24 hours to soak in before the second coat is applied. The excess of preservative which does not soak into the wood shall be wiped off with a clean dry piece of cloth.

5.0 PLASTIC EMULSION PAINTING ON WALL & CEILING

5.1 General

Plastic emulsion paints are not suitable for application on external wood and iron surfaces and surfaces which are liable to heavy condensation and are to be used generally on masonry or plastered surfaces. Suitable primer as per manufacturer shall be provided.

5.2 Paint

Plastic emulsion paint of approved brand and manufacture and of the required shade shall be used.

5.3 Preparation of Surface

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 atleast 48 hours. It 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 paris mixed with water on the entire surface including filling up the undulation and then sand papering the same after it is dry.

5.4 Application

The number of coats shall be as stipulated in the item.

The paint will be applied in the usual manner with brush or roller.

The paint dries by evaporation of the water content and as soon as the water has evaporated the film gets hard and the next coat can be applied. The time of drying varies from one hour on absorbent surfaces to 2 to 3 hours on non-absorbent surfaces.

The thinning of emulsion is to be done with water and not with turpentine.

Thinning with water will be particularly required for the undercoat which is applied on the absorbent surface. The quantity of thinner to be added shall be as per manufacturer's instructions.

The surface on finishing shall present a flat velvety smooth finish. If necessary more coats will be applied till the surface presents a uniform appearance.

5.5 Precautions

(a) Old brushes if they are to be used with emulsion paints, should be completely dried of turpentine or oil paints by washing in warm soap water.

Brushes should be quickly washed in water immediately after use and kept immersed in water during break periods to prevent the paint from hardening on the brush.

(b) In the preparation of walls for plastic emulsion painting, no oil base putties shall be used in filling cracks, holes etc.

(c) Splashes on floors etc. shall be cleaned out without delay as they will be difficult to remove after hardening.

(d) Washing of surfaces treated with emulsion paints shall not be done within 3 to 4 weeksof application.

5.6 Other Details :

These shall be as per specification for "Painting" as far as they are applicable.

6.0 SYNTHETIC TEXTURED PAINT IN PLAIN / STONE OR METALLIC FINISH.

6.1 General

Synthetic Textured Paint, reinforced by using fibres and shall be based on chemicals having acid and alkally resistant properties. It can be applied to any hard, plain surface both internally and externally. It does not require any further application or treatment once it is applied on the surface.

Synthetic Textured Paint is available in ready-mixed form in any desired colour and can be applied by using a trowel. The synthetic Textured Paint avoids cracks formation as well as it provides a waterproofing coating on the surface treated.

6.2 Base Coat

An average 20mm thick cement plaster shall be provided as rendering coat which shall be roughened lightly with wire brush so as to form very mild keys on the rendered surface.

The surface shall be allowed for curing for a period of minimum 14 days before the application of synthetic Textured Paint.

6.3 Applications

Synthetic Textured Paint is applied in three coats :

(a) one coat of plaster by trowel and ;

(b) subsequent two coats of chemical overcoat by brush in approved colour and finished as specified (plain/stone or metallic).

6.4 Measurements

The item shall be measured in square metre areas. The rate shall include erecting and removal of scaffolding, all labour, materials, equipments, plants, tools and all incidental expenses to complete the treatment to the satisfaction of Engineer-in-charge.

6.5 Guarantee

The synthetic Textured Paint treatment shall be executed through an approved agency and written performance guarantee shall be submitted by the Contractor for a minimum period of Ten years through the agency. The contractor and the agency shall be jointly responsible for the performance of the treated surface until the expiry of the guarantee period.

7.0 ACRYLIC PAINTING TO EXTERNAL SURFACES

Acrylic weather shield paint of approved brand shall be applied over plastered surfaces as directed by the Engineer.
Other specifications including preparation of surfaces, application of paint etc. shall conform to section 4.3 above and as directed by Engineer-In-Charge. The priming coat, anti-fungal treatment, preparation of paint etc. shall be carried out as per manufacturer's specification / as directed by Engineer-In-Charge.

8.0 MEASUREMENT

Painting on plastered or concrete surface shall be measured as for plastering. Painting on wooden or metal surfaces shall not be measured separately and is deemed to be included in the respective item.

FLOORING

CONTENTS

1.0 SCOPE

These Specifications covers flooring, skirting, dado or cladding works using different types of stone/ slabs/ tiles as detailed hereunder:

2.0 GENERAL

The provision of the latest revisions of the following IS Codes shall form a part of this specification to the extent they are relevant.

IS: 269 Specification for ordinary, rapid hardening and low beat Portland cement.

IS: 383 Specification for coarse and fine aggregate from natural sources for concrete

IS: 657 Specification for material for use in the manufacturer of magnesium oxychloride flooring compositions.

IS: 1130 Specification for marble (Blocks, slabs & Tiles).

IS: 1200 Part XI Method of measurements for Building and Civil Engg. Works, paving, floor finishes, dado & skirting.

IS: 1237 Specification for cement concrete flooring tiles.

IS: 1443 Code of practice for laying and finishing of cement concrete flooring tiles.

IS. 2541 Code of practice for use of lime concrete' in buildings.

IS: 2571 Code of practice for laying in situ cement concrete flooring

IS: 4082 Recommendation on stacking and storage of construction materials at site.

IS: 4457 Specification for Ceramic unglazed vitreous acid resistant tile.

IS: 8042 Specification for white port land cement

IS 8112 Specification for high strength ordinary portland cement

IS: 10067 Material Constants in Building Work

IS: 13711 Ceramic Tiles : Sampling & basis of acceptance

IS: 13712 Ceramic Tiles : Definitions, classifications, characteristics and making

IS: 13753 Dust Pressed ceramic tiles with water absorption of $E > 10\%$ (Group - B III)

IS: 13754 Dust Pressed ceramic tiles with water absorption of $6\% < E < 10\%$ (Group - B IIb)

IS: 13755 Dust Pressed ceramic tiles with water absorption of $3\% < E < 10\%$ (Group - B IIa)

IS: 13756 Dust Pressed ceramic tiles with water absorption of $E < 3\%$ (Group - B I)

Other I.S Codes not specifically mentioned here, but pertaining to Floor Finishes form part of these specifications.

3.0 MATERIAL

3.1 Cement, sand, aggregate, water shall conform to the relevant BIS standards as specified in clause 2.0 above.

Stone shall be hard, sound, durable and free from defects like cavities, cracks, sand-holes, flaws, injurious veins, patches of loose or soft materials and weathered portions etc.

4.0 VITRIFIED TILES FOR FLOORING

4.1 Standards

DESCRIPTION	MINIMUM REQUIREMENT
Specification for coarse and fine aggregates	I.S. 383 - 1970
Tests for mortar	I.S. 2250 : 1981
Method of test of aggregates in concrete	I.S. 2386 - 1963
Recommendation on stacking and storage of construction materials at site.	I.S. 4082 : 1996
Specification for white port land cement	I.S. 8042 - 1989
Ordinary portland cement 43 grade	I.S. 8112 - 1989
Water	I.S. 456 : 2000 & I.S. 3025
Vitrified Tiles	Shall conform to EN - 176 Group B1a and ISO 13006 stds.
Deviation in length	Method of testing shall be as per EN 98
Deviation in thickness	Method of testing shall be as per EN 98
Straightness of sides	Method of testing shall be as per EN 98
Rectangularity	Method of testing shall be as per EN 98
Surface flatness	Method of testing shall be as per EN 98
Water absorption	Shall not be greater than 0.05 % (Method of testing shall be as per EN 99)
Moh's hardness	Shall not be less than 6 (Method of testing shall be as per EN 101)
Flexural strength	Shall not be less than 27 N / sqmm. (Method of testing shall be as per EN 100)
Abrasion resistance	(Method of testing shall be as per EN 102)
Skid resistance (coefficient of friction)	0.6 (Method of testing shall be as per ASTM C-1028)
Breaking strength	Shall not be less than 2500 N (Method of testing shall be as per ASTM C-678)
Density	Shall not be less than 2 gm / cm3 (Method of testing shall be as per DIN - 51082)
Frost resistance	Shall be frost proof (Method of testing shall be as per EN - 202)
Chemical resistance	Shall be resistant to chemicals(Method of testing shall be as per EN - 106)
Thermal shock resistance	Shall be resistant to thermal shocks (Method of testing shall be as per EN - 104)
Colour resistance	No damage (Method of testing shall be as per DIN - 51094)
Thermal expansion	Shall not be more than 9 x 10-6 (Method of testing shall be as per EN - 103)
Stain resistance	Shall be stain resistant (Method of testing shall be as per ISO 10545 -14)
Glossiness	Desired reflection effect as required by architect (Method of testing shall be with the use of glossometer)

4.2 Materials

Tiles

The tiles shall be unchamfered, fully vitrified, homogeneous, unglazed, ceramic satin matt finished tiles of nominal size of premium quality. The size and thickness of tiles shall be as per the architectural requirements.

4.3 Workmanship

The floor tiles shall be laid to the correct slope and levels. The mix of the mortar shall be to a minimum of 1:4 consistency.

Bedding for tiles in flooring

The amount of water added while preparing mortar shall be the minimum necessary to give sufficient plasticity for laying. Before spreading the mortar bed, the base shall be cleaned of all dirt, scum or laitance and loose materials and then well wetted without forming any pools of water on the surface. The mortar shall then be evenly and smoothly spread over the base by the use of screed battens to proper level or slope. The thickness of the bedding shall not be less than 12 mm (about 1/2") or more than 20 mm (about 3/4") in any one place. The tiles shall be laid on bedding mortar when it is still plastic but has become sufficiently stiff to offer a fairly firm cushion for the tiles.

Laying of tiles

The tiles before laying shall be soaked in water for at least 2 hours. Tiles, which are fixed in the floor adjoining the wall, shall be so arranged that the surface of the round edge tiles shall correspond to the skirting or dado. Neat cement grout of honey like consistency shall be spread over the bedding mortar just to cover so many areas as can be tiled within half an hour.

The edges of the tiles shall be smeared with neat white cement slurry and fixed in this grout one after the other, each tile being well pressed and gently tapped with a wooden mallet till it is properly bedded and in level with the adjoining tiles. There shall be no hollows in bed or joints. The joints shall be kept as close as possible and in straight lines

The joints between the tiles shall not exceed 1. 5 mm wide. The joints shall be grouted with a slurry of white cement. After fixing the tiles finally in an even plane, the flooring shall be covered with wet saw dust and allowed to mature undisturbed for 14 days.

Cleaning

After the tiles have been laid in a room or the day's fixing work is completed, the surplus cement grout that may have come out of the joints shall be cleaned off before it sets. Once the floor has set, the floor shall be carefully washed clean and dried.

4.4 Testing

If any tile is found to be warped, damaged or irregular in shape and size, it shall be refitted or replaced, properly jointed. The tiling work shall be tested for plumb, line and level. The surface of the floor and wall surfaces shall be frequently checked with a straight edge.

Corners of walls shall be truly at right angles. The finished work shall not sound hollow when tapped with a wooden mallet.

4.5 Measurement:

The contract rate shall be per square metre of the floor area covered by the flooring of the specified type. All work shall be measured net. The length and width of the flooring shall be measured net between the faces of skirting or dados or plastered faces of walls. Paving under the dado, skirting or plaster shall not be measured.

4.6 Rate :

The rate for the item shall include the following.

(a) All labour, materials and equipment, cleaning the sub-base, laying mortar bed and cement grout, fixing tiles as specified above and making up the joints.

(b) Any cutting and waste if required.

(h) Pointing when included in the item.

(c) Cleaning & protecting the floor from all stains, etc.

FALSE CEILING

CONTENTS

1.0 PLASTER OF PARIS (GYPSUM ANHYDROUS) TILES CEILING

1.1 INDIAN STANDARDS

(1) IS : 2095 – 1982 : Gypsum Plaster boards.

The above mentioned IS Specification and Code of Practice has been indicated for general guidance.

However, this IS Specification and Code will be adopted only for those particular items in the contract where the mode of measurement or detailed technical specifications are not laid down in the Tender.

1.2 PLASTER OF PARIS

Plaster of Paris shall be of the calcium sulphate. Its fineness shall be such that when sieved through a sieve of I.S. Sieve designation 3.35 mm for 5 minutes after drying the residue left on it, shall not be more than 1% by weight. Initial setting time shall not be less than 13 minutes.

1.3 Preparation of Tiles.

The tiles of plaster of Paris reinforced with hessian cloth shall be prepared in suitable sizes as per drawing or as ordered by the Engineer in charge. The maximum size of tiles shall be limited to 75 cms. in each direction. Wooden forms of height equal to the thickness of the tiles shall be placed on a truly level and smooth surface such as glass sheet.

The section of form sides shall be such that the edges of the tiles shall be provided with a neatly formed chamfer alround of 5mm width and 8mm depth, unless the tiles are to be provided with cover fillets over joints, in which case the edges of the tiles shall be truly square. The glass sheet or the surface on which the form is kept and the form sides, shall be given a thin coat of non-staining oil to facilitate the easy removal of the tile. Plaster of Paris shall be evenly spread into the form upto about half the depth and hessian cloth weighing not less than 230 gms per square metre, shall be pressed over the Plaster of Paris layer. The ends of the hessian cloth shall be turned over at all edges to form a double layer to a width of 5 cms. The hessian cloth shall be of an open webbed texture so as to allow the plaster below and above to intermix with each other and form an integral whole. The form shall then be filled with

Plaster of Paris, which shall be uniformly pressed and then wire cut to an even and smooth surface. The tile so moulded shall be allowed to set initially for an hour or so and then removed from the form and allowed to dry and harden for about a week. A good tile, after drying and hardening, shall give a ringing sound when struck. The tiles shall be true and exact to shape and size and with clean and regular chamfers. The exposed face shall be truly plane and smooth.

1.4 Frame

G.I. frame of class and section as specified in the description of relevant item for the frame or as ordered by the Engineer in charge shall be provided. The width of the scantling provided shall be sufficient to provide a proper screwing surface. The longitudinal and header scantling shall be so arranged that the tiles can be fixed to form the panel arrangement required as per drawings, or as ordered by the Engineer in charge and there is supporting scantling under each and every edge of the tiles. The framing shall be paid for separately unless specifically included in the description of the item.

1.5 Plaster of Paris

Shall be as specified in item 1.2 above.

1.6 Preparation of tiles

Shall be as specified in item 1.3 above.

1.7 Fixing

The tiles so prepared shall be fixed to the cross battens of the ceiling frame with 40 mm brass screws at spacing not exceeding 20cm centre to centre on all edges. The tiles shall be laid with their edges in just close position to the adjoining tiles without any gap in between. The line of screws shall be not less than 15mm away from the edge of the tiles. The screws shall be slightly counter sunk into the tiles. Holes for screws shall be drilled. The counter sunk heads of screws shall be covered up with plaster of paris and smooth finished.

Where a surface unbroken by visible joints is required, then the joints shall be filled with plaster of paris and trowelled smooth so that the whole surface appears as one without any joints. Nothing extra shall be paid for this closing of joints.

1.8 G. I. PRESSED METAL SECTION FRAMEWORK FOR SUSPENDED CEILING.

The main load bearing member shall be C shape rectangular tube/ channel with two horizontal 28mm and one vertical 50mm sided and each ends of the C turned down 9mm, fabricated of 22 gauge (0.80mm) G.I. Sheet. The cross runner shall be furring channel with 50mm horizontal side, two vertical 10mm and two ends turned flat 15mm onwards, fabricated out of 24 gauge (0.63mm) G.I. sheet. Wall angle shall be 25mm x 25mm, 24 gauge (0.63mm).

The hangers or suspenders shall comprise 6mm dia. M.S bars, painted with a coat of steel primer of approved make. These will be fixed to 'L' cleats of M.S 25 mm x 25mm x 5mm and 75mm long fixed to the soffit of the of the roof slab with metallic expansion fasteners. The hanger rods of required length shall have threaded end with 2 M.S check nuts at the lower end fixed into holding clamp of size 75mm x 28mm and allowing level adjustment. The clamp will hold main runners which shall be running at not more than 1 metre centres in one direction. The cross runner with open side of the channel at top shall be placed below the main runner at right angles at distance as directed by the Engineer in charge but not exceeding 450mm centres in one direction. These will be anchored and screwed properly with main runners at every crossing with a 12 SWG, G.I. wire clip fixed diagonally around the main runner. The cross runners shall be fixed at centres not exceeding 300mm.

The wall angles shall be properly secured to walls with rawl plugs and screws and the ends of main and cross runners shall be supported on wall angle.

2.0 MINERAL FIBRE BOARD FALSE CEILING

2.1 Standards

DESCRIPTION	REFERENCE FOR CODES
In general	Shall be as per B.S. or equivalent Indian standards
Suspension system	Exposed semi recessed suspension system
Weight	Approximately 3.5 kg / sqm.
Light reflectance	Shall be greater than 83%
Humidity resistance	Shall be about 95% RH
Fire performance	

Reaction	Class 0 / Class 1 (BS 476)
Resistance	One hour fire rating
Acoustical criteria	
NRC (Noise reduction coefficient)	0.55
Sound Absorption	0.5
Sound Attentuation	0.32 decibels
Thermal conductivity	0.052 to 0.057 W/moK

2.2 Materials

2.2.1 Mineral Fibre boards

The mineral fibre boards shall be of shall be of approved make, design, shade and quality.

The tiles shall be of specified size and thickness. The tiles have straight and square edges and shall be free from any breakages, marks, stains or bends.

2.2.2 Framework

The supporting framework shall comprise of sections of specified size and weight as per the requirements of the architect. The main runner shall be appropriately spaced and fixed to soffit by approved hangers. End hangers shall be at a suitable distance from the adjacent wall.

The cross tees shall be appropriately interlocked (both ways) between main runner to form a required module or grid. The wall angle shall be fixed to the wall at specified space intervals.

2.2.3 Workmanship

The ceiling shall be erected in a continuous sequence. All work in this section shall be performed in an efficient manner as per the instructions of the architect and as per manufacturer's recommended procedures. The assembly shall be of the semi-recessed type and shall be designed to meet the needs of performance, durability and aesthetics.. The contractor shall make adequate provisions for adequate supports for lighting fittings, making cut-outs and extra framework for light fixtures, A.C. grills, speakers, trap doors, sprinklers, sensors, all detectors, etc., complete all as per lay-out / pattern as shown in drawing, as per manufacture's recommendations, as per approved shop drawings.

2.2.4 Protection

Prior to installation, the material shall be stored in a dry and clean area which is enclosed and protected from rain or other causes of excessive moisture and stabilised in the area for not less than 24 hours prior to installation.

2.3 Testing

The false ceiling system installed shall be tested for straightness and levels. The panels shall be true to shape and size as specified and shall be from any bends, scratches or visible marks, patches etc. The framework should be carefully examined for rigidity. If there is any sag, the panels should be dismantled and re-erected complete to the satisfaction of the engineer in charge. The maximum sag permissible shall be as per that defined in relevant B.S. or equivalent Indian standards.

2.4 Reference vendors / manufacturers

Armstrong or approved equivalent

3.0 MEASUREMENTS

3.1 Measurements

Length and Breadth of superficial area of the finished work shall be measured correct to a cm. Area shall be calculated in square metre correct to two places of decimal. No deduction shall be made for openings of areas utp 40 dm2, nor shall extra payment be made either for any extra materials or labour involved in forming such openings. For opening exceeding 40 dm2 in area deduction in measurements shall be made, but extra will be payable for any extra material or labour involved in making such openings. Curved surfaces shall be measured and paid for separately from flat surfaces. The work shall be deemed to comprise of flat surfaces only unless specifically stated otherwise in the description of the item.

Any sunk or raised mouldings in the plaster shall be measured and paid for separately, deduction being made from plastering on ceiling only if the width exceeds 15 cm. Ceiling at a height greater than 5 metres shall be so described and measured separately stating the height.

3.2 Rate

The rate shall include the cost of all materials and labour involved in all the operations described above including all scaffolding, staging, etc. The frame work supporting the ceiling will be paid for separately unless otherwise stipulated in the description of the item.

The rate does not include for any raised or sunk mouldings or for any patterned finishing of the surface, which will be measured and paid for extra over the plaster work.

INTERNAL ELECTRIFICATION WORKS

CONTENTS

GUIDE LINES

1.1 SCOPE

The scope of this section covers guidelines for the contractor on the specification and schedule of material and the general requirements.

1.2 SCOPE OF CONTRACT

The scope of work under this contract covers equipment, material, accessories and labour required for the specified works and to carry out the erection as specified and shown on the drawing and schedule of material.

Safety, good workmanship and quality are the prime requisites of the work covered under this contract. All the equipments, material and the work carried out shall meet the relevant codes, specification and the intents of specifications and the proper functioning of the systems and installation and shall be in correct lines, levels etc.

1.3 MATERIAL

The equipments and material shall meet the specifications and requirements indicated in the technical specifications covered under specific section and the relevant equipment data. The makes of material shall be one of the recommended makes covered under Section 104 makes of material.

1.4 SPECIFICATION

The technical specification attached herewith gives general guidelines and minimum standards for equipments material and workmanship. However it is the responsibility of the contractor to meet the statutory provision and local codes.

1.5 SCHEDULE OF WORK

The schedule of work indicates the scope and quantity of the work estimated at the time of preparation of this tender. The quantity indicated are based on rough estimate on the basis of the drawings and subject to variation due to site condition. Also additional requirements may arise during the installation and deletion or replacement of items. Hence there shall be variation in quantities indicated and the unit rates quoted shall remain firm during the contract period.

1.6 STANDARDS & REGULATIONS

Each section indicates the Indian Standard Specification to be followed. It is the responsibility of the contractor to meet the statutory regulation local codes and other relevant standards and specifications connected to the work being carried out.

1.7 INSPECTION & TESTING

The Consultants/Clients have the right to inspect the plants, equipments and material at manufacturer's work or at site at any stage and reject the material that is substandard or does not meet the requirements of the specification and codes.

The contractor shall provide at his cost at site and elsewhere instruments and appliances for testing and equipments and installation at various stages of manufacturing /installation. These instruments shall be got tested and calibrated for their accuracy and performance from the approved institutions.

The inspection and testing carried out by the Consultants/Clients/Third party does not relieve the contractor of their responsibility of carrying out routine inspection during each stage of procurement, manufacture and installation and also meeting the intents and requirements of the specification and statutory requirements.

All equipments and the installation to be tested in the presence of the Consultants/Clients after carrying out necessary rectification, adjustments and balancing. Four sets of test readings should conform to the specification, equipment data, standards and codes.

1.8 TRAINING

The operating staff of the clients shall be trained free of cost for the operation, maintenance overhauling etc. of the equipments and installation.

1.9 STATUTORY INSPECTION

The contractor shall be fully responsible for meeting all the statutory obligations and local inspectorates pertaining to the works carried out by them. The contractor should prepare all working drawings and obtain approval of competent authorities and also have the equipment and installation inspected and got approved.

All official fees will be paid by the clients directly against demand in writing from the appropriate authorities and all other expenses for submission and approval of the various relevant statutory bodies shall be embodied in the tender prices. You shall also do the necessary liaison work with the power supply company on client's behalf.

1.10 DEVIATIONS

Should the tenderer wish to deviate from the provision of specification and drawings, the same shall be indicated separately along with supporting drawing and specifications to decide the merits of such deviation. In the absence of any deviation it is deemed that the tenderer is fully satisfied with the intents of specification and drawings and their compliance with the statutory provisions and codes.

However, the offer shall be strictly on the basis of tender specification and schedule of material. The offer for the deviated items shall be furnished separately.

1.11 REFERENCE DRAWINGS

The drawings issued with the tender and shown in relevant section are basic diagrammatic drawings and is part of the tender documents. Contractor shall preserve one set of this drawing in good condition incorporating all modifications carried out from time to time during the erection period at the site and shall return them to the Consultants/Clients after completion of the work.

1.12 WORKING DRAWINGS

Contractor shall prepare and get approved shop drawings/fabrication drawings prior to execution of work for the following:

a) Layout of substation indicating the details of poles, switches, accessories etc.

b) GA, schematic and control drawings for switchgear panels, transformer etc.

On completion of work the contractor shall prepare ‘AS BUILT’ drawings and one set in CD in Autocad format and two sets hard copy shall be submitted.

1.13 MEASUREMENTS AND PAYMENTS

The mode of measurement and payment shall be strictly indicated under relevant Section measurements and payments. This indicates the mode of measurement, items to be included and items excluded etc. in a board basis. However, it is the responsibility of the contractor to meet the intents of the specification and total installation on the works contract/turnkey basis.

1.14 HANDING OVER

The installation shall be handed over after a satisfactory testing along with the following documentation.

a) Two sets of prints of the as installed drawings along with CD

b) Two sets of test reading and certificate of local authorities.

c) Two sets of detailed equipment data and operation and maintenance manuals.

d) List of recommended spares.

e) Performance guarantee in the prescribed form.

The final acceptance shall be effective only after the submission of the above documents. Final payment will be released only after the handing over and submission of documentation.

1.15 PERFORMANCE GUARANTEE

All equipment and the entire installation shall be guaranteed to yield the specified ratings and design conditions plus/minus 3% tolerance. Any equipment found short of the specified ratings by readings shall be rejected.

2.0 DIVISION OF WORK

2.1 SCOPE

Scope under this section the division of work between the contractor and others on a broad basis, both supply of material and installation. The details of material to be included in the supply items as well as installation, testing and commissioning of the system are covered under respective section and measurements and payments.

The scope of work of the contractor for installation of equipments and material supplied by the clients covers:

a) Taking delivery of material, storage and safe custody till handing over.

b) Transportation to the site of erection.

c) Supply of all fixing material, supports and accessories.

d) Supply of consumables for testing and commissioning.

e) Maintaining register of material received and utilized.

f) Hand over excess material.

Clients hold the option to supply some of the major material and debit it at the quoted supply rate.

3.0 MEASUREMENT & PAYMENT

3.1 SCOPE

The scope under this section covers the mode of measurements and payments for all items.

3.2 DIVISION OF WORK

The measurement and payments of items shall be based on the stage of completion of the work and shall be as indicated elsewhere in the tender.

3.3 REQUIREMENTS

The general requirements for the above items shall be as shown below:

A) SUPPLY OF ITEMS

This shall include supply material and accessories required for the completion of the entire installation specified under various headings.

B) INSTALLATION, TESTING & COMMISSIONING

This shall include supply of all supporting material and accessories, equipments, tools and consumables for fixing, testing and commissioning and labour.

3.4 MODE OF MEASUREMENT

The mode of measurement and the basis material to be included are as shown below. However, the item required for the proper installation other than that clearly indicated in the items excluded to achieve proper installation finish and functioning of the whole system shall be the responsibility of the contractor.

Cutting and chasing of brick walls, rectifying, levelling etc., wherever required shall be included in the scope of work. No chasing or cutting shall be done on RCC work. The fixing of supports and hangers to RCC work shall be done using anchor bolts/fasteners of adequate capacities, which are included in the scope of work. Cutting of brick shall be done with wheel cutter. The final finish of chased area will be carried out by civil agencies.

SL	ITEM	ITEM INCLUDED	ITEM EXCLUDED
1	PANELS & DBS Each LT panel shall be measured as one unit	Supply of panel fixing accessories	Nil
2	DISTRIBUTION BOARDS		
2.1	Each DB shall be measured as one unit and shall be classified on the basis of no. of circuits	Incoming and outgoing feeders busbars and interconnection, protecting and indicating meters and instruments fixing accessories	Nil
3	WIRING INSTALLATION		
3.1	CONDUIT WIRING		
	Each circuit point shall be measured on the basis of unit length	Conduit and accessories, wires, clamps termination etc. from DB to the first electrical outlet/fitting, including wiring to the switches, if any	Control switches with boxes
3.2	Each secondary point looping from circuit point/outlet/ switch/fitting shall be measured as one unit	Conduit and accessories wires, clamps, outlet box	Control switches socket etc.

3.3	Each control switch outlet shall be measured as one unit. Multiple control switch outlet shall be considered as that many no. of switch outlets	Control switch and box internal wiring for multiple outlets	Conduit wiring
3.4	Each fan regulator shall be measured as one unit. Multiple regulator outlet shall be considered as that many no. of regulator outlet	Solid state regulator control switch, and box. Internal wiring for multiple outlet	Conduit wiring
3.5	Each socket outlet including combined socket outlet shall be measured as one unit. Multiple socket outlet shall be measured as many no. of socket outlets.	Socket outlet, control switch and box. Internal wiring for multiple outlets and and plug tops for metal clad sockets	Plug tops for 6/16A sockets
3.6	Each light fitting shall be measured as one unit and shall be classified based on the type of fittings.	Fixtures with accessories, fixing material and accessories	Fixture with lamps& control gear, if supplied by clients
3.7	Each ceiling fan shall be measured as one unit and shall be classified on the basis of size of the fan	Ceiling fan, down rod hanging hook	Regulator & switch
3.8	Each propellar fan shall be measured as one unit and shall be classified on the basis of the size and capacity.	Propellar fan, fixing frame, gravity louvers bird screen	Nil
4	LOW VOLTAGE WIRING		
	TELEPHONE		
4.1	Each tag block shall be measured as one unit and shall be classified on the basis of no. of pair of terminals	Tag block, enclosure, fixing accessories	Nil
4.2	The telephone cable shall be measured on the basis of unit length and shall be classified on type and no. of pairs	Cable, fixing accessories, marker excavation, back filling	Nil

4.3	Wiring of each telephone outlet from the tag block, to individual outlet shall be measured on the basis of unit length	Conduit, wires	Outlet&box
4.4	Each telephone outlet shall be measured as one unit	Outlet with box	Nil

3.5 PAYMENTS

The payment shall be made on the basis of quantities measured and the unit rates accepted. The payments shall be made according to the stages/terms indicated in 1201 tender details. Surplus material after completion of the installation shall be taken back by the contractor. In case the owner intents to take over these material, payments shall be made to the contractor at the supply rates/mutually agreed upon.

4.0 DISTRIBUTION BOARDS

4.1 GENERAL REQUIREMENTS

The distribution boards shall be complete with:

- Sheet steel enclosure of 16 SWG suitable for recessed semirecessed or surface mounting or of thermoplastic/ABS body.
- Electrolytic grade copper, busbars, incoming and outgoing feeders
- Earthing terminals
- Circuit diagram indicating load distribution on the inside cover
- Weather proof enclosure and canopy for outdoor DB's and feeder pillar.
- Double door vertical or horizontal.

4.2 ENCLOSURE & FABRICATION

The fabrication of the enclosure shall comply the following.

- 16 SWG sheet enclosure with circular knock-outs
- Wire race for individual phases.
- Phase barriers of insulating material for three phase DB's
- 2 nos. earthing terminals with lug type connection

4.3 Wherever wiring is with 3C –flexible wires, minimum space of 150 mm shall be provided between MCB & enclosure all around as well as between MCBs of different phase.

4.4 CORROSION TREATMENT

Sheet steel work shall be provided with 7 tank anticorrosive treatment. The panel shall be finished with 2 coats of approved synthetic enamel paint over two coats of red-oxide primer, oven dried.

4.5 BUSBARS

The busbars shall be as follows :

- The electrolytic grade copper bar suitable for incoming feeder with current carrying capacity of min. 800A/sq. inch.
- Individual phase and neutral bars located in respective phase cubicle for three phase DB's.

4.6 MINIATURE CIRCUIT BREAKERS

The MCB's shall comply the following feature :

- Short circuit capacity of minimum 9 KA
- Quick make, quick break, non welding silver alloy contacts suitable for manual and automatic operation

- Inverse time over load and instantaneous short circuit tripping mechanism with trip free operation.
- Common operating handle and integral tripping for multiple MCB
- Pressure clamp terminals for users upto 4 mm sq. and bolted lugs for higher rating.
- Phenol formaldehyde moulded enclosure.
- B curve for lighting d curve for UPS supply & c curve for motor duty (AC etc.).

4.7 FUSES

The fuses shall comply the following features:

- HRC link type with carriers
- Short circuit rating of minimum 16 KA
- Pressure clamp terminals for wires upto 4 mm sq. and bolted lugs for higher rating.

4.8 INSTALLATION & TESTING

The distribution boards shall be mounted on necessary angle crow fram work. Insulation resistance shall be tested with 1000V meggar and the values should be as shown below:

- Between phases : 2.5 megohms
- Between phases & neutral : 1.5 megohms

5.0 WIRING INSTALLATION

5.1 SCOPE

The scope under this section covers wiring installation consisting of :

A) Lighting circuit
B) Power circuit
C) Equipment & machinery
D) Low voltage installation

5.2 STANDARDS

A) IS : 732 COP for electrical wiring installation (system voltage not exceeding 650 V)
B) IS : 1646 COP for fire safety for buildings (General) electrical installation
C) IS : 5216 Guide for safety procedures & practice in electric work.
D) IS : 4648 Guide for electrical layouts on residential buildings
E) IS : 302 General & safety requirements for light electrical appliances
F) IS : 9537 Specification of conduits for electrical installation
G) IS : 1653 Rigid steel conduits for electrical wiring.
H) IS : 2509 Rigid non metallic conduits for electrical installation
I) IS : 3480 Flexible steel conduits for electrical wiring
J) IS : 3667 Fittings for rigid steel conduits for electrical wiring
K) IS : 3837 Accessories for rigid steel conduits for electrical (wiring)
L) IS : 6946 Flexible (pliable) non-metallic conduits for electrical installation.
M) IS : 3419 Fittings for rigid steel conduits for electrical wiring
N) IS : 694 PVC insulated wires
O) IS : 8130 Conductors for insulated electric cables & flexible cords
P) IS : 5133 Boxes for enclosures of electrical accessories
Q) IS : 2148 Flame proof enclosure for electrical apparatus
R) IS : 1293 3 pin plugs and sockets
S) IS : 4705 Switch socket outlet (non-inter locking type)
T) IS : 5561 Electrical power connectors

U) IS : 2004 PVC insulated wires

5.3 CONDUIT WIRES

Conduit wiring shall be from LDB, PDB, panels, MCC or isolators as indicated and shall be complete with:

- Conduit & accessories
- Wires & interconnections
- Control switches & sockets
- Outlet boxes with terminal connectors & earthing

5.4 NON-METALLIC CONDUITS

Non-metallic conduits shall be heavy/medium guage PVC as specified in schedule of work as per IS : 9537 with following dimensions subject to tolerances. All accessories shall also be of the same material.

	NOM. DIA	ID	OD
1)	20 dia	15.8	20
2)	25 dia	20.6	25
3)	32 dia	26.6	32
4)	40 dia	34.4	40

5.5 METALLIC CONDUITS

All conduits & accessories shall comply the following features:

- Solid welded pipes with black enamelling
- Wall thickness of

16 SWG upto 40 mm dia

14 SWG above 40 mm dia

- Conduit accessories of similar wall thickness & include bends, elbows, junction boxes, reducers, nipple, splitter coupling plugs, etc.
- Junction boxes shall be with the required number of outlets & cover 50/75 mm deep as per site conditions.
- Flexible conduits made out of continuous length of spirally wound, inter-linked strip steel with fired zinc coating on both sides.
- Flexible HDPE pipes short length of upto 500 mm may be used as adaptor for drop to the fixtures wherever false ceiling is there.

5.6 WIRES

Wires shall comply the following features:

- PVC insulated bright annealed copper stranded conductors.
- 600 V grade wires for single phase circuits and 1000 V grade for 3 phase circuits.
- Colour coded as below :

Phase - R - Red

Phase - Y - Yellow

Phase - B - Blue

Neutral - Black

Earth - Green or yellow/green

5.7 CONTROL SWITCHES AND SOCKETS

The control switches and sockets shall be of rated capacity and shall comply the following features:

A) CONTROL SWITCHES

- Silver contacts with shrouded current carrying terminals
- Moulded urea formaldehyde casing and cover plates

B) SOCKET OUTLETS

- Brass or copper female outlets enclosed in urea formaldehyde or porcelain casing
- Control switches & fuses

- Urea formaldehyde cover plates

C) INDUSTRIAL OUTLETS

- Brass or copper female outlet enclosed urea formaldehyde or porcelain casing.
- Aluminium alloy enclosure with cover
- Scraping in earthing terminals
- DP/TP MCB

D) OUTLET BOXES

The outlet boxes shall be factory fabricated out of machine pressed sheet steel passivated as per the switch manufacturer.

5.8 LAYING OF CONDUITS

The size of conduit shall be selected on the following basis:

Conduit size mm dia						
Wire sq. mm	20	25	32	40	50	63
	Maximum number of wires					
1.0	4	8	10	x	x	x
1.5	4	8	10	x	x	x
2.5	4	6	8	x	x	x
4	2	4	6	x	x	x
6	x	2	4	x	x	x
10	x	x	2	4	x	x
16	x	x	x	x	4	x

Note : x indicates not applicable

The conduit laying shall be as follows :

- On the routes indicated on the drawing or to be marked on the drawing and at site and got approved before laying.
- Conduit junction boxes/pull through boxes to be installed at spaces not more than 12 m or two 90 deg. bends, the junction boxes shall be flush with ceiling.
- Conduits to be kept 100 mm minimum from pipes and non electrical services
- Separate and colour coded conduits/runways to be used for
    1) Lighting circuits
    2) Emergency lighting circuit
    3) Power circuit
    4) Low voltage circuit
- Fixing screws to be rust proof or cheese head screws
- Conduit buried in concrete to be fastened to the reinforcement and get approved before casting the slab.
- Conduits embedded in wall to be fixed by staples at 500 mm intervals.
- Conduits embedded in floor screen to be of PVC or galvanized and painted with emulsified bitumen
- Conduits to be free from sharp edges and burrs and necessary PVC bushing to be provided wherever necessary.
- Outlet boxes to have minimum size of 50 x 50 x 32 mm or as per switch manufacturer's specification.

- Flexible conduits are acceptable only at machine end and for short extension to outlets (not exceeding 500 mm in false ceiling)
- Chasing the brick wall shall be done by cutters/circular discs.
- All metallic conduits and accessories shall be threaded type and exposed threads and bends shall be given one coat of black enamel paint over a coat of redoxide paint.
- Non-metallic conduit shall be jointed using solvent specified by the conduit manufacturers.

5.9 EARTHING

Insulated earth conductors of specified size shall be taken through the conduits.

The size of earth wire shall be of size 50% of phase conductor subject to a maximum and minimum shown below :

Copper	Aluminium	GI
Minimum (sq.mm)	1.5	2.5	4
Maximum (sq.mm)	150	175	350

All outlet boxes, switch & socket boxes, and light fitting to be earthed properly.

The switch/socket outlet shall be factory built suitable for the particular make of switch/outlet.

5.10 WIRING

The wiring in conduit shall comply the following :

- Single core PVC insulated copper aluminium wires as specified below or as shown on drawings and schedule of material
- Wire sizes

Copper	Aluminium
Light circuit point	1.5 sq.mm	2.5 sq.mm
Light secondary point	1.5 sq.mm	2.5 sq.mm
Power points	2.5/4.0 sq.mm	4.0 sq.mm
Machineries	According to the load current	

5.11 A maximum 3 circuits of same phase can be taken per conduit and each circuit shall have independent neutral and earth wire from DB.Jointing of wires are not permissible, however looping may be done from the circuit point/secondary points.

Metalic/non-metalic trunking may be used if number of conduits aremany. The metalic trunking shall be earthed securily at DB end and throughout the length. Single trunking with metallic partition may be used for different voltage services.

5.12 TESTING

The entire installation to be tested for :

1) Insulation resistance
2) Earth continuity
3) Polarity of single pole switches

3 copies of test certificates shall be submitted for the approval.

6.0 LIGHT FITTINGS AND FANS

6.1 SCOPE

The scope of this section covers light fittings, lamps, ceiling fans and exhaust fans.

6.2 STANDARDS

The following standards shall be applicable:

A) IS : 3646 COP for interior illumination

B) IS : 1913 General and safety requirements for electric lighting fittings.
C) IS : 7027 Transistorised ballasts for fluorescent tubes
D) IS : 1534 Ballasts for fluorescent lamps
E) IS : 6616 Ballasts for HPMV lamps
F) IS : 2215 Starters for fluorescent lamps
G) IS : 3324 Holders for starters for tubular fluorescent lamps
H) IS : 3323 Bipin lamp holders for tubular fluorescent lamps
I) IS : 1569 Capacitors for electrical discharge lamps
J) IS : 2418 Tubular fluorescent lamp for general lighting services
K) IS : 5081 Glass tubes for fluorescent lamps
L) IS : 481 Tungsten filament miscellaneous electric lamps
M) IS : 6701 Tungsten filament miscellaneous electric lamps
N) IS : 2183 Schedule of or HPSV lamps
O) IS : 7023 Methods for tests for HPMV lamps
P) IS : 2147 Degree of protection provided by enclosure for low voltage switch gear and control gear.
Q) IS : 4327 General requirement for switchgear and control gear for voltages not exceeding 1000 V.
R) IS : 374 Electrical ceiling type fan & regulators
S) IS : 1169 Electrical pedestal type fans & regulators
T) IS : 2997 Air circulator type electrical fan and regulators
U) IS : 6272 Industrial cooling fans (man coolers)
V) IS : 1709 Fixed capacitors for fans.

6.3 GENERAL REQUIREMENTS-FITTINGS

The general requirements for the light fittings shall be as follows:
- Sheet metal mounting frame and enclosure with fixing accessories
- Sheet metal white stove enamelled reflector.
- Control gear such as ballast, starter and capacitor
- Lamp holder
- Diffuser and other attachments to reduce glare

6.4 The enclosure for the light fittings and other accessories shall conform to the IS : 2147 and IS : 2148 depending on the location mounting of the fittings. The type of fittings and lamps shall be as indicated in the drawing and schedule of material.

The ballasts shall be of copper wound, open type vacuum impregnated with minimum loss, silent operation and without radio interference or electronic ballasts as indicated in the schedule of material.

The light fittings and the lamps shall be suitable for long life and shall withstand voltage variation of minimum □10% .The aircraft obstruction lights shall be of neon cold cathode helix with longer life,or LED type housed inside thick glass dome. The fittings shall be prewired with PVC insulated copper wires of adequate capacity but not less than 1.5 sq.mm copper. The light fittings shall be provided with earthing terminals.

6.5 FANS

The fans shall be driven by copper wound electrical motors housed inside cast aluminium enclosure.

The fans shall be with double ball bearing to achieve smooth and silent operation.

The fan assembly and blades in the case of fans other than centrifugal fans shall be of cast aluminium with properly balanced blades.

The fan shall be provided with capacitors for starting up single phase fans and to achieve better power factors for 3 phase fans.

6.6 INSTALLATION

Fans shall be mounted on pre-embedded hook. The drawing of the junction box which shall be got approved. Wherever, pre-embedded hooks are not available anchor fasteners shall be used.

The light fixtures suspended shall include two nos. down rods with ball and socket joints. For the recessed fittings, the mounting supports shall be taken from the ceiling.

6.7 TESTING AND COMMISSIONING

Fans and light fittings shall be checked for visible damages before installation and proper performance.

7.0 LOW VOLTAGE INSTALLATION

7.1 SCOPE

The scope under this section covers the low voltage installation consisting of:

a) Voice/Data wiring

The equipments such as EPABX, telephone instruments, Nurses call control unit etc. are excluded from the scope of this work.

7.2 STANDARDS

A) IS : 732 COP for electrical wiring installation (upto 650V)
B) IS : 9537 Specification of conduits for electrical installation
C) IS : 1653 Rigid steel conduit for electrical installation
D) IS : 3667 Fittings for rigid steel conduits for electrical wiring
E) ------- National Electrical Code
F) ------- Indian Electricity Rules and Regulations
G) BS : 5839 Fire alarm panel
H) IS : 14131 Coaxial cables for TV

7.3 WIRING

The conduiting work for low voltage wiring shall be similar to that for electrical wiring except that there shall be no earthing conductors.

The wires and cable for different LV services shall be as shown below

a) Voice/Data - 4 pair CAT-5e/CAT-6 UTP cable

b) Fire alarm - 1.0 sq.mm or 1.5 sq.mm PVC insulated copper wires of 650V grade with colour coding of brown for positive, white for negative and blue for remote indication or 2C – 40/36 shielded as per the manufacturer’s instruction

7.4 TESTING

The entire system shall be tested for:

a) Continuity

b) Performance

INTERIOR WORKS

CONTENTS

1.0 GENERAL

This Specification is for work to be done, item to be supplied and materials to be used in the works as shown and defined on the drawings and described herein, all under supervision and to the satisfaction of the client. The specification given under is General Specifications and shall be applicable only to relevant items specified in the tender Schedule. In case of brought out items where the model number is mentioned the manufacturer's specifications shall be valid.

The workmanship is to be the best available and of a high standard, use must be made of a special trades men in all aspect of the work and allowance must be made in the rates for so doing.

The materials and items to be provided by the Contractor shall be approved by the client in accordance with any samples which will be submitted for approval by Contractor and generally in accordance with the Specifications. Also if products are specified in the Specification and/or bill of brand, trade name or catalogue reference, the Contractor will be required to obtain the approval of the client before using the materials. The Contractor shall produce all in voices, Vouchers or receipts for any material if called upon to do so by the client.

Samples of all materials are to be submitted to the client for approval before the Contractor orders or deliver the materials at site. Samples together with their packing are to be provided free of charge by the Contractor and should any materials be rejected, they will be removed from the site at the Contractor's expense. All samples will be retained by the client for comparison with materials which will be delivered at the site. Also, the Contractor will be required to submit specimen finishes of colours, fabrics etc. for the approval of the client before proceeding with the work.

The contractor shall be responsible for providing and maintaining and boxing or other temporary coverage's required for the protection of dresses or finished work if left unprotected. He is also to clean out all shelving, out ends and other waste from all pairs of the works before coverings or in-fillings are constructed.

Templates, boxes and moulds shall be accurately set out and rigidly constructed so as to remain accurate during the time they are in use. All unexposed surface of timber e.g. false ceiling, backing fillets, backs of door frames, cupboard framing, grounds, etc. are to be treated with two coats of approved timber preservative before fixing or converging. Only first class workmanship will be accepted. Contractor shall maintain uniform quality and consistency in workmanship throughout.

2.0 JOINERY

2.1 Joinery is to be prepared immediately after the placing of the Contract framed up, bonded and waged up. Any portions that are warped or found with other defects are to be replaced before wedging up. The whole of the work is to be framed and finished in a workmen-like manner in accordance with the detailed drawings wrought and whenever required, fitted with all necessary metal ties. Straps, belts, screws, glue etc. Running beaded joints are to be cross tongued with teak tongues wherever 1(1/2) thk. Double cross tongued. Joiners work generally to be finished with fine sand/glass paper.

2.2 JOINTS

All joints shall be standard mortise and tenon, dowel, dovetail, and cross halved. Nailed or glued but joints will not be permitted, screws, nails etc. will be standard iron or wire of oxidized Nettle fold tenons should fit the mortises exactly.

Nailed or glued butt joints will not be permitted, exceptional cases with approval of client. Where screws shown on a finished surface, those will be sunk and the whole plugged with a wood plug of the same wood and grain of the finished surfaces will be neatly punched and the hole filled with wood filler to match the colour.

Should joints in joiner's work open, or other defects arise within the period stated for defect liability in the contract and the clause thereof be deemed by the client to be due to such defective joinery shall be taken down, and refilled, redecorated and/or replaced if necessary and any work disturbed shall be made good at the Contractor's expense.

Nails, spikes and bolts shall be of lengths and weights approved by the client. Nails shall comply with IS 1959-1960. Brass headed nails are to comply with B.S.1210. Wire staples shall comply with B.S.1494 or equivalent.

The contact surface of dowels, tendons, wedges etc., shall be glued with an approved adhesive. Where glued, joinery and carpentry work is likely to come into contact with moisture; the glue shall be waterproof grade.

3.0 HARDWARE AND METALS

The hardware throughout shall be of approved manufacture or supplier well made and equal to in every respect to the samples to be deposited with the client. The Contractor may be required to produce and provide samples from many different sources before the client take decision and he should allow his rates for doing so.

Fittings generally shall be brass polished & lacquered, unless otherwise specified and shall be suitable for their intended purpose. In any case, it will have to be approved by client before the Contractor procures it at site of work.

Screws are to much the finish of the article to be fixed, and to be round or flat headed or counter sunk as required. The contractor should cover up and protect the brass and bronze surfaces with thick grease or other suitable productive material, renew as necessary and subsequently clean off away on completion.

Aluminium and stainless steel shall be of approved manufacture and suitable for its particular application. Generally the surface of aluminium shall have an anodized finish and both shall comply with the samples approved by the client. All stainless steel sheets shall be 304 SS Japan or equivalent with gauge as specified but not thinner than 16 G.

All steel, brass, bronze, aluminium and stainless steel articles shall be subjected to a reasonable test for strength, if so, required by the client at the Contractor's expense All brazing and welds are to be executed in a clean and smooth manner rubbed down and left in the flattest and tidiest way, particularly where exposed. Chromium plating shall be in accordance with I.S. Standard or as per approved specification for normal outdoor conditions and shall be on a base material of copper or brass.

4.0 GLAZING

All glass to be of approved manufacturer complying with I.S. 3548-1966 as per approved quality and sample to be of the selective qualities specified and free from bubbles, smoke, air holes and other defects.

Polished plate glass shall be "glazing glass" (G.G.) conforming to IS 3438-1965 or as per approved sample and quality. The compound for glazing to metal is to be a special non hardening compound manufactured for the purpose and of a brand and quality approved by the client.

While cutting glass, proper allowance be made for expansion. Each square of glazing to be in one whole sheet. On completion of work clean all glass inside and out, replace all cracked scratched and broken panes and leave in good condition.

5.0 PAINTS & POLISHES

All material required for the works shall be of specified and approved manufacturer , delivered to the site in the manufacturer's containers with the seals etc., unbroken and clearly marked with the manufacturer's name or trade mark with a description of the contents and colour. All materials are to be stored on the site of the work. Spray painting with approved machines will be permitted only if written approval has been obtained from the client prior to painting. No spraying will be limited in the case of priming neither coats nor where the soiling of adjacent surfaces is likely to occur. The buzzle and pressure to be so operated as to give an even coating throughout to the satisfaction of the client. The paint used for spraying is to comply generally with the specification concerned and is to be specially prepared by the manufacturer for spraying. Thinning of paint made for brushing will not be allowed. Wood preservative shall be Bison or other equal and approved impregnating wood preservative and all concealed wood work shall be treated with wood preservative. All brushes, tools, pots, kettles etc. used in carrying out the work shall be clean and free from foreign matter and are to be thoroughly cleaned out before being used with a different type of class of materials. All iron or steel surfaces shall be thoroughly scraped and rubbed with wire brushes and shall be entirely free from rust, mill scale etc. before applying the priming coat. Surfaces of new wood work which to be painted are to be rubbed down, cleaned, down to the approval of the client. Surfaces of previously painted woodwork which are to be cleaned down with soap and water, detergent solution or approved solvent to remove dirt, grease etc. While wet the surfaces shall be flatted down with a suitable abrasive and then rinsed down and allowed to dry. Minor areas of defective paint shall be removed by scraping back to a firm edge and the exposed surface touched in with primer as described and stopped with putty. Where wood work has been previously painted or polished and is to be newly polished, scrapping, burning off or rubbing down. Surfaces of previously painted metal which shall be painted are to be cleaned down and flattened down as described in surfaces of any rust and loose scale shall be removed completely by chipping , scrapping and wire brushing back to the bare metal and touched in with primer as described .

6.0 POLISH

6.1 FRENCH POLISH

The basic material shall be shellac dissolved in methylated spirit.

Preparation:-The timber must be sanded and cleaned and the grain filled with a grain filler .Any staining must be done before applying the polish.

Equipment :-The polishing rubber the most important implement in French polish shall consist of a pad of cotton wool , which acts as a reservoir for the polish , and a cover of soft white linen or cotton fabric , similar to a well-worn handkerchief which acts as a fitter , the rubber must never be dipped into the polish .; it should be changed by pouring the pouring the polish on to the pad with the cover removed .

Application:- Work evenly over the surface with a slow figure-of-eight motion until the timber is coated with a thin layer of polish. The objective is to apply a series of thin coats, allowing only a few minutes for drying between the coats. When a level and even-boiled surface is obtained the work is ready for the second stage i.e. spiriting off. Allow the work to stand for at least eight hours then take a fresh rubber with a double thickness of cover material and charge it with methylated spirit. The object of spiriting off into and remove the rubber marks and to give the brilliance of finish. Finally, work in the direction of the grain and continue until the surface is free from smears and rubber marks then leave to harden off.

6.2 WAX POLISH

Wax polish shall contain silicones and driers. A good silicon wax is to be used not a creamy or spray. The timber shall be sealed first with another finish such as Ronseal, before applying the wax.

Application:- Apply a light coat of the sealer by brush or cloth direct to the unfilled timber, working it well in and finishing evenly with the grain. Allow to dry thoroughly then sand lightly with fine abrasive paper. Apply a heavy coat of wax by cloth or on flat surfaces, with a stiff brush. Work it well into timber and finish off by stroking with the grain before leaving to harden. Leave for several hours before rubbing up with a soft

brush .Finally; buff the grain with a soft cloth.

Transparent Colored Polyurethane (Melamine) this shall be applied where natural grain of the wood is required to show. Polyurethane gives tough surface which resist chipping, Scratching and boiling water.

Application:- Clean off all grease and wax with an abrasive and white spirit, this should not be applied in humid conditions. Apply the first coat, preferably of clear hard glaze with a cloth pad. Leave this to dry for at least six hours, and then apply further coats with a paint brush. If you wait for longer than 24 hours between coats , rub down the previous coat with fine glass paper or a medium grade of steel wool .Obtain a Matt finish , if required by giving a final coat of clear Renseal Matt coat.

7.0 TIMBER

Only seasoned New Burma Teak Wood or Sal Wood to be used.

All the wood shall be properly seasoned, natural growth and shall be free from worm holes, loose or dead knots or other defects, saw die square and shall not suffer warping, ting or other defects.

The moisture content shall not exceed 12%

All internal frame work shall be treated with approved wood preservative.

All wood brought to site should be clean shall not have any preservative.

All rejected decayed, bad quality wood shall be immediately removed from site.

All wood brought to site must be stacked-stored properly as per instructions.

8.0 PLYWOOD

Plywood/medium density fiber board/teak particle board/ Veneered board etc., as specified in the approved list of manufacturers shall only be used.

Only Fire retardant type exterior grade Phenol formaldehyde bonded, hot pressed ply generally conforming to I.S.I. 5509 of approved make only to be used.

Marine plywood shall generally conform to I.S.710-1980 and also to Defense/ Navy specification bonded, with phenol formaldehyde, treated with wood preservative.

9.0 CARPENTRY WORK

Providing and fixing in position Double skin Exterior Grade Plywood frame work for partitions upto true ceiling height, panelling, boxing, soffit with Aluminium members at not more than 600 mm centres and horizontal members not more than 600 mm centres complete including necessary additional supports, bracing runner etc. complete as per drawing and directions.Items are to be completed in all respects as per drawings & instructions from client. Rate to include applying of approved wood preservative approved make on the finished frame work.

Providing and fixing 12mm thick Glass in partition of approved make (MODI GUARD / SAINT GOBAIN etc), of appropriate size as per drawings and design with necessary wooden mouldings / biddings to hold the glass in position . All exposed wooden surfaces has to be finished with 2/3 coats of malamine polish. Finishes for Partitions / Panelling, Etc

10.0 PANELLING / BOXING

Providing and fixing in position 12/19 mm thick Exterior Grade Ply board. Item are to be completed in all respects as per drawings & instructions from MMTC. Rate to include make on the inner side of the board. Actual executed area will be measured.

IMPORTANT NOTE: Actual executed area will be measured on one side of partition. Rate of this item shall include cost of providing fixing wooden facia, if any, matching laminate in approved pattern, skirting, Cornice Moulding at both door level and false ceiling level, Top Cap moulding in case of Low Height Partition etc. as per details and finished in melamine polish of wooden and veneered surfaces for which no extra payment shall be made but shall measured alongwith the partition dimensions. The finishing material shall be fixed in required divisions/ panels/ pattern with proper grooves etc. as per drawings & directions. Item are to be completed in all respects as per drawings & instructions from client. Rate shall include supplying and installing electrical light modular switches as per the ceiling lighting plan and also providing 15nos 5/15 amps modular plug points along with switches in the interior partitionings, rate to include for wiring.

TENDER DOCUMENT FOR INTERIOR FUNISHING & ELECTRICAL WORK OF MMTC OFFICE PREMISES AT ALOK BHARTI TOWER, SAHEED NAGAR, BHUBANESWAR.

No. MMTC/BBSR/Admn/RO/IW/2014-15 Dated: Dated: 25/11/2014

LIST OF APPROVED MAKES AND MANUFACTURERS

Approved makes of material are listed below. In case it is established that the brands specified below are not available in the market, the contractor shall submit alternative proposal for the approval.

CIVIL & INTERIOR

Sl No	Material Description	Make of materials
1.	White Portland cement	Birla White, JK Cement, Nihon White.
2.	Ordinary Portland cement (IS 269)	ACC, ULTRATECT, AMBUJA,KONARK
3.	Block Board BWP Grade (IS 1659)	GREEN , CENTURY ALISHAN. SYLVAN. MAYUR GOLD
4.	Plywood BWR grade (IS303)	CENTURY, SYLVAN, ALISHAN, MAYUR GOLD, GREEN PLY PRIMIUM.
5.	Laminates	Merino,Greenlam,Century,Royal Touch.
6.	LOCKS	GODREJ, Hafelle,Hettich,Doorset
7.	Hardware	EARL BIHARI.Dorma,Hettich,Hafelle
8.	Door Closers	EARLBIHARI,Hardwyn,Dorma,Hafelle
9.	Paints	ASIAN/ICI/BERGER/NEROLAC
10.	Tiles	JHONSON, KAJARIA,RAK,NITCO
11.	Aluminium Sections	OEL, INDAL, JINDAL
12.	Blinds	VISTA LEVLOR, MAC
13.	Ceiling	GYPSUM BOARD, Armstrong
14.	Adhesives	FEVICOL /PIDILTE
15.	Flush Door	Green,Mayur,Century,Archid ply.

ELECTRICAL

Sl No	Material Description	Make of materials
01.	M.S.conduit pipe	BEC/Supreme/Kalinga/Any other make with ISI mark
02.	M.S.conduit accessories	Universal/ Laxmi
03.	Switch,socket,holder,ceiling rose,modular switch box etc	MKIndia WRAPAROUND/ABB Legrand, SchneiderElectric(LKFuga)
04.	PVC insulated wires	Finolex, Anchor.
05.	Bakelite sheets	Hylam/Formica
06.	PVC insulated cables (with ISI mark only)	NICCO/INCAB/Fort Gloster/CCI/ Universal
07.	Cable lugs	Dowells/Ismal/Clipon
08.	Cable jointing kits	M Seal
09.	Switch gears viz isolator switches,SFU,starter,change over switch,HRC fuse holder etc	EE/Siemens/L&T/Havells/GEC Alsthom/Indo-Asian
10.	MCB, RCCB and associated distribution board	MDS/L & T/Standard/Indo -Asian/ABB
11.	Instrument viz voltmeter etc	AE/IMP/Meco
12.	Selector switch	Kaycee/Saltzer
13.	Energy meters	GEC/Capital/Jaipur/Havells
14.	LT Distribution Board (Fabricated)	ESS/VeeESS/Technocrat/East Coast or any other standard panel manufacturing unit.
15.	Kitkats	Anchor
16.	HRC fuses	EE/Siemens/L&T/Indo-Asian
17.	CTs & PTs	AE/Kappa/Eastern Switchgear
18.	Metal clad plug socket	Crompton/Havells/Indo-Asian
19.	Trim tubes/ Structurella	Decon
20.	CFL/Fluorescent fixtures	/Crompton/Bajaj/PACE/K-Lite
21.	Lamps (CFL/Fluorescent)	Philips/Bajaj/Crompton/ECE/ Sylvania/Osram/Wipro
22.	Cabin & Pedestal fans	Crompton/Khaitan/Usha/Orient Almonard
23.	Exhaust fan	Almonard/Crompton Khaitan
24.	Adhesive & Insulating Tapes	Steelgrip
25.	G.I.Pipes	TATA/Jindal/Prakash
26.	Clip-in-type modular switches & plug sockets.	MK(India)WRAPAROUND/ABB Legrand, Schneider Electric(LKFuga)

Note:

1.1 Samples of all building materials, fittings and other articles required for use on the work shall be got approved. The articles classified as first quality by the manufactures shall be used. Preference shall be given to these articles which bear ISI certificate work. In case, articles bearing ISI certification mark are not available, the same shall be got approved by EIC/MMTC/Consultant. Articles manufactured by firms of reputes shall be used.

1.2 All material and articles brought by the contractor to the site of work for use shall conform to the samples approved, which shall be preserved till the completion of work. Final decision to reject any material shall rest with the MMTC/EIC/Consultant.

(Stamp & Signature of Bidder & Date)

No. MMTC/BBSR/Admn/RO/IW/2014-15 Dated: Dated: 25/11/2014

GENERAL CHECK LIST OF GUIDANCE FOR SUBMISSION OF OFFER

Tenderers are also requested to duly fill-in this general check list. The check-list, signed and stamped on each page by the person(s) signing the tender may be submitted along with the Technical Bid Part-1 of the tender and also ensure that all details/documents have been furnished as called for in this tender.

<table>
<tr><td>EMD
Rs. 40,000.00 (Rupees Forty thousand only)</td><td colspan="2">Amount (Rs.40,000.00): by way of Demand Draft/ Banker's Cheque/ Pay Order /FDR in favour of MMTC Limited payable at Bhubaneswar</td><td>DD/BC/PO No. : ……
Date : ……
Issuing Bank : ……</td></tr>
<tr><td>Tender document cost
Rs.4000.00 plus VAT @ 12.5%</td><td colspan="2">Amount Rs.4000.00 plus VAT @ 12.5% by way of Demand Draft/ Banker's Cheque/ / Pay Order in favour of MMTC Limited payable at Bhubaneswar.</td><td>DD/BC/PO No. : ……
Date : ……
Issuing Bank : ……</td></tr>
<tr><td rowspan="4">Annual Turn over (Audited Balance Sheet – Trading, P & L account / TDS for any of the years mentioned herein in accordance with NIT).</td><td>Year</td><td>Amt (Rs.)</td><td>List of document enclosed</td></tr>
<tr><td>2011-12</td><td></td><td></td></tr>
<tr><td>2012-13</td><td></td><td></td></tr>
<tr><td>2013-14</td><td></td><td></td></tr>
<tr><td colspan="2">Proof of financial soundness / solvency certificate duly certified by bank.</td><td colspan="2"></td></tr>
<tr><td rowspan="2">Work Order Value for the work executed (Copies of qualifying similar work orders – executed along with completion certificates or any other proof certifying</td><td colspan="2">PO No.
of M/s
Completion value Rs.</td><td></td></tr>
<tr><td colspan="2">PO No.
of M/s
Completion value Rs.</td><td></td></tr>
</table>

the executed value of the work as per NIT).	PO No. of M/s Completion value Rs.	

DESCRIPTION		YES / NO (In all the Blank space below please fill either Yes or No only)	REMARK
Company profile, Power of Attorney / Authorization on Company's letter head in favour of person who has signed the offer.			: Please enclose the self attested document such as Declaration of proprietorship or Partnership deed or power of attorney etc.
Work Contract Tax VAT PF code No.			: Enclose the self attested copy of registration certificate
ESI code No. TIN No. Sales Tax No. PAN No.			: Enclose the self attested copy of registration certificate.
Whether blacklisted / put on holiday list of any Central /State Department, PSU's and Major Institutional / Industrial establishments			
All the documents furnished are readable / legible.			: Please ensure filling the tender in readable / legible form.
Original tender / Bidding document submitted			: Please submit the complete tender document.
Validity of offer upto 2 (two) months from the date of opening of Price bid.			: Please certify
All documents submitted signed on each page by authorized person.			: Please ensure signing of each page of tender.
All corrections properly attested by the person signing the bid.			: Please ensure signing the correction, if any.

Name & Signature of Tenderer

PROFORMA for e-payments

Details to be furnished on Vendor/Customer Letter Head

1	Vendor Code	
2	Customer Code	

(Details to be given by MMTC)

We agree for e-payments & submit details as under:-

The Banking/Account details are as furnished below:

(A). In case you already have an account with HDFC Bank, then we request you to give your kind consent for crediting your account directly by E-Payment mode and give us following account details:-

1	Bank Account No.	
2	Account Name	
3	E-Mail ID	

(B) In case you do not have an account with HDFC Bank, then please provide the following details, so that we can transfer funds through RTGS mode:-

1	Bank Account No.	
2	RTGS IFSC Code	
3	NEFT IFSC Code	
4	Bank Name	
5	Bank Branch Name	
6	Branch code	

7 Bank Location

8 Account Type
(Saving/Current)(SA/CA)

9 E-mail ID (if any)

A blank cancelled cheque has been enclosed: YES / NO

Thanking you,

(Vendor's/ Customer's Name & Signature)

Certified by Bank regarding Banking Details

(Bank Seal & Signature of Authorized Signatory)

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N.B. Above documents form part of TECHNICAL BID (PART-I).

NOTICE INVITING TENDER DOCUMENT FOR INTERIOR FURNISHING & ELECTRICAL WORK OF MMTC OFFICE PREMISES AT ALOK BHARTI TOWER, SAHEED NAGAR, BHUBANESWAR.

No. MMTC/BBSR/Admn/RO/IW/2014-15 Dated:25/11/2014

PRICE BID (PART-II) BOQs

Sl. NO.	DESCRIPTION	Unit	Quantity	Rate (Rs)	Amount(Rs.)
	CIVIL & FURNISHING				
1	FALSE CELLING (GYPSUM)				
	Providing and fixing false ceiling at all height including providing and fixing of frame work made of special sections, power pressed from M.S. sheets and galvanized with zinc coating of 120 gms/sqm (both side inclusive) as per IS : 277 and consisting of angle cleats of size 25 mm wide x 1.6 mm thick with flanges of 27 mm and 37mm, at 1200 mm centre to centre, one flange fixed to the ceiling with dash fastener 12.5 mm dia x 50mm long with 6mm dia bolts, other flange of cleat fixed to the angle hangers of 25x10x0.50 mm of required length with nuts & bolts of required size and other end of angle hanger fixed with intermediate G.I. channels 45x15x0.9 mm running at the spacing of 1200 mm centre to centre, to which the ceiling section 0.5 mm thick bottom wedge of 80 mm with tapered flanges of 26 mm each having lips of 10.5 mm, at 450 mm centre to centre, shall be fixed in a direction perpendicular to G.I. intermediate channel with connecting clips made out of 2.64 mm dia x 230 mm long G.I. wire at every junction, including fixing perimeter channels 0.5 mm thick 27 mm high having flanges of 20 mm and 30 mm long, the perimeter of ceiling fixed to wall/partition with the help of rawl plugs at 450 mm centre, with 25mm long dry wall screws @ 230 mm interval, including fixing of gypsum board to ceiling section and perimeter channel with the help of dry wall screws of size 3.5 x 25 mm at 230 mm c/c, including jointing and finishing to a flush finish of tapered and square edges of the board with recommended jointing compound , jointing tapes , finishing with jointing compound in 3 layers covering upto 150 mm on both sides of joint and two coats of primer suitable for board, all as per manufacturer's specification and also including the cost of making openings for light fittings, grills, diffusers, cutouts made with frame of perimeter channels suitably fixed, all complete as per drawings, specification and direction of the Engineer in Charge but excluding the cost of painting with 12.5 mm thick tapered edge gypsum plain board conforming to IS: 2095- Part I	Sqm	210.00		
2	FALSE CELLING (ARMSTRONG)				
	Providing and fixing tiled false ceiling of approved materials of size 595x595 mm in true horizontal level, suspended on inter locking metal grid of hot dipped galvanized steel sections (galvanized @ 120 grams/ sqm, both side inclusive) consisting of main "T" runner with suitably spaced joints to get required length and of size	Sqm	155.00		

	24x38 mm made from 0.30 mm thick (minimum) sheet, spaced at 1200 mm center to center and cross "T" of size 24x25 mm made of 0.30 mm thick (minimum) sheet, 1200 mm long spaced between main "T" at 600 mm center to center to form a grid of 1200x600 mm and secondary cross "T" of length 600 mm and size 24x25 mm made of 0.30 mm thick (minimum) sheet to be interlocked at middle of the 1200x600 mm panel to form grids of 600x600 mm and wall angle of size 24x24x0.3 mm and laying false ceiling tiles of approved texture in the grid including, required cutting/making, opening for services like diffusers, grills, light fittings,fixtures, smoke detectors etc. Main "T" runners to be suspended from ceiling using GI slotted cleats of size 27 x 37 x 25 x1.6 mm fixed to ceiling with 12.5 mm dia and 50 mm long dash fasteners, 4 mm GI adjustable rods with galvanised butterfly level clips of size 85 x 30 x 0.8 mm spaced at 1200 mm center to center along main T, bottom exposed width of 24 mm of all T-sections shall be pre-painted with polyester paint, all complete for all heights as per specifications, drawings and as directed by Engineer-in-charge. GI Metal Ceiling Lay in plain Tegular edge Global white color tiles of size 595x595 mm, and 0.5 mm thick with 8 mm drop; made of G I sheet having galvanizing of 100 gms/sqm (both sides inclusive) and electro statically polyester powder coated of thickness 60 microns (minimum), including factory painted after bending				
3	Finishing wall surface with Acrylic wall putty (water based) of approved make (Birla/JK) and finished smooth for a even surface to receive the painting including cost of scaffolding staging charges with cost of all materials taxes, labour T & P etc complete as per direction of Engineer-in-charge.	Sqm	170.00		
4	Providing and painting two coats with plastic emulsion paint of approved quality and approved shade in all floors at all height by making the surface to the interior plastered surface of wall smooth with primer including cost, conveyance, loading and unloading and taxes of all materials, cost of all labour, sundries, T & P, scaffolding etc. required for the work and complete in all respect as per specification and direction of Engineer-in-charge.	Sqm	170.00		
5	Painting with synthetic enamel paint of approved brand and manufacture of required colour to give an even shade : One or more coats on old work.	Sqm	50.00		
6	Providing and laying 600x600mm Vitrified tiles in different sizes (thickness to be specified by manufacturer), with water absorption less than 0.08 % and conforming to I.S. 15622, of approved make, in all colours & shade, in skirting, riser of steps, over 12 mm thick bed of cement mortar 1:3 (1 cement: 3 coarse sand), including grouting the joint with white cement & matching pigments etc. complete.	Sqm	335.00		
7	HALF HEIGHT PARTITION				
	Providing & Fixing in position 1350 mm high partition using AL frame 50 x 25 mm as indicated in the drawing, intermediate, verticals & horizontal runner /posts shall be provided at intervals as shown in drawing, and shall be fixed to floor, walls etc with suitable size of screws plugs and fixing 6 mm water proof ply on both side over the AL frame work with screws at adequate interval and fixing both sides with 1mm laminate (mat finish) of	Sqm	58.00		

	approved make and shade with edge band & 12 mm thk glass with etching to be fixed with teak beading &100mm SS patch fitting , where ever necessary including all materials, labour and hardware as per drawing and specification and direction of consultant or Engineer-in-charge.(Payment will be made as per measurement on one side only).				
8	FULL HEIGHT PARTITION				
	Providing & Fixing full high partition for chamber and other area as per drawing using Aluminium frame 50 x 25 mm as indicated in the drawing, intermediate, verticals & horizontal runner /posts shall be provided at intervals as shown in drawing, and shall be fixed to floor, walls etc with suitable size of screws plugs and fixing 6mm water proof ply on both side over the Aluminium frame work with screws at adequate interval and fixing both sides with 1mm laminate (matt finish) of approved make and shade & 12 mm thk glass with etching to be fixed with teak wood beading & 100 mm SSpatch fitting whereever necessary including all materials, labour and hardware as per drawing and specification and direction of consultant or Engineer-in-charge.(Payment will be made as per height below the false ceiling if false celling be carried out).	Sqm	153.00		
9	PARTITION CUM SHELF				
	Providing and putting in position MODULAR PARTITION CUM SHELF of size as per drawing with partition and shutter made of 19 mm MDF board and shelf made out of 19mm thk Exterior Grade MDF board with 1.0 mm laminate (Matt finish) outside and the flap with auto closing hinges SS equivalent to (EB No 15899 /87) with locking arrangement with inside surface finished with 0.8 mm laminate with SS HANDLE & magnetic latches as per drawing and direction of consultant or Engineer-in-charge.	Sqm	58.00		
10	TABLES				
	Providing and putting in position Modular tables for the officers of size as per drawing made out of 19mm MDF Board with post forming lamination 1.0mm on both sides (natural finish) including provision for key board tray of " Earl Bihari" make or equivalent with locking arrangement Modular drawer units made out of 19mm MDF with post forming laminate on both sides with sleek telescopic drawer slide (EB.No. 170523/87) and flap made out of 19mm MDF with auto closing hinge equivalent to (EB.No. 158991/87) with locking arrangement and the top made with post formed laminate with 25mm thick MDF (ext grade)as per drawing and direction of consultant or Engineer in charge.				
A	Table T1 (Approx size 1800 x 750)	Nos	5.00		
B	Table T2 (Approx size 1500 x 750)	Nos	16.00		
11	WORK STATION				
	Providing and putting in position MODULAR RUNNING TABLS of 450mm depth top made with post formed laminate with 25mm thick MDF Board as per drawing with a shelf as shown in drawing made out of 19mm thk Exterior Grade MDF board with 1.0 mm laminate (Matt finish) on top with drawer made 19mm Ext. Grade MDF board with sliding channel and the shelve made out of 19 mm exterior grade MDF board and the flap with auto closing hinges SS equivalent to (EB	Rm	36.00		

	No 15899 /87) with locking arrangement with inside surface finished with 0.8 mm laminate as per drawing and direction of consultant or Engineer-in-charge.				
12	CREDENJA				
	Providing & fixing Modular credenza made out of 19mm tk MDF Board with Post forming lamination on both sides (natural finish)and the drawer made out of ext.grade19mm thick MDF Board with post forming laminate on both sides with sliding channel and the shelve made out of 19mm MDF Board with post forming laminate and the flap with auto closing hinges equivalent to (EB No 15899 /87) with locking arrangement with inside surface lamination of 0.8mm thk laminate and the top made with post formed laminate with 25mm thick MDF Board as per Drawing and direction of consultant or Engineer -in -charge	Rm	34.00		
13	DOOR				
	Supplying fitting and fixing in position flush door shutter of 32mm thick of Green / Mayur / Century or equivalent with 1mm sun mica of approved quality and as per drawing & design with all necessary brass fittings, door closer (godrej, heavy duty) motrice lock (godrej heavy duty),handle, door stopper etc including cost of all materials, labour, all taxes, transportation, loading & unloading etc. complete as per specification and direction of Engineer –in-charge.	Sqm	15.00		
	ELECTRICAL				
14	Wiring for light point/ fan point/ wall bracket fan/ exhaust fan point/ call bell point with 1.5 sq.mm FR PVC insulated copper conductor single core cable in surface / recessed medium class PVC conduit, with modular switch, modular plate, suitable GI box and earthing the point with 1.5 sq.mm. FR PVC insulated copper conductor single core cable etc as required. Group C Point.				
i	Single point controlled by one 5A switch or first light point of group control.	EA	50.00		
ii	Secondary light points looped from the above point	EA	47.00		
iii	Ceiling fan point	EA	8.00		
iv	Wall bracket fan point	EA	38.00		
v	Call bell point	EA	4.00		
15	Supplying and fixing following modular switch/ socket on the existing modular plate & switch box including connections but excluding modular plate etc. as required.				
	3 pin 5/6 amp socket outlet	EA	10.00		
16	Supplying and fixing following size/ modules, GI box along with modular base & cover plate for modular switches in recess etc as required.				
i	1 or 2 Module (75mmX75mm)	EA	5.00		
ii	6 Module (200mmX75mm)	EA	45.00		
17	Supplying and fixing following modular switch/ socket on the existing modular plate & switch box including connections but excluding modular plate etc. as required.				
i	5/6 amps switch	EA	90.00		
ii	3 pin 5/6 amp socket outlet	EA	90.00		
iii	Telephone socket outlet	EA	14.00		

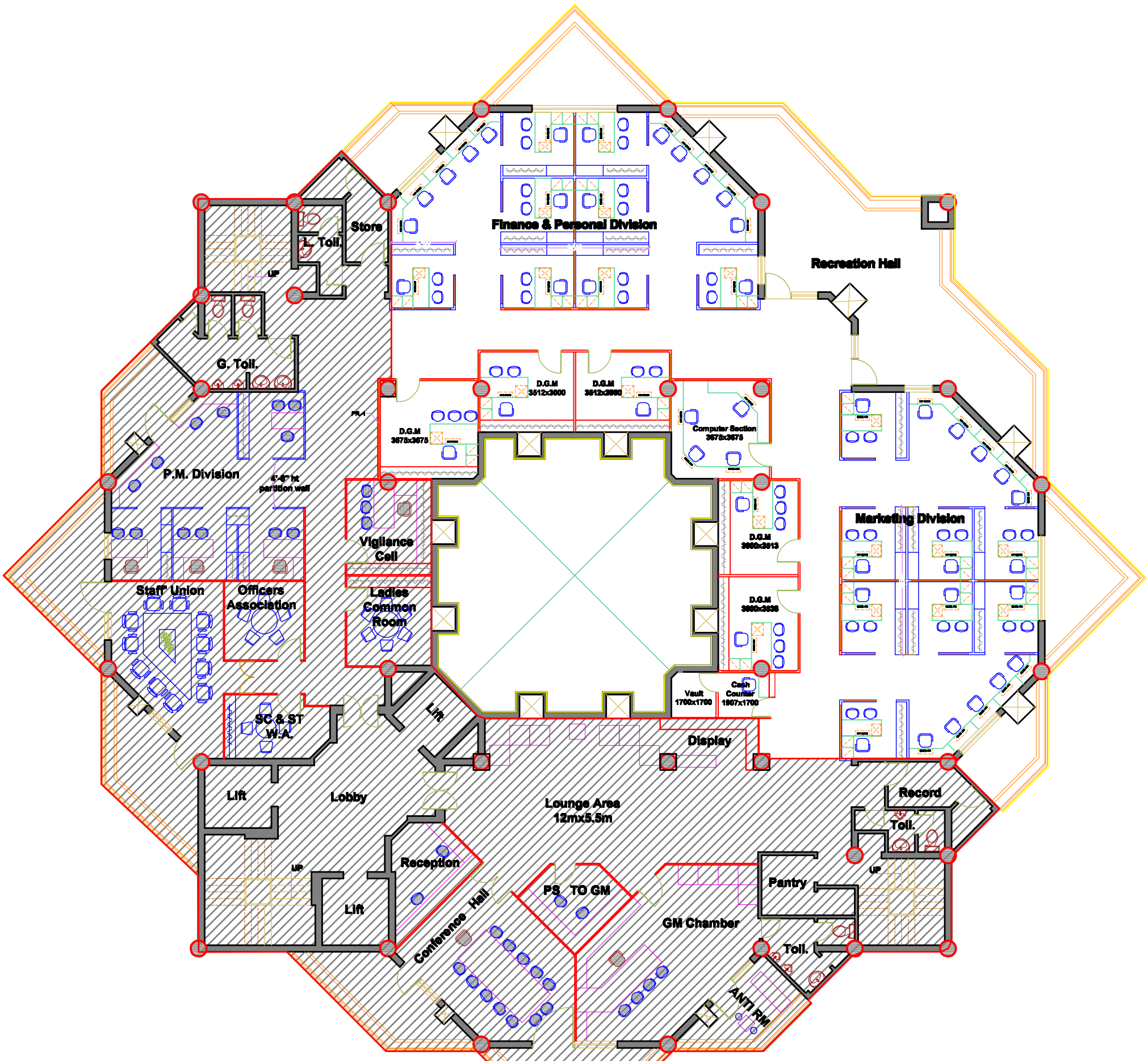
18	Supplying and fixing stepped type electronic fan regulator on the existing modular plate switch box including connections but excluding modular plate etc. as required.	EA	8.00		
19	Supplying and fixing suitable size GI box with modular plate and cover in front on surface or in recess, including providing and fixing 3 pin 5/6 amps modular socket outlet and 5/6 amps modular switch, connection etc. as required. (For light plugs to be used in non residential buildings).	EA	45.00		
20	Supplying and fixing suitable size GI box with modular plate and cover in front on surface or in recess, including providing and fixing 6 pin 5/6 & 15/16 amps modular socket outlet and 15/16 amps modular switch, connection etc. as required.	EA	2.00		
21.	Supplying and fixing 20 amps, 240 volts, SPN industrial type, socket outlet, with 2 pole and earth, metal enclosed plug top along with 20 amps "C" curve, SP, MCB, in sheet steel enclosure, on surface or in recess, with chained metal cover for the socket out let and complete with connections, testing and commissioning etc. as required.	EA	12.00		
22	Wiring for circuit/ submain wiring along with earth wire with the following sizes of FR PVC insulated copper conductor, single core cable in surface/ recessed medium class PVC conduit as required.				
i	2 X 1.5 sq. mm + 1 X 1.5 sq. mm earth wire	Rm	600.00		
ii	2 X 2.5 sq. mm + 1 X 2.5 sq. mm earth wire	Rm	400.00		
iii	2 X 4 sq. mm + 1 X 4 sq. mm earth wire	Rm	300.00		
iv	2 X 6 sq. mm + 1 X 6 sq. mm earth wire	Rm	200.00		
v	4 X 10 sq. mm + 2 X 10 sq. mm earth wire	Rm	60.00		
23	Supplying and drawing following pair 0.5 sq mm FR PVC insulated annealed copper conductor, unarmored telephone cable in the existing surface/ recessed steel/ PVC conduit as required.				
i	2 Pair	Rm	300.00		
24	Supplying and fixing of following sizes of medium class PVC conduit along with accessories in surface/recess including cutting the wall and making good the same in case of recessed conduit as required.				
i	20 mm	Rm	300.00		
ii	32 mm	Rm	20.00		
25	Supply, delivery, laying and testing of 20 pair PVC insulated jelly filled armoured telephone cale laid on surface of wall/ column/ roof/ partitions of the building or inside prelaid conduit/ hume pipes/ GI pipes, complete as required and as per direction of Engineer-in-charge.	Rm	30.00		
26	Supplying and fixing following way, single pole and neutral, sheet steel, MCB distribution board, 240 volts, on surface/ recess, complete with tinned copper bus bar, neutral bus bar, earth bar, din bar, interconnections, powder painted including earthing etc. as required. (But without MCB/RCCB/Isolator)				
i	2 + 12 way, Double door	EA	6.00		
27	Supplying and fixing following way, horizontal type three pole and neutral, sheet steel, MCB distribution board, 415 volts, on surface/ recess, complete with tinned copper bus bar, neutral bus bar, earth bar, din bar, interconnections, powder painted including earthing etc. as required. (But without MCB/ RCCB/ Isolator)				

i	4 way (4 + 12), Double door	EA	2.00		
28	Supplying and fixing following rating, double pole, (single phase and neutral), 240 volts, residual current circuit breaker (RCCB), having a sensitivity current upto 300 milliamperes in the existing MCB DB complete with connections, testing and commissioning etc. as required.				
i	40 amps	EA	4.00		
ii	63 amps	EA	2.00		
29	Supplying and fixing following rating, four pole, (three phase and neutral), 415 volts, residual current circuit breaker (RCCB), having a sensitivity current upto 300 milliamperes in the existing MCB DB complete with connections, testing and commissioning etc. as required.				
i	63 amps	EA	2.00		
30	Supplying and fixing 5 amps to 32 amps rating, 240/415 volts, "C" curve, miniature circuit breaker suitable for inductive load of following poles in the existing MCB DB complete with connections, testing and commissioning etc. as required.				
i	Single pole	EA	96.00		
31	Earthing with copper earth plate 600 mm X 600 mm X 3 mm thick including accessories, and providing masonry enclosure with cover plate having locking arrangement and watering pipe of 2.7 metre long etc. with charcoal/ coke and salt as required.	EA	2.00		
32	Supplying and laying 25 mm X 5 mm copper strip at 0.50 metre below ground as strip earth electrode, including connection/ terminating with nut, bolt, spring, washer etc. as required. (Jointing shall be done by overlapping and with 2 sets of brass nut bolt & spring washer spaced at 50mm)	Rm	10.00		
33	Providing and fixing 4.00 mm dia copper wire on surface or in recess for loop earthing along with existing surface/ recessed conduit/ submain wiring/ cable as required.	Rm	100.00		
34	Supplying and fixing call bell/ buzzer suitable for single phase, 230 volts, complete as required.	EA	4.00		
35	Installation, testing and commissioning of pre-wired, fluorescent fitting / compact fluorescent fitting of all types, with all accessories and tube etc. directly on ceiling/ wall, including connection with 1.5 sq. mm FR PVC insulated, copper conductor, single core cable and earthing etc. as required.	EA	27.00		
36	Supply of recessed mounted 600X600mm decorative softlight (Philips make cat no. TBS440 4xTL5-14W OB EBP or equivalent)	EA	27.00		
37	Erection of wall bracket /ceiling fittings of all sizes and shapes containing upto two GLS lamps per fitting, complete with all accessories including connection etc. as required.	EA	108.00		
38	Supply of recessed mounted round type spot light. (Philips make cat no. FBS085 xPL-C/2P18W or equivalent)	EA	70.00		
39	Supply of wall mounting 400mm bracket fan. (Crompton Greaves make model no. WMHiflo LG/Wave or equivalent)	EA	38.00		
40	Installation, testing and commissioning of ceiling fan, including wiring the down rods of standard length (upto 30 cm) with 1.5 sq. mm FR PVC insulated, copper conductor, single core cable etc. as required.	EA	8.00		
41	Supply of 1200mm sweep ceiling fan, including the down rods of standard length (upto 30 cm) blades etc.	EA	8.00		

	(Crompton Greaves make model no. Cool Breeze or equivalent)				
42	Supply, installation, testing & commissioning of a microprocessor based 4 zone master control fire alarm panel cimplete with LCD display, battery back up with SMF batteries for 30 minutes of back up operation with 24 Volt battery supply with inbuilt system for monitoring of cable short circuit, battery voltage, audio visual alarm, testing module etc.	SET	1.00		
43	Supply, installing connecting up, testing and commissioning of the following fire alarm equipment :				
I	Smoke detector ('optical' type)	EA	24.00		
Ii	Smoke detector above false ceiling	EA	10.00		
Iii	Heat Detector	EA	1.00		
Iv	Response indicator	EA	10.00		
V	Manual break glass call point	EA	3.00		
Vi	Electronic Hooters (6 watt)	EA	2.00		
44	Supply & Laying of 2 Core 1.5 Sq.mm Armoured cable for Fire Alarm System	Rm	200.00		
45	Supply and termination of RJ-45Jack of Category 6 with Single-port British-style Face plate 86x86 mm with Curveture and Wall Mout Box. Make: Tyco-AMP/Systimex/Belden	EA	20.00		
46	Supply and termination of RJ-45Jack of Category 6 with Dual-port British-style Face plate 86x86 mm with Curveture and wall mount box. Make: Tyco-AMP/Systimex/Belden	EA	25.00		
47	Supply and laying of 4-pair Cat6 UTP Cable for data in existing conduits.Make: Tyco-AMP/Systimex/Belden	Rm	1350.00		
48	Supply and laying of 4-pair Cat5 UTP Cable for voice in existing conduits.Make: Tyco-AMP/Systimex/Belden	Rm	600.00		
49	Supply and Fixing of Cat 6 24-port loaded, Modular Jack Panel having 24-port individually replaceable module, Make: Tyco-AMP/Systimex/Belden	SET	2.00		
50	Supply and Fixing of Cat6 Factory crimpped moulded 7 Ft patch cord. Make: Tyco-AMP/Systimex/Belden	EA	45.00		
51	Supply and Fixing of Cat6 Factory crimpped moulded 4 Ft patch cord. Make: Tyco-AMP/Systimex/Belden	EA	46.00		
52	Supply & fixing of 19" 15U UL Listed Wall Mounted Rack with accessories(one no 6Skt power distribution unit, 3nos cable manager, Two nos FAN/90CFM and one no H/W screw Pkt). Make: Netrack/APW/ Emerson	SET	1.00		
53	Supply Installation of 24port 10/100/1000Mbps Managed Switch with minimum Two combo ports and RS232/USB Console port with testing and commissioning. . Make: Cisco/HP/Zyxel	SET	2.00		
	GROSS TOTAL IN RS. = **Less Discount in %age , if any** **NET TOTAL IN INR:** **(Rupees in words:**				

***** Running Account Bill Payments :** All running account bill payments shall be regarded as payments by way of advance against the final bill payment only and not as payments for work

actually done and completed and accepted 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 this respect, or the accruing of any claim, nor shall it conclude, determine or effect in any way the powers of the MMTC / consultant under these conditions or any of them as to the powers of the MMTC/consultant under these conditions or any of them as to the final settlement and adjustment of the accounts or otherwise, or in any other way very / affect the contract. The final bill shall be submitted by the contractor within two months of the date fixed for completion fo the work, otherwise the Consultant/Engineer-in-charge's certificate of the measurement and of the total amount payable for the work accordingly shall be final and binding on all parties.



PROJECT	SHEET TITLE	LEGEND	ARCHITECT	ENGINEER	DRAWN	CONSULTANT
BPCL BHUBANESWAR	INTERIOR LAY OUT PLAN FOR MMTC AT-BHUBANESWAR		A.K SHARMA	U.K JENA	MANSI	Designers Forum NAYA, U.G. VILLAGE BHUBANESWAR - 19 Tel.No:- (0674) 2560000, 2560000 Mobile:- (0674) 0000 E.mail:- designersforum1@gmail.com
			DATE	SCALE	DRG NO	
			28.05.2019	N.T.S	ARCH-01	