**INDIRA GANDHI INSTITUTE OF DEVELOPMENT RESEARCH.**

**GOREGAON (EAST), MUMBAI**

**VOLUME – I**

TENDER DOCUMENT FOR

**UPGRADATION OF INFRASTRUCTURAL FACILITIES**

Road and allied works

**Project Consultants**

**M/s DESIGN IDEAS**

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

102, VASANT KUNJ, PLOT NO 163/E, OFF DR AMBEDKAR RD, DADAR (EAST), MUMBAI-400014.

TEL: 24118778. TELE/FAX: 24121713. MAIL: ideas.design@yahoo.com

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **INDIRA GANDHI INSTITUTE OF DEVELOPMENT RESEARCH** **TENDER NOTICE**No. IGI/Admn/Road and allied/12 Date:­­8TH September 2012 Indira Gandhi Institute of Development research invites sealed bids on item rate basis from eligible contractors for the work of Up-Gradation of Infrastructure Facilities-Road and Allied Works

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| EstimatedCost(Rs.) | EMD(Rs.) | Time for completion including monsoon | Last date of issue of tender papers | Last date of submission & opening of tenders | Cost of tender form (non refundable)(Rs.) |
|  **23,98,305.00**  | Rs 50,000 | 1 month  | 18 Sept 2012 | 18 Sept 2012 | Nil  |

 |
| MINIMUM ELIGIBILITY CRITERIA FOR BIDDERS **TECHNICAL CRITERIA** :1. The bidders should have applied to IGIDR in previous enquiries floated in last 12 months and should have been prequalified in the Technical Criteria.
2. The bidder should have participated in Financial bid of previous enquiry i.e. Up gradation of Infrastructure Facilities –Phase 2

 **SALE AND SUBMISSION OF TENDER FORMS** **:**Eligible Contractors may peruse the tender documents and obtain the same from the website of IGIDR (<http://www.igidr.ac.in/>)on all working days. The completed tender forms will be received in the office of IGIDR up to 14:00 hours on the last date of submission as mentioned above and will be opened on the same day at 15:00 hours. MODE OF SUBMISSION OF E.M.D. WITH THE TENDER DOCUMENTS:1. An amount of Rs 50,000.00 can be deposited in the form of DD/Bank Guarantee valid for a period of minimum six months after last date of receipt of tenders and pledged in favour of Registrar, Indira Gandhi Institute of Development research or Demand Draft / Banker’s Cheque of a Scheduled Bank issued in favour of IGIDR, payable at Mumbai .

IGIDR reserves the right to accept or reject any or all tenders in part or full without assigning any reason whatsoever. Jai Mohan Pandit*Registrar* |

Section (A)

# Letter of Offer

Place \_\_\_\_\_\_\_\_\_\_

Date \_\_\_\_\_\_\_\_\_\_\_

Shri Jai Mohan Pandit

Registrar,

Indira Gandhi Institute of Development& Research,

Gen.A.K Vaidya Marg ,Filmcity Road

Goregaon ( East ) , Mumbai 400065.

Dear Sir,

Having examined the Drawings, Specifications, Designs and Schedule of Quantities relating to the works specified in the Memorandum herein after set out and having visited and examined the site of the works specified in the said Memorandum and having acquired the requisite information relating thereto as affecting the tender, I/We hereby offer to execute the works specified in the said Memorandum within the time specified in the said Memorandum at the rates mentioned in the Schedule of Quantities and in accordance in all respects with the Specifications, Designs, Drawings and Instructions in writing referred to in Conditions of Tender, the Articles of Agreement, Special Conditions, Schedule of Quantities and Conditions of Contract and with such materials as are provided for, by and in all other respects in accordance with such conditions so far as they may be applicable.

M E M O R A N D U M

|  |  |  |
| --- | --- | --- |
| a) | Description of work | Road and allied works  |
| b) | Earnest Money Deposit | **Rs 50,000** |
| c) | Estimated cost | **Rs 23,98,305.00** |
| d) | Percentage if any to be deducted form Bills | **3%** |
| e) | Time allowed for completionof the work from the date ofwritten order to commence work : | **1 month** |

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1. Should this tender be accepted, I/We hereby agree to abide by and fulfill the terms and provisions of the said Conditions of Contract annexed hereto so far as they may be applicable or in default thereof to forfeit the EMD and pay to the IGIDR the amount mentioned in the said Conditions.

I/We have deposited a sum of Rs.50,000 rupees as earnest money with the IGIDR, which amount will not bear any interest. Should I/We fail to execute the contract when called upon to do so. I/We do hereby agree that this sum shall be forfeited by me/us to the IGIDR.

Our Bankers are:

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

The names of partners of our firm are:

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Address \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Name of the partner of the firm authorised to sign. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

OR

Name or person having power

of attorney to sign the contract. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

(Certified copy of power of

Attorney should be attached.)

 Yours faithfully,

 **(**Signature of the Contractor)

**Witness:**

1. **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

 Signature

Address ……………………………

 …………………………….

 ……………………………

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 Signature

Address: …………………………….

 ……………………………

 ……………………………

**ARTICLES OF AGREEMENT**

ARTICLES OF AGREEMENT made the ……………………………. day of ………………………………………………………….. between the Indira Gandhi Institute of Development Research (hereinafter called "the Employer") of the one part and ………………………………………

…………………….. (Hereinafter called "the Contractor") of the other part.

WHEREAS the employer is desirous of Road and Allied Works at IGIDR. Goregaon ( Mumbai and has caused Drawings and Bill of Quantities showing and describing the work to be done prepared by or under the directions of Institute`s architect/Engineers.

AND WHEREAS the said drawing numbered \_\_\_\_\_\_\_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ inclusive, the specifications and the schedule of Quantities have been signed by or on behalf of the parties hereto.

AND WHEREAS the Contractor has agreed to execute upon and subject to the conditions set forth herein and in the correspondence attached hereto and to the Conditions set forth in the Special Conditions and in the Schedule of Quantities and Conditions of Contract (all of which are collectively herein after referred to as "the said Conditions") the works described in the said Specifications and included in the said Schedule of Quantities at the respective rates therein set forth amounting to the sum as therein arrived or such other sum as shall become payable there under (hereinafter referred to as "the said Contract Amount").

NOW IT IS HEREBY AGREED AS FOLLOWS:-

1. In consideration herein mentioned the Contractor will upon and subject to the conditions annexed carry out and complete the work shown upon the Contract, Drawing and described by or referred to in the Schedule of Quantities and in the said conditions.
2. The Employer shall pay the Contractor the said Contract Amount, or such other sum as shall become payable, at the times and in the same manner specified in the said Conditions.
3. The said conditions and Appendix thereto and the correspondence attached hereto shall be read and construed as forming part of this Agreement and the parties hereto shall respectively abide by, submit themselves to the said conditions and the correspondence and perform the agreements on their part respectively in the said Conditions and the correspondence contained.
* 5 –
1. The plans, agreement and documents mentioned herein shall form the basis of this contract.
2. This contract is neither a fixed Lump sum Contract nor a Piece Work Contract, but it is a Contract for the complete work to be paid for according the actual quantities at the rates contained in the Schedule of Rates and Probable Quantities or as provided in the said Conditions. The Contractor has to visit the site & acquaint himself with the site condition & also the part work done therein by the previous contractor. As the nature of the work comprises of completing the balance incomplete work, the new contractor should carefully study the present site condition & quote the rates accordingly, No claims will be entertained later for any lapse on the contractor’s part in having studied the present site condition.
3. The Contractor shall afford every reasonable facility for carrying out of all works or other Contractors appointed by the Employer and shall make good any damages done to walls, floors etc. after the completion of such works.
4. The Employer reserves to itself the right of altering the items to be executed by adding to or omitting any items without prejudice to this contract. However, the Contractor shall not be entitled to any payment for the works done exceeding the Tender Quantities unless specificallyapproved in writing by the Institute’s Engineer.

 8. Time shall be considered as the essence of this Contract and the contractor hereby agrees to commence the work job from 4th date of issue of work order as provided for in the said conditions and to complete the entire work within 3 months. Subject nevertheless to the provisions for extension of time.

 9 All payments by the Employer under this contract will be made only at Mumbai. All disputes arising out of or in any way connected with this Agreement shall be deemed to have arisen at Mumbai and only courts in Mumbai shall have the jurisdiction to determine the same.

1. That the several parts of this Contract have been read by the Contractor and fully understood by the Contractor.

IN WITNESS HEREOF the Employer and the Contractor have set their respective hands to these presents and two duplicates hereof the day and year first hereinabove written. (If the Contractor is a partnership or an individual)

IN WITNESS WHEREOF the Employer has set its hands to these presents through its duly authorized officials and the contractor has caused its common seal to be affixed hereunto and the said two duplicates has caused these presents and the said two duplicates hereof to be executed on its behalf, the day and year first hereinabove written (if the Contractor is a Company)

SIGNATURE CLAUSE

SIGNED AND DELIVERED by the

Indira Gandhi Institute of Development & Research by the

hands of

Shri ……

…………………………..

 (Name & Designation)

in the presence of

1. ………………………………….

Address…………………………………

**…………………………………………..**

1. **………………………………….**

Address ………………………………..

…………………………………………..

Witnesses

SIGNED AND DELIVERED BY If the party is a partnership firm or an individual

………………………………….. Should be signed by all or on behalf of all the

in the presence of partners.

1. …………………………………

Address ……………………………….

**………………………………………….**

1. **…………………………………**

Address ………………………………..

…………………………………………..

Witnesses

THE COMMON SEAL OF ………………

was hereunto affixed pursuant to

the resolution passed by its Board

of Directors at the meeting held on

……………………………………in the

presence of

1. ……………………………..….
2. ………………………………...

Directors, who have signed these If the Contractors signs under common

presents in token there of in the seal, the signature clause should tally

presence of with the sealing clause in Articles of

 Association.

1. ………………………………………
2. **……………………………………...**

SIGNED AND DELIVERED BY the If the Contractor is signing by the hand of

hand of Shri …………………………… power of Attorney whether a company or

and duly constituted attorney an individual.

**S E C T I O N `C’**

**GENERAL INSTRUCTIONS TO TENDERERS**

1. Sealed Tenders **in duplicate** should be addressed to Shri. Jai Mohan Pandit, Registrar, Indira Gandhi Institute of Development Research, Goregaon ( East ), Mumbai-400065. (by name) and superscribed ~**Tender for Road and allied work of IGIDR CAMPUS, Goregaon Mumbai.**

 To reach him not later than 2 p.m. on 18 Sept 2012 along with an Earnest Money of deposit Rs 50,000 by Demand Draft/Bank Guarantee drawn in favour of Indira Gandhi Institute of Development Research, of a Scheduled Bank.

1. The scope of **Up gradation of Infrastructure Facilities-Road and allied** workas defined in BOQ comprises of the following:
2. Renovation of Road from Entrance Gate till C gate of Campus.
3. Creation of ramps to enter into auditorium and general beautification of entrance area.
4. Deposited Tender will be opened at 3 p.m. on the same date at the office of Shri. Jai Mohan Pandit, Registrar Indira Gandhi Institute of Development Research, Goregaon, Mumbai, or any other officer designated for this purpose by him in the presence of the tenderers or their representatives should they choose to be present.
5. . Tenders shall remain valid for acceptance by the Institute for a period of 3 months from the date of opening of the tender which period may be extended by mutual agreement and the tenderer shall not cancel or withdraw the tender during this period.
6. The tenderer must use only the forms issued by the Institute to fill in the rates. Any addition/alteration in the text of the tender form made by the tenderer shall not be valid and shall be treated as null and void. Bidder / Bidders will not be allowed to modify his / their bids once submitted. In case, such modifications are found / made, the bid shall be cancelled and E.M.D. shall be forfeited without prior notice to the bidder. Financial bid will be evaluated on the original Tender Form only .If any correction with respect to the Tender Form other than the original are found, then the bid shall be cancelled without any prior notice to the bidder.
7. The tender form must be filled in English and all entries must be made by hand and written in ink. If any of the documents is missing or unsigned, the tender may be considered invalid by the Institute in its discretion.
8. Rates should be quoted both in figures and in words in columns specified. All erasures and alterations made while filling the tender must be attested by initials of the tenderer. Overwriting of figures is not permitted. Failure to comply with either of these conditions will render the tender void at the Institute's option. No advice whatsoever especially on any change in rate specifications after the opening of the tender will be entertained.
9. Each Page of the Tender Documents should be signed by the person or persons submitting the tender in token of his/their having acquainted himself/themselves with the General Conditions of contract. General Specifications, Special Conditions, etc., as laid down. any tender with any of the documents not so signed will be rejected.
10. The tender submitted on behalf of a firm shall be signed by all the partners of the firm or by a partner who has the necessary authority on behalf of the firm to enter into the proposed contract or by a person holding the power of attorney in the case of a company. Otherwise the tender may be rejected by the Institute.
11. **MODE OF SUBMISSION**

The bid shall be submitted in three sealed envelopes marked as follows:

**Envelope 1** – E.M.D.

A bid not accompanied by Earnest Money Deposit will not be considered.

**Envelope 2** – Financial Bid –

Original copies of Tender Document ,Financial Bid and its corrigendum/ addendum duly filled and duly signed and stamped in Duplicate

The above-mentioned envelopes shall be again put together in one **common outer cover / envelope** and sealed, superscribed in capital letters along with the title of the project.

All three envelopes shall :Be marked on the left hand top corner thus: UPGRADATION OF INFRASTRUCTURAL FACILITIES-Road and allied Works Have full name and address of the bidder written or typed on these. And Indicate the contents.If all envelopes are not sealed, superscribed or submitted in any other than mentioned format, IGIDR will assume no responsibility for the misplacement or premature opening of the bid submitted and bid may be rejected by IGIDR

1. The Earnest Money deposit of Rs 50,000.00 by a Demand Draft/ Bank Guarantee issued by a Schedule Bank drawn in favour of Indira Gandhi Institute of Development Research, Mumbai shall only be accepted by the Institute. A tender which is not accompanied by EMD i.e. demand draft/ Bank Guarantee will not be considered. The EMD will be returned to the tenderer if his tender is not accepted by the Institute but without Interest. The EMD paid by the successful tenderer shall be held/encashed by the IGIDR. as security for execution and fulfillment of the contract. No interest shall be paid on this deposit. The Earnest Money Deposit (EMD) of the successful tenderer shall be converted into Security Deposit (SD). 3% of the total value of work done will be withheld from their running A/C bills by the Institute as Retention Money (RM). The 50% EMD and 50% of Retention Money shall be released to the contractor on virtual completion and remaining 50% of EMD and RM amount shall be released after successful completion of 12 months of Defect Liability Period. In case of the contractor so request the balance 50% of Security Deposit (i.e. EMD + RMD) will be held in the form of Bank Guarantee of an approved scheduled Institute in the proforma to get approved by the employer till the satisfactory completion of defect liability period of 12 months. The security deposit of the successful tenderer will be forfeited if, he fails to comply with any of the conditions of contract. No interest will be paid on Security Deposit withheld by the Institute.

13. Indira Gandhi Institute of Development Research does not bind itself to accept the lowest or any tender and reserves to itself the right to accept or reject any or all the tenders, either in whole or in part, without assigning any reasons for doing so. Indira Gandhi Institute of Development Research also reserves the right to divide the order between two or more tenderers and the contractor shall carry out even the part orders for various items.

14. Indira Gandhi Institute of Development Research reserves the right to sub-divide the work mentioned in the tender, amongst two or more contractors at its own discretion and the Contractor will have to execute orders for part of the items placed with them at the quoted rates. Indira Gandhi Institute of Development Research also reserves the right to increase or decrease the quantities and even omit any item of work after the order is placed and the Contractor shall execute the same without claiming anything extra for the same. In this context the rates quoted for each item must be self supporting and relevant.

15. On receipt of intimation from the Employer of the acceptance of his/their tender, the successful tenderer shall be bound to sigh the formal Contract and within seven days thereof, the successful tenderer shall sign an agreement in accordance with the draft agreement and the Schedule of Conditions but the written acceptance by Indira Gandhi Institute of Development Research and the Contractor so tendering, whether such formal agreement is or is not subsequently executed. The cost of necessary Stamp paper for execution of the agreement shall be borne by the successful tenderer.

16. The Contractor shall not assign the contract. He shall not sublet any portion of the contract except with the written consent of the Employer. In case of breach of these conditions, the Employer may serve a notice in writing on the Contractor rescinding the contract whereupon the security deposit shall stand forfeited to the Employer, without prejudice to his other remedies against the Contractor.

17. The Contractor shall carry out all the work strictly in accordance with drawings, and design and as per detailed instructions of the Institute’s Engineer. If in the opinion of the Institute’s Engineer, changes have to be made in the design and with the prior approval in writing of the Employer they desire the Contractor to carry out the same, the Contractor shall carry out the same. The Institute’s Engineer's decision in such cases shall be final.

18. A schedule of probable Quantities in respect of each work and Specifications accompany these Special Conditions. The Schedule of Probable Quantities is liable to alterations, as per Institute`s requirement. Each tender should contain not only the rates but also the value of each item of work entered in a separate column and all the amounts quoted against various items should be totaled in order to show the aggregate value of the entire tender.

19. The tenderer must obtain for himself on his own responsibility and at his own expenses all the information which may be necessary for the purpose of making tender and for entering into a contract and must examine the drawings, inspect the site of the work, acquaint himself with all local conditions, means of access to the work, nature of the work and all matters appertaining thereto. Since the contract comprises of completion of balance incomplete works from the previous contract, the contractor quoting shall visit the site & familiarize himself with the work already executed & the balance work to be executed under the new contract. Any extra claims on account of non understanding the existing site condition shall not be entertained later.

20. The rates quoted in the tender shall include all charges for packing, transport, loading, unloading and for delivery at site. The rates shall also be firm and shall not be subject to exchange variations, labour conditions, fluctuations in railway freights or any conditions whatsoever. Tenderers must include in their rates, work contract tax, sales tax, excise duty, octroi and any other tax and duty or other levy whether existing or future, levied by the Central Government or any State Government or Local Authority, if applicable. No claim in respect of sales tax, excise duty, octroi or other tax, duty or levy whether existing or future, shall be entertained by the Employer.

21. The Contractor should note that unless otherwise stated the tender is strictly on item rate basis and his attention is drawn to the fact that rates for each and every item should be correct, workable and self supporting. The quantities in the Schedule of Quantities approximately indicate the total extent of work but may vary to any extent and may even be omitted thus altering the aggregate value of the contract. No claim shall be entertained on this account.

The contractor shall bring to the notice of the Employer in case of any extra items not mentioned in the schedule of quantities during the course of the work and shall only carry out the same on written approval from the Institute's Engineer.

22. Time allowed for carrying out the work is 4 weeks, which shall be strictly observed by the tenderer and it shall be reckoned from the 4th day of issue of written order to commence the work. The work shall throughout the stipulated period of the contract be proceeded with all the due diligence and if the Contractor fails to complete the work within the specified period he shall be liable to pay compensation at the rate of 1% per week subject to a maximum amount of 10% of the contract amount. The tenderer shall before commencing work prepare a detailed work program which shall be approved by the Institute's Engineer/ Consultant.

23. Tenders will be considered only from recognized bonafide manufacturers/contractors in the trade concerned and who are satisfying the minimum prescribed qualifications. Each tenderer shall submit with his tender a list of large works of a like nature he has executed giving details as to their magnitude and cost, the proportion of work done by the Contractor in it and the time within which the works were completed.

24. The Contractor shall not be entitled to any compensation for any loss suffered by him on account of delays in commencing or executing the work, whatever the cause of delays may be, including delays arising out of modifications to the work entrusted to him or in any sub-contract connected therewith or delays in awarding contracts for other trades of the project or in commencement or completion of such works or in procuring government controlled or other building materials or in obtaining water and power connections for construction purpose or for any other reason whatsoever and the Employer shall not be liable for any claim in respect thereof. The Employer does not accept liability for any sum besides the tender amount, subject to such variations as are provided for herein.

25. The successful tenderer is bound to carry out any or all items of work necessary for the completion of the job even though such items are not included in the quantities and rates. Schedule of Instructions in respect of such additional items and their quantities will be issued in writing by the Employer. The rates for such extra items shall be worked out on the basis of a rate analysis considering the basic material prices with market discounts plus labour cost plus the profit & overheads component of 15% over the material & labour cost.

26. The successful tenderer must co-operate with the other contractor appointed by the Employer so that the work shall proceed smoothly with the least possible delay and to the satisfaction of the Engineer. The contractor is responsible for the protection of the materials ordered by him & stored on the site against any theft, damage on account of natural elements like rain, storms, etc & should take proper precaution to cover the same.

27. The rates for all RCC, Masonry, Plaster & other Civil items to include that for necessary scaffolding, staging, platforms, curing etc as per the directions of the engineer in charge.

28. DEFECT LIABILITY PERIOD

Any defect or fault which may appear during 12 months from the date of virtual completion of work/or supply and installation in full as specified under the contract, arising in the opinion of the Institute's Engineer from materials or workmanship not in accordance with the contract, shall upon the directions in writing of the Institute's Engineer, and within such reasonable time as shall be specified therein, be amended and made good by the Contractor at his own cost and in case of default the Institute may employ and pay other persons to amend the make good such defects/faults and damages, loss and expenses consequent there upon or incidental thereto shall be made good and borne by the Contractor and such damages, loss and expenses shall be recoverable from him by the Institute, or may be deduced by the Institute upon the Institute's/Institute`s Engineers' certificate in writing from any moneys due or that may become due to the contractor. The contractor/supplier shall remain liable under the provisions of this clause notwithstanding the signing by the Institute's Engineer any certificate or passing of any accounts.

29. All erasures and alterations made while filling the tender must be attested by initial of the tenderer. Overwriting of figure is not permitted. Failure to comply with any of these conditions will render the tender void. No advice of any change in rate or conditions after the opening of the tender will be entertained.

30. Each tender should contain not only the rates but also the value of each item of work entered in a separate column and all items should be totaled up to show the aggregate value of the entire tender.

31. The Contractor shall arrange to get all the samples of materials to be used in the work approved from the employer.

32. Time shall be considered as the essence of the contract. Indira Gandhi Institute of Development Research reserves the right to terminate the Contract if the contractor fails to execute the job within the specified period or fail to keep the programme of work as per the programme given by the contractor and approved by Institute.

**Procedure for Termination:-**

**Notice to Correct**

If the Contractor fails to carry out any of his obligations, or if the Contractor is not executing the Works in accordance with the Contract, the Engineer may give notice to the Contractor requiring him to make good such failure and remedy the same within a specified reasonable time.

**Termination**

If the Contractor:

(a) Fails to comply with a notice issued by Engineer.

(b) Abandons or repudiates the Contract.

(c) Without reasonable excuse fails:

to commence the Works in accordance with Letter of Acceptance,

to proceed with the Works in accordance

 (d) Becomes bankrupt or insolvent, goes into liquidation.

(e) Fails to comply with a notice issued, within 7 days after having received it, or

(f) Assigns the Contract or Subcontracts the Works without the required consent.

Then the Employer may, after having given **7 days' notice to the Contractor**, terminate the Contractor’s employment under the Contract and expel him from the Site. The Contractor shall then deliver all Construction Documents to the Engineer. The Contractor shall not be released from any of his obligations or liabilities under the Contract. The rights and authorities conferred on the Employer and the Engineer by the Contract shall not be affected.

The Employer may upon such termination complete the Works himself and/or by any other Contractor. The Employer or such other Contractor may use for such completion so much of the Construction Documents, Contractor’s Equipment, Temporary Works, Materials as he or they may think proper, upon completion of the Works, or at such earlier date as the Engineer thinks appropriate. The Engineer shall give notice that the Contractor's Equipment and Temporary Works will be released to the Contractor at or near the Site. The Contractor shall remove or arrange removal of the same from such place without delay and at his cost

**Valuation on Date of Termination**

The Engineer shall, as soon as possible after termination, determine and advise the Contractor of the value of the Construction Documents, Materials, and Works and all sums then due to the Contractor as at the date of termination.

**Payment after Termination**

After termination, the Employer shall not be liable to make any further payments to the Contractor until the costs of execution, completion and remedying of any defects, damages for delay in completion (if any), and all other costs incurred by the Contractor, have been established.

The Employer shall be entitled to recover from the Contractor the extra costs, if any, for completing the Works after allowing for any sum due to the Contractor. If there are no such extra costs the Employer shall pay any balance to the Contractor.

33. Mode of payment:

On account bills shall be made as under detailed item wise measurement will be taken and payment shall be made based on completion of specific item of work basis on the quoted rate. All payment shall be subject to recovery of 5% towards security deposit, Retention money income tax and work contract tax. On account payment to the extent of 75% of the total amount of running bill can be paid to the contractor if deemed fit and approved by the institute’s engineer and consultant architects representative.

1. Material advanced on false ceiling material, partition work, ceramic tiles, etc. only be paid at 75% of the purchase cost on production of purchase bill (after checking the reasonableness from the market by Institute or the quoted rates in tender whichever is lower).
2. Contractor shall note that the interim value of work done towards payment of running bill is Rs. 15 lakhs.

34. The item wise measurements of work have to be done and quantities have to be worked out for the accurate assessment of the total cost of renovation before quoting.

35. In all matters of dispute arising on the work, the matter shall be referred to Registrar Indira Gandhi Institute of Development Research, Goregaon or decision. If this decision is not acceptable to the party, then the same shall be settled as per the arbitration act.

36. Insurance Clause:

The Contractor shall be responsible for all injury to person, animals or things and for all structural and decorative damage to property which may arise from the operation or neglect of himself or of any nominated sub-Contractor’s employees, whether such injury or damage arise from carelessness, accident or any other case whatever in any way connected with the carrying out of the contract. This clause shall be held to include, inter-alia, any damage to buildings whether immediately adjacent or otherwise, and any damage to road, streets, footpaths, bridges or ways as well as all damage caused to the buildings and works forming the subject of this contract, by frost or other inclemency of weather. the Contractor shall indemnify the employer and hold him harmless in respect of all and any expenses arising from any such injury or damage to persons or property as aforesaid and also in respect of any claim made in respect of injury or damage under any Acts of government or otherwise and also in respect of any award of compensation or damages consequent upon such claims. The Contractor shall reinstate all damages of every sort mentioned in this clause, so as to deliver up the whole of contract works complete and perfect in every respect and so as to make good or otherwise satisfy all claims for damage to the property or third parties.

 The Contractor shall indemnify the employer against all claims which may be made against the employer by any member of the public or other third party in respect of anything which may arise in respect of the works or in consequence there of and shall at his own expenses arrange to effect the maintain until the virtual completion of the contract with an approved office, policy of insurance in the joint names of the employer and the Contractor against such risk and deposit such policy or policies with the employer from item to time during the currency of this contract. The contract shall also similarly indemnify the employer against all claims which may be made upon the employer whether under the workmen’s compensation act or any other statutes in force during the currency of this contract or act Common Law in respect of any employee of the contractor or any sub-contractor and shall at his own expense effect and maintain, until the virtual completion of the contract, with an approved office a policy of insurance in the joint names of the Employer and the contractor against such risks and deposit such policy or policies with the Employer from time to time during the currency of the contract.

The minimum limit of the coverage under the third party insurance policy shall be Rs. 2 lakhs person for any one accidental or occurrence and Rs. 5 lakhs in respect of damage to property for any one accident or occurrence.

The Contractor shall be responsible for anything, which may be excluded from the insurance policies above referred to and also for all other damages to any property arising of and incidental to the negligent or defective carrying out of this contract. He shall also indemnify the Employer in respect of any costs, charges or expenses arising out of claim or proceedings of damage arising there from.

The Employer shall be at liberty and is hereby empowered to deduct the amount of any damage compensation, costs, charges and expenses arising occurring from or in respect of any such claims of damage from any or all sums due or to become due to the Contractor.

In addition to the above, the Contractor shall insure the work against loss due to fire, for the entire contract amount with an approved insurance company till the virtual completion of the work.

I/We hereby declare that I/we have read and understood the above instructions and the same will remain binding upon me/us incase the work is entrusted to me/us.

Place : Signature of Contractor

 with the seal of their company

Date :

**SECTION `D’**

**SPECIAL CONDITIONS**

1. The workmen will not be allowed to stay within the premises.

1. The water required for the work or workmen cannot be availed from the site .Contractor has to make arrangements independently.
2. The electric power required for the work can be drawn from the supply available at site on the condition that expenses shall be borne by the contractor. The electric meter to be installed at the site by the contractor at his own cost.
3. Permission if any, required from the local bodies shall be obtained by the contractor at his cost.
4. Even though in finishing items, the number of coats of paint/polish are mentioned, the contractor shall note that the entire furniture be finished in top class while handing over, including if necessary, additional coat of painting/polishing etc. without any extra cost. Since the job involves completion of incomplete work, the contractor to ensure the finish for the incomplete as well as balance work.
5. The intending tenderer can obtain any clarifications regarding the tender drawings, specifications etc. if any from the office of the Registrar , Indira Gandhi Institute of Development Research, Goregaon, Mumbai 400 065 on any Institute`s working day.
6. The entire materials for the work shall be brought to the working area through the staircase only.
7. Wherever the basic rate for the material is specified, the contractor should provide to the Institute for verifications all paid bills of purchased materials for ascertaining the actual rate of purchase so as to settle the difference in cost of material. The rate shall be got approved from the Institute before purchasing. The adjustment in price of materials shall be made on measured quantity with 5% allowance for wastage. No overhead or profit shall be considered on the cost difference. The basic price for the materials shall be taken as the cost of material at dealer’s godown and transportation; loading and unloading charges etc. shall be included in the lump-sum rate quoted for each item.
8. The debris/dust or any wastage generated out of the above work shall be cleaned as frequently as required and as instructed by the Institute’s Engineer away from the Institute’s premises.

10. The tenderer shall use only approved brand materials.

11. A qualified, experienced in Renovation and responsible full time engineer shall be posted at site who can receive instructions, maintain account of materials etc. take decisions at site, without waiting for the instructions of the contractor.

12. No lapses from the Contractors side, which may cause damage to the property and injury to the occupants/neighbors in the opinion of he Institute’s Engineer, shall be permitted.

13. The work has to be carried out with least inconvenience to the staff.

14. Programme should be submitted before commencement of work so as to enable the Institute to intimate the Departments in advance for smooth working and better progress and the time schedule should be strictly adhered to.

15. No labours shall be permitted to stay inside the campus after working hours. Contractor to make provision for the stay of his labor outside the premises at his own cost & the rates quoted to include the cost for the same.

16. The Contractors has to obtain permission from the local authorities as per the existing local bye laws for such works and the charges/fees if any, has to be borne and paid by the contractor including water and draining charges.

17. The contractor should have valid labour license from Labour Commissioner wherever the number of laborers’ engaged is 20 or more.

18. Sales Tax on works contract shall be deducted as per Works Contract Act 1989 (as amended) at source. The rate quoted shall include all such taxes and levies.

19. The contractor shall have the addresses and photographs of their workmen being engaged by them for the said work. The entry of workmen will be allowed inside the building only on producing the photo pass issued by the Institute’s Caretaker.

20. Before quoting the rates contractor should inspect the site and understand themselves about the nature and scope of the work.

21. Any damage cause to any of Institute’s properties shall be made good by the contractor at their own cost.

22. The contractor shall carry out the work strictly in accordance with specification details and instructions of the Institute’s Engineer.

23. The Contractor shall make their own arrangements for storing of their materials at site.

24. Contractor shall keep the Institute indemnified against all claims, if any.

25. Before starting any dismantling work, the contractor shall procure the entire material to be use for that particular material in advance & should make his own arrangements to store the material at his risk & cost. The institute will try to provide space to store the procured material to its best extent, however if it is not possible for the institute to do so, then the contractor shall make his own arrangements to store the material outside the institute’s premises & bring the same for execution as and when required. The contractor should physically verify the receipt of the materials by having the procured materials checked by the engineer in charge.

26. The Contractor to deposit with IGIDR a **performance bond** in the form of a Demand Draft or Bank Guarantee an amount equivalent to 5% of the value of the contract, which will be returned to the contractor on the faithful completion of the project, on virtual completion as certified by the consultant architect & the Institute’s engineer. IGIDR will not be liable to pat any interest on this amount. IGIDR reserves the right to withhold/ encash full or part of the Performance bond in case the contractor fails to complete the project as per the tender stipulations due to any failure on his part.

Place :

Date : Signature of Contractor with seal

SAFETY CODE

1. First aid appliances including adequate supply of sterilized dressings and cotton wool shall be kept in a readily accessible place.
2. An injured person shall be taken to a public hospital without loss of time in case where the injury necessitates hospitalization.
3. Suitable and strong scaffolds should be provided for workmen for all works that cannot safely be done from ground.
4. No portable single ladder shall be over 8 meters in length. The width between the side rails shall not be less than 30 cm. (clear) and the distance between two adjacent rungs shall not be more than 30 cm. When a ladder is used, an extra mazdoor shall be engaged for holding the ladder.
5. The excavated material shall not be placed within 1.5 meters of the edge of the trench or half of the depth of trench whichever is more. All trenches and excavations shall be provided with necessary fencing and lighting.
6. Every opening in the floor of a building or in a working platform is provided with suitable means to prevent the fall of persons or materials by providing suitable fencing or railing whose minimum height shall be one meter.
7. No floor, roof or other part of the structure shall be so overloaded with debris or materials as to render it unsafe.
8. Workers employed on mixing and handling material such as asphalt cement mortar and lime mortar shall be provided with protective footwear and rubber hand-gloves.
9. Those engage in welding works shall be provided with welder's protective eye-shields and gloves.
10. (i) No paint containing lead or lead products shall be used except in the work

of paste or readymade paint.

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

1. Overalls shall be supplied by the Contractor to the painters and adequate facilities shall be provided to enable the working painters to wash during the period of cessation of work.
2. Hoisting machines and tackle used in the works, including their attachments, anchorage and supports shall be in perfect conditions.
3. The ropes used in hoisting or lowering material or as a means of suspension shall be durable quality and adequate strength and free from defects.

**SPECIFICATIONS (General Building Works)**

Section E – General

*Contract:*

The form of contract shall be according to the printed form "Conditions of Contract". The following clauses shall be considered as an extension and not in limitation of obligation of the contract.

*Drawings:*

Two copies of all drawings, the Schedule of Quantities and Specifications shall be furnished by the Engineers to the contractor for his own use until the completion of the contract, and shall be accessible at all reasonable times to the Architects or their representatives.

All important drawings are to be mounted on boards and placed in racks and indexed.

*Dimensions:*

Figured dimensions are in all cases to be accepted in preference in scaled sizes, large scale details take precedence over small scale drawings, incase of discrepancy, the Contractor has to ask for clarification before proceeding with the work.

Contractor to include in his rates:

The Contractor shall include in his rates for all the items listed in this Section.

*Contractor to Inspect Site:*

1. The Contractor shall visit and examine the construction site and satisfy himself as to the nature of the existing roads or other means of communications, the character of the soil and the excavations, the extent and magnitude of the work and facilities for obtaining materials and shall obtain generally his own information on all matters affecting the execution of the work. No extra charge made in consequence of any misunderstanding or incorrect information on any of these points or on the ground of insufficient description will be allowed. All expenses incurred by the contractor in connection with obtaining information for submitting this tender including his visits to the site or efforts in compiling the tender shall be borne by the Tenderer and no claims for reimbursement thereof shall be entertained.

*Access to site:*

2. The Contractor is to include in his rates for forming access to the site, with all temporary roads and gangways required for the works.

*Setting out:*

3. The Contractor shall set out the building in accordance with the plans. All grid/ centre lines shall be pegged out to the satisfaction of the Architects. The contractor shall be responsible for the correctness of the lining out and any inaccuracies are to be rectified at his own expense. He will be responsible for taking ground levels of the site before setting out and recording them without any extra charge.

The Contractor shall construct and maintain proper benches at the intersection of all main walls, columns etc., in order that the lines and levels may be accurately checked at all times.

*Treasure Trove:*

1. Should any treasure, fossils, minerals, or works of art of an quarial interest be

found during excavation or while carrying out the works, the Contractor shall give immediate notice to the Institutes of any such discovery and shall make over such finds to the Employer.

*Access for Inspection:*

1. The Contractor is to provide at all times during the progress of the works and the

maintenance period proper means of access, with ladders, gangways etc. and the necessary attendance to move and adapt as directed for the inspection of measurement of the works by the Engineers of their representatives.

*Attendance upon all Trades:*

6. The General Contractors shall be required to attend on all the Tradesmen or

Sub-Contractors/Contractors appointed by the Employer for Water Supply and Sanitary, Electrical Installation, Lifts, Air-conditioning, Security Equipment, Hardware, Telephone and other Specialist Contractors. The rates quoted shall be inclusive of all attendance and also allow the other contractors, appointed by the Employer, use of his scaffolding and retain until such time the relevant sub-Contract works are completed.

*Water supply:*

1. Water shall be arranged in accordance with Clause 2 of Special Conditions of

Contract.

*Electric Supply:*

1. Shall be arranged in accordance with Clause 3 of Special Conditions of Contract.

*Caretaker and Watchmen:*

1. The Contractor from the time of being placed in possession of the site must make

arrangements for watching, lighting and protecting the work, all materials, workmen and the public by day and night on all days including Sundays and Holidays at his own cost.

*Storage for Materials:*

1. The Contractor shall provide for all necessary sheds of adequate dimension for

storage and protection of materials like cement, lime, timber and such other materials including tools and equipment which are likely to deteriorate by the action of sun, wind, rain or other natural causes due to exposure in the open. For cement the contractor shall arrange for leak proof godown of sufficient size to store not less than 3 months requirement of cement.

All such sheds shall be cleared away and the whole area left in good order on completion of the contract to the satisfaction of the Institute's Engineer.

All materials which are stored on the site such as bricks, aggregates etc. shall be stacked in such a manner as to facilitate rapid and easy checking of quantities of such materials.

*Cost of Transporting:*

1. The Contractor shall allow in his cost for all transporting, unloading, stacking and storing of supplied of goods and material for this work on the site and in the places approved from time to time by the Engineers. The Contractor shall allow in his price for transport of all materials controlled or otherwise to the site.

**APPENDIX**

Earnest Money Deposit Rs 50,000

Defects Liability Period 12 months.

Period of final measurement 1 months.

Date of commencement 4th day from the date of issue of work order.

Date of completion 1 months from the date of commencement

Liquidated damages Rs. 1% of the cost of the work per week (subject to a max. of 10% of the value of work actually executed/ accepted contract value)

Value of work for interim certificate Rs 15 Lakhs (15,00,000)

Retention percentage 3% of each R. A Bill Amount.

Total Security Deposit

(EMD + Retention Money) 5% of the contract value.

Payment after virtual completion 50% of the aggregate of the Security

 Deposit amount actually retained.

 The balance after defect Liability period

 as mentioned above is over.

Place : Signature and seal of Contractor with Seal

Date :

TECHNICAL SPECIFICATIONS

GENERAL PROVISIONS

Indian standards and codes of practice

The book of specification and the various sections therein are intended for particular application to the works under the contract. However these specifications may not cover all the materials and works. Such material and works, which are not covered by these specifications, shall be in accordance with the latest and most current revisions standards and codes of practice published by the Bureau of Indian Standards, Manak Bhavan, 9 Bahadur Shah Jafar Marg, New Delhi and available through their local branches.

In case of conflict between the Indian standards and the specifications included in the contract documents, the more stringent, as decided by the architect, shall prevail.

Related documents and their precedence

The items in specifications should be in conjunction with the relevant drawings, bill of quantities, general and special conditions of contract. In case of conflict between the specifications and other documents, the precedence shall be in the following order in priority: 1) special conditions of contract 2) bill of quantities 3) drawings 4) specifications 5) general conditions of contract

Materials

All finish materials shall be of the same manufacturer or source, as far as practicable from the same batch of manufacture, of uniform color and texture throughout the project and free from defects and surface blemishes as described in greater detail in the particular sections of the specifications.

This intention is that the contractor / vendor shall be particularly selective in the sourcing and application of materials in order to obtain a unified appearance and finish throughout the project. The contractor shall before commencing procurement, calculate quantities required to complete the project and ensure that they are available.

Samples of materials and finishes shall be submitted to the architect, for approval prior to procurement and fabrication.

Alternatives

The architect will consider alternative materials and methods that the contractor may propose in writing, stating the reason for proposing the alternative.

No such alternatives shall be procured without the prior written approval of the architect. Approved alternative materials or work will not qualify for additional costs unless such additional costs are sanctioned before approval is given. Under no circumstance shall approval relive the contractor of his responsibilities under the contract and no approval will be binding until given in writing.

Testing and inspection

The architect may issue instructions requiring the contractor to open up for inspection any work covered up or to arrange for or carry out tests for any materials, goods or any executed work and the cost of such opening up or testing shall be borne by the contractor & shall be in accordance with the provisions of this contract.

The architect may issue instructions in regard to removal from the site of any work, materials or goods, which are not in accordance with this contract.

**QUALITY CONTROL**

GENERAL

The contractor shall provide and maintain an effective contractor quality control (CQC) programme and perform sufficient inspections and tests of all items of work, including those of sub-contractors, to ensure compliance with contract documents. Includes surveillances and tests specified in the technical sections of the specifications. Furnish appropriate facilities, instruments, and testing devices required for performance of the quality control function. Controls must be adequate to cover construction operations and be keyed to the construction sequence.

CONTROL OF ON-SITE CONSTRUCTION

Preparatory inspection: The contractor shall perform this inspection prior to beginning work on any definable feature of work. Include a review of contract requirements with the supervisors directly responsible for performance of the work, check to ensure that materials, products and equipment have been tested, submitted and approved; check to ensure that provisions have been made for required control testing; examine the work area to ascertain the preliminary work has been completed; physically examine materials and equipment to ensure that they conform to shop drawing and data and that the materials and equipment are on hand.

Initial inspection : The contractor shall perform this inspection as soon as work commence on a representative portion of a particular feature of workmanship; review control testing for compliance with contract requirements.

Follow-up inspections: The contractor shall perform these inspections on a regular basis to ensure continuing compliance with contract requirements until completion of that particular work.

Documentation of contractors quality control (CQC) report: The contractor shall identify the inspections herein before specified and document in the CQC report with a brief description of the subject matter covered and the personnel involved.

LATEST DOCUMENTS

The contractors quality control system shall provide for procedures to ensure that the latest version of contract documents, shop drawings, and instructions required by the contract are used for fabrication, testing and inspection and have them available at the site at all times for use by the contractors staff and the architect.

#### CONSTRUCTION SCHEDULE

The schedule shall be in the form of bar chart or CPM network, with time intervals of not less than one week. A separate schedule shall be prepared for each major component of the project, such as each building, the site development etc., with a summary schedule for the project as a whole. Each major component of the project shall be divided in to sub-components, e.g. each floor, and further subdivided in to the various construction activities. The schedule shall indicate important milestones, starting dates, finishing dates, co-ordination nodes between various trades, sub-contractors and other contractors.

The construction schedule shall be further supported by:

1. Procurement schedule for materials and equipment to be incorporated in to the works in the format as per appendix I
2. Schedule of manpower on a weekly basis, showing the manpower by trade and/or skill required to achieve the contractors construction schedule in the format as per appendix II

# SURVEY DATA

The contractor shall be responsible for properly laying out the work, and for lines and measurements for the work executed under the contract documents. The contractor shall verify the figures shown on the drawing before laying out the work and report errors or inaccuracies in writing to the architect before commencing the work. The architect or his representative will in no case assume the responsibility for laying out the work.

The contractor shall be responsible for the proper location and level of the work and for the maintenance of the reference lines and bench marks. The contractor shall establish bench marks and axis lines at each floor showing exact floor elevations and other lines and dimensional reference points at required for the information and guidance of all trades; field checking of the structure and surveys thereof as may be required by the technical sections of the specifications; the marking and layout of walls and partitions; and the taking of settlement readings as hereinafter specified.

The mechanical and electrical trades shall be responsible for the layout of the duct work, piping and conduit based on the reference line and bench marks established by the general contractor.

The contractor shall upon setting out the principal walls, prepare and submit to the architect a certified survey showing that dimensions, elevations, angles, and the location of the buildings and interior works are in accordance with the contract documents. When the setting out and layout are completed a further survey shall be submitted, certifying their location and plumpness.

# OTHER SUBMITTALS

#### Other submittals shall be as specified elsewhere in the contract documents

**DEMOLITION, DISMANTLING AND MODIFICATIONS DURING CONSTRUCTION OF BUILDING INTERIORS**

##### GENERAL

SCOPE OF WORK

Work included:

This section covers the requirements of works involving demolition and/or dismantling parts of building interiors not involving the structure or any part of the building that contributes to the integrity and stability of the building

This section includes preliminary works in preparation for demolition such as obtaining permits; disconnection and/or controlled operation of building services; precautionary measures for the safety of the building, its occupants and workers.

This section includes demolition of non-load-bearing masonry and concrete walls; ally types of partitions and wall cladding; doors and windows; suspended ceiling; wall and floor finishes.

This section includes the dismantling of built-in cabinets, counters, furniture and fixtures.

This section includes disconnection, dismantling and controlled operation of electrical systems, water supply, drainage and sanitary systems, HVAC systems and all other building services by skilled operatives competent in their respective fields.

This section includes the salvaging, retrieval and safe storage of all material as required by the contract and the transport and disposal of all unwanted material and debris.

Work excluded:

This section does not include structural demolition or modifications.

# RELATED WORK SPECIFIED ELSEWHERE

#### Temporary works

Electrical

Water supply & drainage

HVAC

# SUBMITTALS

The contractor shall submit the following to the architect for review and approval well before the commencement of work.

1. Required approvals from all concerned authorities
2. Proposed demolition and dismantling plan and day-to-day progress schedule showing clearly the sequence of operations for disconnection of building services, controlled operation of services to retained and safety precautions. This shall be accompanied by description of procedures proposed to be followed.
3. Equipment proposed to be used for demolition and dismantling.
4. Proposals for temporary works to partition and protect adjacent or near by areas in use, including dust control and clean up procedures.
5. Proposal for temporary storage of salvaged material and for debris to be transformed off site.

# CONTROL OF PROCEDURES AND SAFETY

The contractor shall devise and be responsible for all procedures to ensure the safety of the building, the workers and the other occupants during the demolition and dismantling work. The work shall at all times be under the direct supervision of experienced foremen under the overall supervision of the contractors site engineer.

# HANDLING, STORAGE, TRANSPORTATION AND DISPOSAL

Handle and store materials retrieved from the demolition and dismantling in accordance with IS:7969. Whenever there is a conflict in the requirements of IS:7969 and the provisions herein, the more stringent of the specifications shall apply.

Store debris and salvaged material separately in designated places approved by the submittals procedure described above. All salvaged material shall be classified and stored separately by categories agreed upon prior to commencement of demolition.

Do not pile up material in a manner that will cause the structure to be over loaded. Stack material so that the stacks are stable and do not cause obstruction to movement.

Do not allow debris to accumulate beyond the capacity of the approved area for temporary storage. Do not dump debris in public rights-of-way, in private property without owners consent, in municipal garbage receptacles etc. The contractor shall dispose of debris only at dumping grounds approved by the local authority in manner not objectionable to the authority.

Transport debris to the approved dumping grounds at times permissible by law and acceptable by local practice. Take precautions to avoid spillage of debris from the transport vehicle en-route.

**MATERIALS AND PRODUCTS**

#### SCAFFOLDS AND LADDERS

Scaffolds and ladders used in the demolition and dismantling shall be in accordance with IS:3696 Part 1 and Part 2.

The scaffolding shall be designed and erected by the contractor in accordance with the requirements of the work, by experienced workers. All scaffolding material shall be in good serviceable condition and assembled to be stable in the conditions of the work being performed.

# MECHANICAL EQUIPMENT

Do not use mechanical equipment without the prior approval of the architect.

Do not use gas cutting and electric welding or cutting without the prior approval of the architect. Take special precautions to prevent fire if permission is granted for gas and electrical cutting and welding.

**EXECUTION**

#### GENERAL

Survey and mark out clearly the portions that are to be demolished or dismantled. Proceed with demolition and dismantling strictly in conformance with the plans, sequence, schedules and procedures proposed by the contractor and approved by the architect.

Proceed with work only in the presence and under control of skilled supervisors.

Do not proceed with work if latent conditions contrary to expectations or assumptions are encountered as work proceeds. Do not proceed with work if any part of the building assumed to be non-structural and non-load-bearing is discovered or suspected to be structural and contributing to the stability of the building. Report to the architect and obtain approval to proceed further.

Maintain in a journal with serially numbered pages, inventories of all salvaged items as the work proceeds.

# WATER SUPPLY AND SANITATION PIPES, FIXTURES AND FITTINGS

Dismantling of water supply, drainage and sanitary installation shall be carried out under the supervision of a licensed plumber, employing competent skilled workers.

Coordinate dismantling work with related permanent work to be installed, if any.

Shut off water supply and drainage pipes by closing valves or by providing plugs to isolate the systems to be dismantled from those to be retained. Ensure that areas in use are not disturbed during the progress of work by providing temporary service connections. If possible complete and protect proposed permanent modifications before commencing dismantling and demolition work.

Fixtures and fittings shall be removed only by skilled technicians to salvage them with minimum damage. Dismantle in the following sequence:

1. Fittings such as faucets, showers, taps, valves, meters, gauges etc.
2. Fixtures such as wash basins, WC’s, urinals, pumps etc.
3. Pipes, tanks, and heavy equipment
4. Brackets, supports, hangers and foundations

Complete dismantling of water supply, drainage and sanitary installation before commencing demolition of walls and partitions, flooring, ceiling etc. Closely coordinate the works if this is not practically possible.

ELECTRICAL

Dismantling of electrical installation shall be carried out under the supervision of a licensed electrical contractor, employing competent certified electricians.

Carefully survey the entire existing system and coordinate dismantling work with related temporary permanent works, if any. Modify the existing system, if required before commencing dismantling work to ensure that the functioning of systems outside the demolition areas are not affected.

Shut off and isolate electric supply to the demolition and dismantling area. Take precautions to ensure that the disconnected circuits may not be accidentally re-energized.

1. Disconnect supply cables and isolate all distribution boards within the work areas. Disconnect and remove the distribution boards. Provide temporary service connections to the work areas from a temporary DB fed by an exclusive cable tapped from a board outside the work area with an isolation switch close to the temporary DB. Do not provide temporary services through any existing circuits in the areas to be demolished.
2. If DB and circuits located within the demolition areas cannot be disconnected or diverted, they shall be clearly marked out and identified with cautionary signs to distinguish them from others that are to dismantled.
3. Have a skilled electrician on standby.
4. Fixtures and fittings shall be removed only by skilled technicians to salvage them with minimum damage.
5. Complete dismantling of electrical installation before commencing demolition of walls and partitions, flooring, ceiling etc.

OTHER SERVICES

Carefully survey each of the existing systems in its entirety and coordinate dismantling work with related temporary and permanent works, if any. Modify the existing system, if required, before commencing dismantling work to ensure that the functioning of systems outside the demolition areas is not affected.

Systematically shut off and isolate each system from the demolition and dismantling area. Take precautions to ensure that the portions to be retained are clearly marked out and identified with cautionary signs to distinguish them from others that are to dismantle.

Follow a sequence of dismantling by which valuable equipment, fittings and other material are recovered with minimum damage.

Complete dismantling of all services before commencing demolition of walls and partitions, flooring, ceiling etc.

**CAST IN PLACE PORTLAND CEMENT CONCRETE**

**GENERAL**

SCOPE OF WORK

Work included

This section cover the requirements for supply of materials, mixing, forming, placing, compacting, finishing, jointing, curing and all other works as required for cast-in-place concrete.

The scope of work includes testing of concrete as required by this specification.

Work not included

Concrete reinforcement

RELATED WORK SPECIFIED WORK ELSEWHERE

Concrete reinforcement

Metal decks

QUALITY CONTROL

The contractor shall be fully responsible for quality control inspection and testing. All concreting operations shall be at all times under the supervision of a qualified and experienced engineer.

The quality control supervisor shall be responsible for the following regular tests and inspection:

1. Consistency measurements such as slump, air-content, temperature, cement content etc.
2. Taking and testing of specimens from concrete pours and having them tested in accordance with the codes and standards.
3. Inspection and approval of framework and reinforcement
4. Inspection and approval of batching and mixing facilities
5. Inspection and approval of concrete placement, consolidation, finishing and curing operations.
6. Inspection and approval of form removal.
7. Maintaining complete, up to date records, throughout the contract of all concreting operations, inspection, tests etc.
8. The standard age of concrete for tests is 28 days, but seven day test may be used to predict probable 28-day strength, provided that the relation between 7-day and 28-day test strength is established and the 28-day tests are subsequently performed for confirmation. The acceptance criteria for concrete shall be as set out in NBC, Part VI, section 5, table 5.
9. Any concrete, which is deemed by the architect not to comply with this specification shall be broken and replaced, including all reinforcement.

**TRANSPORTATION, HANDLING AND STORAGE**

Cement and dry admixtures shall be stored in dry, water proof, well ventilated housing or silos. Liquid admixtures shall be stored in clean, isolated containers.

Packaged cement

Packaged cement shall be delivered to the mixing site in original moisture proof, sealed packages, which shall be labeled with the weight, name of manufacturer, brand and type specified. Cement received in broken or damaged packages shall not be used.

Packages of cement, which vary in weight by +/- 3% shall not be accepted.

Bulk cement

Bulk cement shall be stored separately from packaged cement. Bulk cement shall be stored in dry, weather tight, well ventilated bins with provisions for prevention of moisture absorption or the intrusion of foreign matter.

Facilities for sampling of cement shall be proved at the weighing hopper, or at the feed line immediately before entering the hopper.

Different brands of cement, or the same brand of cement from different sources, shall not be used without prior notification by the contractor.

Aggregates

Aggregates shall be transported and stockpiled separately according to their sources and gradations. Aggregates shall be handled in a manner, which will prevent segregation and contamination with earth or foreign materials.

If the aggregates show segregation, or if the different grades become mixed, the aggregates shall be re-screened before placing in the proportioning bins. Contaminated aggregates shall not be used.

Aggregates shall not be transferred directly from trunks, railroad cars or barges to the proportioning bins when moisture content or/and water absorption is such that it will affect the accuracy of the proportioning of the concrete mixture. In such cases, the aggregates shall be stockpiled until the excess moisture drains off.

Muddy or oil-leaking equipment shall not be allowed to operate on the stockpiles.

Formwork

All formwork materials that may be affected by moisture or whether shall be stored in dry, weatherproof, well ventilated housing.

All formwork material shall be handled and stored to prevent damage.

FORMWORK

Forms are designed by the contractor to have sufficient strength to carry the hydrostatic head of the concrete as a liquid without deflecting beyond acceptable limits. Besides the weight of concrete and reinforcement, the formwork shall be designed for loads and lateral pressures due to construction operations.

Maximum deflection of facing materials which reflect in concrete surfaces exposed to view shall be not greater than 1/240 of the span between structural supports.

Where necessary to maintain the tolerances indicated, the framework shall be cambered to compensate for anticipated deflections due to the weight and pressure of the fresh concrete and also due to any other construction loads.

The surface of forms is to be designed to provide the correct finish, as specified in the subsection herein.

CURING:-

Exposed Surfaces of concrete shall be kept continuously in a damp or wet condition for at least seven days from the date of placing of concrete.

Approve curing compounds may be used in lieu of moist curing with the permission of the Architect/Engineer-in-charge. Such compounds shall be applied to all exposed surfaces of the concrete as soon as possible after the concrete has set.

COVER:-

To maintain the specified amount of concrete cover to the reinforcement small precast concrete blocks of grade similar to that of concrete to be placed shall be used as indicated hereunder unless otherwise specified in the drawings.

1. At each end of reinforcing bar, not less than 25mm, nor less than twice the diameter of bar.
2. For a longitudinal reinforcing bar in a beam, not less than 25mm, nor less than the diameter of the bar.
3. For a longitudinal reinforcing bar in a column, not less then 40mm nor less than the diameter of the bar.
4. For tensile, compressive, shear or other reinforcement in a slab, not less than 15mm, nor less than the diameter of the bar.
5. For Vertical or horizontal reinforcement in concrete walls not less than 15mm nor less than the diameter of the bar.
6. For reinforcement in footings, pile caps and raft foundations not less than 50mm.

ADMIXTURES:-

Plasticisers may be used in the concrete work to achieve better workability admixtures or cement containing additives (Such as accelerators, retarders, water proofing agents etc) shall not be used unless specified or otherwise directed or approved by the Architect/Engineer-in-charge.

COARSE Aggregate:-

The Coarse aggregate for the reinforced concrete work shall consist of crushed gravel, black trap, granite or other stone to the approval of the Architect/ Engineer-in-charge and shall be free from dust. If considered necessary by the Architect / Engineer-in-charge the aggregate shall be washed specially until an approved cleanliness is obtained. The use of laminated stone, flat or flaky material will not be permitted. The combined coarse aggregate shall in all respects be so graded as to allow 95% to 100% by weight to pass a 20mm BIS Sieve; 25% to 55% by weight to pass a 10mm BIS Sieve and 0% to 10% by weight to pass a 5mm BIS Sieve. The aggregates of different sizes shall be stored in separate stacks in clean state and free from all dirt.

The coarse aggregate where absorption of water after 24 hours immersion is more than 5% by weight shall not be used.

When required by the Architect/Engineer-in-charge tests indicated in BIS 383 shall be carried out by contractor at this cost to show the acceptability of the materials.

Stored piles of aggregate shall have good drainage, preclude inclusion of foreign matter and preserve the gradation.

FINE AGGREGATE:-

Sand shall conform to BIS: 383 and relevant portion of BIS: 515. It shall pass through a BIS: Sieve 4.75mm (3/16-B.S.) test sieve, leaving a residue not more than 5%. It shall be from natural source or crushed stone screenings, chemically inert, clean, sharp, hard, durable, well graded & free from dust, clay, shale, large pebbles, salt, organic matter, loam, mica or other deleterious matter. The sum of percentage of all deleterious materials in sand shall not exceed 5% by weight. It shall be washed, to reduce the percentage of deleterious substances to acceptable limits. Sand shall not contain any trace of salt and it shall be rejected.

The fine aggregate for concrete shall be graded within limits as specified in BIS: 383 and the Fineness modulus may range between 2.60 to 3.20.

The fine aggregate shall be stacked carefully on a clean hard dry surface so that it will not get mixed up with deleterious foreign materials. If such a Surface is not available, a platform of planks or iron sheets or brick floor or a thin layer of lean concrete shall be prepared.

The sand for plaster shall be screened & washed.

WATER PROOFING:-

The cement based waterproofing work shall be carried out through approved contractor with 10 years guarantee as per their specifications under the supervision of the contractor.

Terrace, Canopy, Refuge area, roofs, Tops of balconies, lift machine rooms, water tank, pump room and watchman’s cabin roof: These shall be finished with water proofing treatment as per the approved agencies specifications and as approved by architect with a guarantee of 10 years. Water proofing treatment will include necessary waterproof brickbat coba of required minimum thickness 75mm laid to required slope. Top of brickbat will be finished with waterproofing treatment and china mosaic flooring of approved colour by Architects finished smooth made watertight including 300mm round vata at junction of slab and parapet wall complete.

Toilets: This shall be as per approved agency’s specifications with 10 years guarantee. Water proofing treatment to sunk portion including waterproof brickbat coba filling. Before filling brickbat coba, the walls upto 600mm above general finished floor level will be finished with waterproof treatment as per waterproofing agency’s specifications.

TESTING:-

All G. I. pipes and fittings may be tested to a pressure of 10.5 Kg/cm2 to ensure that pipes have proper threads and that proper materials (such as white zinc and spurnyarn) have been used in jointing. All leaky joints must be made leak- proof by tightening or redoing at contractors expense.

**MATERIALS AND PRODUCTS**

CEMENT

Cement shall be ordinary Portland conforming to IS: 269 and shall meet the following additional requirements:

Compressive strength

At 3 days ------- 160 Kg/Cm2 minimum

At 7 days ------- 220 Kg/Cm2 minimum

Time of setting (vicat):

Initial set ------- 30 minutes minimum

Final set ------- 5 hours maximum

COARSE AGGREGATES

Coarse aggregates shall comprise clean crushed or uncrushed gravel, crushed stone or a combination of the tree free from adherent coatings deleterious materials, organic impurities and salts in accordance with IS:383.

The coarse aggregates shall be selected, screened to various particle sizes and rinsed as necessary to meet the acceptance criteria.

The normal size of coarse aggregates used for different purposes shall be as given below:

Reinforce concrete – 20mm maximum; 4.75 mm minimum

Floor screed upto 75mm th over existing concrete slab – 8mm maximum, 1mm minimum

Un-reinforced mass concrete – 40mm maximum; 4.75mm minimum

The coarse aggregates shall comply with the requirements set forth below:

Slake durability index using distilled water as slake fluid – 99.0% minimum

Clay lumps and friable particles – 1.0% maximum

Water absorption – 2.5% maximum

Sodium chloride – 0.03% maximum

FINE AGGREGATES

Fine aggregates shall comprise clean natural sand with rounded or sub rounded particles free of adherent coatings, deleterious materials, organic impurities and salts in accordance with IS :383.

Fine aggregates shall be selected, screened and rinsed as necessary to meet acceptance criteria.

The aggregates shall comply with the requirements set forth below

Clay lumps and friable particles – 1.0% maximum

Material finer than 75 micros – 2.0% maximum

Water absorption – 1.0% maximum

Sodium chloride – 0.05% maximum

WATER

Water for rising aggregates, for inCompany in the concrete and for curing shall be clean potable water free from injurious amounts of oils, acids, salts, alkalis, organic matters and other potentially deleterious substances when examined in accordance with IS:3025 and when compared with the limits specified in this specification.

The maximum permissible concentrations of chemicals and organic and inorganic solids shall be in accordance with NBC, Part VI, Section 5, paragraph 4.1.3.2. The pH value of water shall generally be between 6 and 8.

FORM MATERIALS

The selection of materials suitable for formwork shall be made by the contractor unless specified otherwise based on maximum quality consistent with the specified finishes and safety.

The use of proprietary forming systems is recommended and should be used where possible.

MISCELLANEOUS MATERIALS

Water stops to the used in water tight concrete construction joints shall be polyvinchloride (pvc) of the size and type shown on the drawing.

Other inserts and embedment shall be as shown on drawing.

Form release agents to prevent concrete adhering to formwork shall be non-staining, non-reactive, rust preventive and guaranteed to be compatible with subsequent surface applications to concrete.

CONCRETE GRADES AND MIXES

General

Controlled concrete or designed concrete mix is concrete of which the constituted proportions have been determined by preliminary tests to meet the acceptance criteria of the grade of concrete required.

Ordinary concrete or normal concrete mix is concrete of which the constituent proportions ar based on nominal mixes without preliminary tests.

Only controlled concrete shall be permitted for use in reinforced concrete and concrete used in building structures. Ordinary concrete shall generally not be used except by written approval of the architect preceded by a written request for use of ordinary concrete by the contractor giving reasons why he wishes to do so. Concrete in this specification shall always mean controlled concrete.

Grades of concrete are denoted by a designation consisting of the letter ‘M’ followed by a numeral indicating the 28-day cube compressive strength in Kg/cm2.

Each grade of concrete may consist of one or more ‘mixes’ determined by cement content, quantity and gradation of aggregates, water cement ratio, slump, type of admixtures etc.

Each mix within a grade shall be considered a specific type given an appropriate distinctive nomenclature and will require approval by the architect. The contractor shall use the approved the approved mix for approved uses.

Strength requirements of concrete

The strength requirements of concrete for the various grades of concrete shall be as given below, determined on the basis of the compressive strength of 150mm cubes at 28 days after mixing in accordance with IS: 516

**Grade of concrete Preliminary test Works test**

 **Comp. Strength in Comp. Strength in**

 **Kg/sqcm (min) (Kg/sqcm (min**

M100 135 100

M150 200 150

M200 260 200

M250 320 250

M300 380 300

M350 440 350

M400 500 400

For explanation refer NBC, Part VI, section 5, table 1.

Concrete mix proportions for ordinary concrete:

The concrete mix proportions for ordinary concrete shall be as given below:

**Grade of Total quantity of dry Proportion of Qty of water**

Concrete aggregate by volume per Fine aggregates per 50Kg of

 50 Kg of cement being to coarse cement

 the sum of individual aggregates (maximum

 volumes of fine and coarse in ltrs)

 aggregates (max in ltrs)

M100 300 Generally 1:2 but 34

M150 220 subject to an upper 32

M200 160 limit of 1:1 ½ and 30

M250 100 lower limit of 1:3 27

For explanation refer NBC, Part VI, section 5, table 3and 4.

**BURNT CLAY BRICK MASONRY**

SCOPE OF WORK

Work included

This section covers the requirements for the supply of materials and workmanship for the construction of load bearing and non-load bearing burnt clay brick masonry including all types of mortar, grouting and masonry accessories.

This section includes architecturally exposed burnt clay brick masonry in association with stone masonry.

RELATED WORK SPECIFIED ELSEWHERE

Stone masonry

Cast-in-place Portland cement concrete

Concrete reinforcement

Plastering

QUALITY CONTROL

The contractor shall be responsible for the quality of the burnt clay brick masonry. The masonry work shall at all times be under the direct supervision of an experienced foreman under the overall supervision of the contractors site engineers. The bricks shall comply with I.S.1077.

EXECUTION

GENERAL

The setting and layout of masonry shall be the contractors responsibility and shall be in strict conference with the drawings.

The contractor shall accurately locate openings, returns, offsets etc. in accordance with the drawings.

The contactor shall layout walls in advance for accurate spacing of surface bond patterns with uniform joint widths and to properly locate openings. Use of less than half size bricks at corners, jambs and other locations shall be avoided.

Cut bricks carefully to prevent disintegration and to obtain clean, sharp, un chipped edges. Cut-bricks may be used not more than twice in a straight-run course.

COORDINATION WITH OTHER WORK

The contractor shall coordinate and schedule the masonry work with other related work and trades to avoid cutting and breaking of masonry after erection and for proper sequencing.

ACCURACY AND TOLERANCES

Erect walls and columns true to line and plumb, with courses level with joints of uniform thickness and spacing. Corners, returns, jambs etc. shall be square or true to angles shown on drawings.

Acceptable tolerances are as given below:

Variation from means plan: Walls shall be constructed as true planes. When tested with a 3 meter straight edge, placed anywhere on the wall in any direction, the maximum deviation from a true plane shall be within 5mm.

Variation from plumb: Variation from plumb shall be within 5mm in 3meters height.

Variation from level: Variation from the level for any masonry course shall not exceed 6mm in any 6mtere bay.

Variation from positions: Variation from positions shall not exceed 6mm from the designated position shown on the drawing.

CONCRETE WORK

All concrete work associated with masonry shall proceed keeping pace with masonry.

Concrete lintels, sills, and stringer course etc. shall be flush with the masonry surfaces, unless otherwise indicated.

CURING

Cure the masonry construction by continuously keeping moist for at least 7 days.

**CERAMIC WALL AND FLOOR TILING**

SCOPE OF WORK

The tiles will be selected by the owner and the cost of tiles delivered at site will be adjusted against the allowance for this item provided in the contract documents.

The scope of work under this specification section covers the unloading of materials at site, storage and safekeeping, furnishing of all other materials, accessories, labour, tools, equipment and the installation of tiles.

RELATED WORK SPECIFIED ELSEWHERE

Stone masonry

Burnt clay brick masonry

Cast-in place Portland Cement concrete

Lath and plaster

Structural wood work

QUALITY CONTROL

The tiling shall be carried out under the direct supervision of an experienced tiller foreman who shall continuously check the work of the tiling teams to ensure stringent quality control.

COORDINATION WITH OTHER TRADES AND CONTRACTORS

The tiling work shall be coordinated with other trades and contractors. The contractor shall check and ensure that all work preceding tiling is complete before commencing the work

PROTECTION

Protect other finished work during tiling work to prevent damage and protect the finished tiling work from any damage after completion.

**FLOOR AND WALL TILING AND PAVING**

SCOPE OF WORK

This section covers the furnishing of all materials (other that those supplied at site by the owner) equipment and labour for floor and wall tiling and paving including but not limited to:

Marble to floors and walls

Polished granite to floor and walls

Granolithic flooring with surface hardener

Cast-in-place Portland cement concrete pavement –external.

Polished granite and marble steps & risers

The owner will provide at site the following material against allowances in the contract documents:

Marble for floors and walls cut to sizes as determined by the contractor according to site conditions.

RELATED WORK SPECIFIED ELSEWHERE

Cast-in place Portland cement concrete

Ceramic wall and floor tiles

Stone masonry

TILES

The tiles will be selected by the owner and the cost of tiles delivered at site will be adjusted against the allowance for this item provided in the contract documents

The contractor shall order take delivery and arrange for the transportation of the tiles to the site from the suppliers nominated by the owner. Costs for ordering, transportation etc. upto delivery at site will be adjusted against the allowance.

EXECUTION

LAYOUT OF TILES

Plan the layout of tiles on all continuous surfaces to ensure that:

The horizontal joints of tiles on walls are all in line.

The layout of tile pattern is in accordance with the design intent.

As far as practicable, jambs, sills and heads of windows, doors and other opening correspondent to tile joints.

Cut tiles will not be less than half tile.

At external corners the tiles may be joined with 45 degree mitered joints.

When required, floor and wall tile joints are aligned.

When floor tiles continue through adjacent rooms the joints are continuous.

At jambs, sills and heads of windows, doors and other openings the finished surface of tiles should match the construction details of the windows and doors and other openings.

PREPARATORY WORK FOR LAYING TILES OVER MASONRY OR CONCRETE

Ensure that all sub-surface installation is in place, tested and approved. Plan ahead, in coordination with all trades involved, so that the requirements of the checklist will be met.

Roughen concrete surfaces, wet the surface and apply a bond coat of rich cement-sand slurry.

Wet masonry surfaces.

Apply a leveling coat of cement or cement lime plaster as specified for plastering in a single coat to a minimum thickness of 15mm and score the surface as a bond for subsequent application. Allow the surface to set and proceed with the application of tiles.

QUALITY CONTROL

The contractor shall be responsible for the quality of materials supplied by him and all workmanship. The work shall be executed under the direct supervision of competent foreman and the quality control staff of the contractor. All defective work shall be replaced by the contractor.

COORDINATION WITH OTHER TRADES AND CONTRACTORS

The contractor shall schedule and coordinate the work under this specification with other trades and contractors to prevent avoidable cutting and patching after installation.

MATERIALS AND PRODUCTS

MARBLE

The marble slabs for use in flooring shall be un-polished 3.4” uniformly thick slabs selected by the owner / architect against the allowance in the contract documents. The sum allowed in the contract shall be inclusive of taxes for delivery within the municipal limits of Mumbai.

The marble slabs for use in wall cladding shall be tin-oxide polished ¾” uniformly thick slabs selected by the owner / architect against the allowance in the contract documents. The sum allowed in the contract shall be inclusive of taxes for delivery within the municipal limits of Mumbai.

The contractor shall place orders and take delivery from the owners nominated supplier and arrange for the transportation and delivery to site. All costs for ordering, taking delivery and transportation from within the municipal limits of Mumbai to the site shall be adjusted against the contractors rate outside the allowance in the contract.

The contractor shall cut the basic slabs to the sizes and shapes required.

POLISHED GRANITE TILES AND SLABS

The granite tiles and slabs for use in flooring shall be polished ½” or ¾” uniformly thick slabs selected by the owner / architect against the allowance in the contract documents. The sum allowed in the contract shall be inclusive of taxes for delivery within the municipal limits of Mumbai.

The granite slabs for use in wall cladding shall be polished ¾” uniformly thick slabs selected by the owner / architect against the allowance in the contract documents. The sum allowed in the contract shall be inclusive of taxes for delivery within the municipal limits of Mumbai.

The contractor shall place orders and take delivery from the owners nominated suppliers and arrange for the transportation and delivery to site. All costs for ordering, taking delivery and transportation from within the municipal limits of Mumbai to the site shall be adjusted, against the contractors rate outside the allowance in the contract.

The contractor shall cut the basic tiles and slabs to the sizes and shapes required.

GRANOLITHIC FLOORING

Cement shall be ordinary Portland cement.

Coarse and fine aggregate shall be clean washed quartz of grading between 6mm and 100 microns.

Water shall be clean potable water free of salts, organic, mineral or other deleterious material.

Surface hardener and sealer shall be of an approved manufacturer specializing in the manufacture of concrete additives and treatment materials,

CAST-IN-PLACE PORTLAND AND CEMENT CONCRETE PAVEMENT

Concrete shall be as specified in the specifications in the specification section titled ‘CAST-IN-PLACE PORTLAND CEMENT CONCRETE’.

Steel reinforcement shall be as specified in the specification section titled ‘CONCRETE REINFORCEMENT’.

SETTING BED FOR FIXING TILES AND SLABS

Setting bed for fixing tiles and slabs shall be cement / sand mortar as specified in specification section titled ‘STONE MASONRY’

JOINT GROUT

Joint grout shall be finely ground marble dust mixed with White Portland Cement and colour pigment to match colour of tile or as directed by the architect.

CUSHIONING

Cushioning below setting bed shall be clean sand.

EXECUTION

CONSTRUCTION AND EXPANSION JOINTS

Floors shall be laid with construction joints cut through the setting bed to the base at regular intervals in every third joint in both directions.

Expansion joints shall be provided at intervals varying between 5 meters to 6 meters directions as indicated on drawings or instructed by the architect on site.

Granolithic and cast-in-place concrete paving shall be installed in preplanned alternatively bays of approx 4 meters x 4 meters as indicated on drawing or instructed by the architect at site.

Expansion joints shall be filled with a flexible joint grout and finished neatly.

INSTALLATION OF MARBLE FLOORS

Install as per details given on drawings.

Spread sand cushion to obtain the required slopes and lightly moisten by sprinkler water.

Install the setting bed of cement / sand mortar to an even thickness and dab on a thin coating of neat cement paste.

Place the pre-soaked title and firmly tamp into position with a wooden mallet, level the surface with respect to the adjacent tiles and the required finish level. Adjust joint thickness by means of spacers. Cut through setting bed, to bed at construction joints as previously explained.

Clean off excess cement paste from joints as required for grouting.

Trim tiles to suit junctions with walls and other trimming lines.

After the setting bed has reached final set, clean the surface with a damp cloth without excess water. Rake and clean joints in preparation for grouting.

Grout the joints with a thick slurry of a grouting and ensure that the joints (except expansion joints) are filled completely with grout.

Cure the installation with clean water by ponding for a period of 7 days.

After the grout has been cured and hardened; commence grinding of the surface, to level out all unevenness of joints. Use a mechanically operated rotary grinder polishing machine using abrasive stones of appropriate grade.

After the surface has been ground level, clean the surface by flushing with water two or three times to clean the surface of all grinding slurry. When excess water has dried off and the surface is in a moist conditions, reapply grout, rub into the entire surface and build up an even thickness throughout. Cure for minimum period of four days by ponding.

After the grout has hardened, polish the surface with a mechanically operated rotary grinder / polisher using finer abrasive stones until the surface is smooth and even, to receive sealer and polish. During the final grinding operation, sprinkle the surface lightly with powdered oxalic acid crystals to remove minor score and scratch marks. Clean of all traces of acid by through flushing with water.

Project the floor from on-going construction activities until final sealing and polishing.

Prior to substantial completion and handling over, apply an approved sealer and then polish and buff the surface to a fine sheen using a silicon wax polish.

Tolerance : The finished surface when tested with a 3 meter long straight edge placed anywhere in any direction shall not show a gap of more than 3mm. Provided that no abrupt differences are discernible.

INSTALLATION OF POLISHED GRANITE FLOORS

The flooring shall be from pre-polished granite tiles or slabs cut to size and shape required with their edges ground smooth.

Spread sand cushion to obtain the required slopes and lightly moisten by sprinkling water.

Install the setting bed of cement / sand mortar to an even thickness and dab on a thin coating of neat cement paste.

Place the pre-soaked title and firmly tamp into position with a wooden mallet, level the surface with respect to the adjacent tiles and the required finish level. Adjust joint thickness by means of spacers. Cut through setting bed, to bed at construction joints as previously explained.

Clean off excess cement paste from joints as required for grouting.

Trim tiles to suit junctions with walls and other trimming lines.

After the setting bed has reached final set, clean the surface with a damp cloth without excess water. Rake and clean joints in preparation for grouting.

Grout the joints with thick slurry of the grouting mix and ensure that the joints (except expansion joints) are filled completely with grout. After the grout has dried, thoroughly clean the surface to remove all traces of grout from the surfaces.

Project the floor from on-going construction activities until final sealing and polishing.

Prior to substantial completion and handling over, apply an approved sealer and then polish and buff the surface to a fine sheen using a silicon wax polish.

Tolerance: The finished surface when tested with a 3 meter long straight edge placed anywhere in any direction shall not show a gap of more than 3mm, provided that no abrupt differences are discernible.

INSTALLATION OF POLISHED MARBLE AND KOTAH STONE WALL CLADDING

The cladding shall be form pre-polished marble or granite slabs cut to the size and shape required with their edges ground smooth.

Cladding shall be installed using dabs of neat cement paste behind the cladding.

Align surfaces and joints accurately using temporary plaster of Paris dabs to keep tiles or slabs in place till the setting dabs are fully set and hardened. Grout the voids behind the tile with cement / sand slurry. When the slurry has set, remove the excess slurry and plaster of Paris dabs and clean the surface and lightly rake the joints in preparation for grouting.

Grout the joints and point to a neat finish and thoroughly clean the surface to remove all traces of grout from the tile surfaces.

Apply surface sealer and polish prior to handover.

INSTALLATION OF GRANOLITHIC FLOORING

The installation of granolithic flooring shall generally be in according with the specification section titled ‘CAST-IN-PLACE PORTLAND CEMENT’

The finish shall be unformed finish type U3.

The surface hardener and sealer shall be applied in accordance with the manufacturers specifications.

PROTECTION AND CLEANING

All work covered by this specification shall be protected after installation and handed over in good condition after thorough cleaning

**PAINTING AND FINISH COATING**

GENERAL

SCOPE OF WORK

Work Included: This section covers the surface preparation, field priming and field painting or finish coating of all wood, plaster, concrete and metal surface, ( both interior and exterior ) as called for in the finish schedule. In addition, all surface, schedule or not, such as piping, tanks, equipment and machinery shall be painted when called for in the finish schedule or in their respective section of these specifications. Contractor shall finish all labour materials, tools and equipment required to complete the work.

Surface not to be painted: The following surface shall not be painted stainless steel, aluminum, brose, copper, lead, brass, factory pre-finished surfaces and installed surfaces. In addition surface of steel member which ate to have concrete cast against them or are to be fully embedded in concrete shall be pointed.

Shop primed Equipment: Final field painting or touch-up of manufacturer’s shop primed or shop painted equipment shall not be done until operational testing has been complete and certified.

RELATED WORK SPECIFIED ELSEWHERE

Quality Control

Structural Steel

Lath and Plaster

Architectural woodwork

Cast-in-place Portland Cement concrete.

MOCK-UPS

In addition to the requirement for submitting colour samples, the contractor shall, prior to proceeding with paint application, provide mock-up or field samples, for each substrate to be painted. The mock-ups or field samples shall be painted to demonstrate method of application, finish texture, colour and quality of workmanship. The size and location of the mock-up or field samples shall be determined by the architect.

**PRODUCTS**

ACCEPTABLE MANUFACTURES

All coating material (paints) shall be furnished be a manufacture, regularly engaged in the manufacture of coatings shall be the manufacturer’s best-grade for the intended substrate.

MATERIALS

Coating materials are listed herein by generic type (vehicle) for various substrates. A1 materials proposed will be subject to review and acceptance by the architect.

Coating accessory materials such as linseed oil, shellac, turpentine and other materials not specifically indicated herein but required to achieve the finished specified shall be of high quality and as far as possible from the manufacturer of the coating material.

Coating shall be ready-mixed, expect for field-catalyzed coatings. Pigments shall be fully ground maintaining a soft past consistency, capable of being readily and uniformly dispersed to a complete homogeneous mixture for brush, roller or airless spray application, as recommended by the manufacturer.

Coating shall have good flowing properties and be capable or drying or cutting free of streaks, runs or sags.

Colours, texture and degree of gloss shall be as shown on the finish schedule. Tint, prime and intermediate coats shall be approximately to the shade of the final coat but with sufficient variation to distinguish them from the preceding coat. Use products of the same manufacturer for succeeding coats. Where red lead primer is used, subsequent coats may be the produce of another manufacturer.

If ferrous metals are shop primed, the contractor shall make every effort to determine the type of primer used. If this is not possible or the primer is not compatible with the proposed finish coat as recommended by the coating manufacturer may be required prior to application of finish coat

PAINTS SELECTION GUIDE

Exterior Surface

Ferrous Metals (unprimed)

First Coat Organic Zinc rich primer

Top Coat Chlorinated Rubber

Ferrous Metals (Unprimed)

First coat Chlorinated rubber Modified Alkyd.

Second Coat Acrylic Epoxy Enamel

Top Coats Acrylic Epoxy Enamel

**Concrete**

First Coat Acrylic primer/ Sealer.

Second Coat Acrylic or Vinyl Emulsion

Third Coat Acrylic or Vinyl Emulsion

Top Coats Acrylic or Vinyl Emulsion

**Cement Plaster**

First Coat Acrylic Latex.

Second Coat Acrylic Latex.

Top Coats Acrylic Latex.

**Wood Designated Painting.**

First Coat Alkyd Primer

Second Alkyd Enamel.

Top Coats Alkyd Enamel.

**Galvanized Steel:**

First Coat (Where not passivating coat as recommended by coating shop Bonderized ) manufacture followed by a Zinc chromate Primer

First Coat (Where Galvanized Iron primer Bonderised)

Second Coat Alkyd Enamel.

Top Coats Alkyd Enamel.

**Interior Surfaces.**

Ferrous metals ( Unprimed )

First Coat Red Oxide Primer

Second Coat Alkyd Enamel

Top Coats Alkyd Enamel.

**Concrete:**

First Coat Acrylic primer/Sealer

Second Coat Acrylic or Vinyl Emulsion.

Top Coats Acrylic or Vinyl Emulsion

**Gypsum Plaster :**

First Coat Latex Sealer.

Second Coat Acrylic Latex.

Top Coats Acrylic Latex.

**Cement or Cement lime Plaster**

First Coat Alkali resistant primer.

Second Coat Acrylic Latex.

Top Coats Acrylic Latex.

**Gypsum Board :**

First Coat Acrylic primer / Sealer ( Note required on

 Moisture resistant board)

Second Coat Acrylic or Vinyl Emulsion.

Top Coat Acrylic or Vinyl Emulsion.

**Wood Designated for painting :**

First Coat Alkyd primer

Second Coat Alkyd Enamel.

Top Coats Alkyd Enamel.

**Wood designated for staining and polishing:**

First Coat Alkyd standing Sealer

Second Coat Modified Polyurethane.

Top Coats Modified Polyurethane.

**Galvanized Steel :**

First coat (Where passivating Coat as recommended by

 Manufacture followed by a Zinc)

First Coat (Where Galvanized iron primer Bonderized)

Top Coats Alkyd Enamel.

**APPROVED BRANDS FOR MATERIALS**

C.I pipes for internal & external drainage &water **:** IISCO, Kesoram as per BIS 1536

Supply.

G.I. pipes **:** “TATA”, of ‘C’ class as per

 BIS:1239 (part I) – 1979.

G.I. fittings **:** KIRTI as per BIS.554 : 1975.

G.M. gate valves, globe valves and check valves **:** LEADERS, SANT as per BIS. 778

 :1971.

Brass bib cock, stop cock  **:** Jaquar / Continental/GEM

Ball Valves  **:** Techno, Leader,as per BIS.1703:1977.

C.I. soil, waste, vent rainwater pipes & fitting.  **:** BIC, HEP, NECO, as per B.I.S. 1729:

 1979.

C.I. nahani traps, floor traps  **:** ------- Do ------

C.I. Chamber boxes & C.I. gully traps **:** Patel Pattern of ‘Bombay Iron Works’.

Pig Lead : Standard Metal Works of 99.50% purity

Lead Pipes : Standard Metal Works solid drawn as

 per BIS. 404:1962.

C.P. brass waste couplings and bottle traps, : Jaquar Allied/GEM.

Health faucet.

C.P. fancy head stop cocks, bib Cocks & pillar taps : Jaquar Continental/GEM.

European W.C. seats : Commander/Patel as per BIS.2548

 Type A

A.C. pipes & fittings : Everest, Swastik as per BIS 1626:1980

Flush valves for W.C. : Jaquar Allied/GEM.

**RELEVANT I.S. CODE NOS. VARIOUS ITEMS OF WORK**

Laying of stoneware pipe drainage : BIS 4127 : 1967

Laying of building drainage : BIS 1742 : 1972

Laying of cast iron pipes : BIS 3114 : 1965

Laying of sanitary pipe work above ground. : BIS 5329 : 1969

Laying of concrete pipes : BIS 783 : 1959

Construction of manholes : BIS.4111 (Pt. 1) – 1967.

Water supply in buildings : BIS 2065 : 1963